



FCC PART 90



TEST AND MEASUREMENT REPORT

For

TX RX Systems, Inc.

30303 Aurora Rd., Solon, OH 44139, USA

FCC: EZZ5PI62

Report Type: Original Report	Product Type: Signal Booster(Bi-directional Amplifier)
Test Engineer: Victor Zhang	
Report Number: R0902232-90	
Report Date: 2009-03-27	
Reviewed By: Sr. RF Engineer	
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* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk "*" enr2

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R0902232-90	Original	2009-03-27

1 GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

The TX RX Systems, Inc. FCC ID: EZZ5PI62 or the "EUT" as referred to in this report, is a bi-directional amplifier that has dual RF paths (uplink and downlink) to extend coverage in RF shielded environments. The uplink and downlink amplifier modules are electrically identical with common ALC control and alarm circuitry.

1.2 Mechanical Description

The EUT Approximate measurement is: 388mm (L) x 391 mm (W) x 188 mm (H). It is of metallic construction.

* The test data gathered are from typical production sample, serial number: B2107, provided by BACL.

1.3 EUT Photo



Please see additional photos in Exhibit C

1.4 Objective

This type approval report is prepared on behalf of TX RX Systems, Inc. in accordance with Part 2 Subpart J, and Part 90 of the Federal Communication Commissions 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 90 Private Land Mobile Radio Services

Applicable Standards: TIA EIA 98-C, TIA/EIA-603-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, BAEL 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 Local Support Equipment List and Details

Manufacturers	Descriptions	Models	Serial Number
Narda	30dB attenuator pad	768-30	N/A
Narda	10dB attenuator pad	768-10	N/A

2.5 Interface Ports and Cabling

Cable Descriptions	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 Tests	Results
§ 2.1046 § 90.207	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	N/A
§ 2.1049 § 90.209, §90.210	Occupied Bandwidth and Emission Mask	Compliant
§ 2.1051 § 90.210 § 90.669	Spurious Emissions at Antenna Terminals	Compliant
§ 2.1053 § 90.210	Field Strength of Spurious Radiation	Compliant
§ 2.1055 § 90.213	Frequency Stability	N/A
§2.1091	RF Exposure	Compliant

4 §2.1046 and §90.205 – RF OUTPUT POWER

4.1 Applicable Standard

FCC §2.1046 and §90.205.

4.2 Test Procedure

Conducted:

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

4.3 Environmental Conditions

Temperature:	22-24 °C
Relative Humidity:	45-47 %
ATM Pressure:	101-102.1kPa

* The testing was performed by Victor Zhang from 2009-03-16 to 2009-03-22 in RF Site.

4.4 Test Equipment List and Details

Manufacturers	Descriptions	Models	Serial Numbers	Calibration Dates
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28
HP	Signal Generator	8648C	3426A00417	2008-05-28
Agilent	ESG Vector Signal Generator	E44387C	MY45092922	2009-01-23

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

4.5 Summary of Test Results

RF Output Power with Modulation, Single Channel Input:

Operating Frequency Band (MHz)	Test Frequency (MHz)	Modulation Type	RF Output Power (dBm)	RF Output Power (Watt)
762-776	762	F1D/F1E/F3D/F3E/F9W	36.43	4.3954
	769	F1D/F1E/F3D/F3E/F9W	36.28	4.2462
	776	F1D/F1E/F3D/F3E/F9W	36.15	4.1210
792-806	792	F1D/F1E/F3D/F3E/F9W	36.79	4.7753
	799	F1D/F1E/F3D/F3E/F9W	36.25	4.2170
	806	F1D/F1E/F3D/F3E/F9W	36.41	4.3752
806-824	806	F1D/F1E/F3D/F3E/F9W/GXW	36.41	4.3752
	815	F1D/F1E/F3D/F3E/F9W/GXW	37.02	5.0350
	824	F1D/F1E/F3D/F3E/F9W/GXW	37.86	6.1094
851-869	851	F1D/F1E/F3D/F3E/F9W/GXW	37.94	6.2230
	860	F1D/F1E/F3D/F3E/F9W/GXW	37.96	6.2517
	869	F1D/F1E/F3D/F3E/F9W/GXW	37.35	5.4325
896-901	896	GXW	36.18	4.1495
	898.5	GXW	37.60	5.7544
	901	GXW	37.34	5.4200
935-940	935	GXW	35.11	3.2434
	937.5	GXW	35.08	3.2211
	940	GXW	35.82	3.8194

5 §2.1047 - MODULATION CHARACTERISTIC

5.1 Applicable Standard

According to FCC § 2.1047(d) and Part 90, the EUT is an amplifier and there is no modulating/or limiting circuit, therefore modulation characteristic is not presented.

5.2 Test Result

N/A

6 §2.1049 and §2.209 – OCCUPIED BANDWIDTH

6.1 Applicable Standard

Requirements: CFR 47 §2.1049, §90.209, §90.210

6.2 Test Procedure

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

According to the FCC 2-11-04/EAB/RF, Input and output signals were compared to verify that there was no any degradation to the signal due to amplification and conversion from the repeater using an RBW of 300 Hz or 1% of the emission bandwidth. Then the 20 dB & 99% bandwidth was recorded.

6.3 Environmental Conditions

Temperature:	22-24 °C
Relative Humidity:	45-47 %
ATM Pressure:	101-102.1kPa

* The testing was performed by Victor Zhang from 2009-03-16 to 2009-03-22 in RF Site.

6.4 Test Equipment List and Details

Manufacturers	Descriptions	Models	Serial Numbers	Calibration Dates
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28
HP	Signal Generator	8648C	3426A00417	2008-05-28
Agilent	ESG Vector Signal Generator	E44387C	MY45092922	2009-01-23

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

6.5 Summary of Test Results

Operation Frequency Band – 762 to 776 MHz

Modulation: FM (With 2.5 kHz Sine Wave Audio Source)

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
FM (With Audio)	Low	762	7.7258
	Middle	769	7.7259
	High	776	7.7308

Modulation: FM (With 9600bps Data Source)

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
FM (With Data)	Low	762	8.7247
	Middle	769	8.8393
	High	776	8.8098

Modulation: C4FM (P25)

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
C4FM	Low	762	8.5215
	Middle	769	8.2897
	High	776	8.5305

Modulation: 2L-FSK

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
2L-FSK	Low	762	11.3343
	Middle	769	11.1664
	High	776	11.1881

Operation Frequency Band – 792 to 806 MHz

Modulation: FM (With 2.5 kHz Sine Wave Audio Source)

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
FM (With Audio)	Low	792	7.7271
	Middle	799	7.7292
	High	806	7.7216

Modulation: FM (With 9600bps Data Source)

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
FM (With Data)	Low	792	8.9592
	Middle	799	8.9240
	High	806	8.8926

Modulation: C4FM (P25)

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
C4FM	Low	792	8.4018
	Middle	799	8.6387
	High	806	8.4666

Modulation: 2L-FSK

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
2L-FSK	Low	792	11.3476
	Middle	799	11.6138
	High	806	11.5921

Operation Frequency Band – 806 to 824MHz

Modulation: FM (With 2.5 kHz Sine Wave Audio Source)

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
FM (With Audio)	Low	806	7.7216
	Middle	815	7.7229
	High	824	7.7269

Modulation: FM (With 9600bps Data Source)

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
FM (With Data)	Low	806	8.8926
	Middle	815	9.0188
	High	824	9.0491

Modulation: C4FM (P25)

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
C4FM	Low	806	8.4666
	Middle	815	8.8537
	High	824	8.3780

Modulation: 2L-FSK

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
2L-FSK	Low	806	11.5921
	Middle	815	11.3814
	High	824	11.5850

Modulation: CQPSK

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
CQPSK	Low	806	4.9458
	Middle	815	4.9323
	High	824	4.9269

Modulation: TETRA

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
TETRA	Low	806	20.7681
	Middle	815	20.7807
	High	824	20.8315

Modulation: iDEN

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
iDEN	Low	806	16.2550
	Middle	815	16.4113
	High	824	16.3352

Operation Frequency Band – 851 to 869 MHz

Modulation: FM (With 2.5 kHz Sine Wave Audio Source)

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
FM (With Audio)	Low	851	7.7330
	Middle	860	7.7373
	High	869	7.7293

Modulation: FM (With 9600bps Data Source)

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
FM (With Data)	Low	851	8.7773
	Middle	860	8.8181
	High	869	8.9025

Modulation: C4FM (P25)

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
C4FM	Low	851	8.5817
	Middle	860	8.5239
	High	869	8.6889

Modulation: 2L-FSK

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
2L-FSK	Low	851	11.5922
	Middle	860	11.4138
	High	869	11.2653

Modulation: CQPSK

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
CQPSK	Low	851	4.9270
	Middle	860	4.9527
	High	869	4.9329

Modulation: TETRA

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
TETRA	Low	851	20.7678
	Middle	860	20.6642
	High	869	21.2264

Modulation: iDEN

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
iDEN	Low	851	16.2789
	Middle	860	16.2614
	High	869	16.2256

Operation Frequency Band – 896 to 901 MHz

Modulation: iDEN

Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
iDEN	Low	896	16.3684
	Middle	898.5	16.2865
	High	901	16.3456

Operation Frequency Band – 935 to 940 MHz

Modulation: iDEN

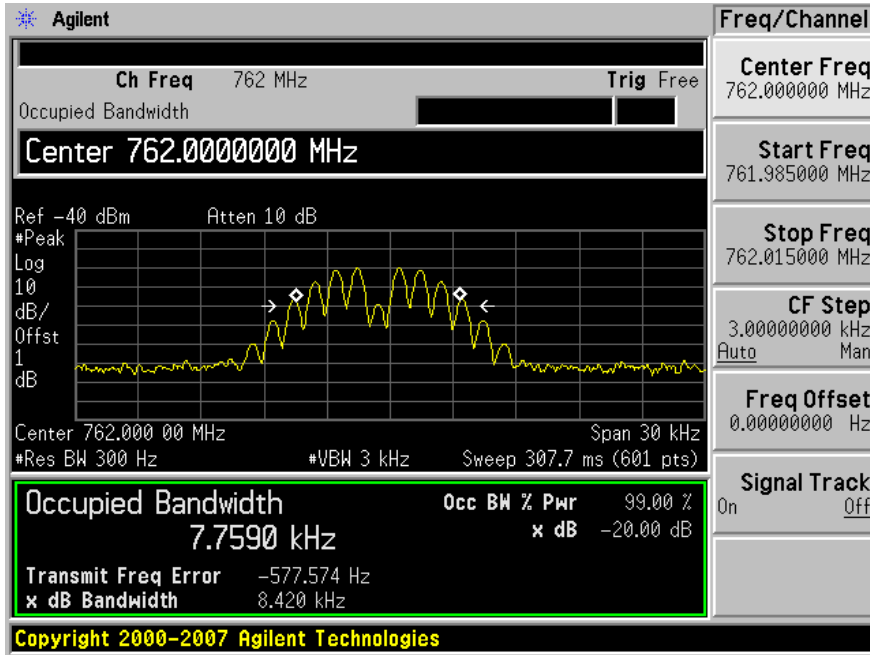
Modulation Type	Channel	Frequency (MHz)	Emission Bandwidth (kHz)
iDEN	Low	935	16.2048
	Middle	937.5	16.4726
	High	940	16.4958

Please refer to the following plots:

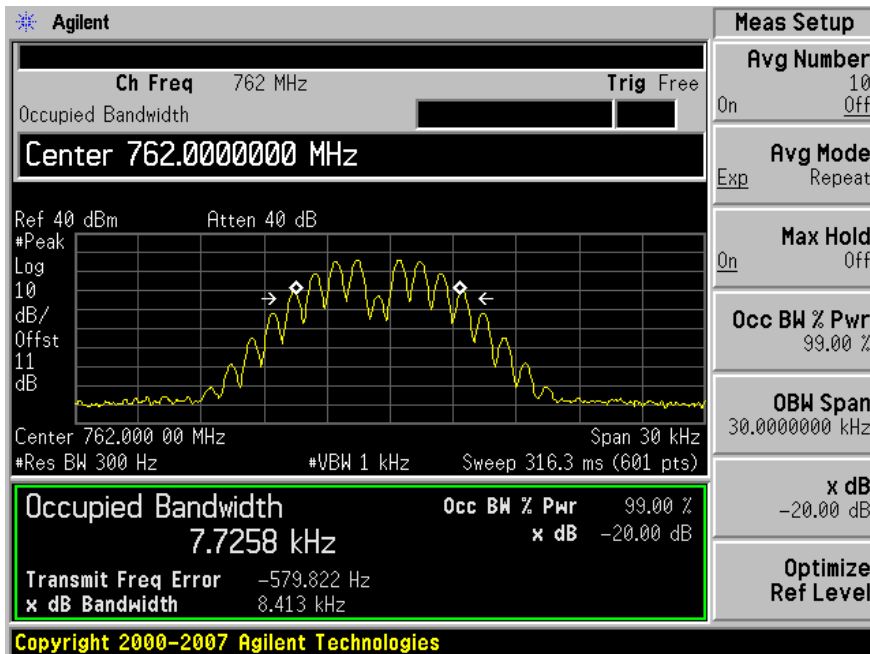
Operation Frequency Band – 762 to 776 MHz

Low Channel: 762 MHz

Input (FM with 2.5 kHz Sine Wave Audio Source)

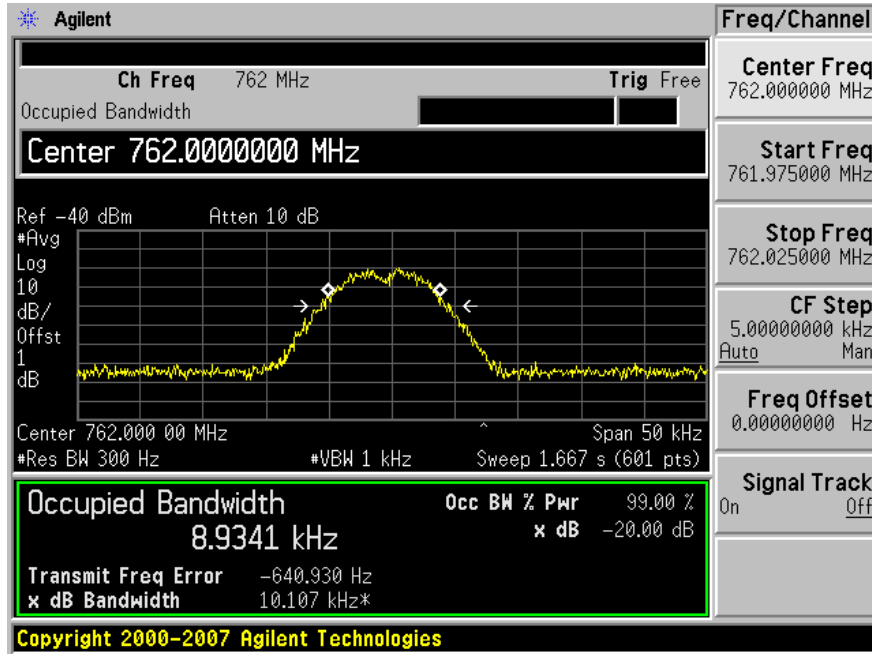


Output (FM with 2.5 kHz Sine Wave Audio Source)

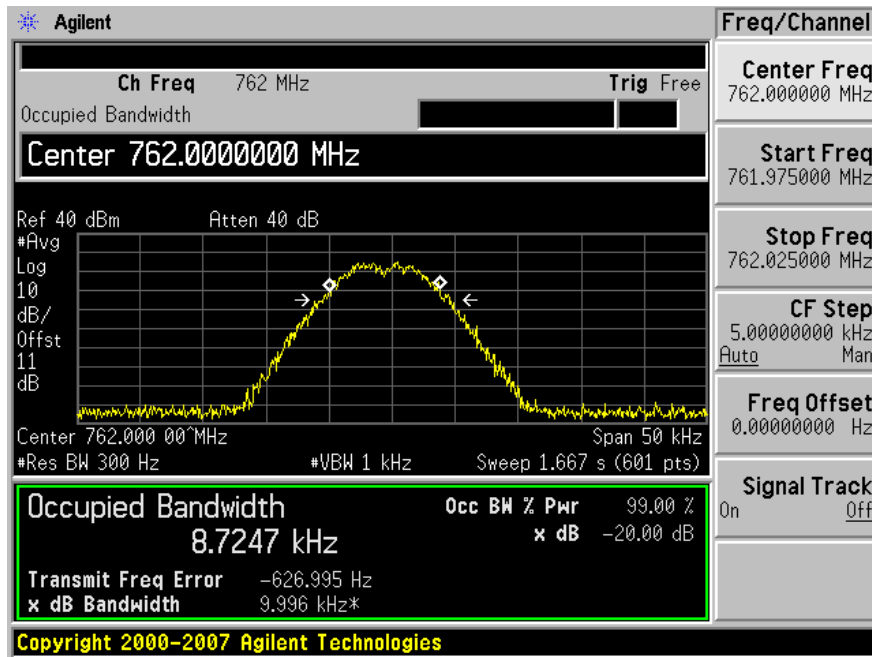


Low Channel: 762 MHz

Input (FM with 9600bps Data Source)

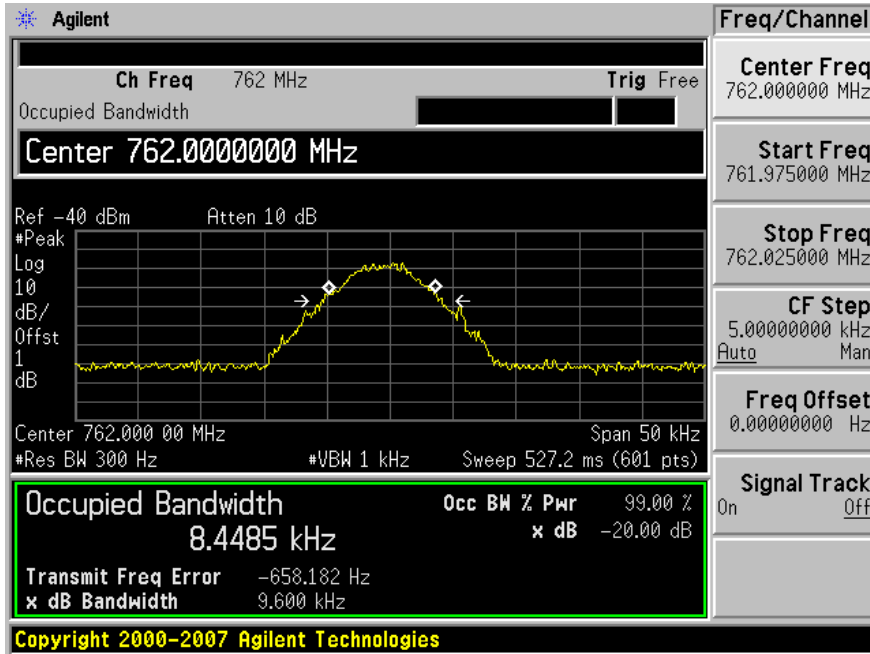


Output (FM with 9600bps Data Source)

