Engineering and Testing for EMC and Safety Compliance

CERTIFICATION APPLICATION REPORT
FCC PART 22 CERTIFICATION & INDUSTRY CANADA RSS-118 CERTIFICATION

Test Lab:	Applicant Information:
Rhein Tech Laboratories, Inc. Phone: 703-689-0368 360 Herndon Parkway Fax: 703-689-2056 Suite 1400 Web Site: www.rheintech.com Herndon, VA 20170 E-Mail: ATCBINFO@rheintech.com	Mobile Communications Technologies Inc. (MCT, Inc.) Contact: John Vagas Phone: 905-726-3444 ext. 202 360 Industrial Pkwy South Fax: 905-726-4233 Unit 1 Aurora, Ontario L4G 3V7 Canada E-Mail: sales@smoothtalker.com

FCC ID:	OW5BST800	**GRANTEE FRN NUMBER:**	0007702509
PLAT FORM:	N/A	**RTL WORK ORDER NUMBER:**	2002166
MODEL(S):	BST800	**RTL QUOTE NUMBER:**	QRTL02-555
DATE OF TEST REPORT:	November 13, 2002		

American National Standard Institute:	ANSI C63.4: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI/TIA/EIA603- 1992	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ANSI/TIA/EIA 603-1-1998	Addendum to ANSI/TIA/EIA 603-1992
TIA/EIA /IS-98-A	Recommended Minimum Performance standards for Dual-Mode Wideband Spectrum Cellular Mobile Stations
FCC Classification:	AMP - Amplifier
FCC Rule Part(s):	Part 22: Public Mobile Services
Industry Canada Standard:	RSS-118: Land and Subscriber Stations: Voice, Data and Tone Modulated, Angle Modulation Radiotelephone Transmitters and Receivers Operating in the Cellular Mobile Bands 824-489 MHz and 869-894 MHz
Digital Interface Information	Digital Interface was found to be compliant
Receiver Information	Receiver was found to be compliant

Frequency Range (MHz)	Output Power (W)	Frequency Tolerance	Emission Designator
824-849	3	N/A	AMP

We, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. No modifications were made to the equipment during testing in order to achieve compliance with these standards.

Furthermore, there was no deviation from, additions to, or exclusions from the FCC Part 2, FCC Part 22, Industry Canada RSS-118, and ANSI C63.4.

Signature: _____ Date: November 13, 2002

Typed/Printed Name: Desmond A. Fraser Position: President

TABLE OF CONTENTS

FIGURE INDEX

TABLE INDEX

PLOT INDEX

APPENDIX INDEX

PHOTOGRAPH INDEX

1 GENERAL INFORMATION

This Type Certification Report is prepared on behalf of **Mobile Communication Technologies, Inc. (MCT, Inc),** in accordance with the Federal Communications Commissions and Industry Canada Rules and Regulations. The Equipment Under Test (EUT) is the **3W Mobile Amplifier, Model BST800, FCC ID: OW5BST800**. The test results reported in this document relate only to the item that was tested.

All measurements contained in this application were conducted in accordance with FCC Rules and Regulations CFR 47, Industry Canada RSS-119, and ANSI C63.4 Methods of Measurement of Radio Noise Emissions, 1992. The instrumentation utilized for the measurements conforms to the ANSI C63.4 standard for EMI and Field Strength Instrumentation. Calibration checks are performed regularly on the instruments, and all accessories including high pass filter, coaxial attenuator, preamplifier and cables.

1.1 TEST FACILITY

The open area test site and conducted measurement facility used to collect the radiated data is located on the parking lot of Rhein Tech Laboratories, Inc. 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report dated March 3, 1994, submitted to and approved by the Federal Communications Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 1992).

1.2 RELATED SUBMITTAL(S)/GRANT(S)

This is an original application report.

2 TESTED SYSTEM DETAILS

2.1 JUSTIFICATION

The EUT was tested in all three orthogonal planes in order to determine worst case emission. The EUT was investigated and tested from 9 kHz to 9 GHz. No Intermodulation testing was determined to be necessary since the EUT is not a bi-directional amplifier, but only an amplifier in the uplink frequency range.

Listed below are the identifiers and descriptions of all equipment, cables, and internal devices used with the EUT for this test, as applicable.

2.2 COMPONENTS

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
AMPLIFIER	MCT, INC.	BST800	46901	OW5BST800	UNSHIELDED POWER	14690
MAGNETIC MOUNT 3 DB ANTENNA	MCT, INC.	SEM2MX	N/A	N/A	SHIELDED I/O	14692
GLASS MOUNT 3 DB ANTENNA	MCT, INC.	SEM2X	N/A	N/A	SHIELDED I/O	14693
MAGNETIC MOUNT 6 DB ANTENNA	MCT, INC.	SEM15MX	N/A	N/A	SHIELDED I/O	14694

2.3 CONFIGURATION OF TESTED SYSTEM

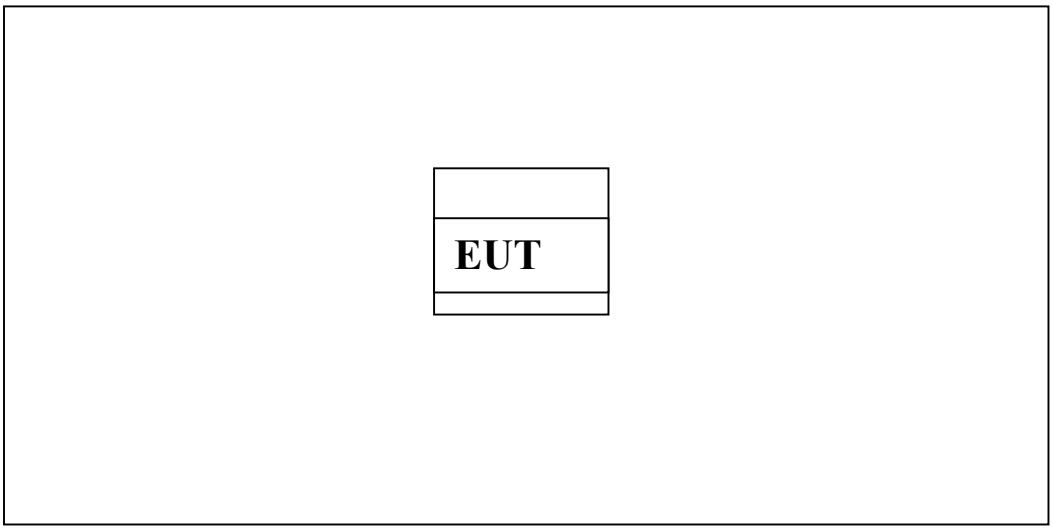


FIGURE 1: WORST CASE CONFIGURATION OF SYSTEM UNDER TEST

3 FCC PART 2.1033(C)(8); DC VOLTAGES AND CURRENTS

The DC voltages applied to and DC currents into the several elements of the final radio frequency amplifying device for normal operation over the power range.

13.8 volt; 1 Amp

The DC voltage and total input current of the entire final power amplifier module is 13.8 VDC and 1A.

4 FCC RULES AND REGULATIONS PART 2.1046 (A): RF POWER OUTPUT: CONDUCTED

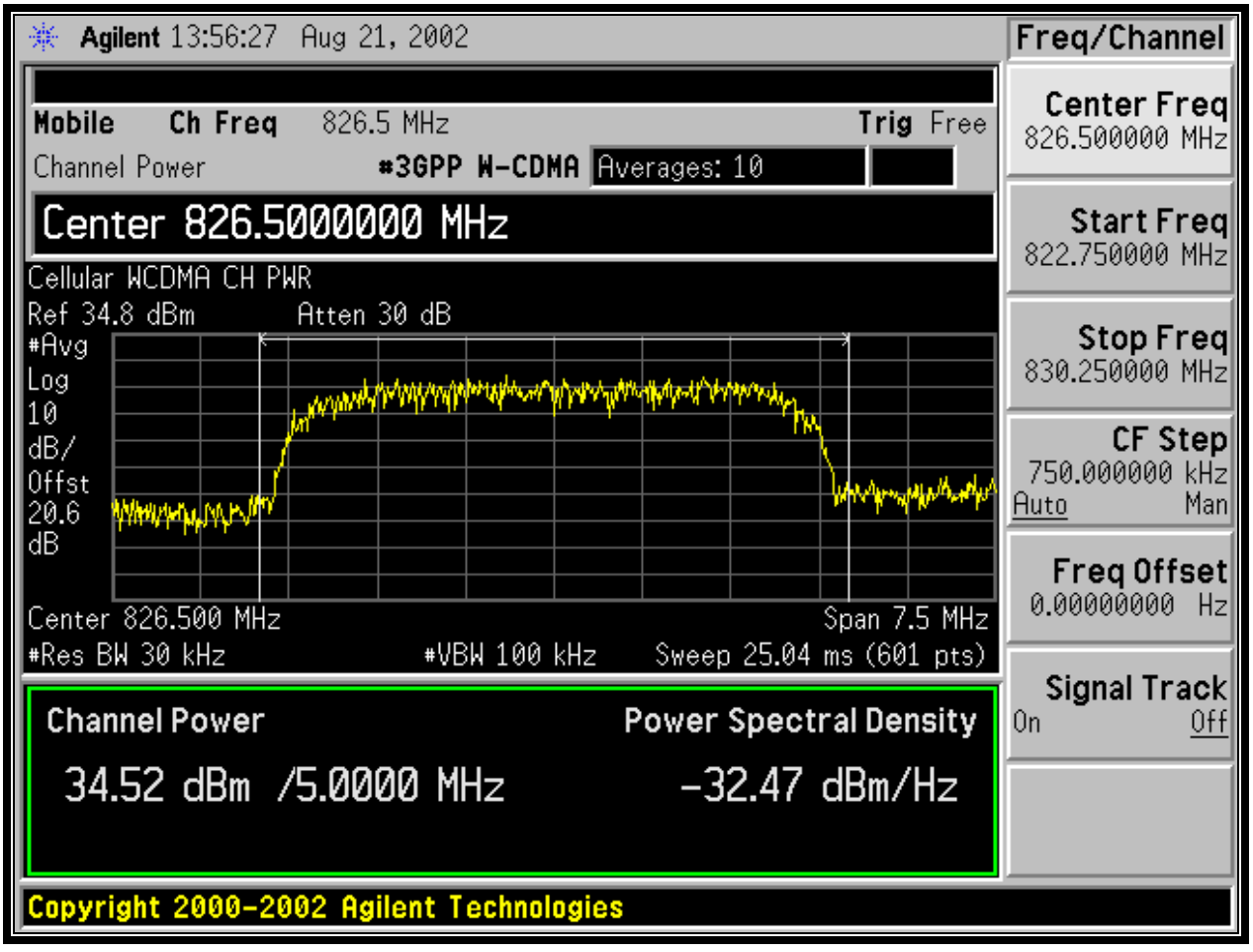
4.1 TEST PROCEDURE

TIA/EIA/IS-98-A; CFR 22.913(a)

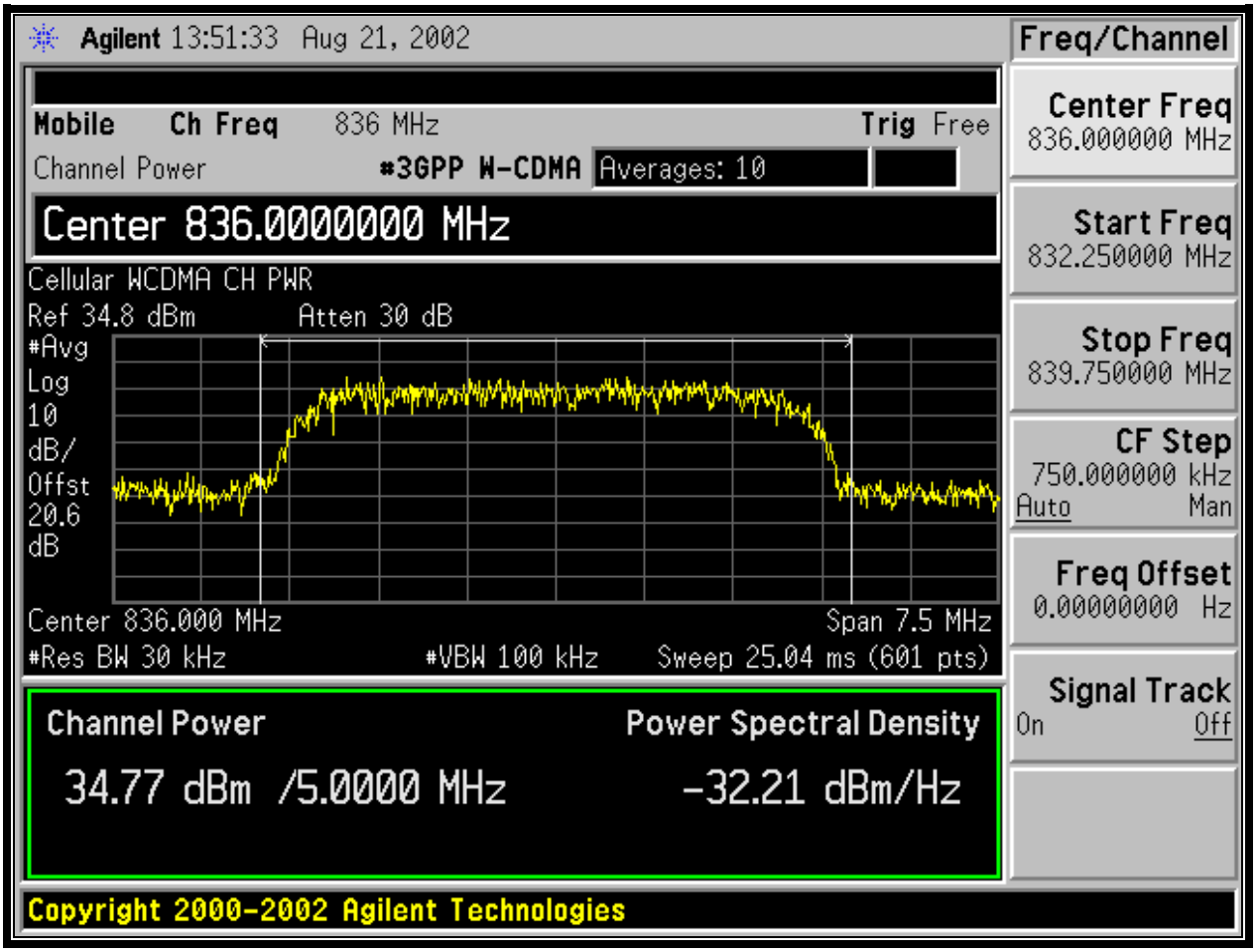
4.2 TEST DATA

TABLE 4-1: RF POWER OUTPUT: CARRIER OUTPUT POWER (WCDMA)

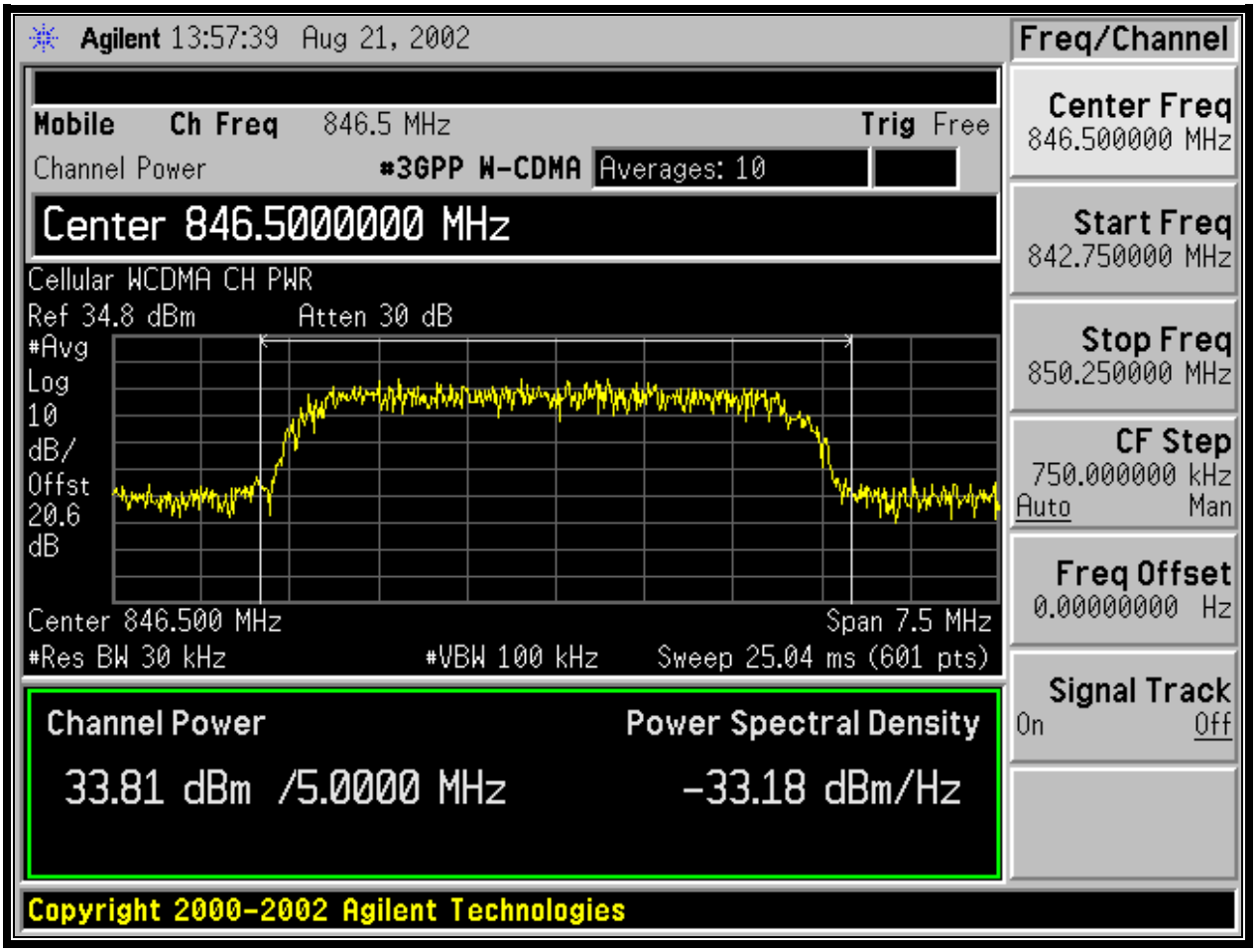
Frequency (MHz)	Power (dBm)	RF Power Measured (Watt)
826.5	34.5	2.8
836.0	34.8	3.0
846.5	33.8	2.4



PLOT 4-1: WCDMA; CHANNEL POWER (LOW CHANNEL 826.5 MHZ)



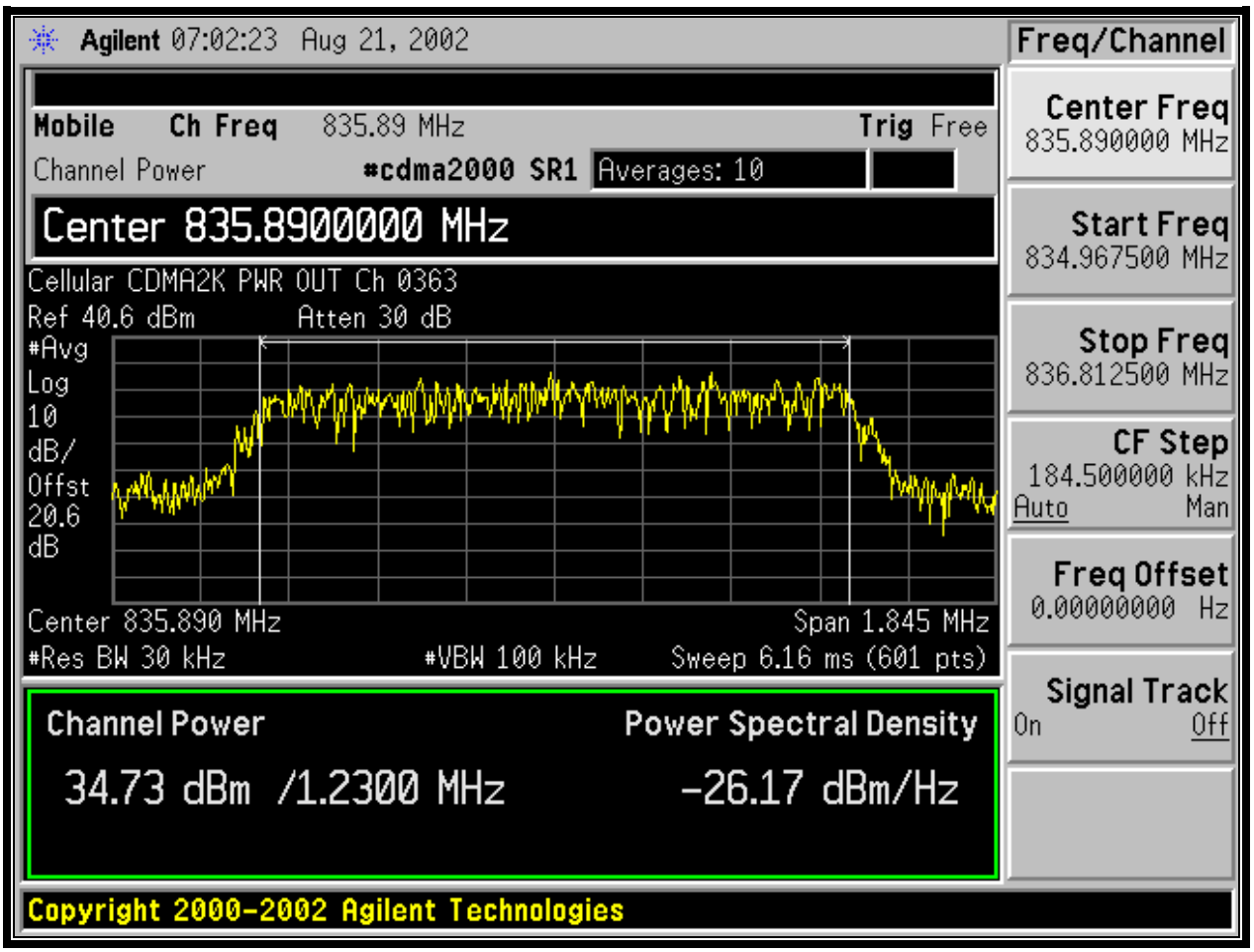
PLOT 4-2: WCDMA; CHANNEL POWER (MID CHANNEL 836 MHZ)



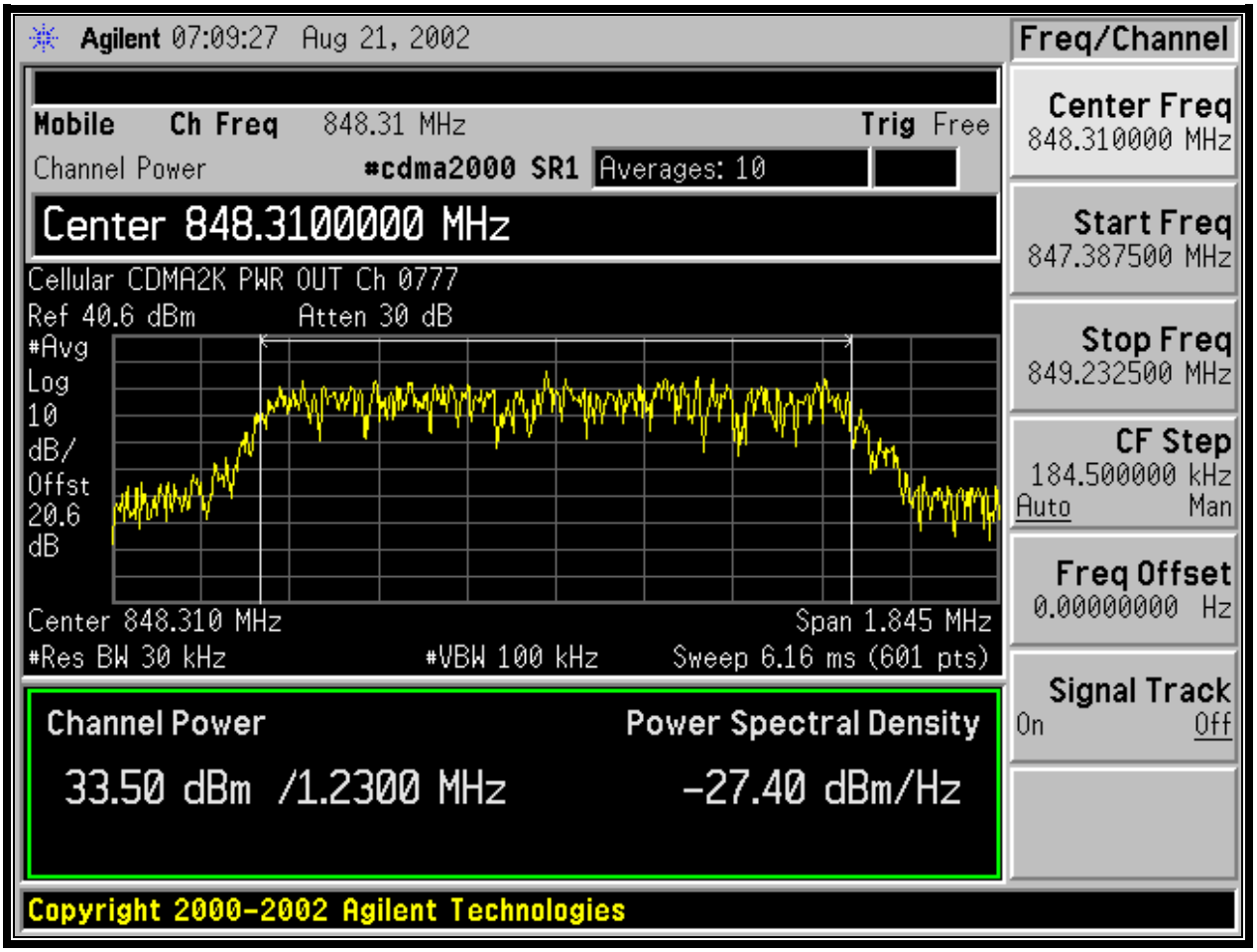
PLOT 4-3: WCDMA; CHANNEL POWER (HI CHANNEL 846.5 MHZ)

TABLE 4-2: RF POWER OUTPUT: CARRIER OUTPUT POWER (CDMA2000)

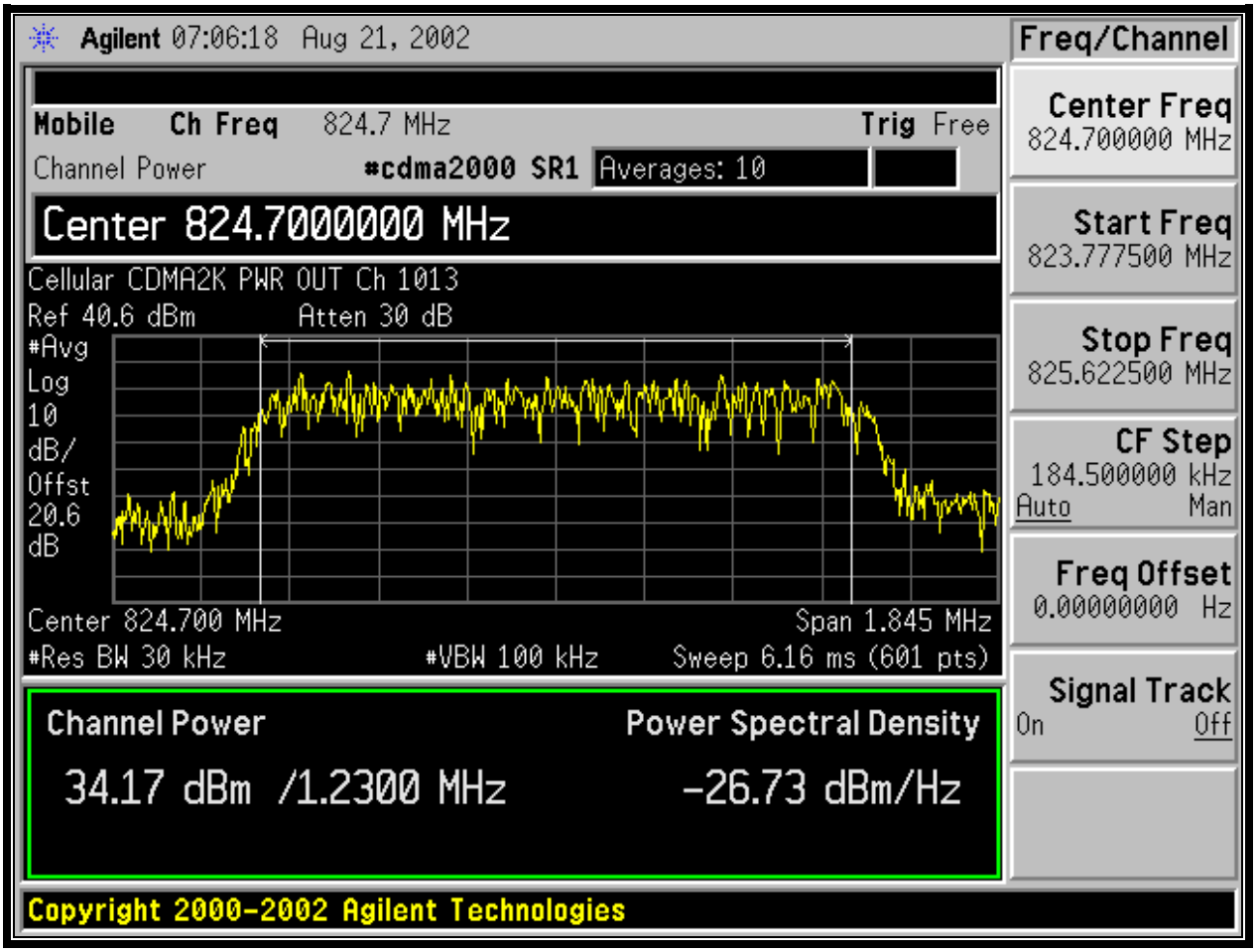
Channel Number	Frequency (MHz)	Power (dBm)	RF Power Measured (Watt)
363	835.89	34.7	3.0
777	848.31	33.5	2.2
1013	824.7	34.2	2.6



PLOT 4-4: CDMA2000; CHANNEL POWER (CHANNEL 363, 835.89 MHZ)



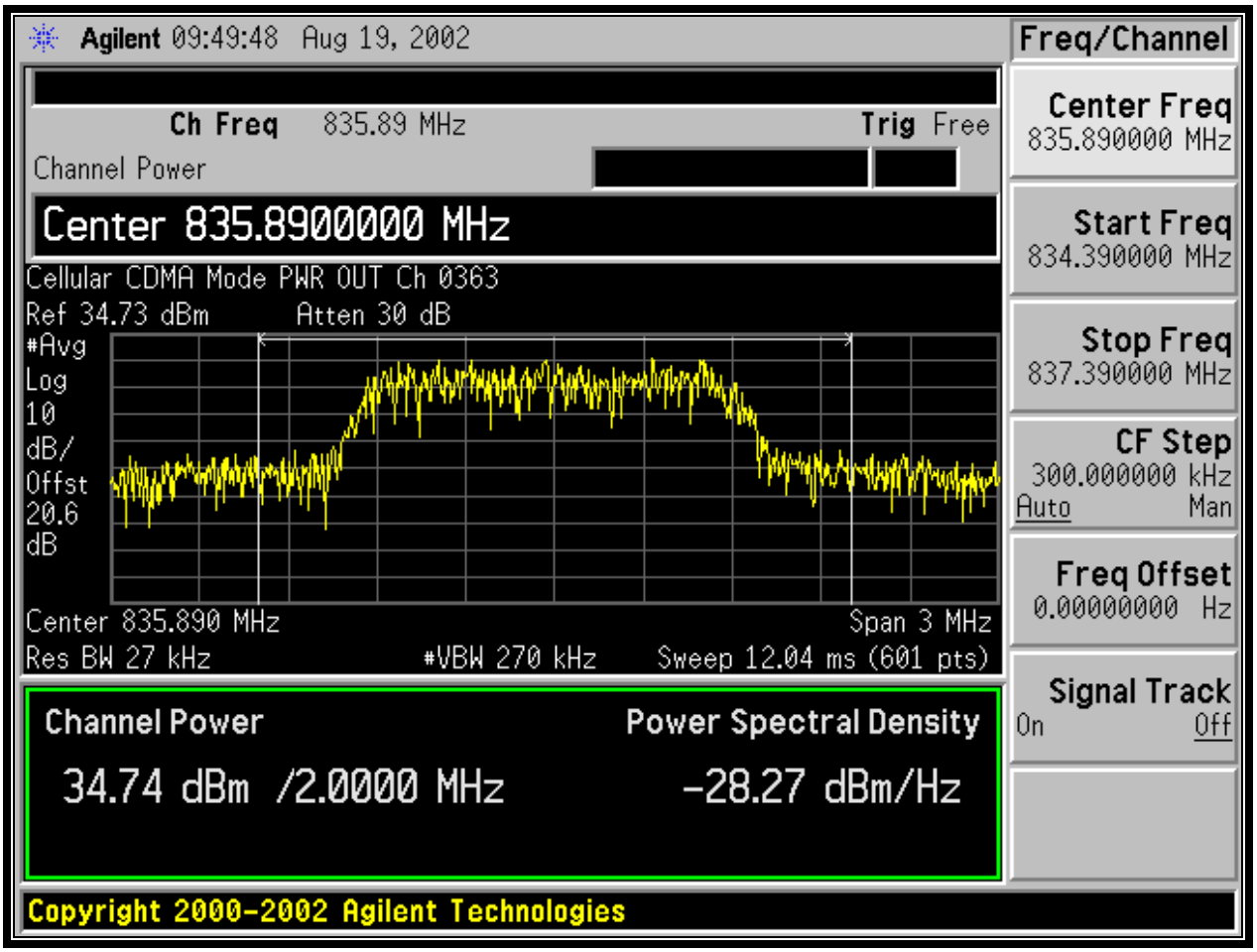
PLOT 4-5: CDMA2000; CHANNEL POWER (CHANNEL 777, 848.31 MHZ)



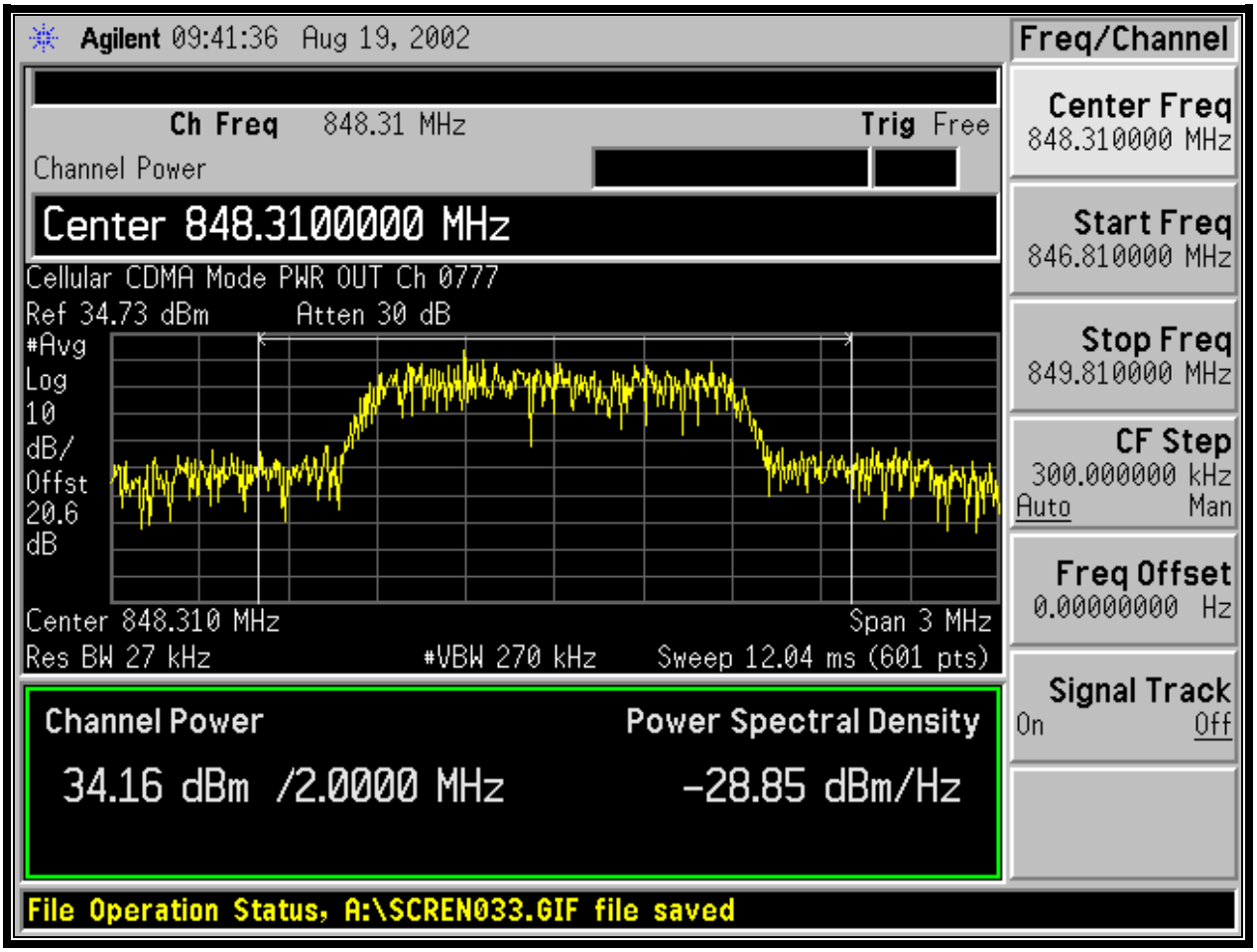
PLOT 4-6: CDMA2000; CHANNEL POWER (CHANNEL 1013, 824.7 MHZ)

TABLE 4-3: RF POWER OUTPUT: CARRIER OUTPUT POWER (CDMAONE)

