

FCC PART 22H
MEASUREMENT AND TEST REPORT

For

Cellphone-Mate, Inc.

43116 Christy Street, Fremont CA 94538, USA

FCC ID: RSNCM800-70-75-80
Model: CM800 70 dB

Product Type: ☒ Original Report		Product Type: Bidirectional Cellular Amplifier
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Report Number:	R0804223-22	
Report Date:	2008-05-06	
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1 GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

The *Cellphone-Mate, Inc.* product, FCC ID: **RSNCM800-70-75-80** or the "EUT" as referred to in this report is a dual-band cellular bidirectional amplifier that employs GSM and Code Division Multiple Access (CDMA) modulation to transmit at cellular service (800 MHz).

1.2 Mechanical Description

The EUT Approximate measurement is: *160mm (L) x 98 mm (W) x 55 mm (H)*. It is of metallic construction.

** The test data gathered are from typical production sample, serial number: CM080118-04048, provided by the manufacturer.*

1.3 EUT Photo



Please see additional photos in Exhibit C

1.4 Objective

This type approval report is prepared on behalf of *Cellphone-mate, Inc.* in accordance with Part 2, Subpart J, Part 22 Subpart H, of the Federal Communication Commissions (FCC) rules.

The objective is to determine compliance with FCC rules for RF output power, modulation characteristic, occupied bandwidth, spurious emissions at antenna terminal, field strength of spurious radiation, frequency stability, band edge, and conducted and radiated margin.

1.5 Related Submittal(s)/Grant(s)

No Related Submittals

1.6 Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 22 Subpart H - Public Mobile Services

Applicable Standards: TIA EIA 98-C, TIA/EIA603-C, ANSI C63.4-2003.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.7 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the values ranging from +2.0 dB for Conducted Emissions tests and +4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL Corp.

Detailed instrumentation measurement uncertainties can be found in BACL Corp. report QAP-018.

1.8 Test Facility

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

The test sites at BACL have been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission, Industry Canada, and Voluntary Control Council for Interference has the reports on file and is listed under FCC registration number: 90464, IC registration number: 3062A, and VCCI Registration Number: C-2463 and R-2698. The test site has been approved by the FCC, IC, and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm>

2 SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was configured for testing according to TIA/EIA-603-C.

The final qualification test was performed with the EUT operating at normal mode.

2.2 EUT Exercise Software

NA, signal was sent through EUT using a signal generator, device was set to normal operating mode.

2.3 Equipment Modifications

No modifications were made to the EUT.

2.4 Power Supply and Line Filters

Manufacturer	Description	Model	Serial Number
Oriental Hero ELE. FTY	AC/DC Switch Adapter	0H-1048A0904000U-U	0752

2.5 Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Midwest Microwave	10dB attenuator pad	ATT-0263-10-000-02	N/A

2.6 Interface Ports and Cabling

Cable Description	Length (M)	From	To
RF cable	0.2	Signal Generator	Input/ EUT
RF cable	0.2	Output/ EUT	Spectrum analyzer

3 SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§ 2.1047	Modulation Characteristics	N/A
§ 2.1053	Field Strength of Spurious Radiation	Compliant
§2.1091	RF Exposure	Compliant
§ 2.1046, § 22.912 (d)	RF Output Power	Compliant
§ 2.1049 § 22.917 § 22.905	Out of Band Emissions, Occupied Bandwidth	Compliant
§ 2.1051, § 22.917	Spurious Emissions at Antenna Terminals	Compliant
§ 22.917	Band Edge	Compliant

4 §2.1047 - MODULATION CHARACTERISTIC

4.1 Applicable Standard

According to FCC § 2.1047(d) and part 22H, there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

4.2 Test Result

N/A

5 §1.1307(b) (1) & §2.1091 - RF EXPOSURE

5.1 Applicable Standard

According to §1.1310 and §2.1091 (Mobile Devices) RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

5.2 MPE Prediction

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

CDMA

Uplink:

Maximum peak output power at antenna input terminal (dBm): 22.07

Maximum peak output power at antenna input terminal (mW): 161.06

Prediction distance (cm): 25

Prediction frequency (MHz): 836.4

Antenna Gain, typical (dBi): 9

Maximum Antenna Gain (numeric): 7.943

Power density at predication frequency and distance (mW/cm²): 0.163

MPE limit for uncontrolled exposure at predication frequency (mW/cm²): 0.5576

Downlink:

Maximum peak output power at antenna input terminal (dBm):	<u>22.84</u>
Maximum peak output power at antenna input terminal (mW):	<u>192.31</u>
Prediction distance (cm):	<u>25</u>
Prediction frequency (MHz):	<u>881.4</u>
Antenna Gain, typical (dBi):	<u>9</u>
Maximum Antenna Gain (numeric):	<u>7.943</u>
Power density at predication frequency and distance (mW/cm ²):	<u>0.195</u>
MPE limit for uncontrolled exposure at predication frequency (mW/cm ²):	<u>0.5876</u>

GSM**Uplink:**

Maximum peak output power at antenna input terminal (dBm):	<u>26.38</u>
Maximum peak output power at antenna input terminal (mW):	<u>434.51</u>
Prediction distance (cm):	<u>25</u>
Prediction frequency (MHz):	<u>824.2</u>
Antenna Gain, typical (dBi):	<u>9</u>
Maximum Antenna Gain (numeric):	<u>7.943</u>
Power density at predication frequency and distance (mW/cm ²):	<u>0.440</u>
MPE limit for uncontrolled exposure at predication frequency (mW/cm ²):	<u>0.5576</u>

Downlink:

Maximum peak output power at antenna input terminal (dBm):	<u>26.85</u>
Maximum peak output power at antenna input terminal (mW):	<u>484.17</u>
Prediction distance (cm):	<u>25</u>
Prediction frequency (MHz):	<u>893.8</u>
Antenna Gain, typical (dBi):	<u>9</u>
Maximum Antenna Gain (numeric):	<u>7.943</u>
Power density at predication frequency and distance (mW/cm ²):	<u>0.490</u>
MPE limit for uncontrolled exposure at predication frequency (mW/cm ²):	<u>0.5877</u>

5.3 Test Result

The device is compliant with the requirement MPE limit for uncontrolled exposure at predication frequency 0.5877 mW/cm². The maximum power density at the distance of 25 cm was 0.490 mW/cm². Thus, the requirement of at least 25 cm required by the manufacturer is in compliance with the MPE requirement.

6 §2.1053, §22.917 - SPURIOUS RADIATED EMISSIONS

6.1 Applicable Standard

Requirements: CFR 47, § 2.1053, § 22.917.

6.2 Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = $10 \lg (\text{TXpwr in Watts}/0.001)$ – the absolute level

Spurious attenuation limit in dB = $43 + 10 \text{Log}_{10} (\text{power out in Watts})$

6.2.1 Environmental Conditions

Temperature:	20 °C
Relative Humidity:	55 %
ATM Pressure:	102.0 kPa

* The testing was performed by Xiao Ming Hu on 2008-04-25.

6.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Agilent	Analyzer, Spectrum	E4446A	US44300386	2007-04-26
HP	Amplifier, Pre	8447D	2944A10198	2007-12-19
HP	Amplifier, Pre, Microwave	8449B	3147A00400	2007-1102
A. H. Systems	Antenna, Horn, DRG	SAS-200/571	261	2007-06-07
HP	Generator, Signal	83650B	3614A00276	2007-05-08
A.R.A.	Antenna, Horn	DRG-118/A	1132	2007-06-18

* **Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

6.4 Test Results

Worst case reading as follows:

Mode: Downlink			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Input Frequency
-5.94	1890.83	Horizontal	881.4 MHz

Mode: Uplink			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Input Frequency
-20.64	1890.83	Vertical	836.4 MHz

6.5 Test Data

Downlink

Input frequency = 881.4MHz

Indicated		Azimuth Degrees	Test Antenna		Substituted					Limit (dBm)	Margin (dB)
Frequency (MHz)	Amp. (dBuV)		Height (m)	Polar (H/V)	Frequency (MHz)	Level (dBm)	Antenna Gain Correction	Cable Loss (dB)	Absolute Level (dBm)		
1890.83	62.93	280	1.5	H	1890.83	-26.3	8.50	1.14	-18.94	-13.0	-5.94
1890.83	61.30	270	1.6	V	1890.83	-27.4	8.50	1.14	-20.04	-13.0	-7.04
1762.321	60.83	92	1.4	V	1762.321	-36.4	9.00	1.07	-28.47	-13.0	-15.47
1762.321	57.44	91	1.4	H	1762.321	-41.2	9.00	1.07	-33.27	-13.0	-20.27

Uplink

Input frequency = 836.4 MHz

Indicated		Azimuth Degrees	Test Antenna		Substituted					Limit (dBm)	Margin (dB)
Frequency (MHz)	Amp. (dBuV)		Height (m)	Polar (H/V)	Frequency (MHz)	Level (dBm)	Antenna Gain Correction	Cable Loss (dB)	Absolute Level (dBm)		
1890.83	48.5	300	1.4	V	1890.83	-41.0	8.50	1.14	-33.64	-13	-20.64
1890.83	58.17	310	1.5	H	1890.83	-41.5	8.50	1.14	-34.14	-13	-21.14
1672.489	49.41	85	1.5	V	1672.489	-49.7	8.90	1.00	-41.80	-13	-28.80
1672.489	45.75	90	1.4	H	1672.489	-54.4	8.90	1.00	-46.50	-13	-33.50

7 §2.1046, §22.913(a) – RF OUTPUT POWER

7.1 Applicable Standard

According to FCC §2.1046 and §22.913 (a), output power is limited to 7 watts.

7.2 Test Procedure

Conducted:

The RF output of the transmitter was connected to the signal generator and the spectrum analyzer through sufficient attenuation.

7.3 Environmental Conditions

Temperature:	21 °C
Relative Humidity:	59 %
ATM Pressure:	101.8 kPa

** The testing was performed by Xiao Ming Hu on 2008-04-25.*

7.4 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Analyzer, Spectrum	E4446A	US44300386	2007-04-26

*** Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

7.5 Test Results

7.5.1 Conducted Power: CDMA

Forward (downlink)

Channel	Frequency (MHz)	Output Power in (dBm)	Limit in ERP (dBm)
Low	869.73	22.68	38.45
Middle	881.40	22.84	38.45
High	893.19	20.23	38.45

Reverse (uplink)

Channel	Frequency (MHz)	Output Power in (dBm)	Limit in ERP (dBm)
Low	824.73	20.50	38.45
Middle	836.40	22.07	38.45
High	848.19	20.57	38.45

7.5.2 Conducted Power: GSM

Forward (downlink)

Channel	Frequency (MHz)	Output Power in (dBm)	Limit in ERP (dBm)
Low	869.20	25.51	38.45
Middle	881.60	26.25	38.45
High	893.80	26.85	38.45

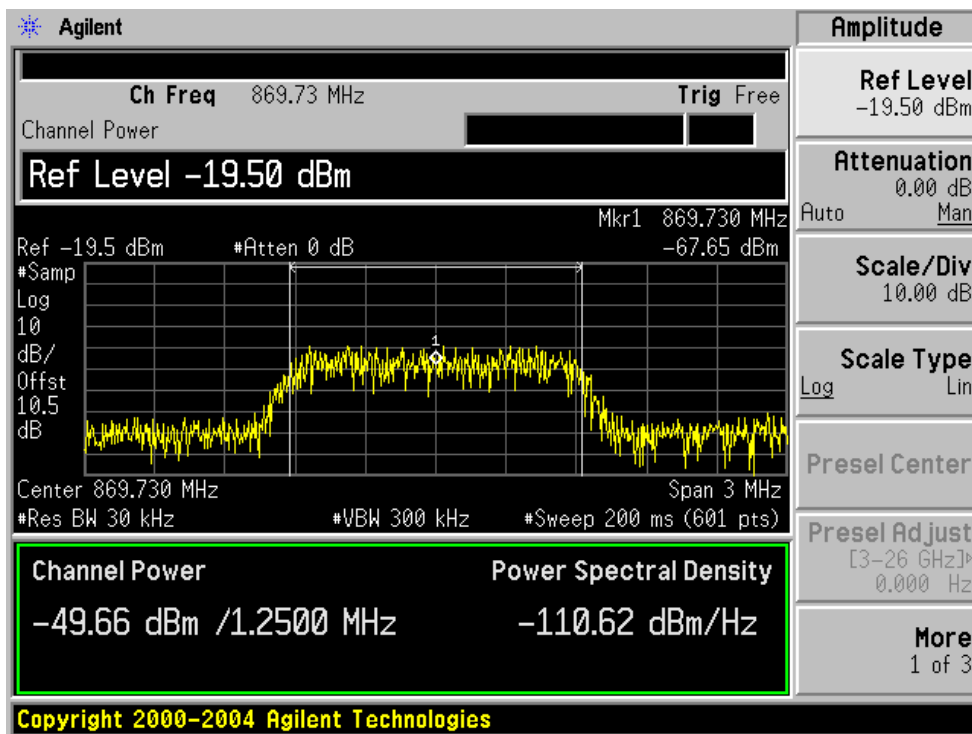
Reverse (uplink)

Channel	Frequency (MHz)	Output Power in (dBm)	Limit in ERP (dBm)
Low	824.20	26.38	38.45
Middle	836.60	26.21	38.45
High	848.80	25.39	38.45

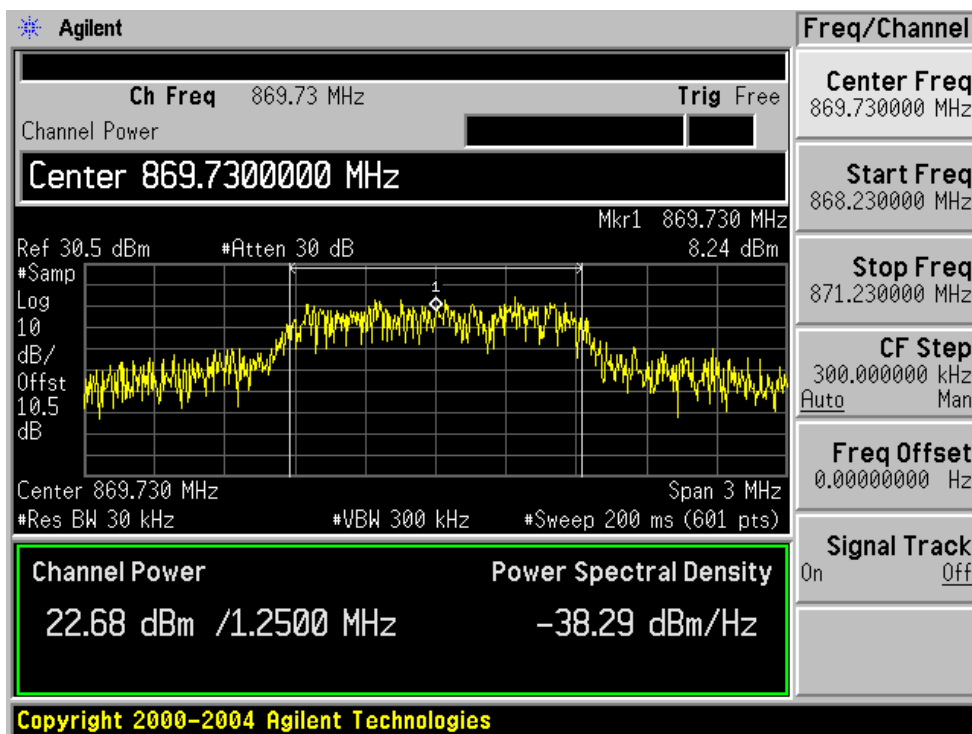
7.6 Test Data

7.6.1 CDMA: Forward (downlink): Low Channel

Input

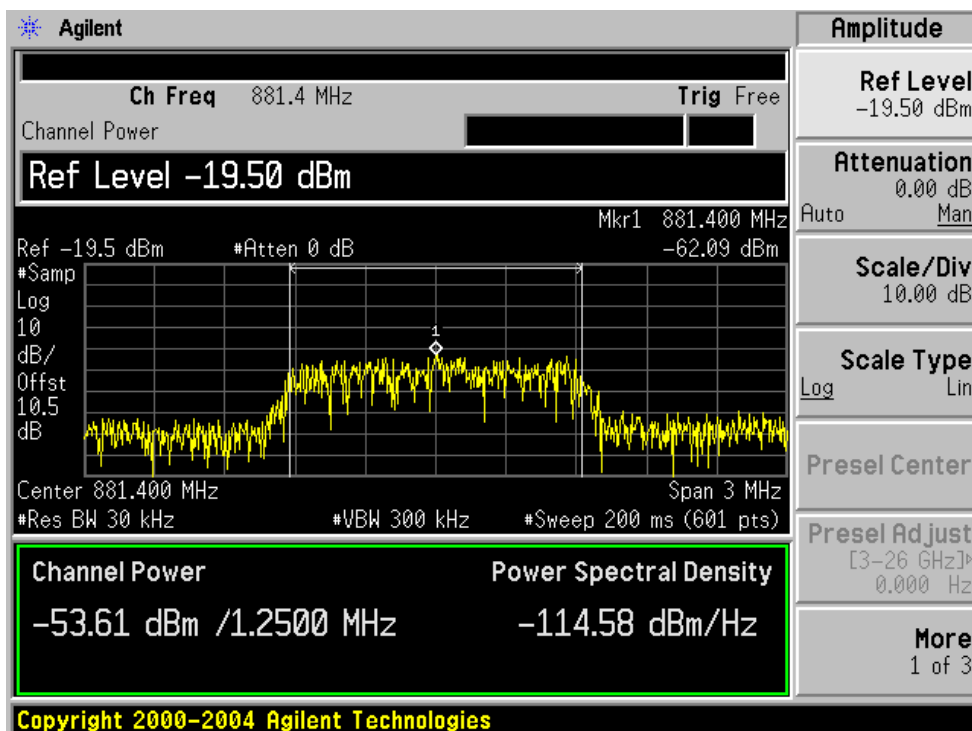


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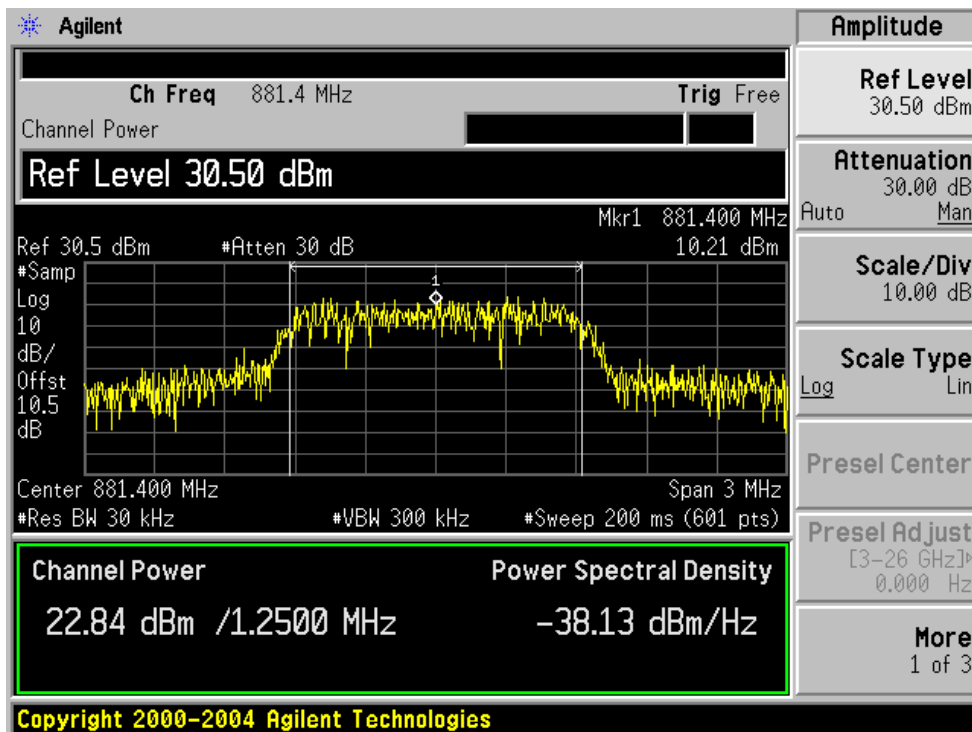


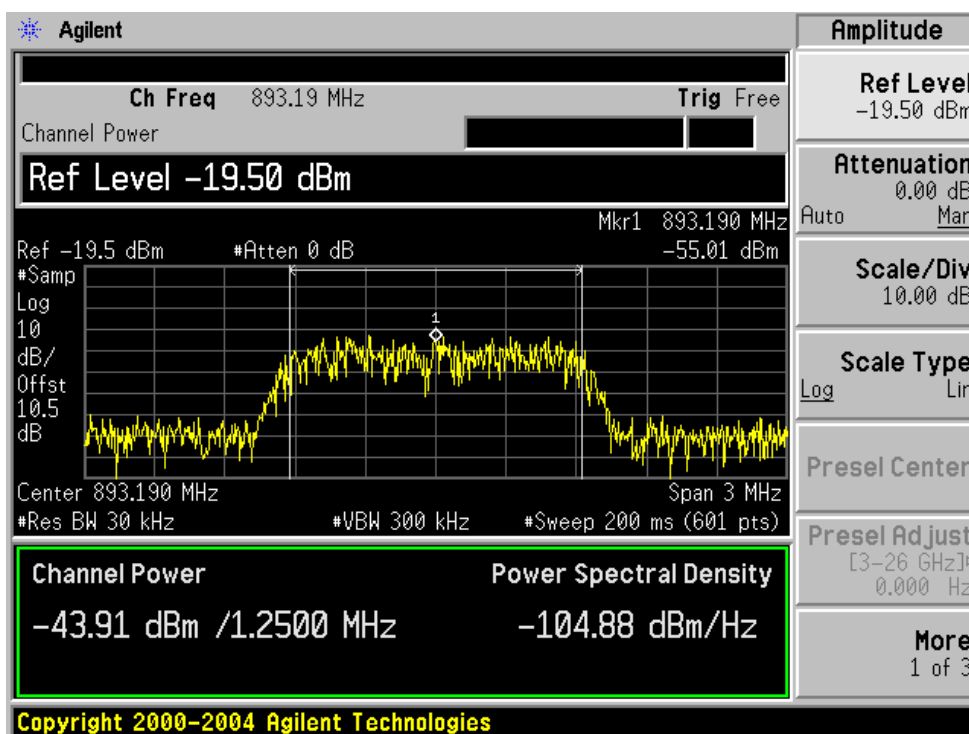
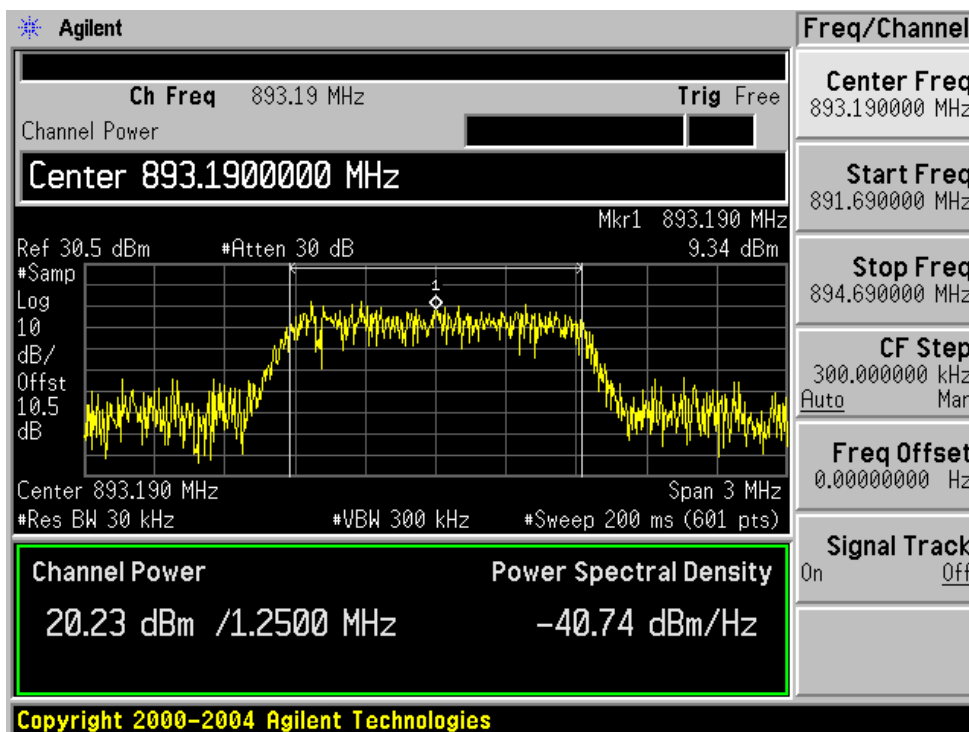
7.6.2 CDMA: Forward (downlink): Middle Channel

Input



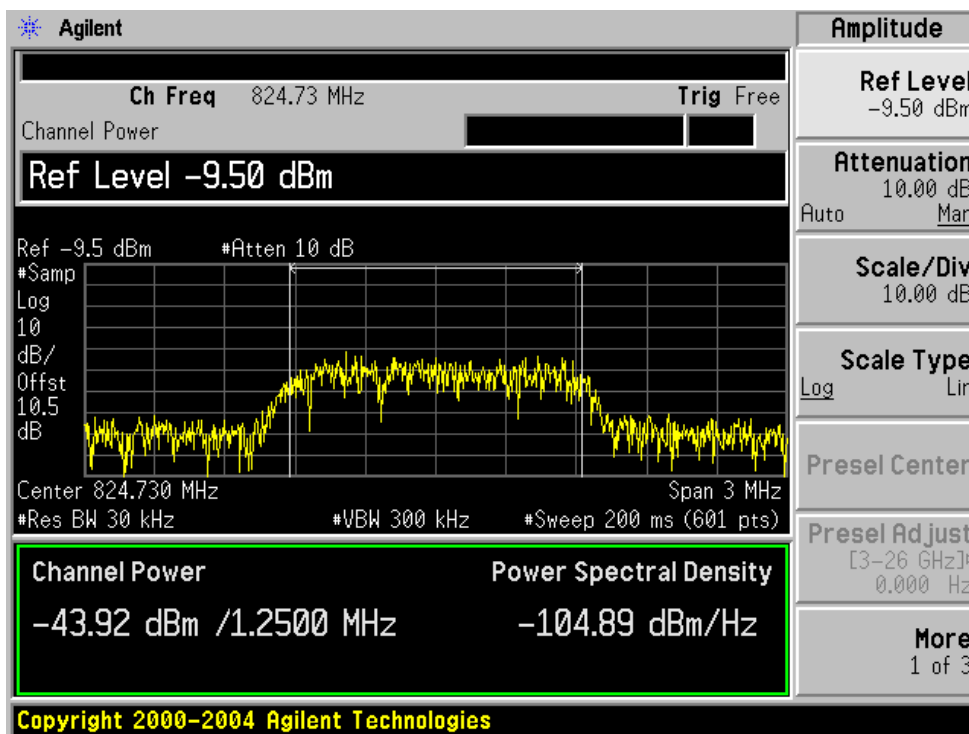
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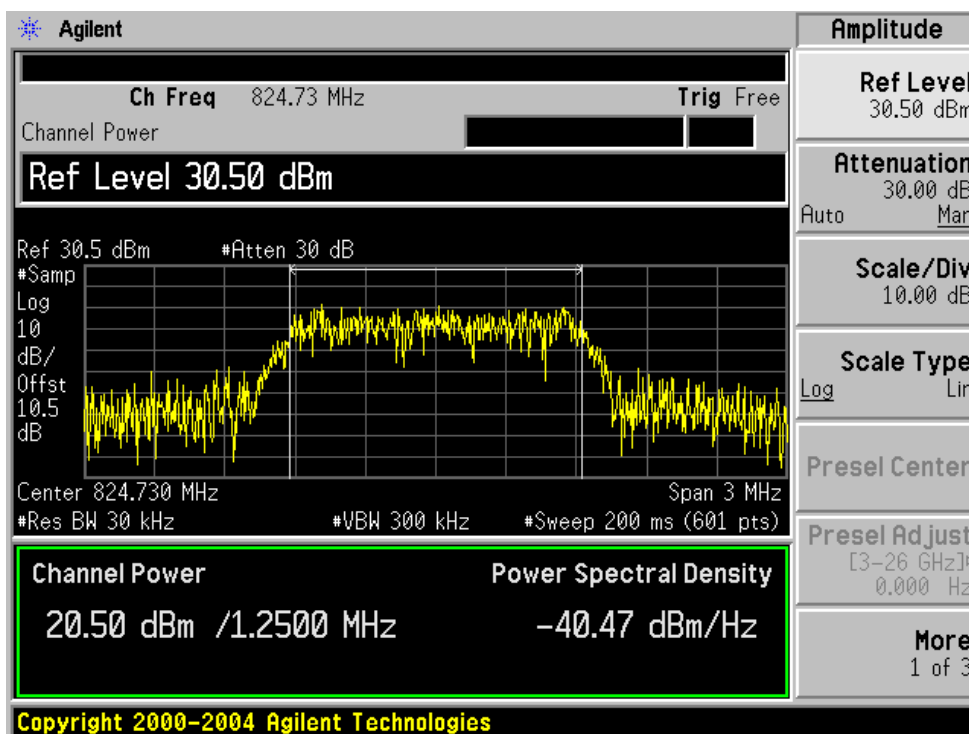
7.6.3 CDMA: Forward (downlink): High Channel**Input****Output**