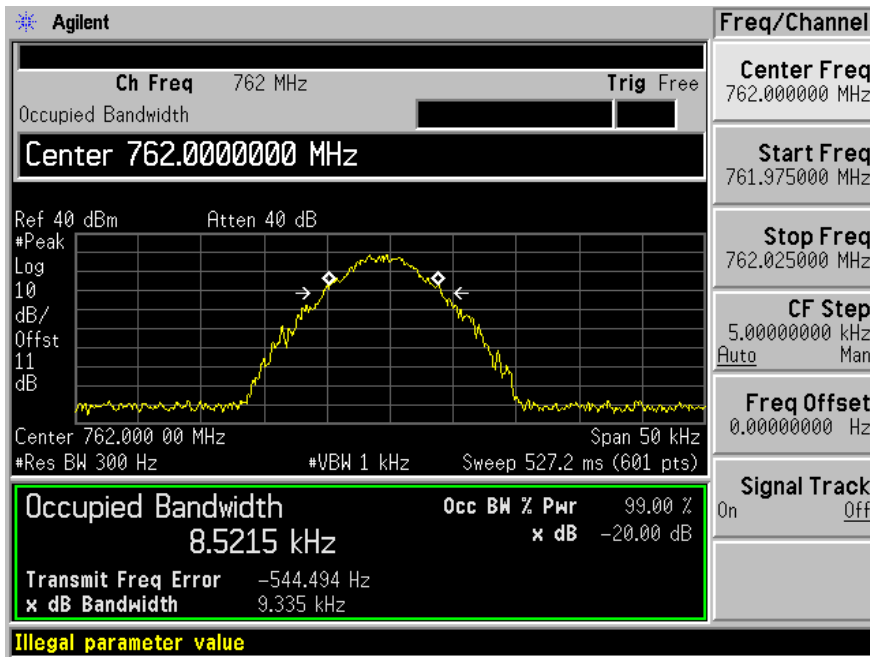


Low Channel: 762 MHz

Input (C4FM)

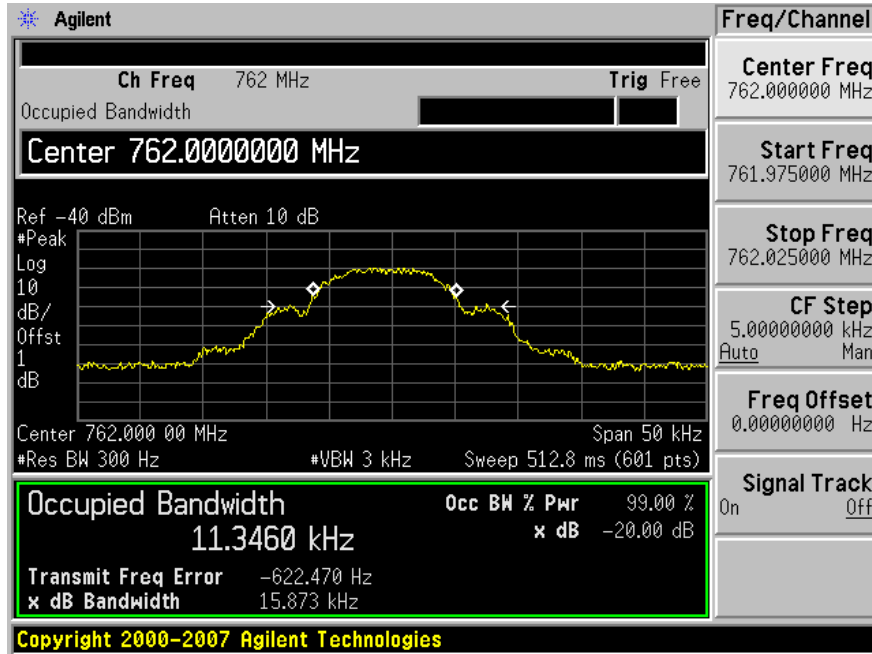


Output (C4FM)

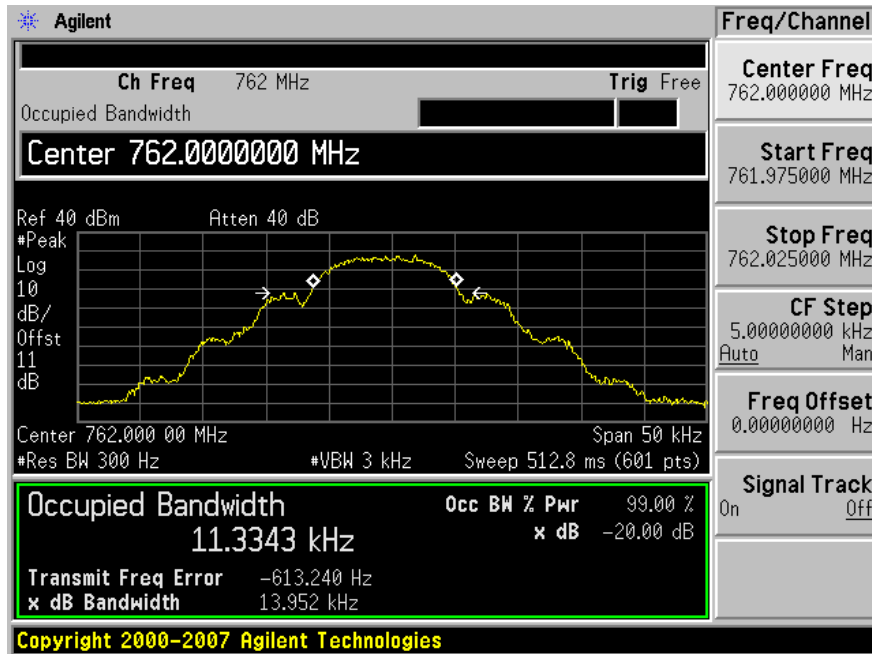


Low Channel: 762 MHz

Input (2L-FSK)

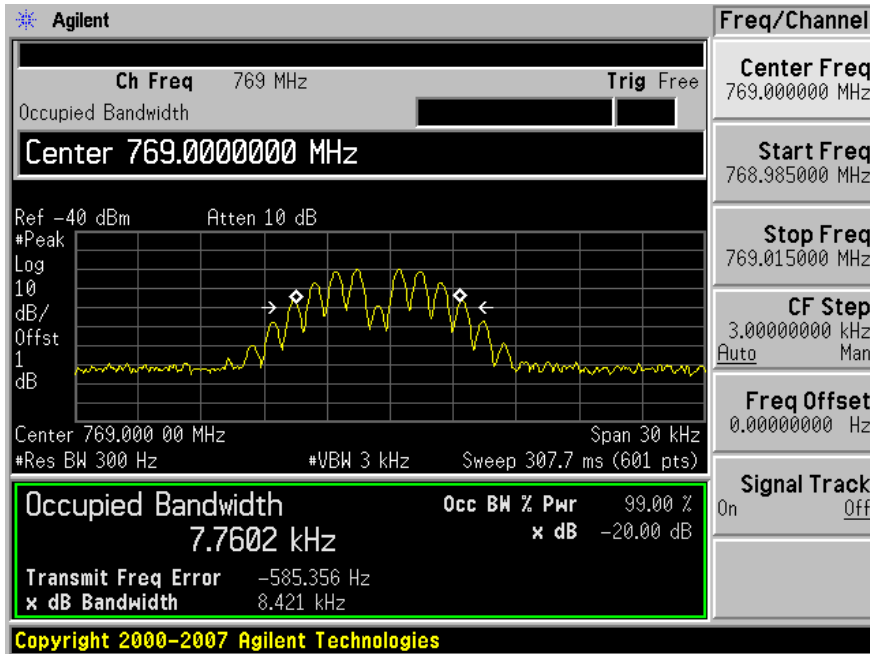


Output (2L-FSK)

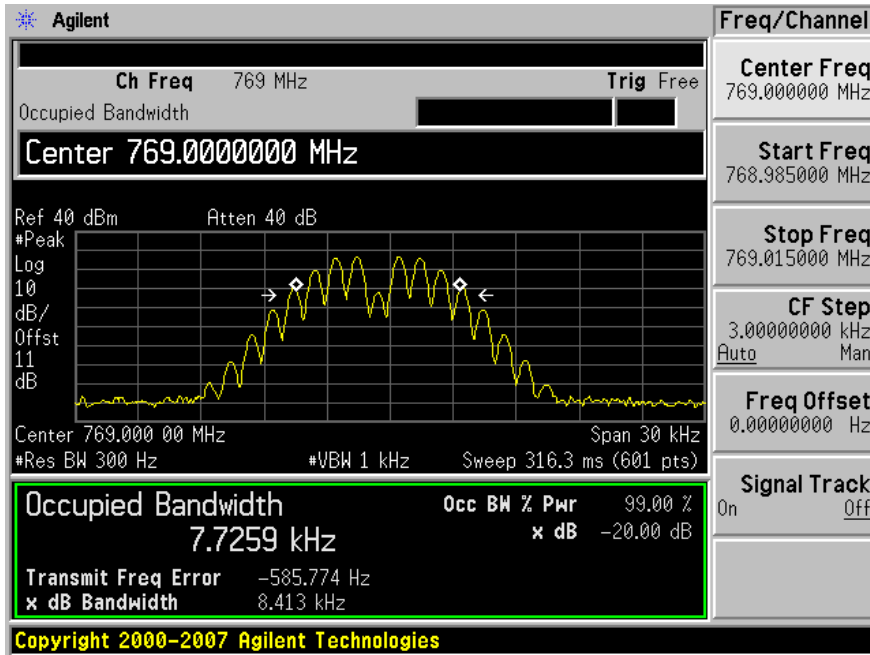


Middle Channel: 769 MHz

Input (FM with 2.5 kHz Sine Wave Audio Source)

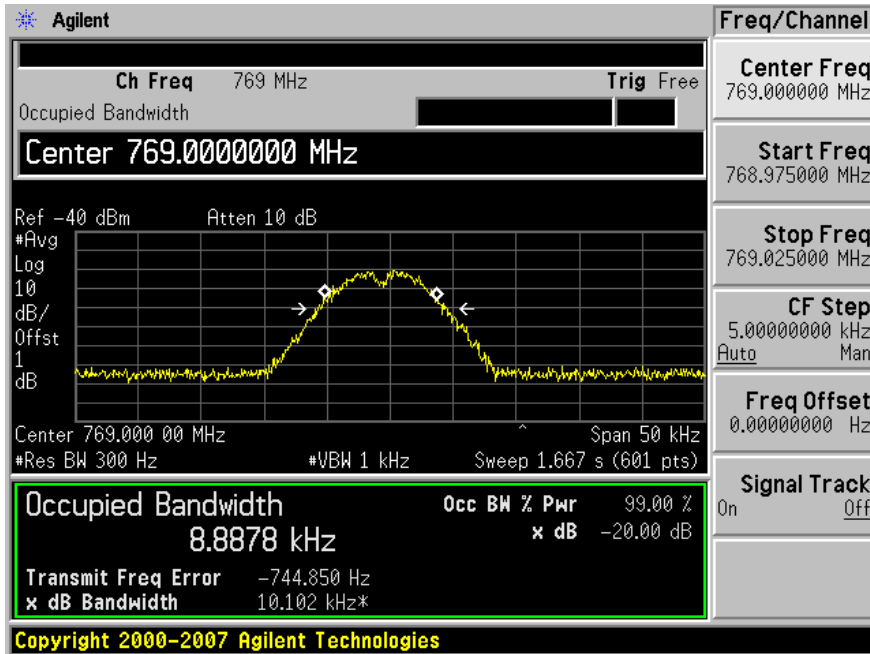


Output (FM with 2.5 kHz Sine Wave Audio Source)

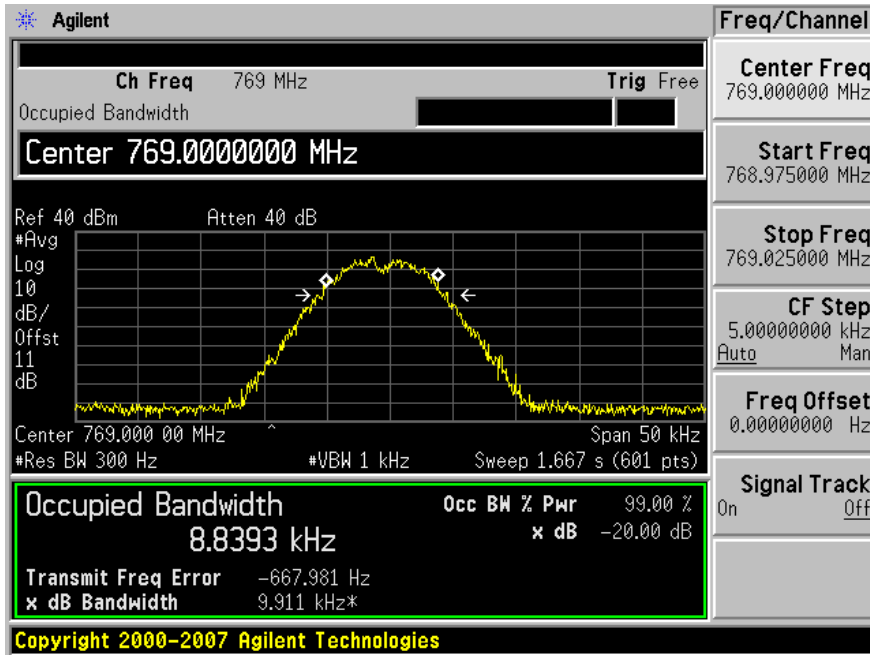


Middle Channel: 769 MHz

Input (FM with 9600bps Data Source)

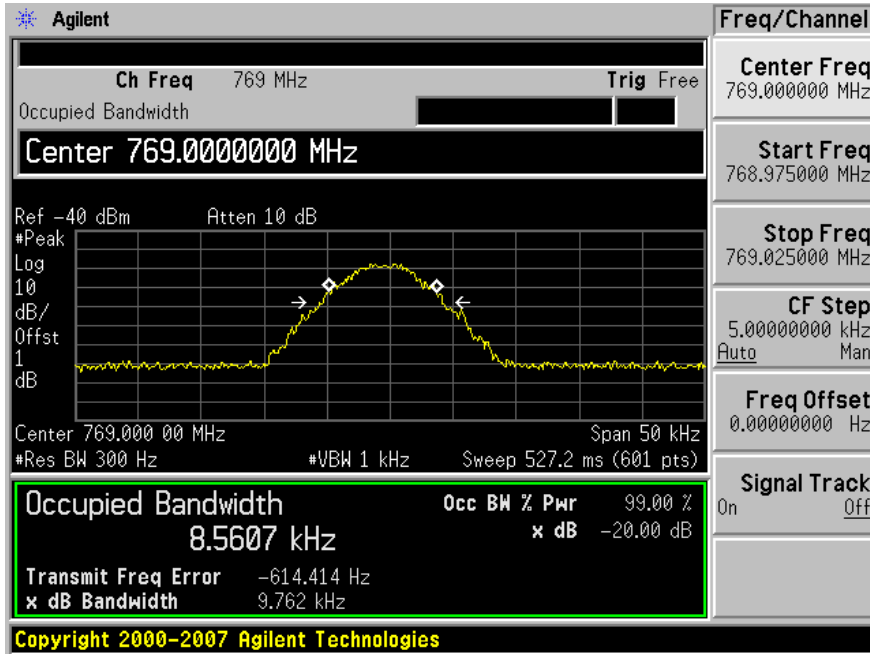


Output (FM with 9600bps Data Source)

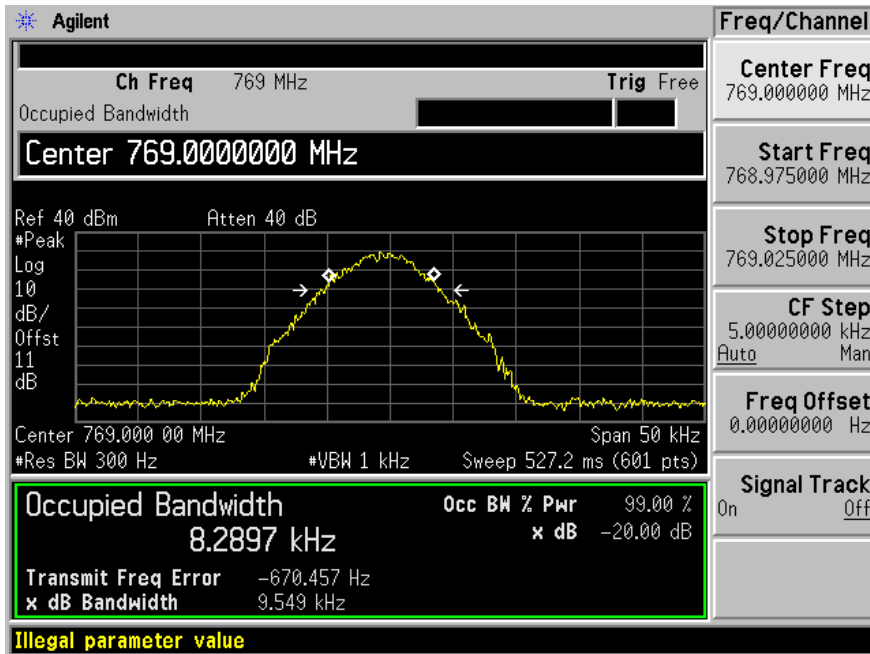


Middle Channel: 769 MHz

Input (C4FM)

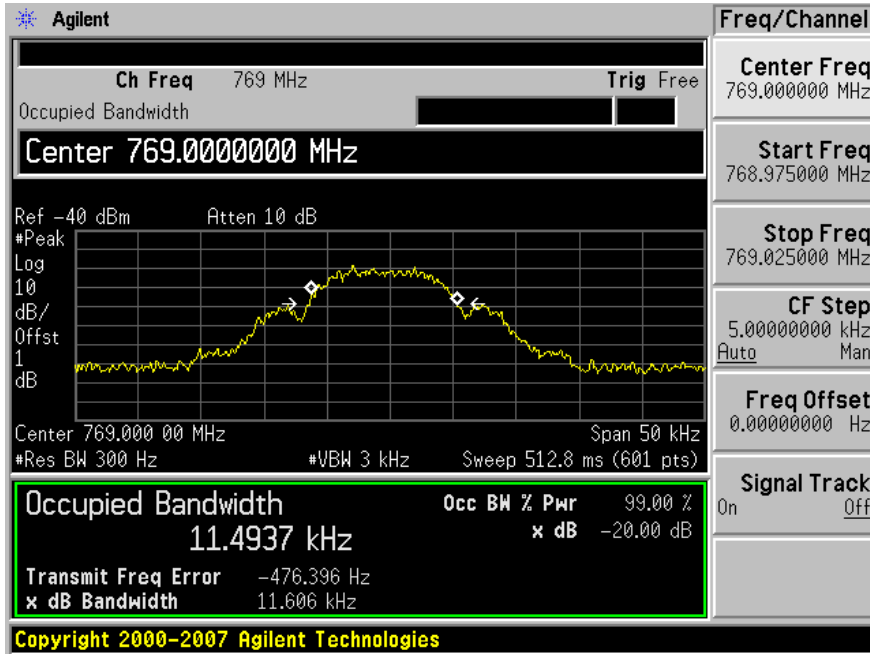


Output (C4FM)