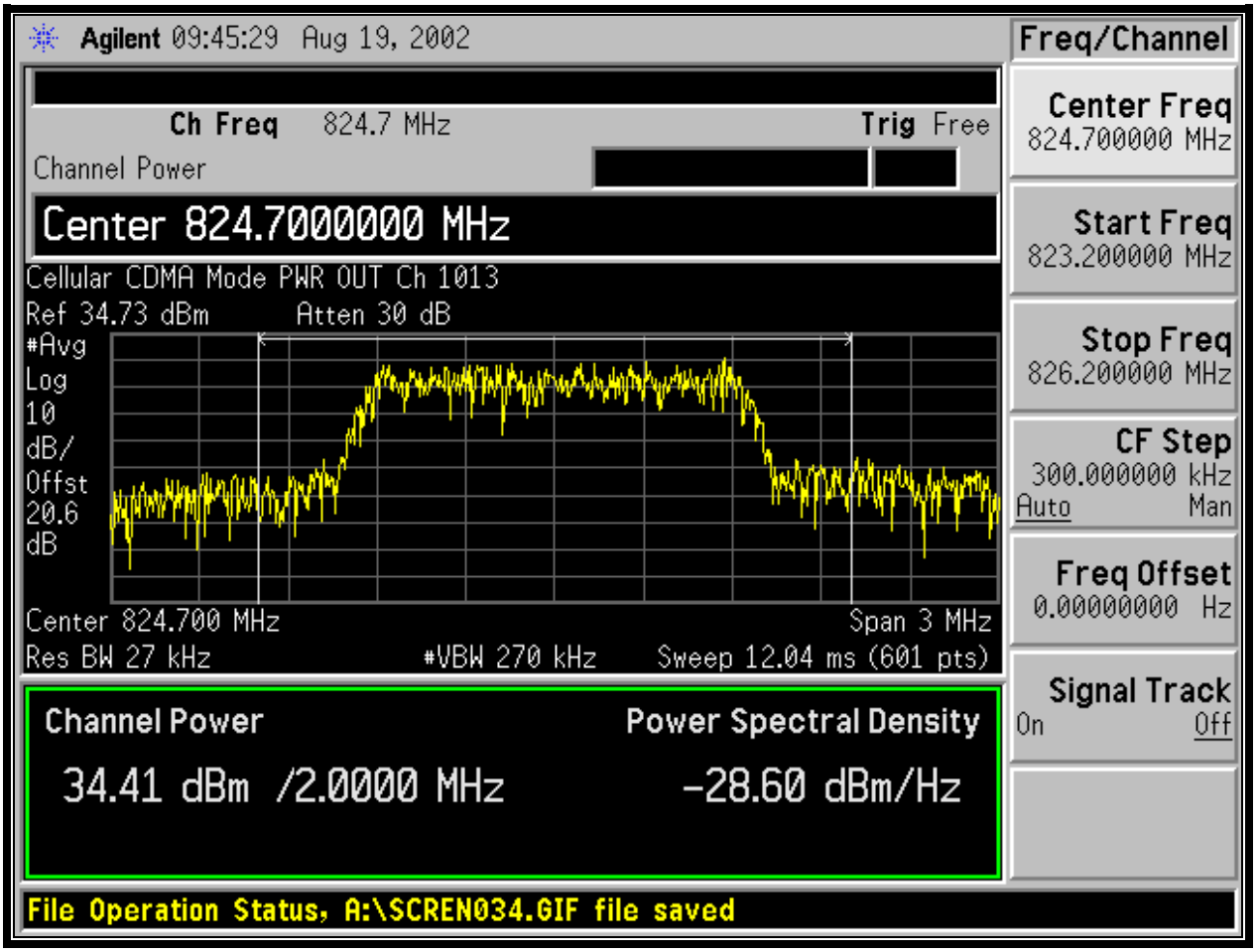
Channel Number	Frequency (MHz)	Power (dBm)	RF Power Measured (Watt)
363	835.89	34.7	3.0
777	848.31	34.2	2.6
1013	824.7	34.4	2.8



PLOT 4-7: CDMA; CHANNEL POWER (CHANNEL 363, 835.89 MHZ)



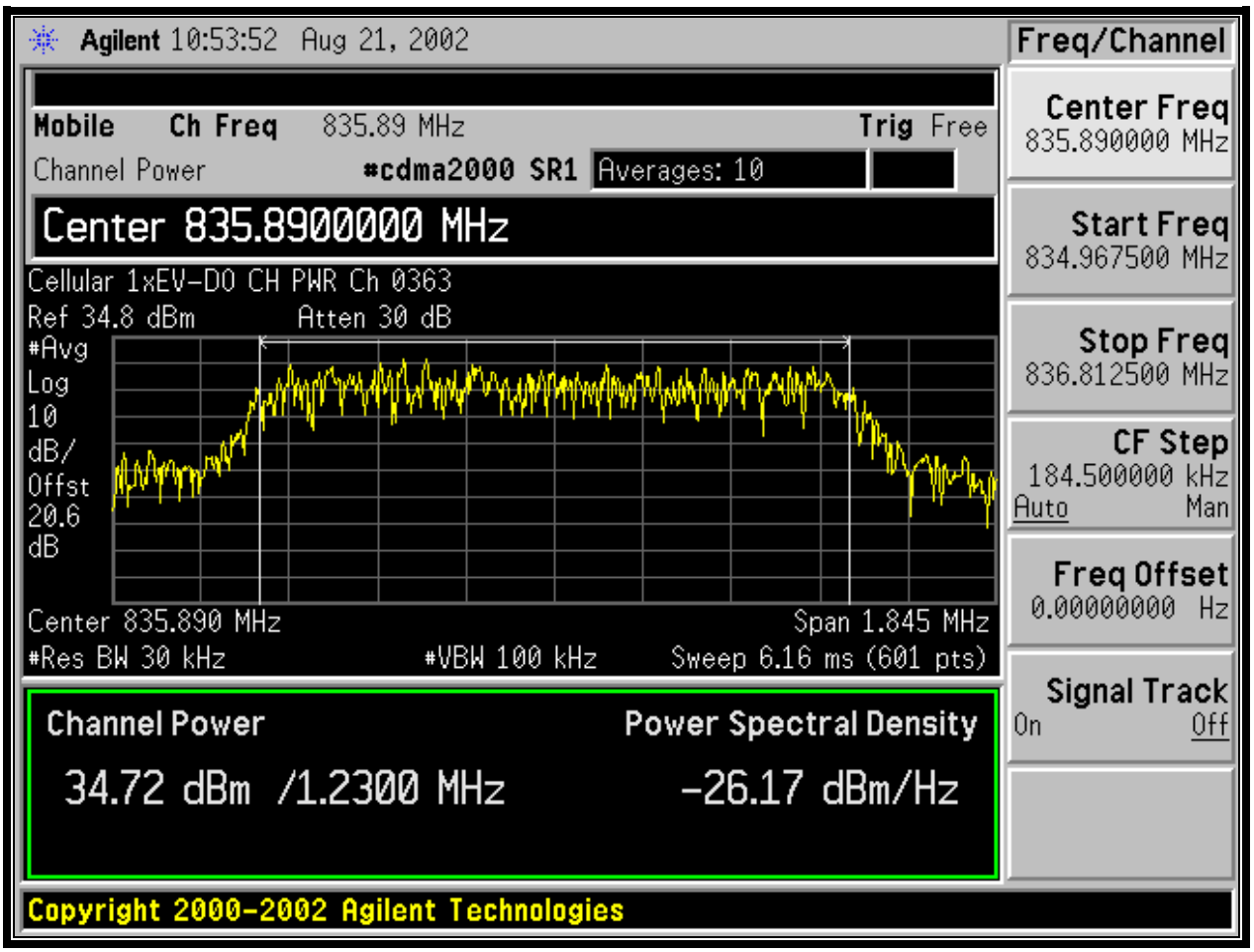
PLOT 4-8: CDMA; CHANNEL POWER (CHANNEL 777, 848.31 MHZ)



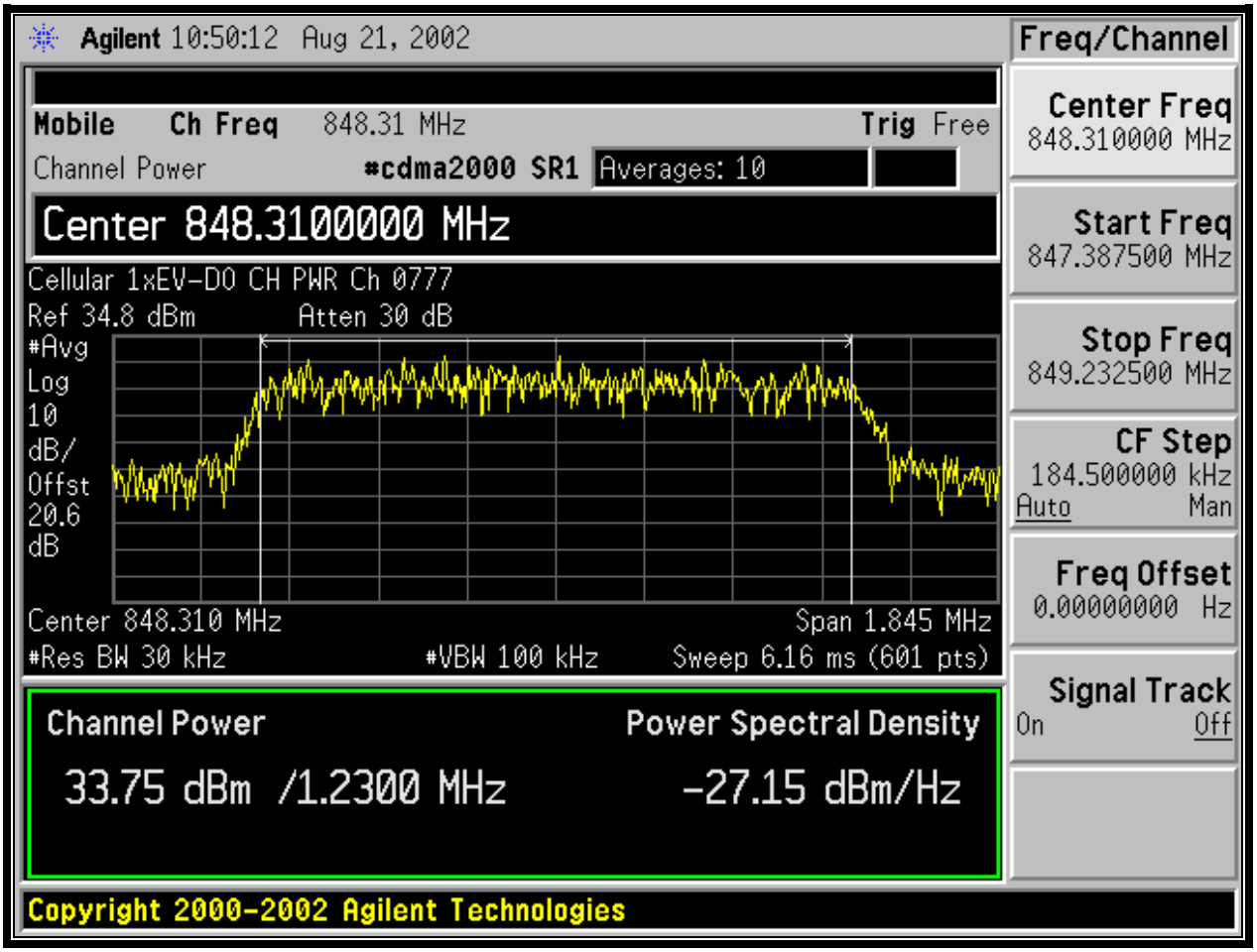
PLOT 4-9: CDMA; CHANNEL POWER (CHANNEL 1013, 824.7 MHZ)

TABLE 4-4: RF POWER OUTPUT: CARRIER OUTPUT POWER (WCDMA)

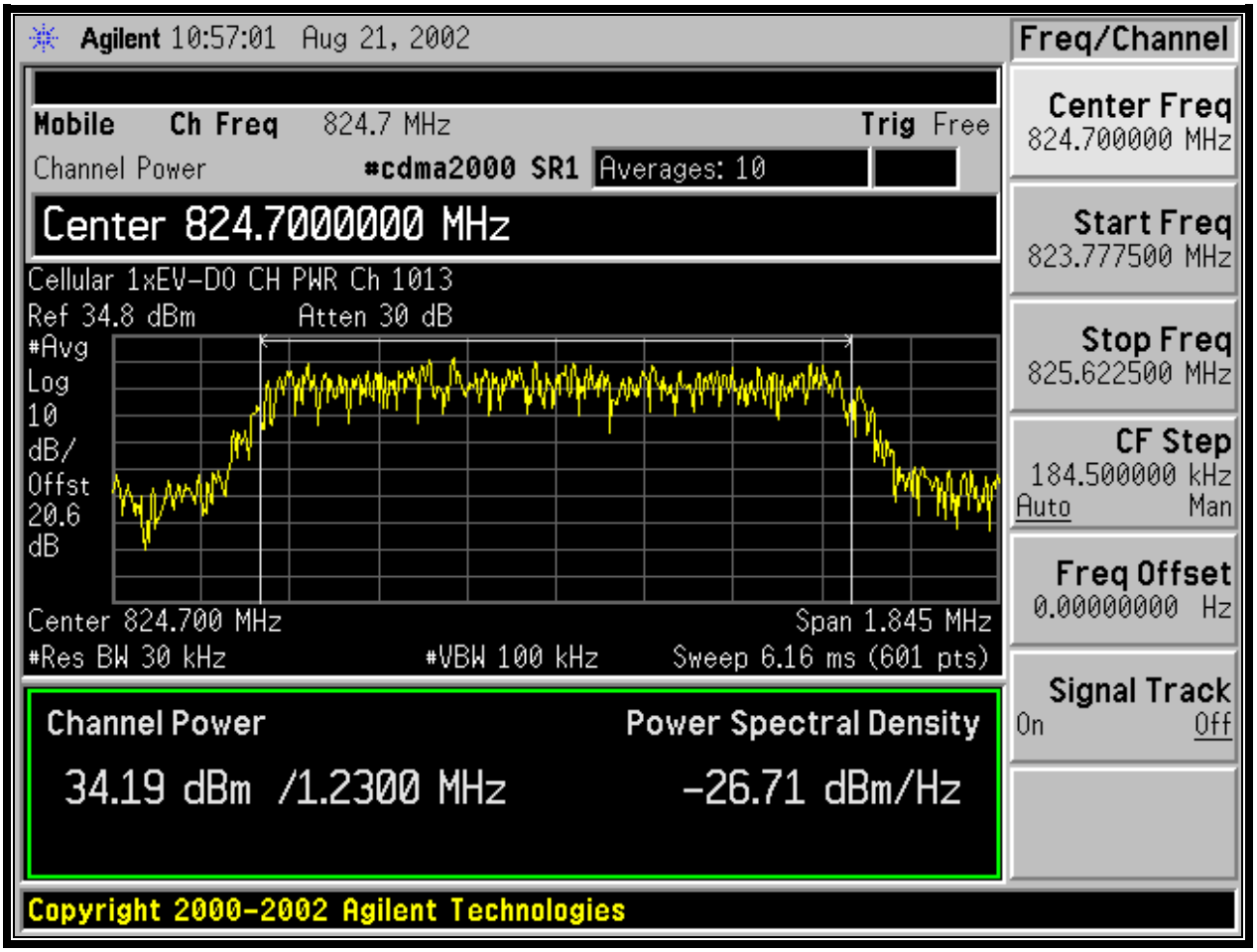
Channel Number	Frequency (MHz)	Power (dBm)	RF Power Measured (Watt)
363	835.89	34.7	3.0
777	848.31	33.8	2.4
1013	824.7	34.2	2.6



PLOT 4-10: 1XEV-DO; CHANNEL POWER (CHANNEL 363, 835.89 MHZ)



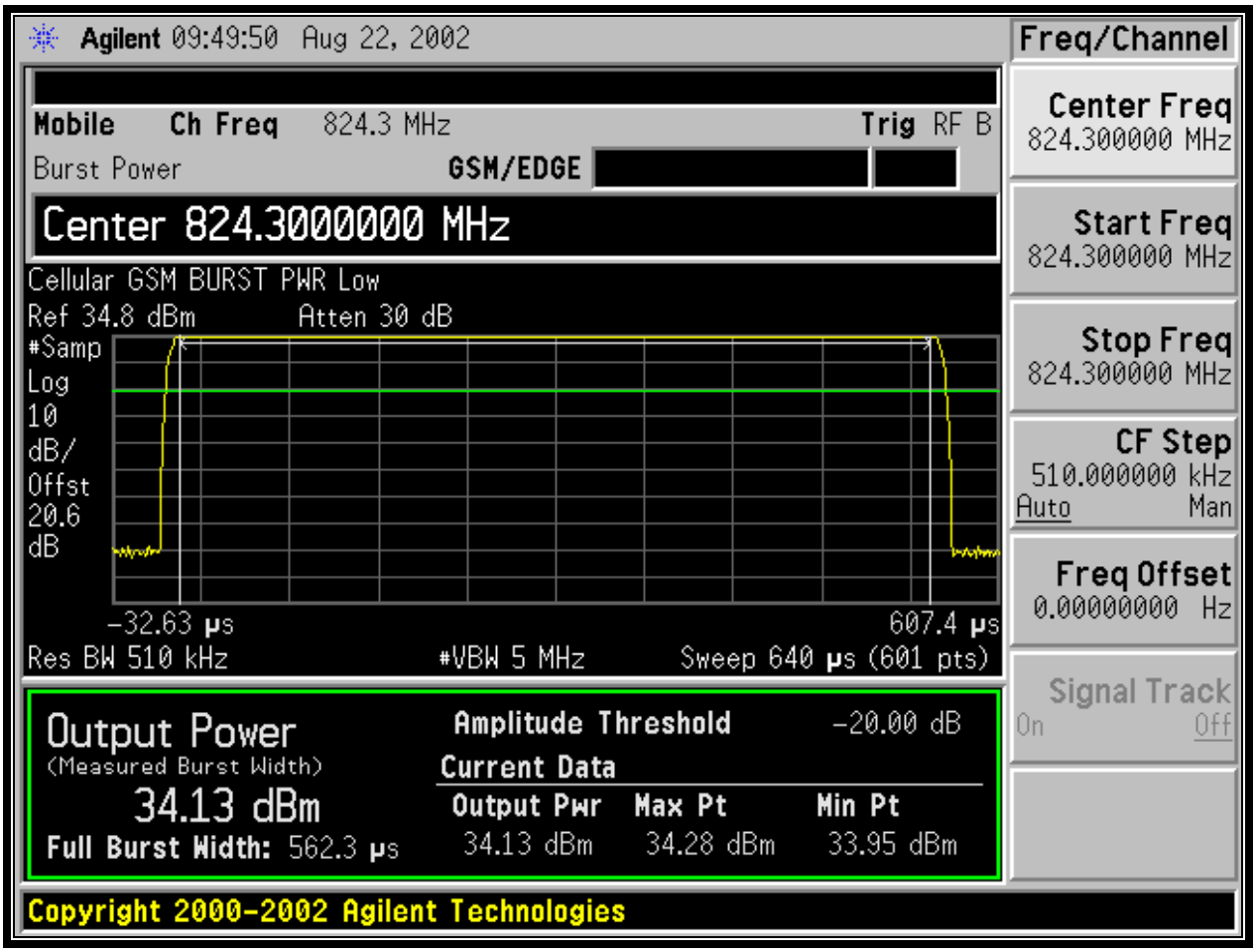
PLOT 4-11: 1XEV-DO; CHANNEL POWER (CHANNEL 777, 848.31 MHZ)



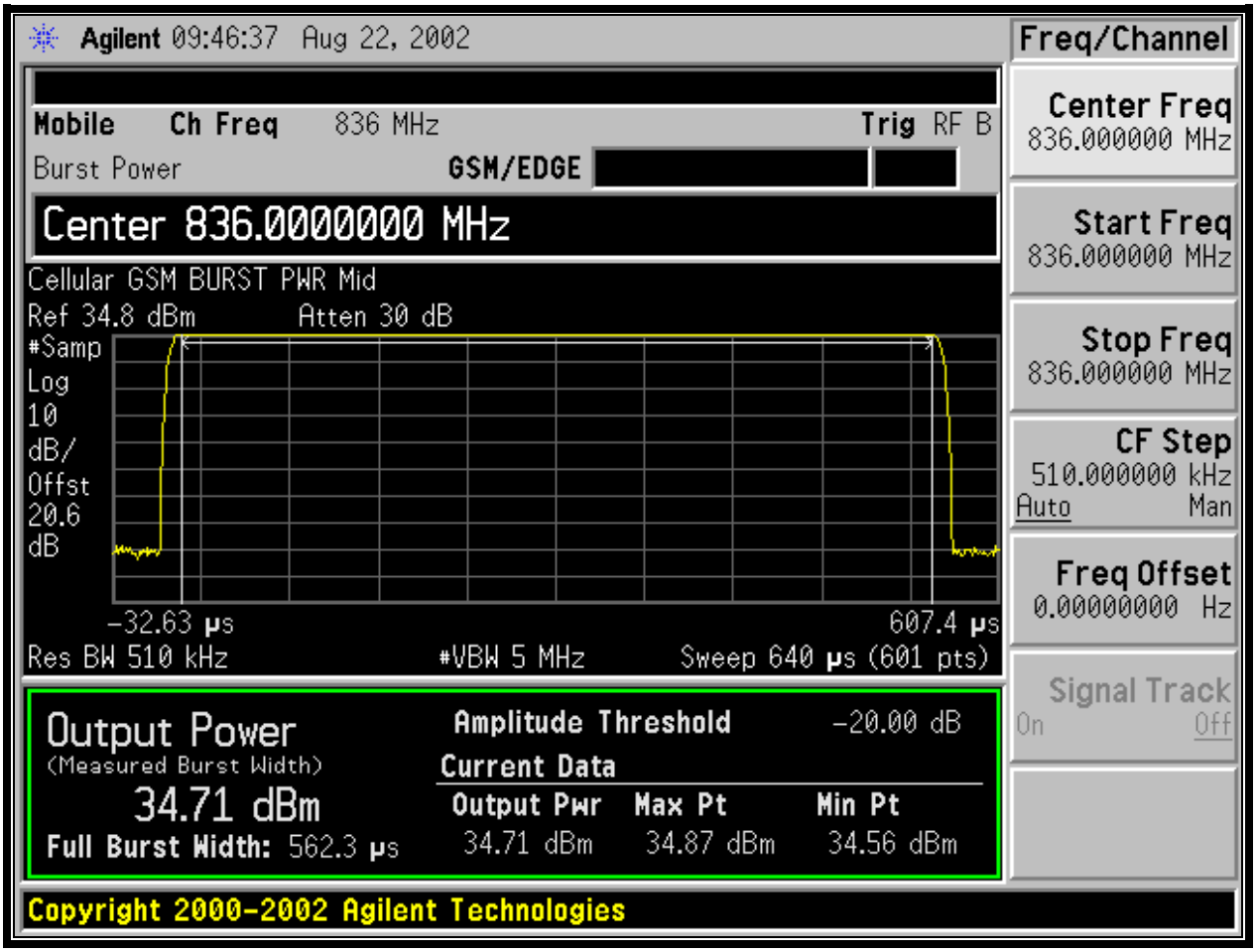
PLOT 4-12: 1XEV-DO; CHANNEL POWER (CHANNEL 1013, 824.7 MHZ)

TABLE 4-5: RF POWER OUTPUT: CARRIER OUTPUT POWER (GSM/EDGE)

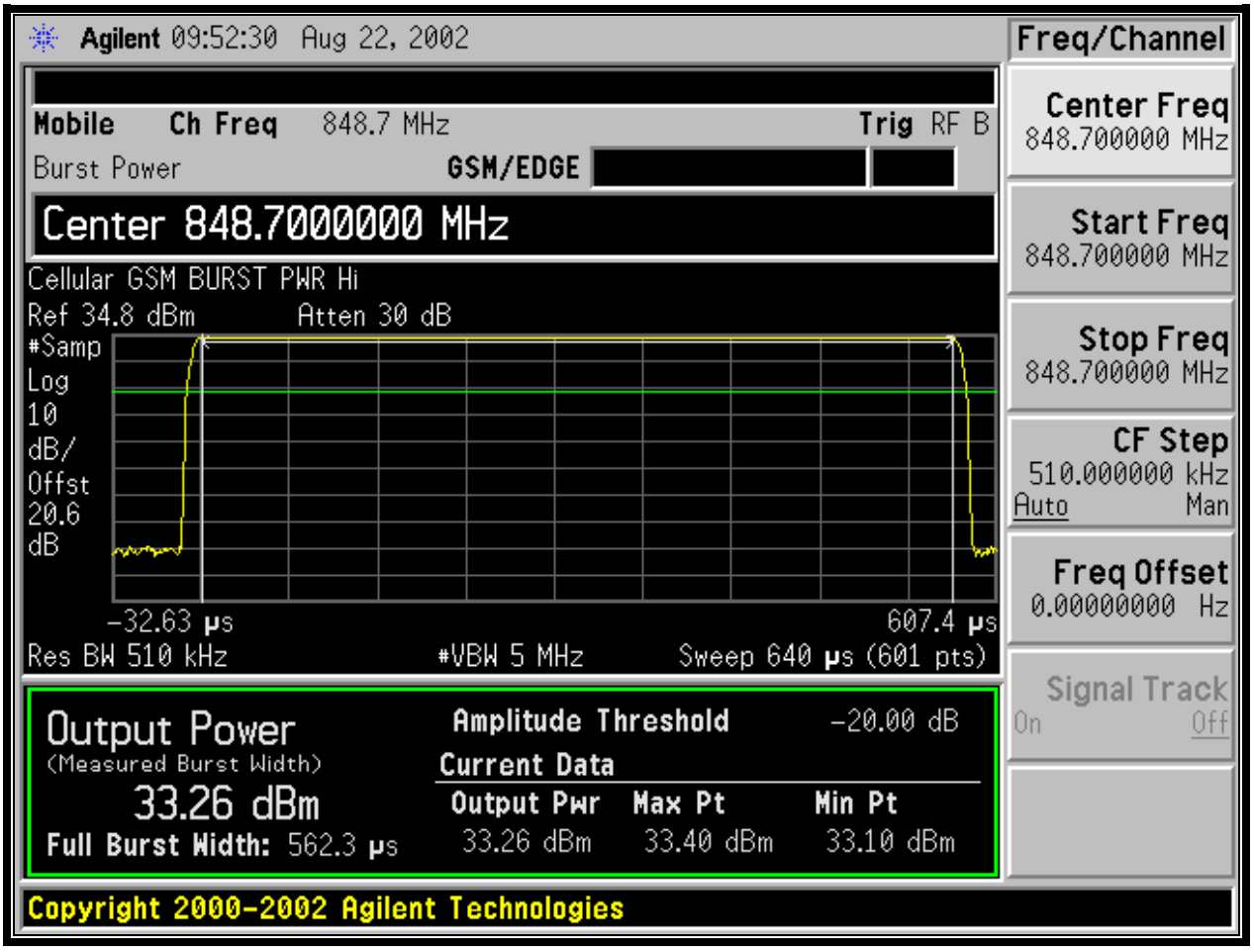
Frequency (MHz)	Power (dBm)	RF Power Measured (Watt)
848.7	33.3	2.1
824.3	34.1	2.6
836.0	34.7	3.0



PLOT 4-13: GSM/EDGE; BURST POWER (824.3 MHZ)



PLOT 4-14: GSM/EDGE; BURST POWER (836.0 MHZ)



PLOT 4-15: GSM/EDGE; BURST POWER (848.7 MHZ)

TABLE 4-6: RF POWER OUTPUT: CARRIER OUTPUT POWER (CW)

Frequency (MHz)	Input Power (dBm)	Power (dBm)	RF Power Measured (Watt)
824.0	22.63	34.77	3.0
836.5	22.67	34.77	3.0
849.0	25.0	34.77	3.0

TABLE 4-7: RF POWER OUTPUT (RATED POWER)

Rated Power (W)
3.0

4.3 TEST EQUIPMENT

TABLE 4-8: TEST EQUIPMENT USED FOR TESTING (RF POWER OUTPUT - CONDUCTED)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901184/901186	Agilent	E4416A/E9323A	Power meter / Sensor	GB41050573/US40410380	07/19/03
900917	Hewlett Packard	8648C	Signal Generator, 100 KHz - 3200 MHz	3537A01741	4/19/03
900024	Amplifier Research	100W1000M1	Amplifier, 100 Watt, (80-1000 MHz)	14491	Not Required
N/A	Agilent	E4438C	Signal Generator	MY42080012	03/29/03
N/A	Agilent	E4440A	Spectrum Analyzer	US40420959	09/27/03

TEST PERSONNEL:

DANIEL BALTZELL — TEST ENGINEER

SIGNATURE

SEPTEMBER 9, 2002 — DATE OF TEST

5 FCC RULES AND REGULATIONS PART 2.1046 (A); RF POWER OUTPUT: RADIATED ERP PER PART 22.913

5.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, section 2.2.1

The EUT was connected to a coaxial attenuator having a 50Ω load impedance.

Substitution Method:

The EUT was setup at an antenna-to-EUT distance of 3 meters on an open area test site. The EUT was placed on a nonconductive turntable 1.0 meter above the ground plane. The physical arrangement of the EUT was varied through three orthogonal planes in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters in order to determine the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations.

The worst-case, maximum radiated emission was recorded and used as reference for the measurement. The EUT was then replaced with a ½ wave dipole antenna and polarized in accordance with the EUT's antenna polarization. The ½ wave dipole antenna was connected to a RF signal generator with a coaxial cable. The search antenna height, and search antenna polarity was set to levels that produced the previously recorded maximum reading. The signal generator was adjusted to a level that produced this emission level. The signal generator level was recorded and corrected by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal ½ wave dipole antenna. The signal generator corrected level is the ERP level.

5.2 TEST DATA

TABLE 5-1: RF POWER OUTPUT: RADIATED ERP 0DB MAGNETIC MOUNT ANTENNA

Frequency (MHz)	Signal Generator (dBm)	Cable Loss* (dB)	TX Antenna Gain (dBd)	Corrected Signal Generator (dBm)	ERP (W)	EIRP (W)	Cable Loss from Amplifier to Antenna (dB)
824.0	31.4	0.4	-1.3	29.8	0.951	1.6	2.3
836.5	28.2	0.3	-1.2	26.7	0.471	0.767	3.4
849.0	30.3	0.4	-1.2	28.7	0.746	1.2	4.1

TABLE 5-2: RF POWER OUTPUT: RADIATED ERP 0DB GLASS MOUNT ANTENNA

Frequency (MHz)	Signal Generator (dBm)	Cable Loss* (dB)	TX Antenna Gain (dBd)	Corrected Signal Generator (dBm)	ERP (W)	EIRP (W)	Cable Loss from Amplifier to Antenna (dB)
824.0	23.9	0.4	-1.3	22.3	0.169	0.278	2.8
836.5	21.7	0.3	-1.2	20.2	0.105	0.172	4.8
849.0	22.7	0.4	-1.2	21.2	0.131	0.216	4.6

TABLE 5-3: RF POWER OUTPUT: RADIATED ERP 6DB MAGNETIC MOUNT ANTENNA

Frequency (MHz)	Signal Generator (dBm)	Cable Loss* (dB)	TX Antenna Gain (dBd)	Corrected Signal Generator (dBm)	ERP (W)	EIRP (W)	Cable Loss from Amplifier to Antenna (dB)
824.0	32.2	0.4	-1.3	30.6	1.143	1.9	2.3
836.5	30.0	0.3	-1.2	28.5	0.703	1.2	3.4
849.0	32.7	0.4	-1.2	31.1	1.288	2.2	4.1

*cable loss from transmitting antenna to signal generator
Measurement accuracy is +/- .5 dB

TEST PERSONNEL:

DANIEL BALTZELL — TEST ENGINEER | SIGNATURE | SEPTEMBER 12, 2002 — DATE OF TEST

5.3 TEST EQUIPMENT

TABLE 5-4: TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900878	Rhein Tech Labs	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	N/A
900889	Hewlett Packard	85685A	RF Preselector for HP 8566B or 8568B (20Hz-2GHz)	3146A01309	11/21/02
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	5/10/03
900969	Hewlett Packard	85650A	Quasi-Peak Adapter	2412A00414	5/10/03
901053	Schaffner Chase	CBL6112B	Bi-Log Antenna (20 MHz - 2 GHz)	2648	5/22/03
901242	Rhein Tech Labs	WRT-000-0003	Wood rotating table	N/A	N/A
900154	Compliance Design Inc,	Roberts Dipole	Adjustable Elements Dipole Antenna (30-1000MHz)	N/A	8/17/03
900917	Hewlett Packard	8648C	Signal Generator, 100 KHz - 3200 MHz	3537A01741	4/19/03
900024	Amplifier Research	100W1000M1	Amplifier, 100 Watt, (80-1000 MHz)	14491	

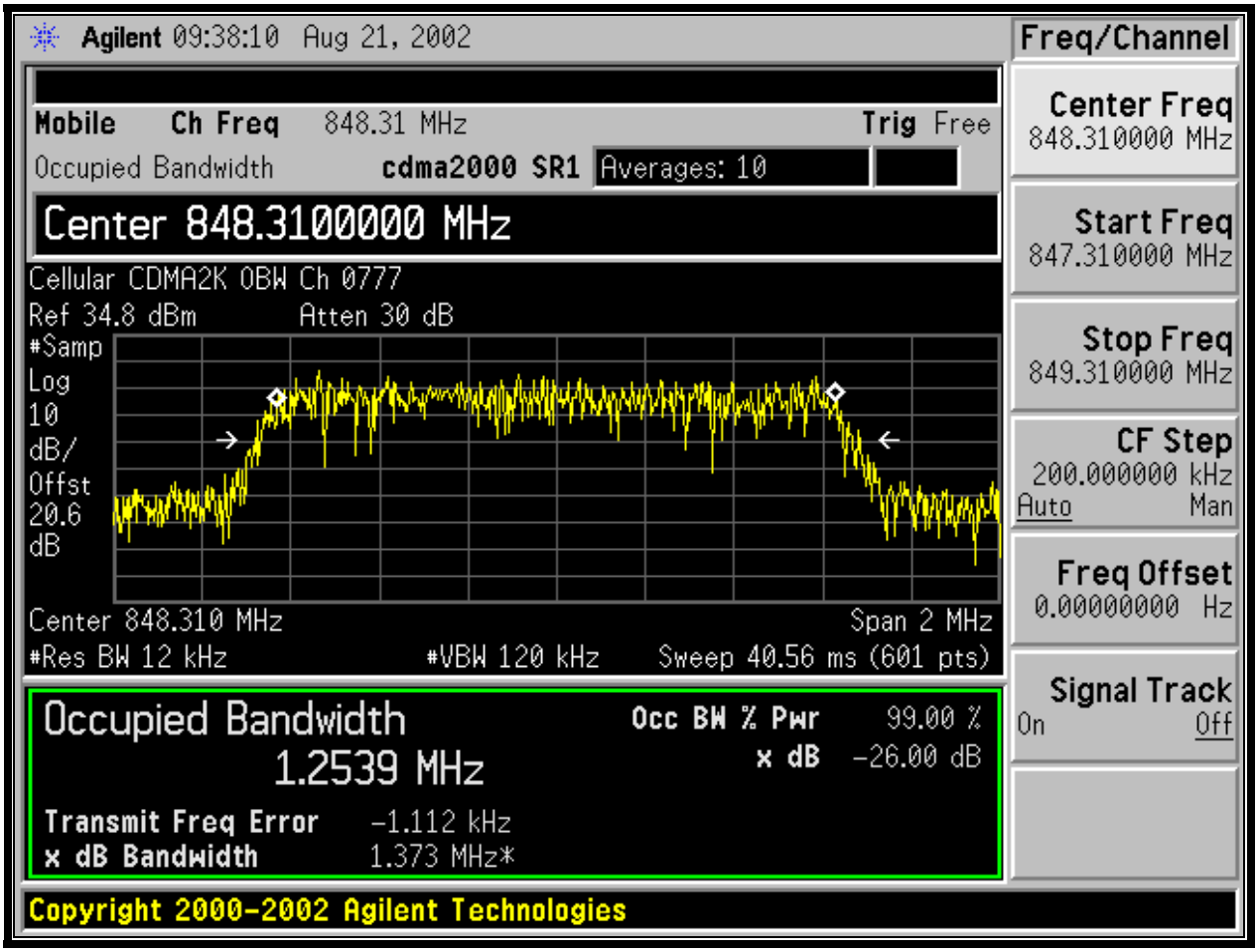
6 FCC RULES AND REGULATIONS PART 2.1049 (C) (1): OCCUPIED BANDWIDTH

Occupied Bandwidth - Compliance with the Emission Masks

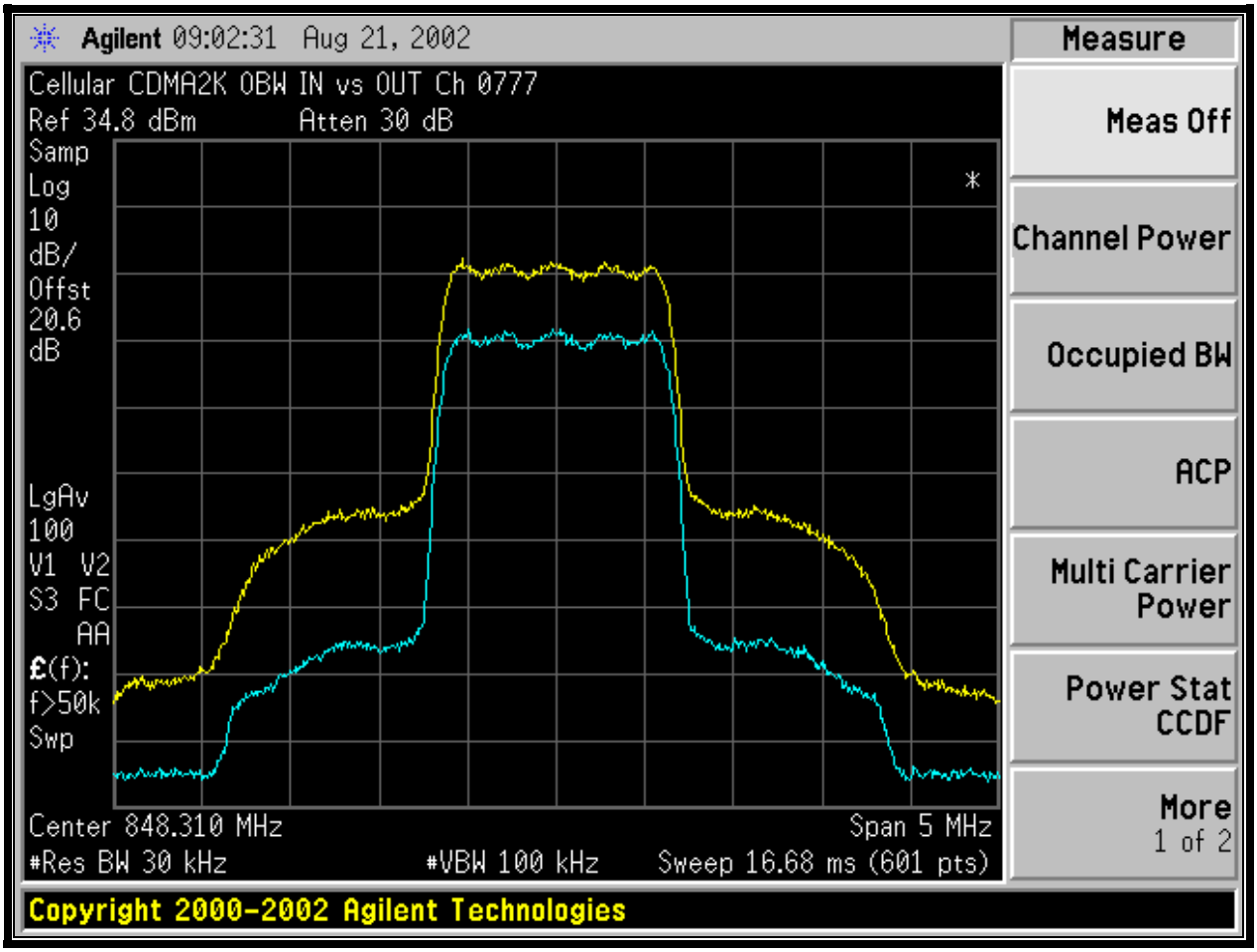
6.1 TEST PROCEDURE

TIA/EIA/IS-98-A; Peak measurements used.