7.6.4 CDMA: Reverse (uplink): Low Channel

Input

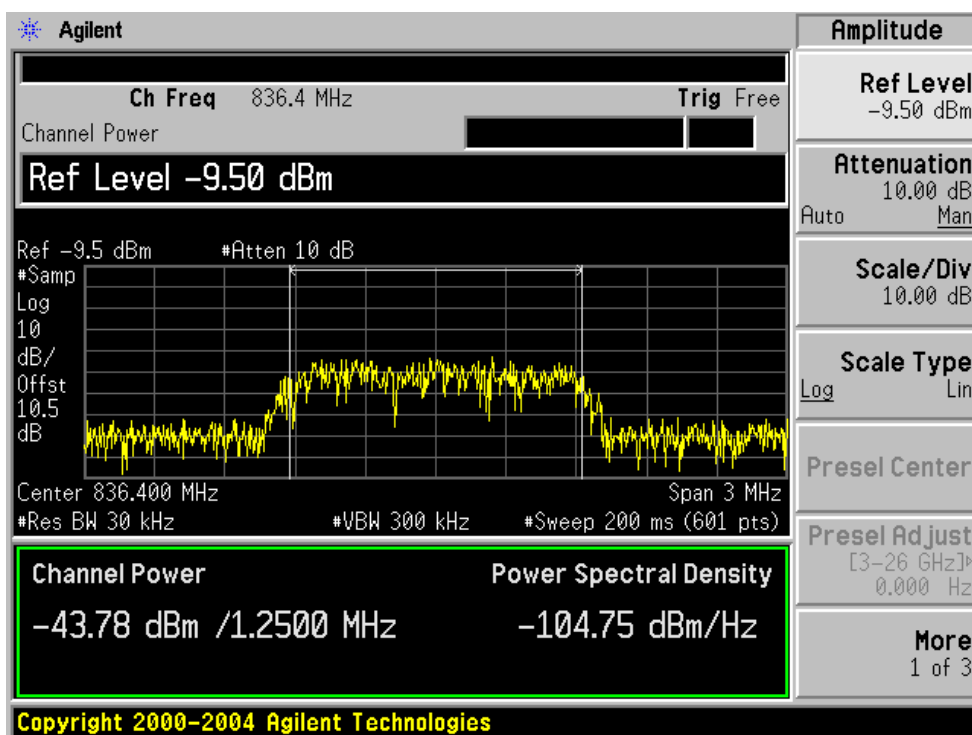


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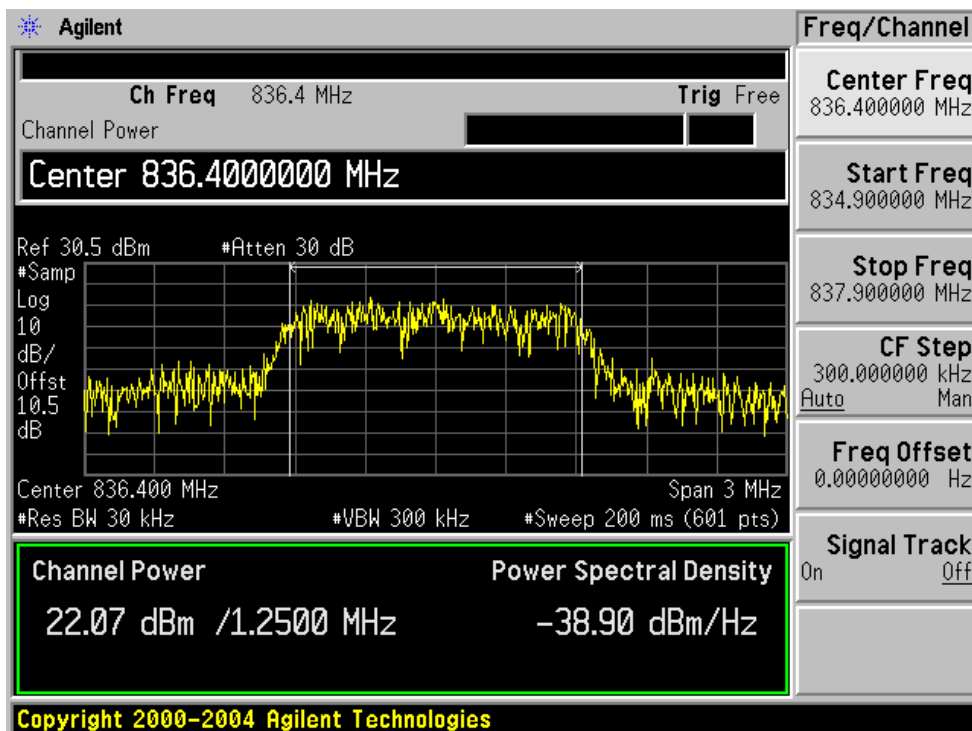


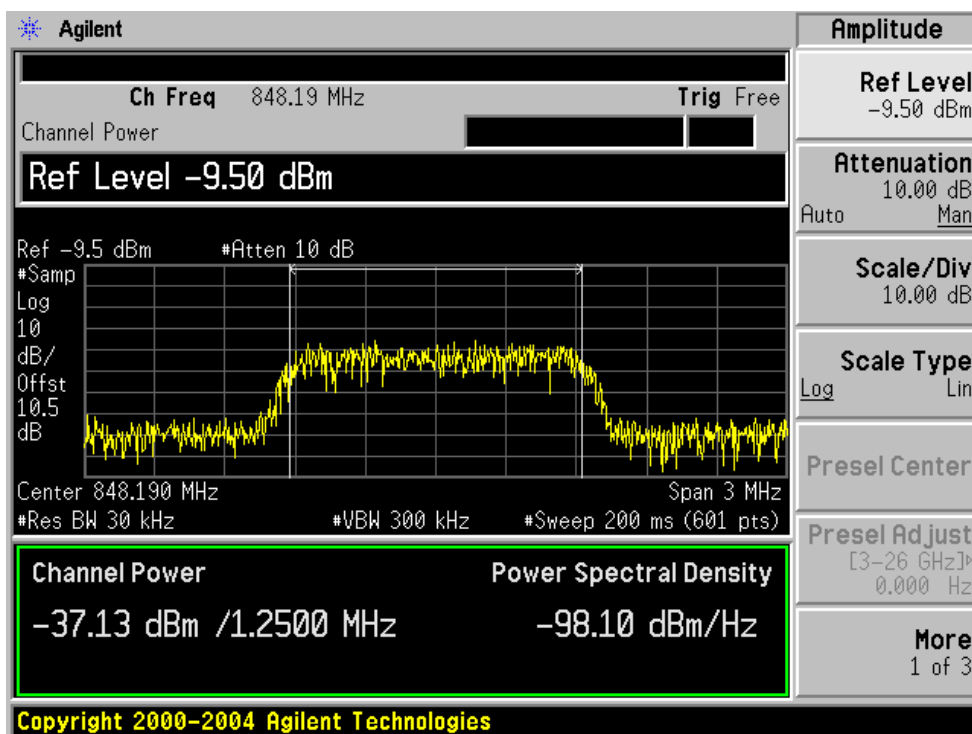
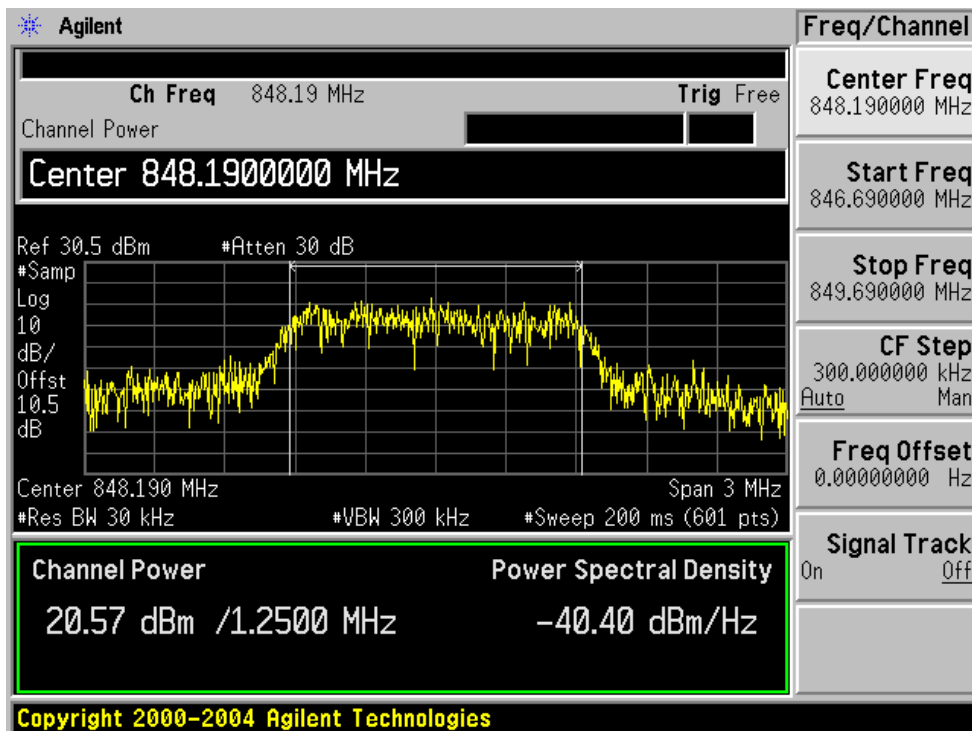
7.6.5 CDMA: Reverse (uplink): Middle Channel

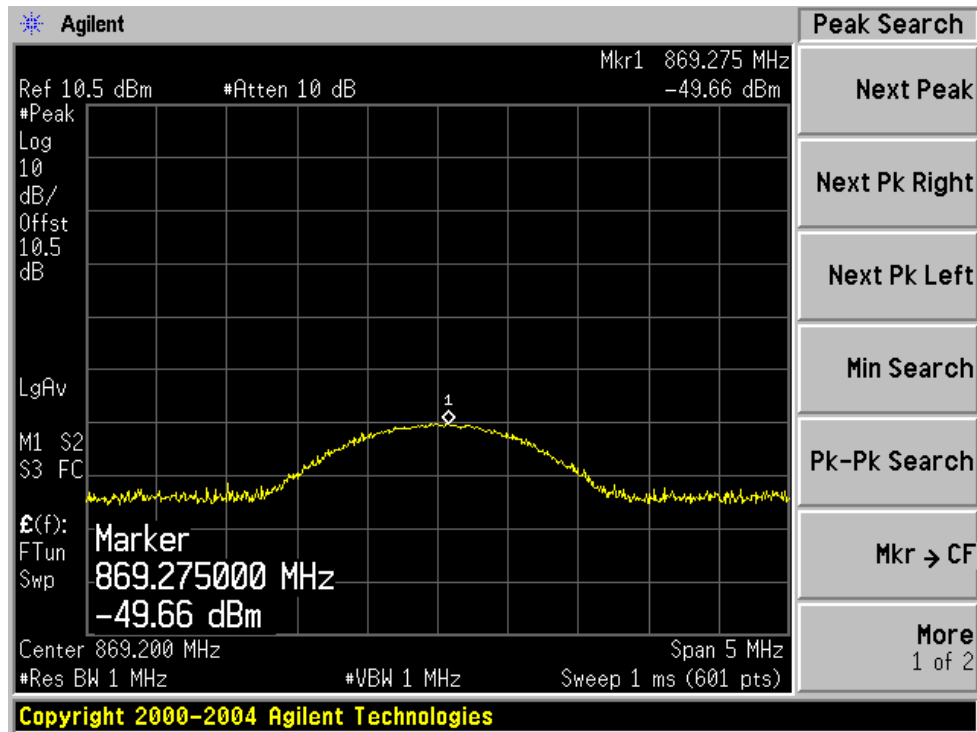
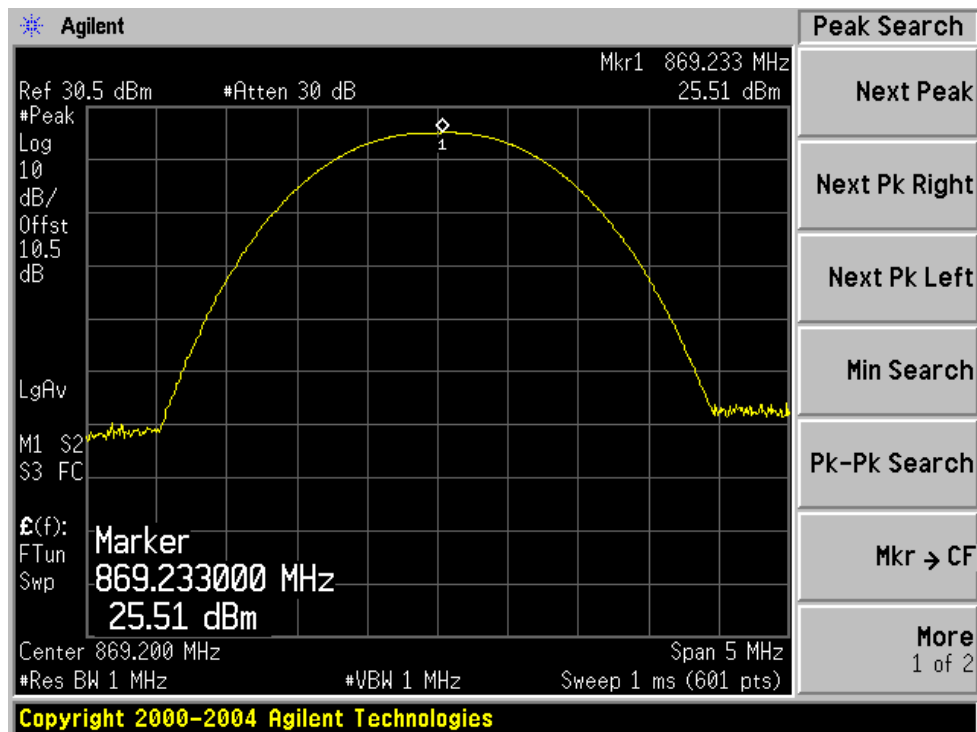
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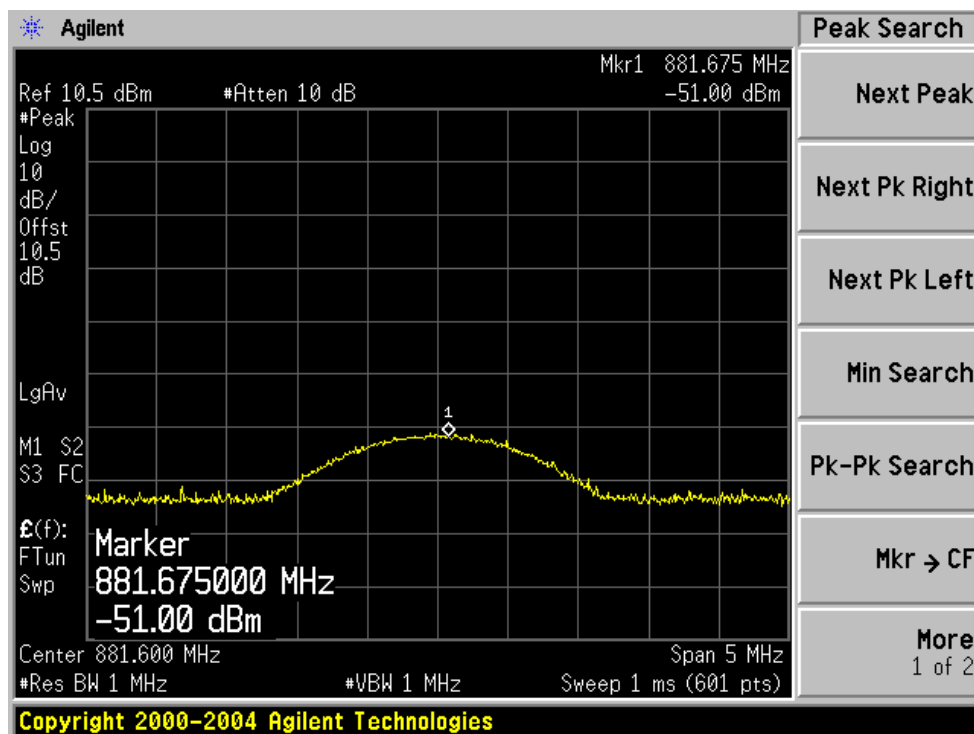
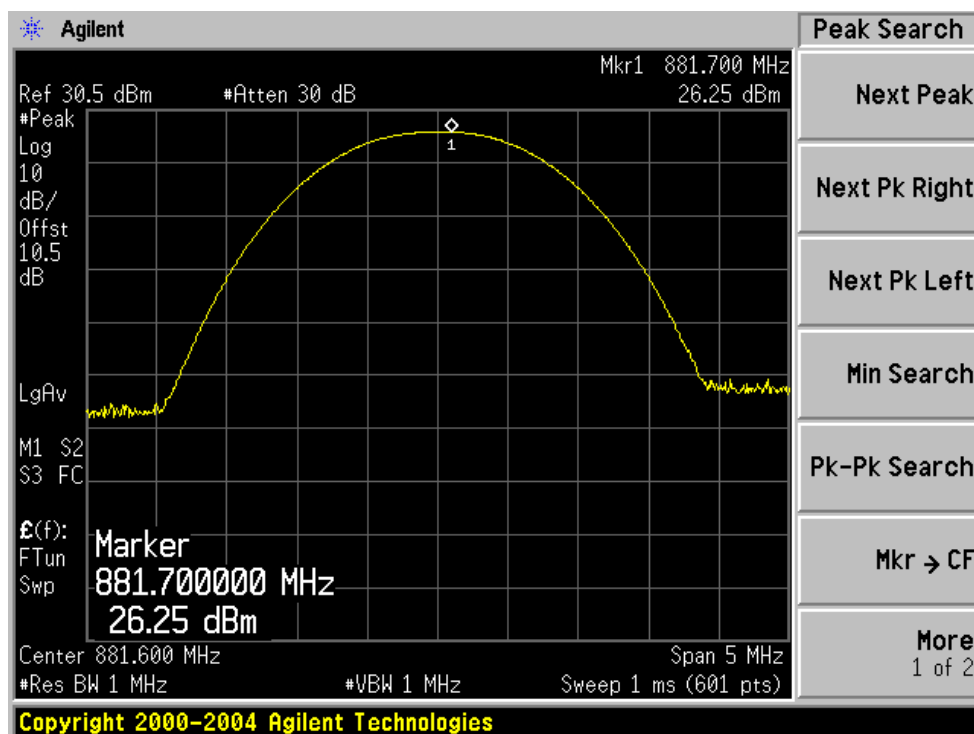


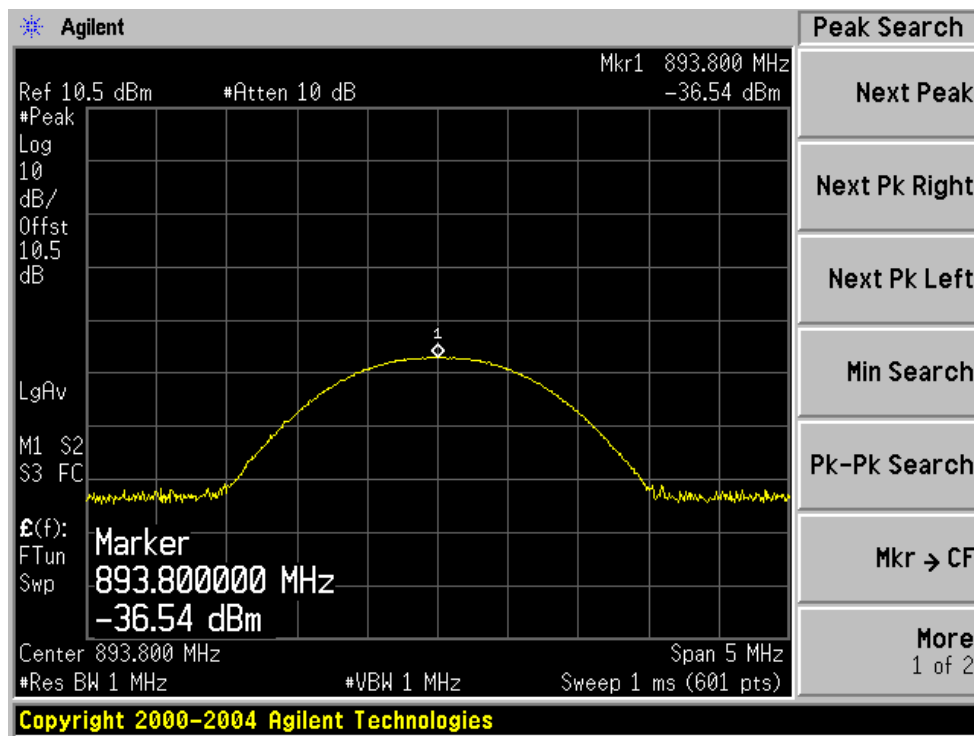
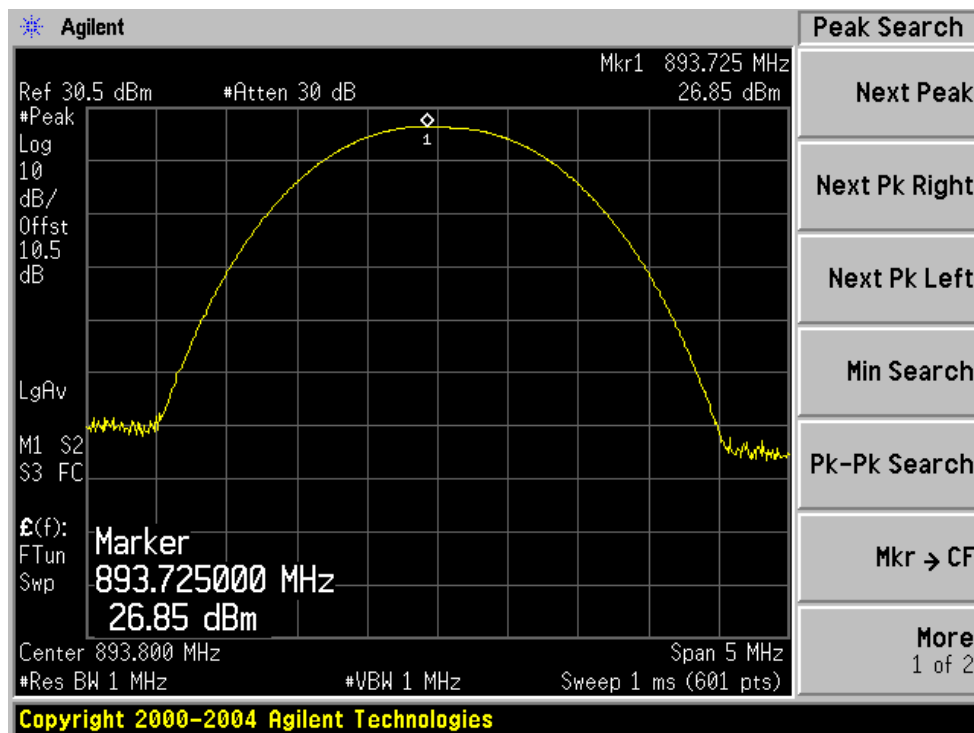
Output

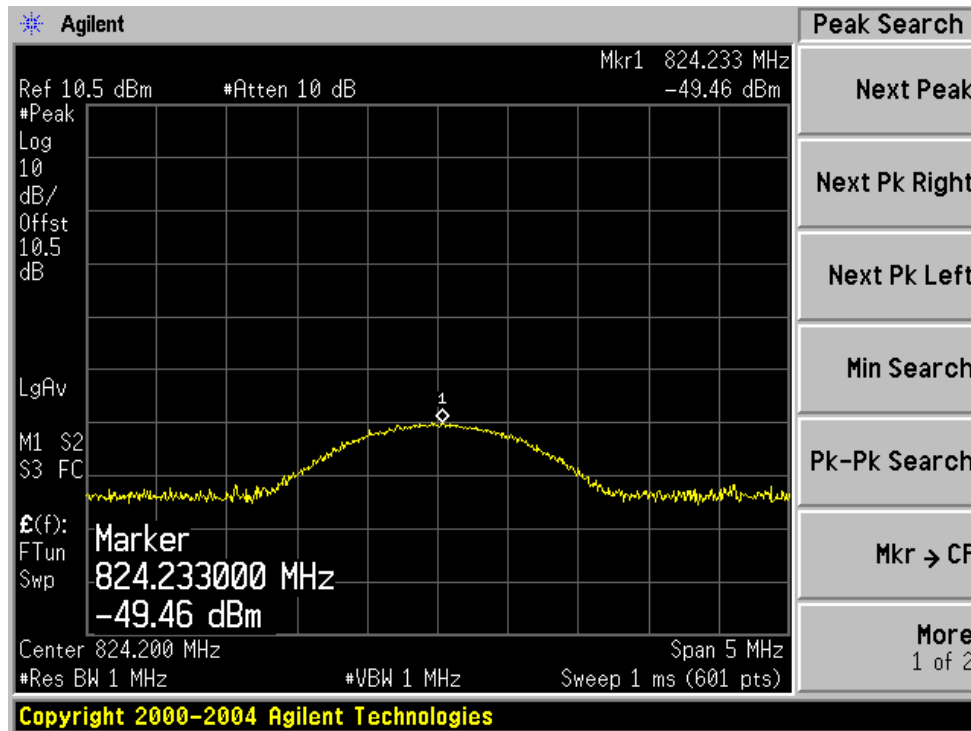
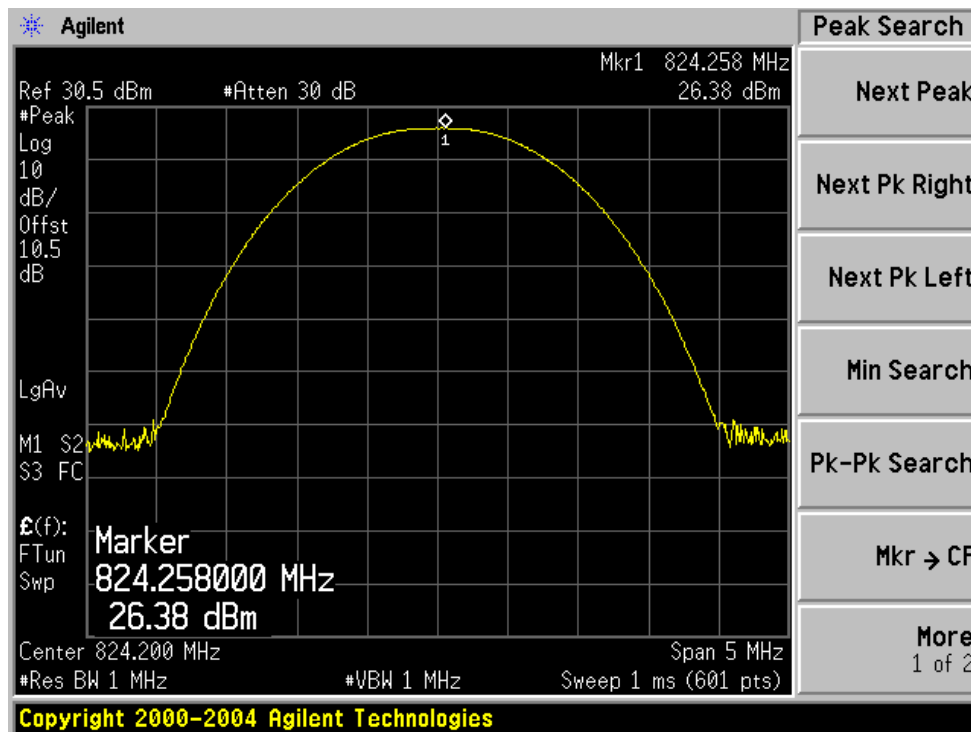