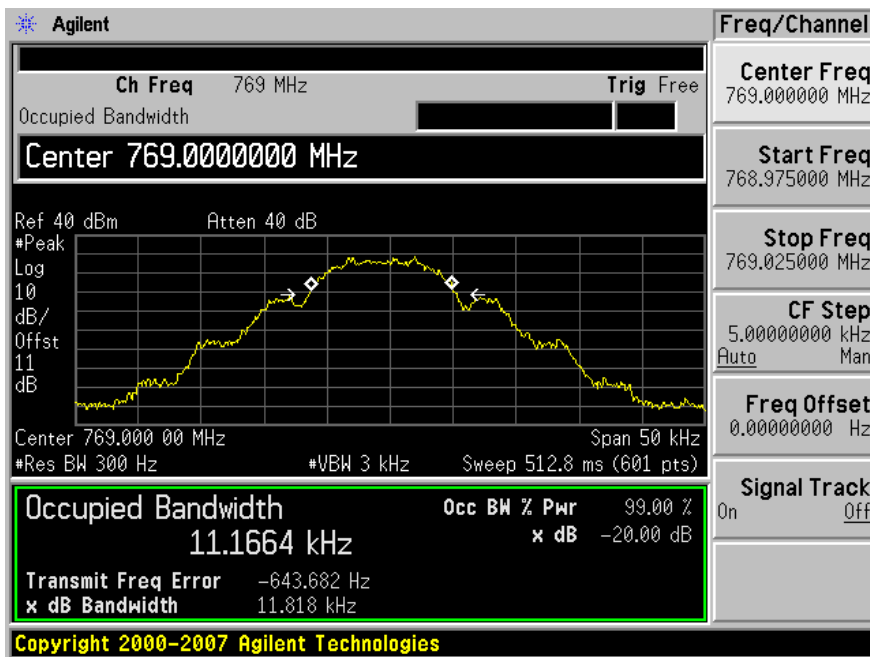


Middle Channel: 769 MHz

Input (2L-FSK)

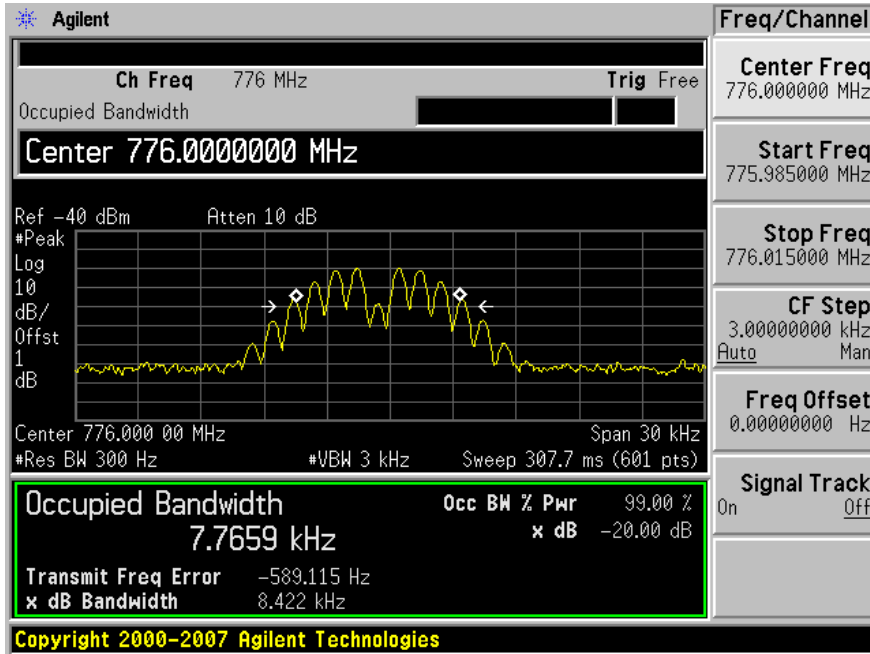


Output (2L-FSK)

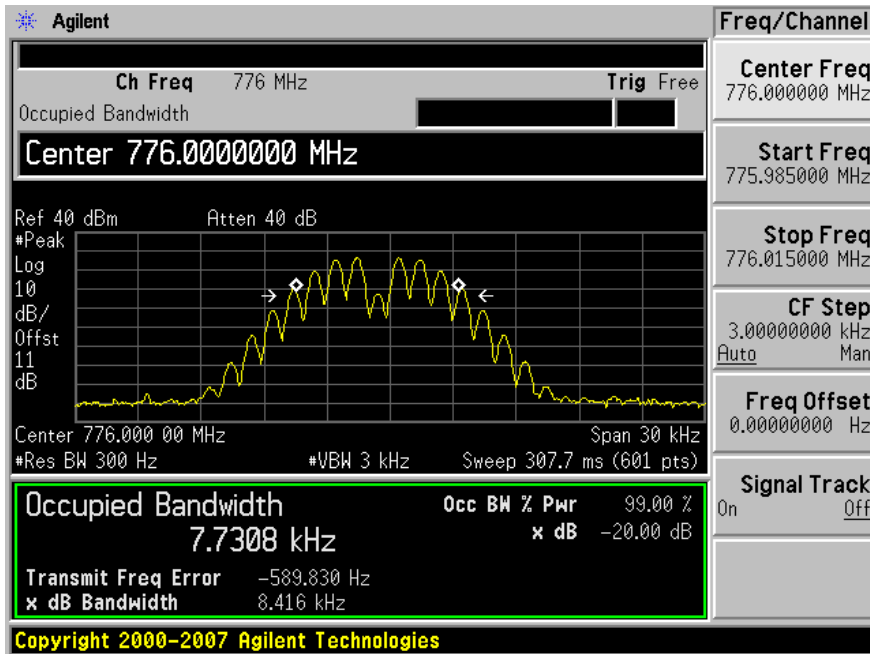


High Channel: 776 MHz

Input (FM with 2.5 kHz Sine Wave Audio Source)

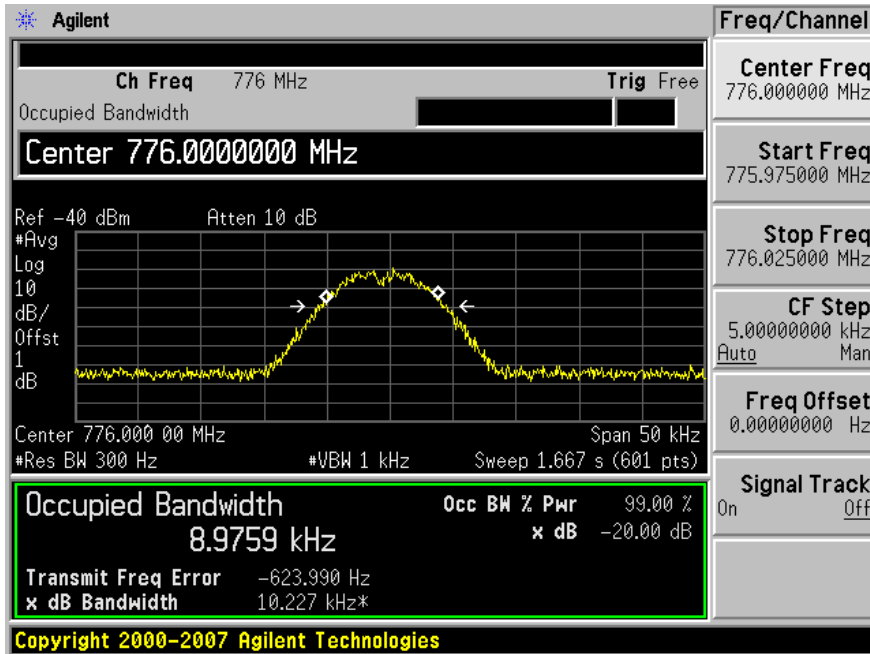


Output (FM with 2.5 kHz Sine Wave Audio Source)

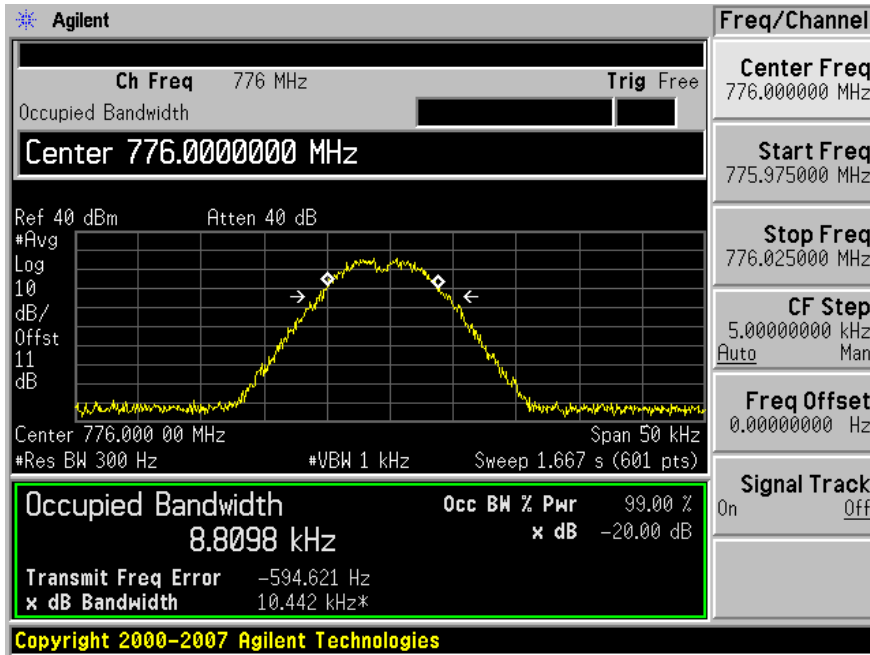


High Channel: 776 MHz

Input (FM with 9600bps Data Source)

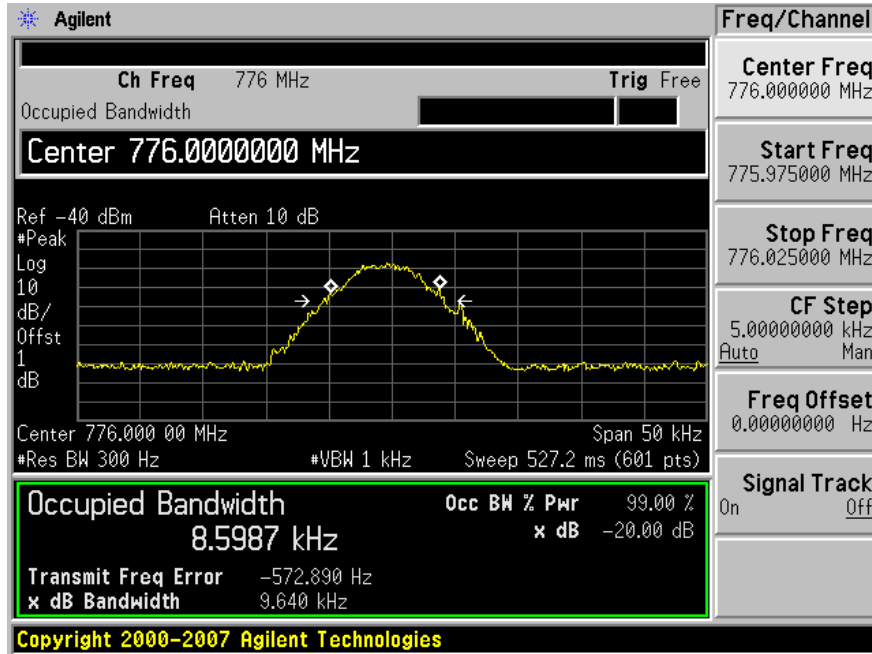


Output (FM with 9600bps Data Source)

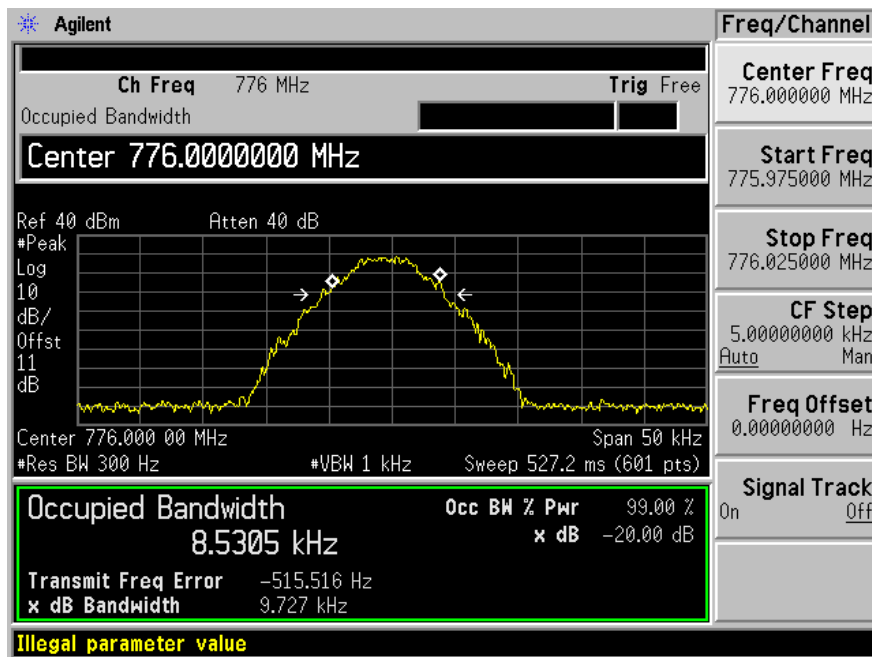


High Channel: 776 MHz

Input (C4FM)

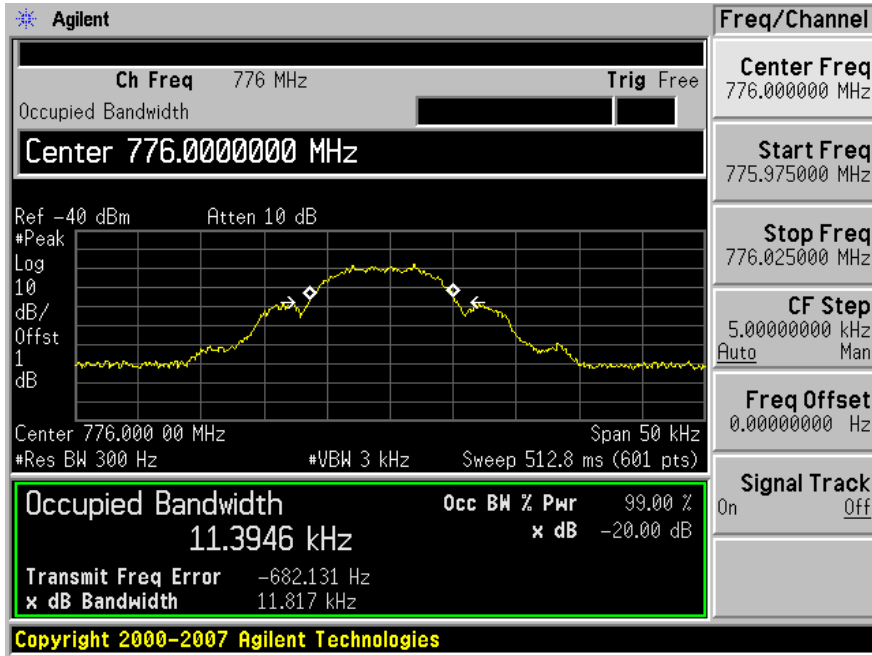


Output (C4FM)

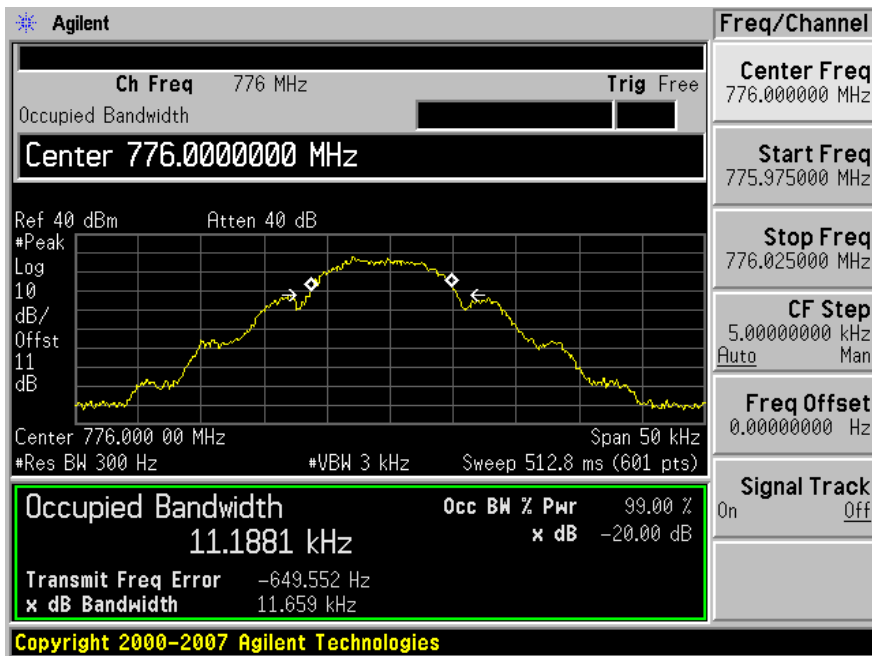


High Channel: 776 MHz

Input (2L-FSK)