6.2 TEST DATA

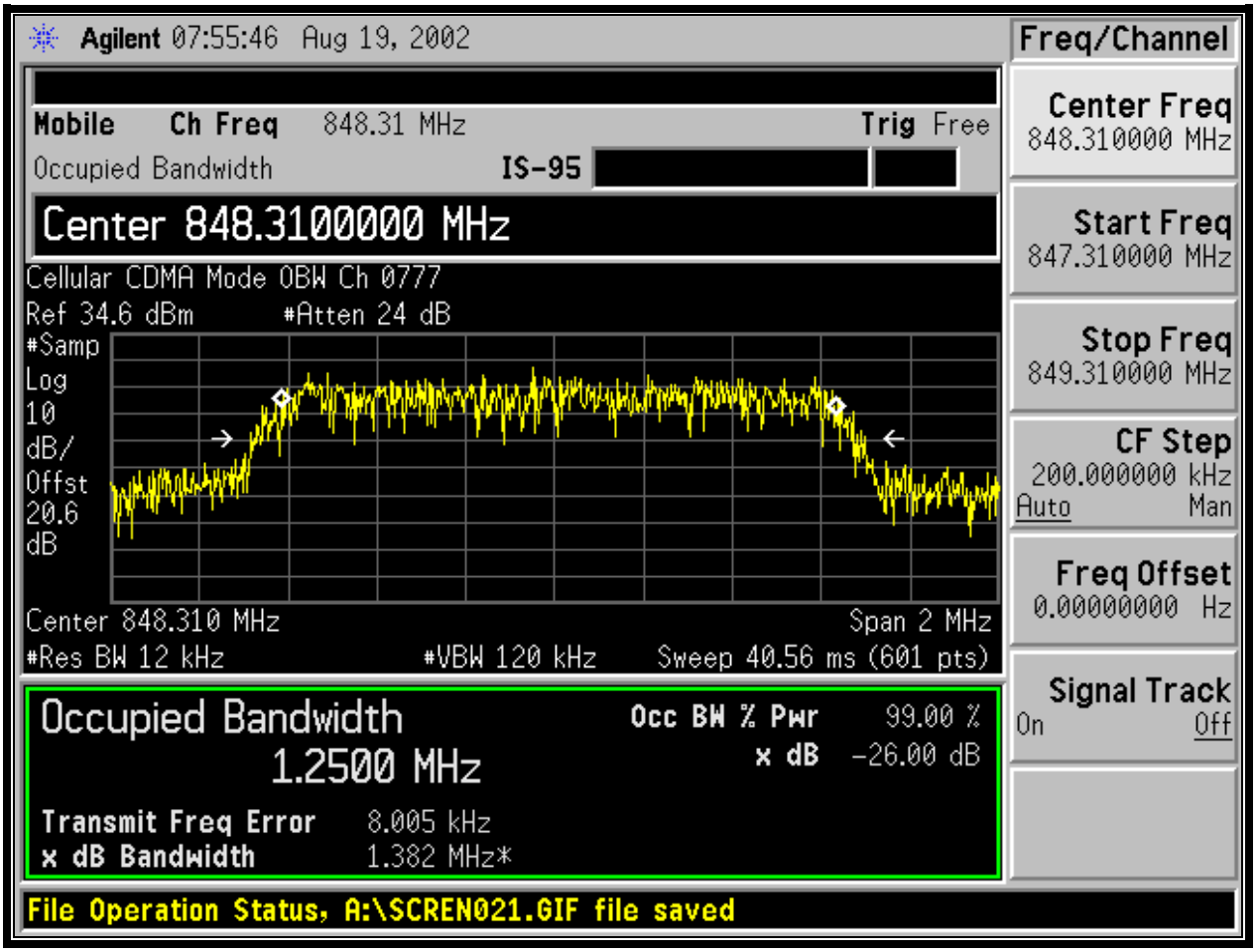


PLOT 6-1: CDMA2000 OCCUPIED BANDWIDTH; 1.2539 MHZ (CHANNEL 777, 848.31 MHZ)

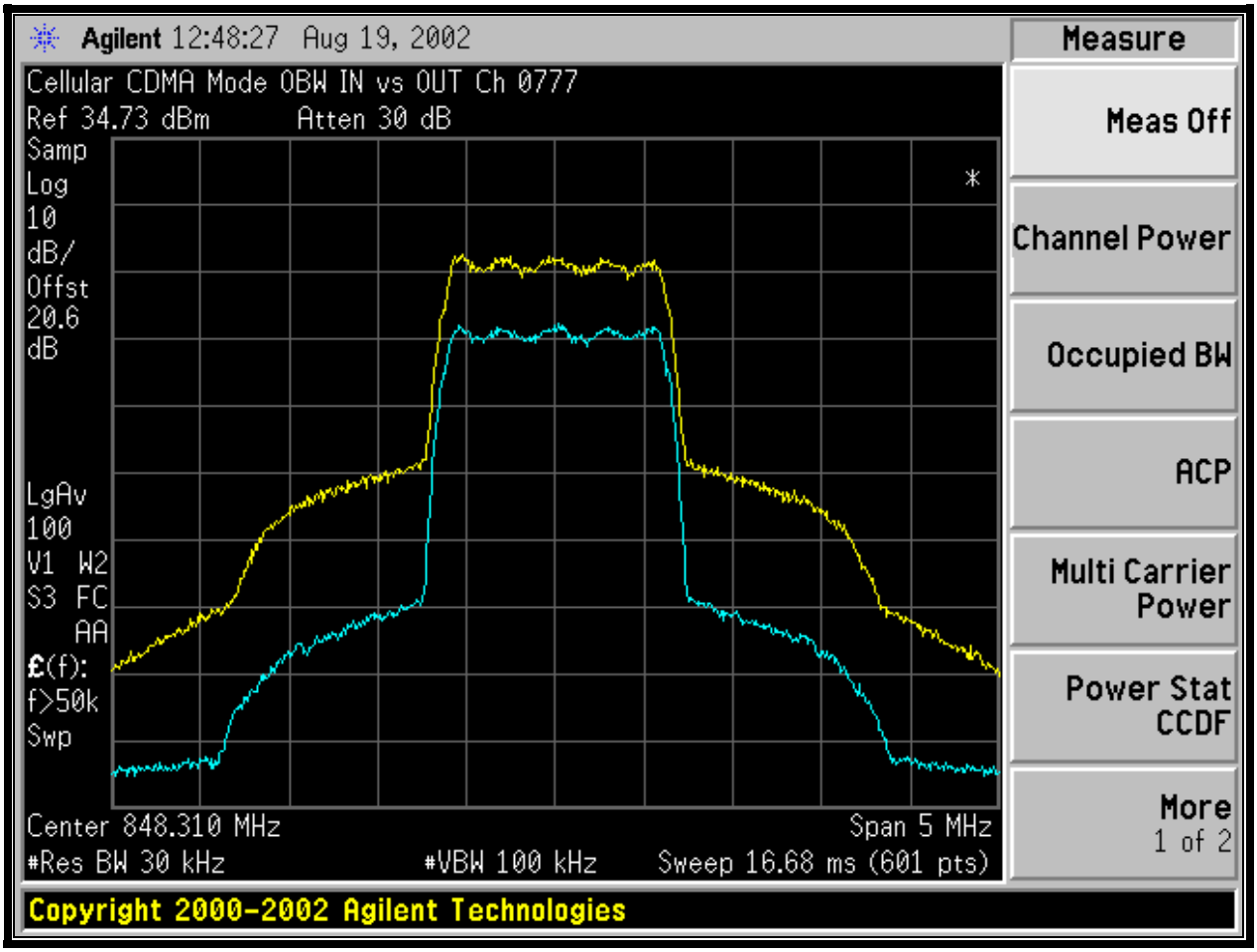


PLOT 6-2: CDMA2000 OBW; IN VS. OUT (CH 777, 848.31 MHZ)

Output Level	16.2 dBm
Input Level	5.8 dBm
Amplification	10.4 dB

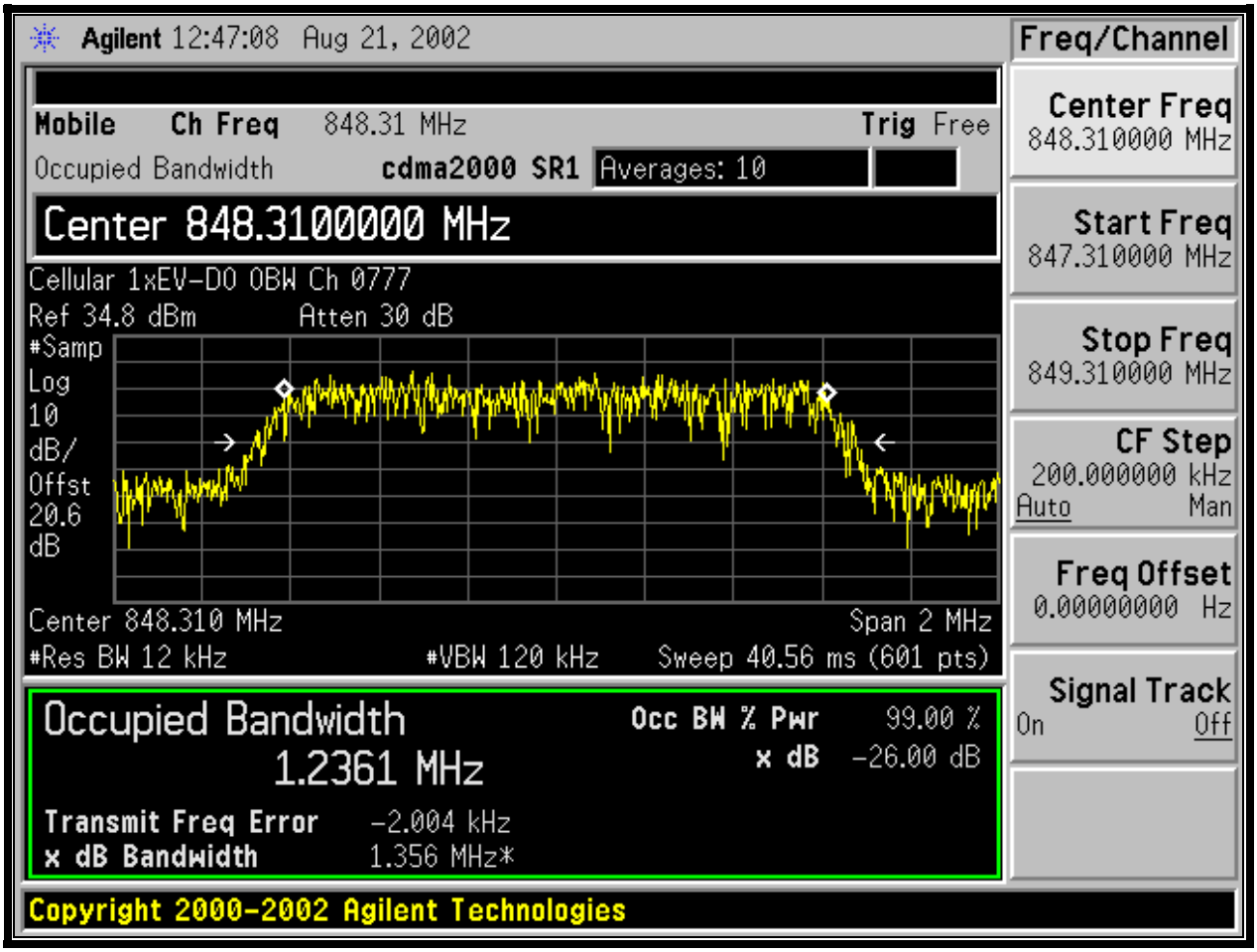


PLOT 6-3: CDMAONE OCCUPIED BANDWIDTH; 1.25 MHZ (CHANNEL 777, 848.31 MHZ)

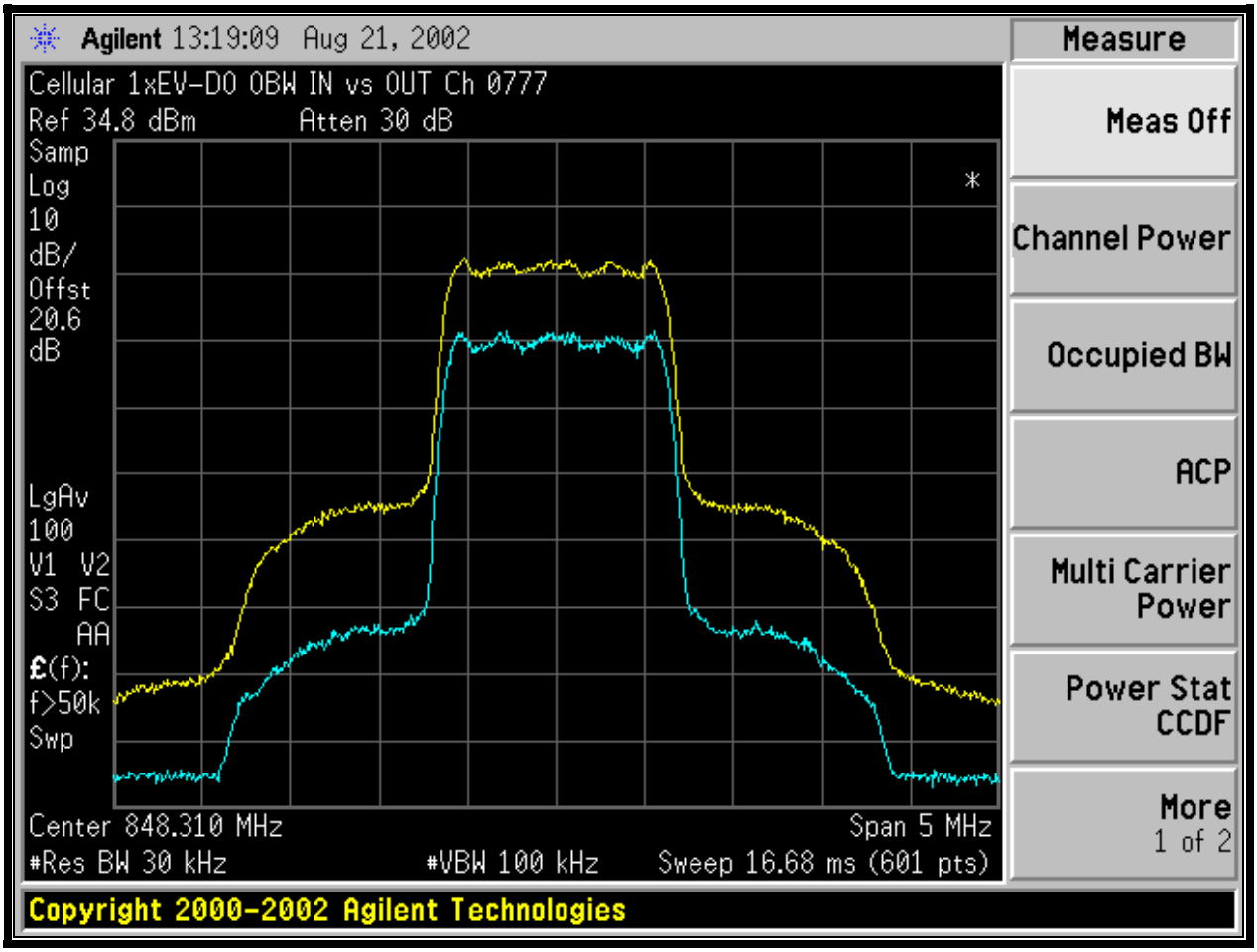


PLOT 6-4: CDMAONE; IN VS. OUT (CHANNEL 777, 848.31 MHZ)

Output Level	16.1 dBm
Input Level	6.1 dBm
Amplification	10.0 dB

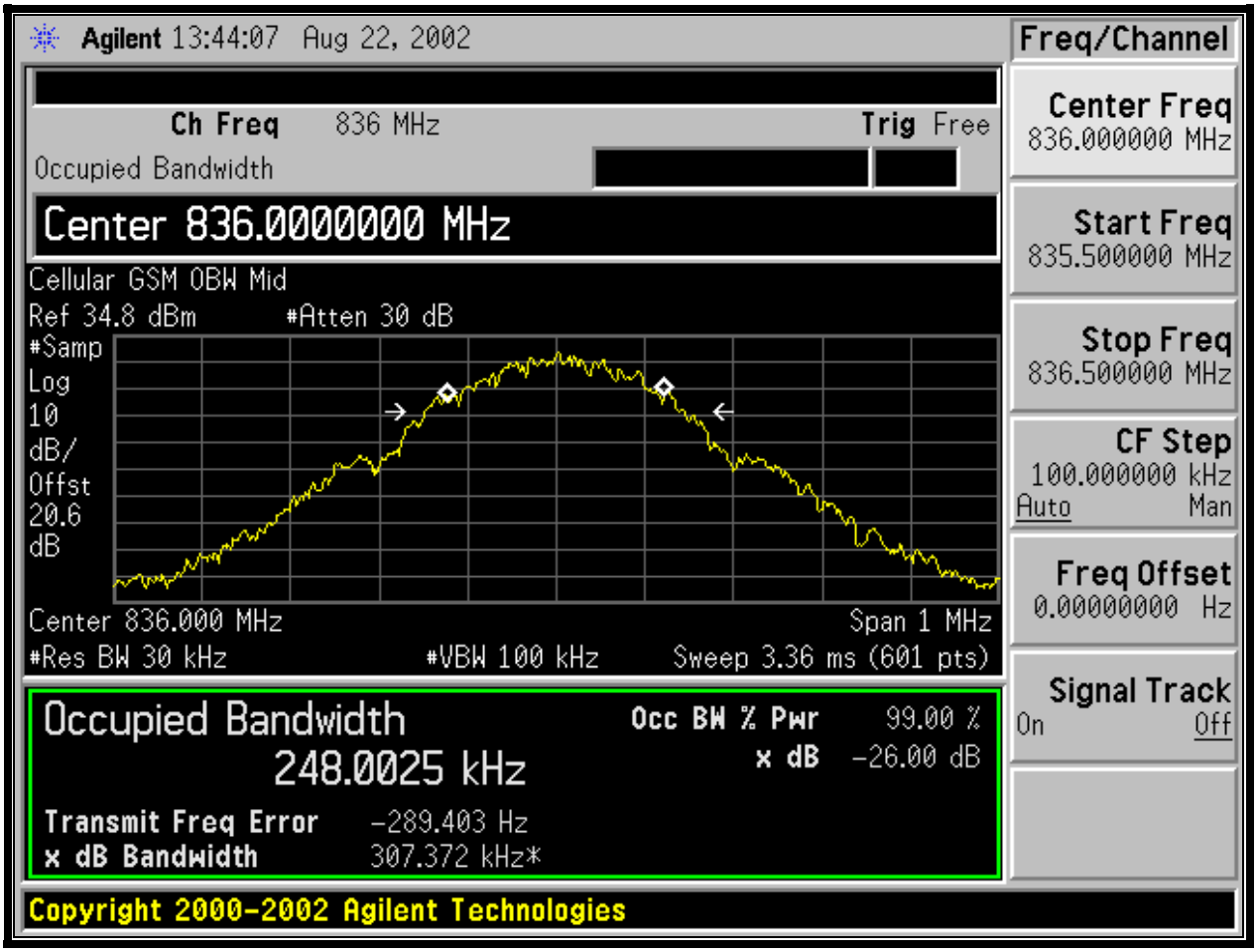


PLOT 6-5: WCDMA OCCUPIED BANDWIDTH; 1.2361 MHZ (CHANNEL 777, 848.31 MHZ)

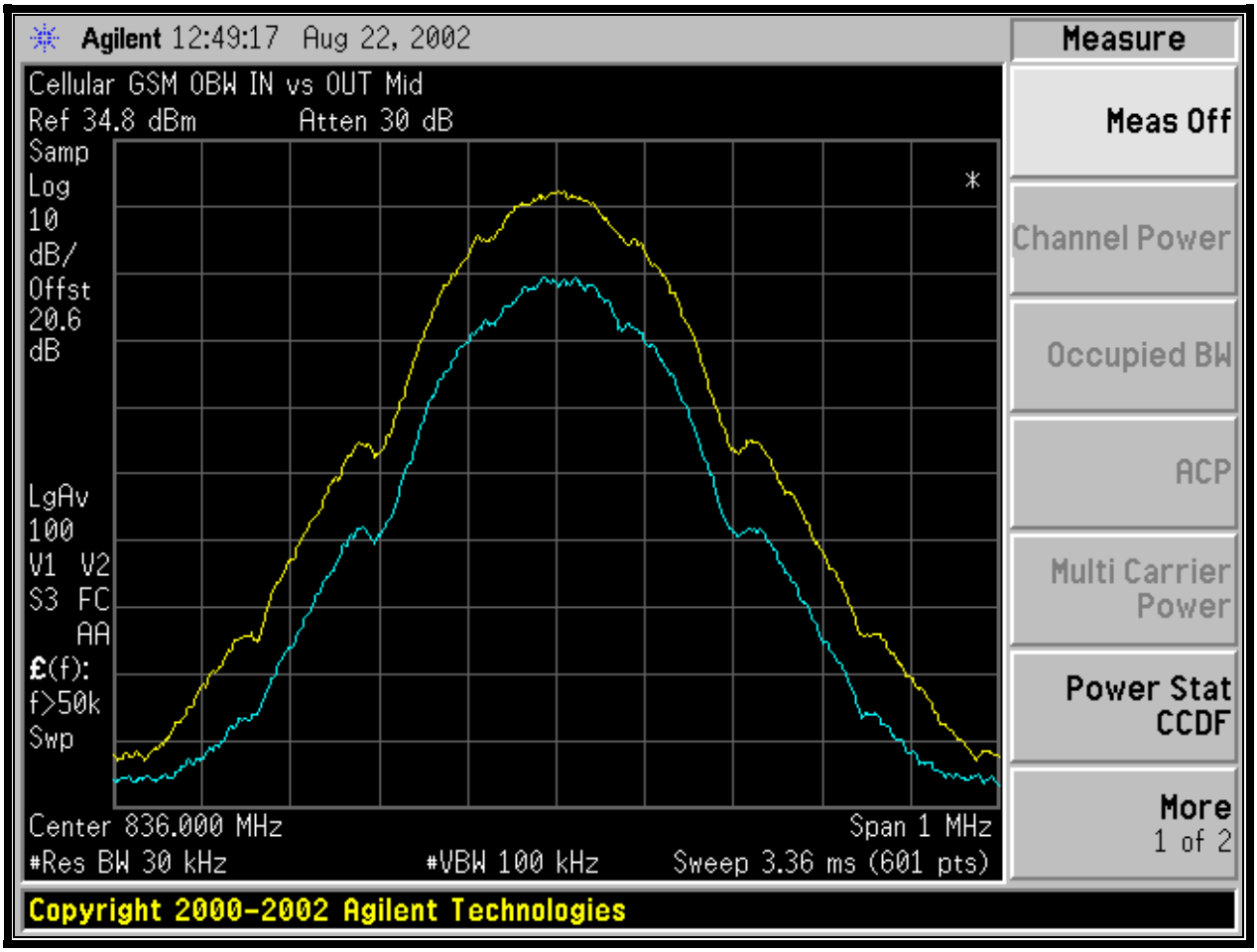


PLOT 6-6: WCDMA; IN VS. OUT (CHANNEL 777, 848.31 MHZ)

Output level	16.1 dBm
Input Level	5.6 dBm
Amplification	10.5 dB



PLOT 6-7: GSM/EDGE OCCUPIED BANDWIDTH; 248.0025 KHZ (836 MHZ)



PLOT 6-8: GSM/EDGE; IN VS. OUT (836.0 MHZ)

Output Level	26.7 dBm
Input level	14.7 dBm
Amplification	12.0 dB

6.3 TEST EQUIPMENT

TABLE 6-1: TEST EQUIPMENT USED FOR TESTING (RF POWER OUTPUT - CONDUCTED)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
N/A	Agilent	E4438C	Signal Generator	MY42080012	03/29/03
N/A	Agilent	E4440A	Spectrum Analyzer	US40420959	09/27/03

7 FCC RULES AND REGULATIONS PART 2.1051: SPURIOUS EMISSIONS AT ANTENNA TERMINALS

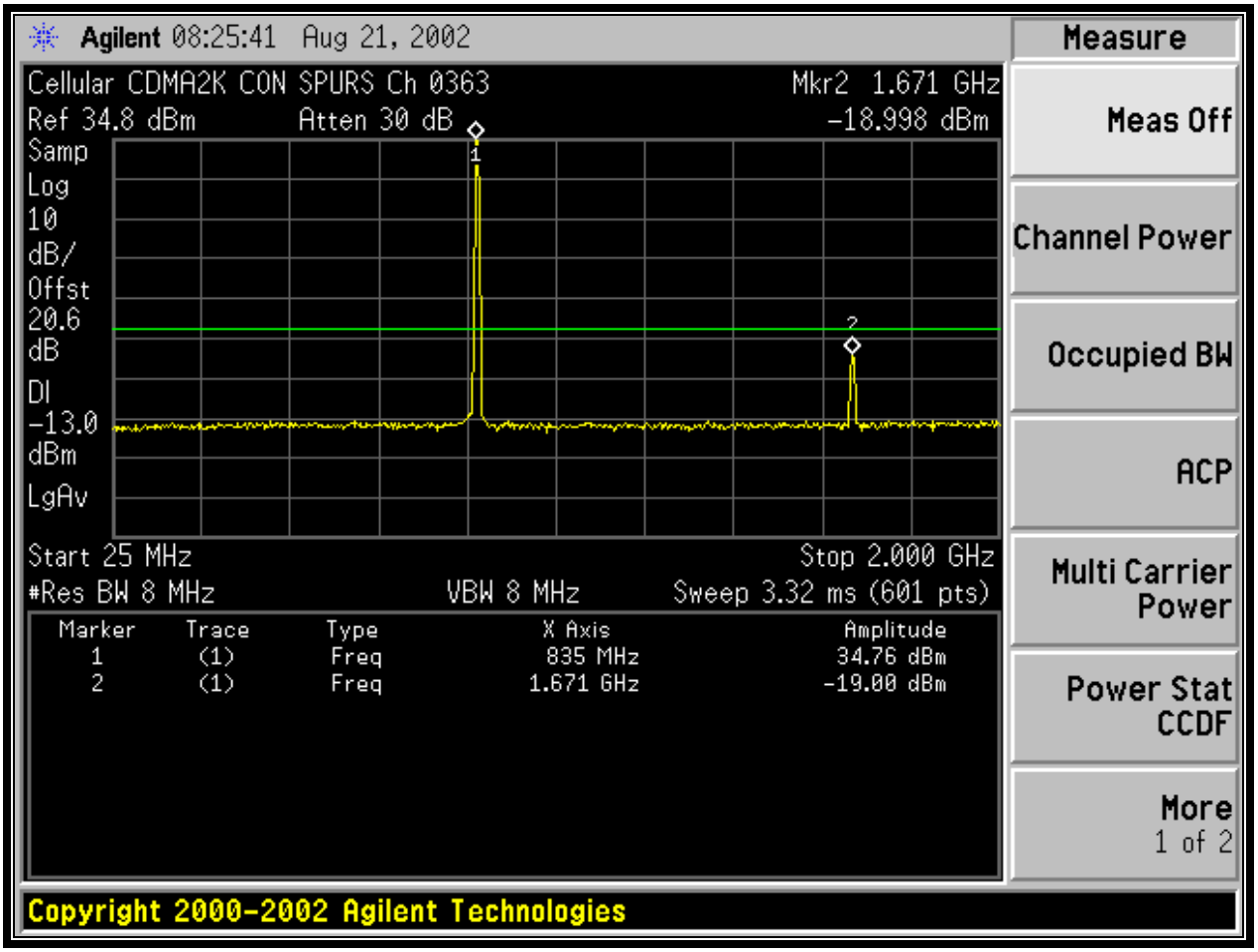
7.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, Section 2.2.13

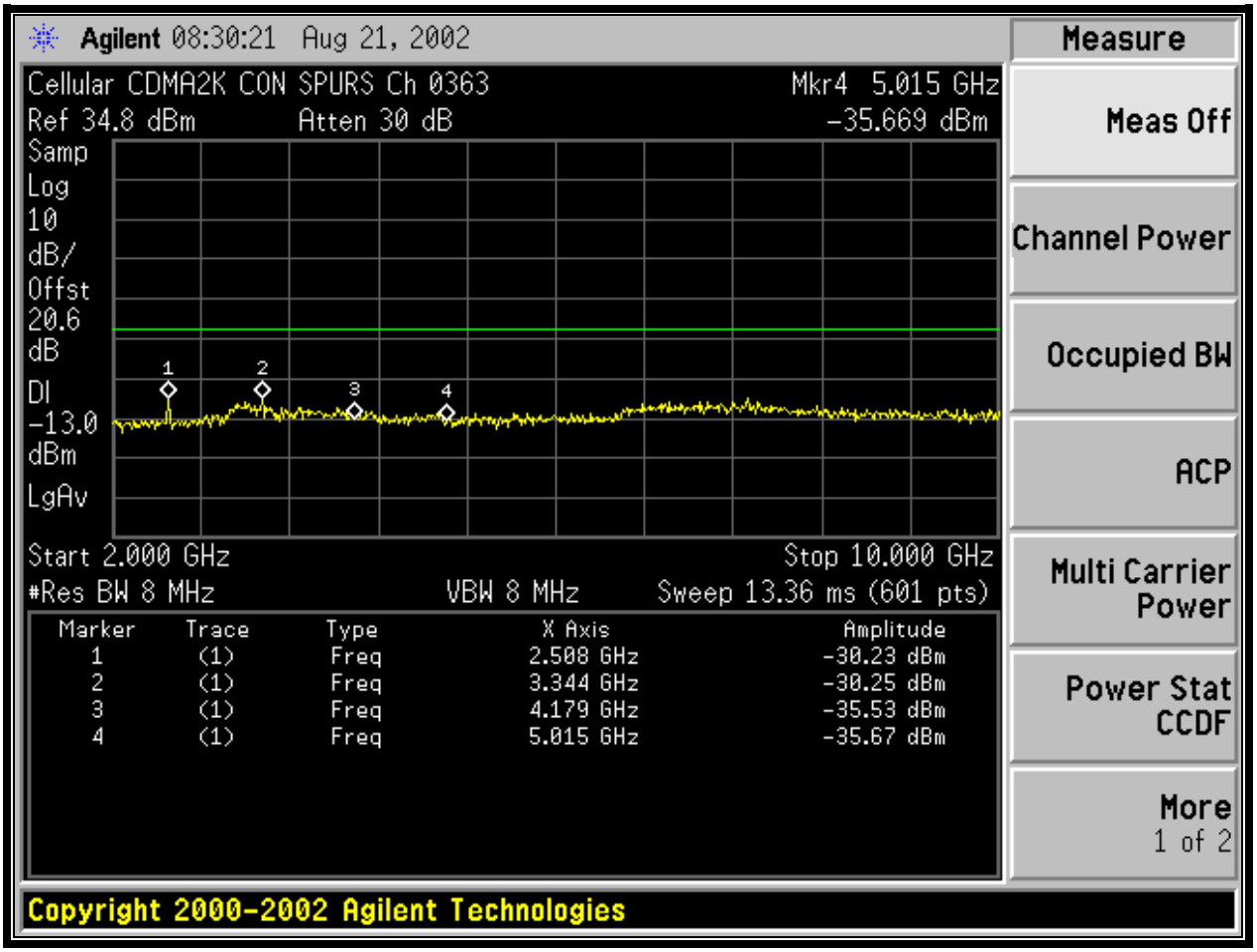
The transmitter is terminated with a 50 Ω load and interfaced with a spectrum analyzer.
The transmitter is modulated with a 2,500 Hz sine wave at an input level 16 dB greater than that required to produce 50% of the rated system deviation at 1000 Hz.

Digital Modulation: Modulated to its maximum extent using a pseudo random data sequence - 9600bps

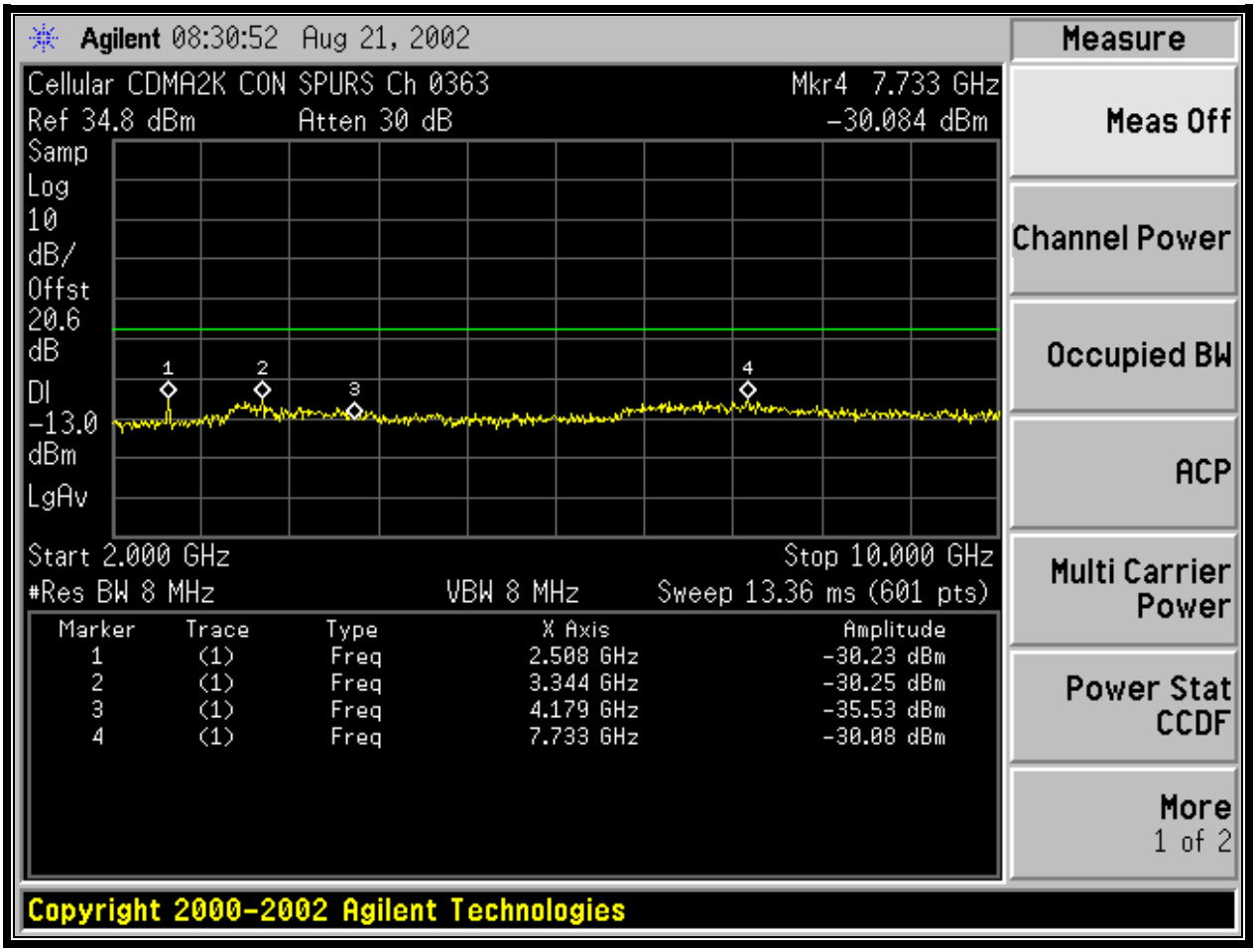
7.2 TEST DATA



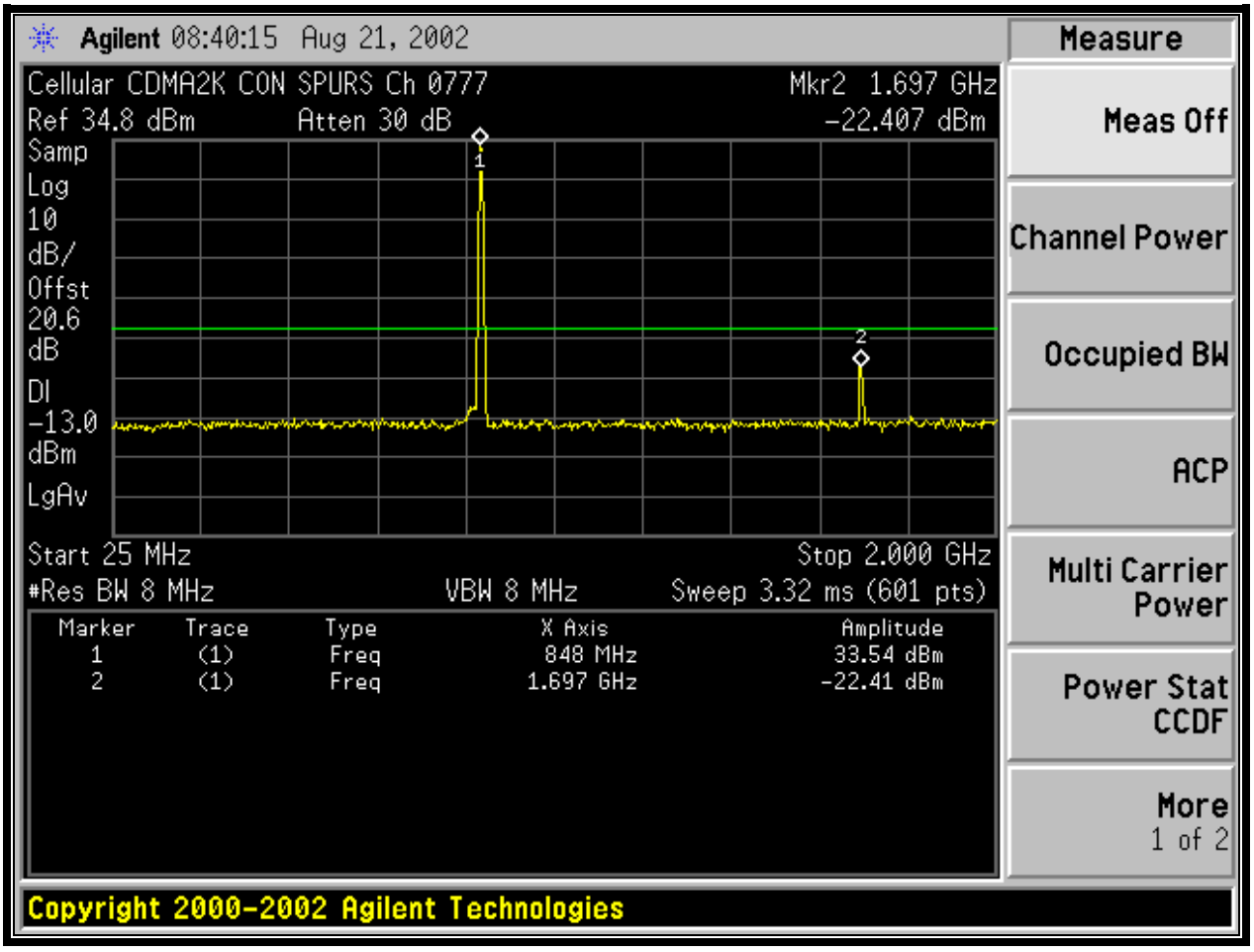
PLOT 7-1: CELLULAR CDMA2000 CONDUCTED SPURIOUS CH 0363



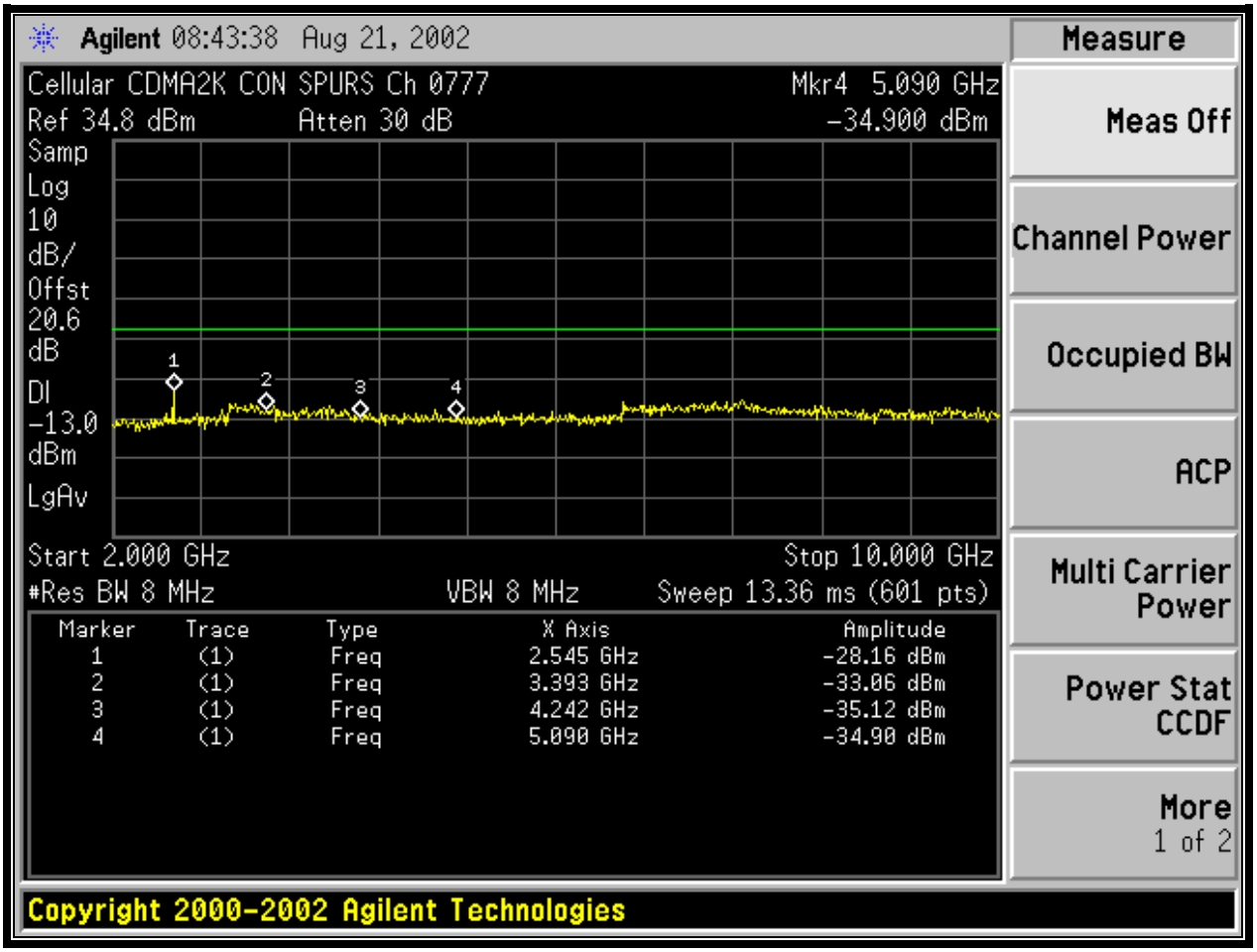
PLOT 7-2: CELLULAR CDMA2000 CONDUCTED SPURIOUS CH 0363