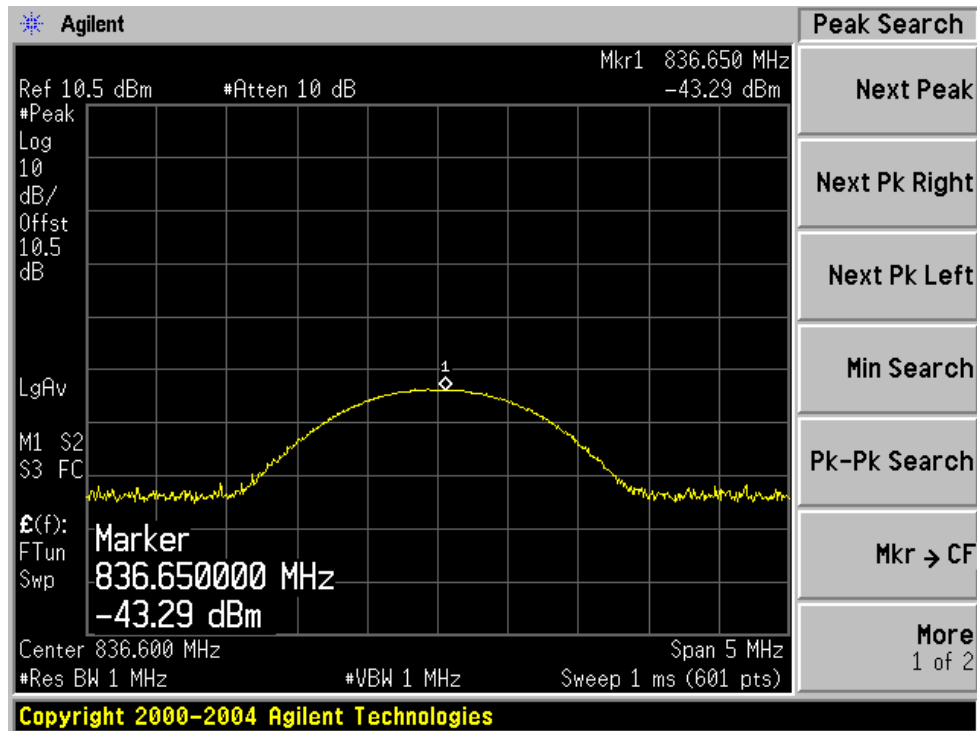
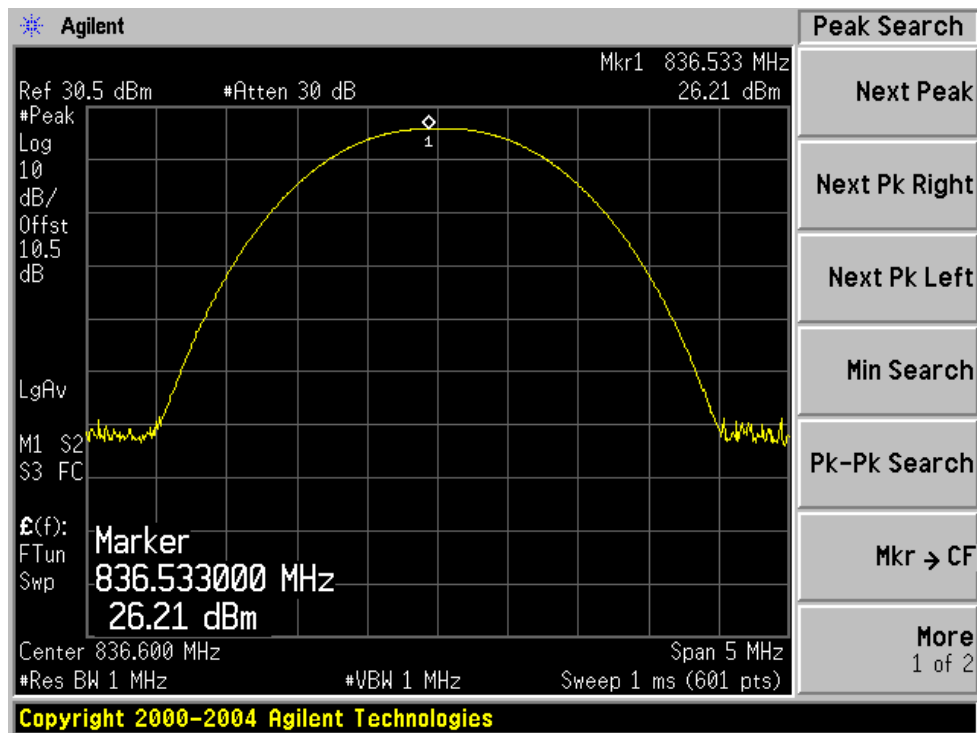
7.6.6 CDMA: Reverse (uplink): High Channel**Input****Output**

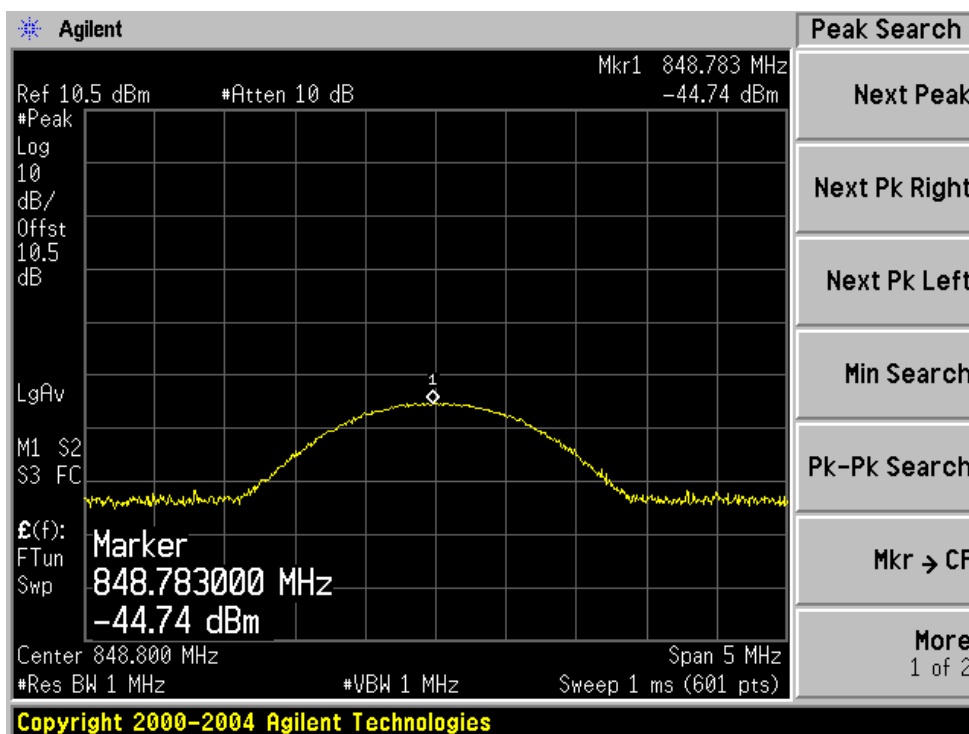
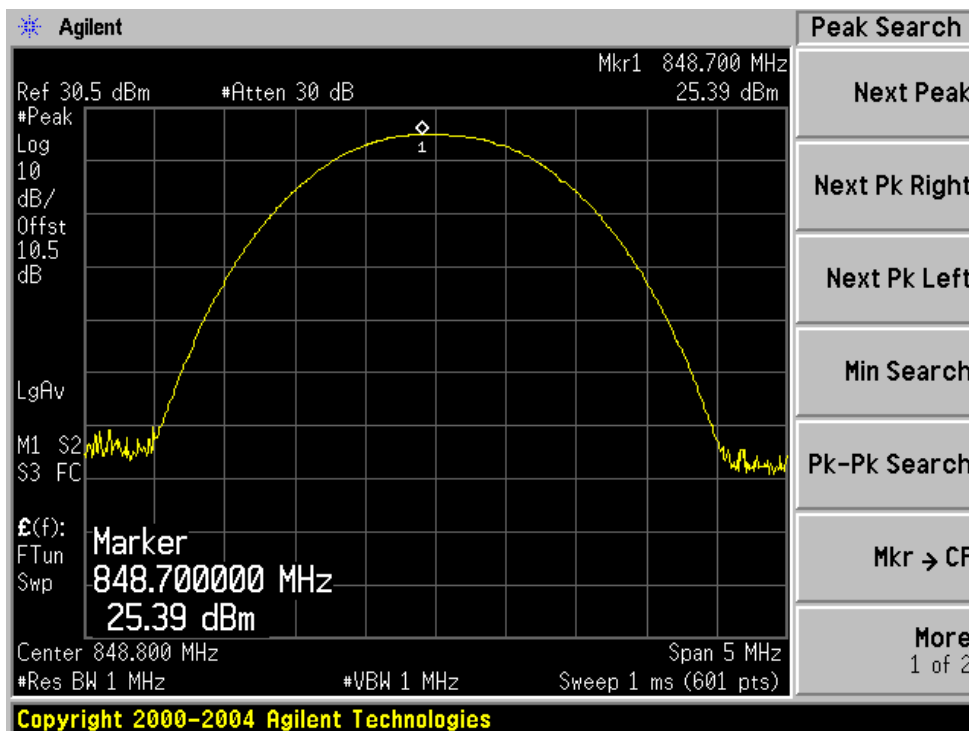
7.6.7 GSM: Forward (Downlink): Low Channel**Input****Output**

7.6.8 GSM: Forward (Downlink): Middle Channel**Input****Output**

7.6.9 GSM: Forward (Downlink): High Channel**Input****Output**

7.6.10 GSM: Reverse (Uplink): Low Channel**Input****Output**

7.6.11 GSM: Reverse (Uplink): Middle Channel**Input****Output**

7.6.12 GSM: Reverse (Uplink): High Channel**Input****Output**

8 §2.1049, §22.917, §22.905 - OCCUPIED BANDWIDTH

8.1 Applicable Standard

Requirements: CFR 47, Section 2.1049, Section 22.901, and Section 22.917.

8.2 Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 30 kHz(Cellular /PCS) and the 26 dB & 99% bandwidth was recorded.

8.3 Environmental Conditions

Temperature:	21 °C
Relative Humidity:	59 %
ATM Pressure:	101.8 kPa

* The testing was performed by Xiao Ming Hu on 2008-04-25.

8.4 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Analyzer, Spectrum	E4446A	US44300386	2007-04-26

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

8.5 Test Results

8.5.1 CDMA:

Downlink

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
Low	869.73	1.2732
Middle	881.40	1.2818
High	893.19	1.2713

Uplink

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
Low	824.70	1.2669
Middle	836.52	1.2724
High	848.30	1.2667

8.5.2 GSM:

Downlink

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Low	869.2	245.2840
Middle	881.6	245.3974
High	893.8	246.3452

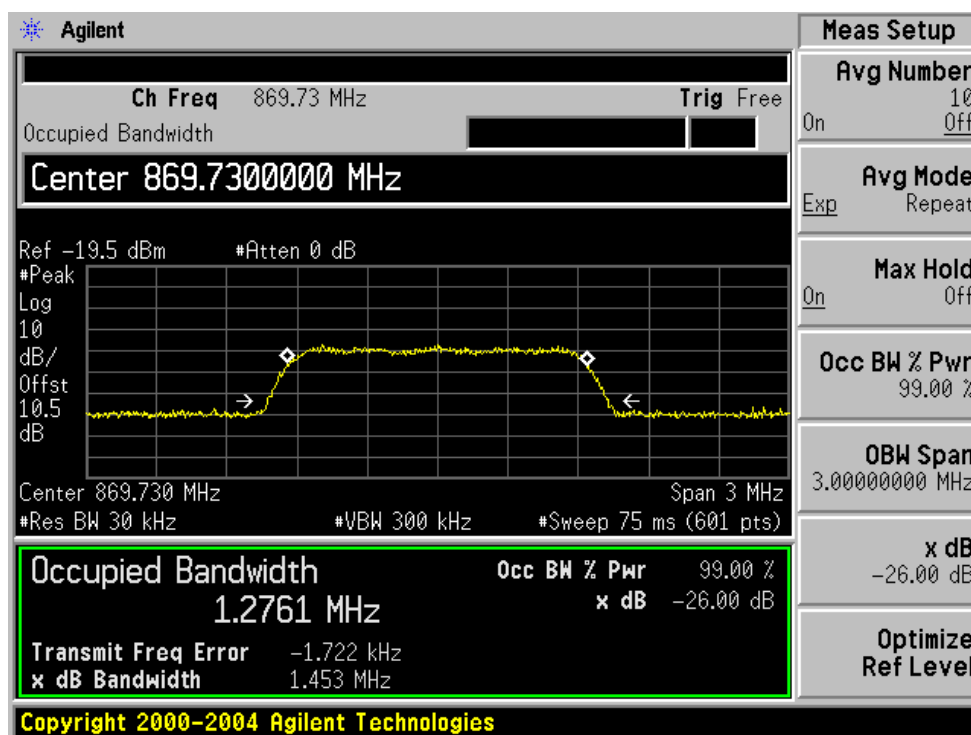
Uplink

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Low	824.2	246.3651
Middle	836.6	246.8653
High	848.8	246.0930

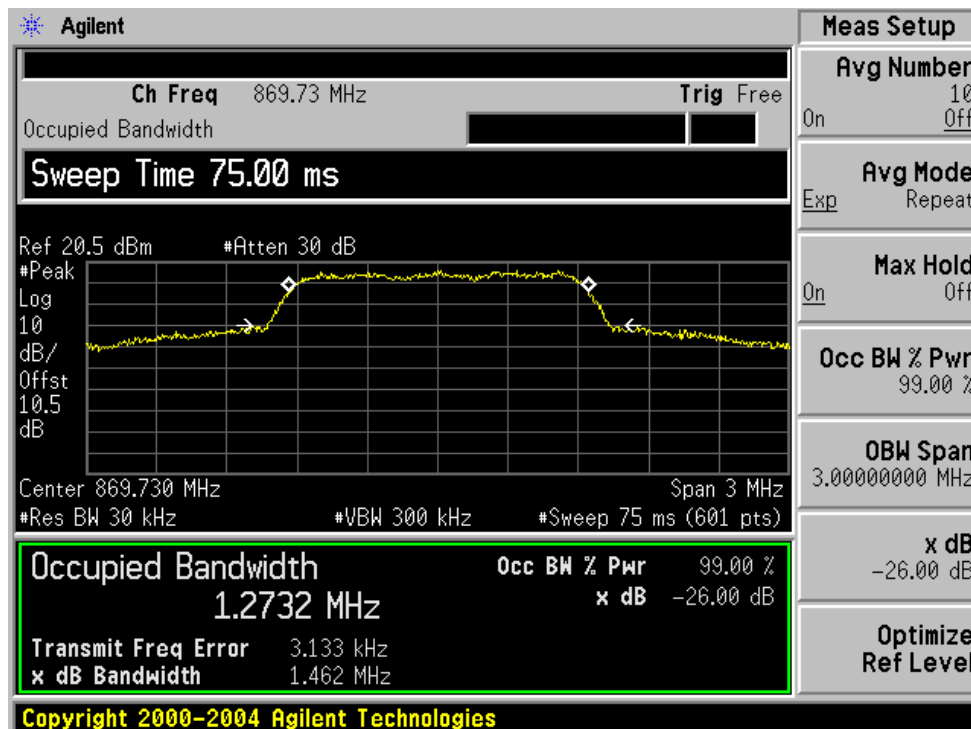
8.6 Test Data

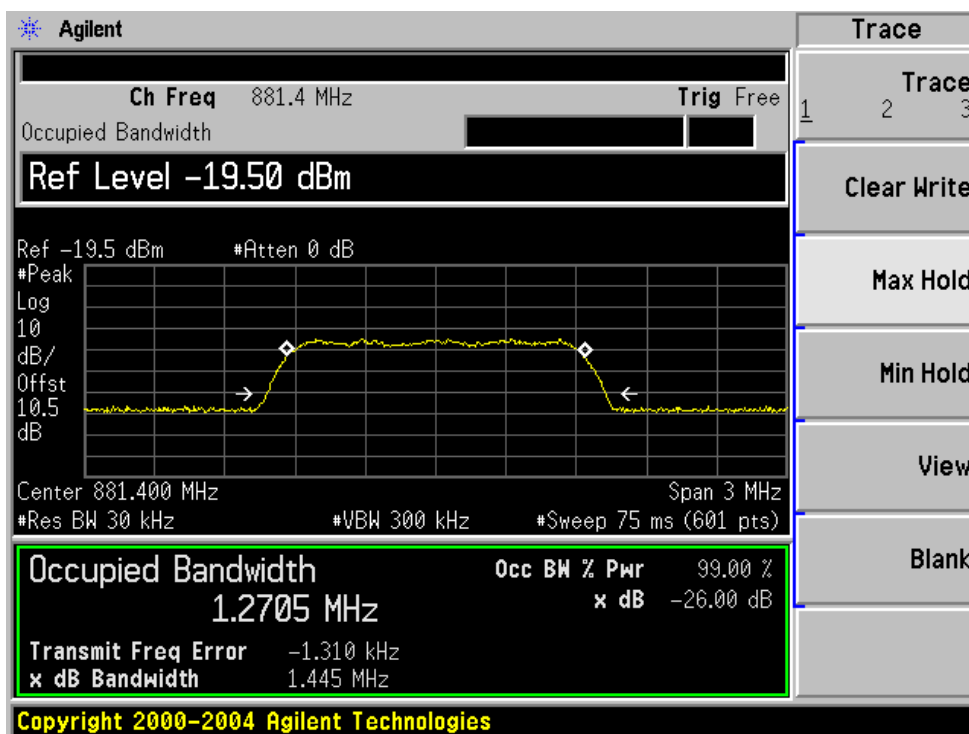
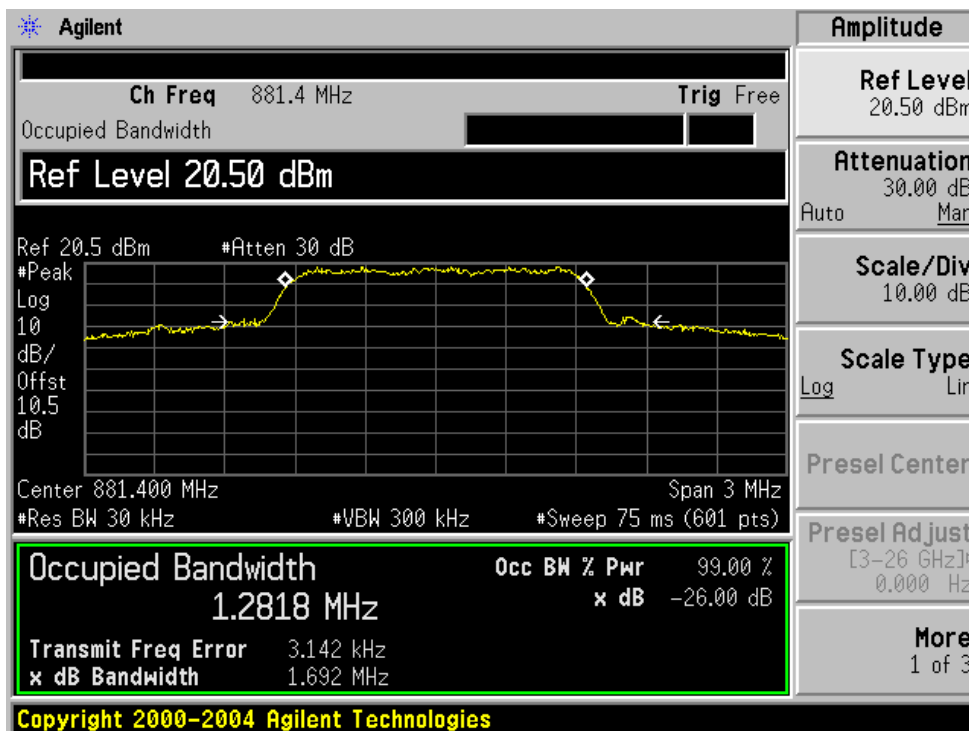
8.6.1 CDMA: Forward (Downlink): Low Channel

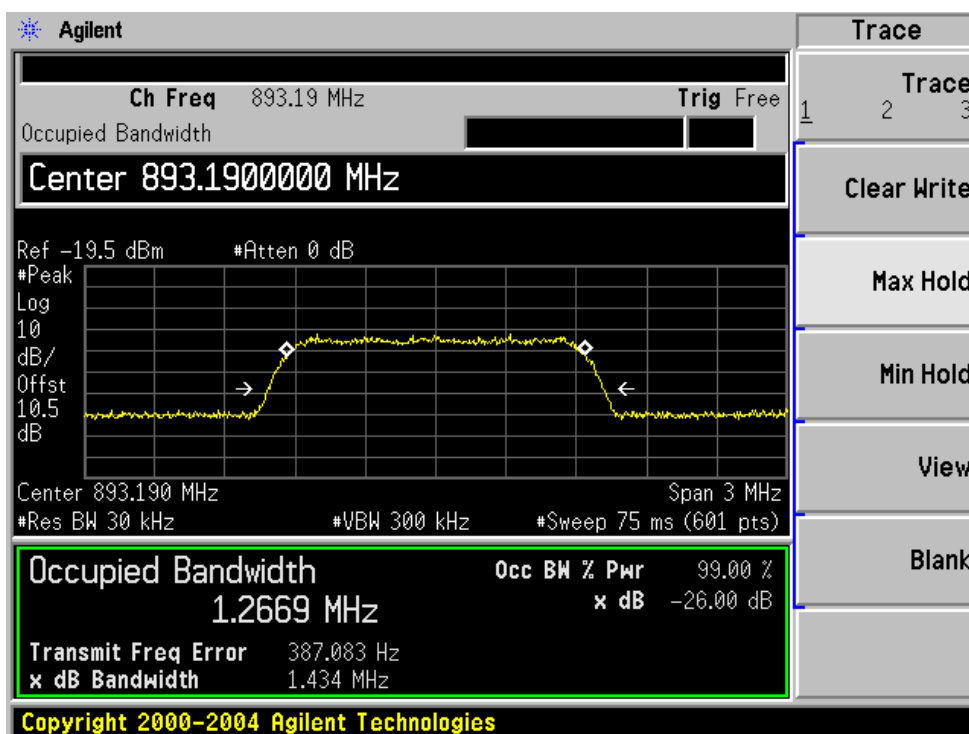
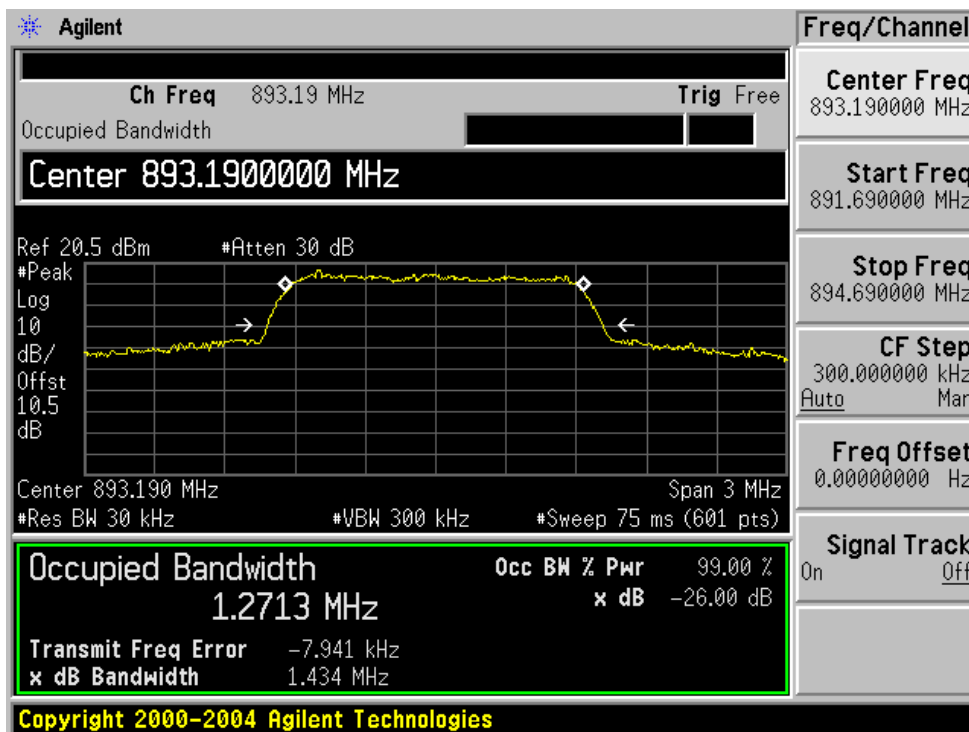
Input



Output

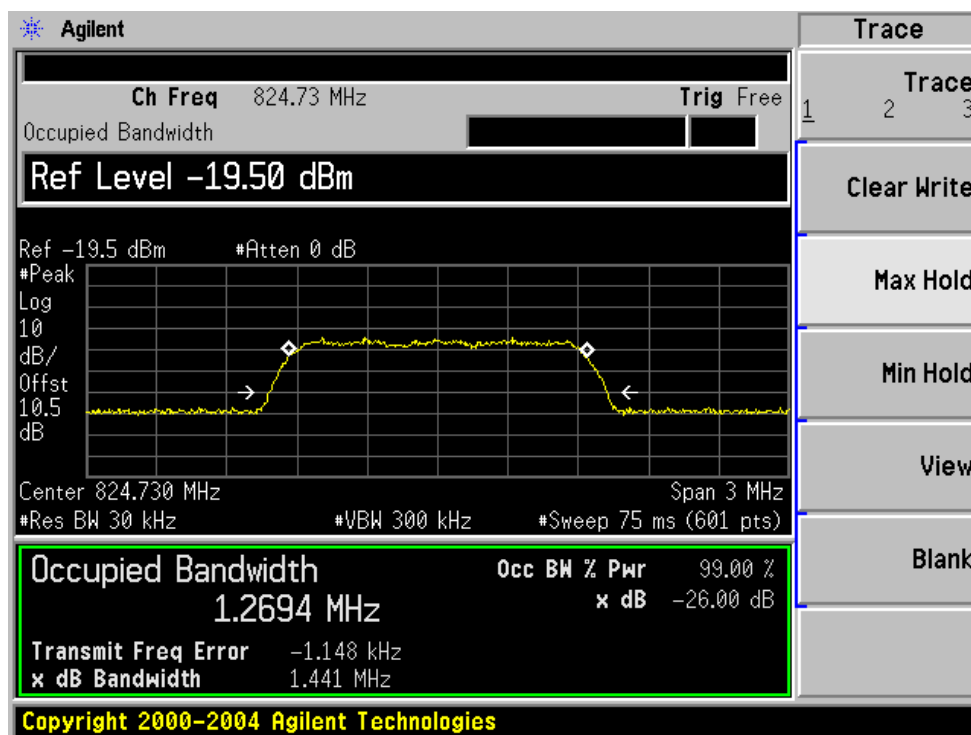


8.6.2 CDMA: Forward (Downlink): Middle Channel**Input****Output**

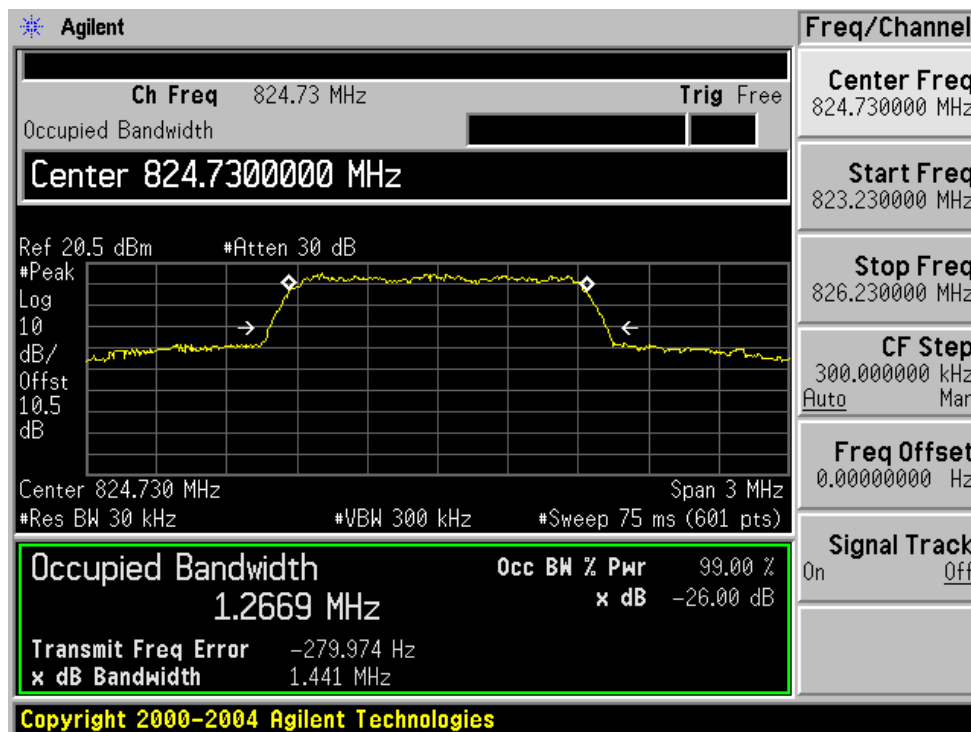
8.6.3 CDMA: Forward (Downlink): High Channel**Input****Output**