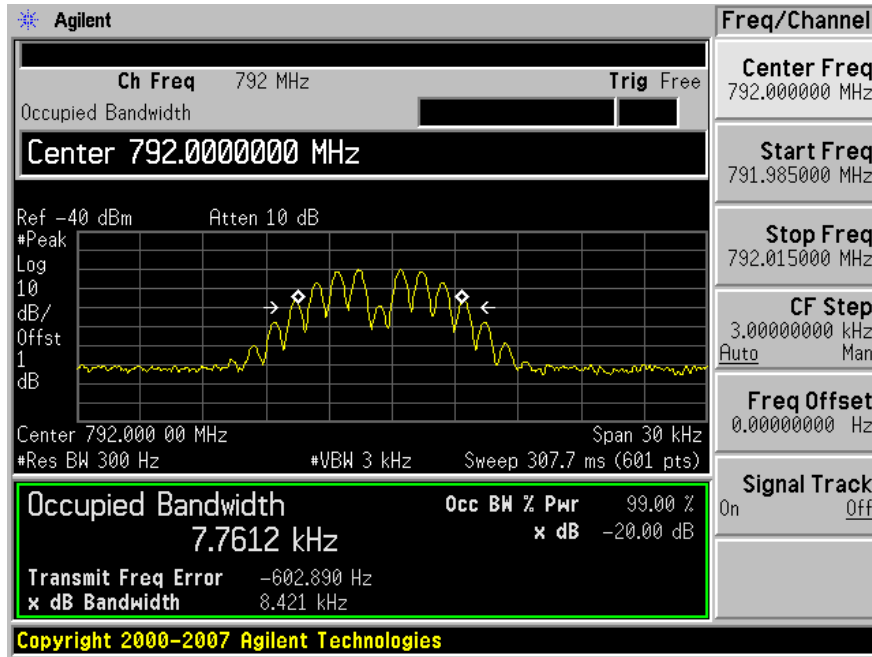
Output (2L-FSK)



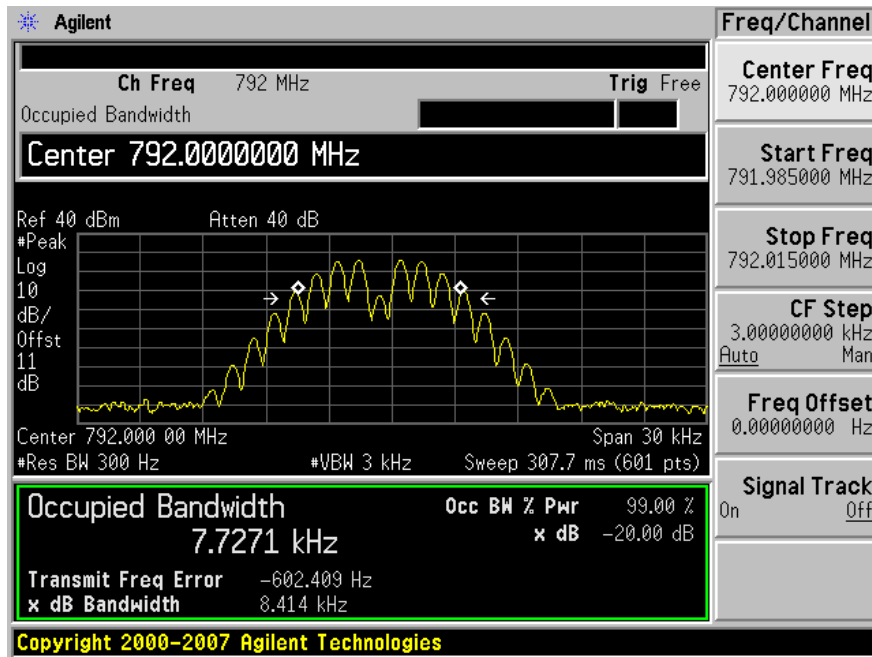
Operation Frequency Band – 792to 824 MHz

Low Channel: 792 MHz

Input (FM with 2.5 kHz Sine Wave Audio Source)

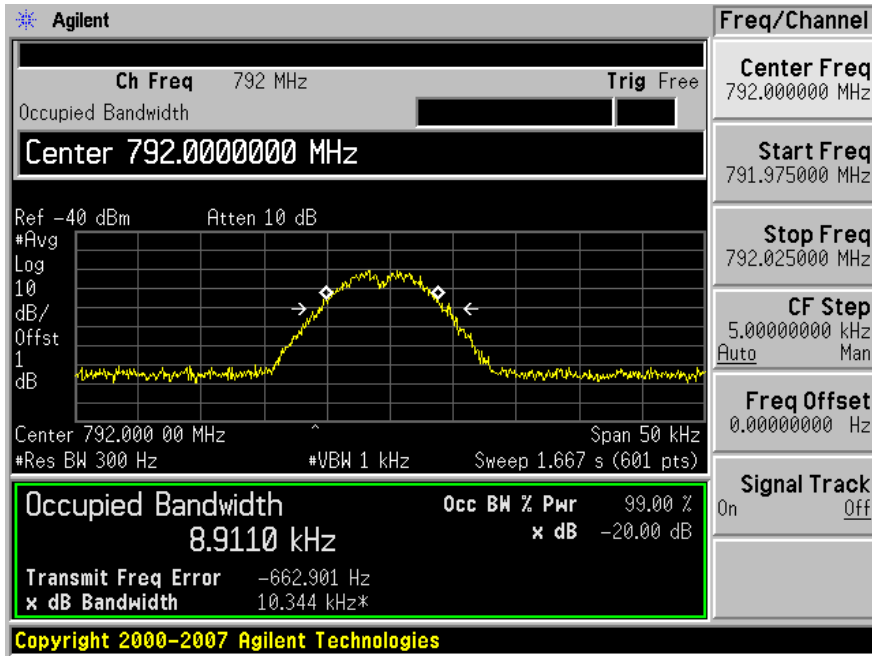


Output (FM with 2.5 kHz Sine Wave Audio Source)

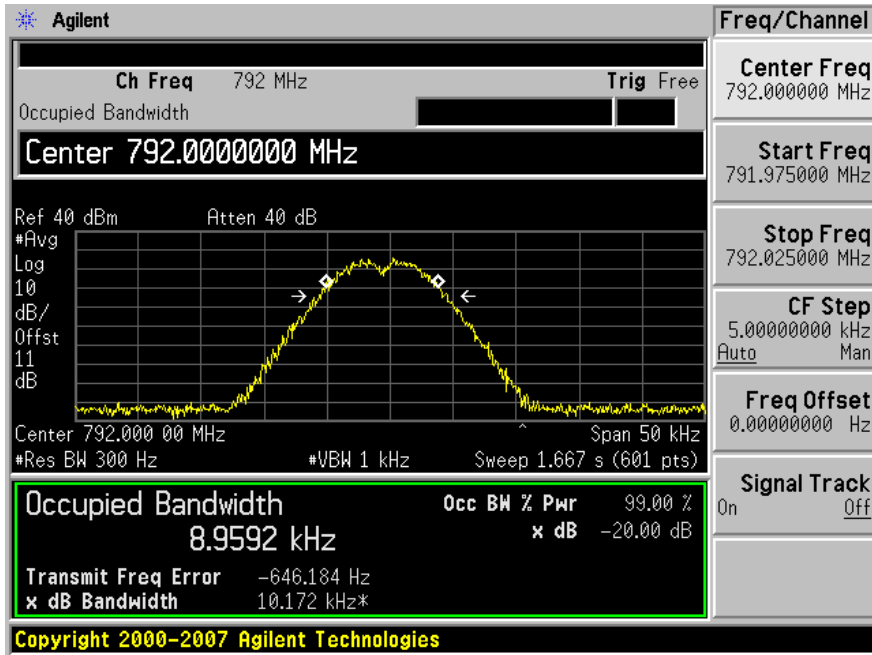


Low Channel: 792 MHz

Input (FM with 9600bps Data Source)

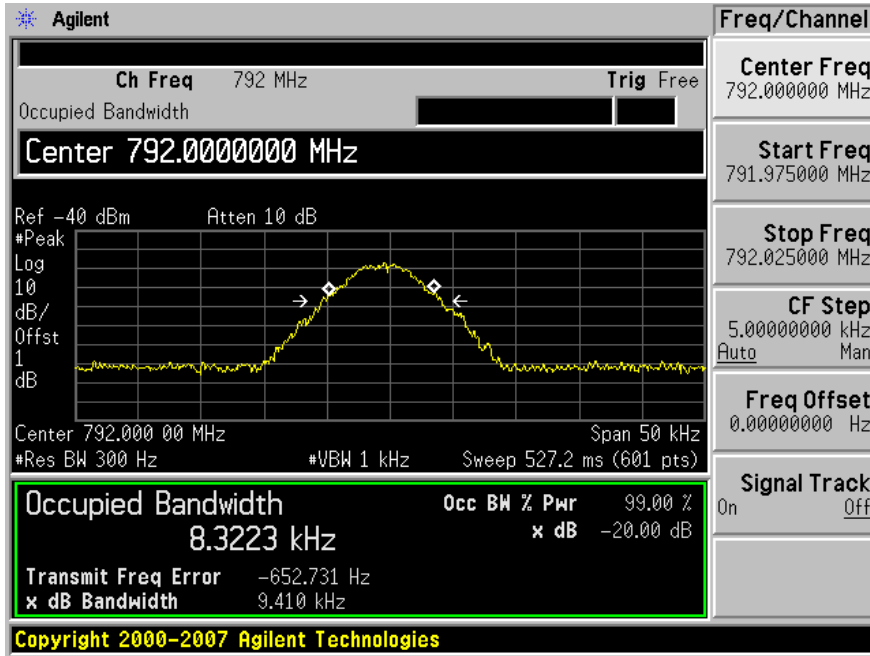


Output (FM with 9600bps Data Source)

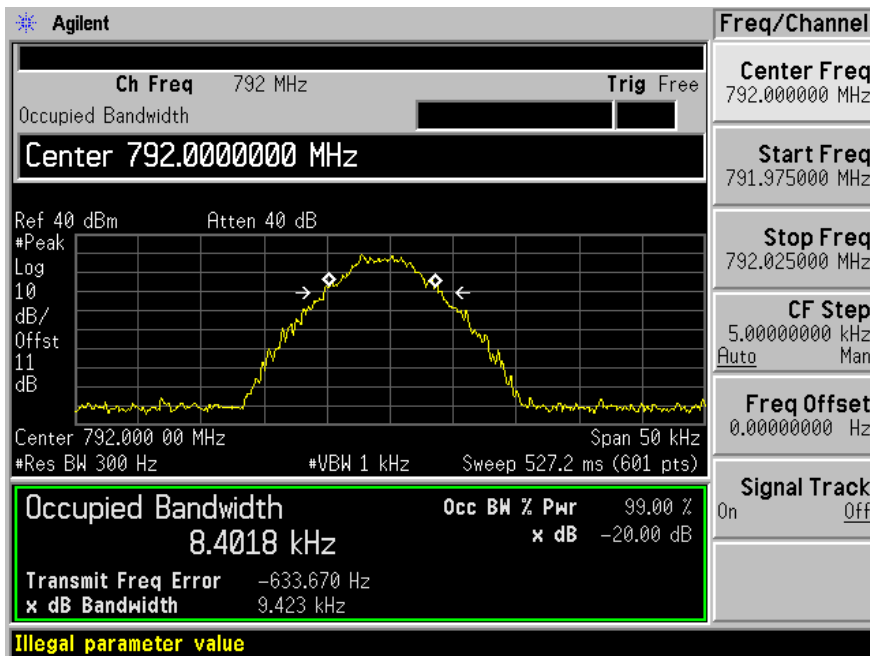


Low Channel: 792 MHz

Input (C4FM)

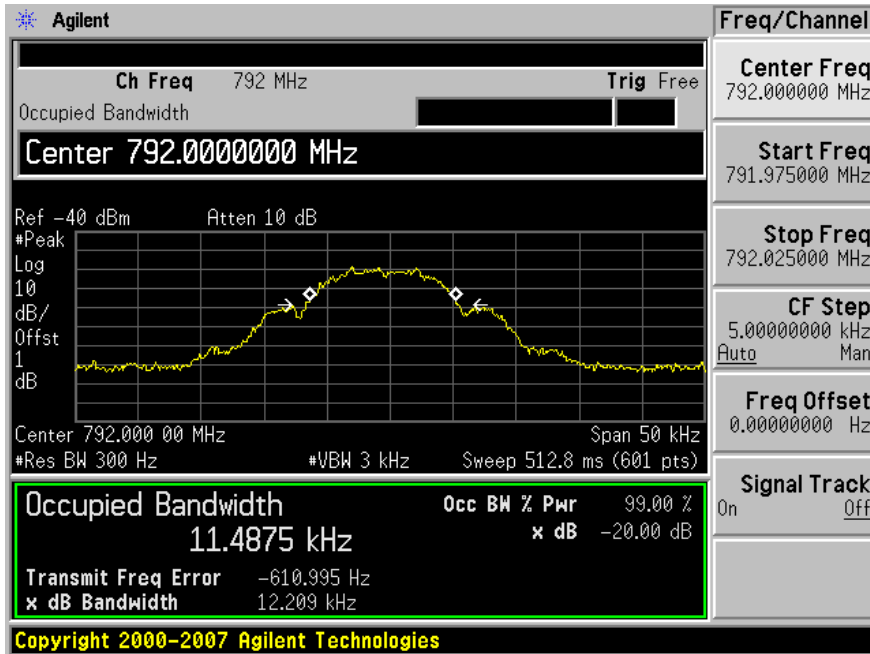


Output (C4FM)

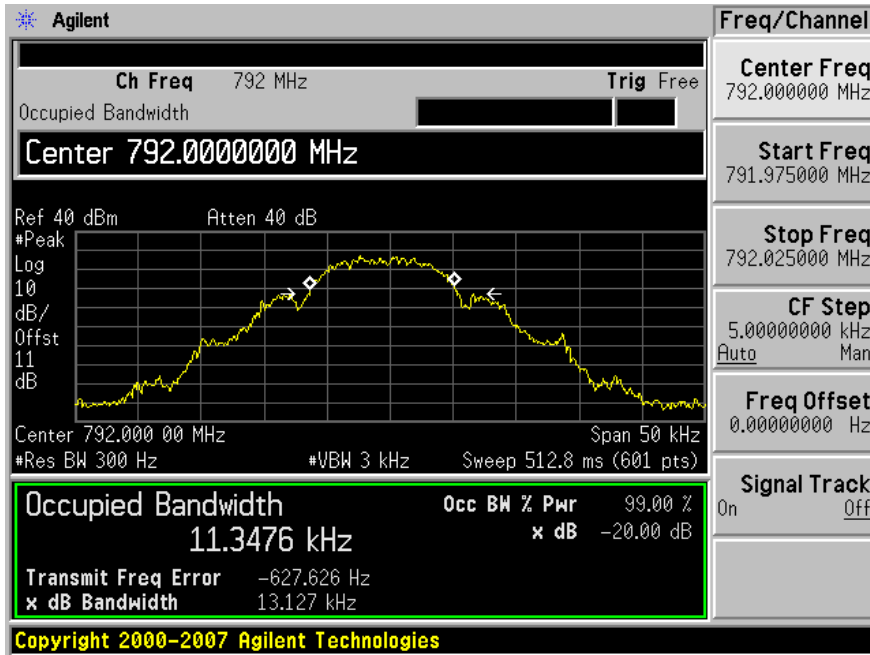


Low Channel: 792 MHz

Input (2L-FSK)

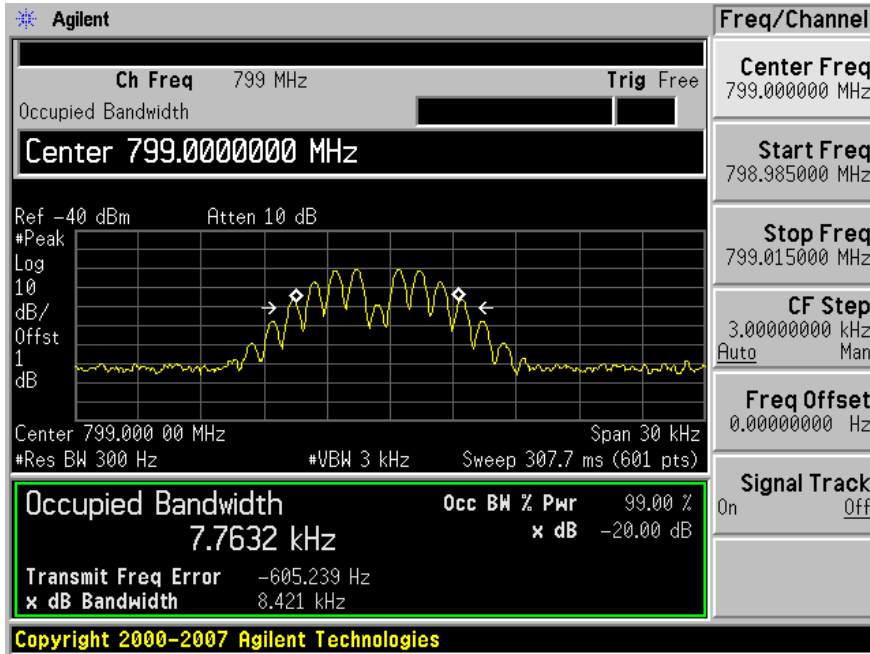


Output (2L-FSK)

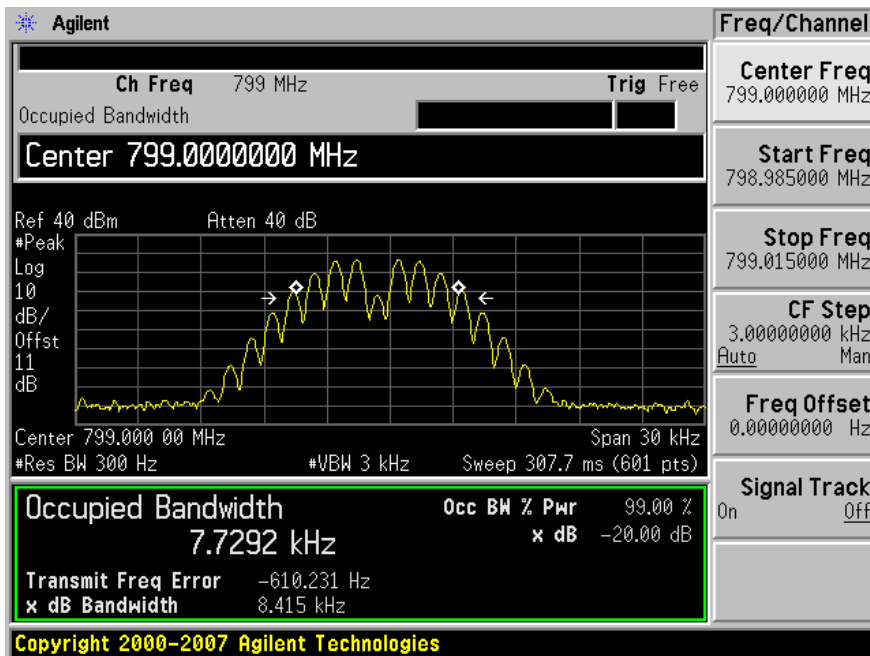


Middle Channel: 799 MHz

Input (FM with 2.5 kHz Sine Wave Audio Source)