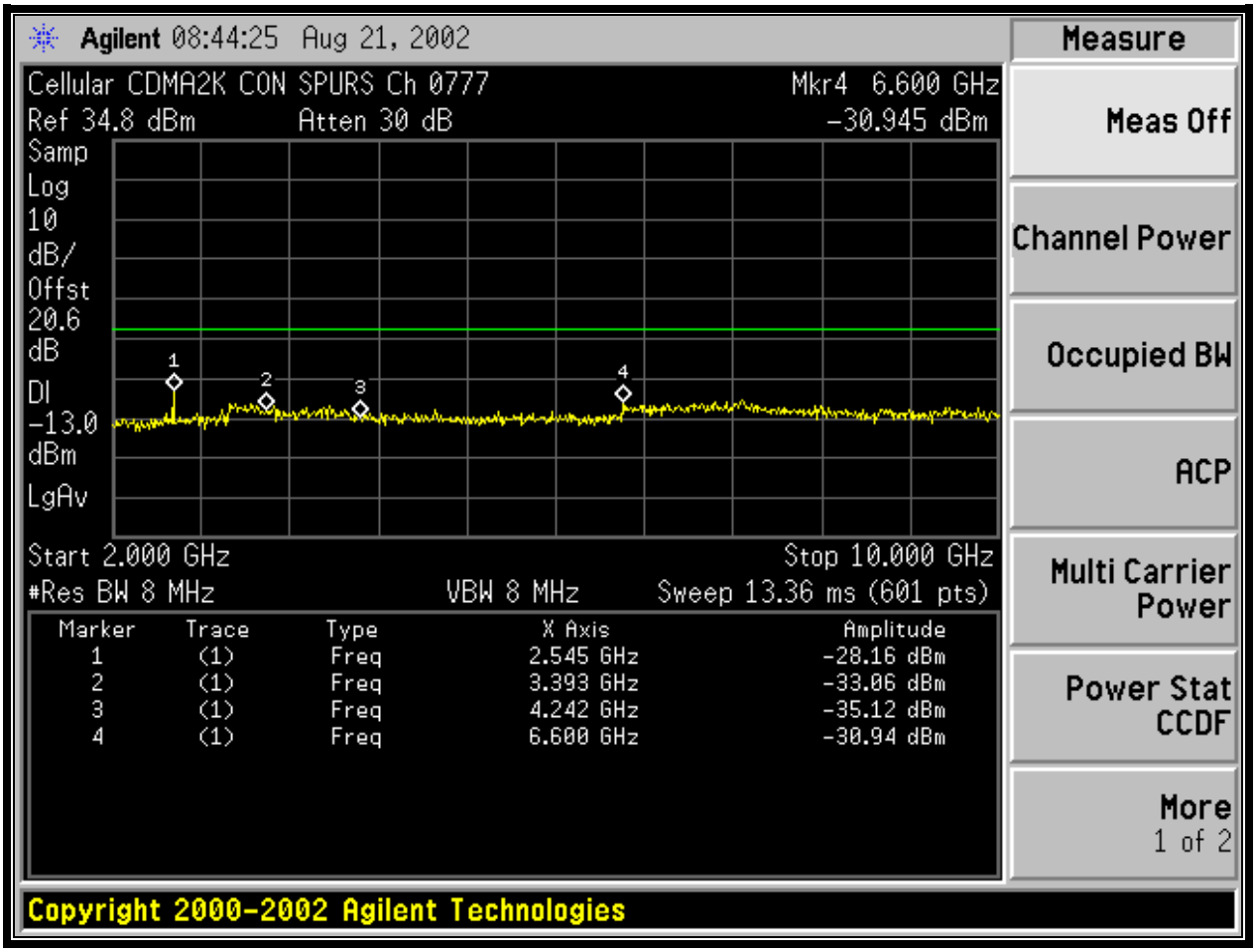
PLOT 7-3: CELLULAR CDMA2000 CONDUCTED SPURIOUS CH 0363



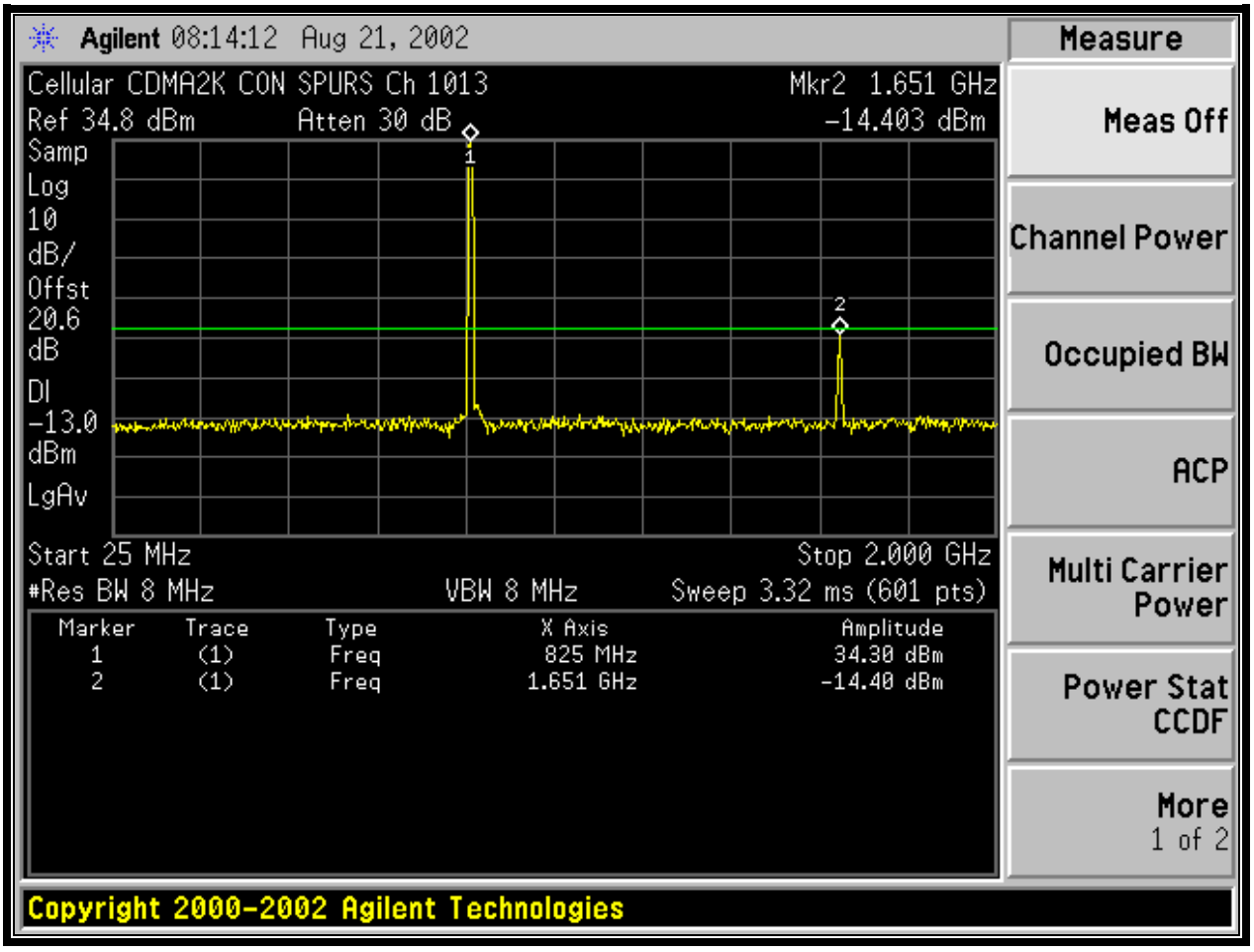
PLOT 7-4: CELLULAR CDMA2000 CONDUCTED SPURIOUS CH 0777



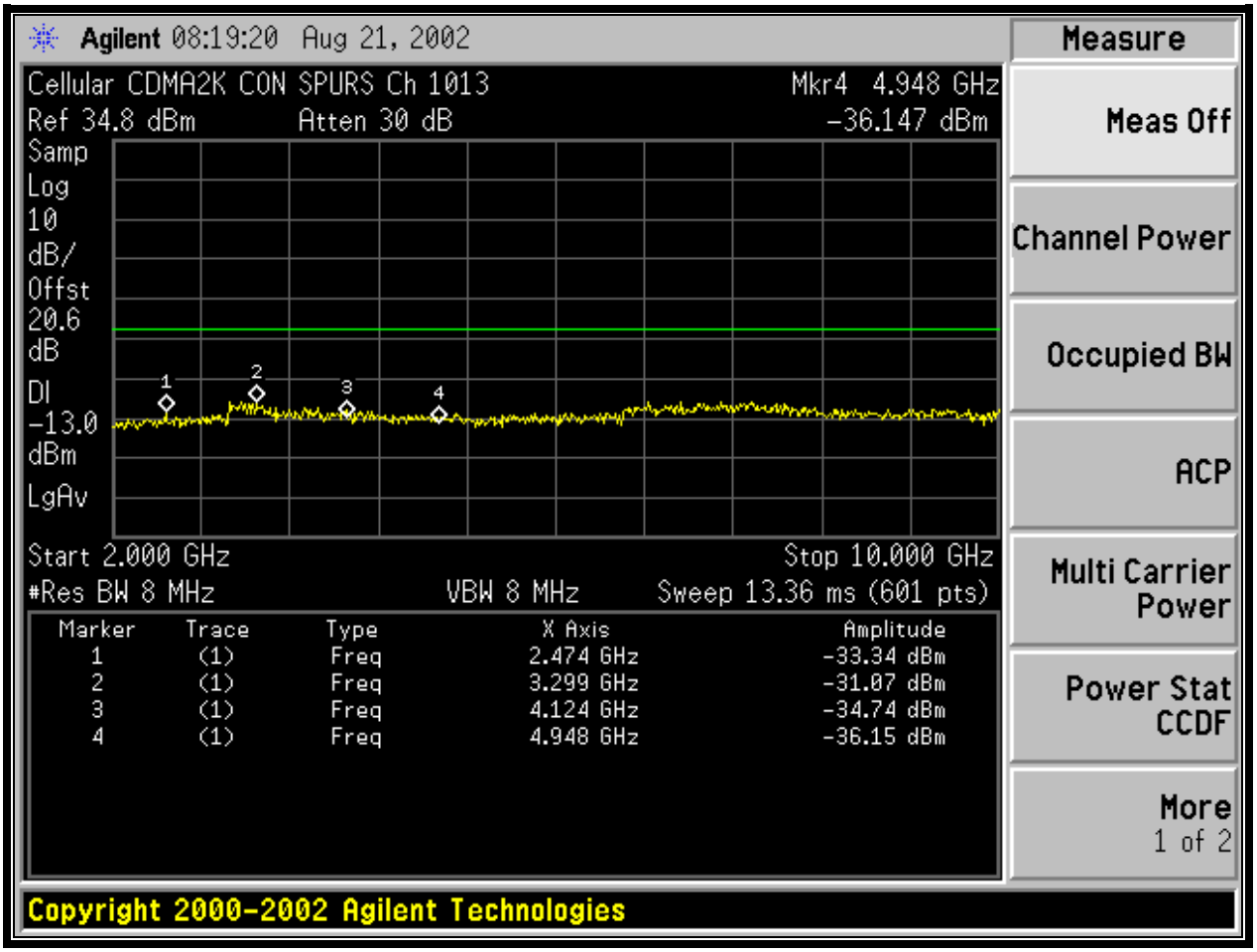
PLOT 7-5: CELLULAR CDMA2000 CONDUCTED SPURIOUS CH 0777



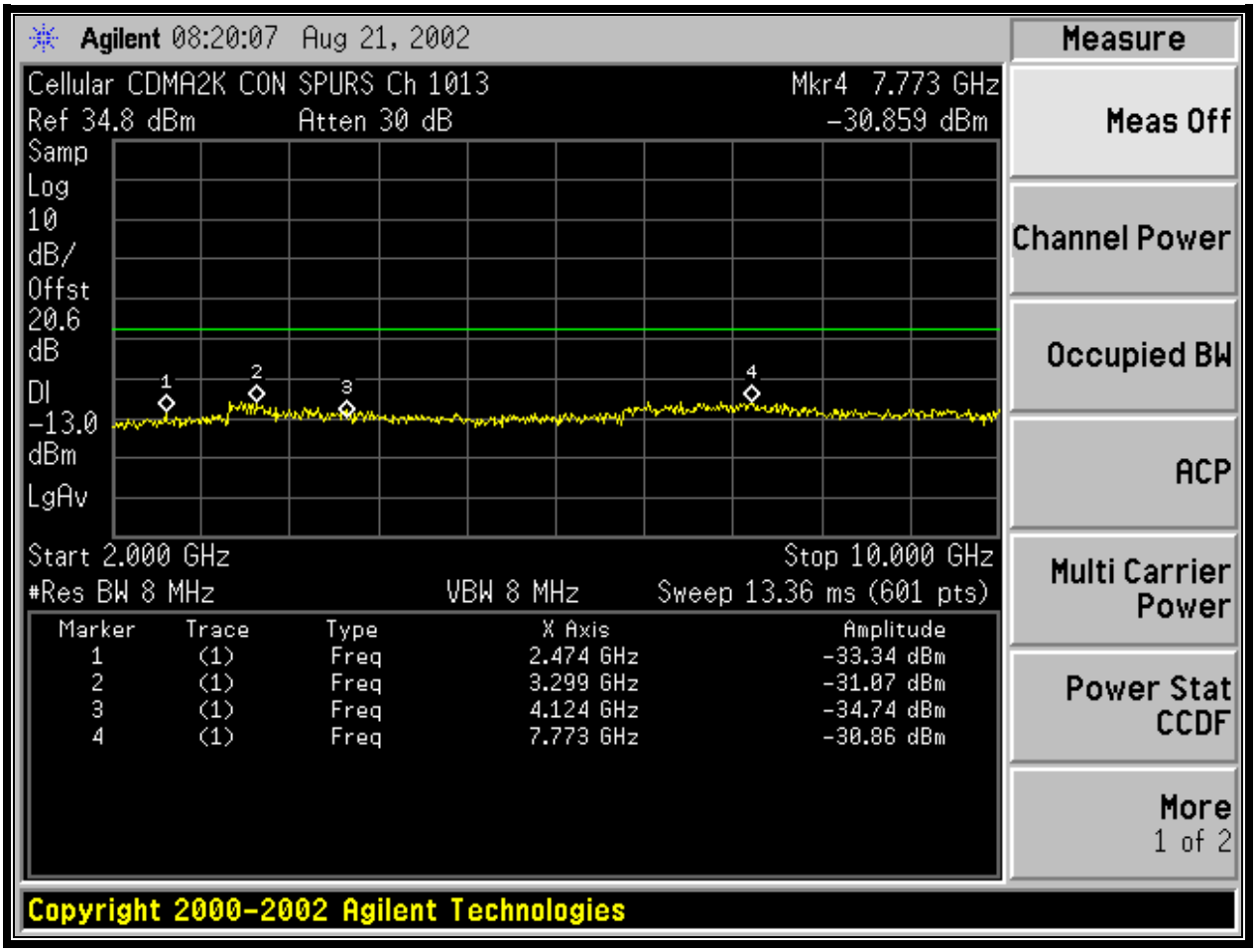
PLOT 7-6: CELLULAR CDMA2000 CONDUCTED SPURIOUS CH 0777



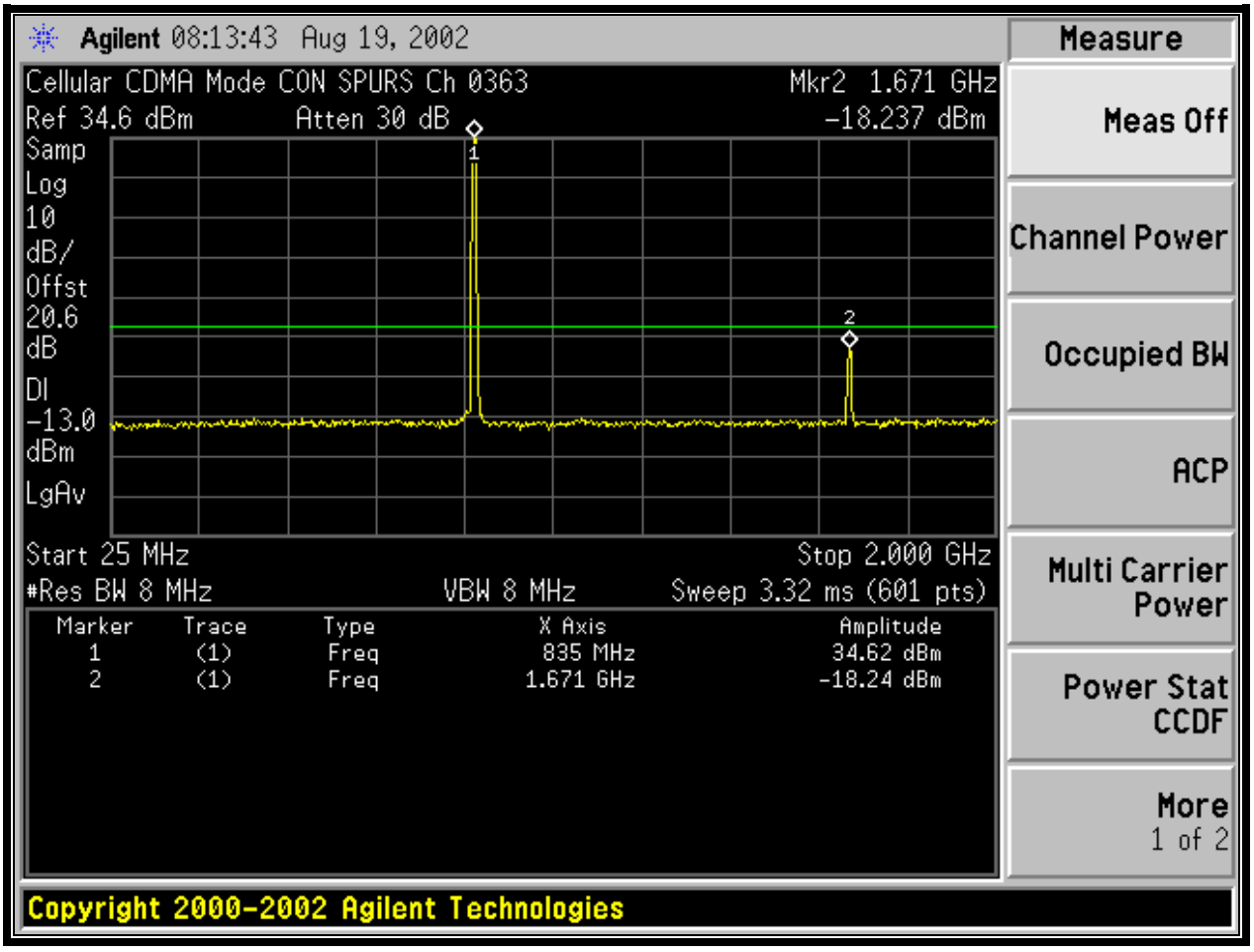
PLOT 7-7: CELLULAR CDMA2000 CONDUCTED SPURIOUS CH 1013



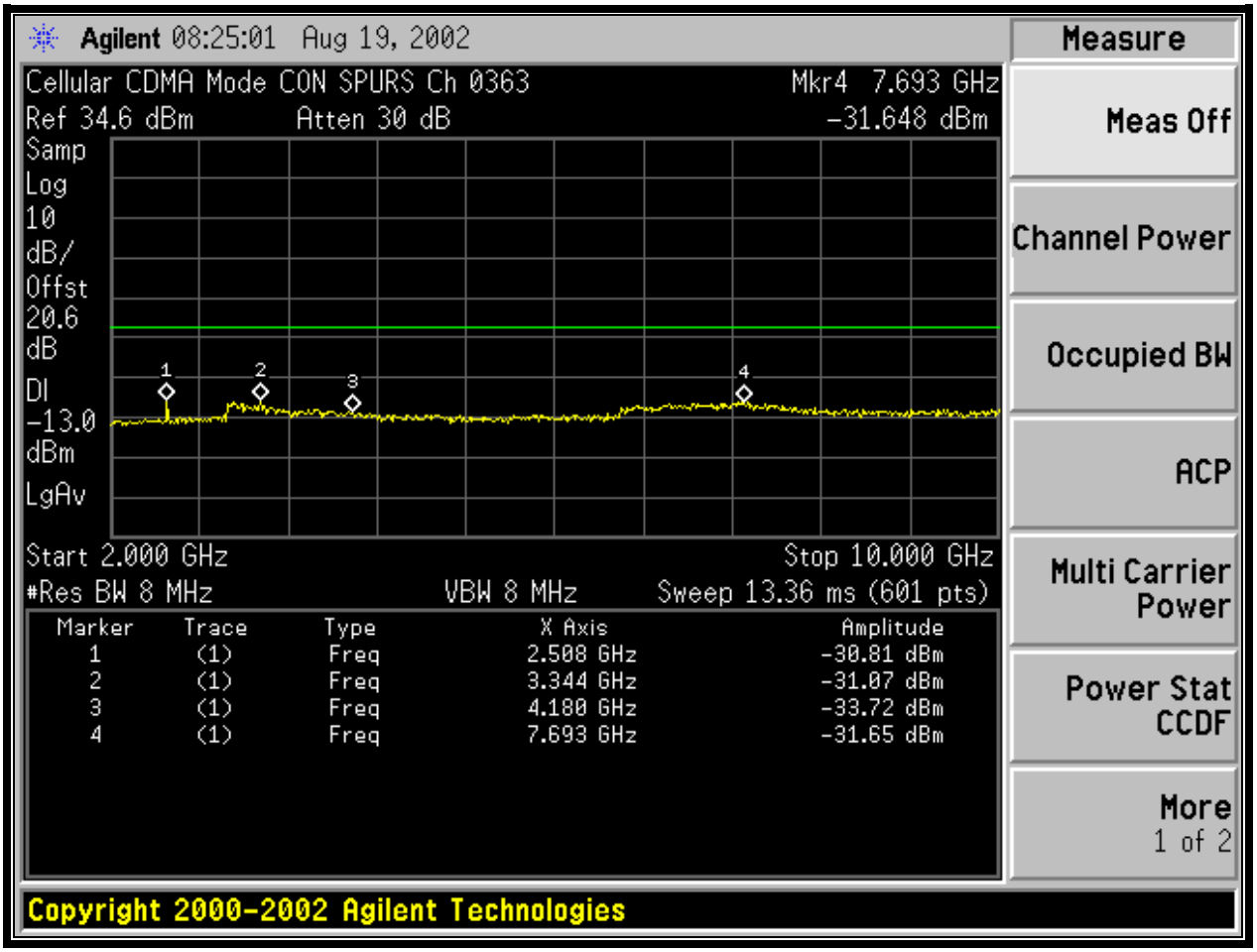
PLOT 7-8: CELLULAR CDMA2000 CONDUCTED SPURIOUS CH 1013



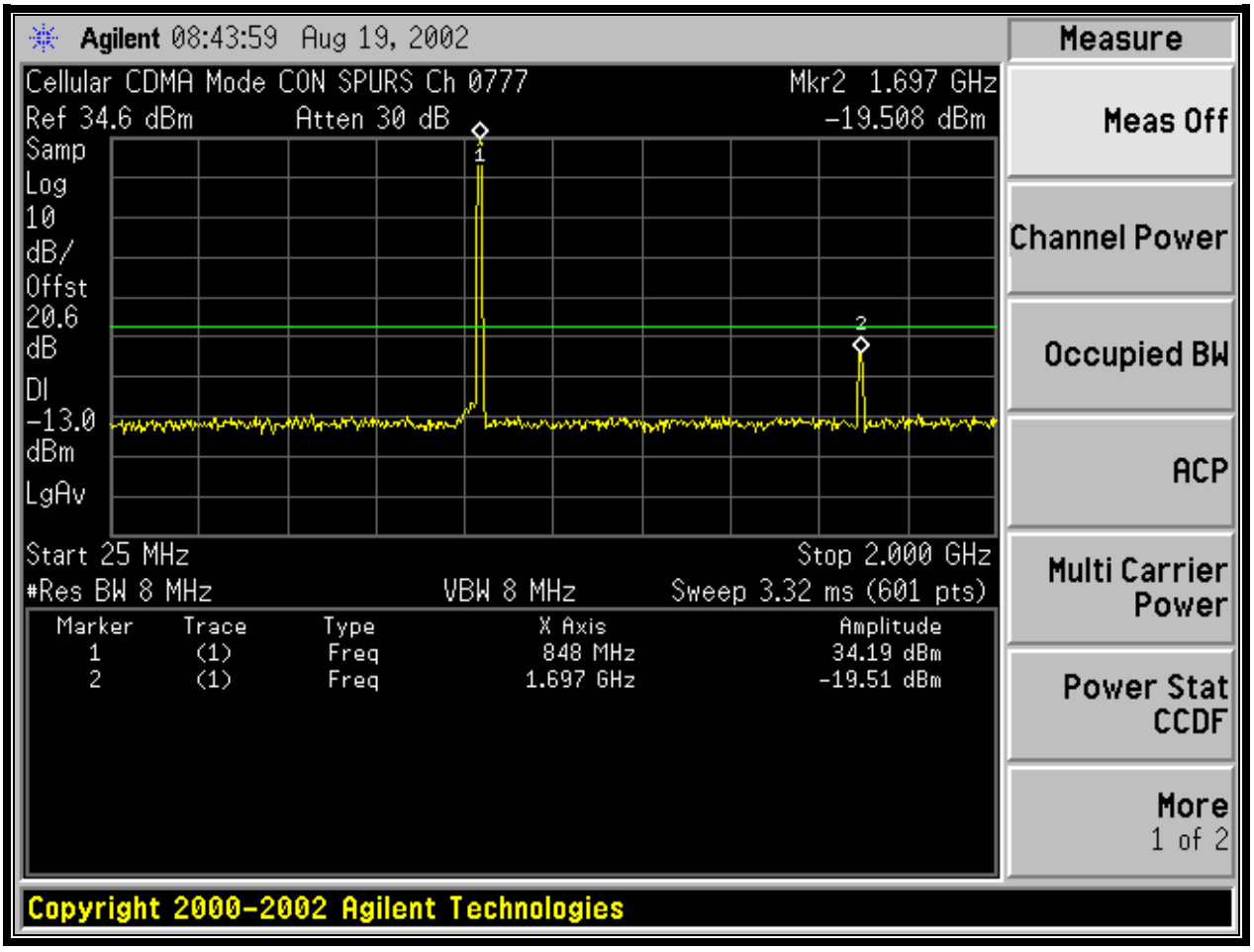
PLOT 7-9: CELLULAR CDMA2000 CONDUCTED SPURIOUS CH 1013



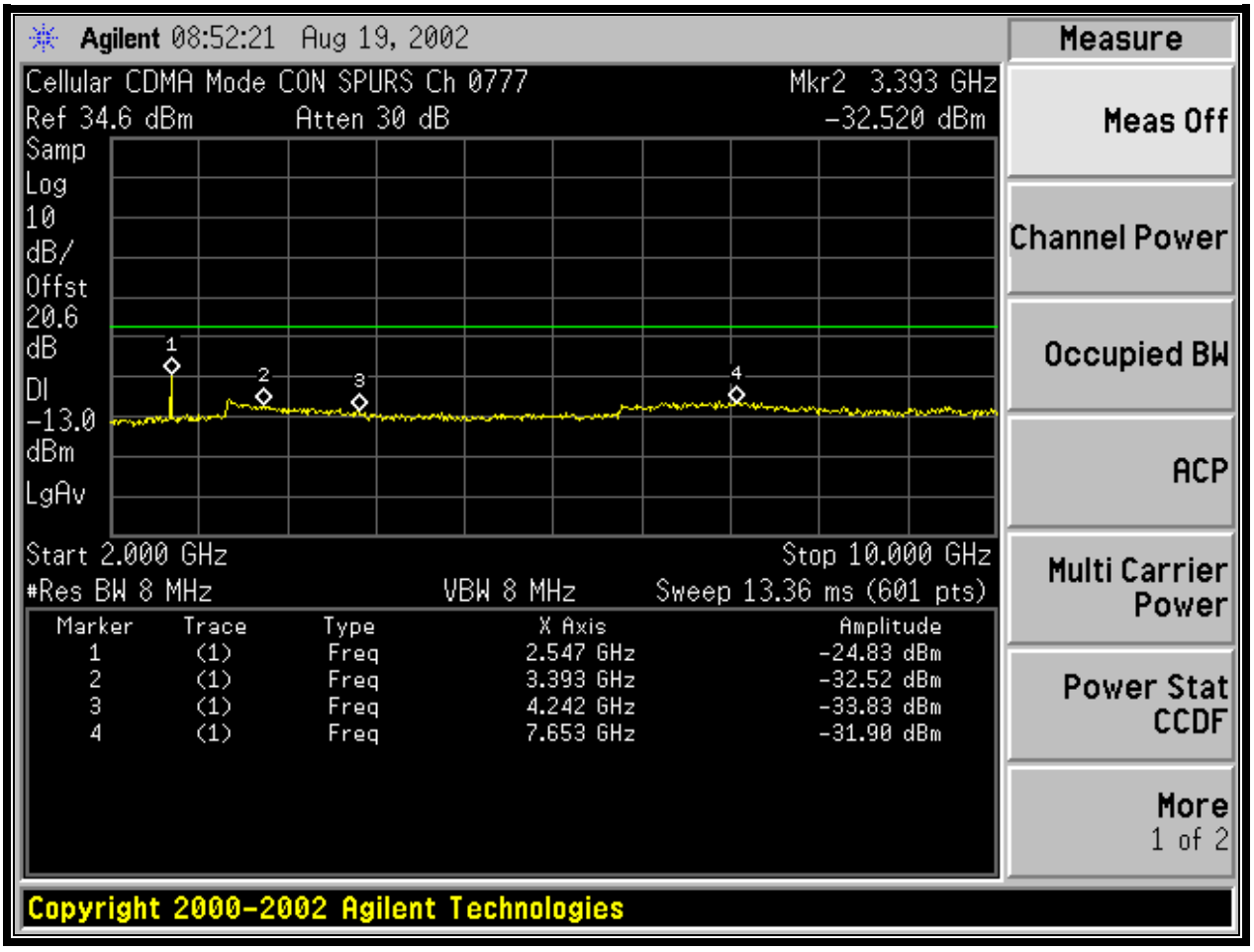
PLOT 7-10: CELLULAR CDMA CONDUCTED SPURIOUS CH 0363



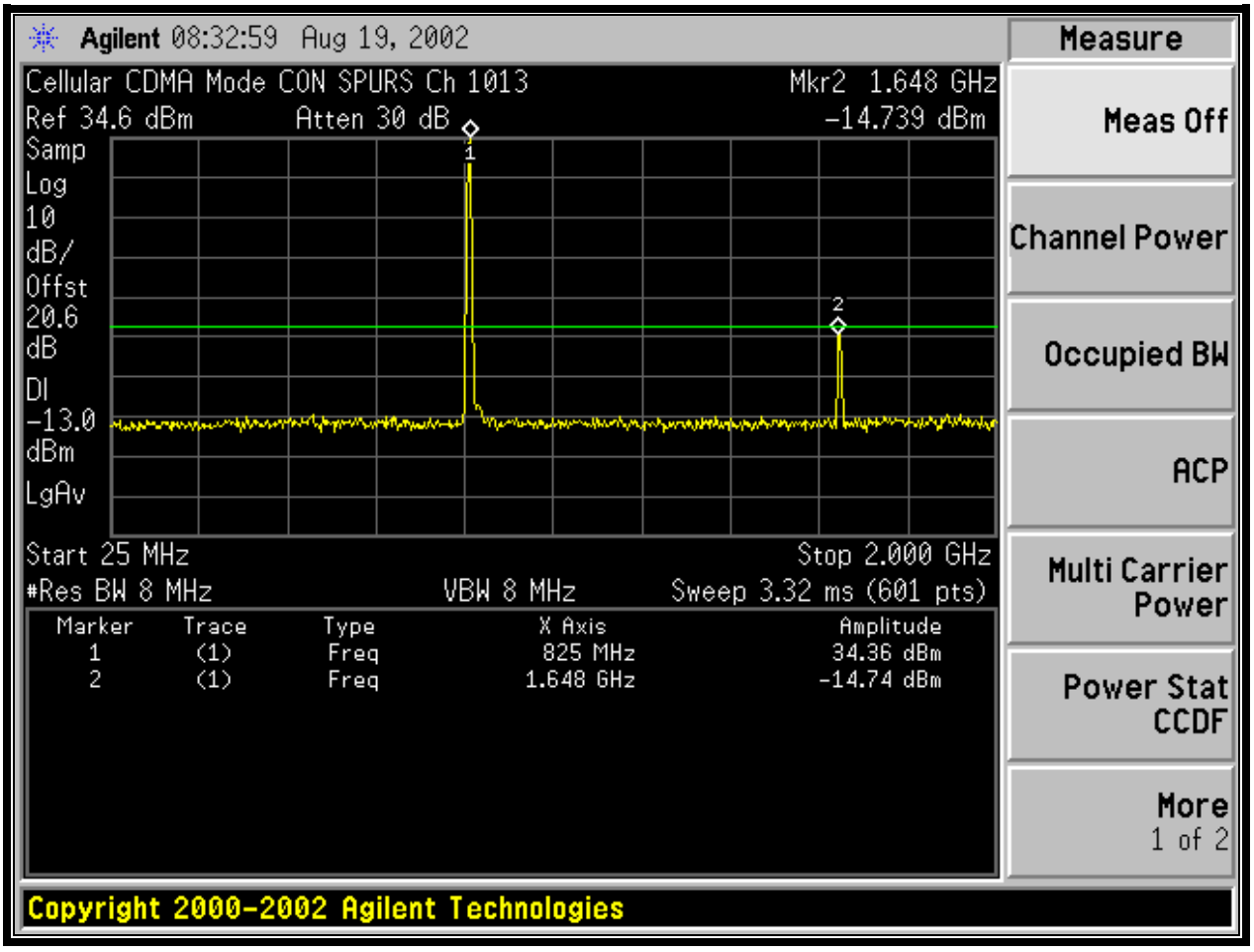
PLOT 7-11: CELLULAR CDMA CONDUCTED SPURIOUS CH 0363



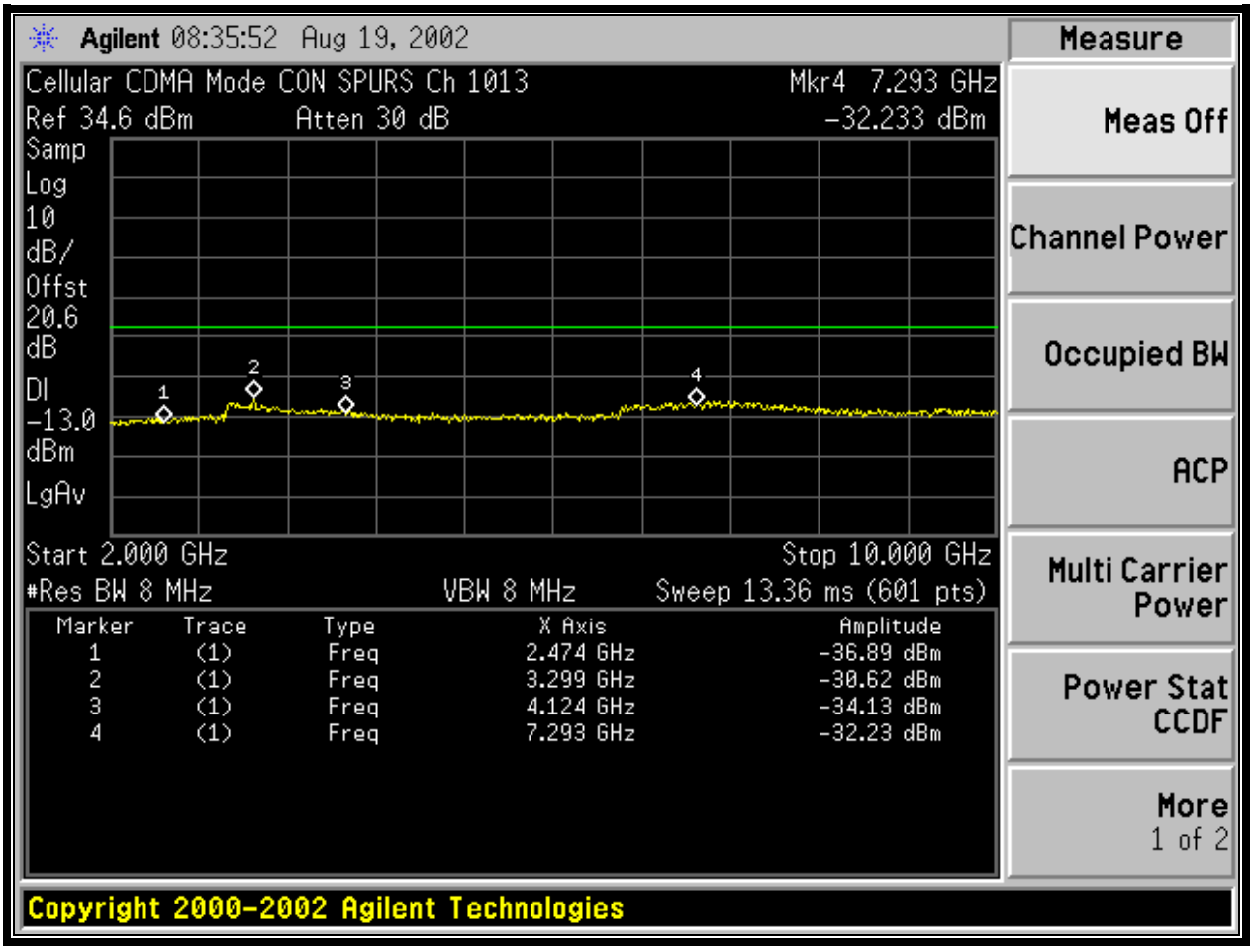
PLOT 7-12: CELLULAR CDMA CONDUCTED SPURIOUS CH 0777