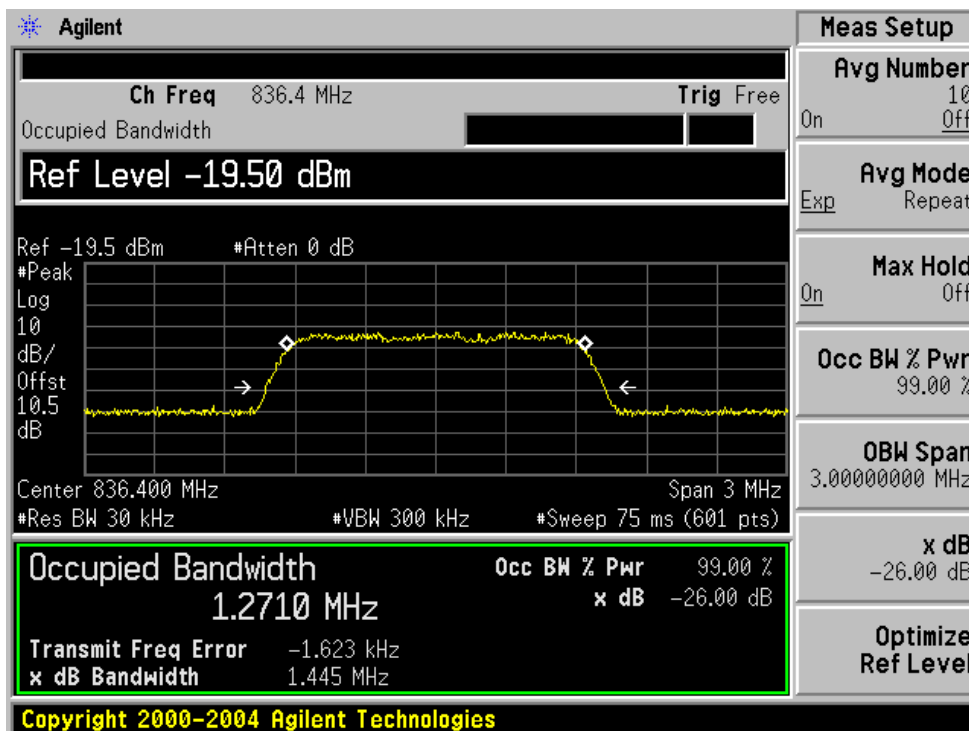
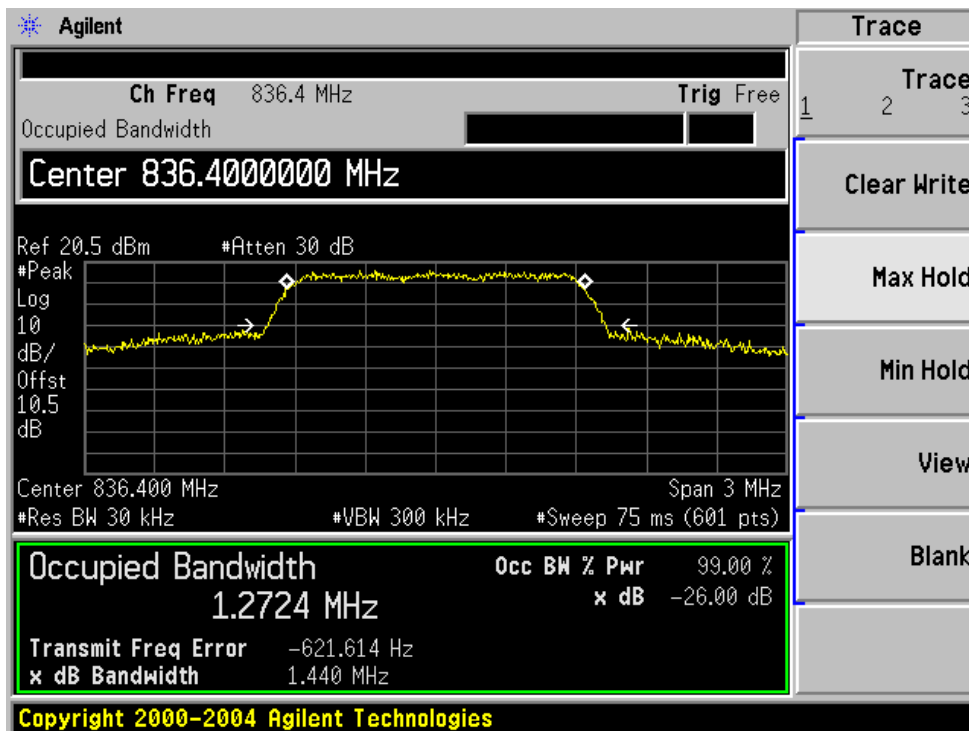
8.6.4 CDMA: Reverse (Uplink): Low Channel

Input



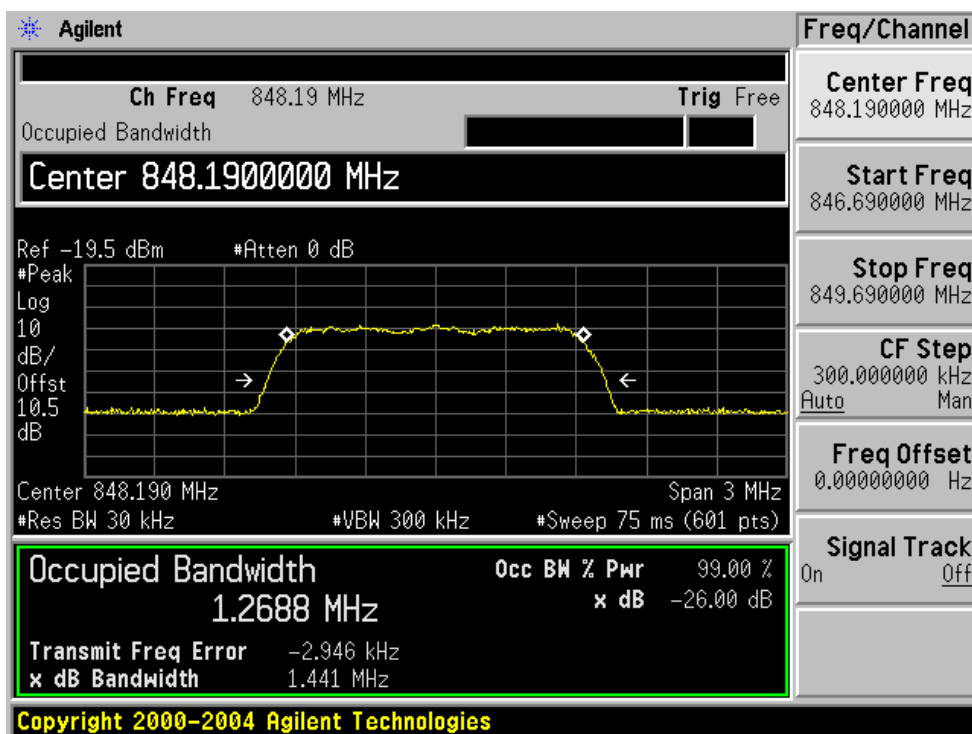
Output



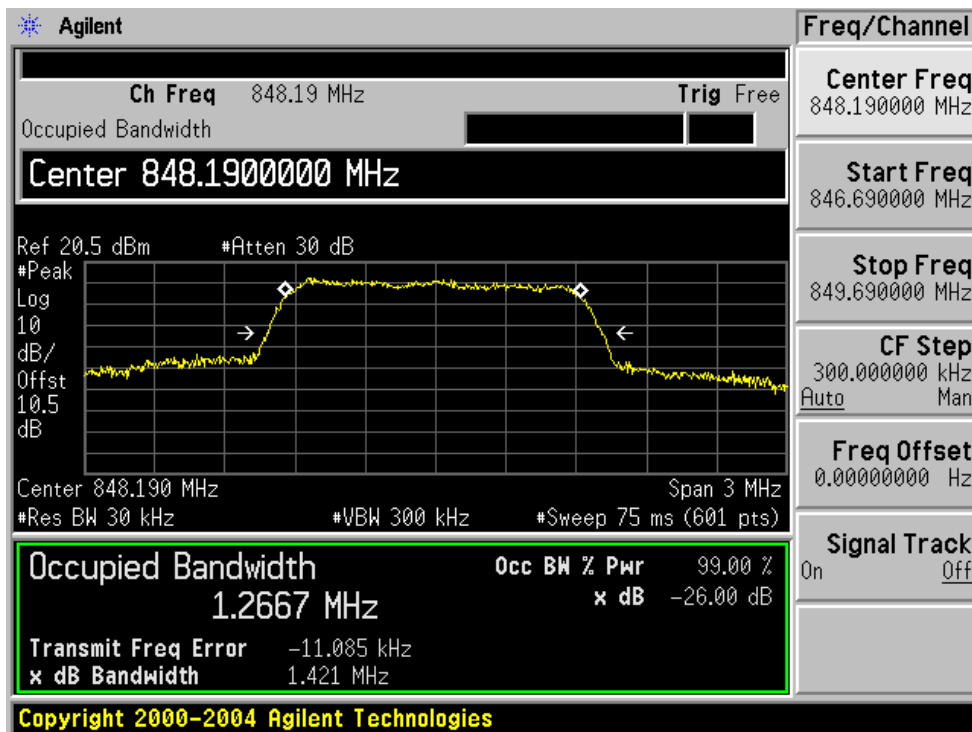
8.6.5 CDMA: Reverse (Uplink): Middle Channel**Input****Output**

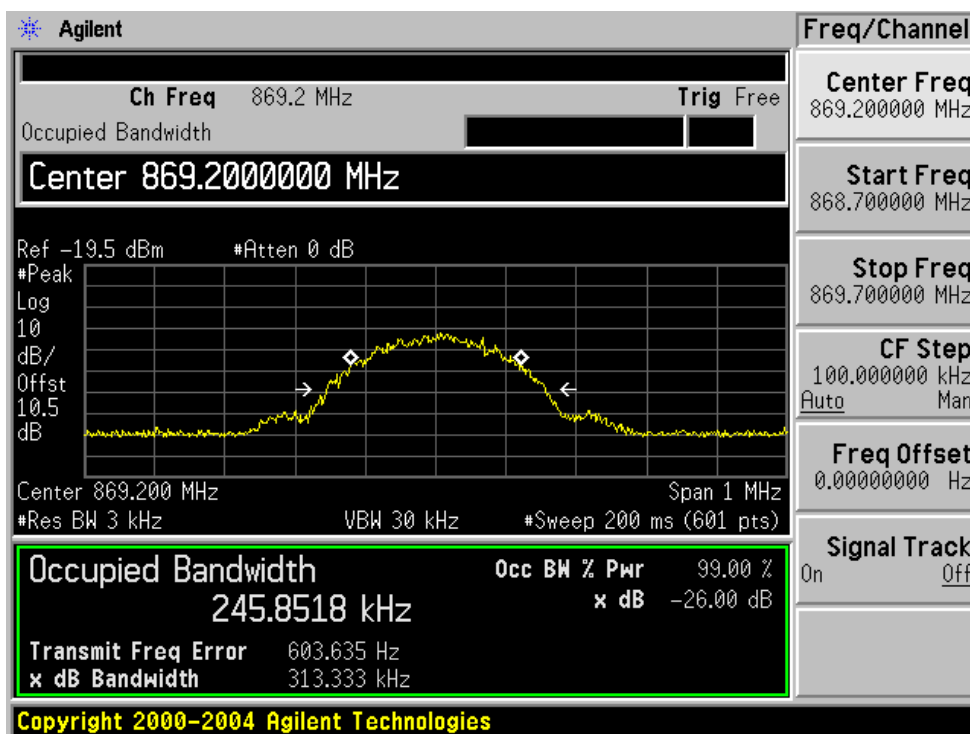
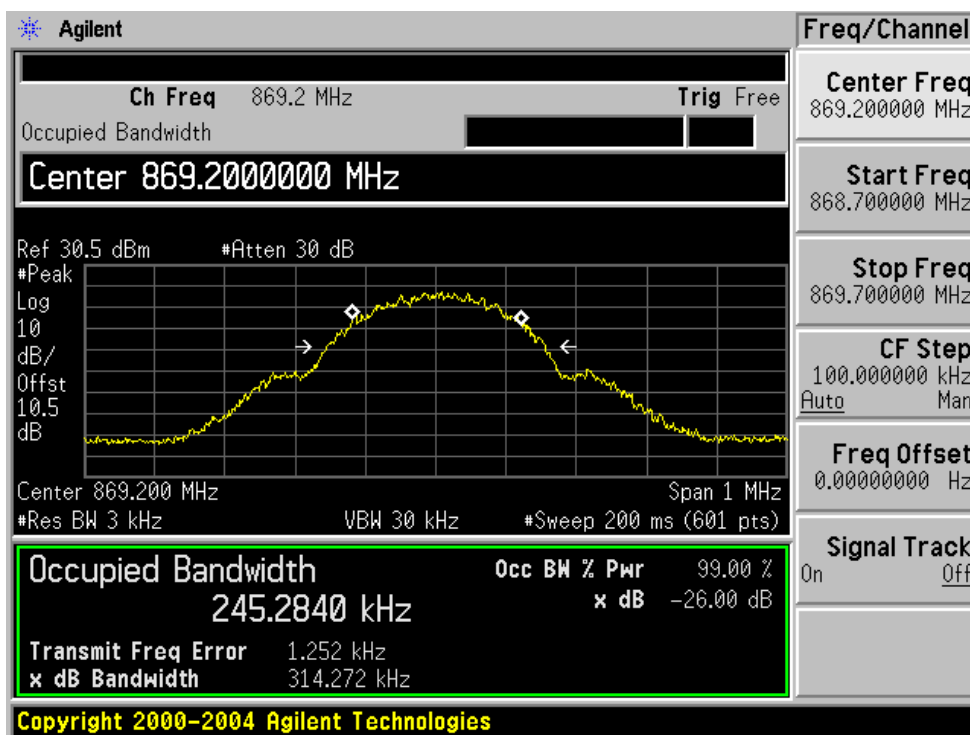
8.6.6 CDMA: Reverse (Uplink): High Channel

Input

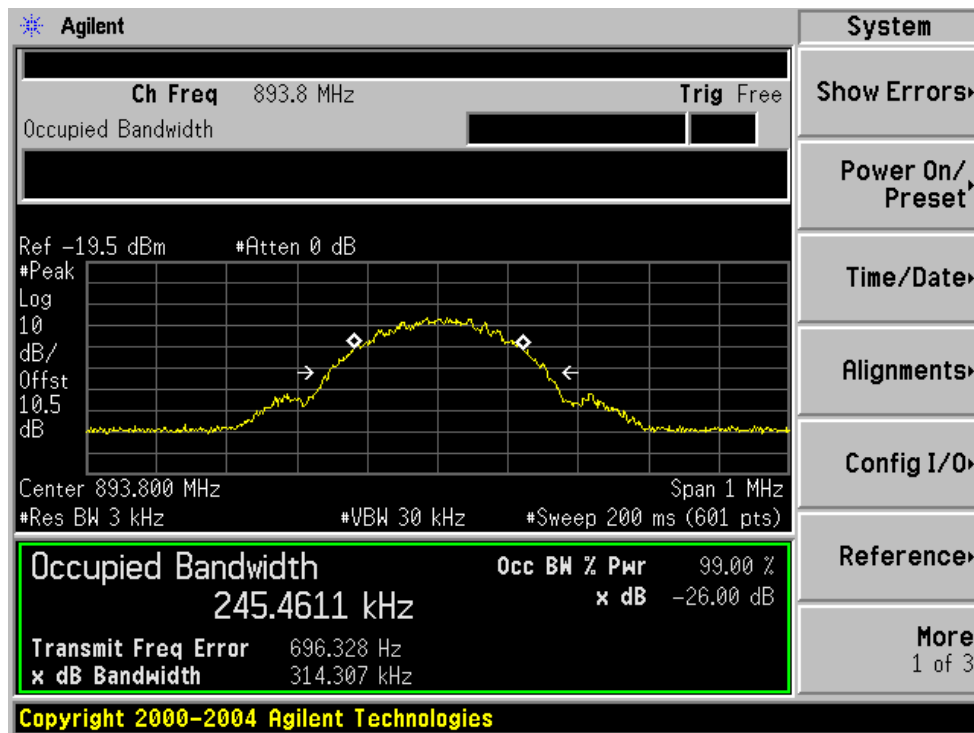
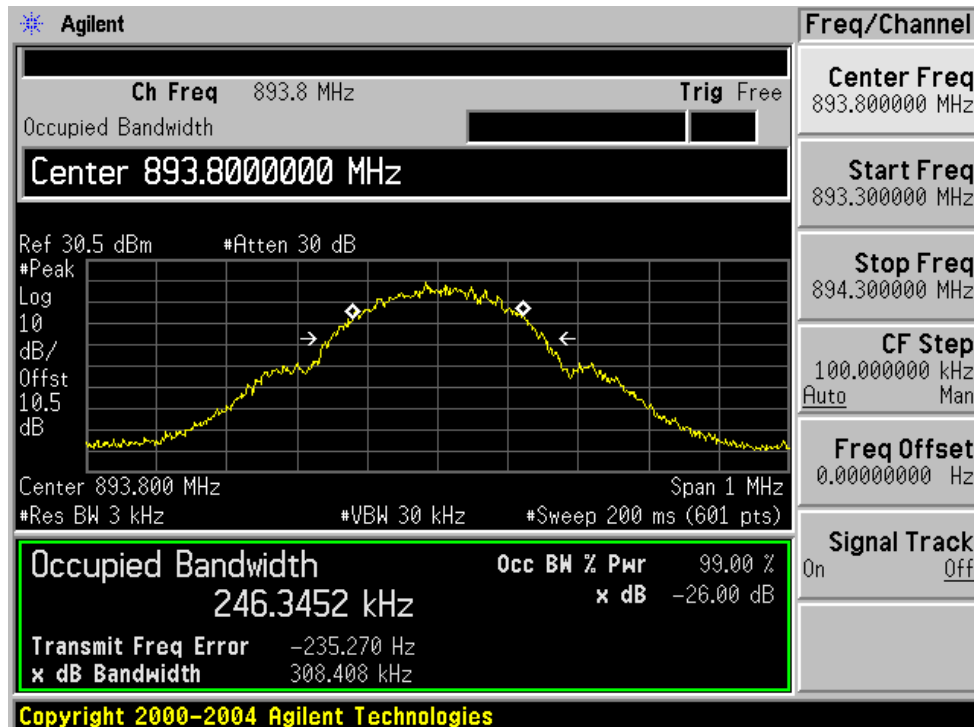


Output



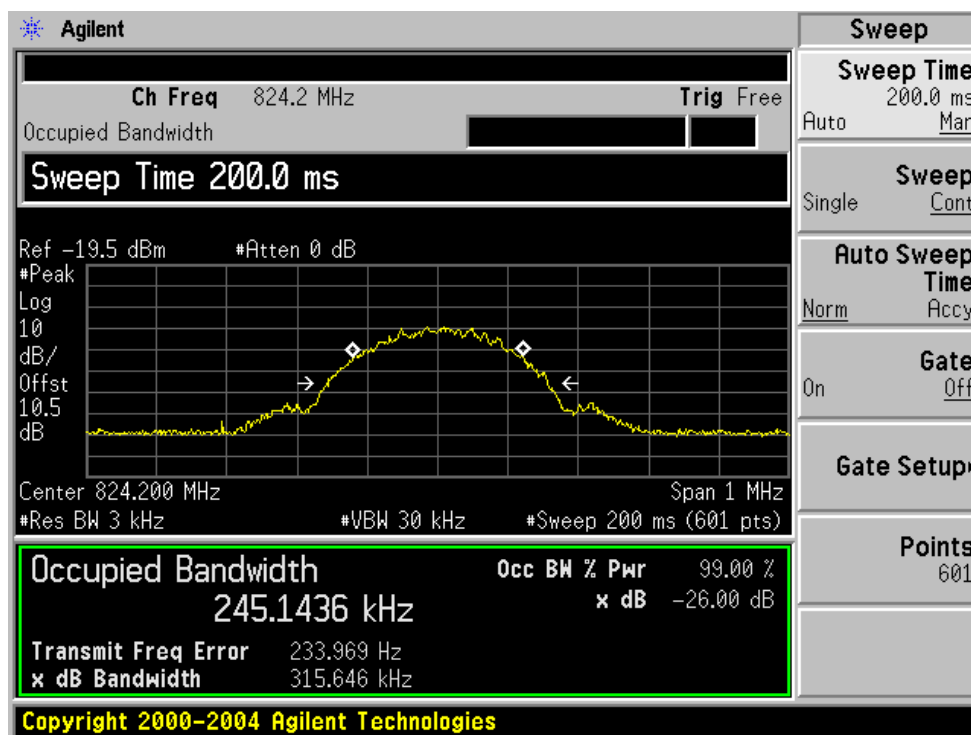
8.6.7 GSM: Forward (Downlink): Low Channel**Input****Output**

8.6.8 GSM: Forward (Downlink): Middle Channel**Input****Output**

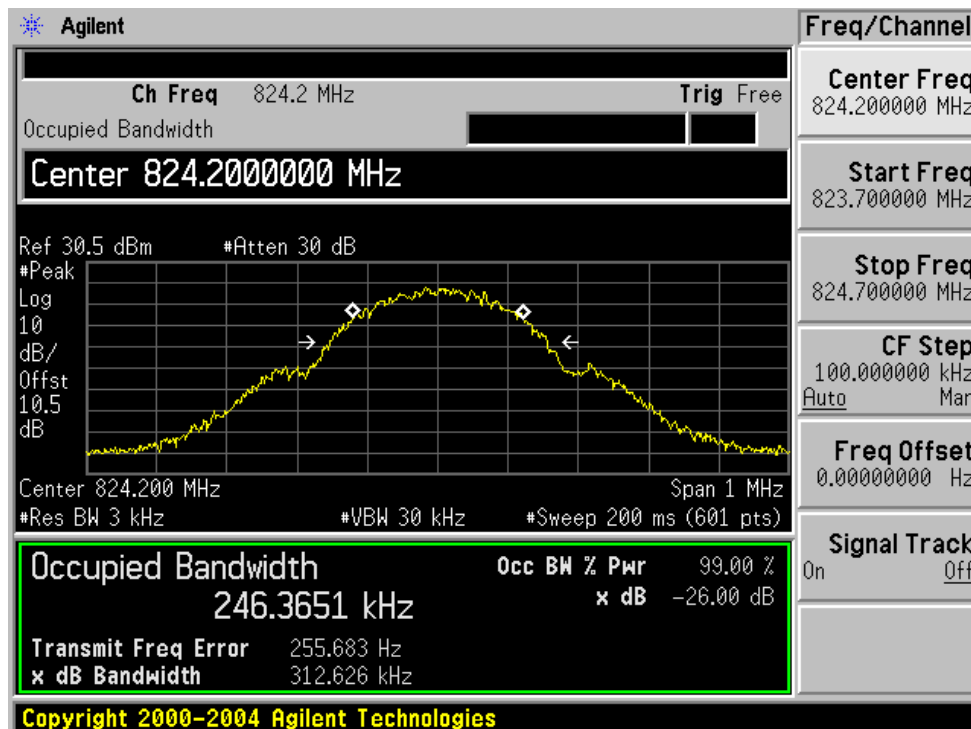
8.6.9 GSM: Forward (Downlink): High Channel**Input****Output**

8.6.10 GSM: Reverse (Uplink): Low Channel

Input

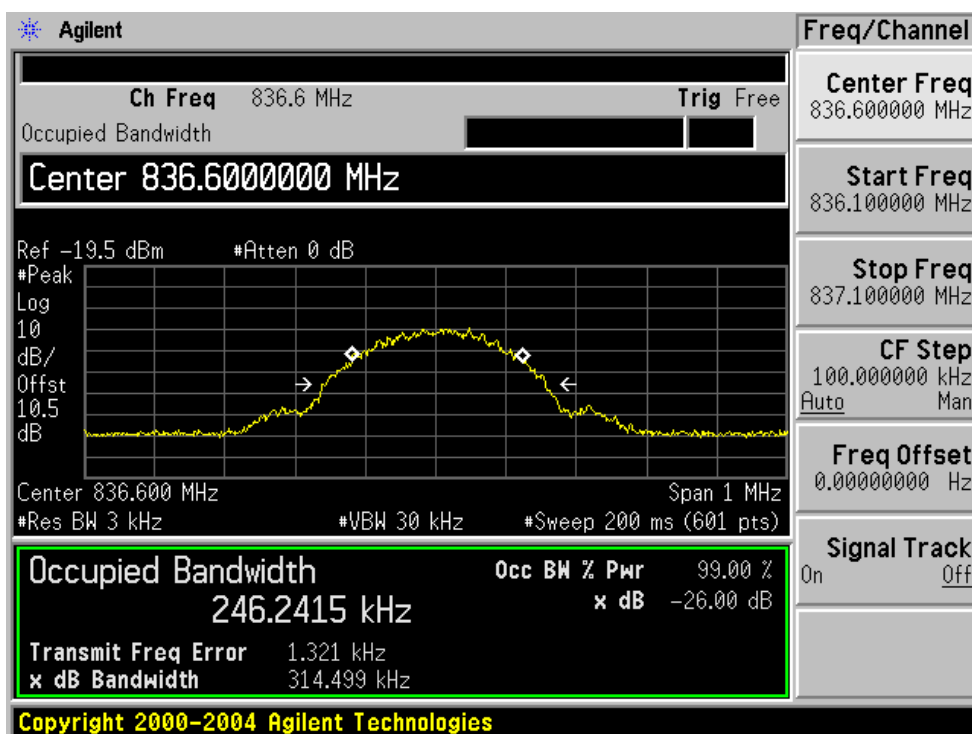


Output

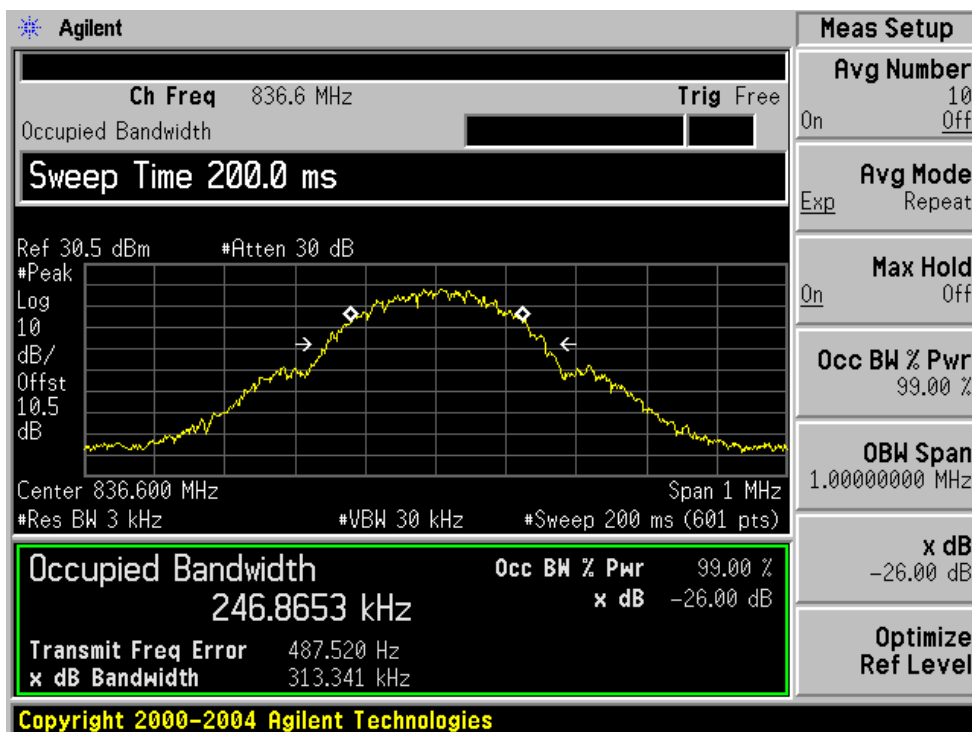


8.6.11 GSM: Reverse (Uplink): Middle Channel

Input

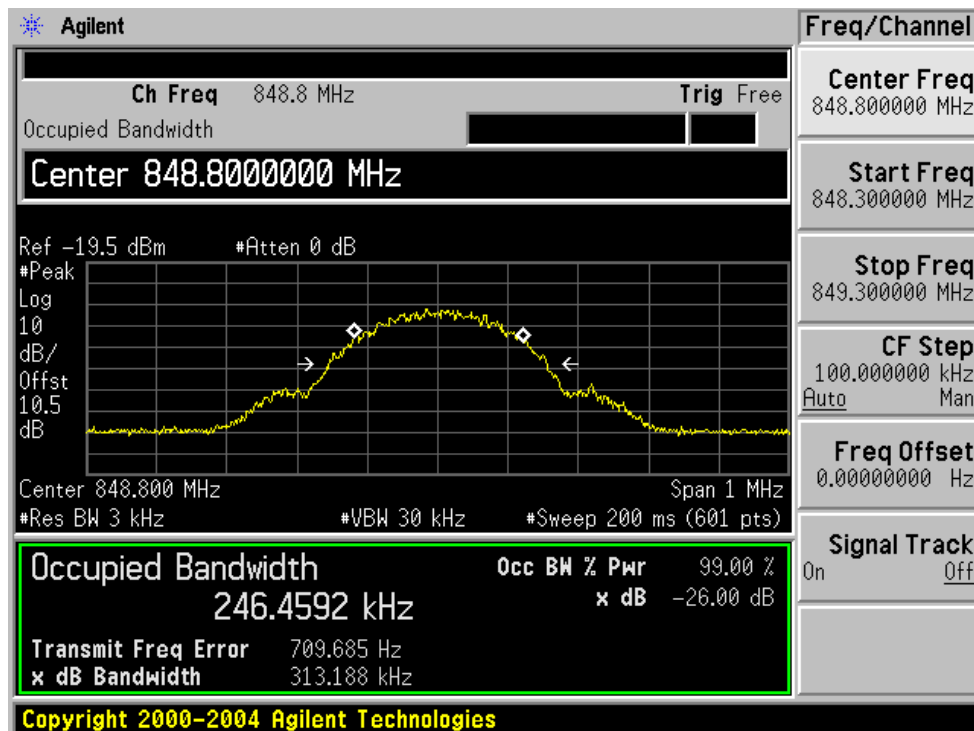


Output

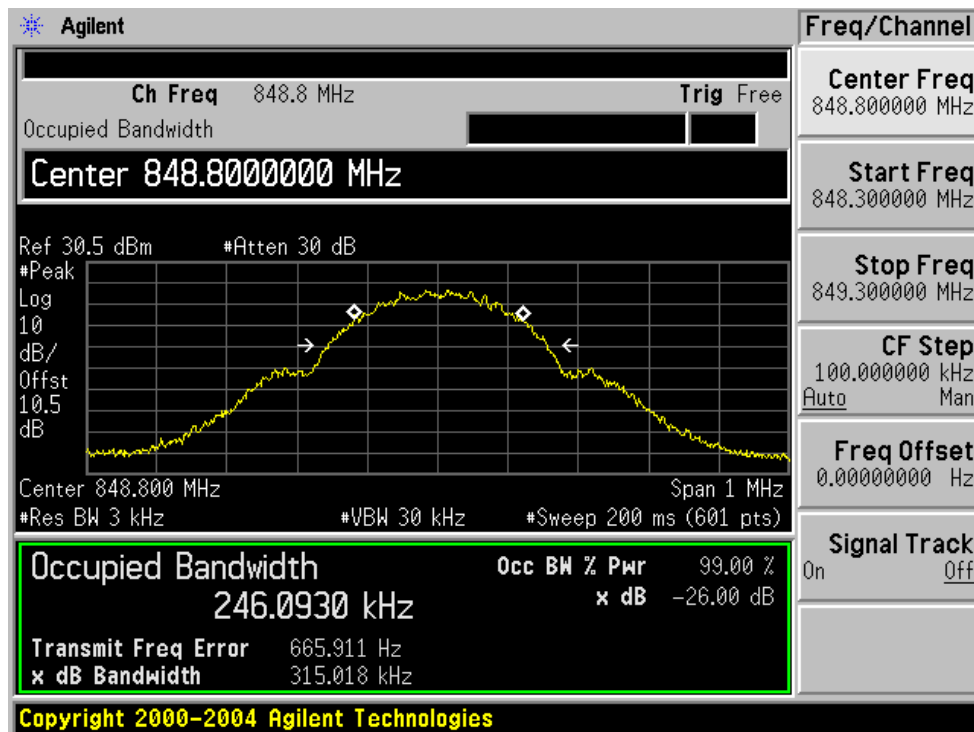


8.6.12 GSM: Reverse (Uplink): High Channel

Input



Output



9 §2.1051, §22.917 (a) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

9.1 Applicable Standard

Requirements: CFR 47, § 2.1051. § 22.917.