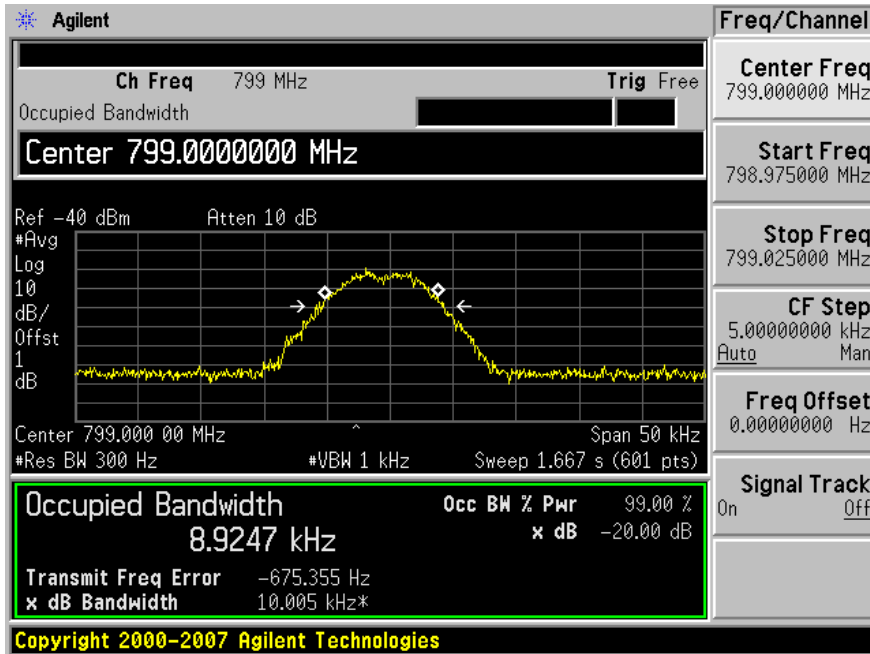


Output (FM with 2.5 kHz Sine Wave Audio Source)

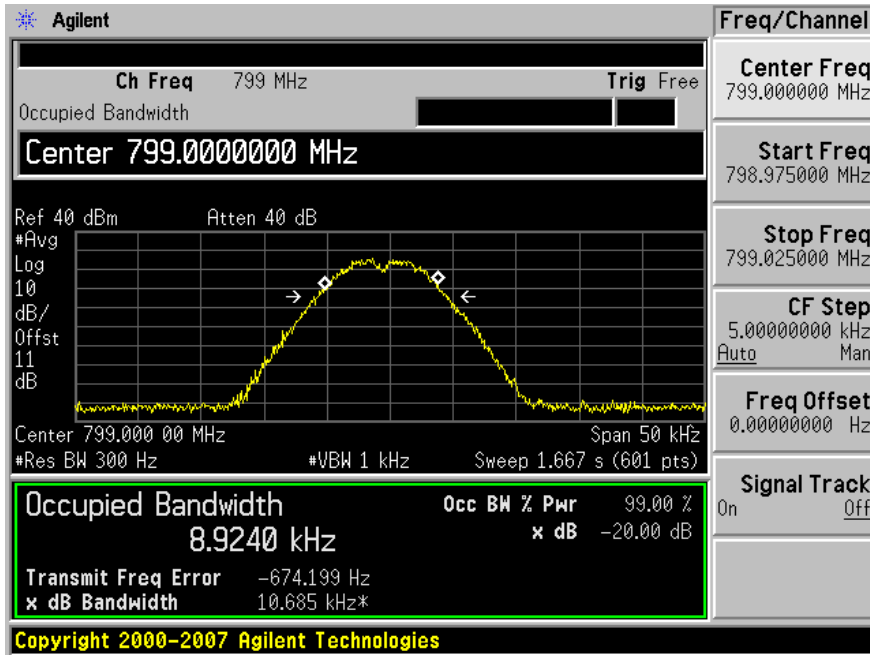


Middle Channel: 799 MHz

Input (FM with 9600bps Data Source)

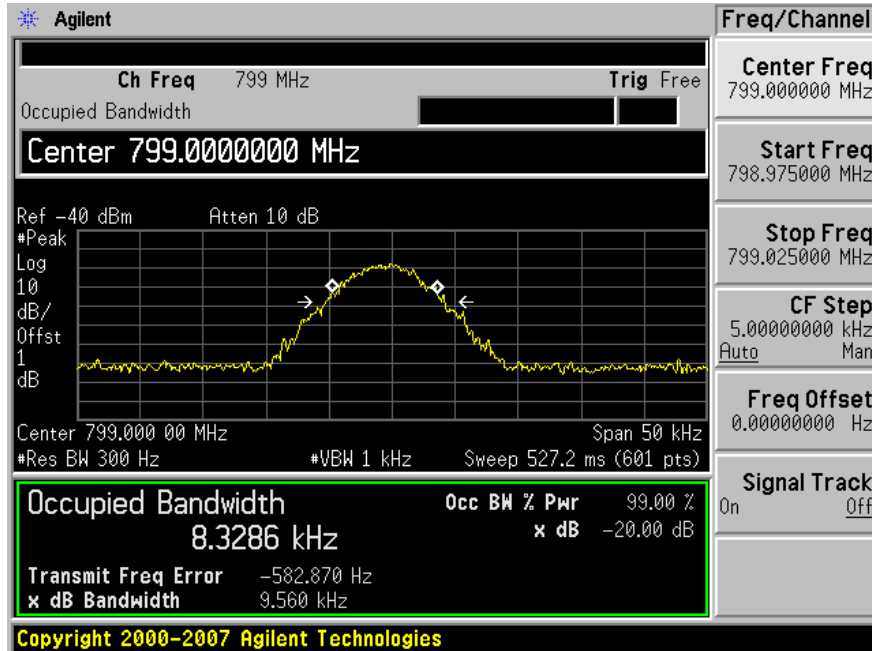


Output (FM with 9600bps Data Source)

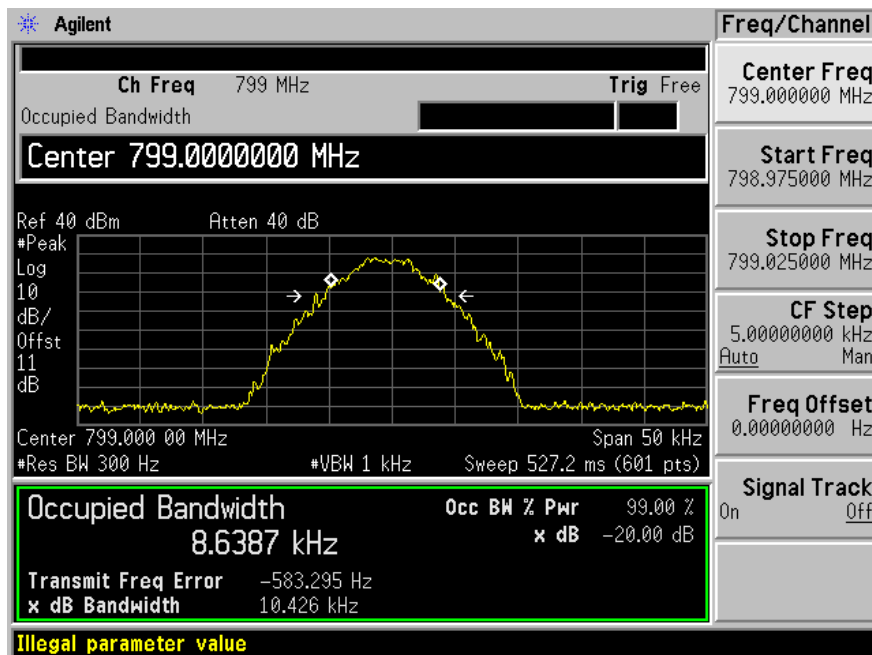


Middle Channel: 799 MHz

Input (C4FM)

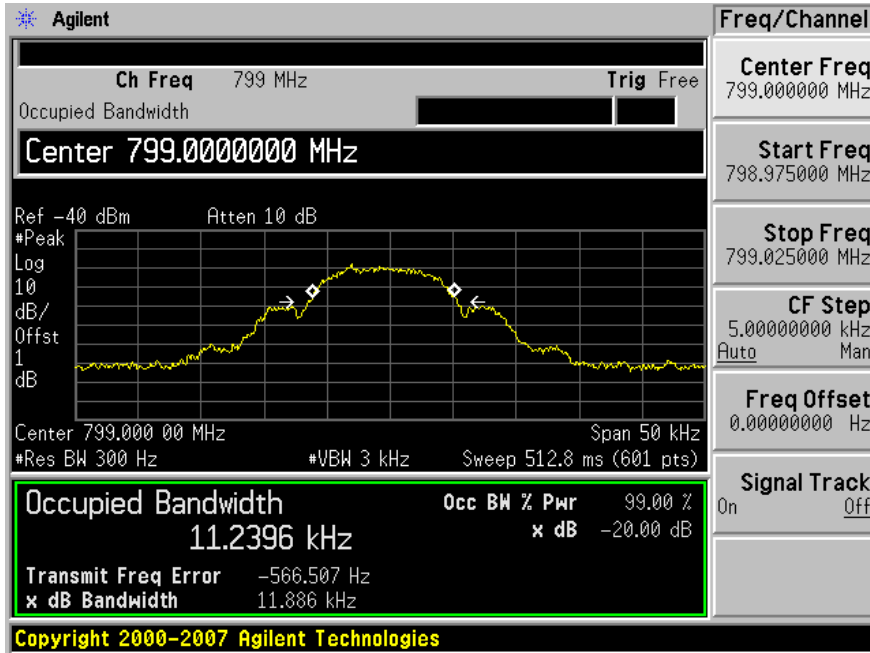


Output (C4FM)

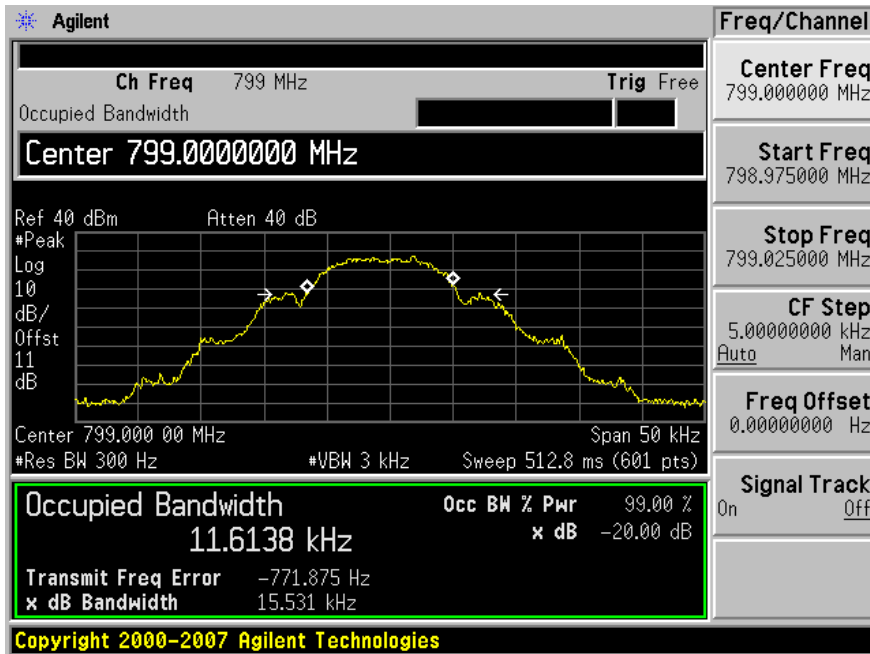


Middle Channel: 799 MHz

Input (2L-FSK)

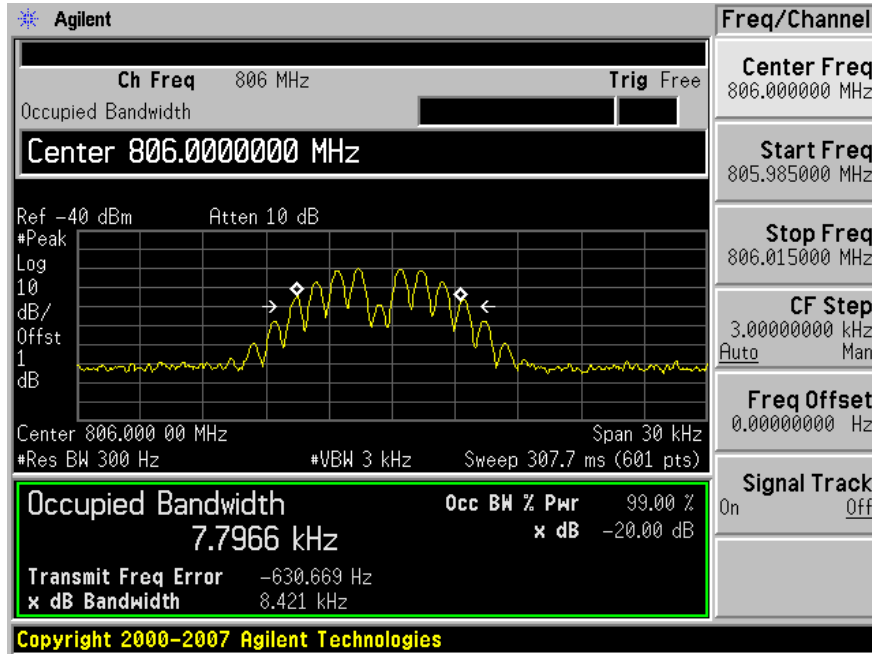


Output (2L-FSK)

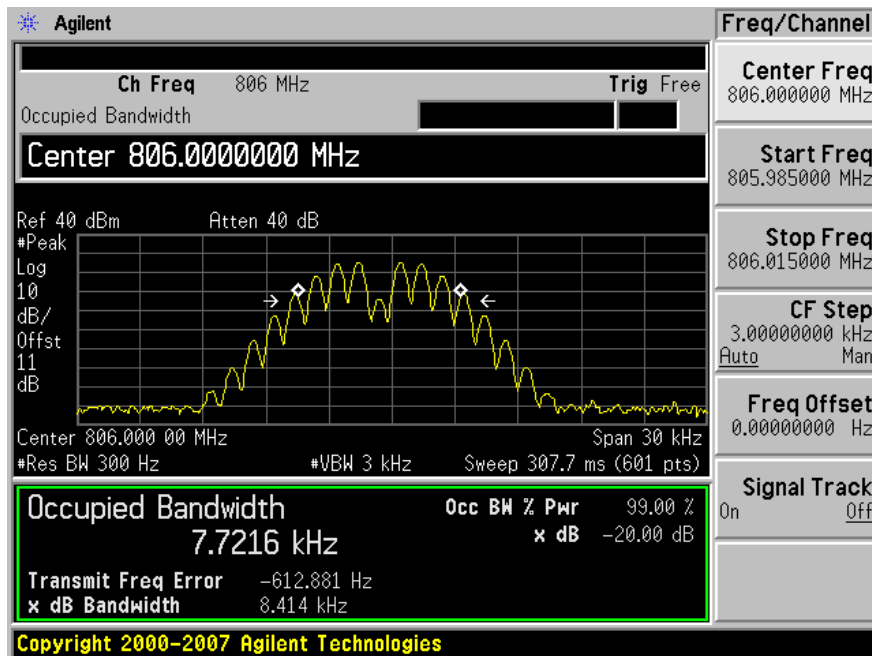


High Channel: 806 MHz

Input (FM with 2.5 kHz Sine Wave Audio Source)

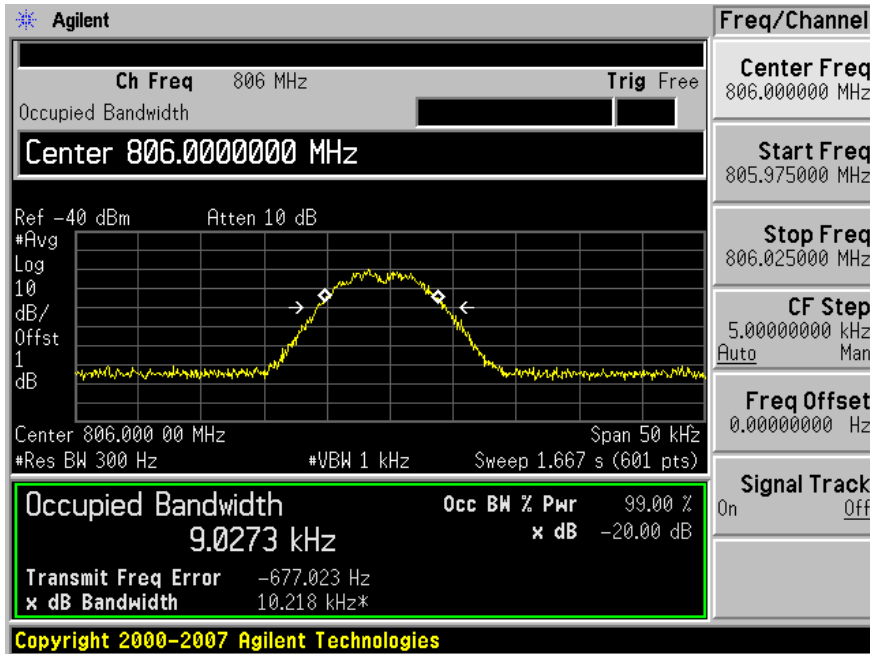


Output (FM with 2.5 kHz Sine Wave Audio Source)

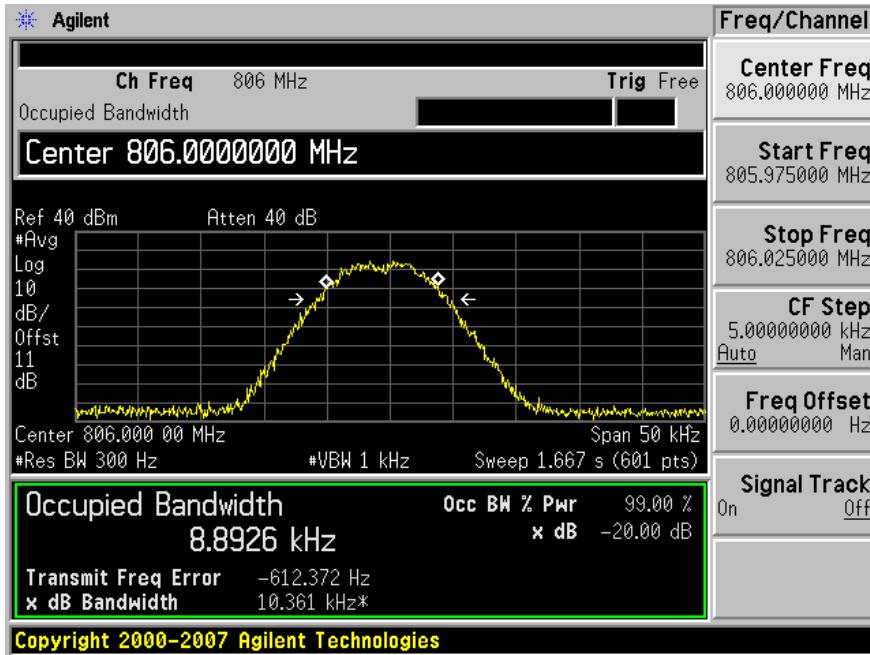


High Channel: 806 MHz

Input (FM with 9600bps Data Source)