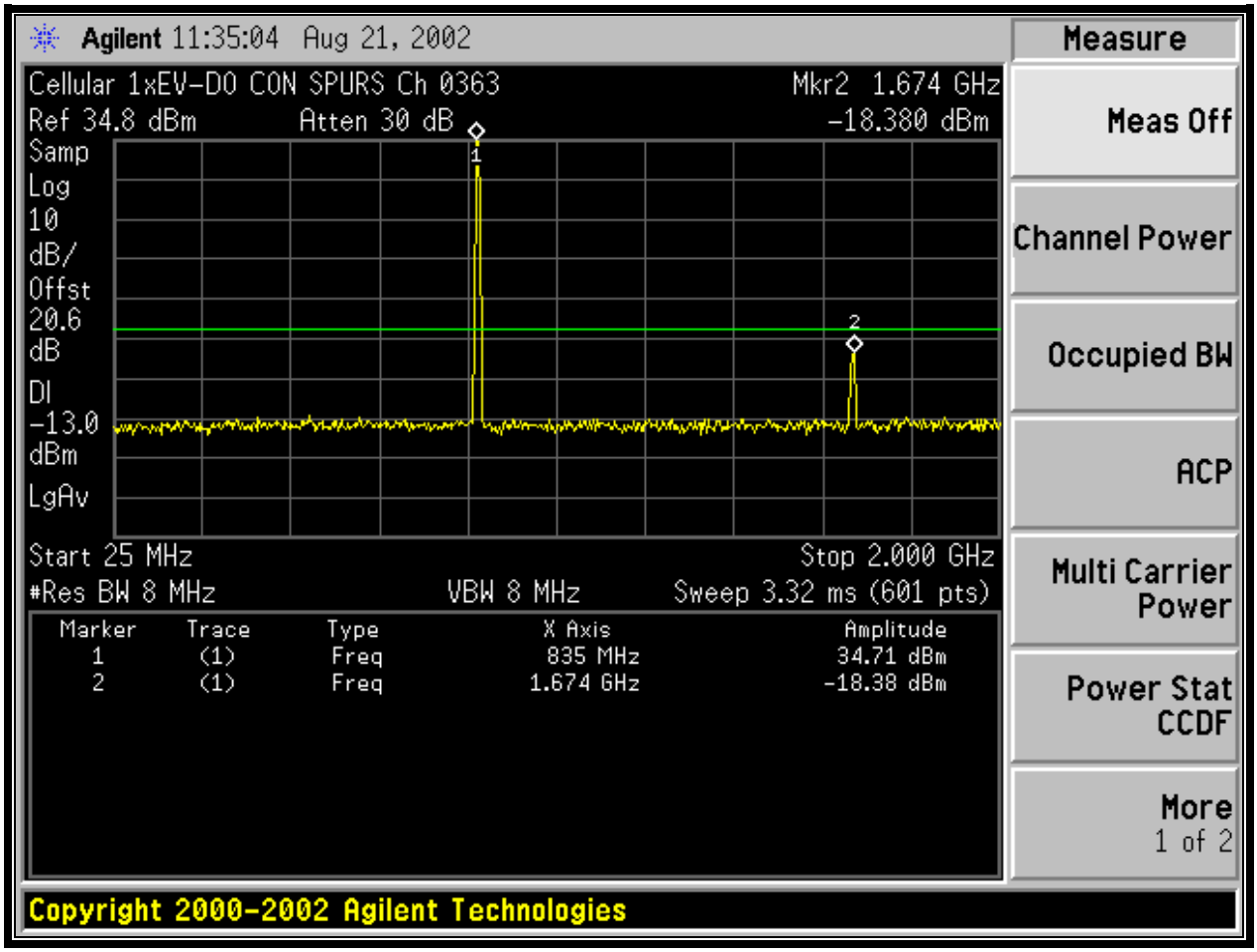
PLOT 7-13: CELLULAR CDMA CONDUCTED SPURIOUS CH 0777



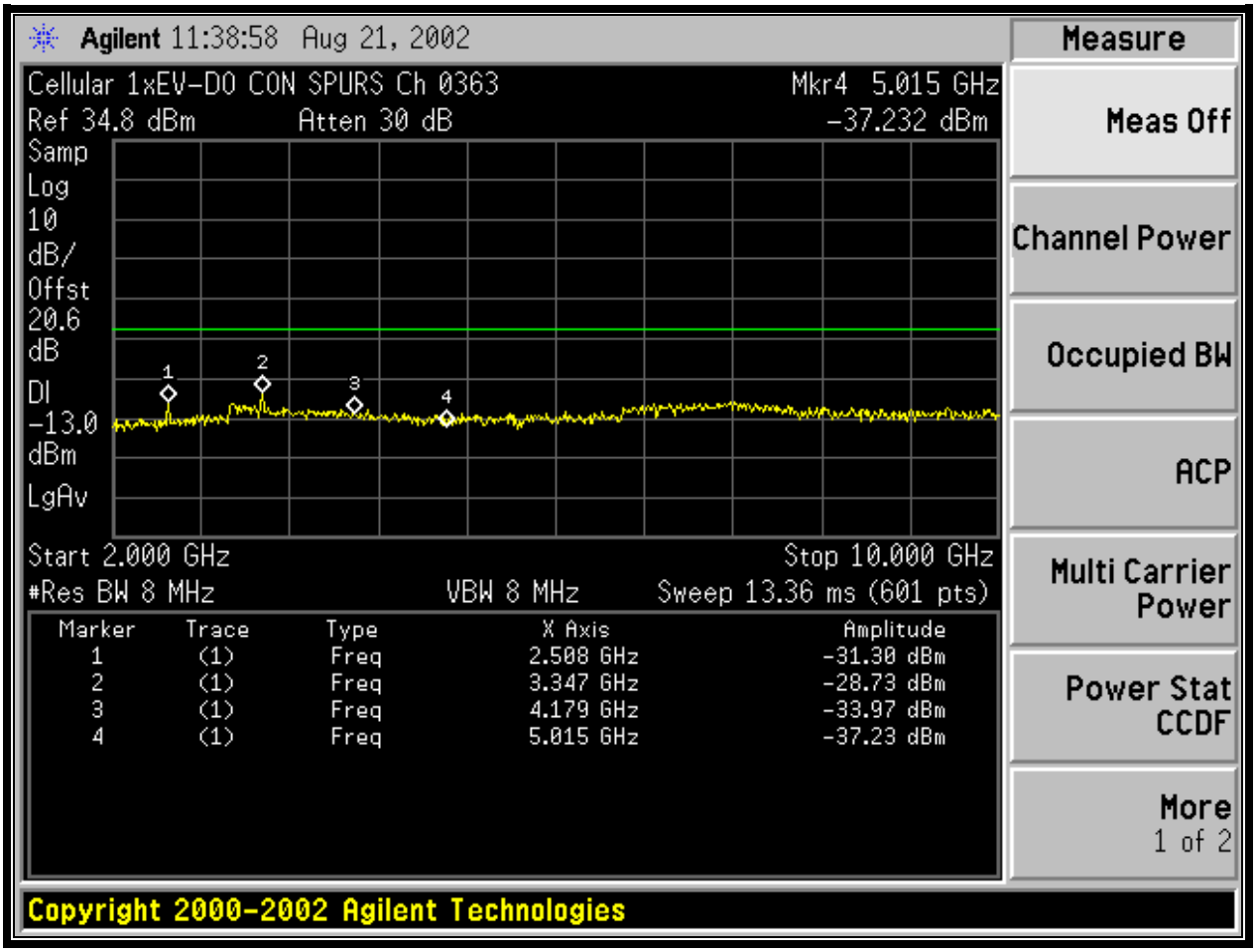
PLOT 7-14: CELLULAR CDMA CONDUCTED SPURIOUS CH 1013



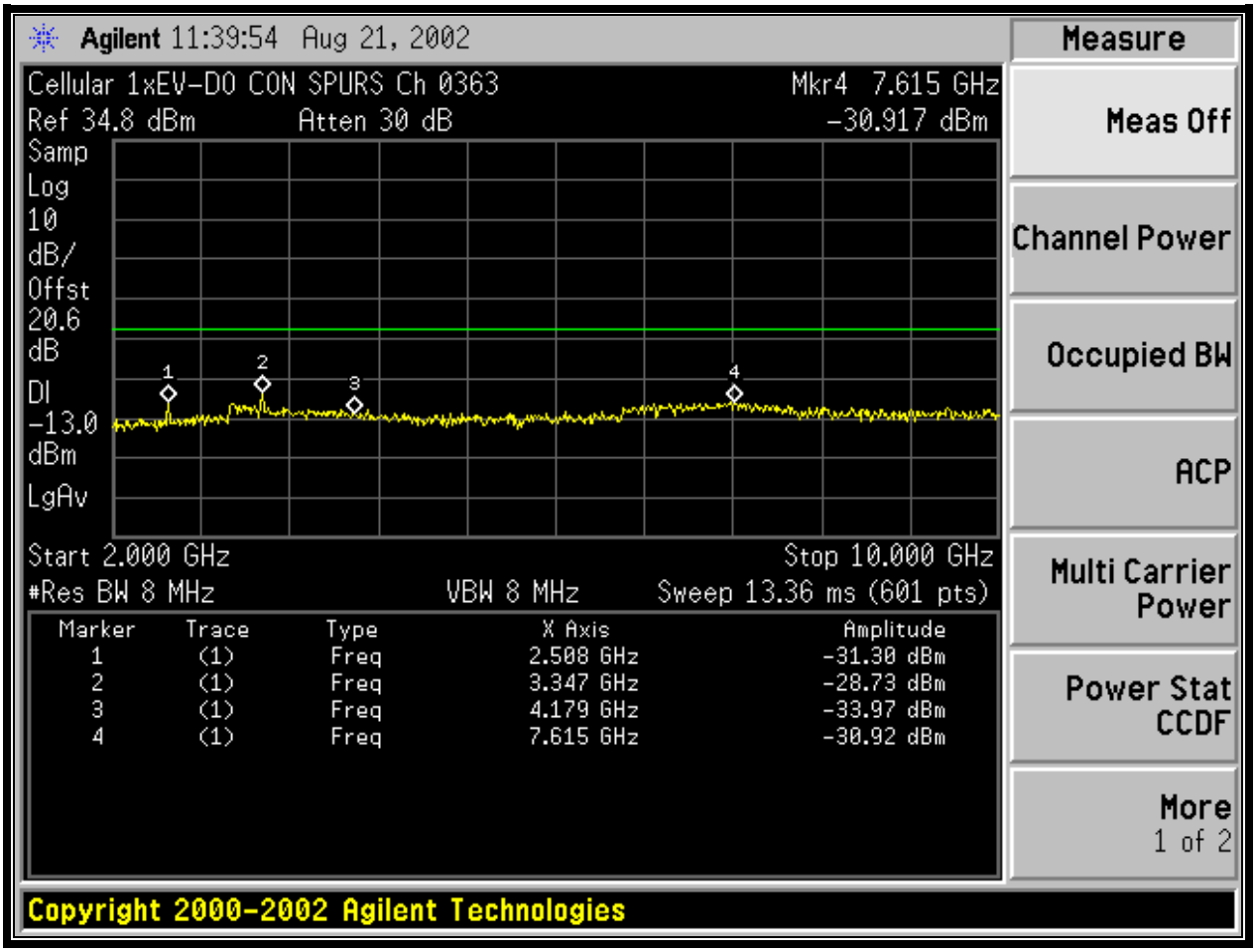
PLOT 7-15: CELLULAR CDMA CONDUCTED SPURIOUS CH 1013



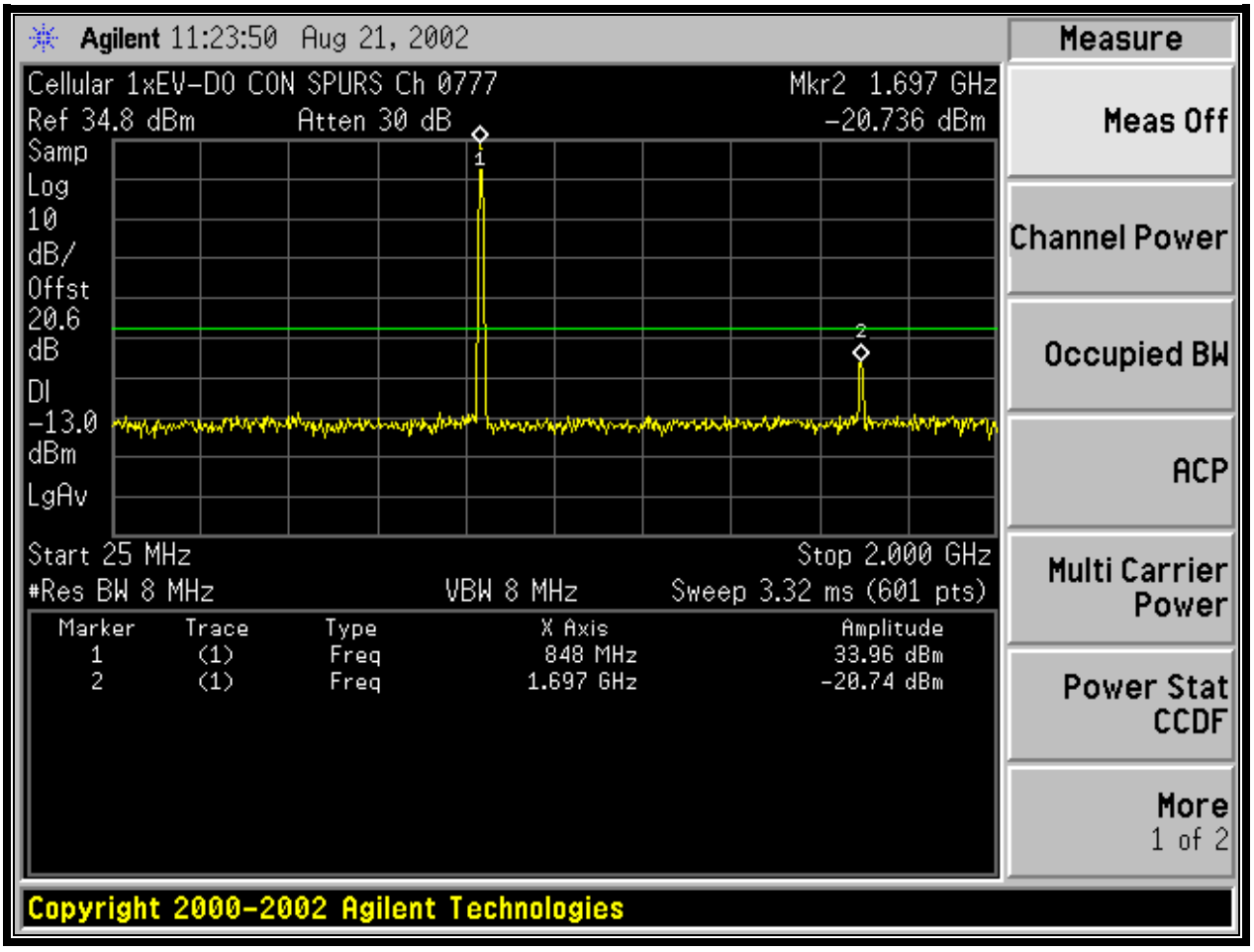
PLOT 7-16: CELLULAR 1XEV-DO CONDUCTED SPURIOUS CH 0363



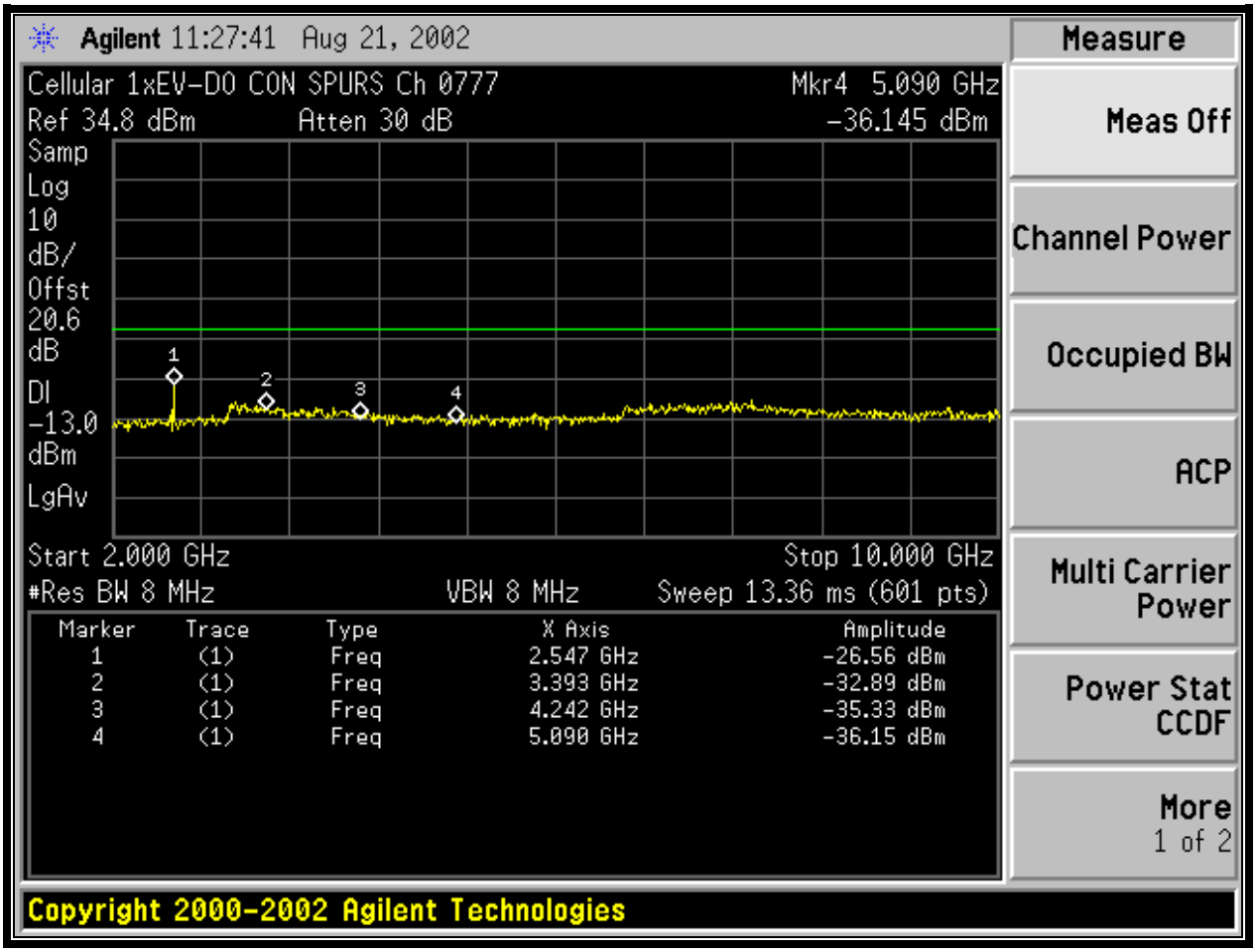
PLOT 7-17: CELLULAR 1XEV-DO CONDUCTED SPURIOUS CH 0363



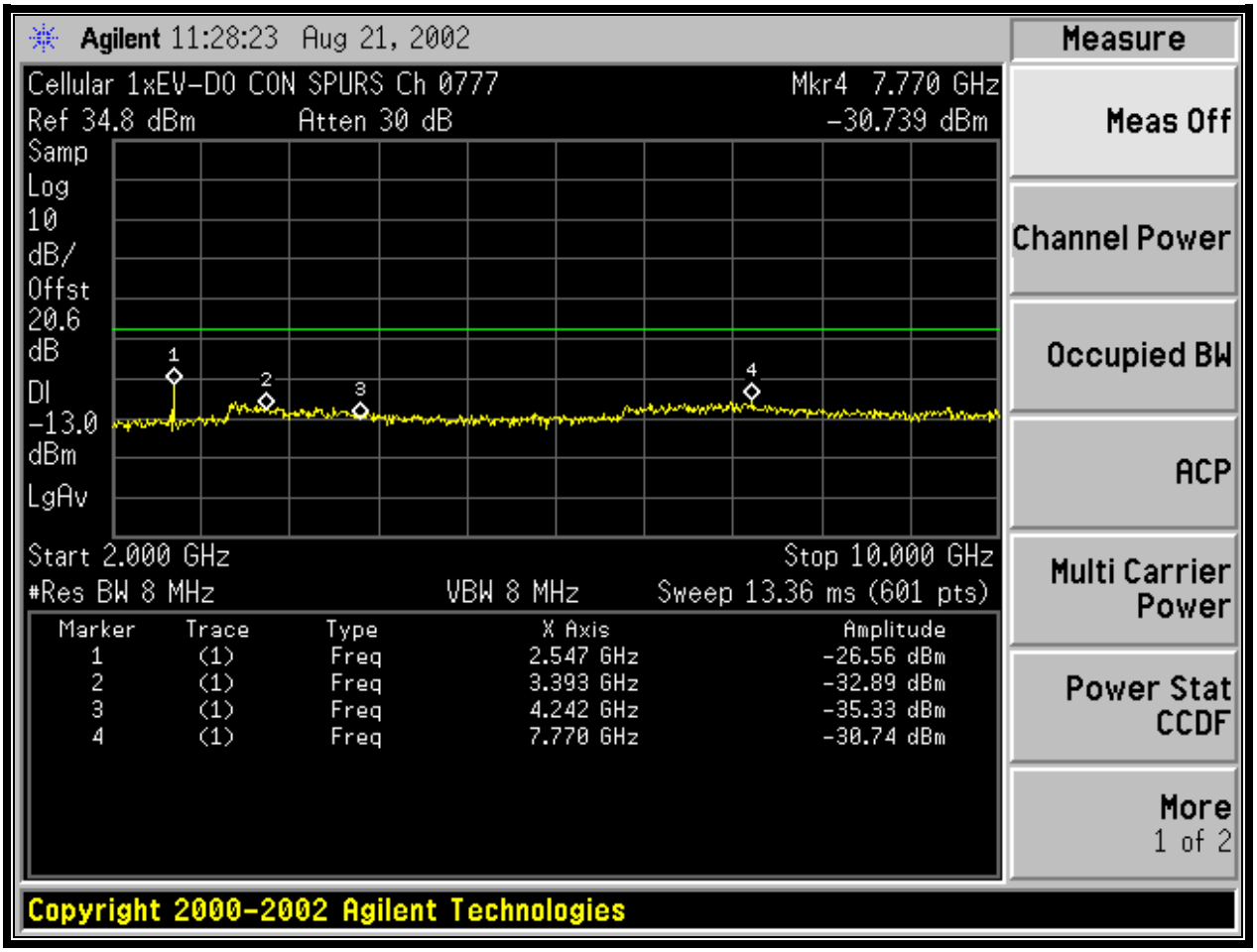
PLOT 7-18: CELLULAR 1XEV-DO CONDUCTED SPURIOUS CH 0363



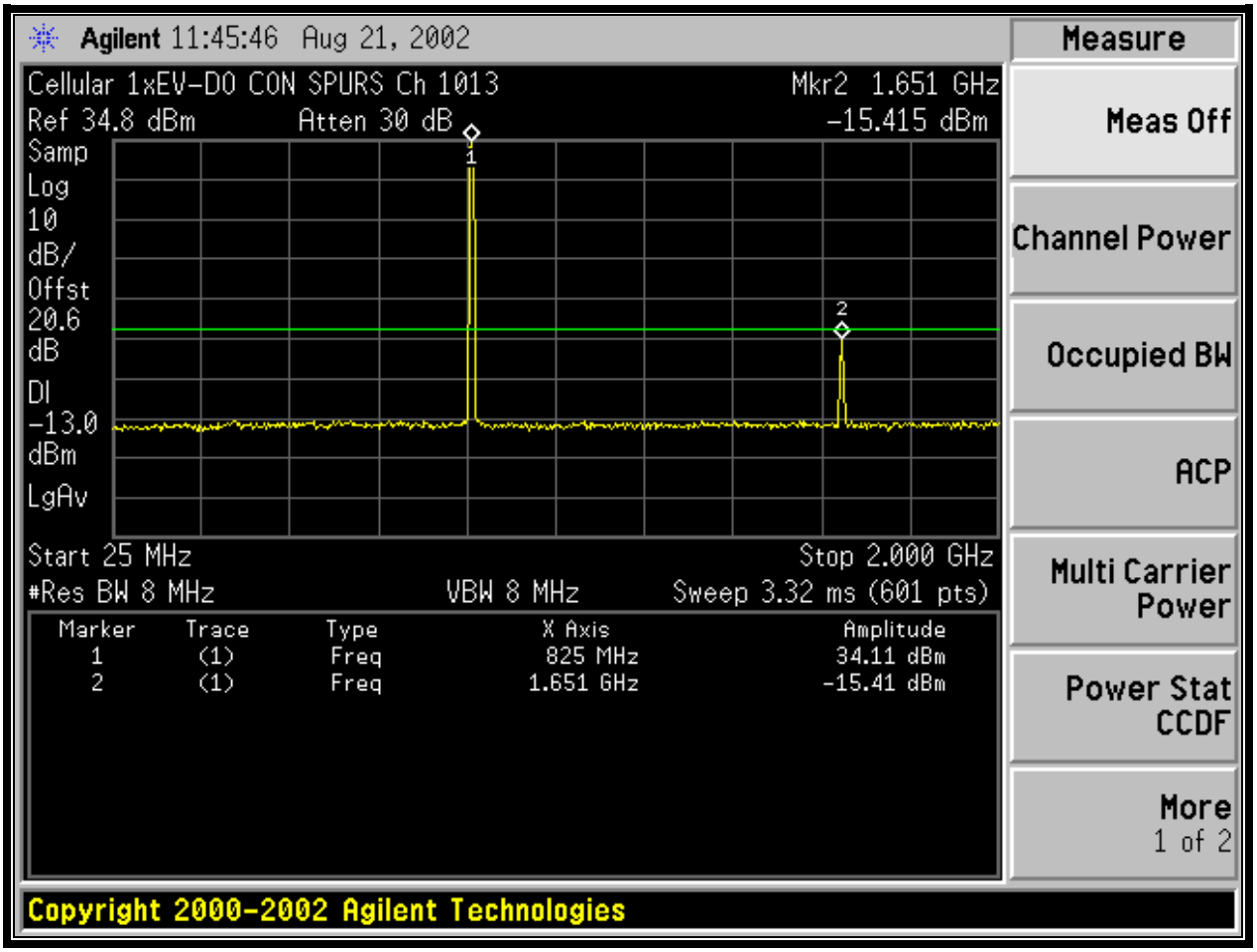
PLOT 7-19: CELLULAR 1XEV-DO CONDUCTED SPURIOUS CH 0777



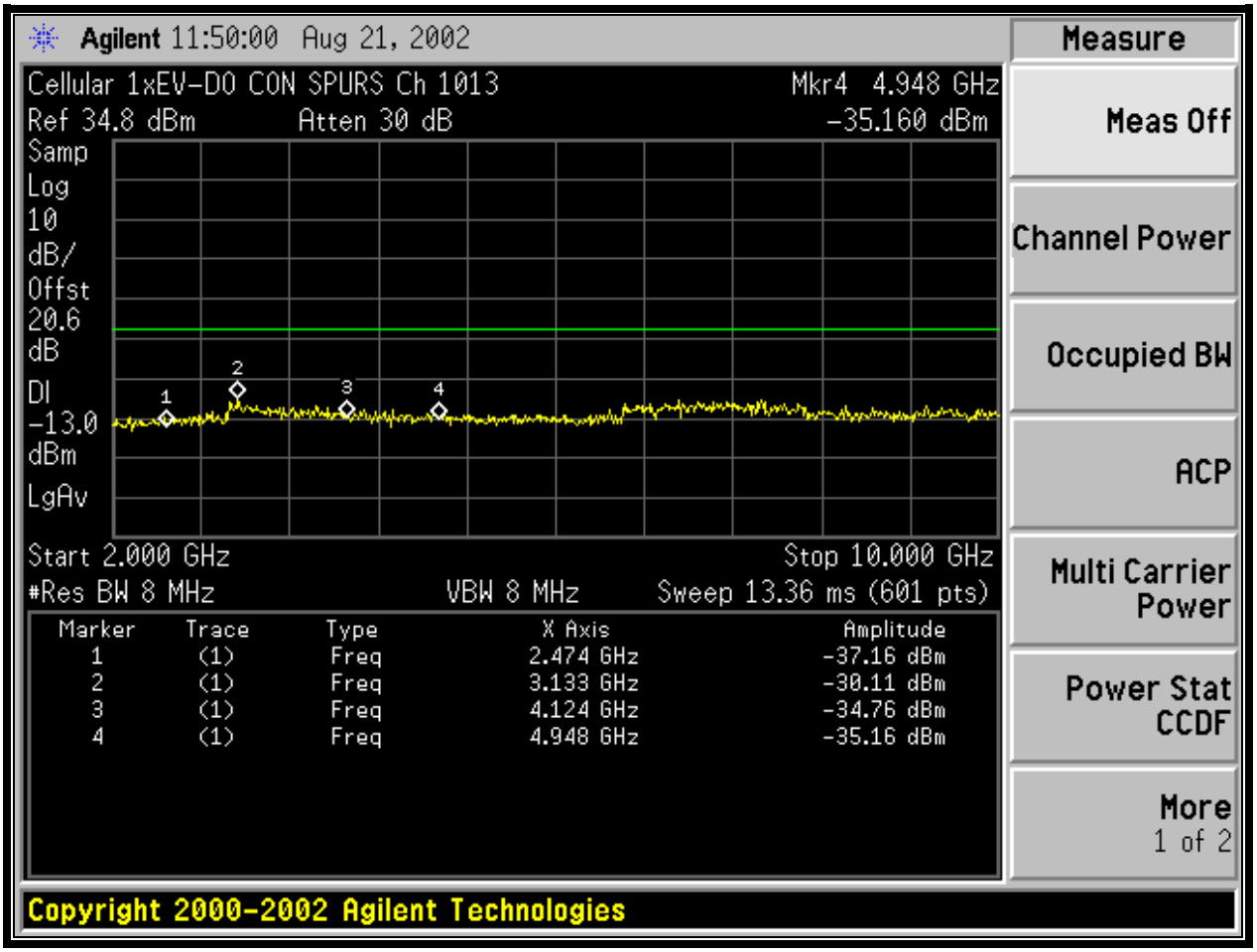
PLOT 7-20: CELLULAR 1XEV-DO CONDUCTED SPURIOUS CH 0777



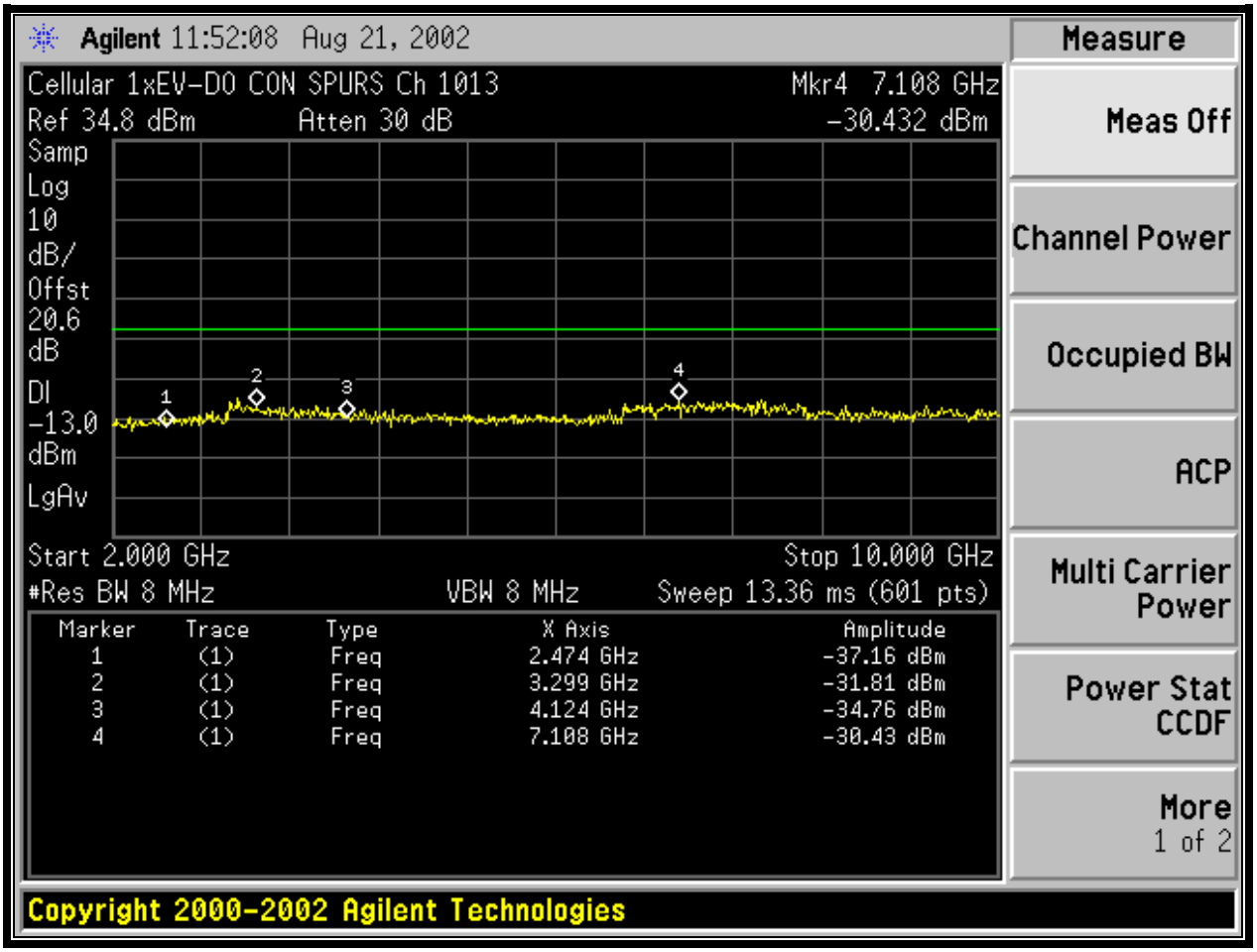
PLOT 7-21: CELLULAR 1XEV-DO CONDUCTED SPURIOUS CH 0777



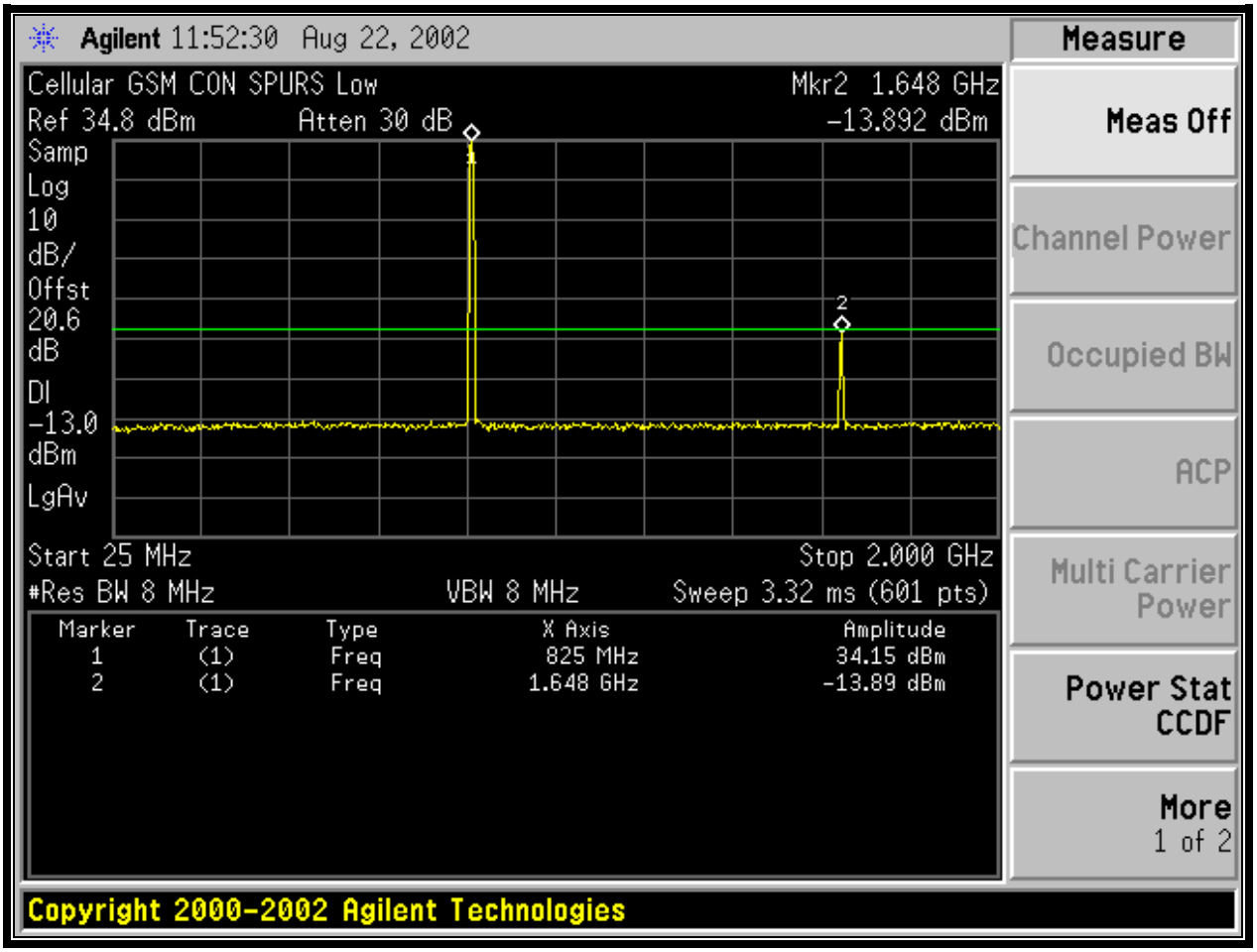
PLOT 7-22: CELLULAR 1XEV-DO CONDUCTED SPURIOUS CH 1013



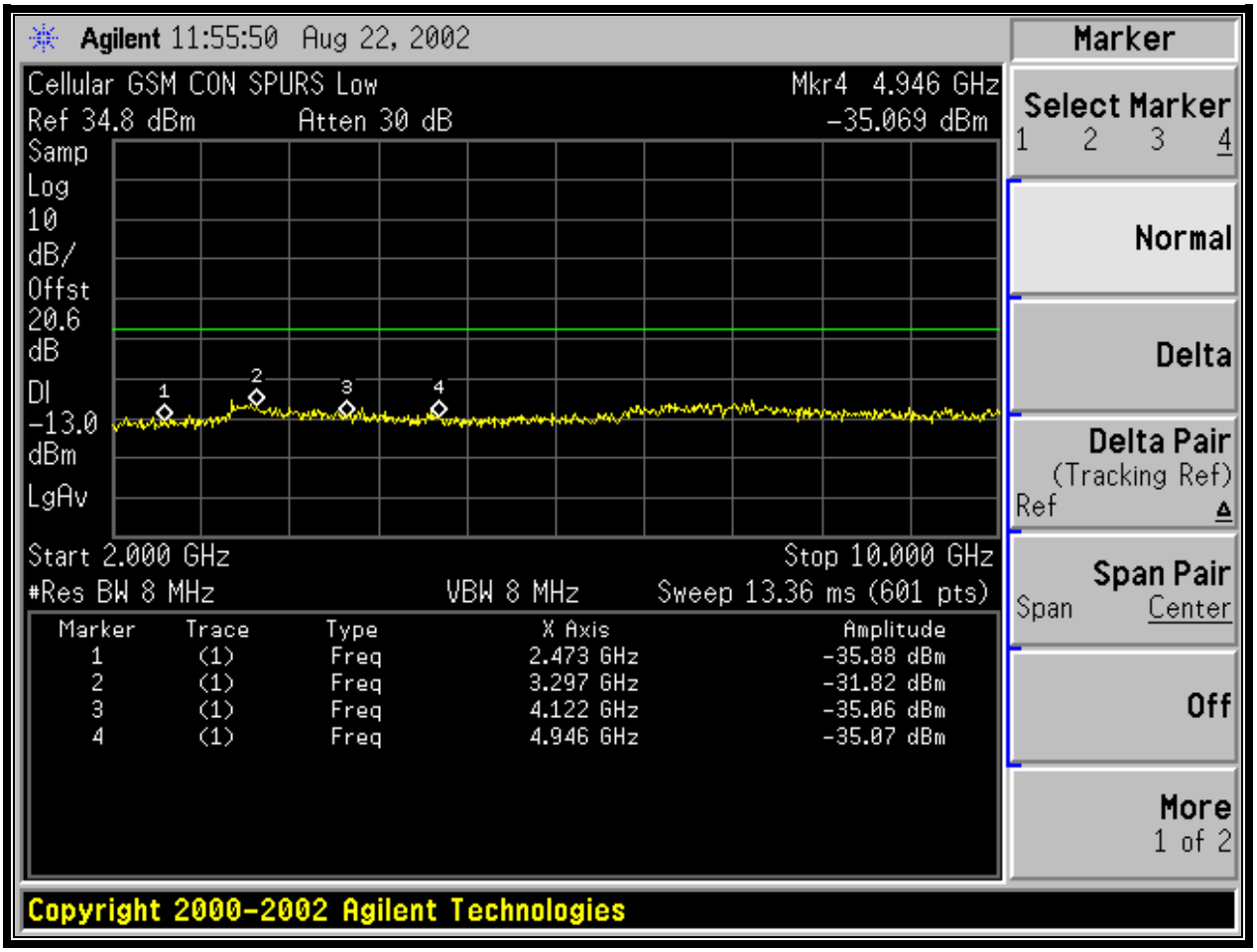
PLOT 7-23: CELLULAR 1XEV-DO CONDUCTED SPURIOUS CH 1013 B