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1057.

9.2 Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

9.2.1 Environmental Conditions

Temperature:	21 °C
Relative Humidity:	59 %
ATM Pressure:	101.8 kPa

* The testing was performed by Xiao Ming Hu on 2008-05-02.

9.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Analyzer, Spectrum	E4446A	US44300386	2007-04-26

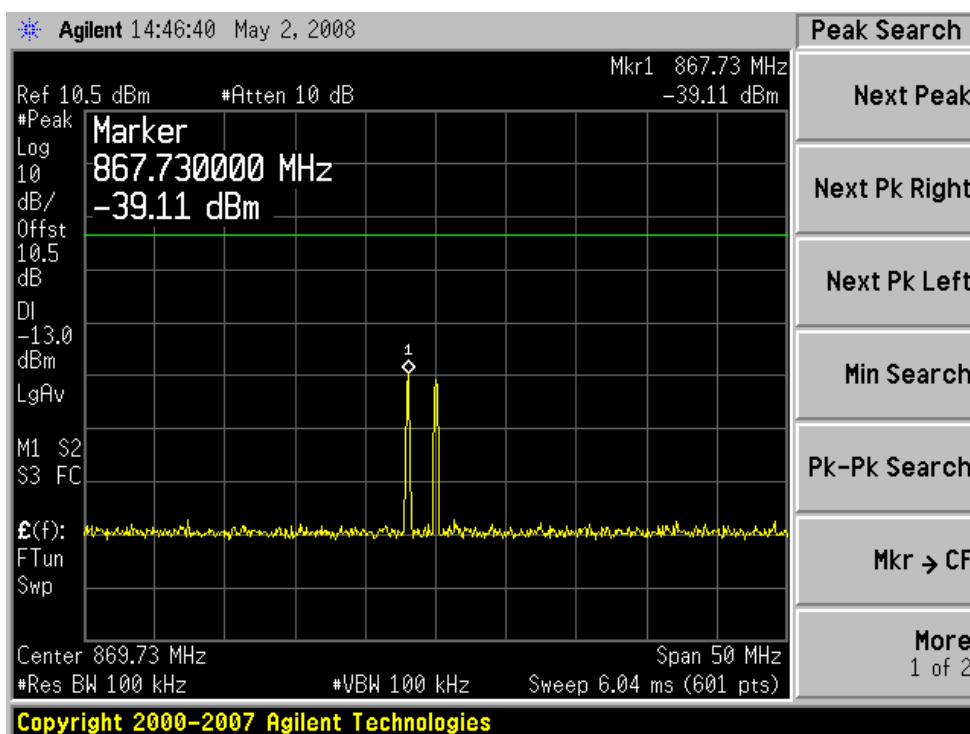
* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

9.4 Test Results

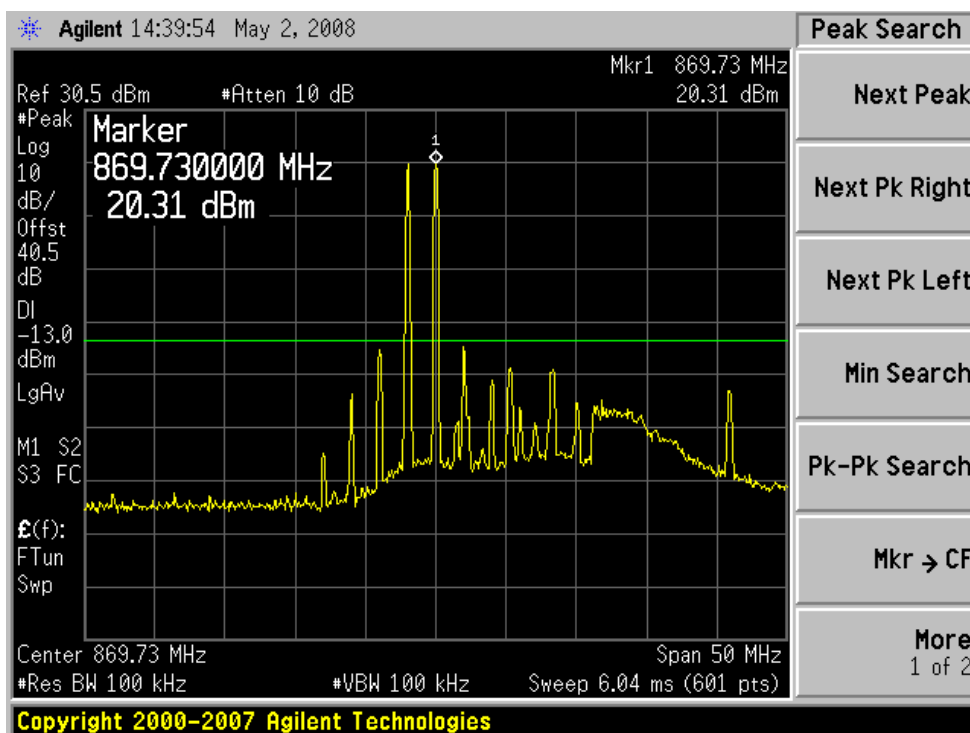
Please refer to the hereinafter plots.