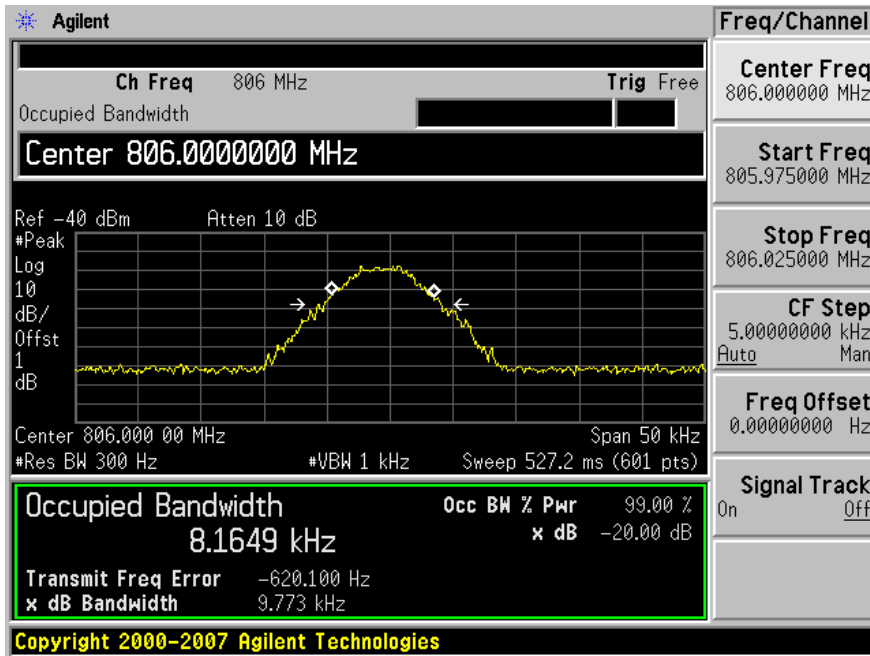


Output (FM with 9600bps Data Source)

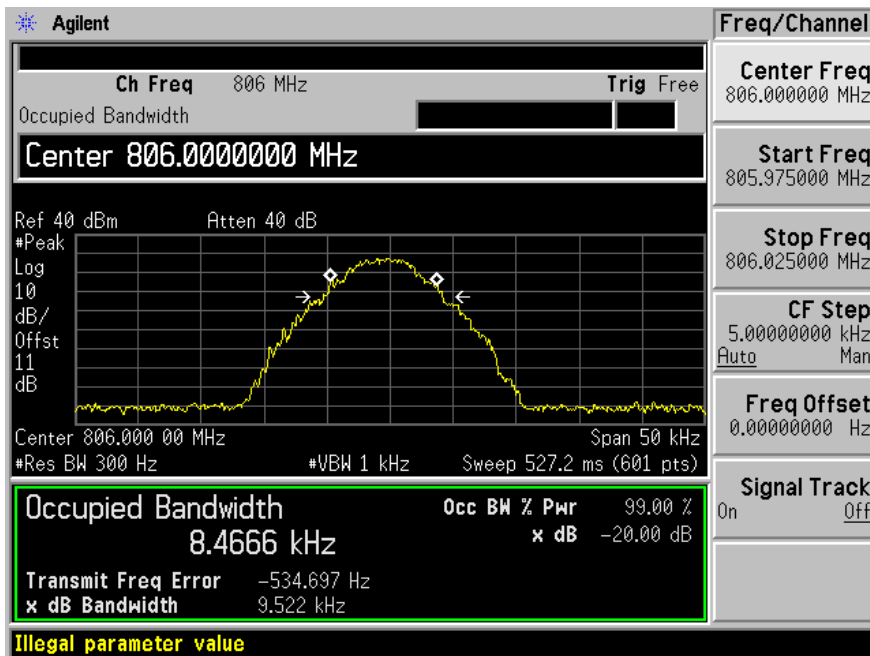


High Channel: 806 MHz

Input (C4FM)

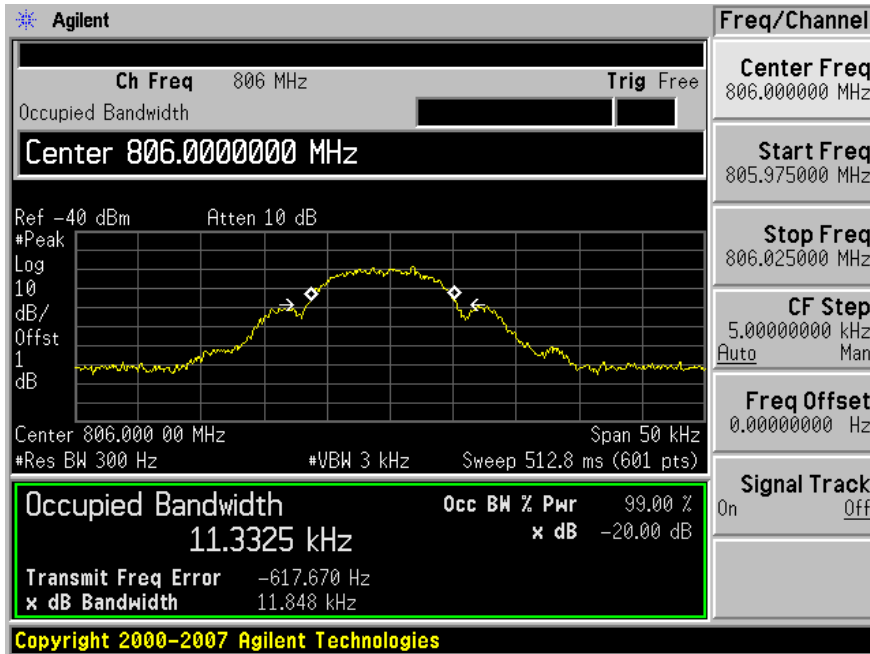


Output (C4FM)

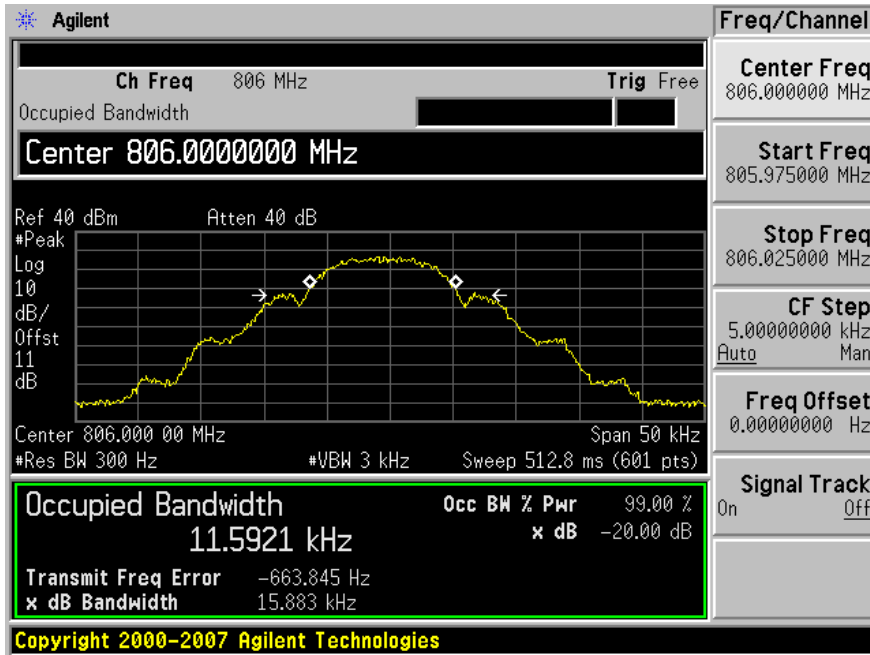


High Channel: 806 MHz

Input (2L-FSK)



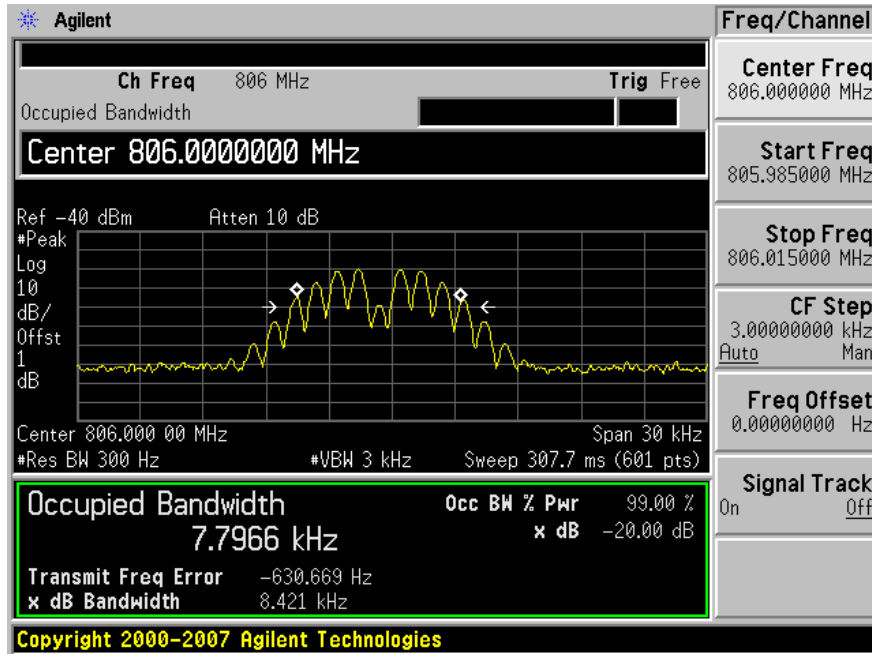
Output (2L-FSK)



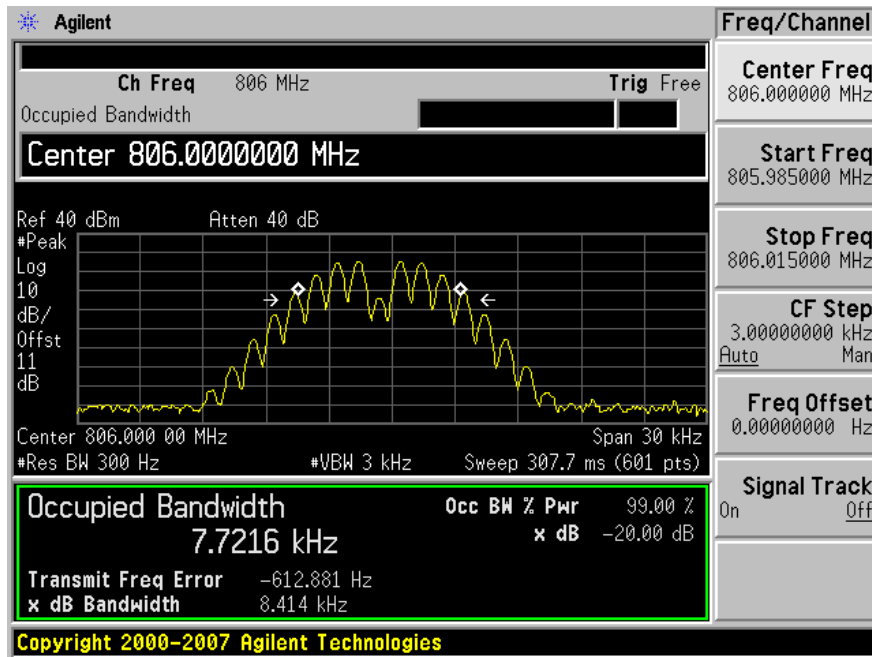
Operation Frequency Band – 806 to 824 MHz

Low Channel: 806 MHz

Input (FM with 2.5 kHz Sine Wave Audio Source)

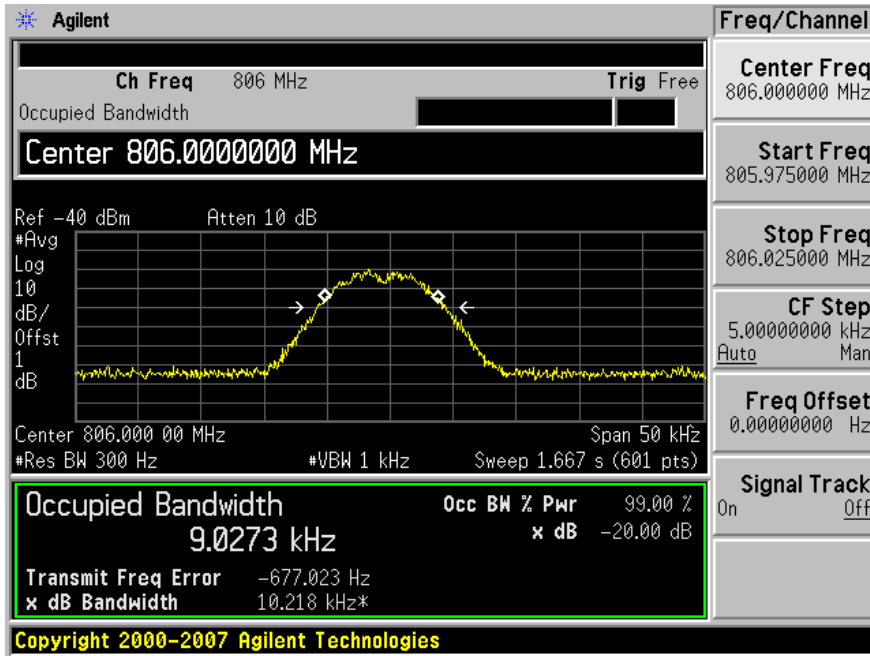


Output (FM with 2.5 kHz Sine Wave Audio Source)

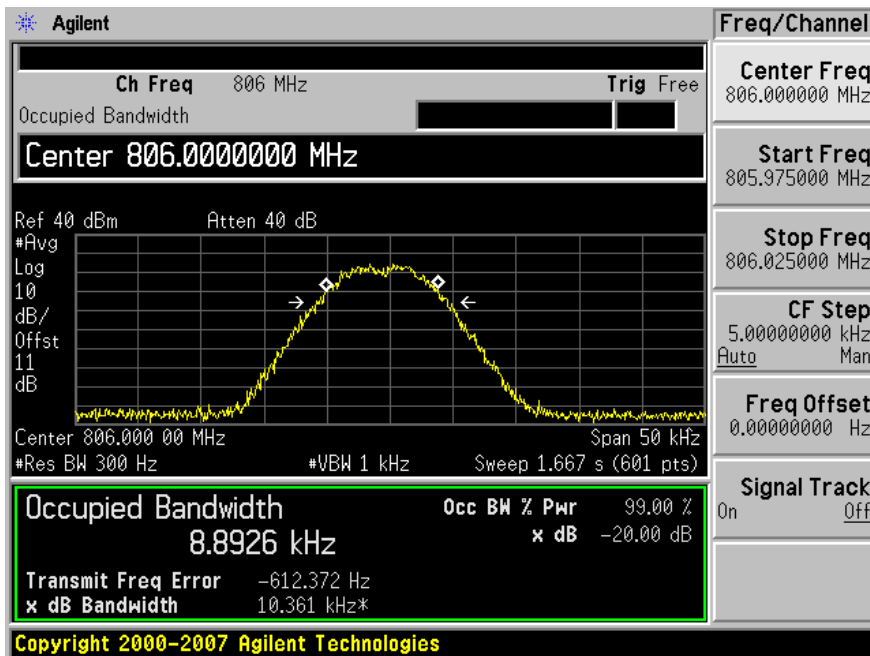


Low Channel: 806 MHz

Input (FM with 9600bps Data Source)

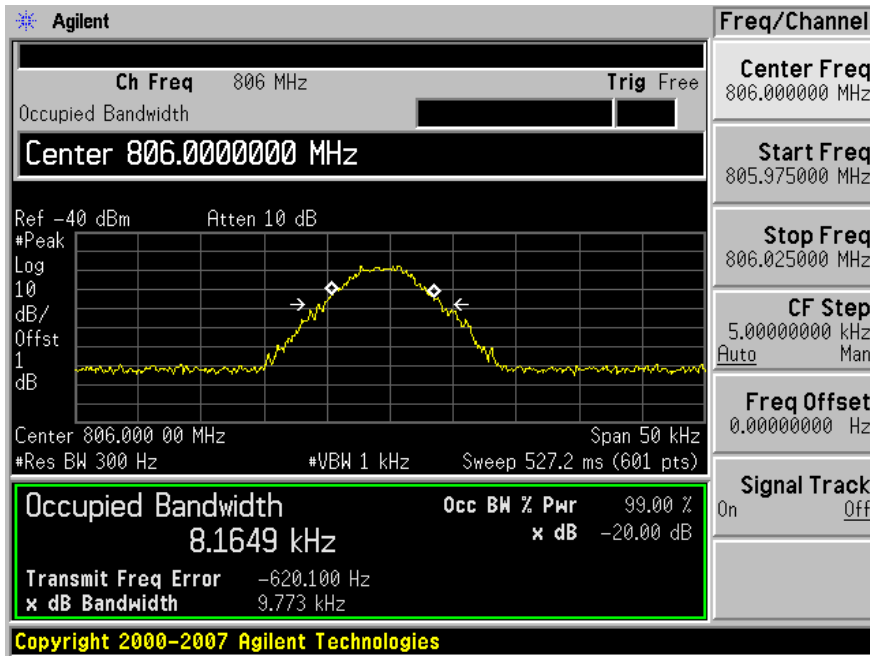


Output (FM with 9600bps Data Source)