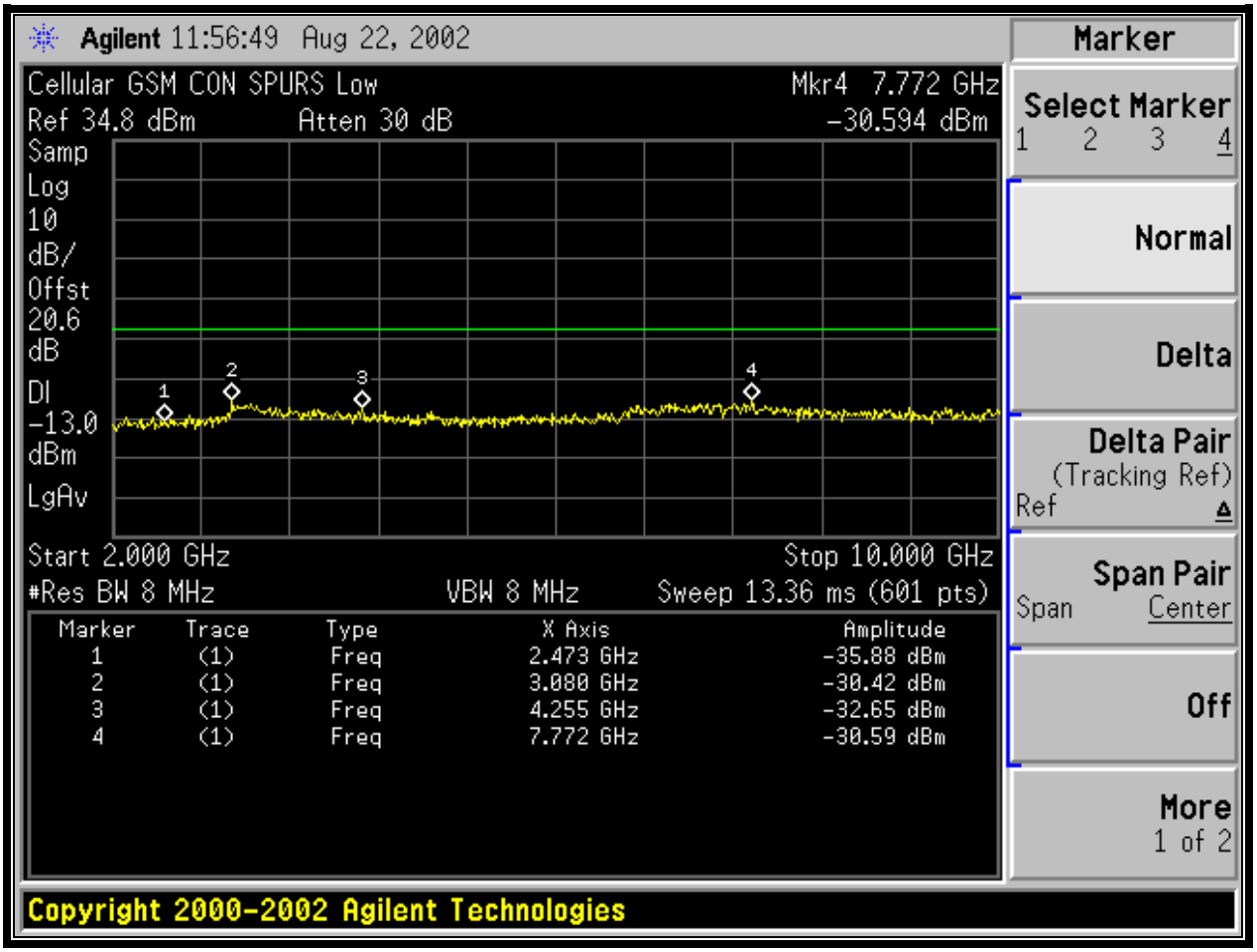
PLOT 7-24: CELLULAR 1XEV-DO CONDUCTED SPURIOUS CH 1013



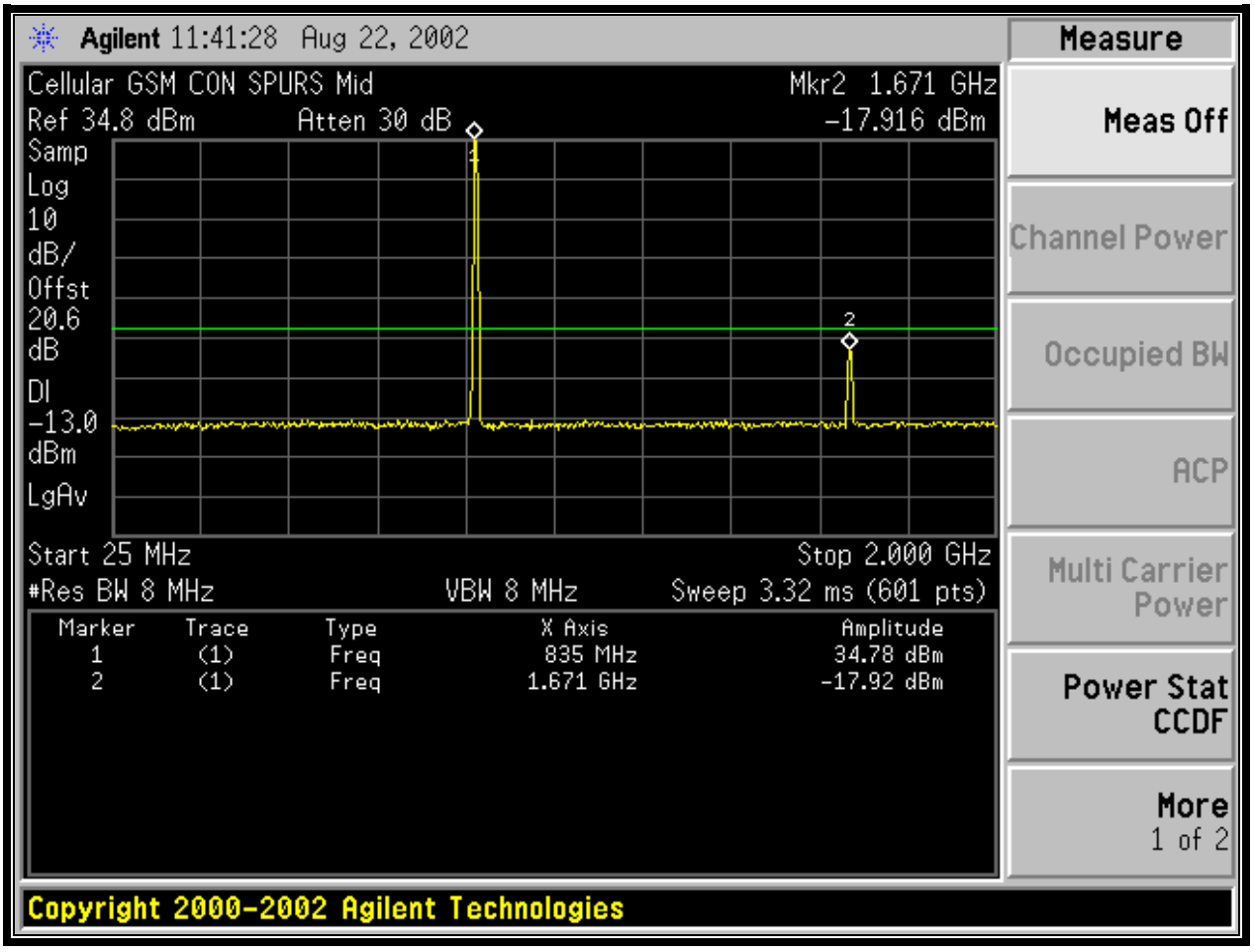
PLOT 7-25: CELLULAR GSM CONDUCTED SPURIOUS LOW CHANNEL



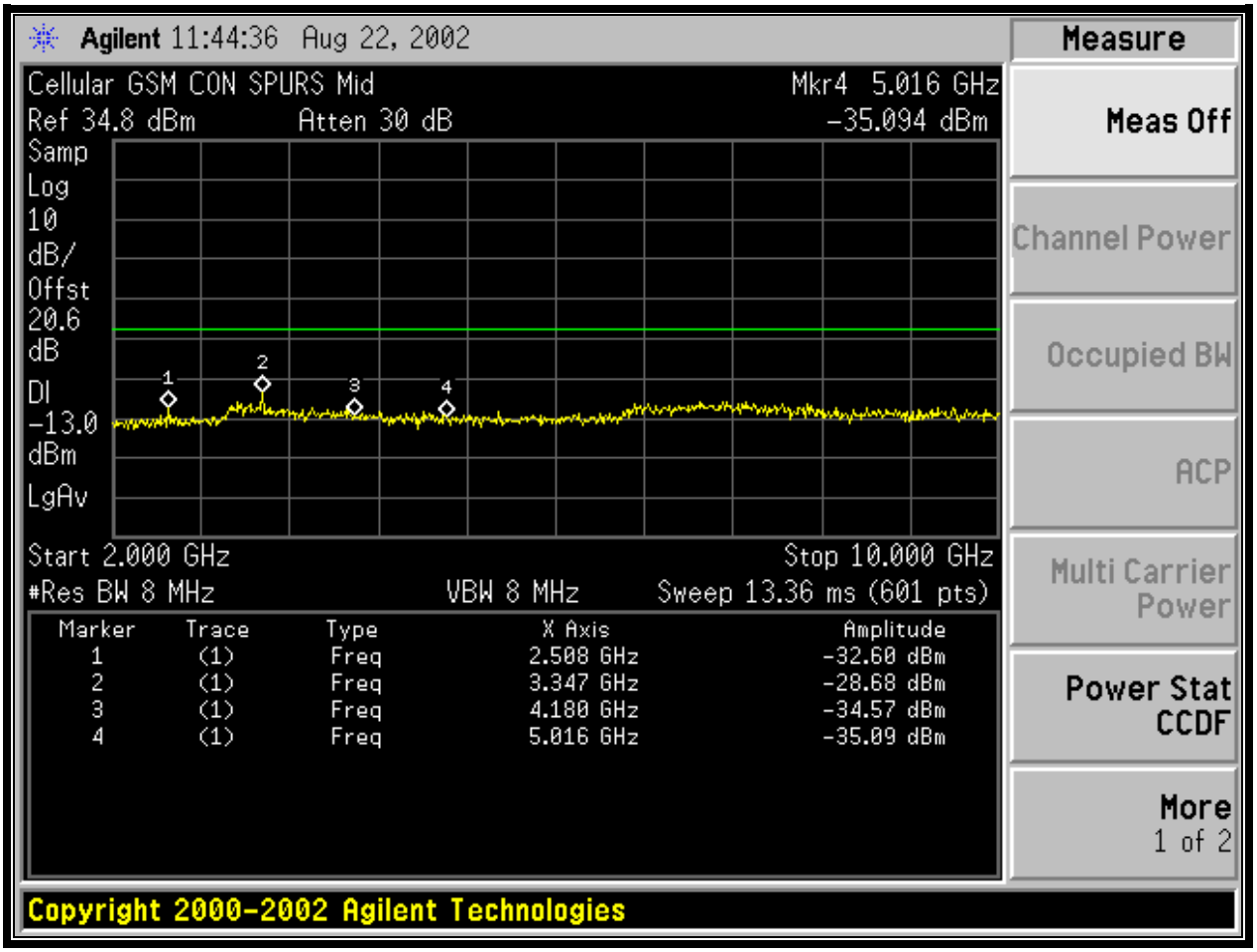
PLOT 7-26: CELLULAR GSM CONDUCTED SPURIOUS LOW CHANNEL



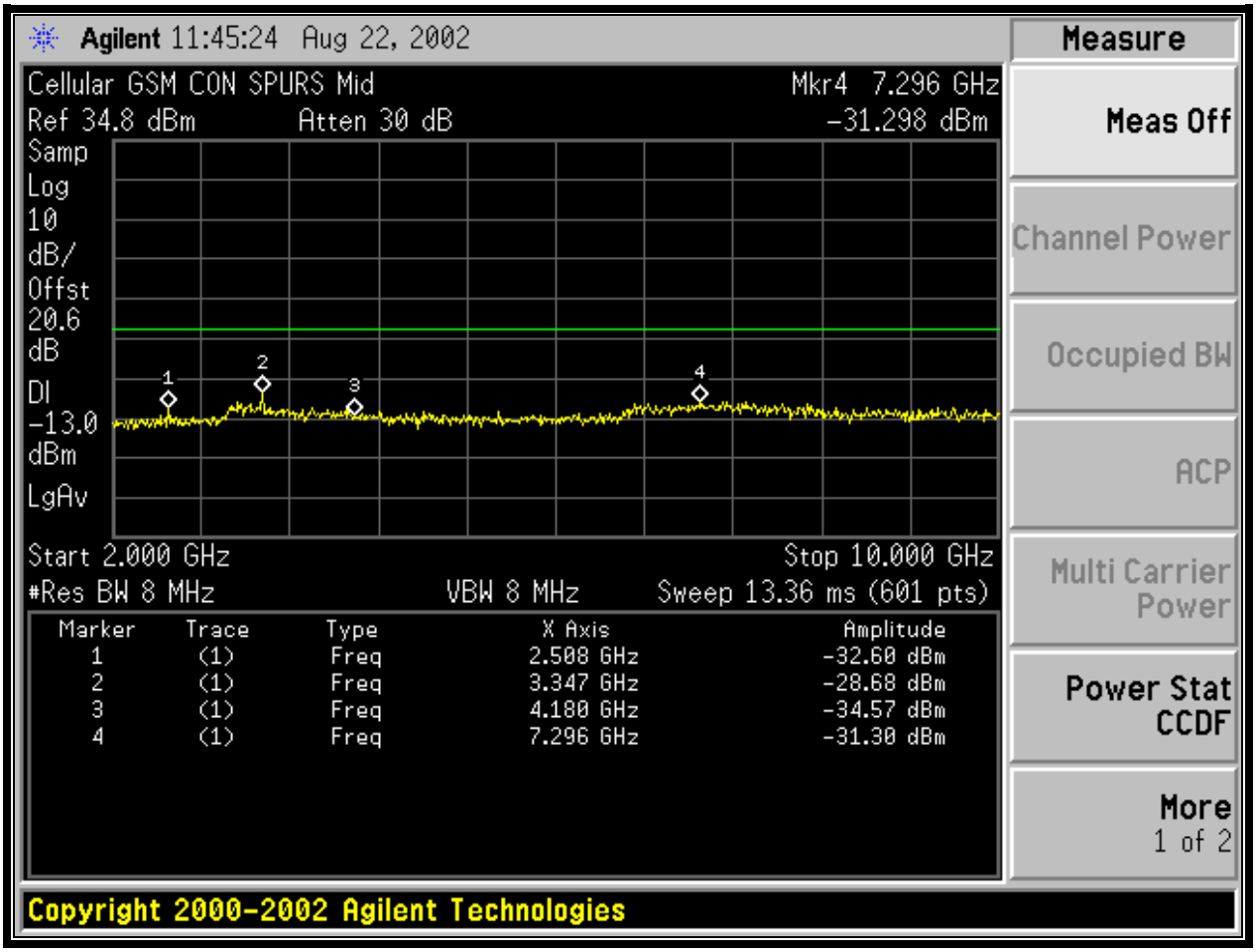
PLOT 7-27: CELLULAR GSM CONDUCTED SPURIOUS LOW CHANNEL



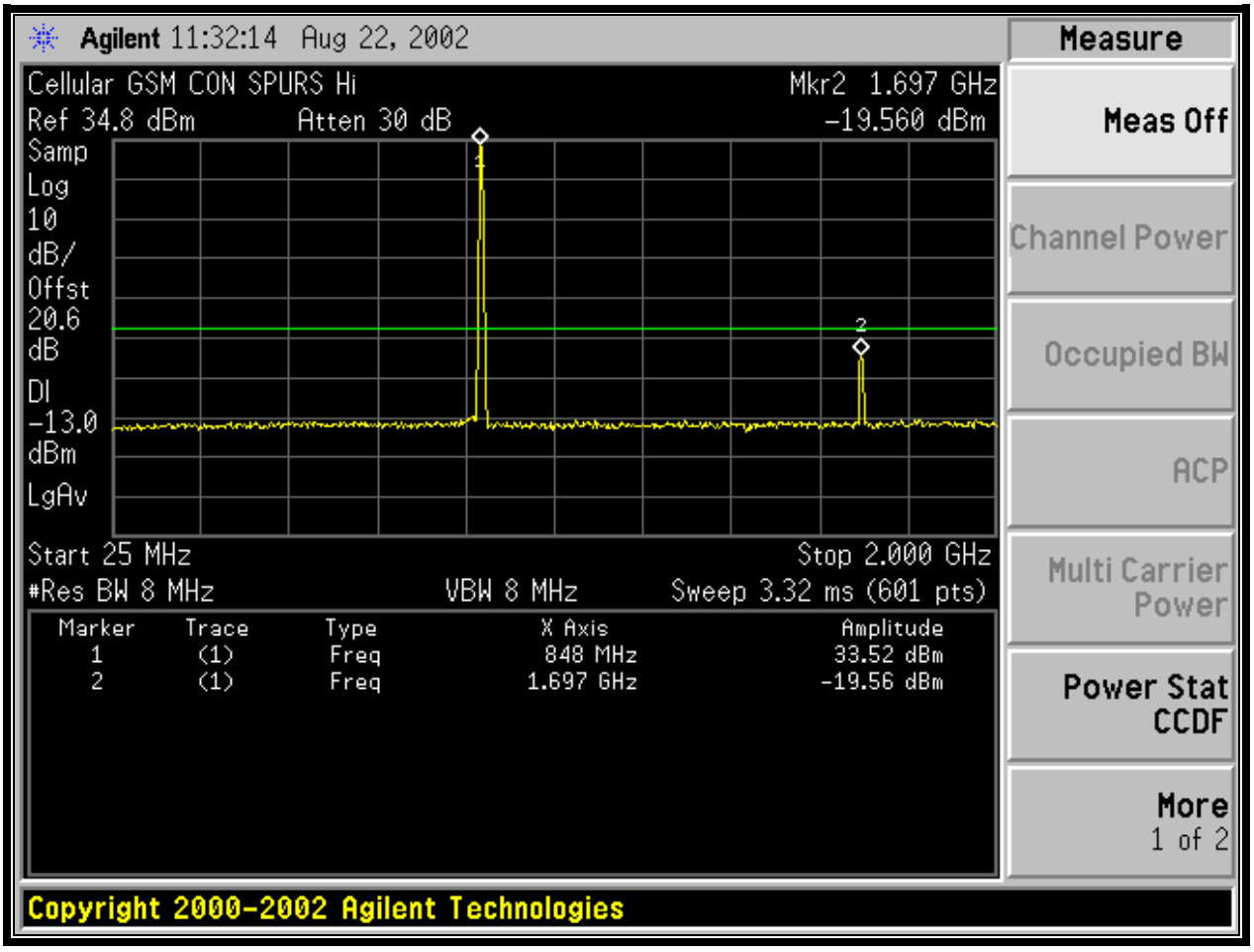
PLOT 7-28: CELLULAR GSM CONDUCTED SPURIOUS MID CHANNEL



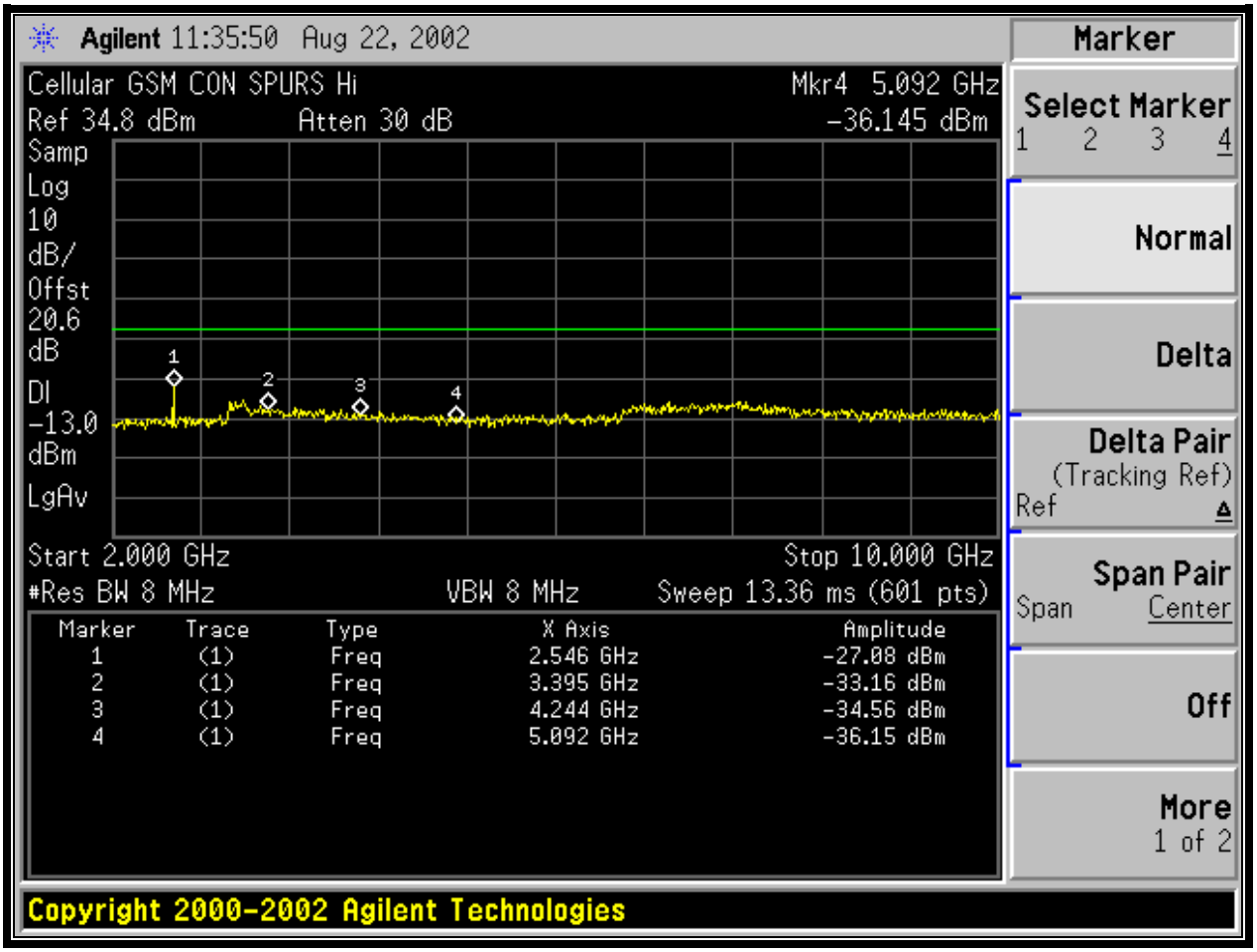
PLOT 7-29: CELLULAR GSM CONDUCTED SPURIOUS MID CHANNEL



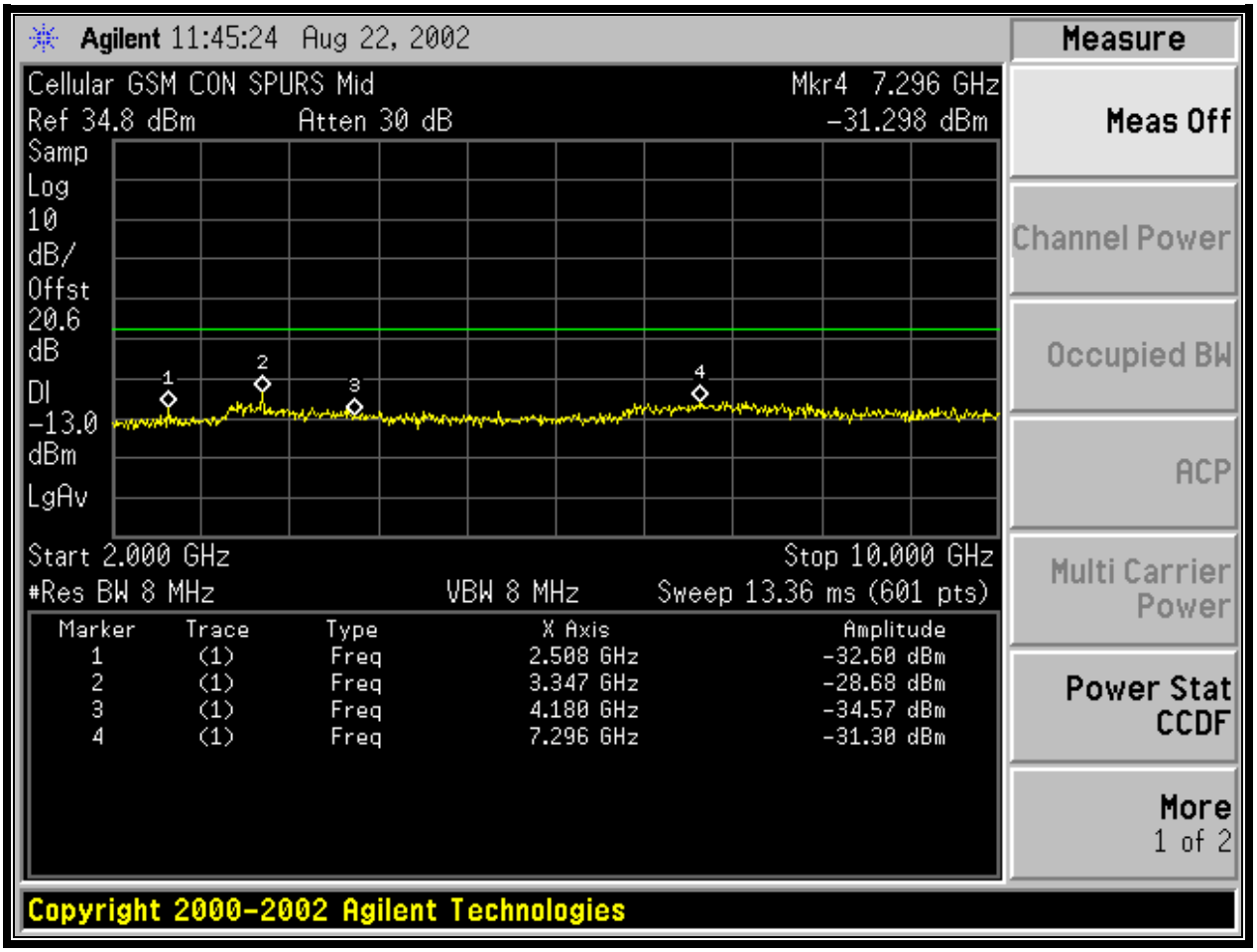
PLOT 7-30: CELLULAR GSM CONDUCTED SPURIOUS MID CHANNEL



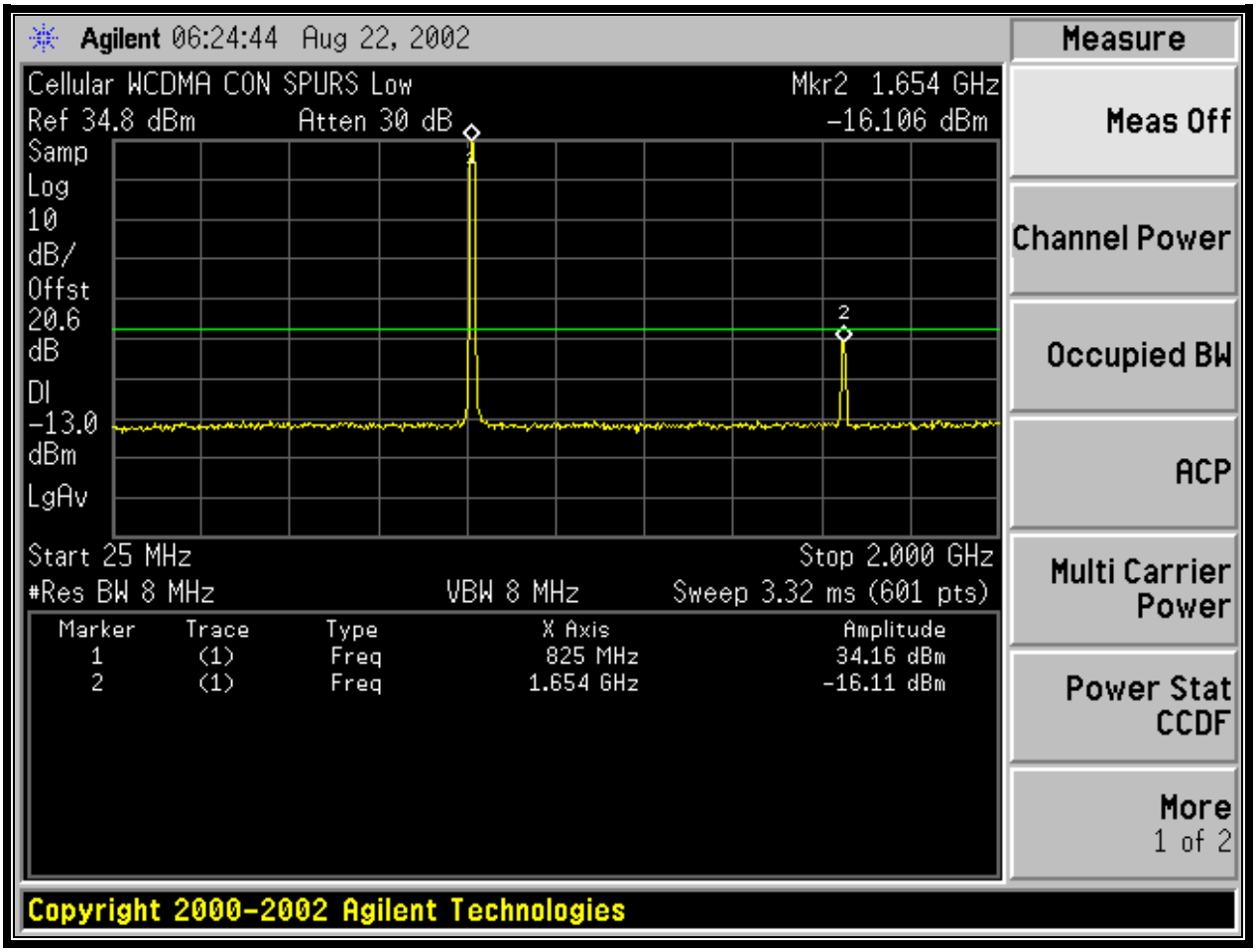
PLOT 7-31: CELLULAR GSM CONDUCTED SPURIOUS HI CHANNEL



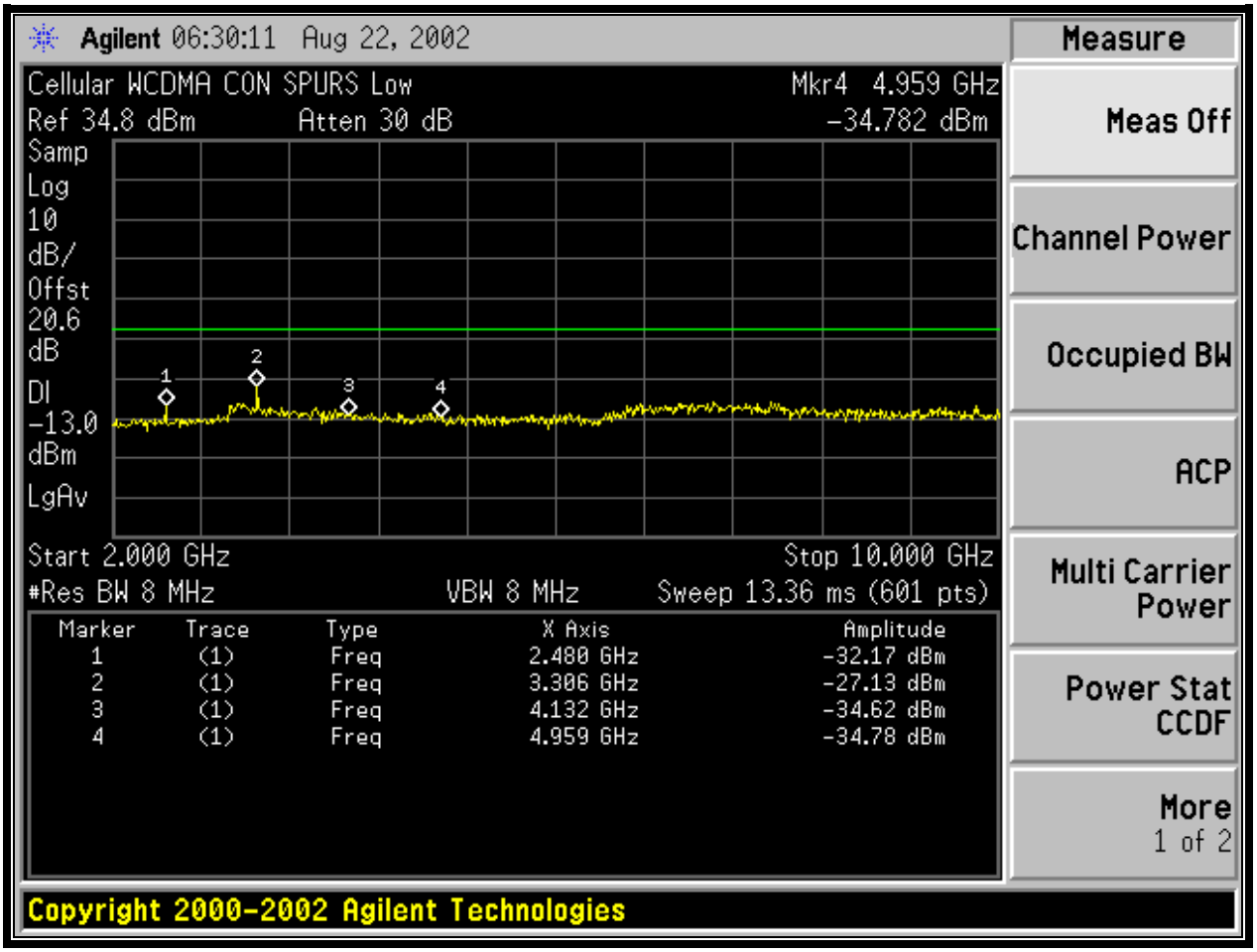
PLOT 7-32: CELLULAR GSM CONDUCTED SPURIOUS HI CHANNEL



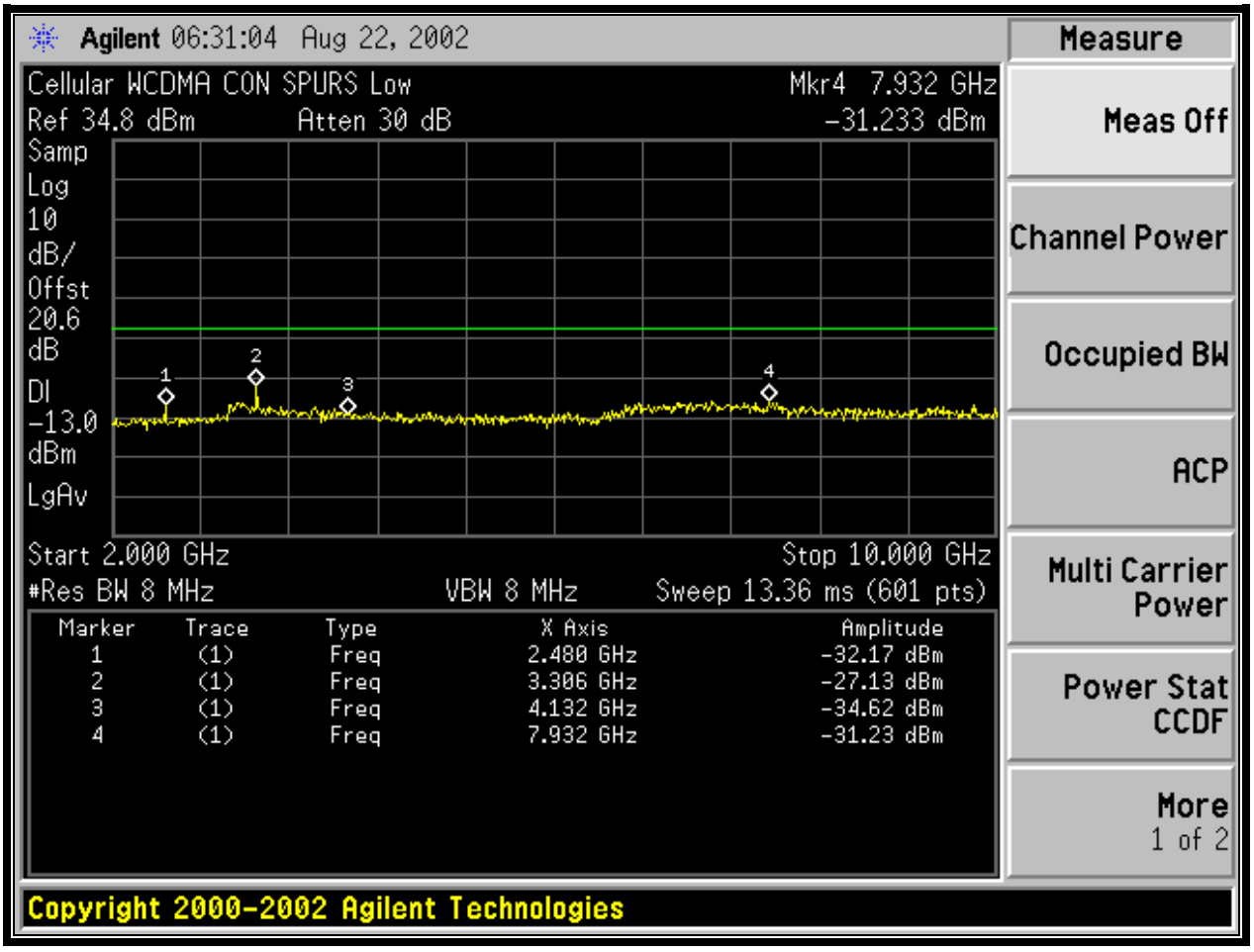
PLOT 7-33: CELLULAR GSM CONDUCTED SPURIOUS HI CHANNEL