9.4.1 CDMA Forward (Downlink): Low Channel

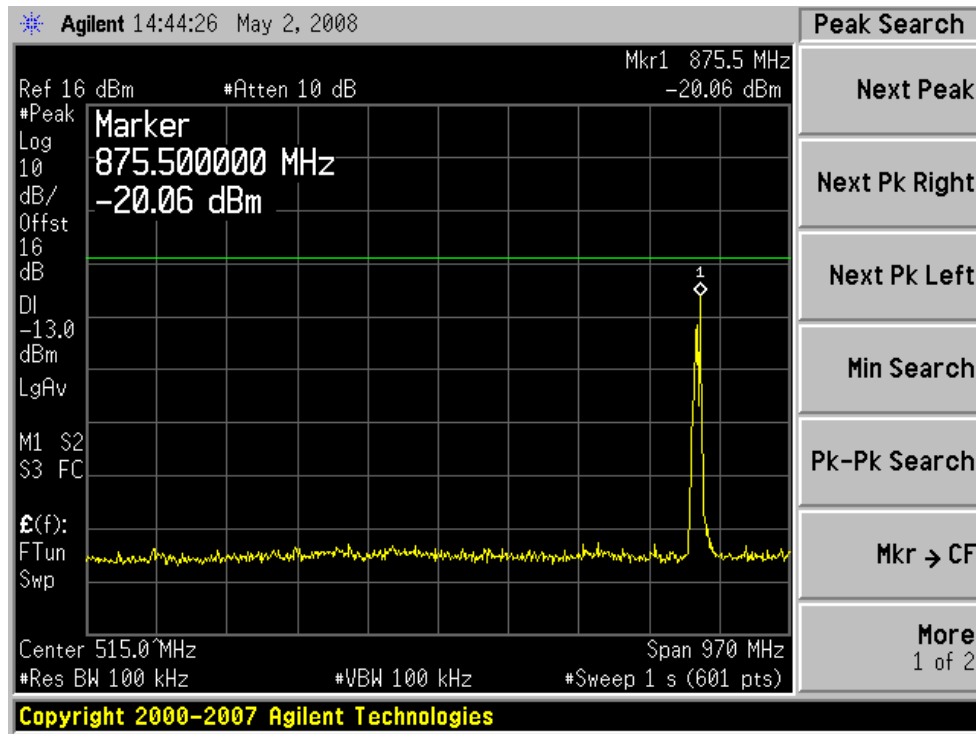
Plot1: Intermodulation - Input



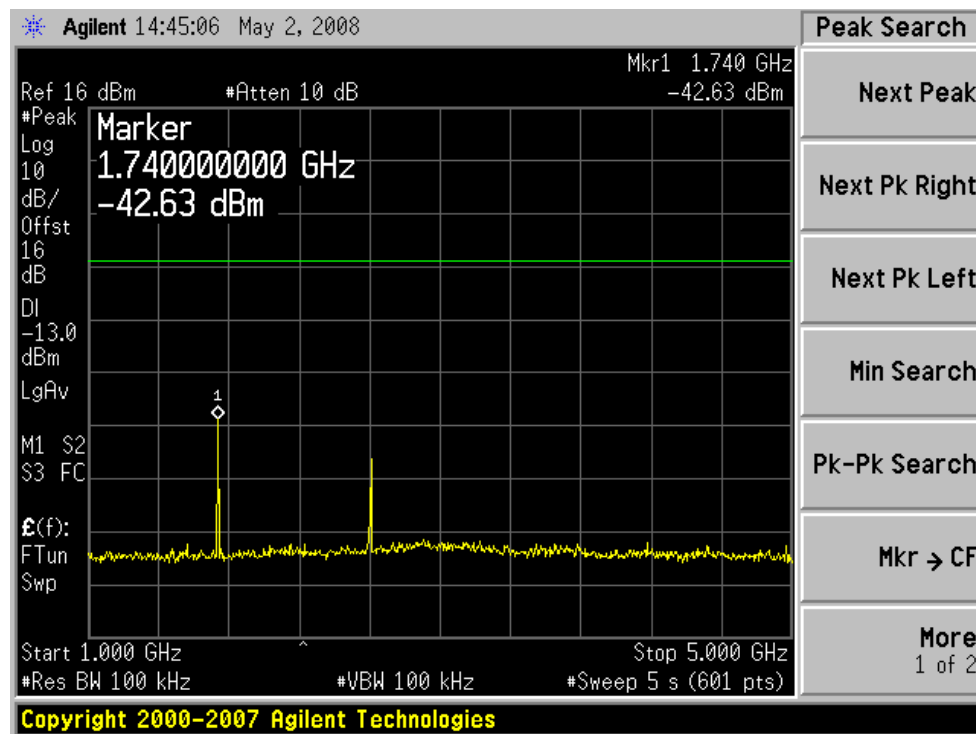
Plot2: Intermodulation - Output



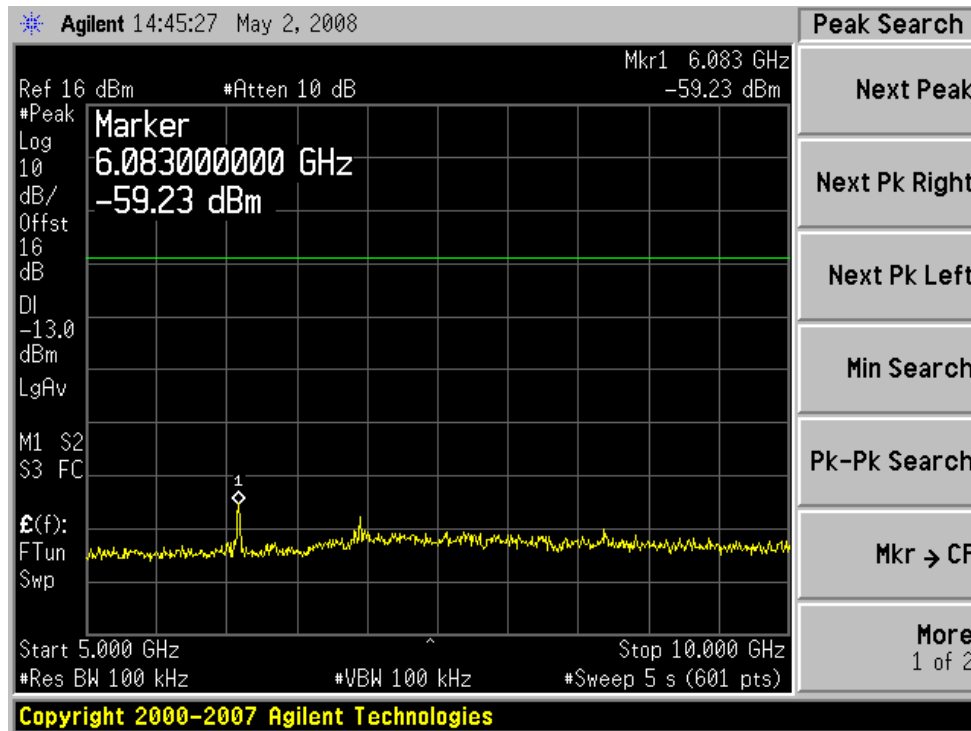
Plot 3: 30 MHz to 1 GHz



Plot 4: 1 GHz to 5 GHz

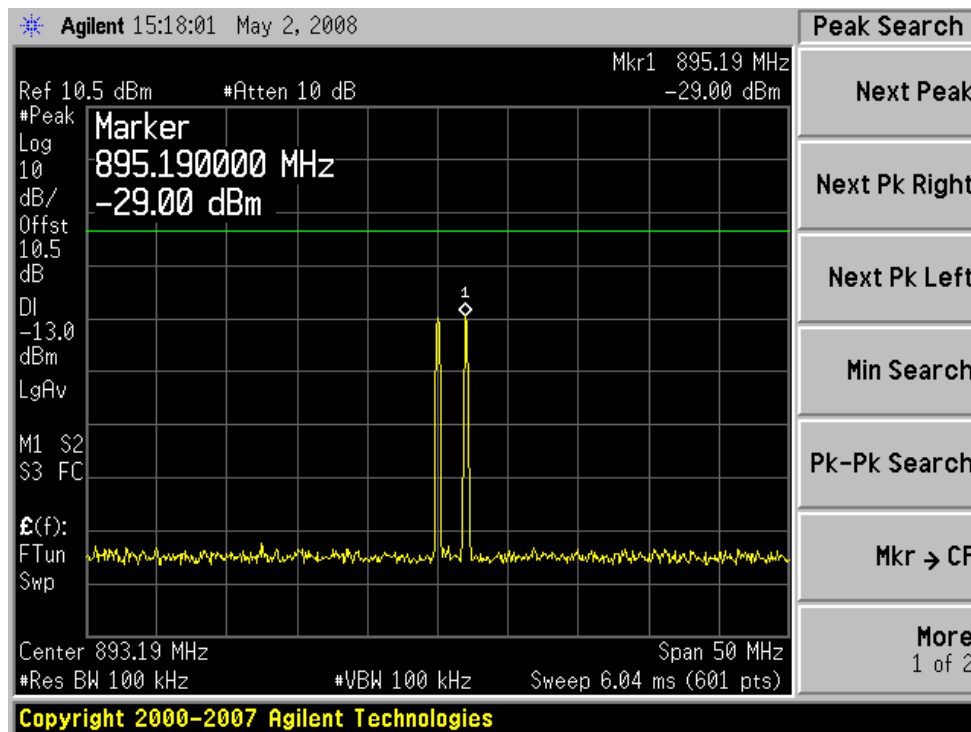


Plot 5: 5 GHz to 10 GHz

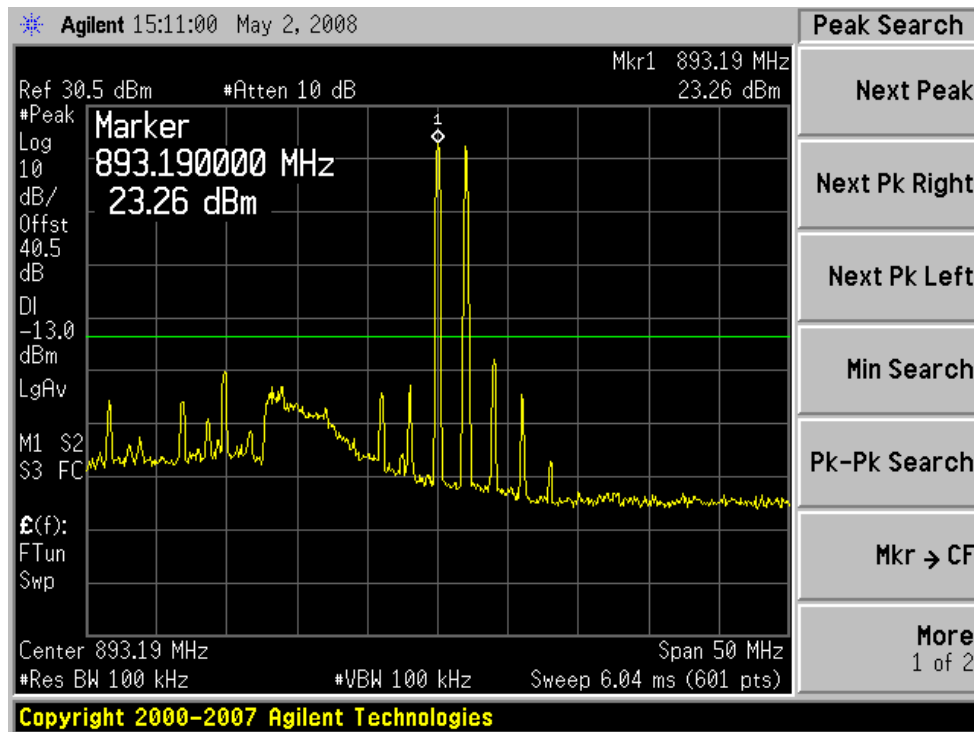


9.4.2 CDMA Forward (Downlink): High Channel

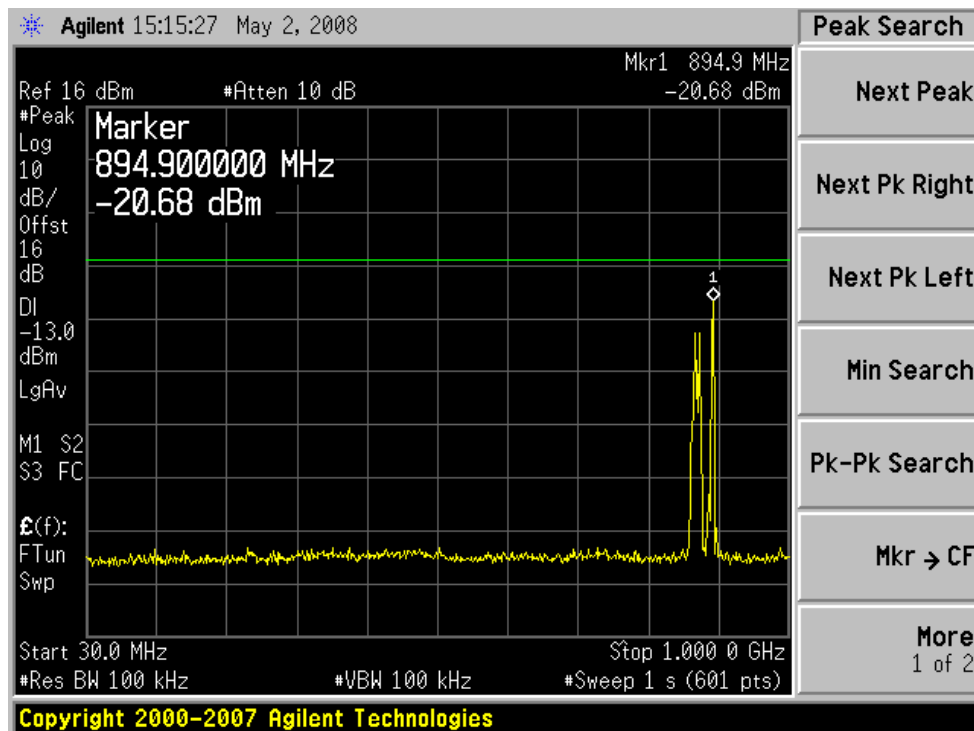
Plot1: Intermodulation - Input



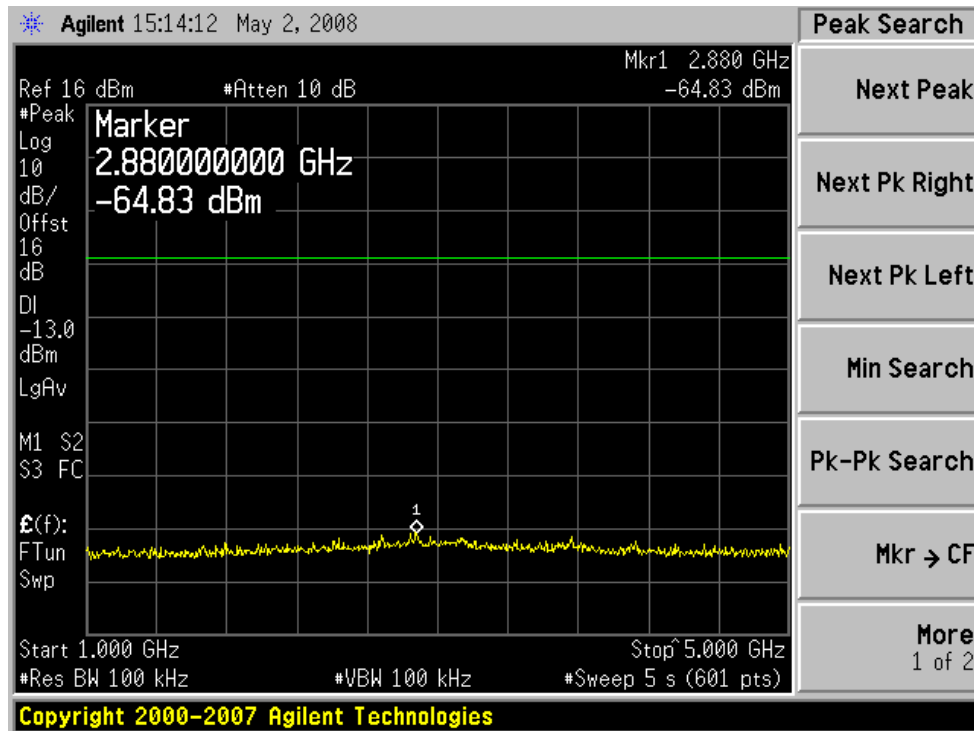
Plot 2: Intermodulation - Output



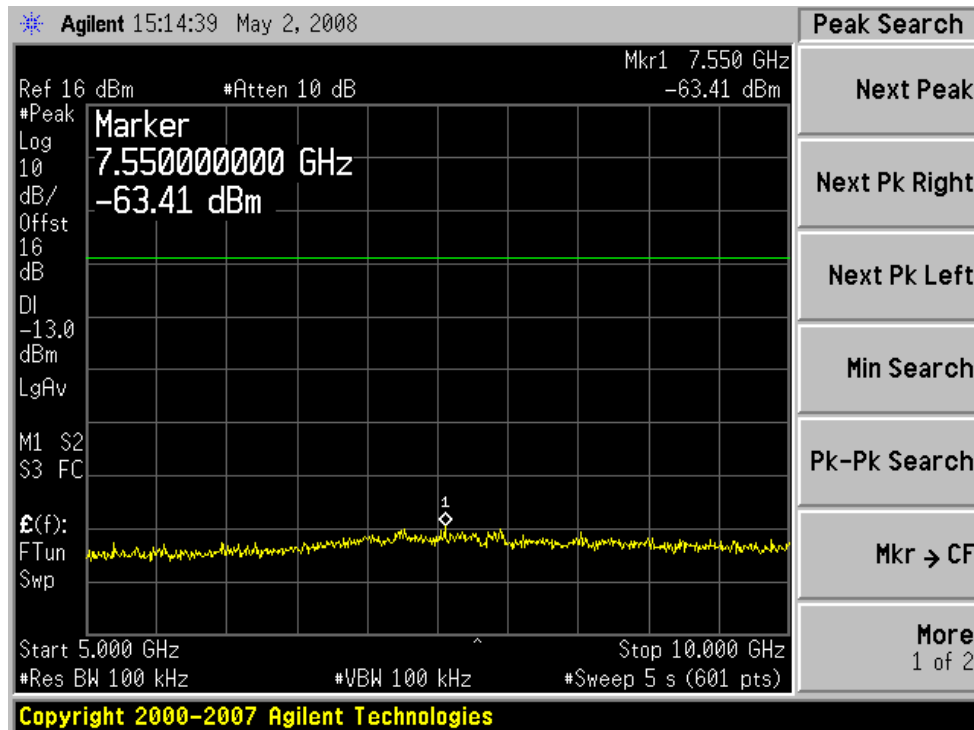
Plot 3: 30 MHz to 1GHz



Plot 4: 1 GHz to 5GHz

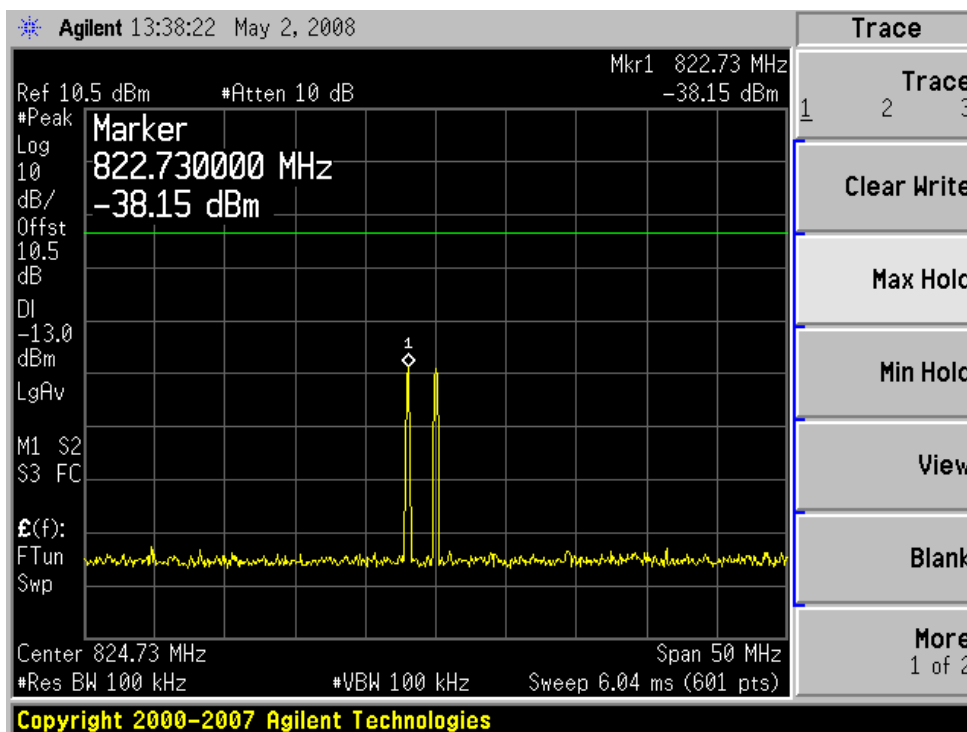


Plot 5: 5 GHz to 10 GHz

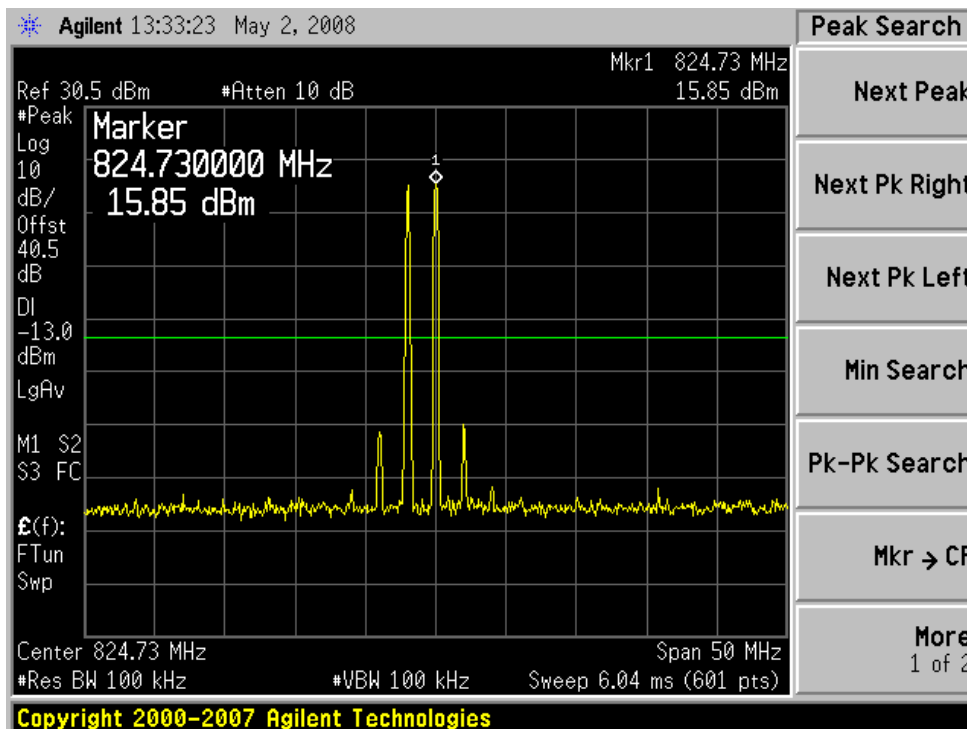


9.4.3 CDMA Reverse (Uplink): Low Channel

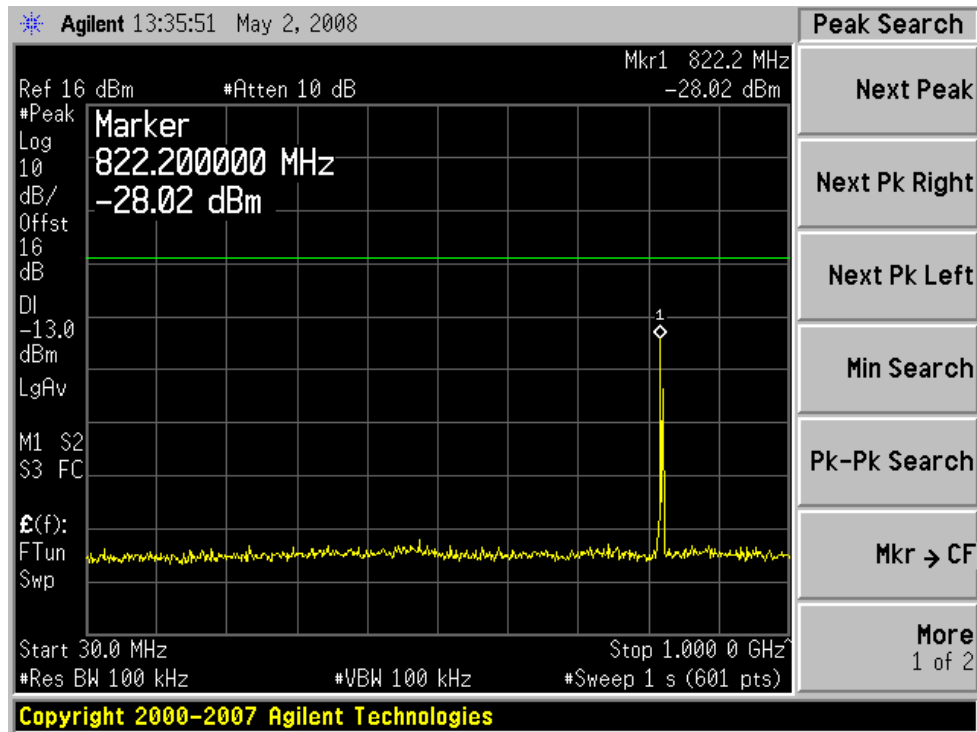
Plot 1: Intermodulation - Input



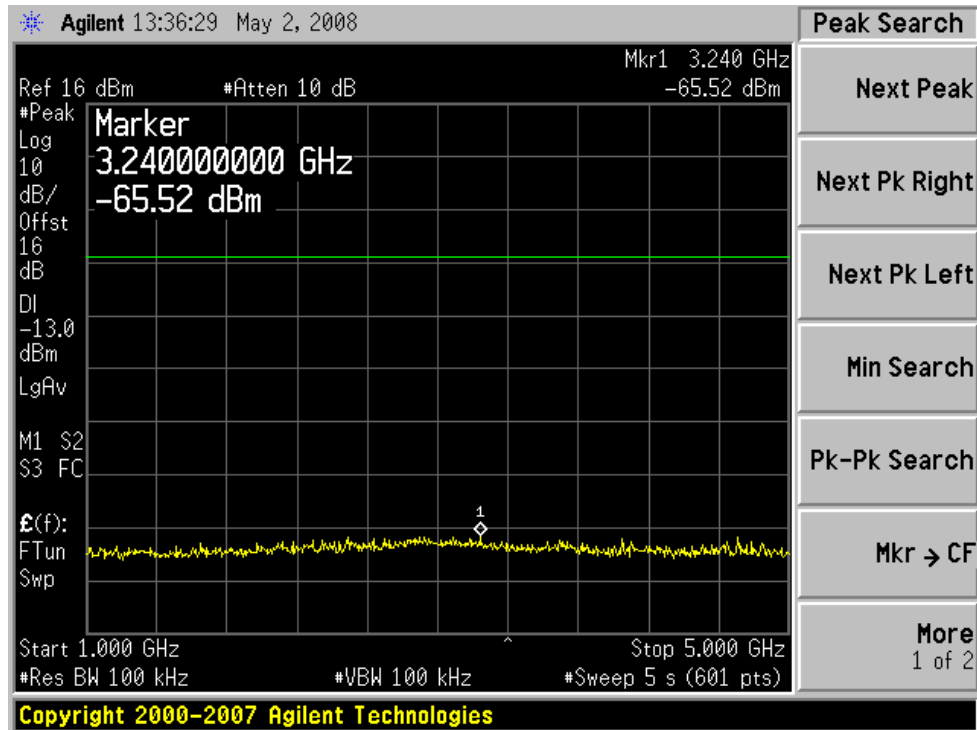
Plot 2: Intermodulation - Output



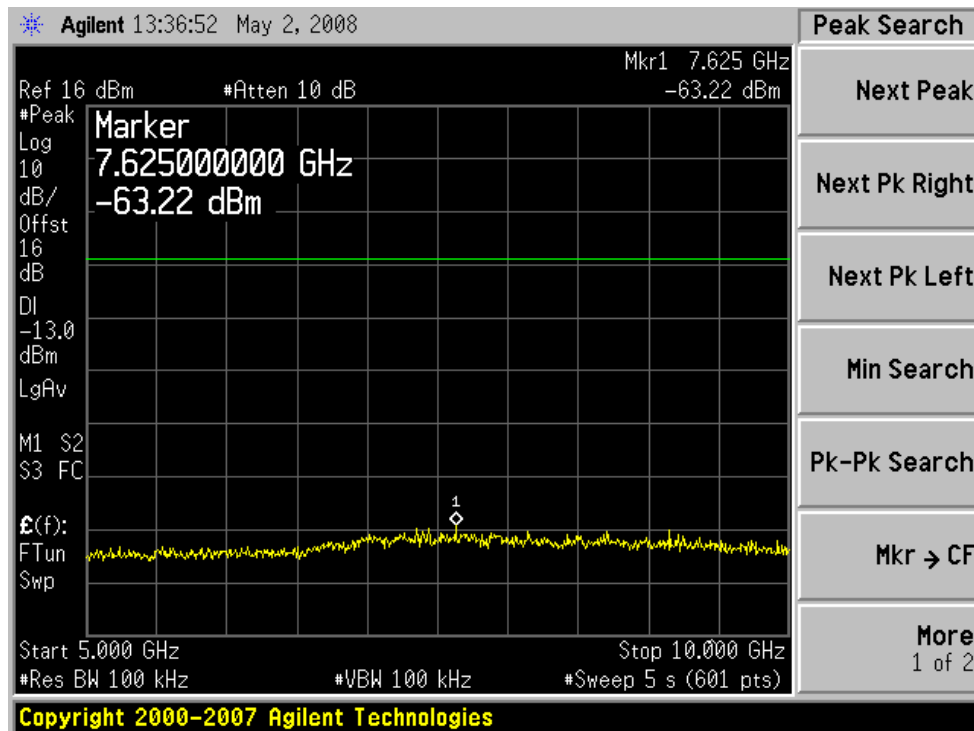
Plot 3: 30 MHz to 1 GHz



Plot 4: 1 GHz to 5 GHz

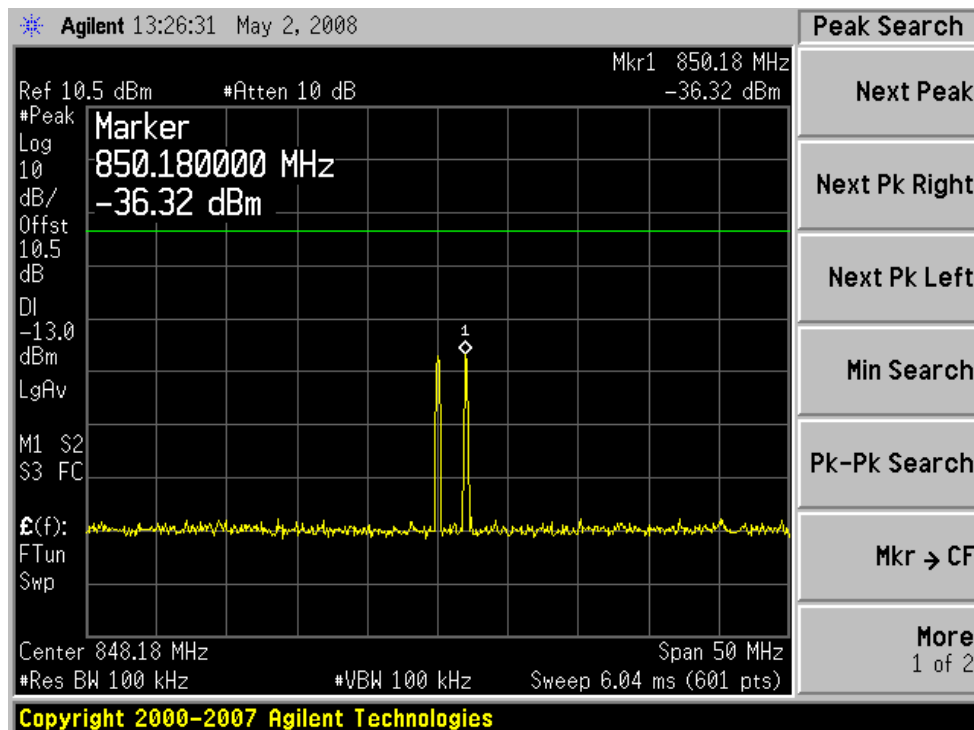


Plot 5: 5GHz to 10 GHz

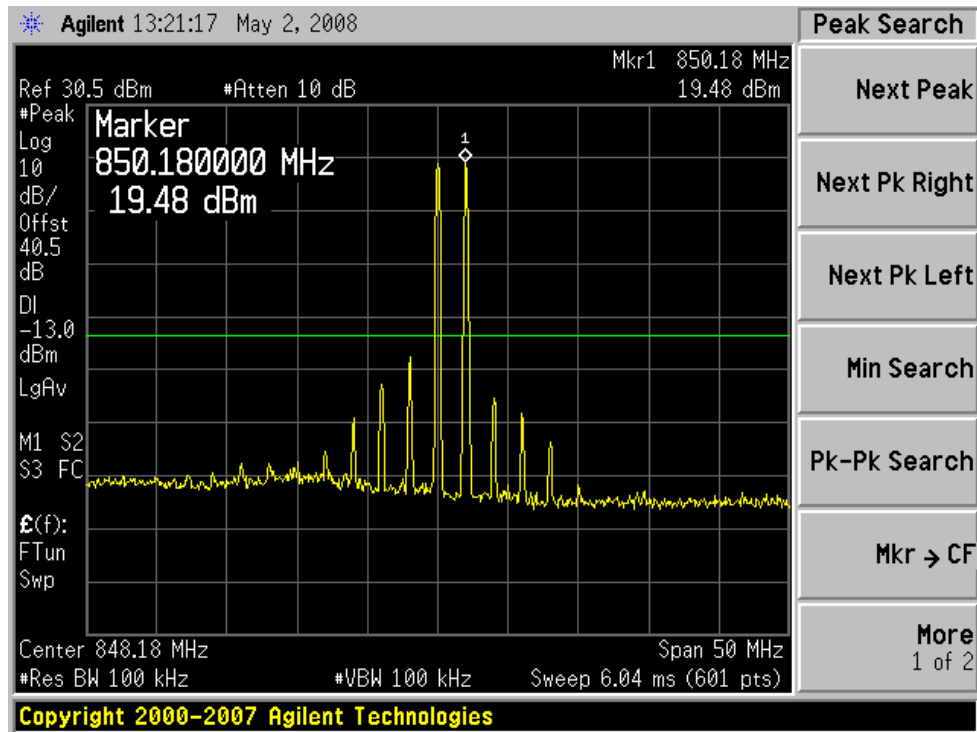


9.4.4 CDMA Reverse (Uplink): High Channel

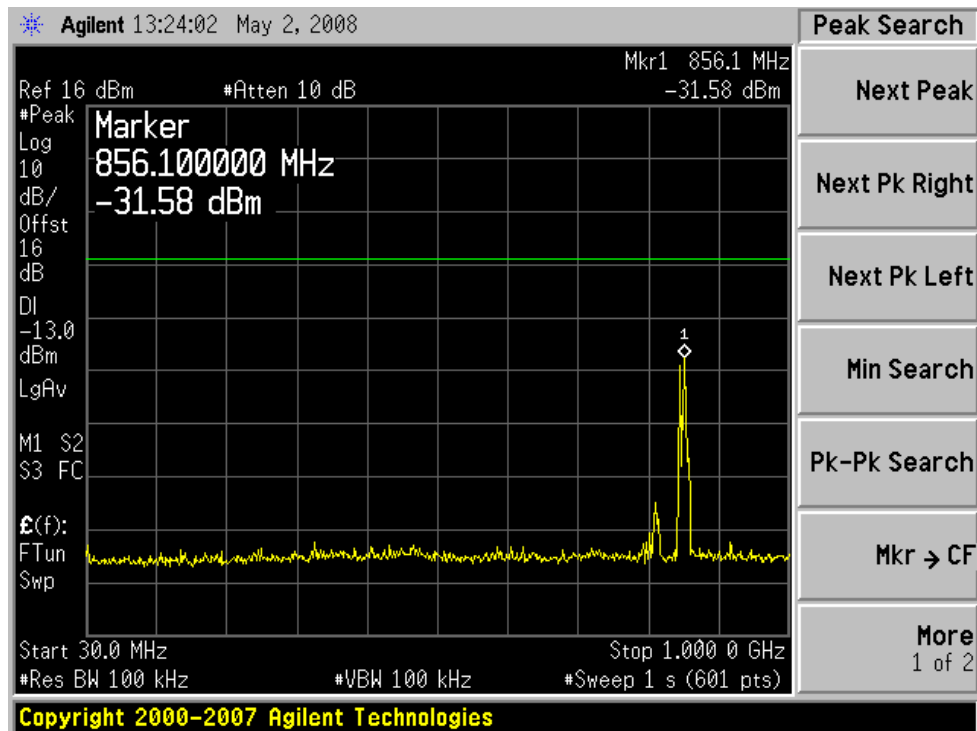
Plot 1: Intermodulation - Input



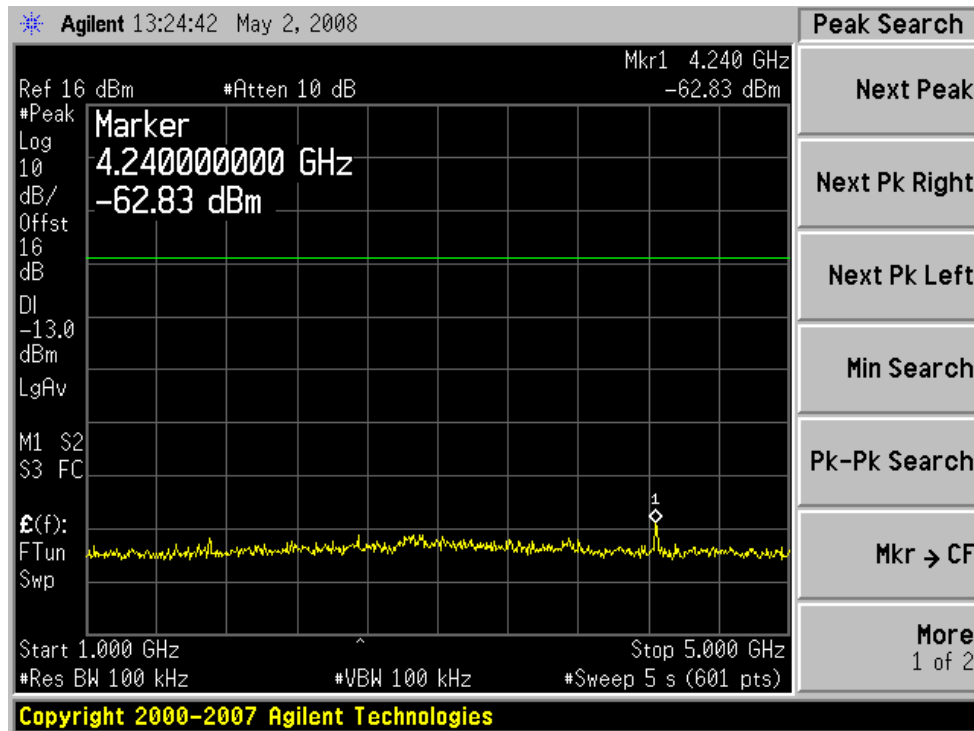
Plot 2: Intermodulation - Output



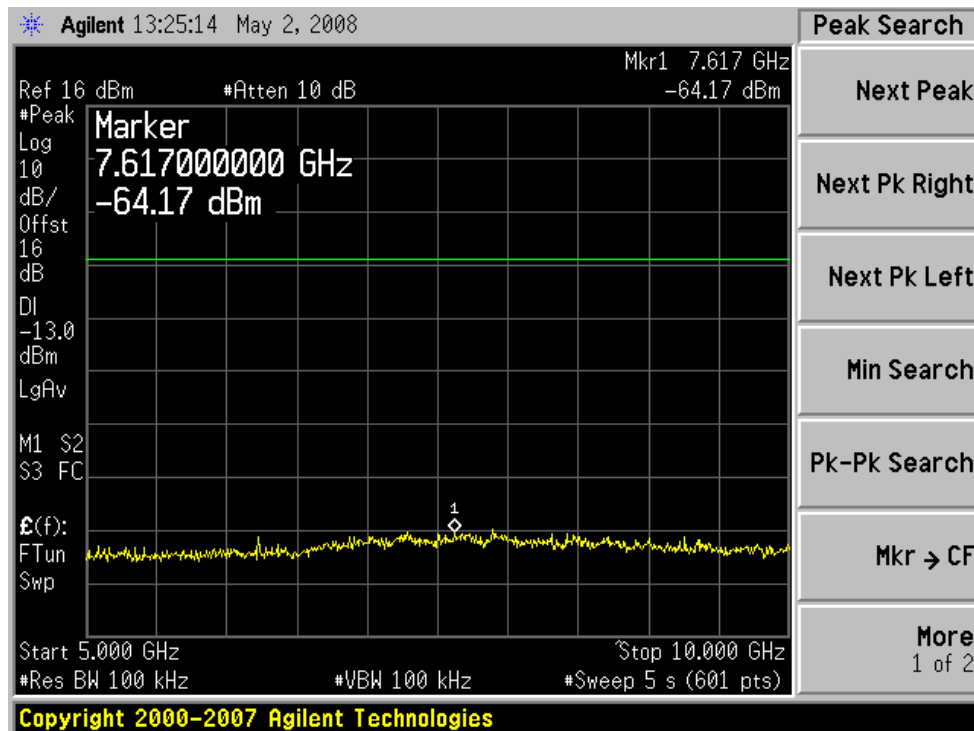
Plot 3: 30 MHz to 1 GHz

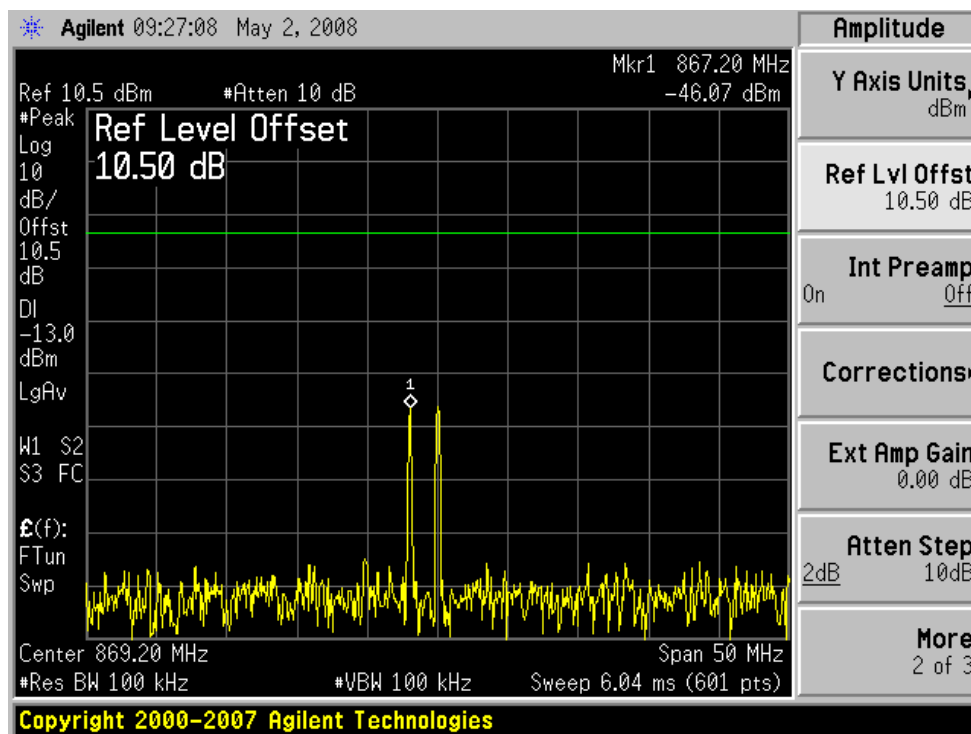
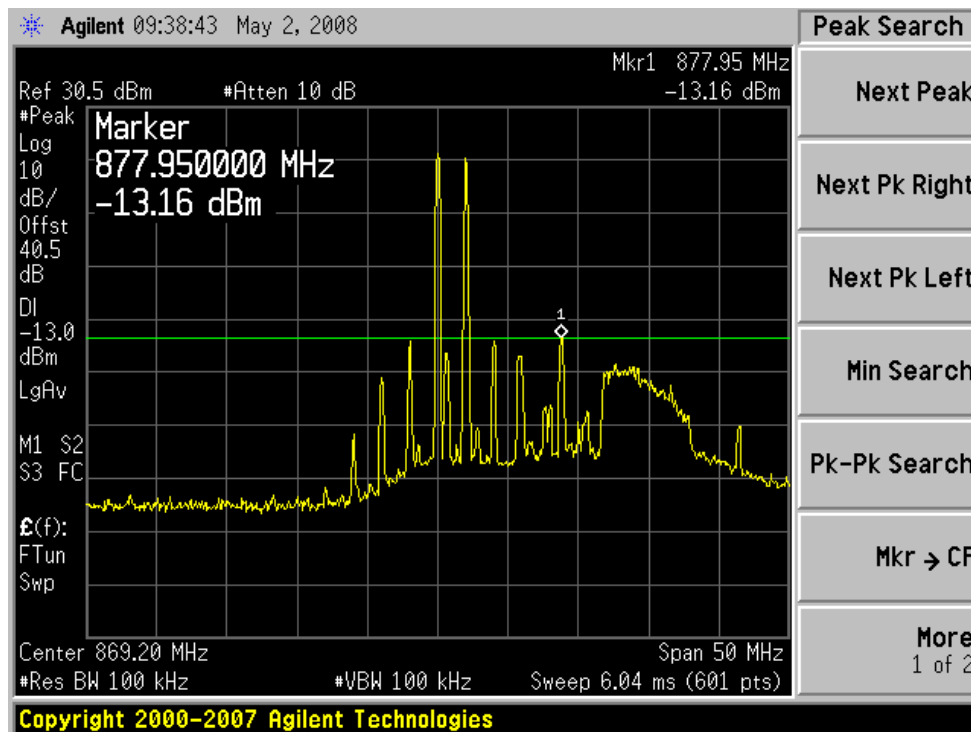