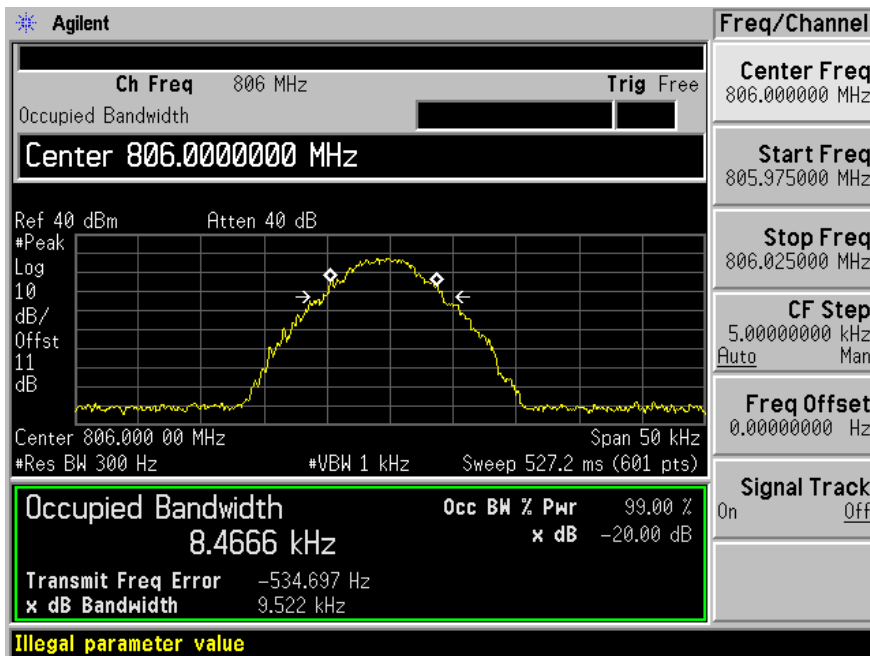


Low Channel: 806 MHz

Input (C4FM)

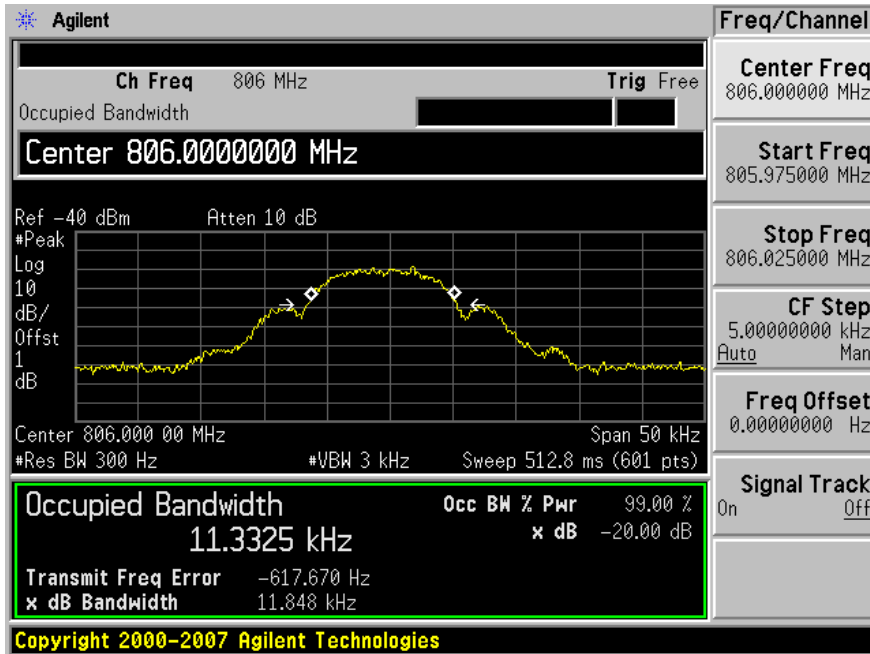


Output (C4FM)

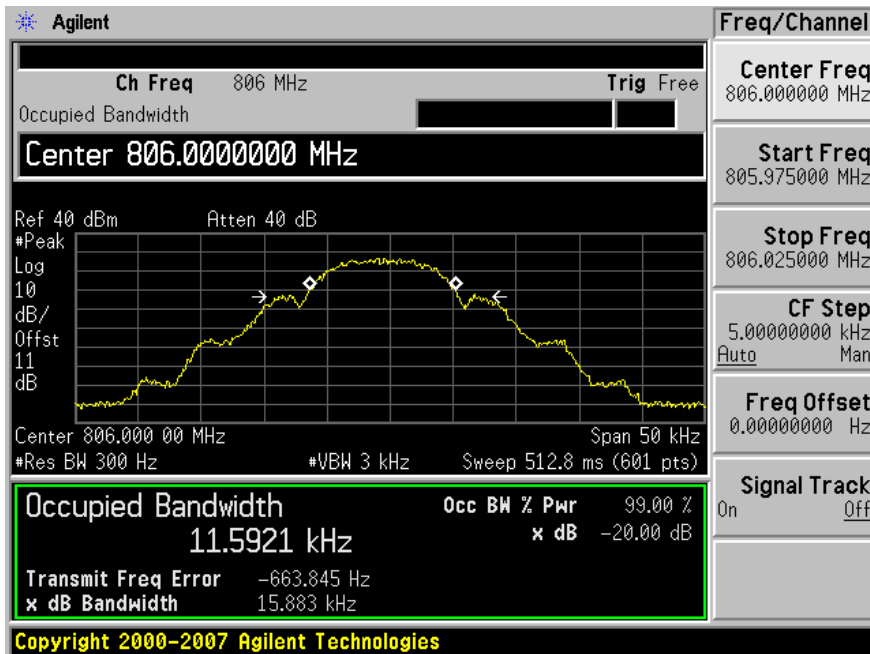


Low Channel: 806 MHz

Input (2L-FSK)

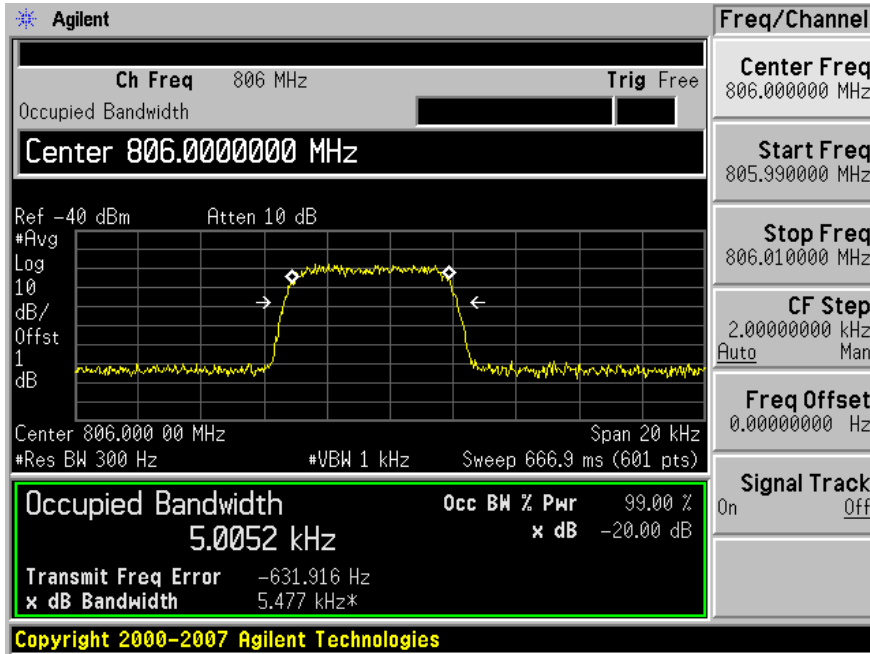


Output (2L-FSK)

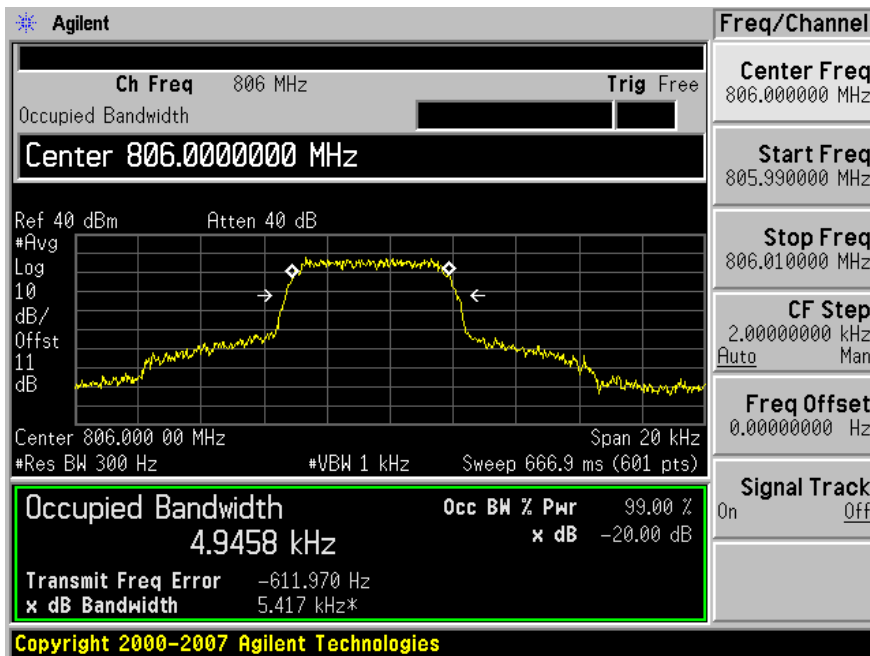


Low Channel: 806 MHz

Input (CQPSK)

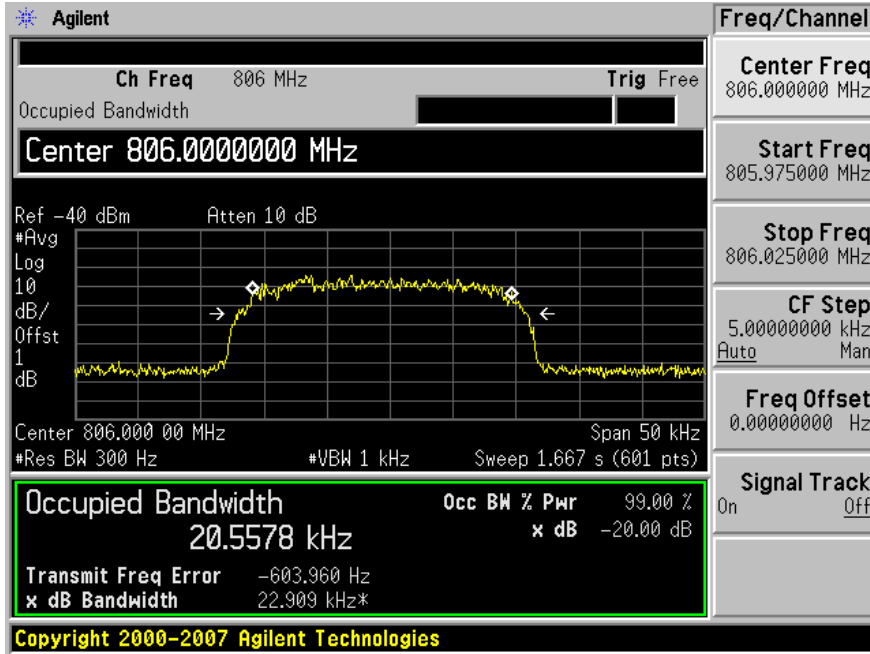


Output (CQPSK)

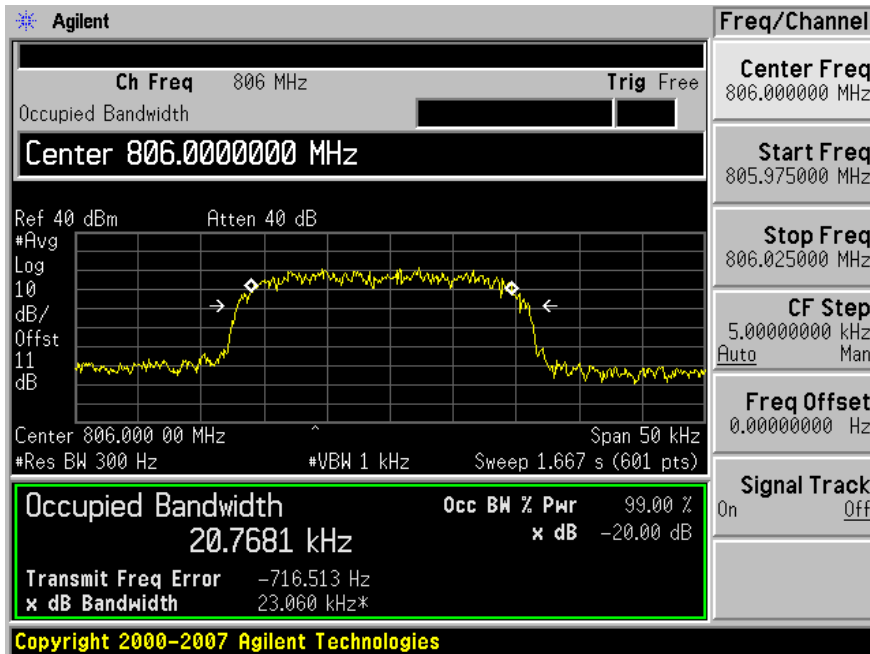


Low Channel: 806 MHz

Input (Tetra)

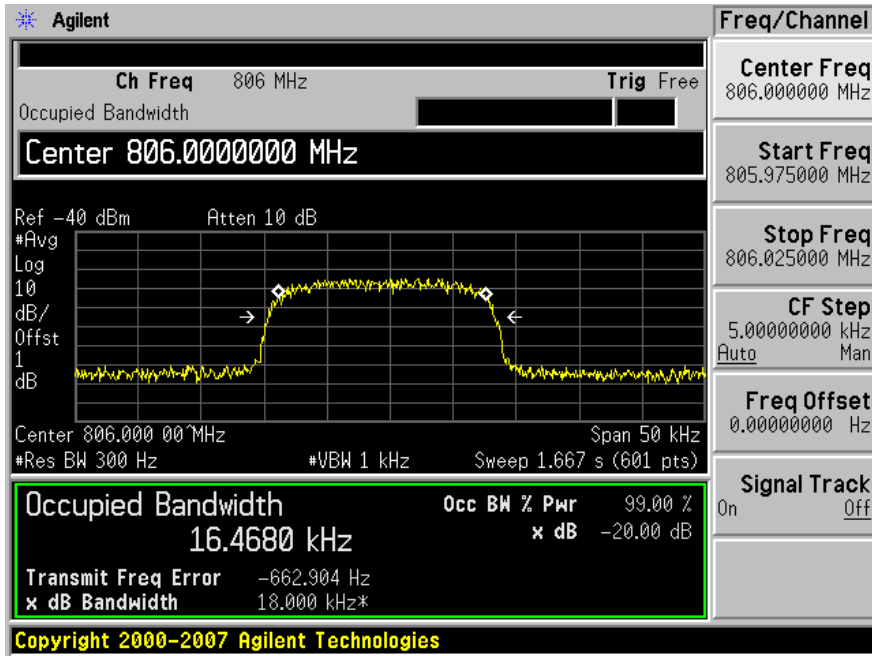


Output (Tetra)

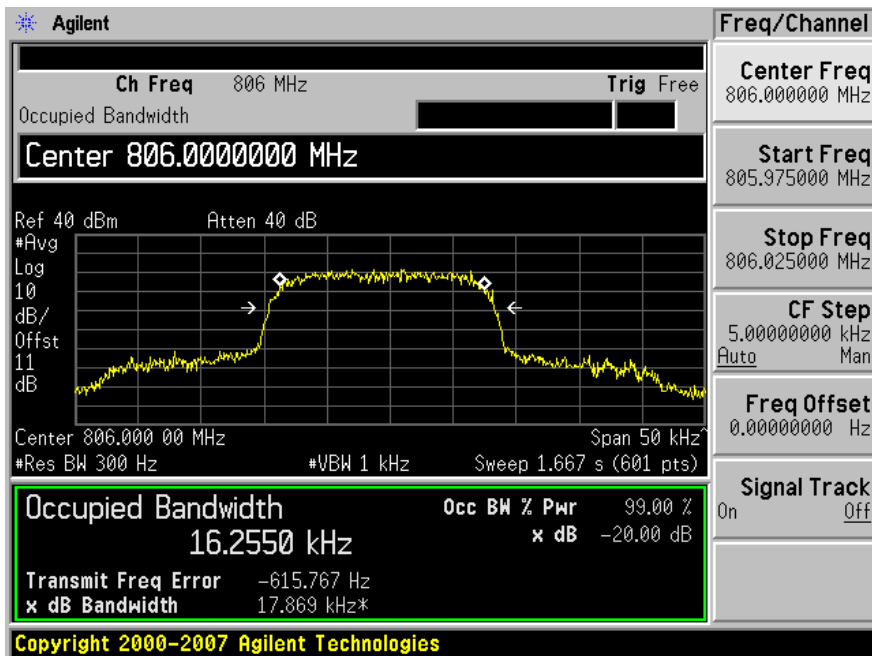


Low Channel: 806 MHz

Input (iDEN)

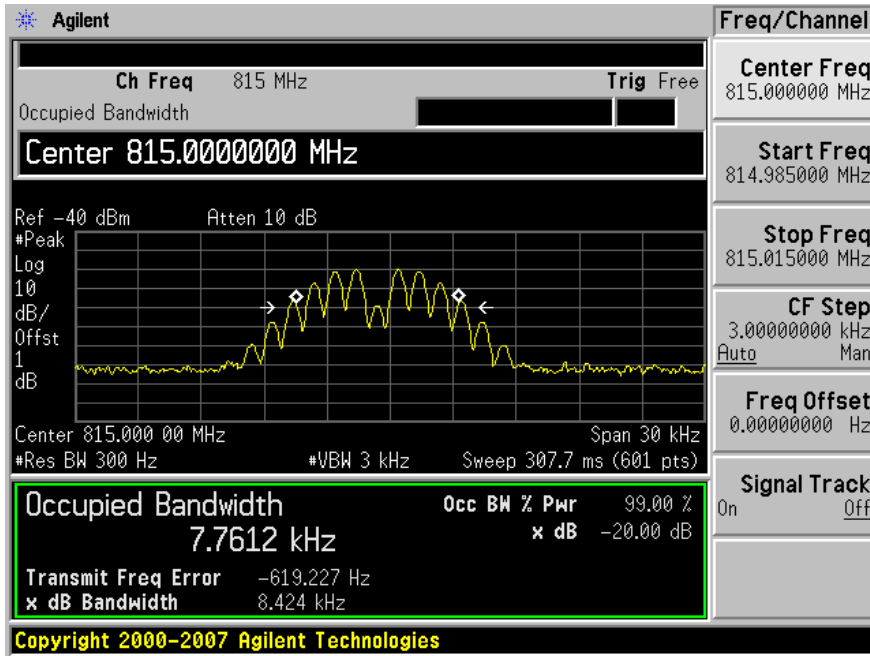


Output (iDEN)