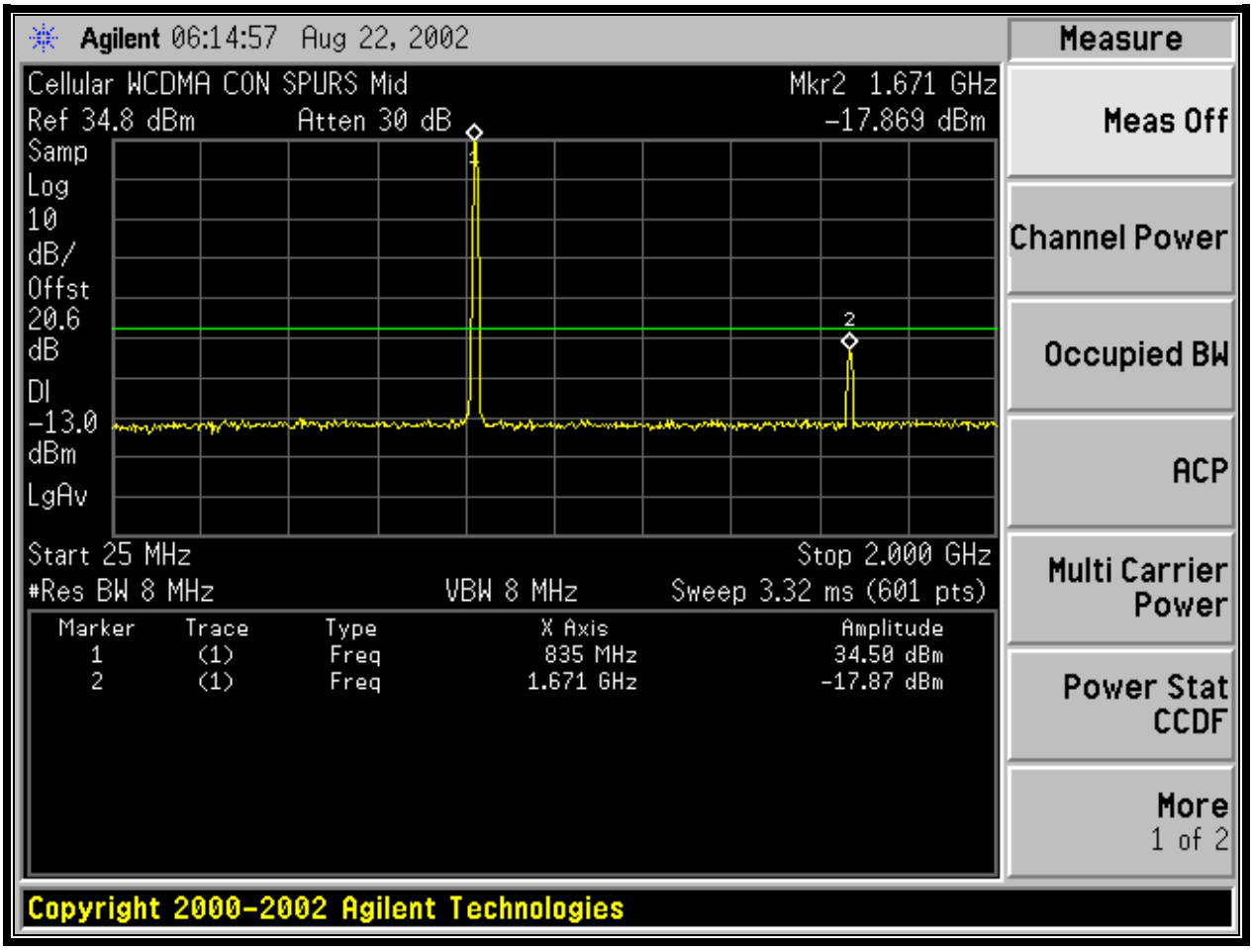
PLOT 7-34: CELLULAR WCDMA CONDUCTED SPURIOUS LOW CHANNEL



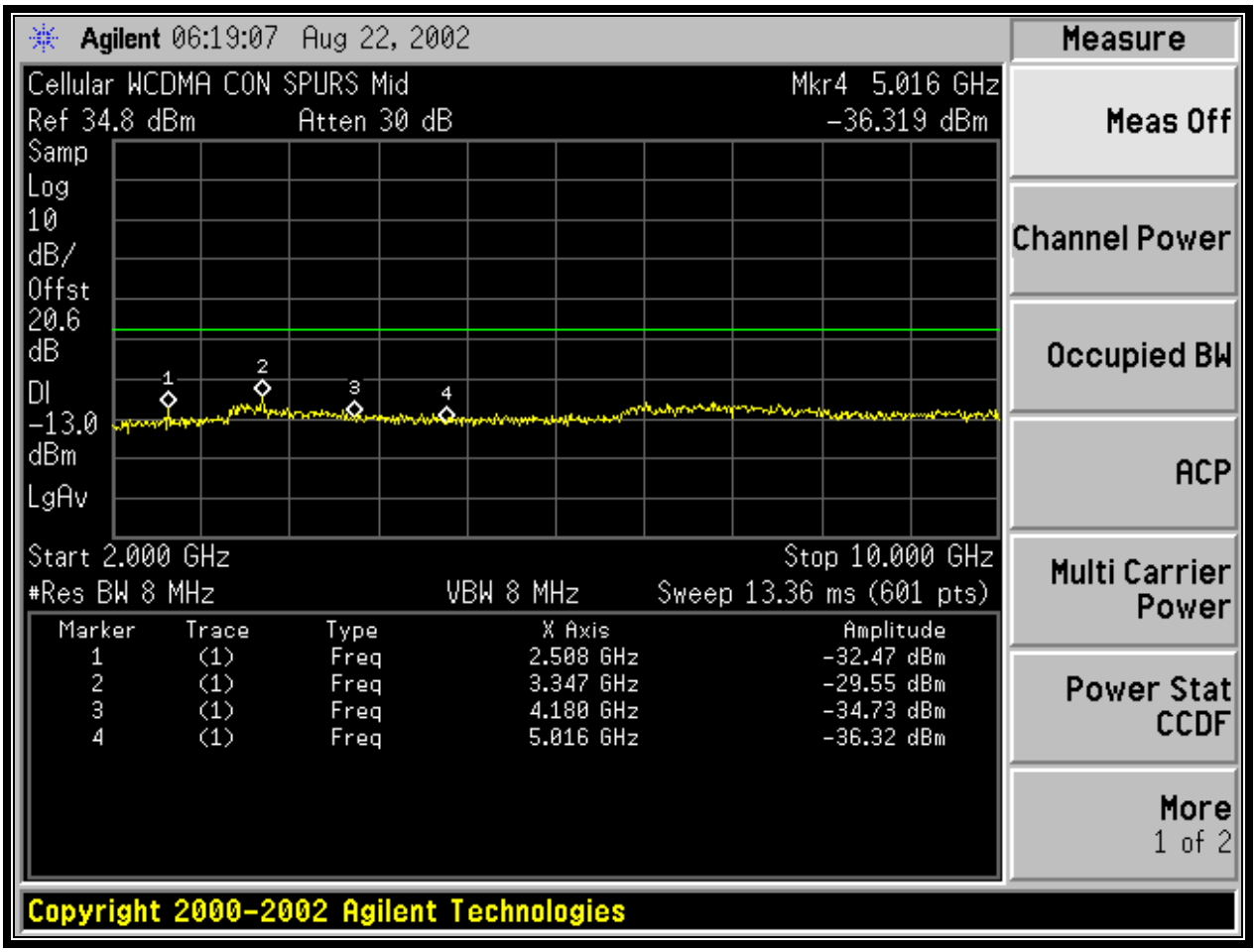
PLOT 7-35: CELLULAR WCDMA CONDUCTED SPURIOUS LOW CHANNEL



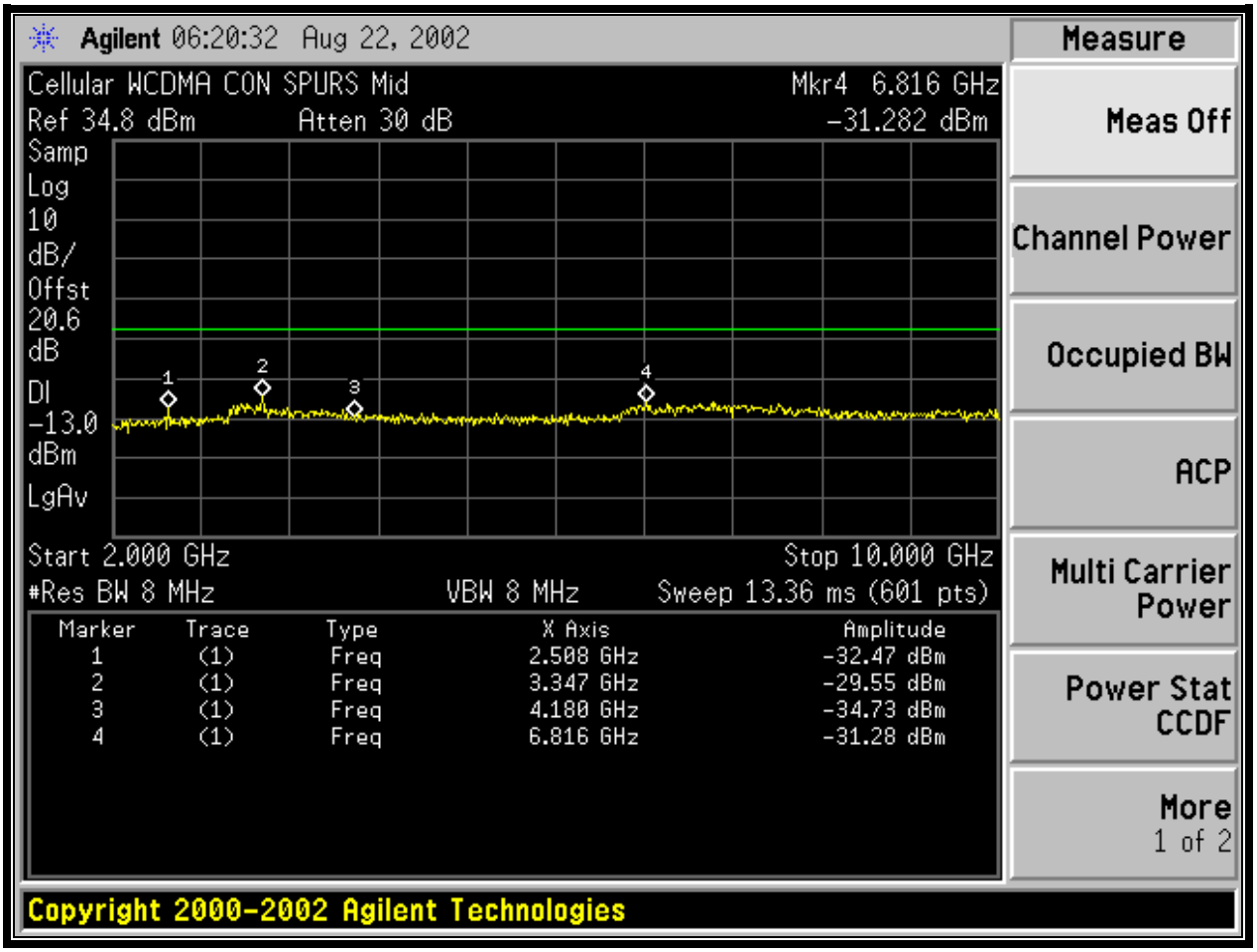
PLOT 7-36: CELLULAR WCDMA CONDUCTED SPURIOUS LOW CHANNEL



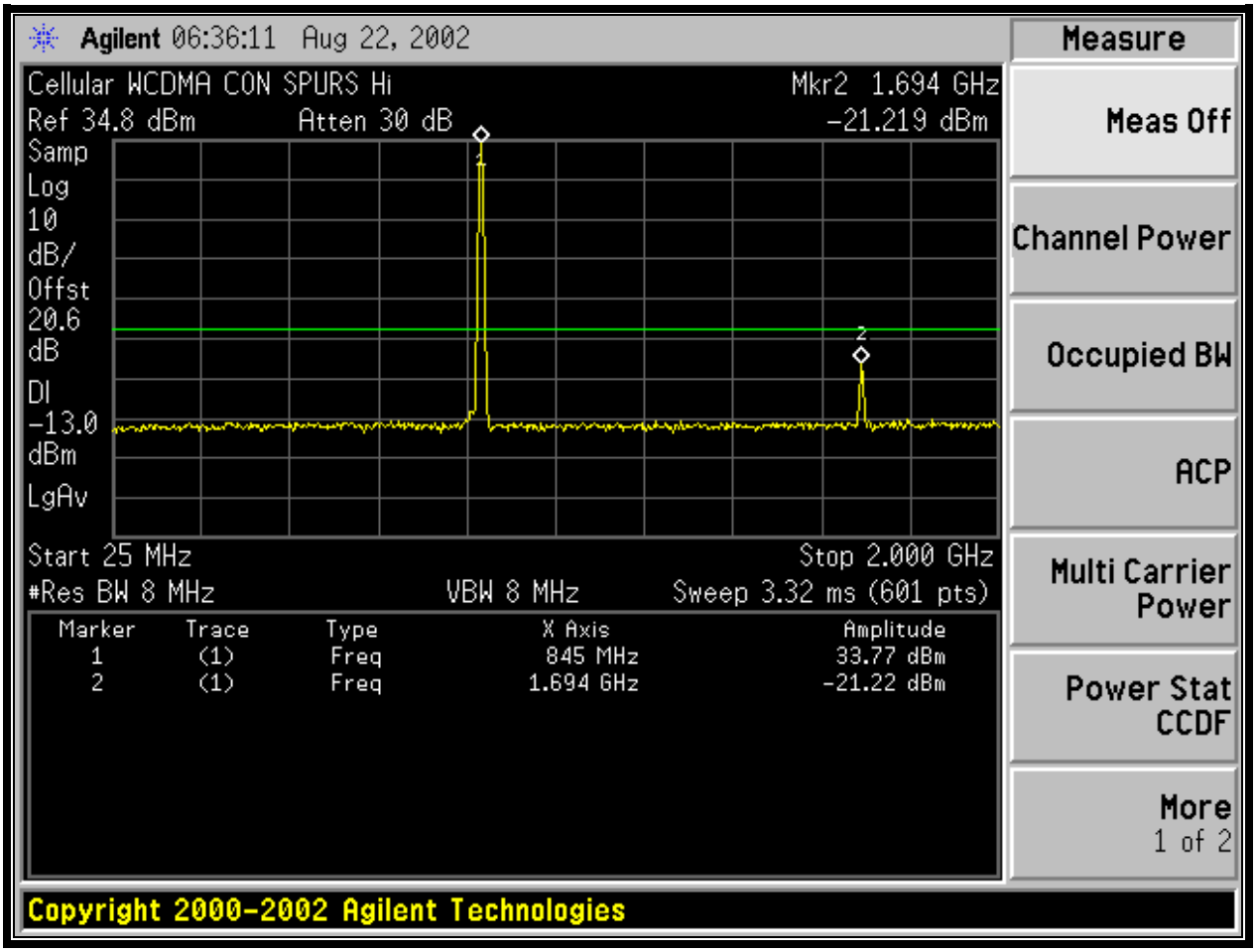
PLOT 7-37: CELLULAR WCDMA CONDUCTED SPURIOUS MID CHANNEL



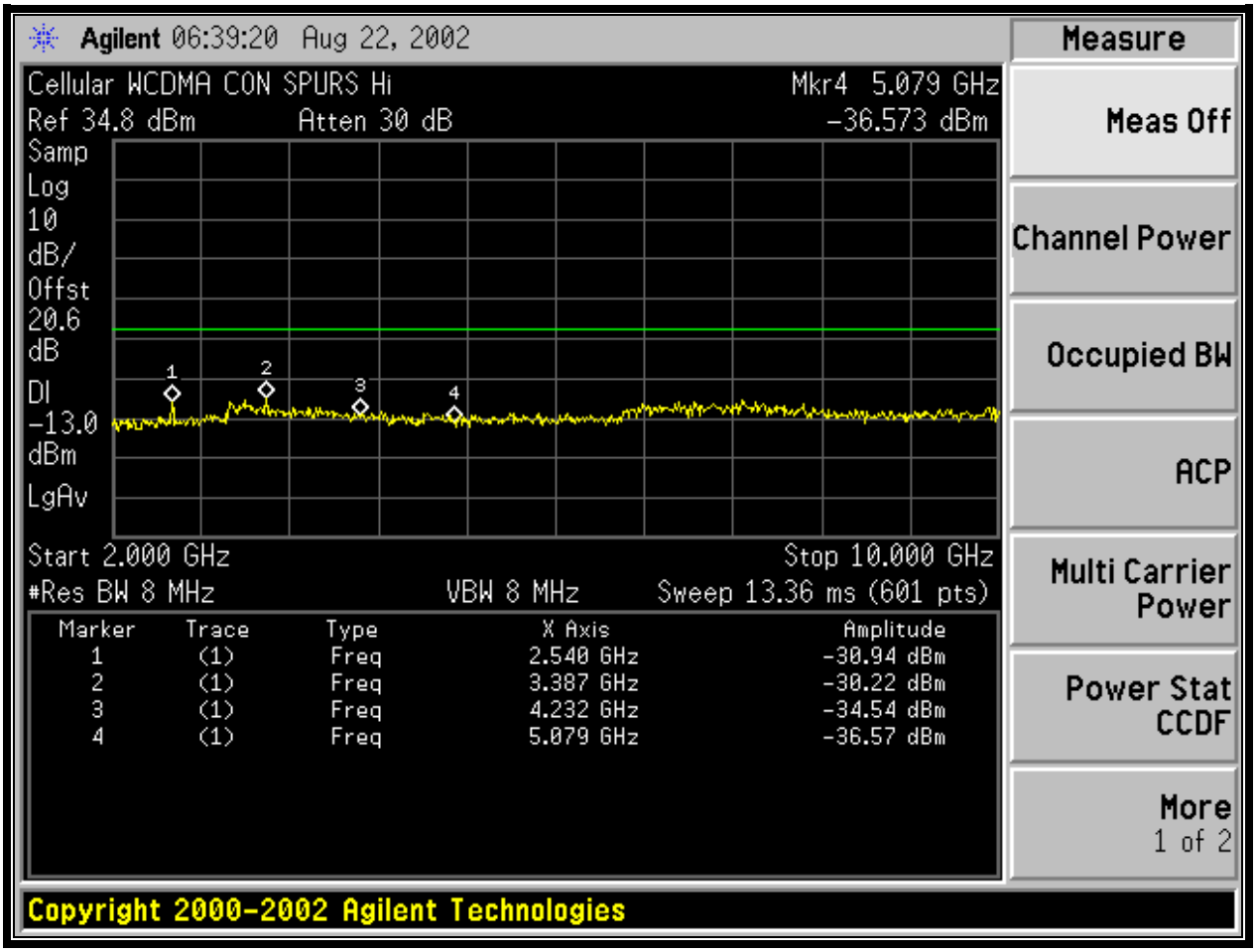
PLOT 7-38: CELLULAR WCDMA CONDUCTED SPURIOUS MID CHANNEL



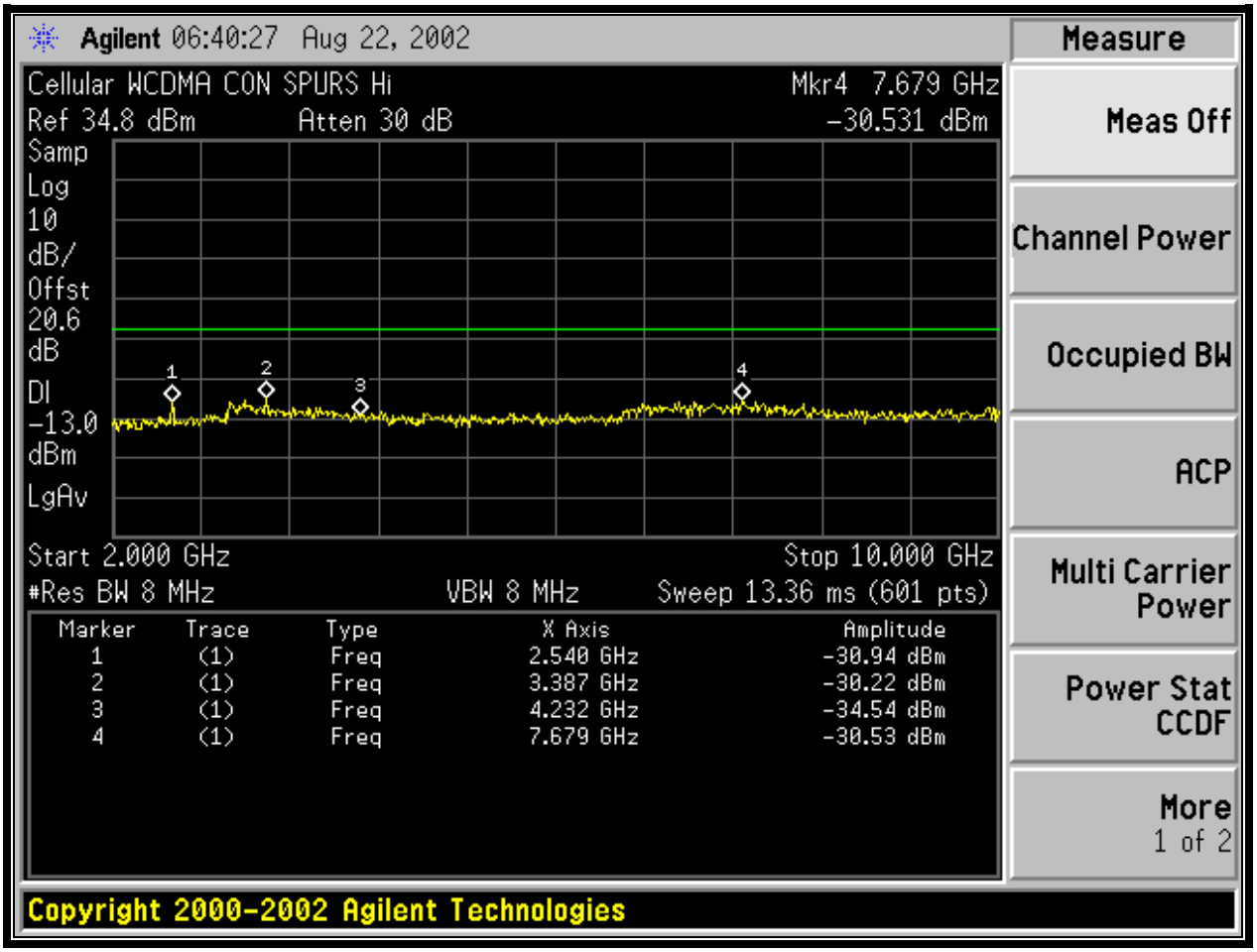
PLOT 7-39: CELLULAR WCDMA CONDUCTED SPURIOUS LOW CHANNEL



PLOT 7-40: CELLULAR WCDMA CONDUCTED SPURIOUS HIGH CHANNEL



PLOT 7-41: CELLULAR WCDMA CONDUCTED SPURIOUS HIGH CHANNEL



PLOT 7-42: CELLULAR WCDMA CONDUCTED SPURIOUS HIGH CHANNEL

Frequency range of measurement per Part 2.1057: 9kHz to 10 x Fc

Limits: Mask B (dBm): P(dBm) – (43+10xLOG P(W))

The following channels (in MHz) were investigated: 824, 836.5, and 849 MHz. The worse case (unwanted emissions) channels are shown. The magnitude of emissions attenuated more than 20 dB below the FCC limit need not be recorded.

TABLE 7-1: CONDUCTED SPURIOUS EMISSIONS LOWER FREQUENCY – 824.0 MHZ

(824.0MHz); Conducted power = 3 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)
1648.0	-32.3	47.77	-17.8
2472.0	-59.7	47.77	-38.3
3296.0	-43.1	47.77	-26.6
4120.0	-74.8	47.77	-57.8
4944.0	-64.9	47.77	-49.3
5768.0	-78.7	47.77	-54.3
6592.0	119.07	47.77	-71.3
7416.0	119.57	47.77	-71.8
8240.0	120.07	47.77	-72.3

TABLE 7-2: CONDUCTED SPURIOUS EMISSIONS MIDDLE FREQUENCY – 836.5 MHZ

(836.5MHz); Conducted power = 3 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)
1673.0	84.1	47.77	-36.4
2509.5	78.2	47.77	-30.4
3346.0	82.3	47.77	-34.5
4182.5	134.1	47.77	-86.3
5019.0	111.5	47.77	-63.7
5855.5	119.0	47.77	-71.2
6692.0	118.47	47.77	-70.7
7528.5	119.97	47.77	-72.2
8365.0	120.17	47.77	-72.4

TABLE 7-3: CONDUCTED SPURIOUS EMISSIONS UPPER FREQUENCY – 849.0 MHZ

(849.0MHz); Conducted power = 3 W

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)
1698.0	79.0	47.77	-31.2
2547.0	84.2	47.77	-36.4
3396.0	80.8	47.77	-33.0
4245.0	126.6	47.77	-78.8
5094.0	133.5	47.77	-85.7
5943.0	129.0	47.77	-81.2
6792.0	118.67	47.77	-70.9
7641.0	118.97	47.77	-71.2
8490.0	119.67	47.77	-71.9

TEST PERSONNEL:

DANIEL BALTZELL		SEPTEMBER 9, 2002
Test Engineer	Signature	Date Of Test

7.3 TEST EQUIPMENT

TABLE 7-4: TEST EQUIPMENT USED FOR TESTING (CONDUCTED SPURIOUS EMISSIONS)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900889	Hewlett Packard	85685A	RF Preselector for HP 8566B or 8568B (20Hz-2GHz)	3146A01309	11/21/03
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	5/10/03
900917	Hewlett Packard	8648C	Signal Generator, 100 KHz - 3200 MHz	3537A01741	4/19/03
900024	Amplifier Research	100W1000M1	Amplifier, 100 Watt, (80-1000 MHz)	14491	N/A
N/A	Agilent	E4438C	Signal Generator	MY42080012	03/29/03
N/A	Agilent	E4440A	Spectrum Analyzer	US40420959	09/27/03

8 FCC RULES AND REGULATIONS PART 2.1053 (A): FIELD STRENGTH OF SPURIOUS RADIATION

8.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, section 2.2.12

Substitution Method:

The EUT was setup at an antenna-to-EUT distance of 3 meters on an open area test site. The EUT was placed on a nonconductive turntable 1.0 meter above the ground plane.

The physical arrangement of the EUT was varied through three orthogonal planes in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters in order to determine the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations.

The worst-case maximum radiated emission was recorded and used as a reference for the measurement.

The EUT was then replaced by a ½ wave dipole antenna and polarized in accordance with the EUT's antenna polarization. The ½ wave dipole antenna was connected to an RF signal generator with a coaxial cable.

The search antenna height and search antenna polarity was set to levels that produced the maximum reading. The signal generator was adjusted to a level that produced the radiated emission level

The signal generator level was recorded and corrected by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal ½ wave dipole antenna. The signal generator corrected level is the spurious radiation emission level.

The transmitter is terminated with a 50 Ω load and interfaced with a spectrum analyzer.

Analog Modulation: The transmitter is modulated with a 2,500 Hz sine wave at an input level 16 dB greater than that required to produce 50% of the rated system deviation at 1000 Hz.

Digital Modulation: Modulated to its maximum extent using a pseudo random data sequence

8.2 TEST DATA

Frequency range of measurement per Part 2.1057: 9kHz to 10 x Fc

Limits: Mask B (dBm): P(dBm) – (43+10xLOG P(W))

The magnitude of emissions attenuated more than 20 dB below the FCC limit need not be recorded.

TABLE 8-1: RADIATED SPURIOUS EMISSIONS MIDDLE FREQUENCY – 836.5 MHZ

Frequency (MHz)	Signal Generator (dBm)	Cable Loss (dB)	Antenna Gain (dBd)	Corrected Signal Generator (dBc)	Limit (dBc)	Margin (dB)
1673.0	-29.5	0.5	4.7	60.1	47.77	-12.3
2509.5	-42.7	0.6	5.2	72.9	47.77	-25.1
3346.0	-31.3	0.8	6.0	60.8	47.77	-13.1
4182.5	-60.1	0.9	6.3	89.5	47.77	-41.7
5019.0	-54.3	1.0	6.9	83.1	47.77	-35.4
5855.5	-61.7	1.4	6.6	91.3	47.77	-43.5
6692.0	-83.9	1.5	7.8	112.37	47.77	-64.6
7528.5	-84.2	1.4	7.6	112.77	47.77	-65.0
8365.0	-84.9	1.4	8.4	112.67	47.77	-64.9

8.3 TEST EQUIPMENT

TABLE 8-2: TEST EQUIPMENT USED FOR TESTING (FIELD STRENGTH OF SPURIOUS RADIATION)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900791	Schaffner-Chase	CBL6112	Antenna (25MHz – 2GHz)	2099	08/23/03
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1-26.5 GHz)	3008A00505	N/A
900917	Hewlett Packard	8648C	Synthesized. Signal Generator (9 KHz to 3200 MHz)	3537A01741	04/19/03
900928	Hewlett Packard	83752A	Synthesized Sweeper, (0.01 to 20 GHz)	3610A00866	06/19/03
900889	Hewlett Packard	85685A	RF Preselector for HP 8566B or 8568B (20Hz-2GHz)	3146A01309	11/21/03
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	5/10/03
900154	Compliance Design Inc,	Roberts Dipole	Adjustable Elements Dipole Antenna (30-1000MHz)	N/A	8/17/03
901218	EMCO	3301B	Horn Antenna (18-26 GHz)	960281-003	7/30/04
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	N/A
900323	EMCO	3160-07	Horn Antenna, (8.2-12.4 GHz)	9605-1054	N/A
900321	EMCO	3161-03	Horn Antenna, (4.0-8.2 GHz)	9508-1020	N/A
900917	Hewlett Packard	8648C	Signal Generator, (100 KHz - 3200 MHz)	3537A01741	4/19/03
900024	Amplifier Research	100W1000M1	Amplifier, 100 Watt, (80-1000 MHz)	14491	N/A

TEST PERSONNEL:

DANIEL BALTZELL — Test Engineer

Signature

SEPTEMBER 9, 2002 — Date Of Test

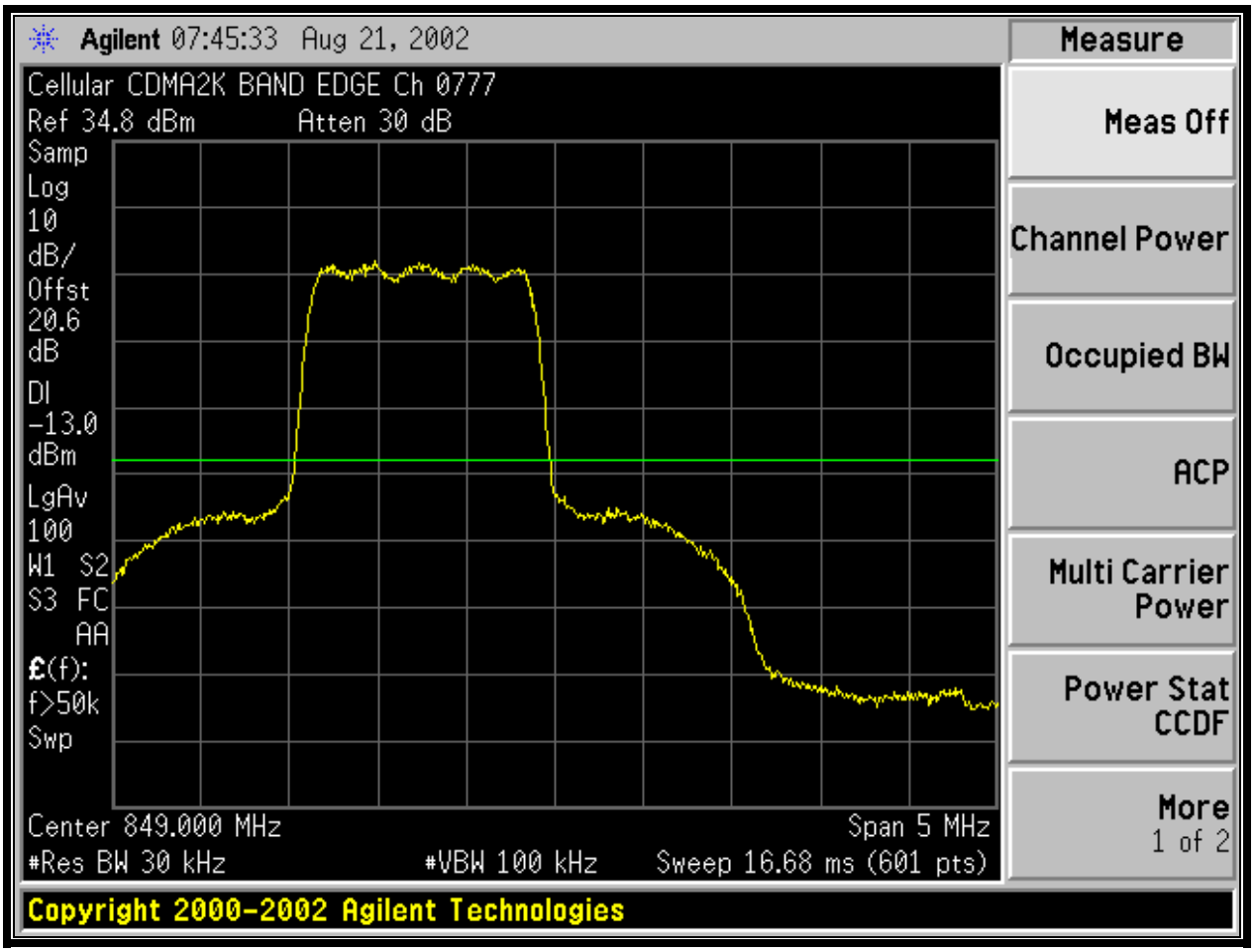
9 FCC RULES AND REGULATIONS PART 22.901(D): BAND-EDGE COMPLIANCE

9.1 TEST PROCEDURE

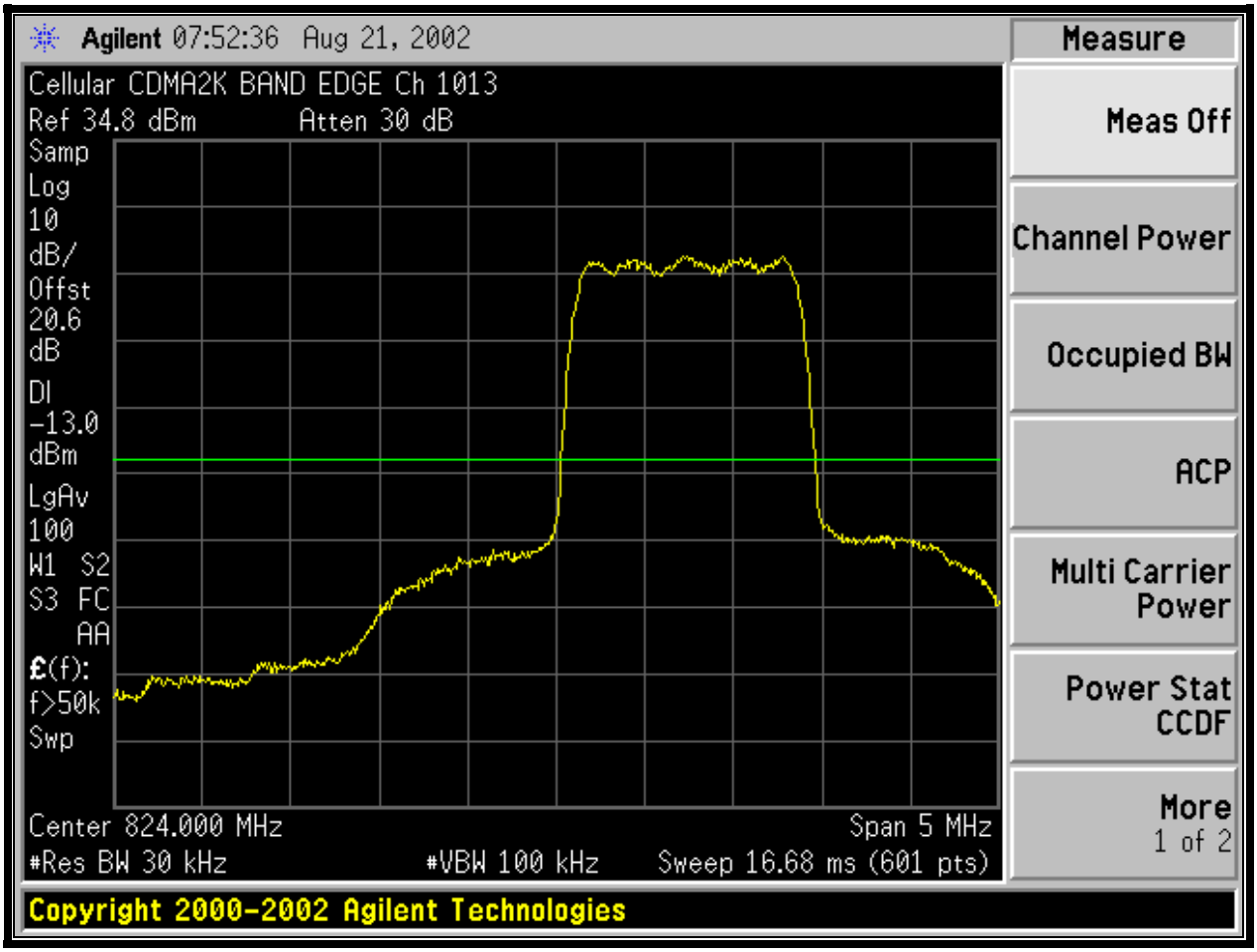
Compliance with the band edges was performed using the FCC's "Radiated Measurement at a Band Edge" guidance document.

9.2 TEST DATA

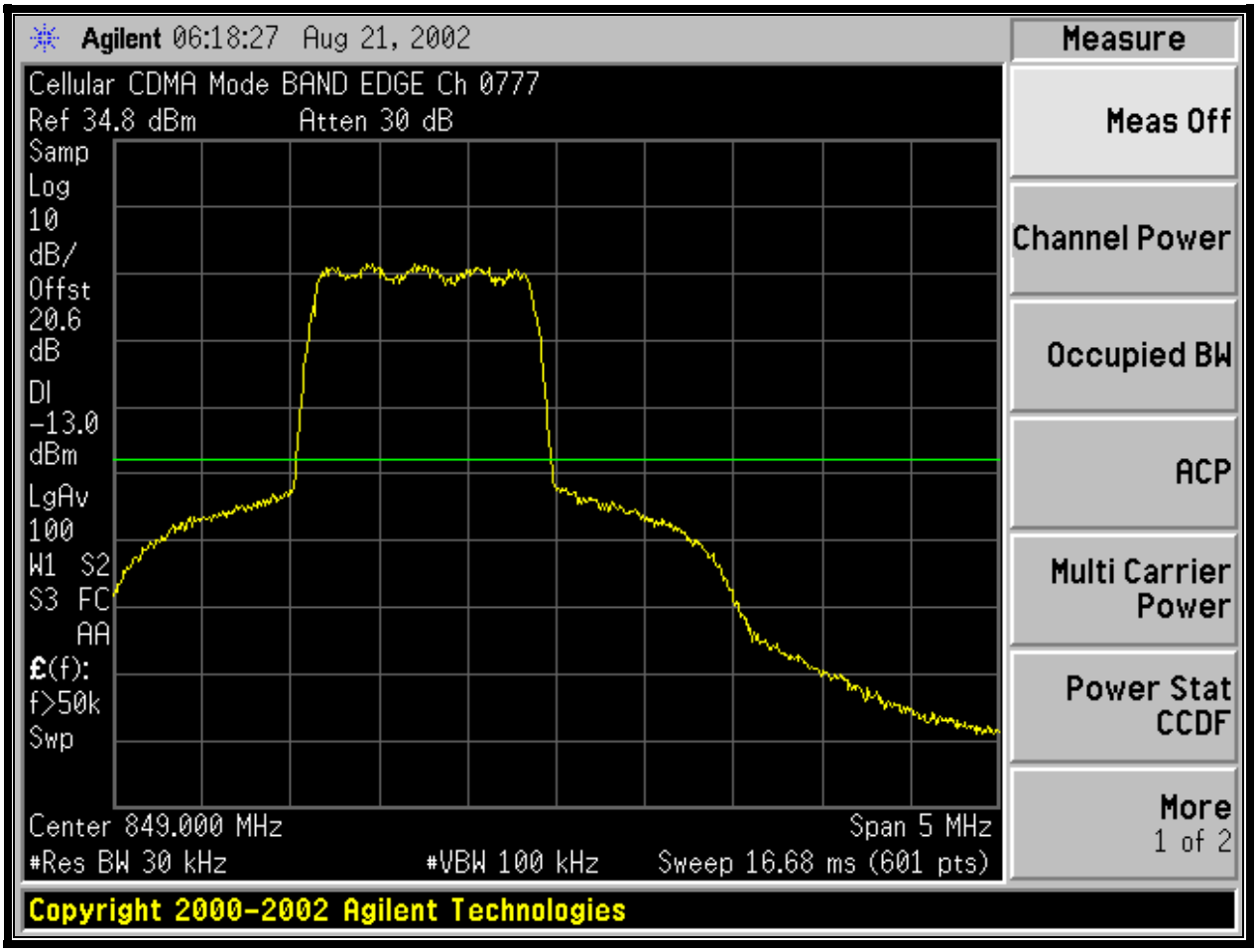
The following plots were made using radiated measurements. The center frequency of the spectrum analyzer display was set to 824MHz for the lower band-edge and 849MHz for the upper band-edge.