Plot 4: 1 GHz to 5 GHz

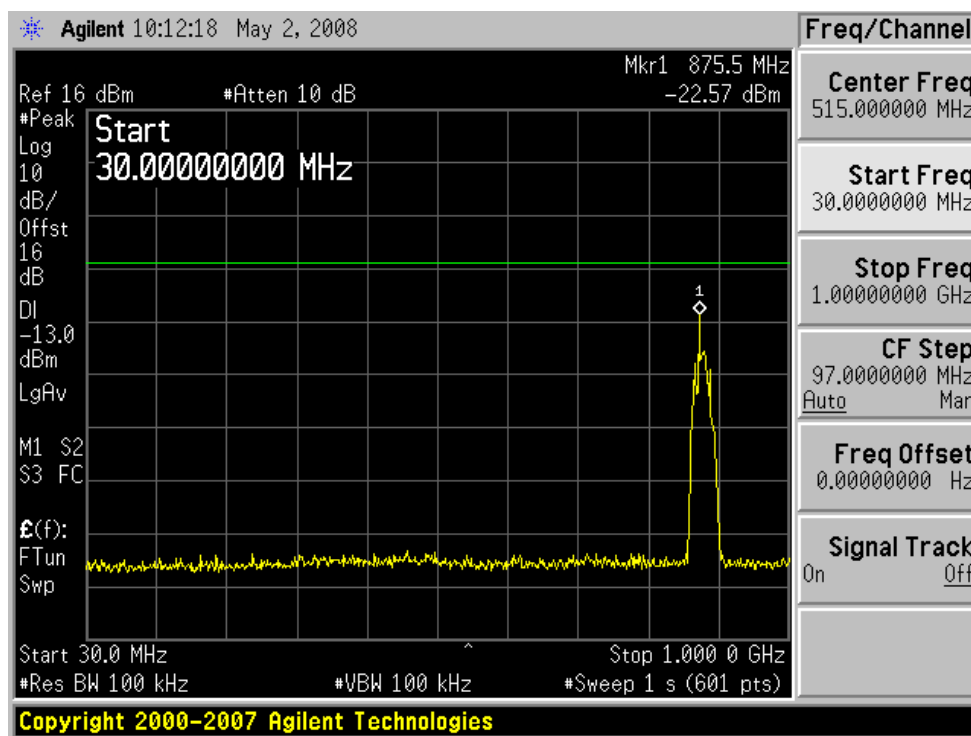


Plot 5: 5GHz to 10GHz

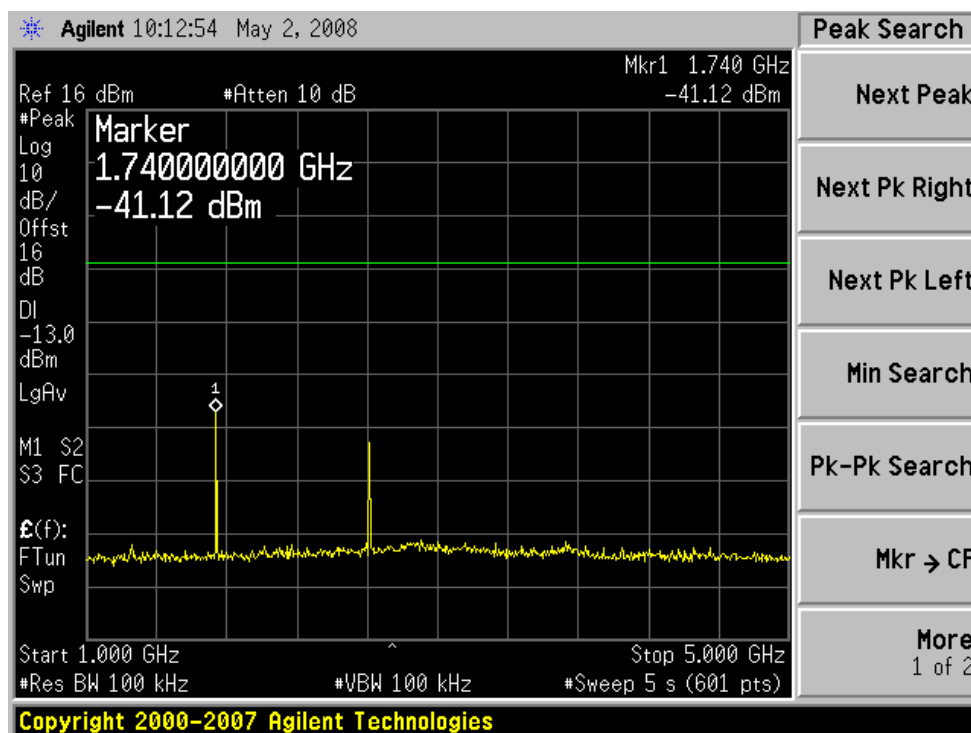


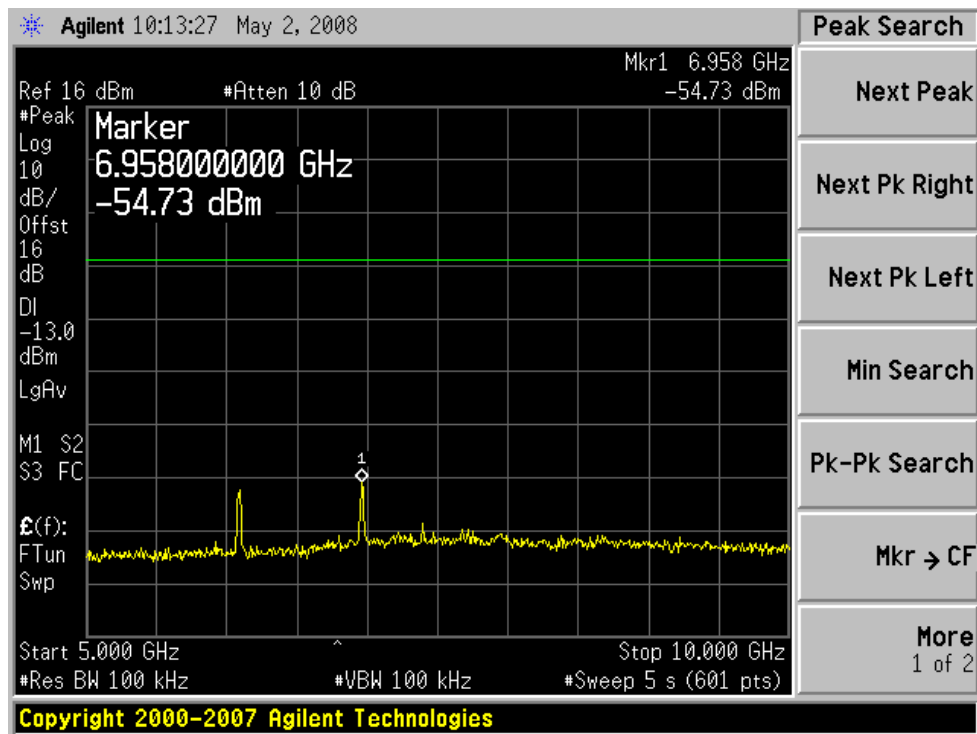
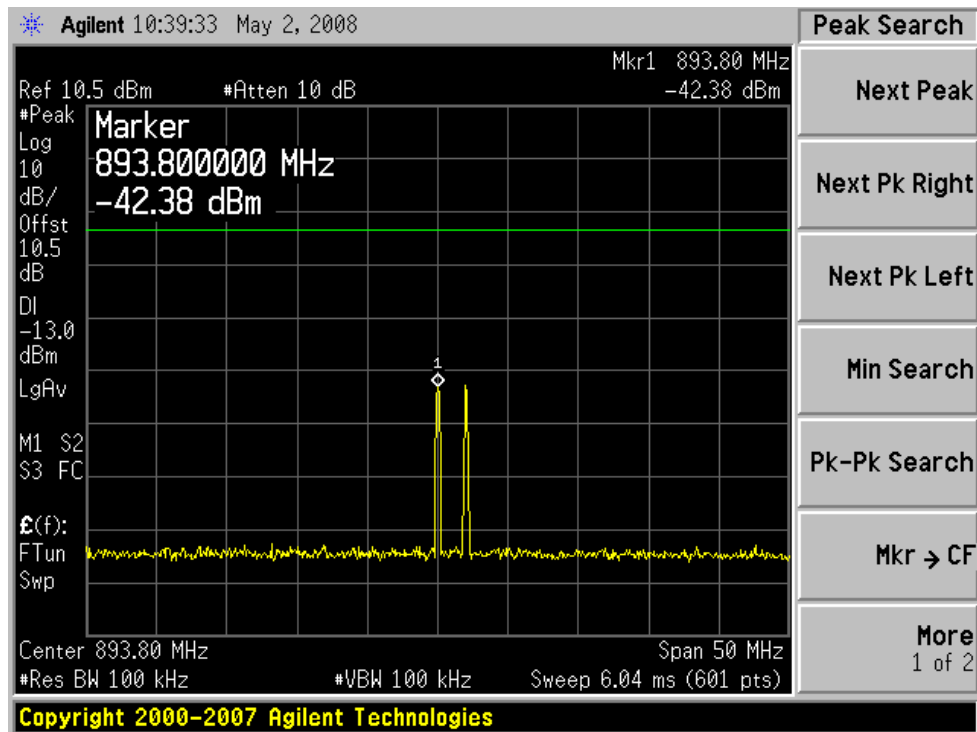
9.4.5 GSM Forward (Downlink): Low Channel**Plot 1: Intermodulation - Input****Plot 2: Intermodulation - Output**

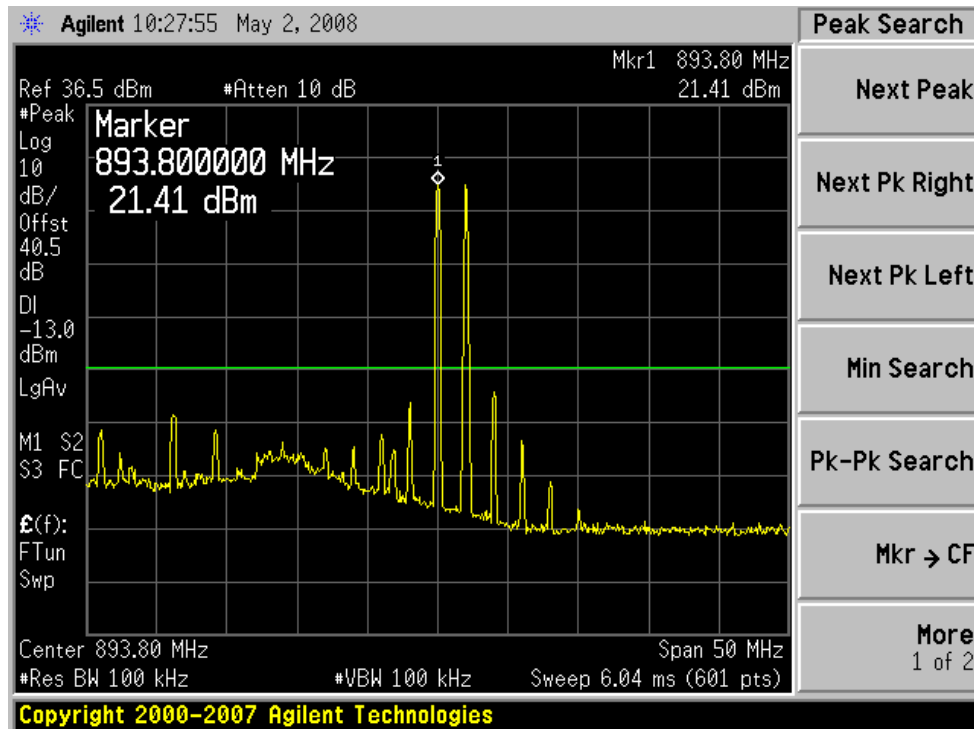
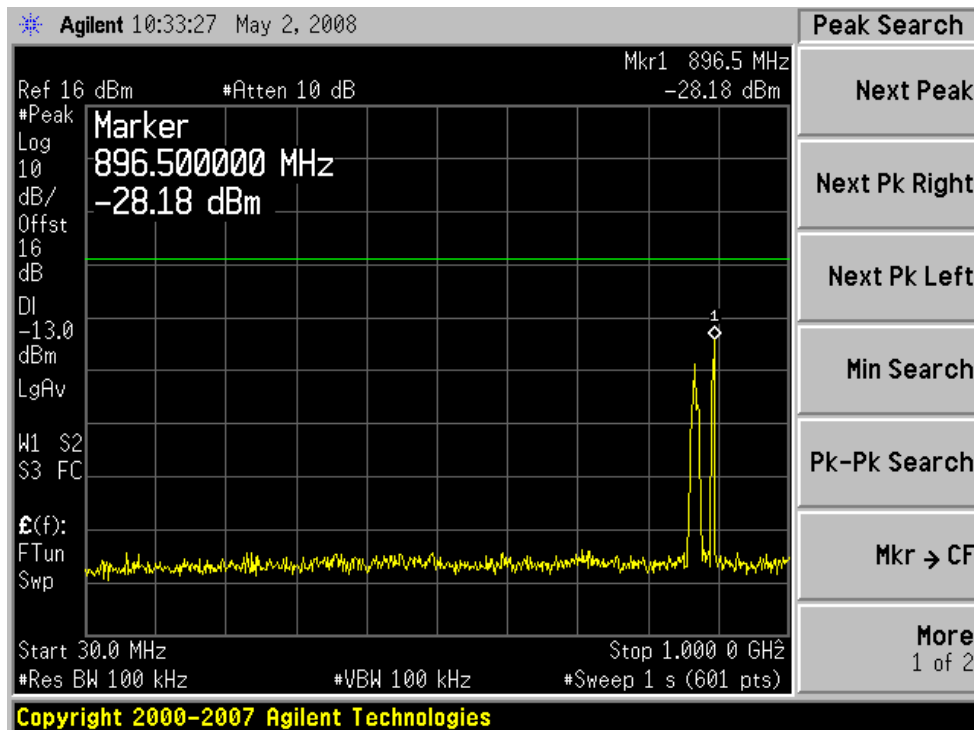
Plot 3: 30 MHz to 1 GHz



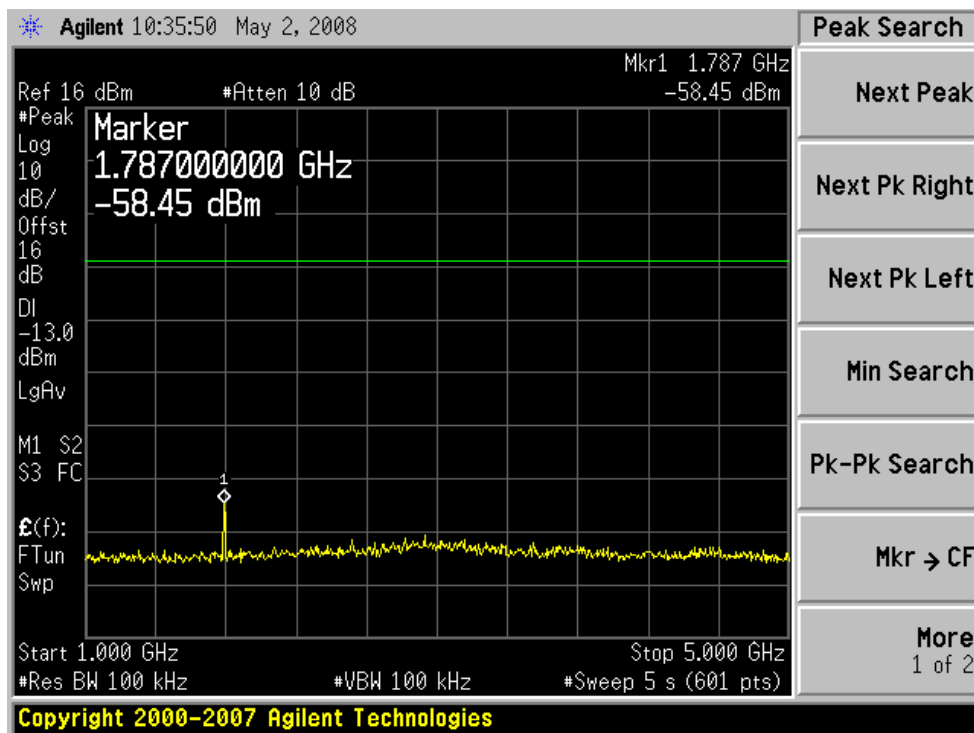
Plot 4: 1 GHz to 5 GHz



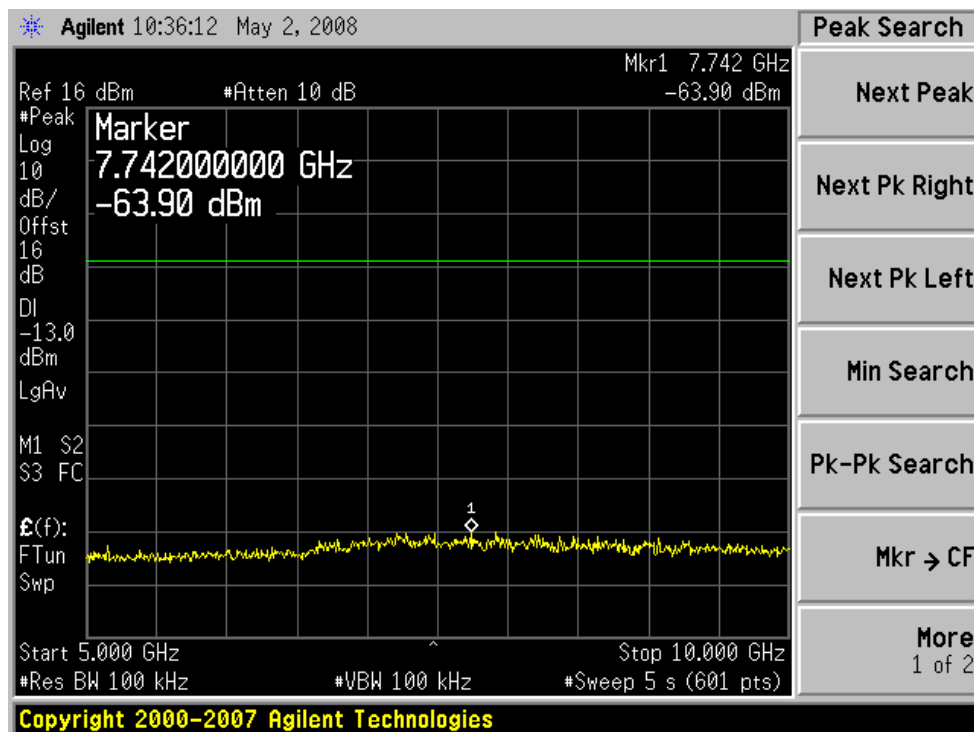
Plot 5: 5 GHz to 10 GHz**9.4.6 GSM Forward (Downlink): High Channel****Plot 1: Intermodulation - Input**

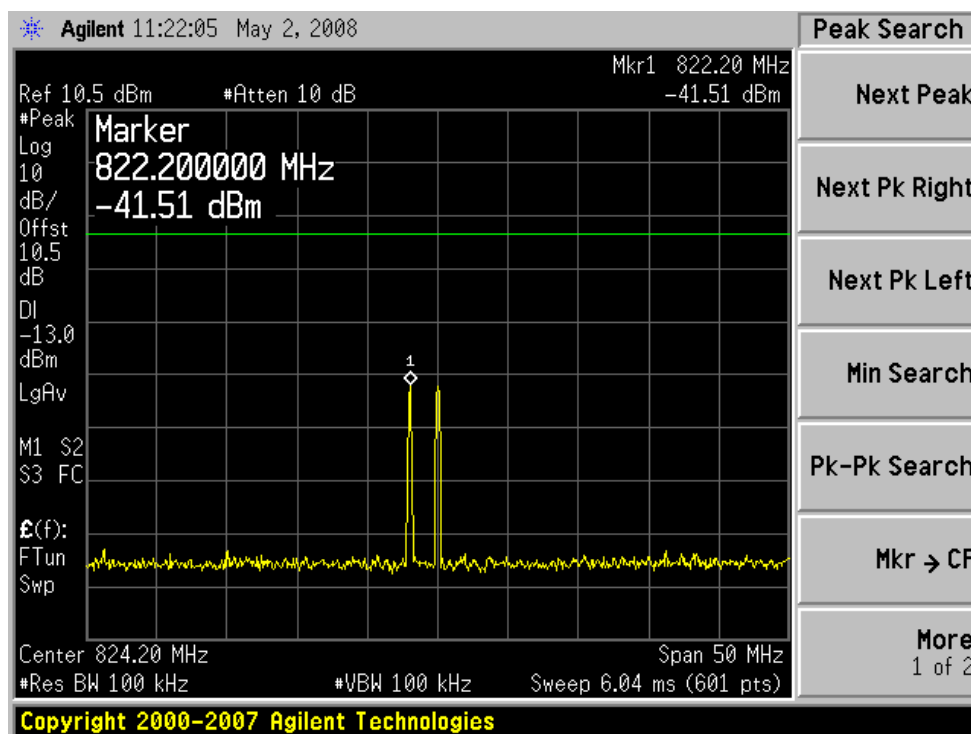
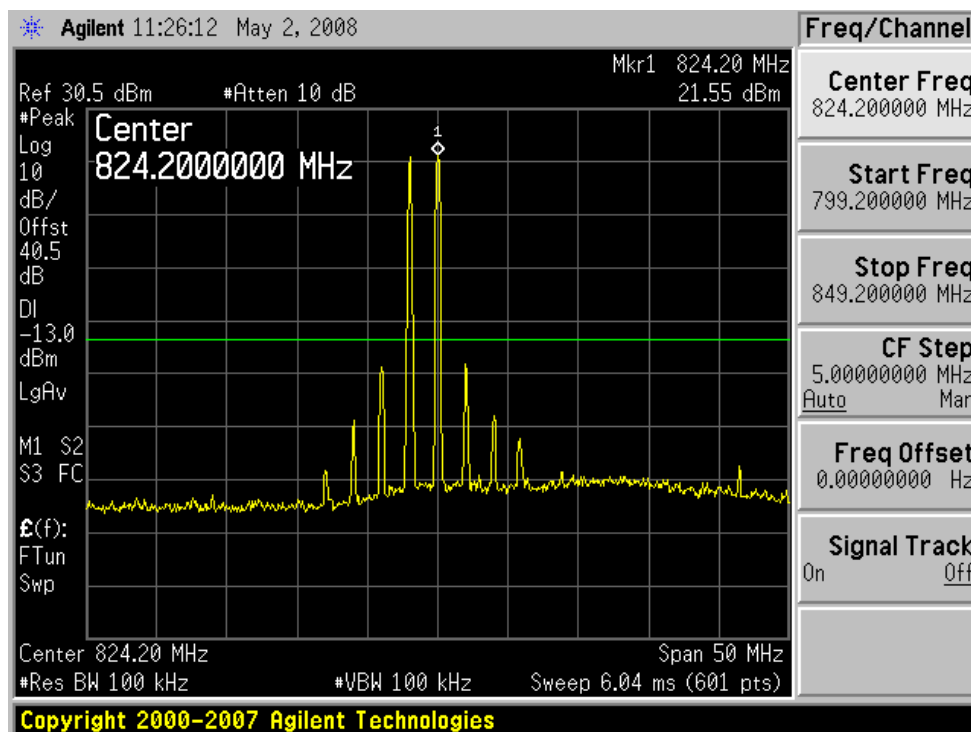
Plot 2: Intermodulation - Output**Plot 3: 30 MHz to 1 GHz**

Plot 4: 1 GHz to 5 GHz

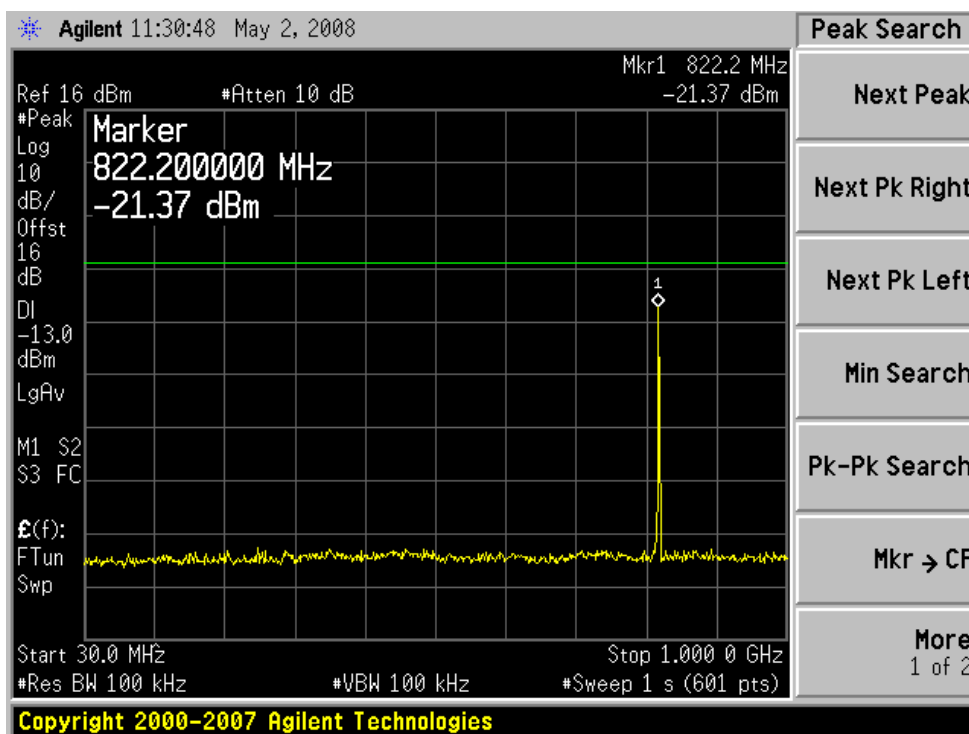


Plot 5: 5 GHz to 10 GHz

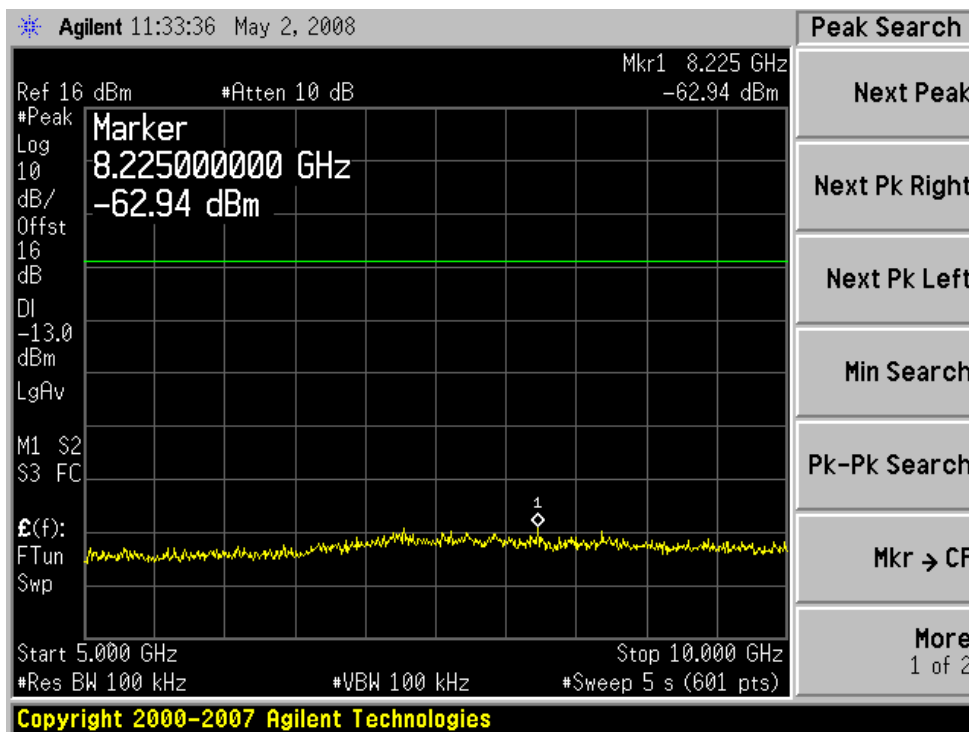


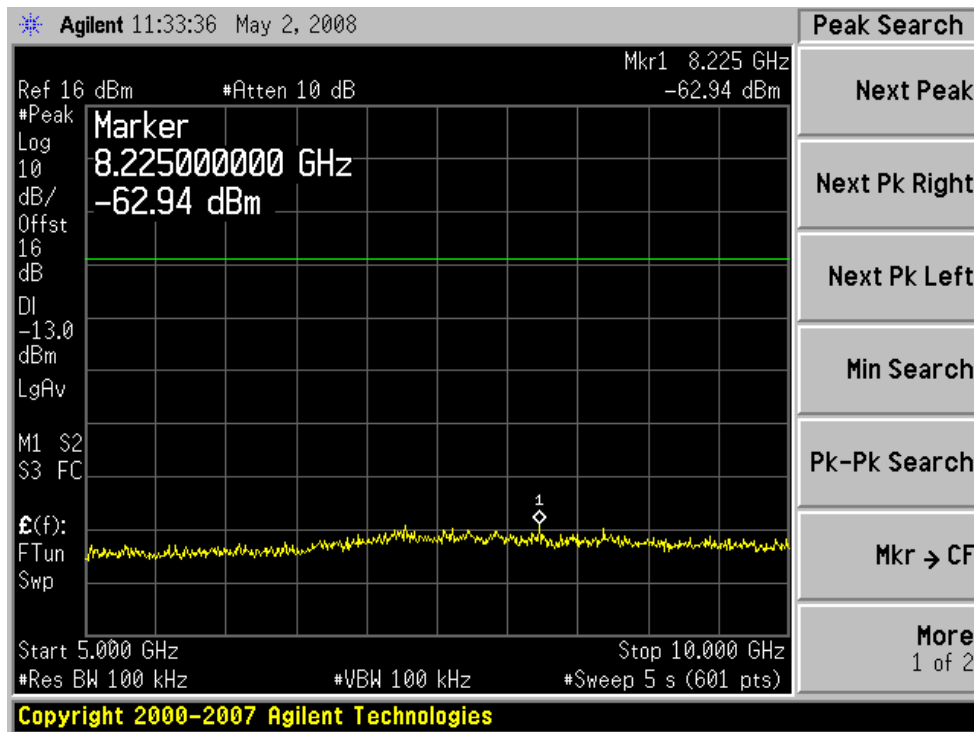
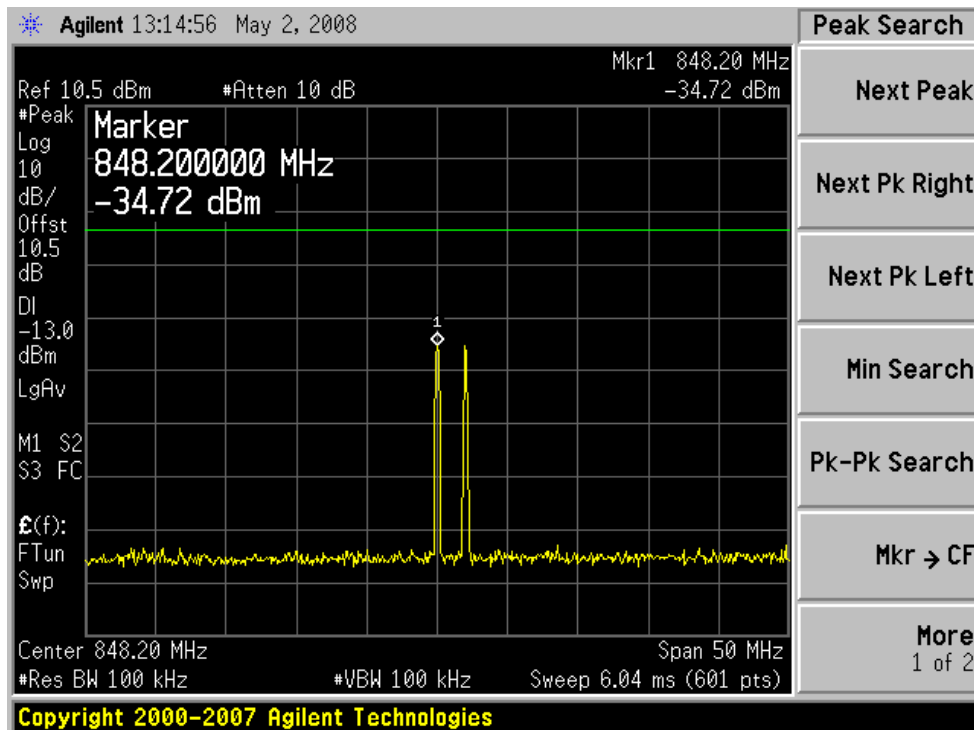
9.4.7 GSM Reverse (Uplink): Low Channel**Plot 1: Intermodulation - Input****Plot 2: Intermodulation - Output**