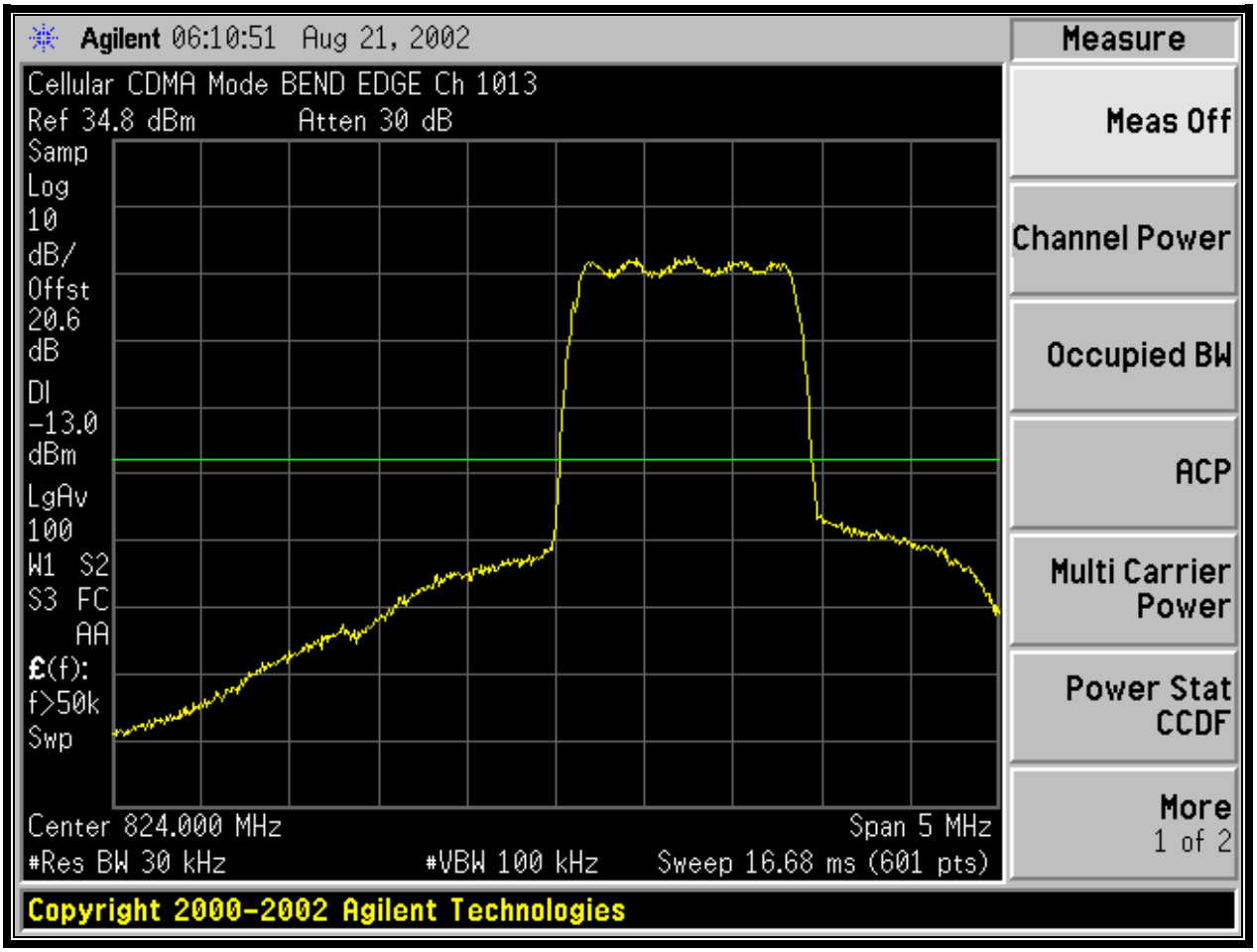
PLOT 9-1: CDMA2000 UPPER BAND EDGE



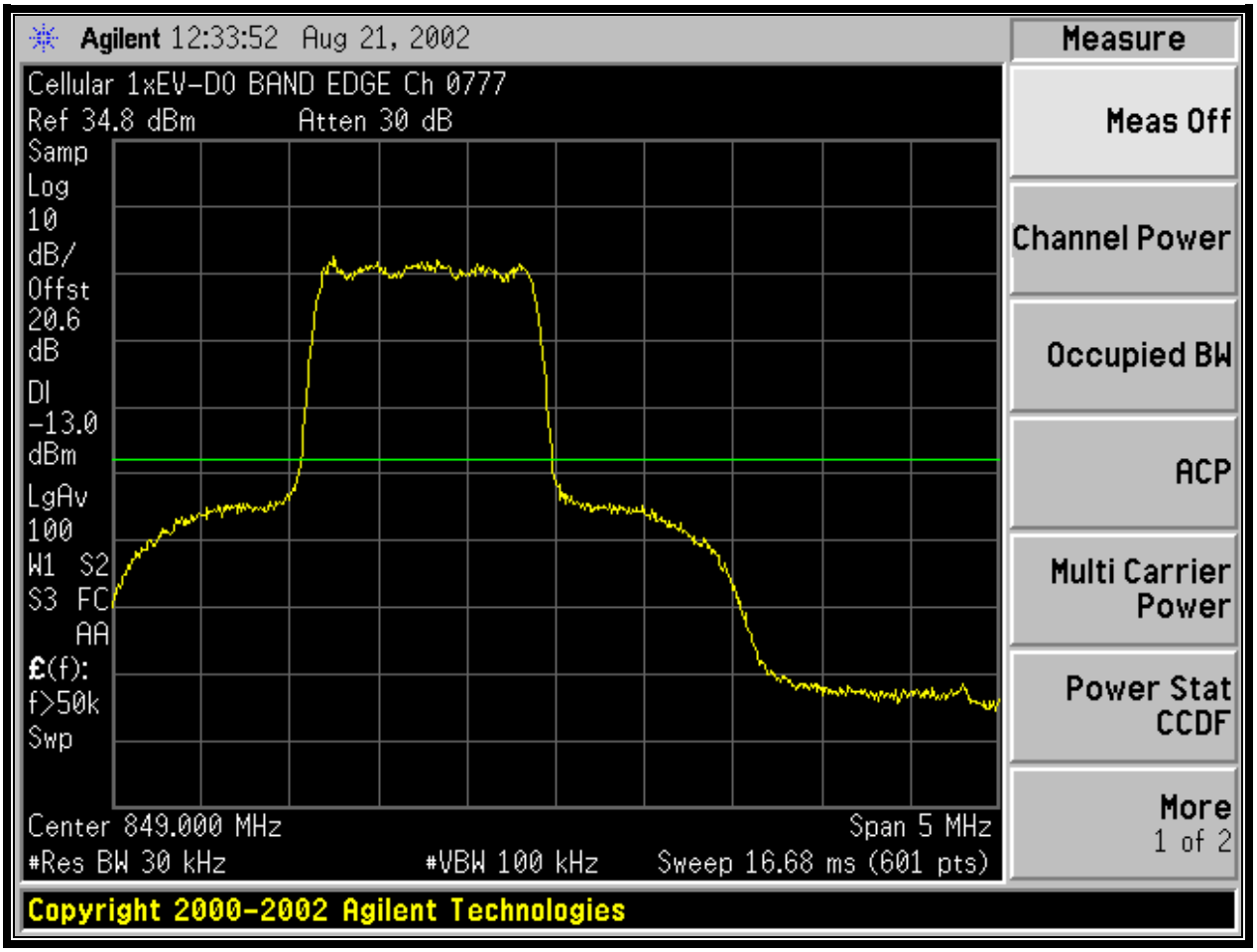
PLOT 9-2: CDMA2000 LOWER BAND EDGE



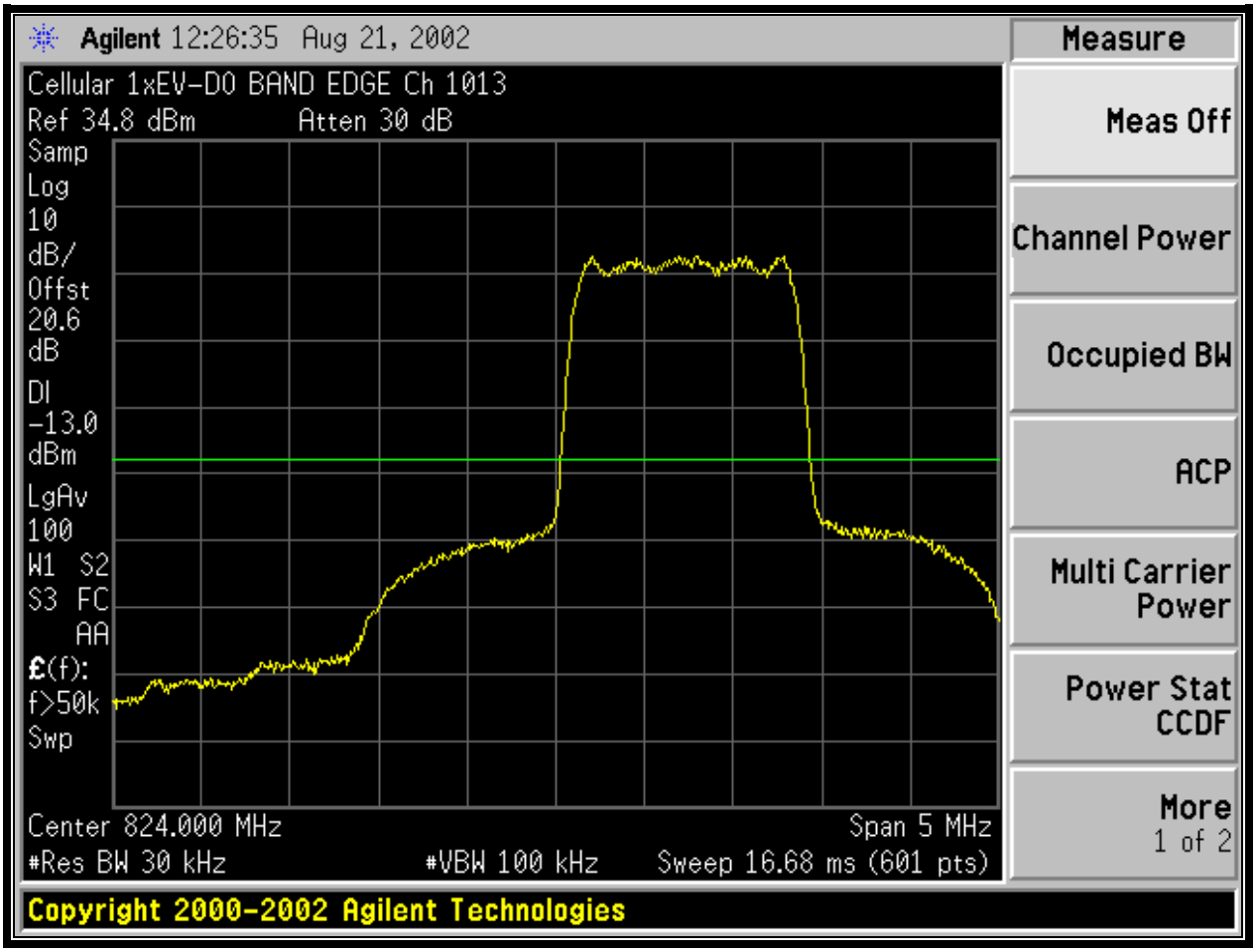
PLOT 9-3: CDMA UPPER BAND EDGE



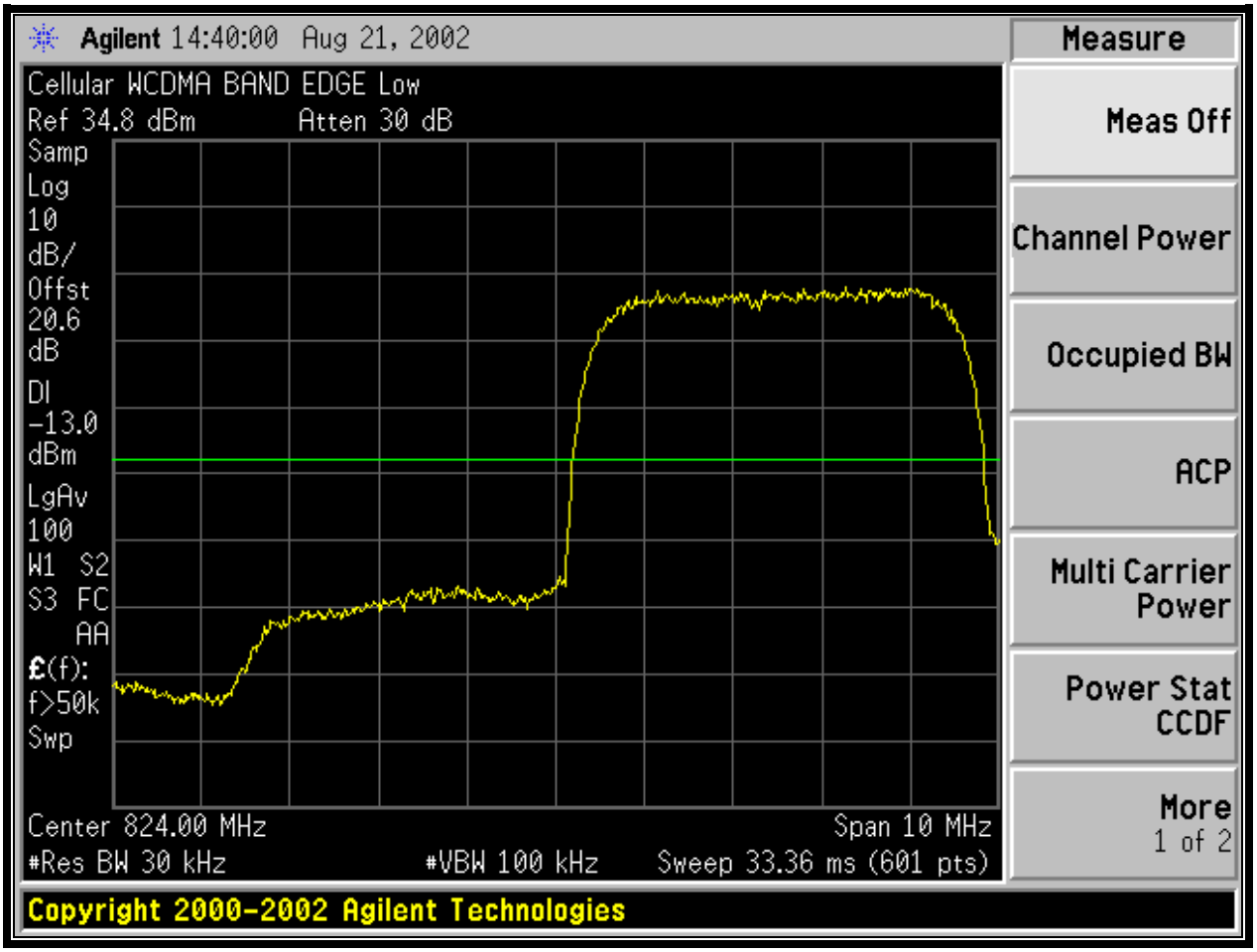
PLOT 9-4: CDMA LOWER BAND EDGE



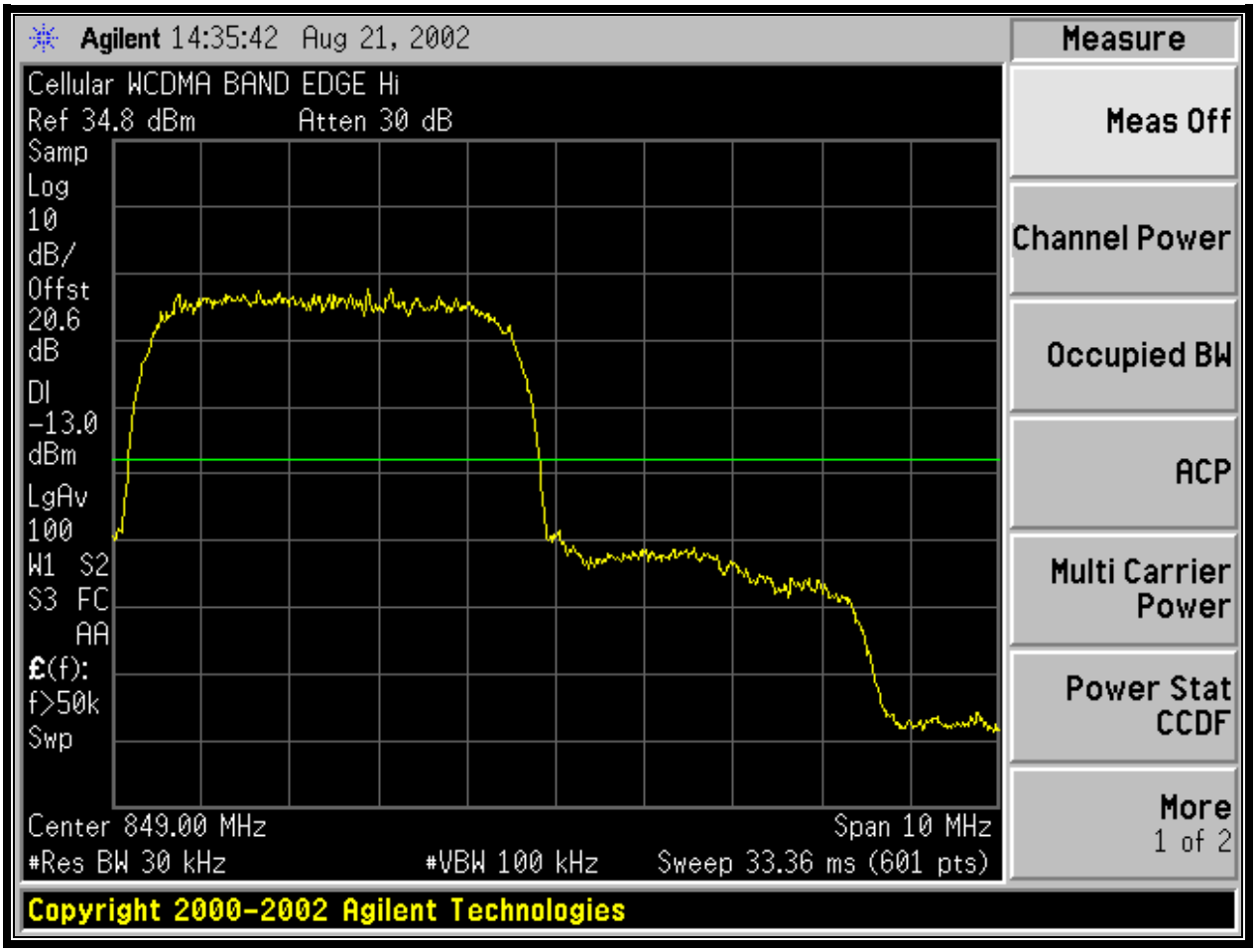
PLOT 9-5: 1XEV-DO UPPER BAND EDGE



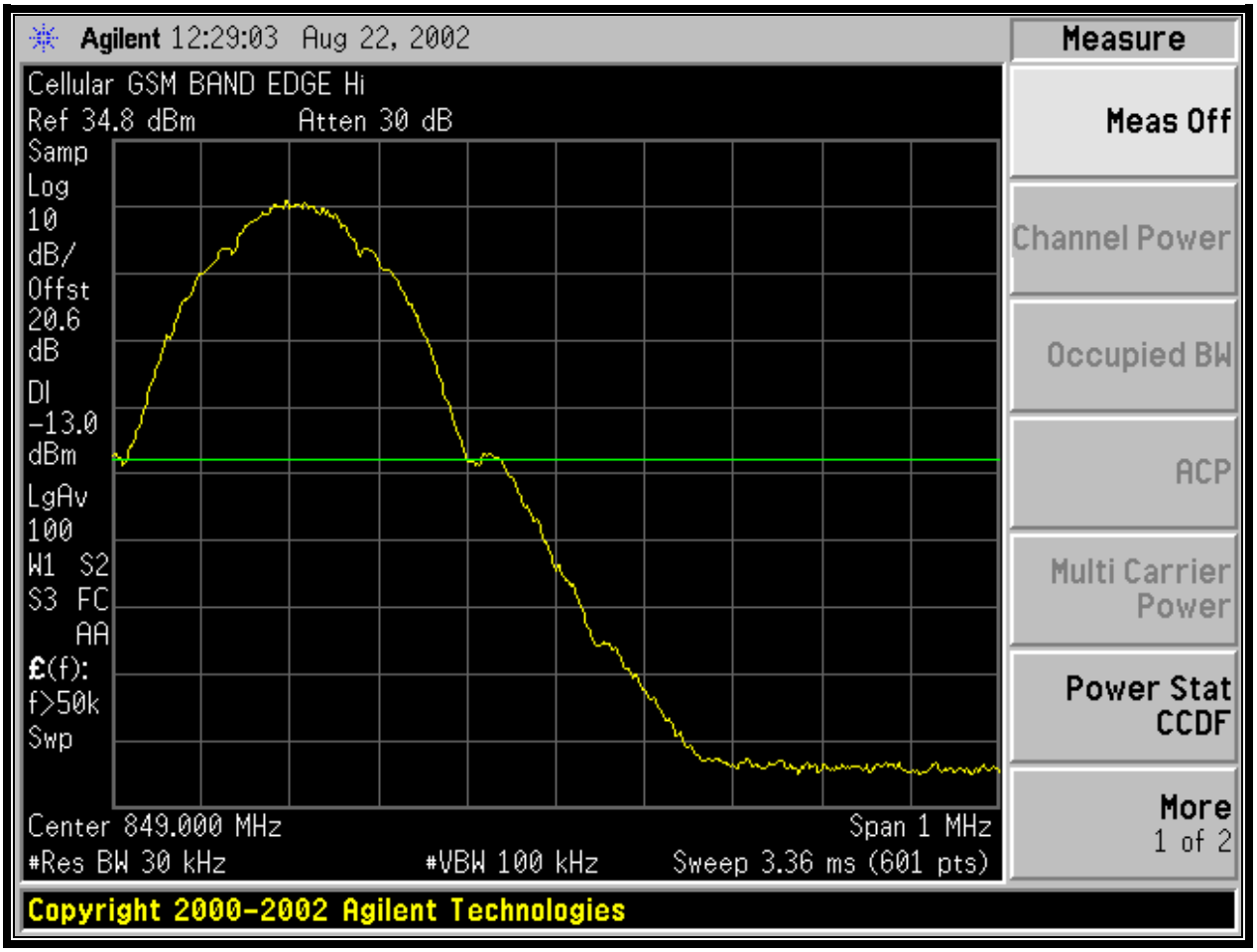
PLOT 9-6: 1XEV-DO LOWER BAND EDGE



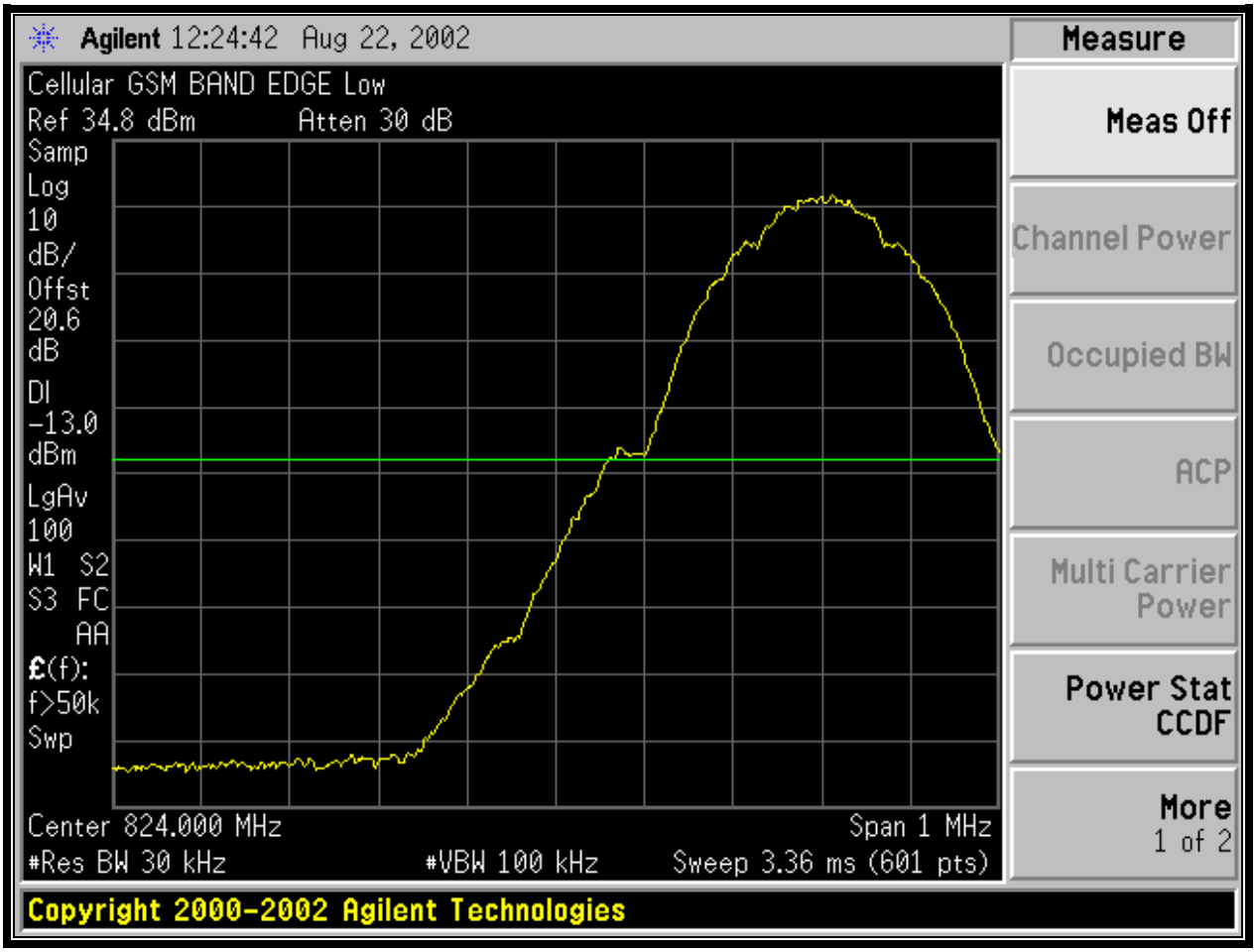
PLOT 9-7: WCDMA LOWER BAND EDGE



PLOT 9-8: WCDMA UPPER BAND EDGE



PLOT 9-9: GSM UPPER BAND EDGE



PLOT 9-10: GSM LOWER BAND EDGE

TEST PERSONNEL:

DANIEL BALTZELL		SEPTEMBER 9, 2002
Test Engineer	Signature	Date Of Test

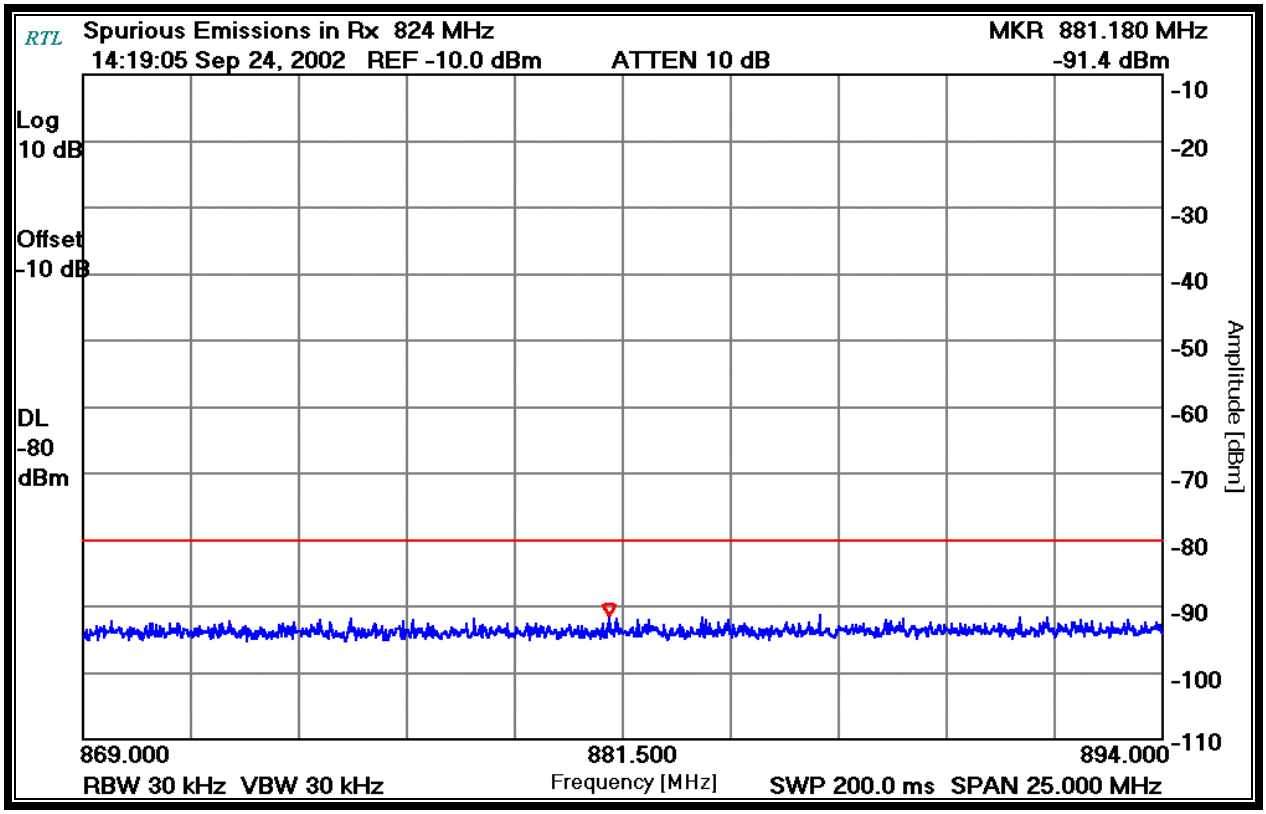
9.3 TEST EQUIPMENT

TABLE 9-1: TEST EQUIPMENT USED FOR TESTING (OCCUPIED BANDWIDTH)

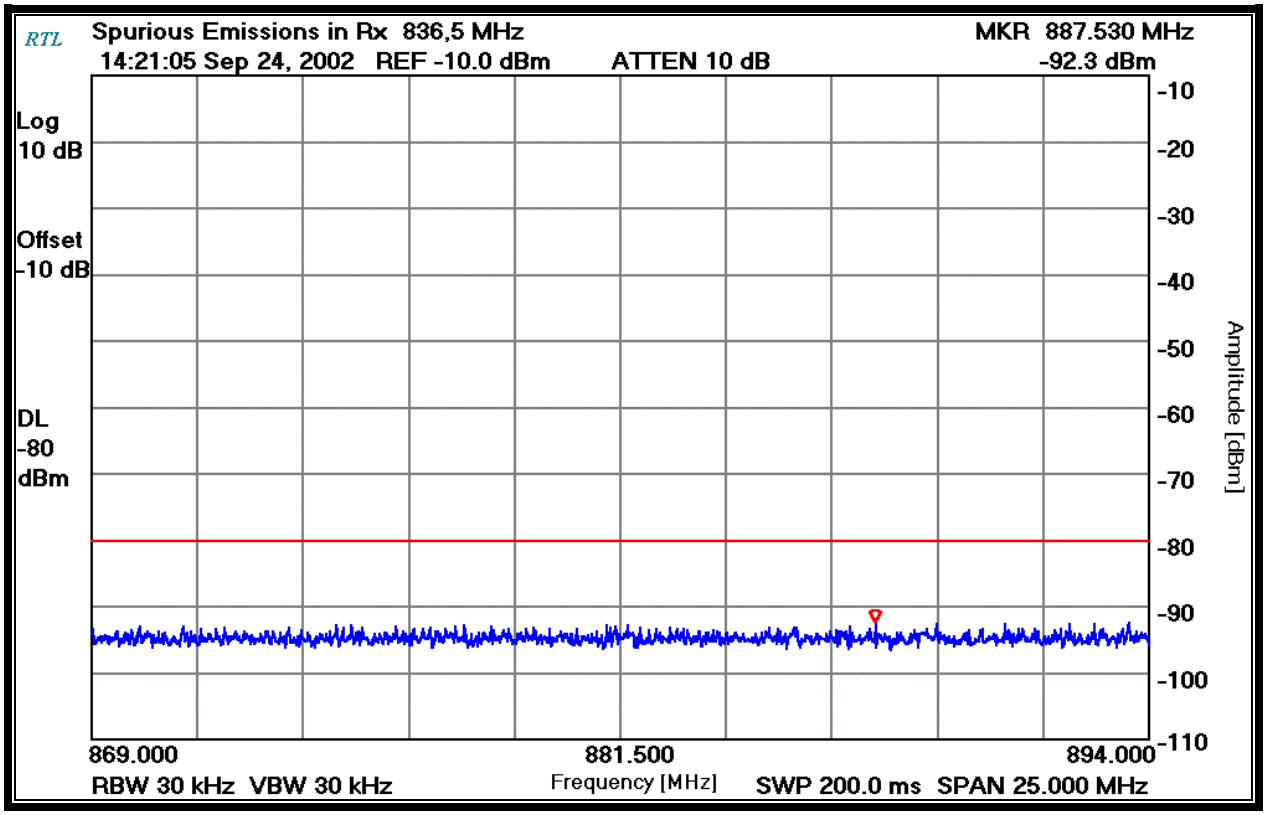
RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
N/A	Agilent	E4438C	Signal Generator	MY42080012	03/29/03
N/A	Agilent	E4440A	Spectrum Analyzer	US40420959	09/27/02

10 FCC RULES AND REGULATIONS PART 22.917(F): EMISSIONS IN BASE STATION FREQUENCY BAND FROM MOBILES

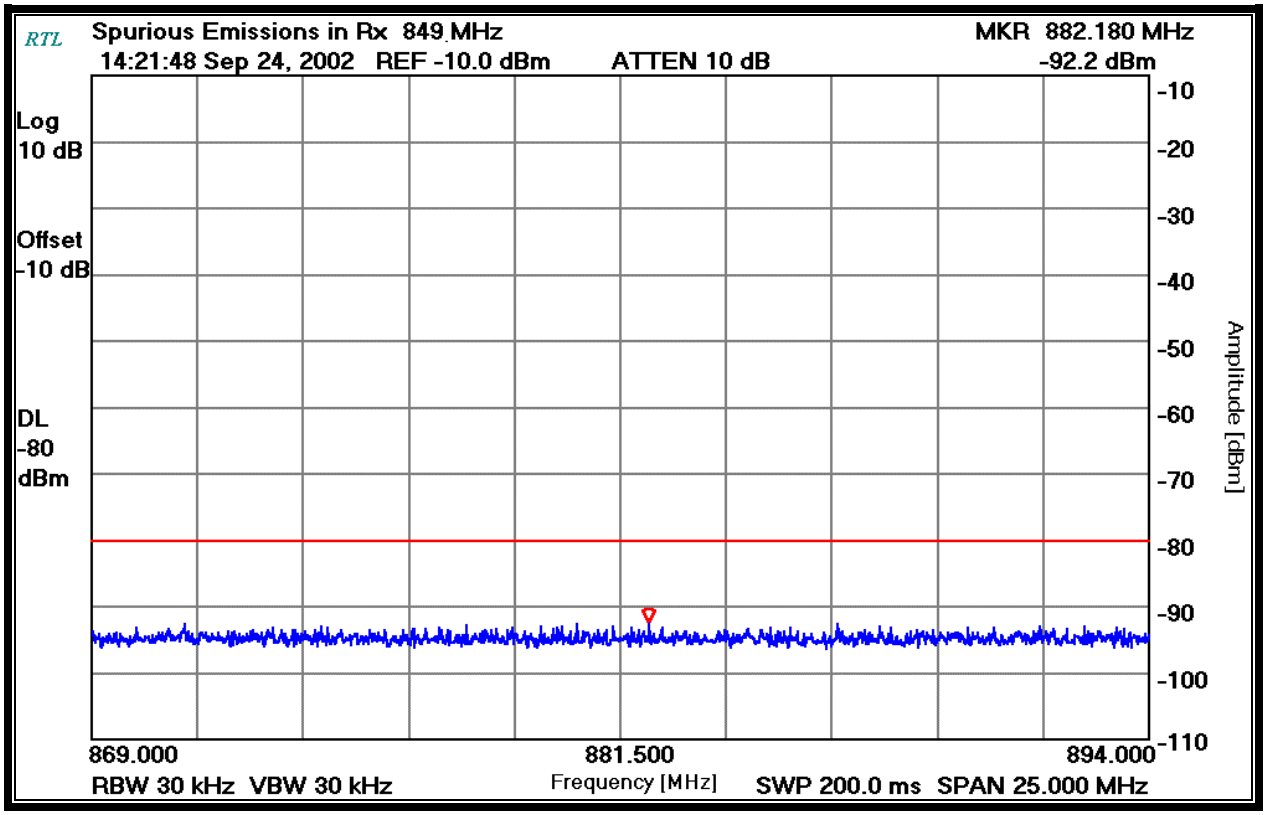
10.1 TEST DATA



PLOT 10-1: SPURIOUS TRANSMISSION IN MOBILE BAND; 824 MHZ



PLOT 10-2: SPURIOUS TRANSMISSION IN MOBILE BAND; 836.5 MHZ



PLOT 10-3: SPURIOUS TRANSMISSION IN MOBILE BAND; 849 MHZ

TEST PERSONNEL:

DANIEL BALTZELL		SEPTEMBER 24, 2002
Test Engineer	Signature	Date Of Test

10.2 TEST EQUIPMENT

TABLE 10-1: TEST EQUIPMENT USED FOR TESTING (RF POWER OUTPUT - CONDUCTED)

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900889	Hewlett Packard	85685A	RF Preselector for HP 8566B or 8568B (20Hz-2GHz)	3146A01309	11/21/03
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	5/10/03
900917	Hewlett Packard	8648C	Signal Generator, (100 KHz - 3200 MHz	3537A01741	4/19/03
900024	Amplifier Research	100W1000M1	Amplifier, 100 Watt, (80-1000 MHz)	14491	

11 CONCLUSION

The data in this measurement report shows that the MCT, Inc. 3W Mobile Amplifier, FCC ID: OW5BST800, complies with all the requirements of Part 22 of the FCC Rules and Industry Canada RSS-118.