Plot 3: 30 MHz to 1 GHz

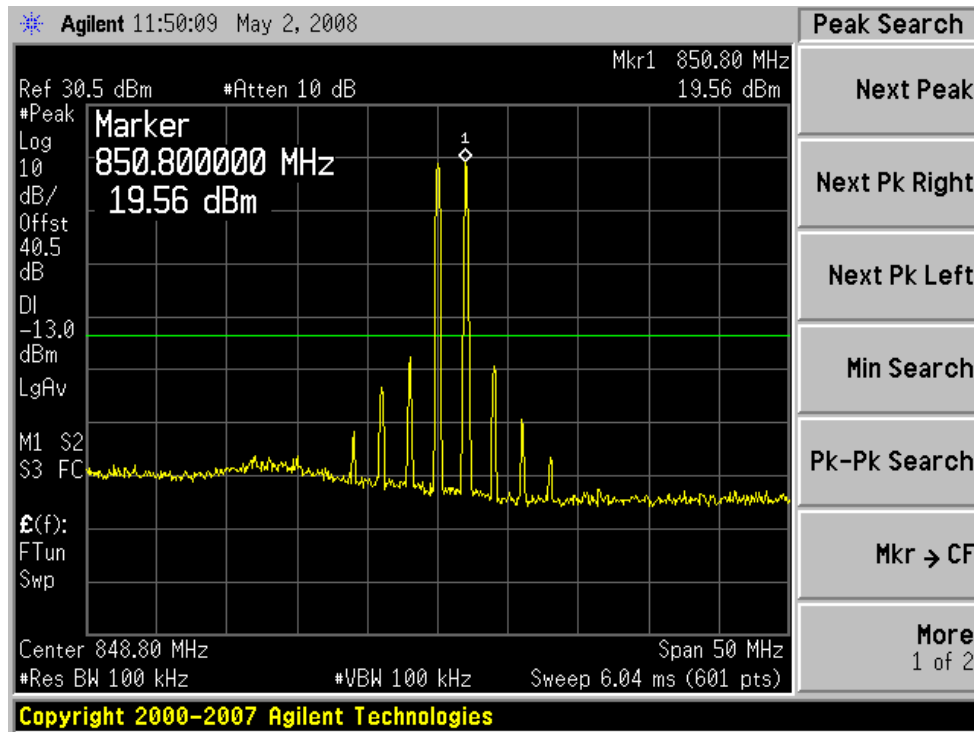


Plot 4: 1 GHz to 5 GHz

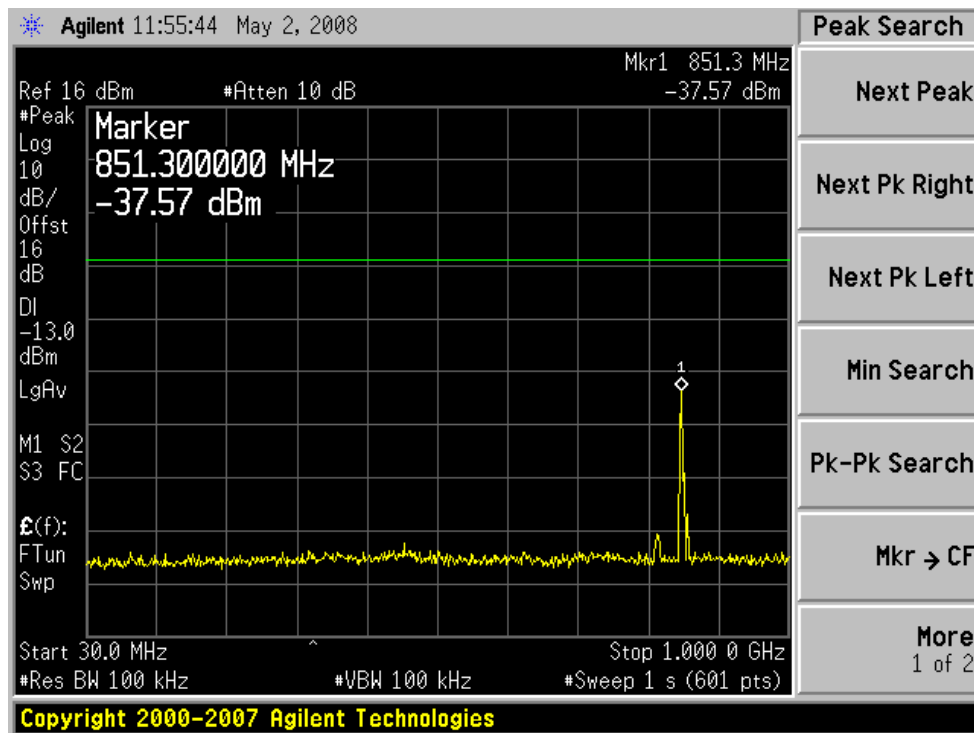


Plot 5: 5 GHz to 10 GHz**9.4.8 GSM Reverse (Uplink): High Channel****Plot 1: Intermodulation - Input**

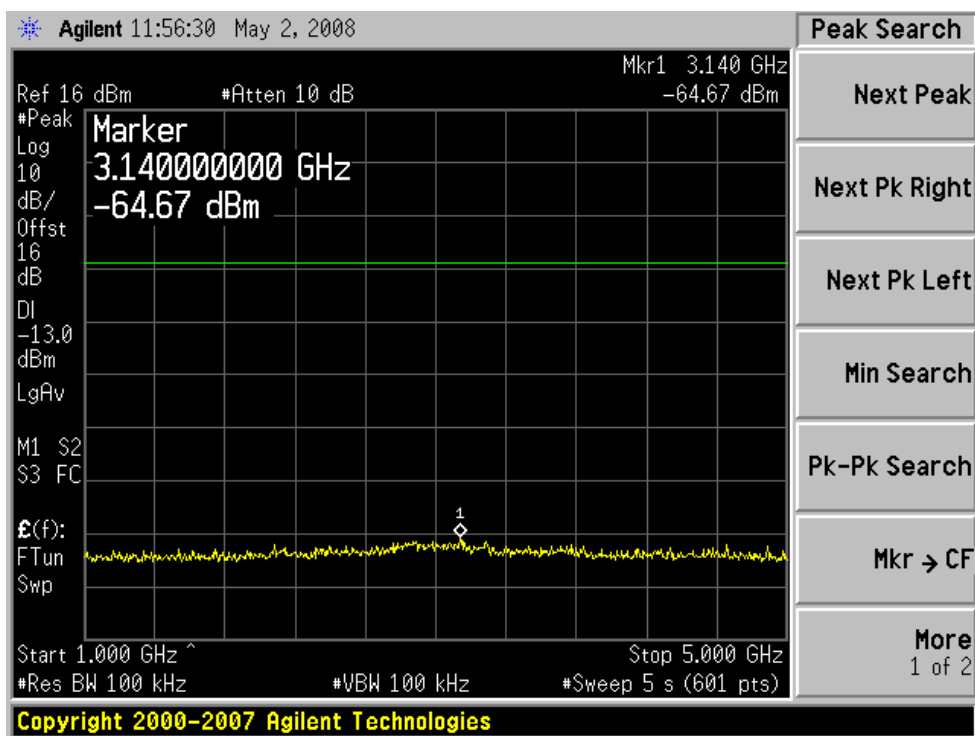
Plot 2: Intermodulation - Output



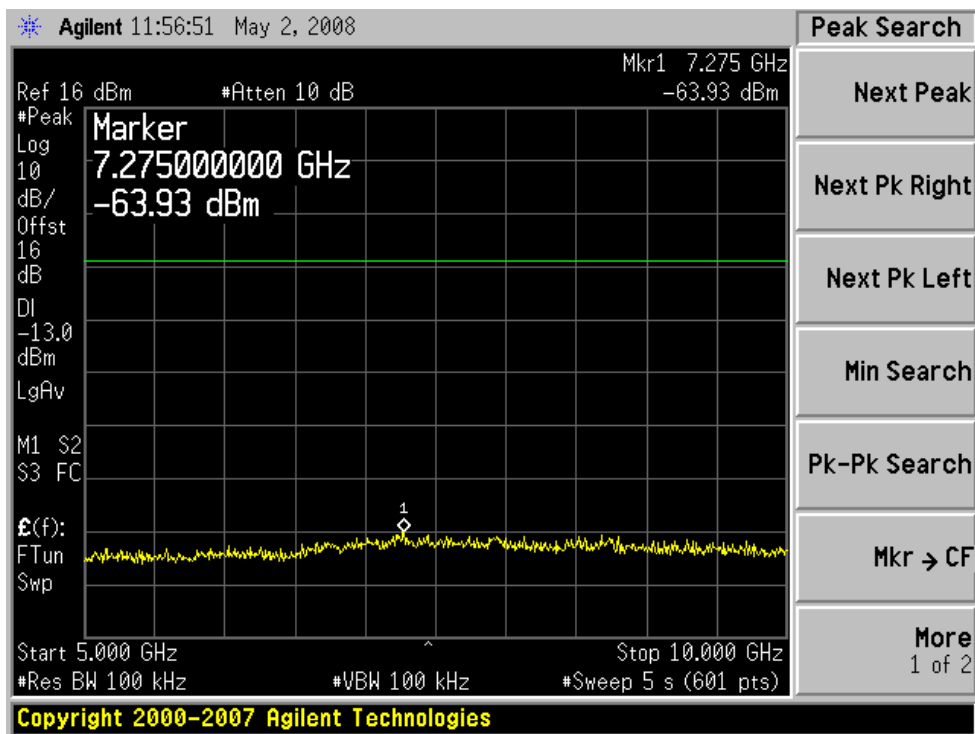
Plot 3: 30 MHz to 1 GHz



Plot 4: 1 GHz to 5 GHz



Plot 5: 5 GHz to 10 GHz



10 §22.917 – BAND EDGE

10.1 Applicable Standard

According to § 22.917, the power of any emissions 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.

10.2 Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency, RBW set to 10 kHz.

10.2.1 Environmental Conditions

Temperature:	19 °C
Relative Humidity:	58 %
ATM Pressure:	101.8 kPa

* The testing was performed by Xiao Ming Hu on 2008-04-25.

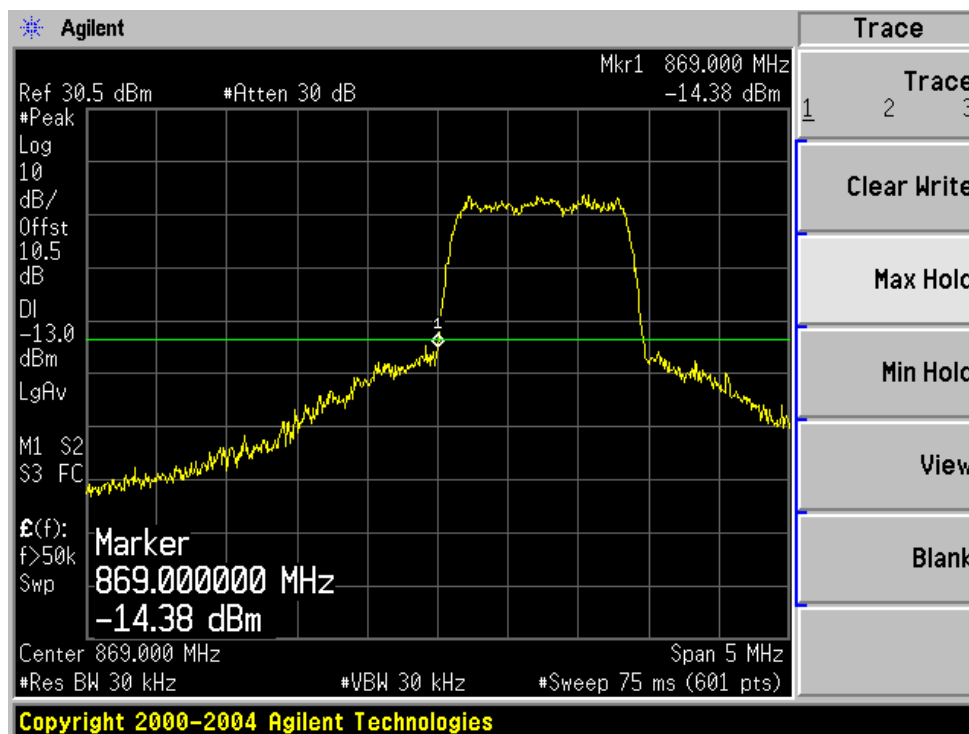
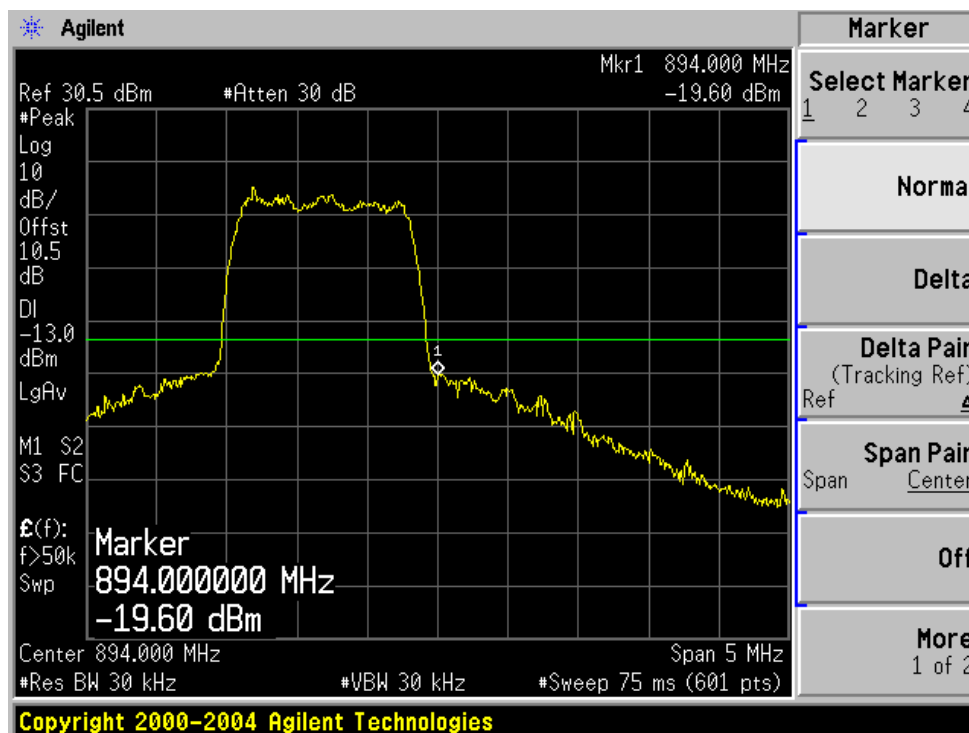
10.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Analyzer, Spectrum	E4446A	US44300386	2007-04-26

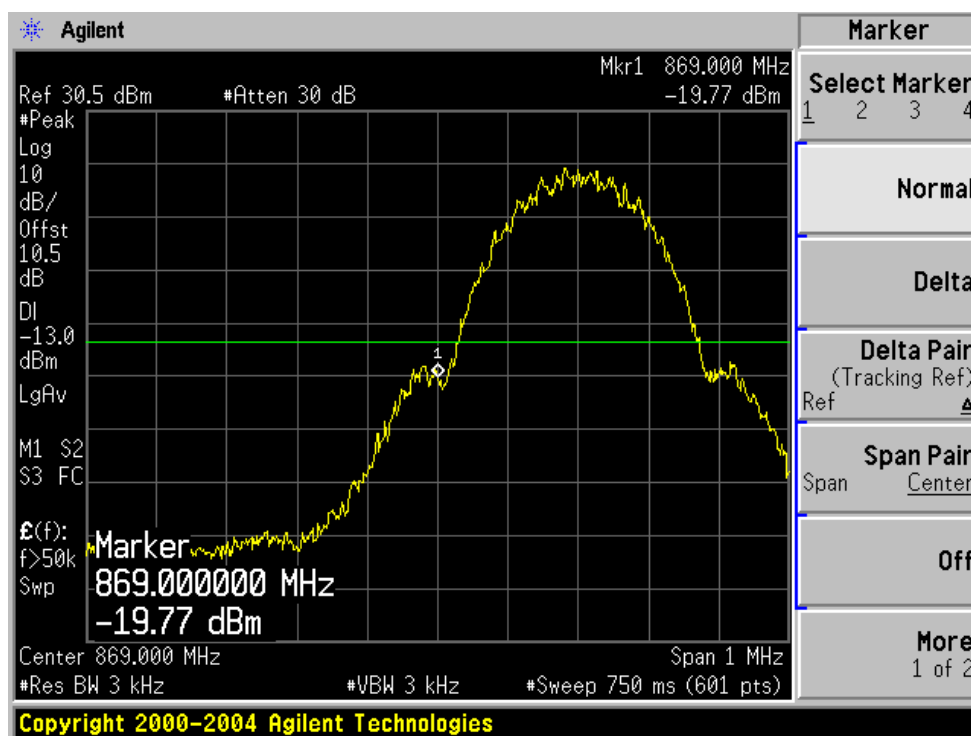
* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

10.4 Test Results

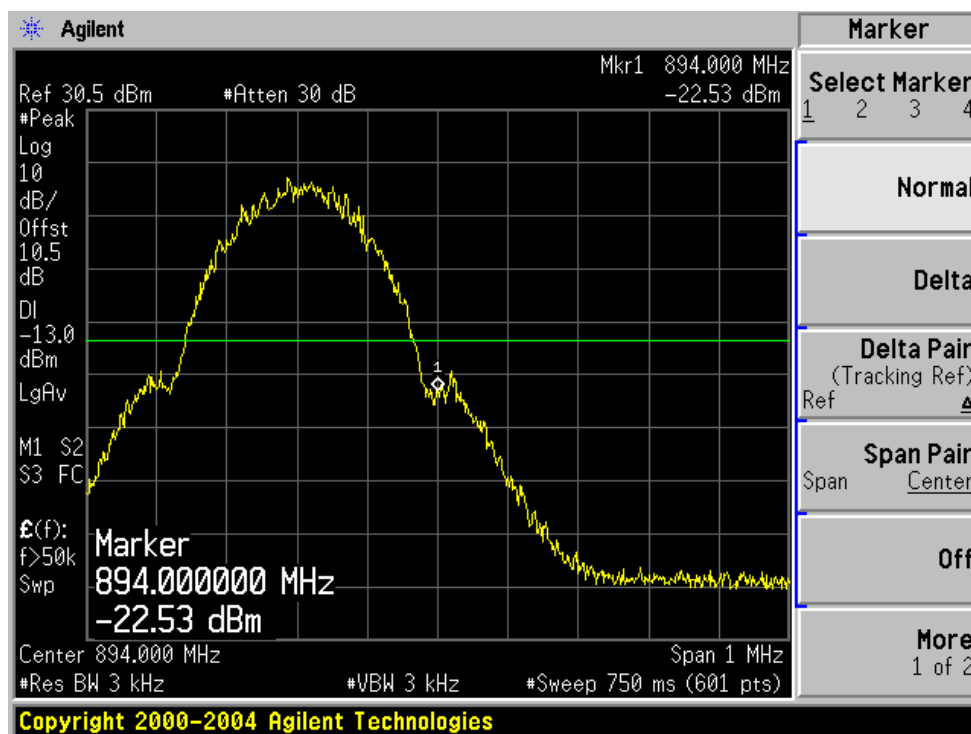
Please refer to the following plots.

10.4.1 CDMA: Forward (Downlink): Lowest Channel**10.4.2 CDMA: Forward (Downlink): Highest Channel**

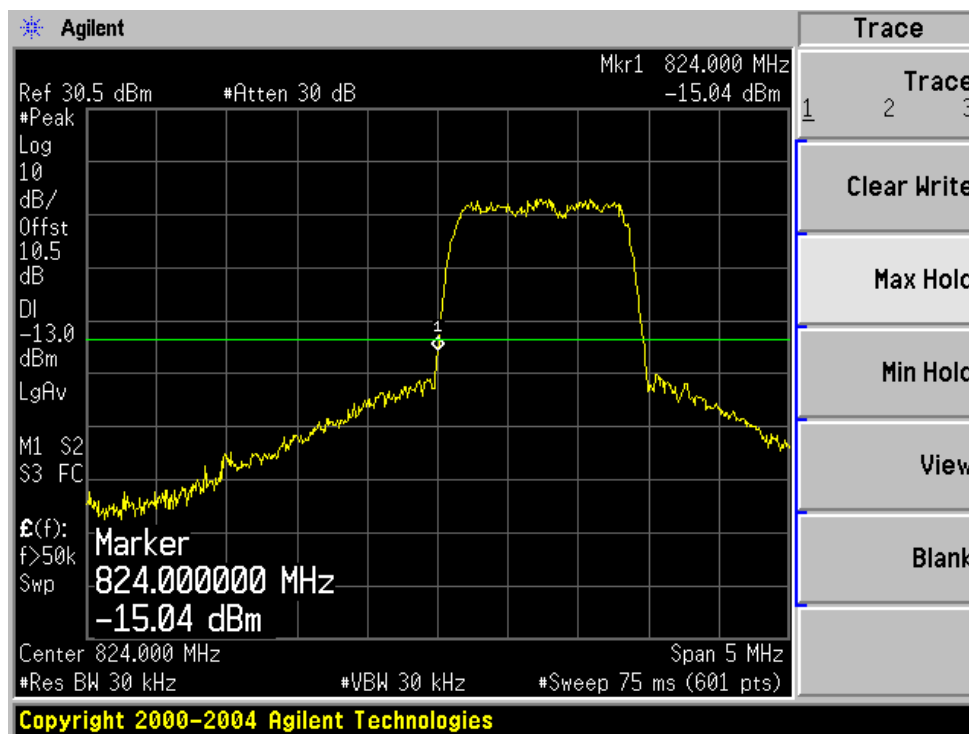
10.4.3 GSM: Forward (Downlink): Lowest Channel



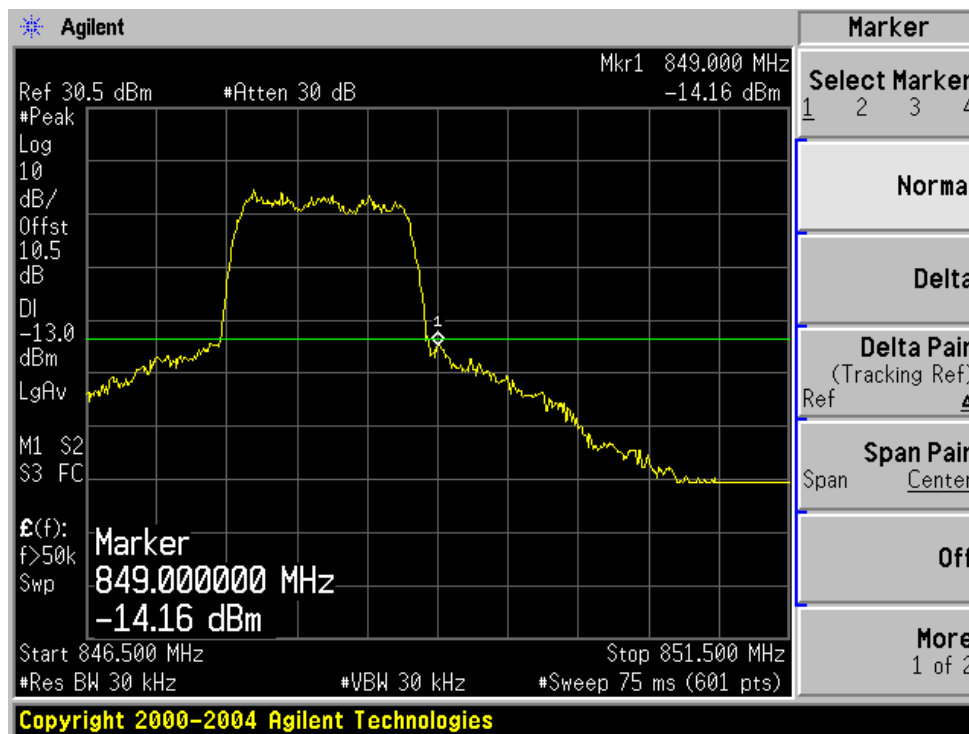
10.4.4 GSM: Forward (Downlink): Highest Channel

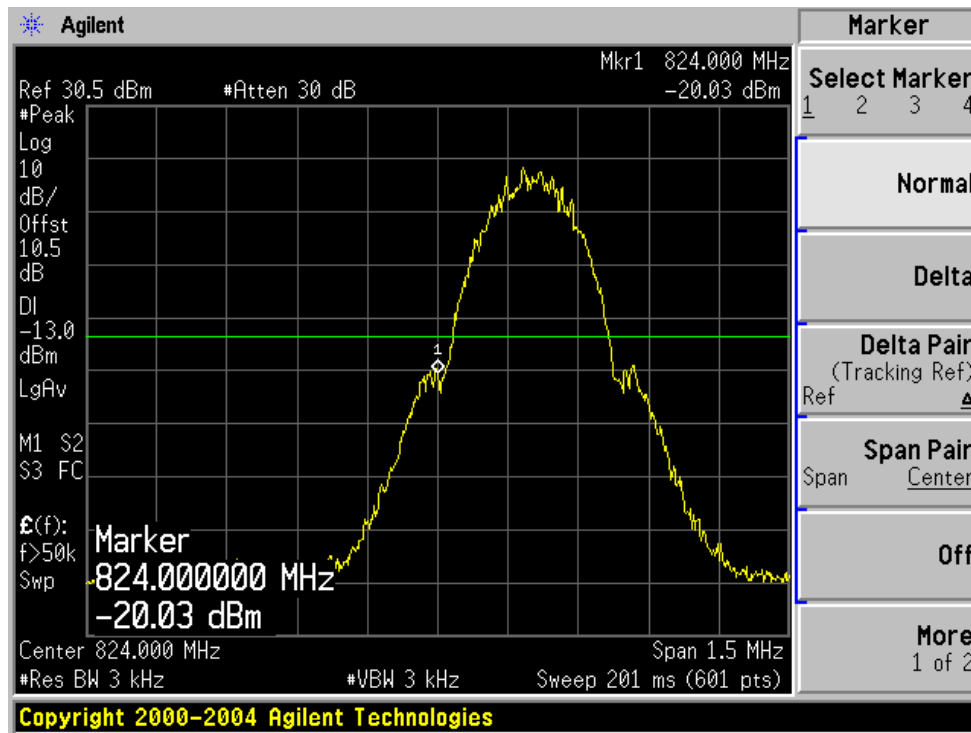


10.4.5 CDMA: Reverse (Uplink): Lowest Channel



10.4.6 CDMA: Reverse (Uplink): Highest Channel



10.4.7 GSM: Reverse (Uplink): Lowest Channel**10.4.8 GSM: Reverse (Uplink): Highest Channel**