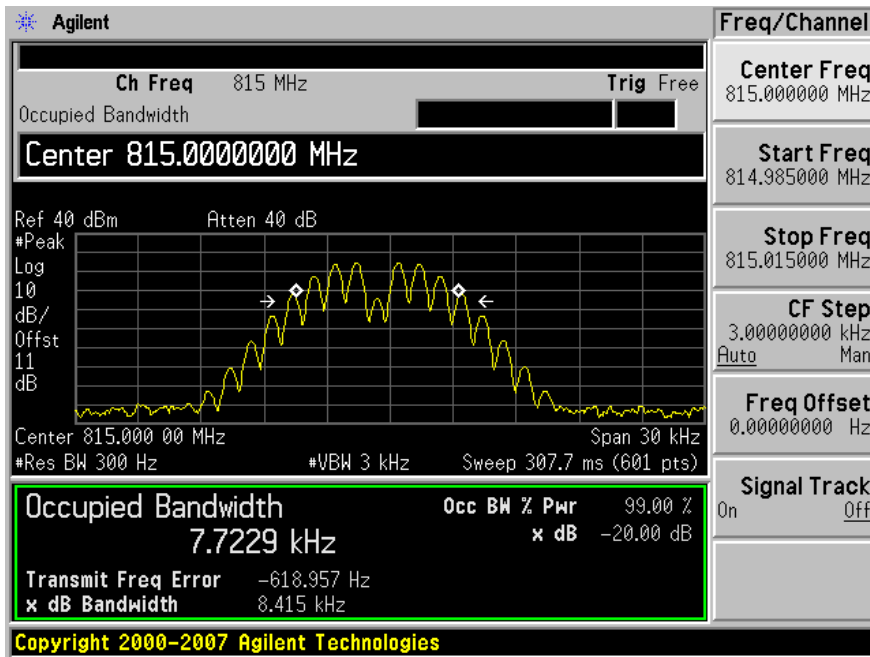


Middle Channel: 815 MHz

Input (FM with 2.5 kHz Sine Wave Audio Source)

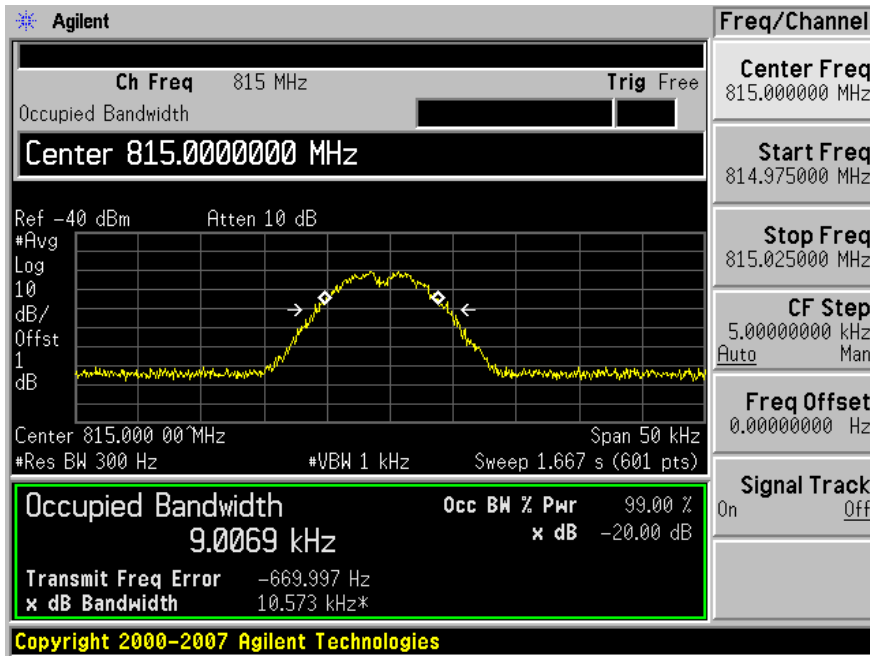


Output (FM with 2.5 kHz Sine Wave Audio Source)

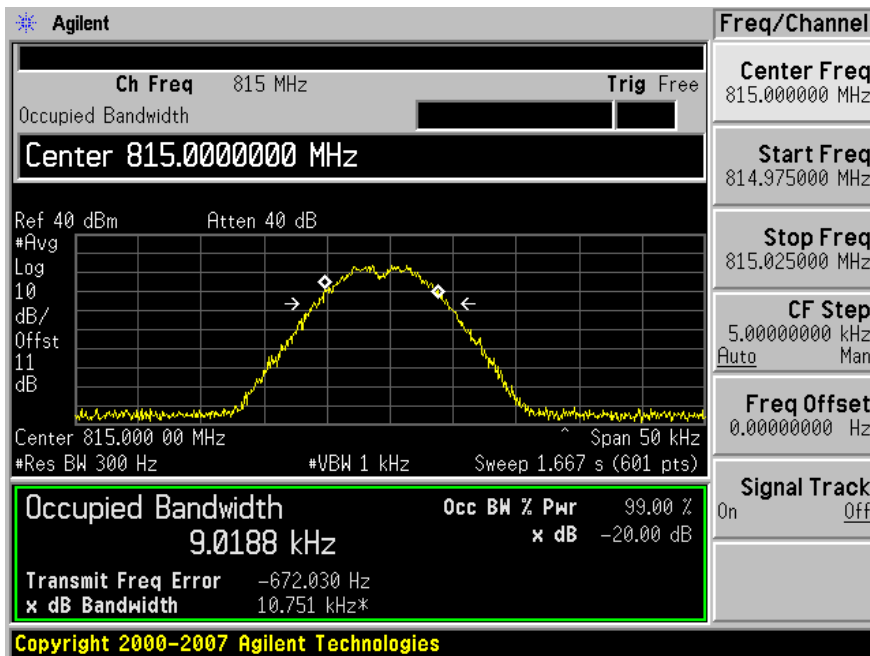


Middle Channel: 815 MHz

Input (FM with 9600bps Data Source)

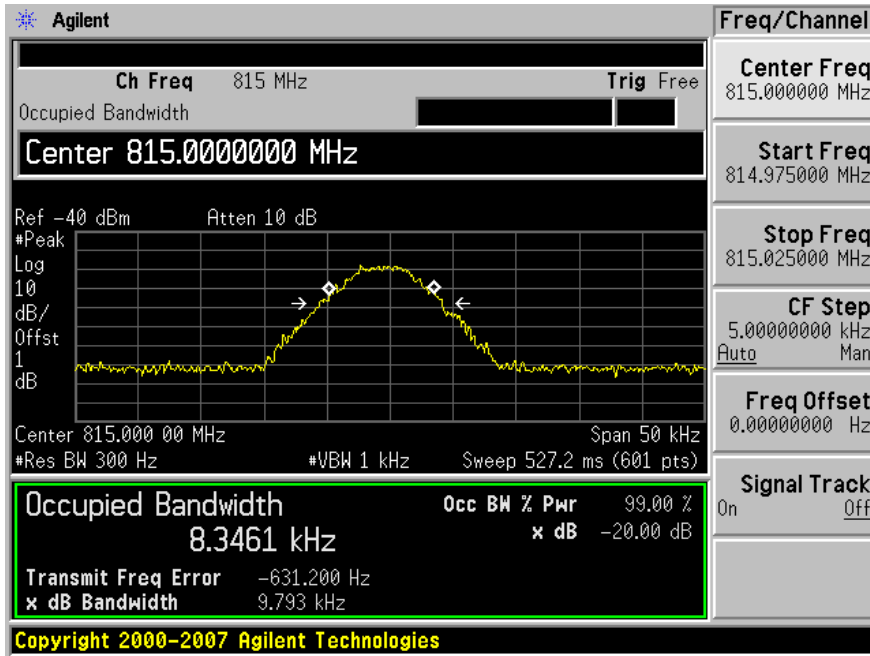


Output (FM with 9600bps Data Source)

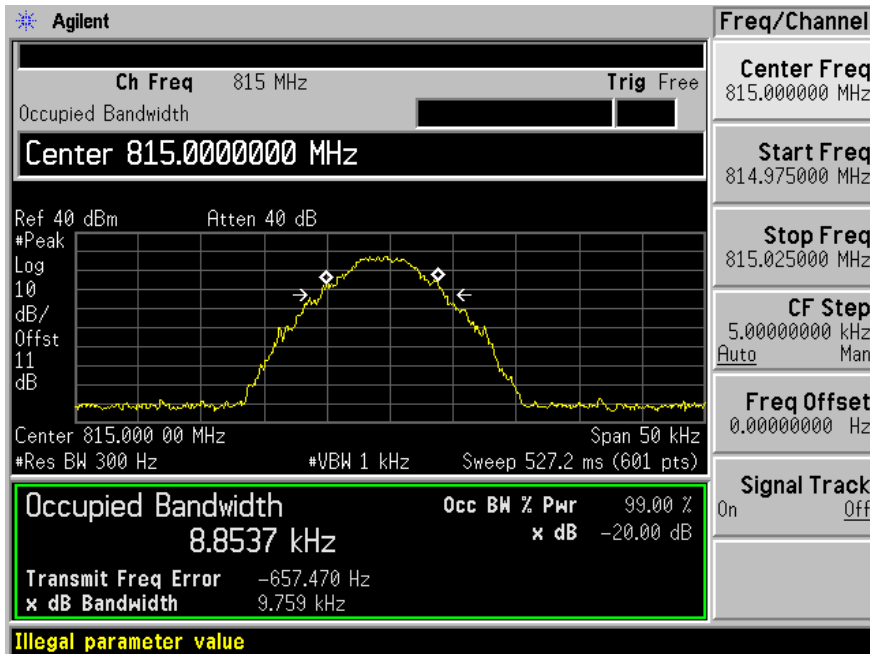


Middle Channel: 815 MHz

Input (C4FM)

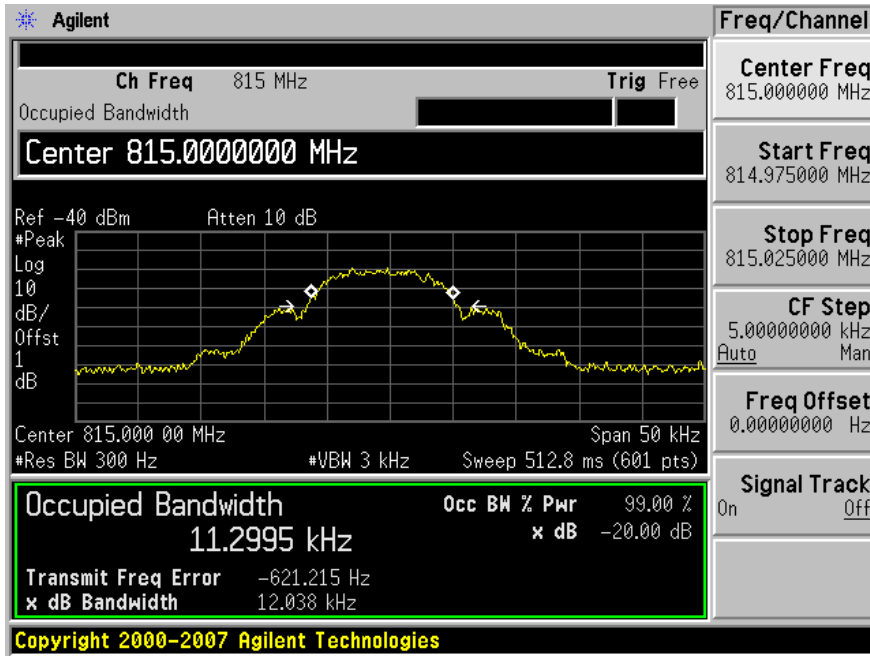


Output (C4FM)

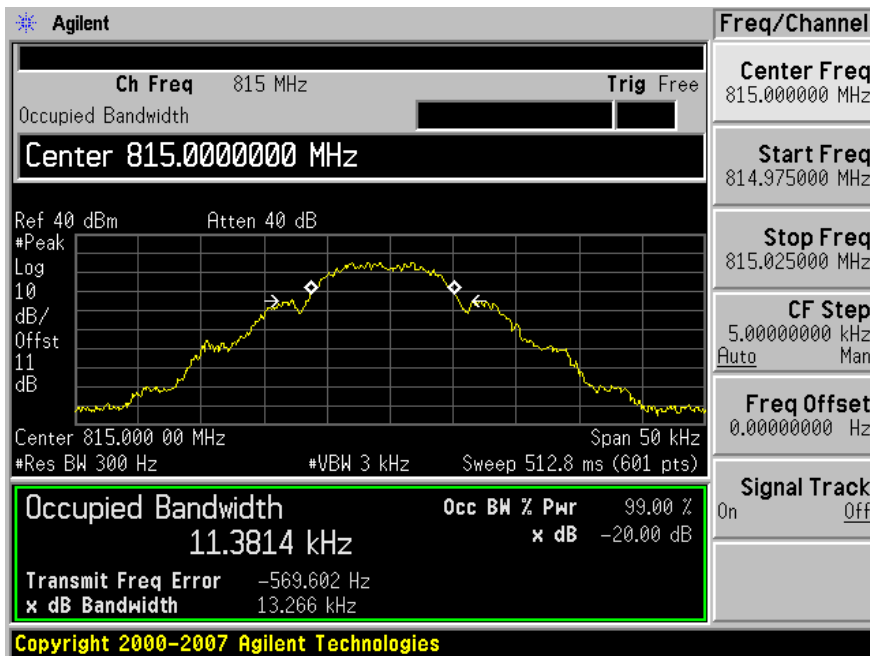


Middle Channel: 815 MHz

Input (2L-FSK)

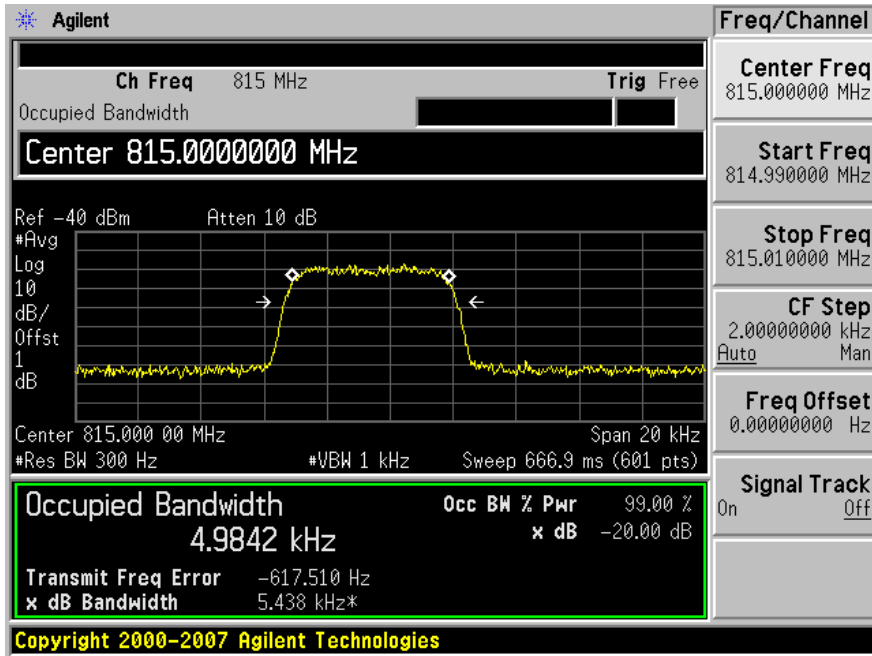


Output (2L-FSK)

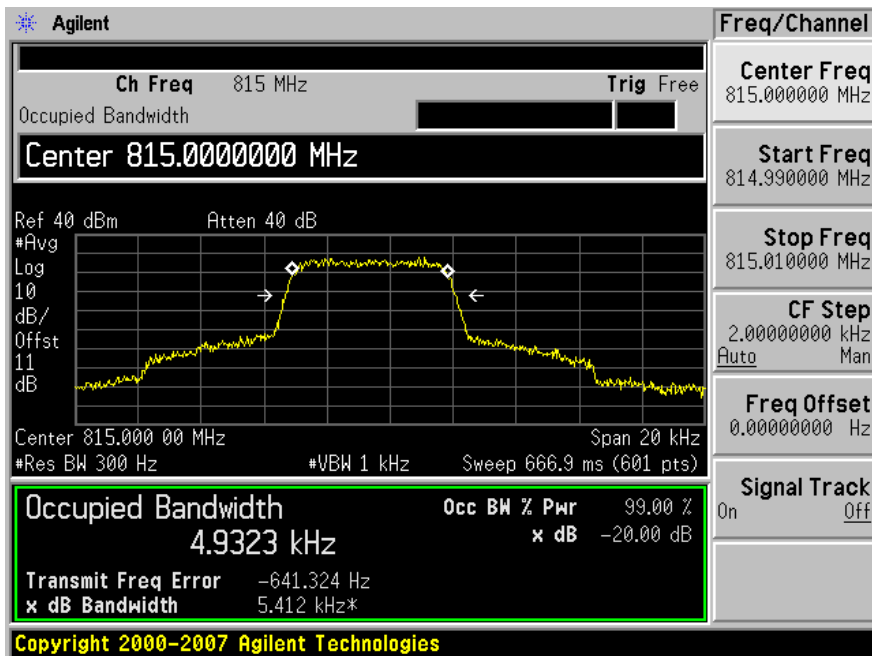


Middle Channel: 815 MHz

Input (CQPSK)

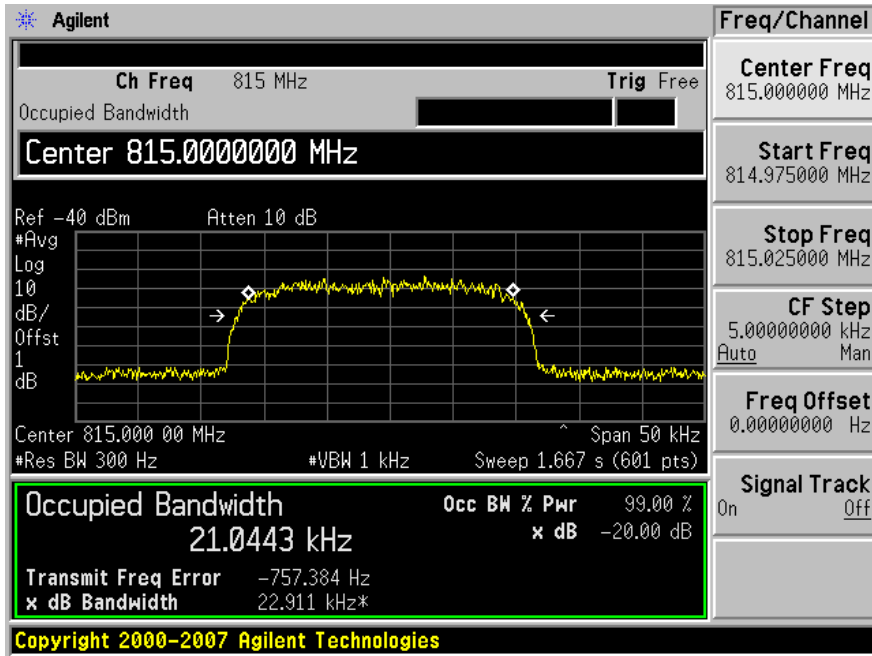


Output (CQPSK)

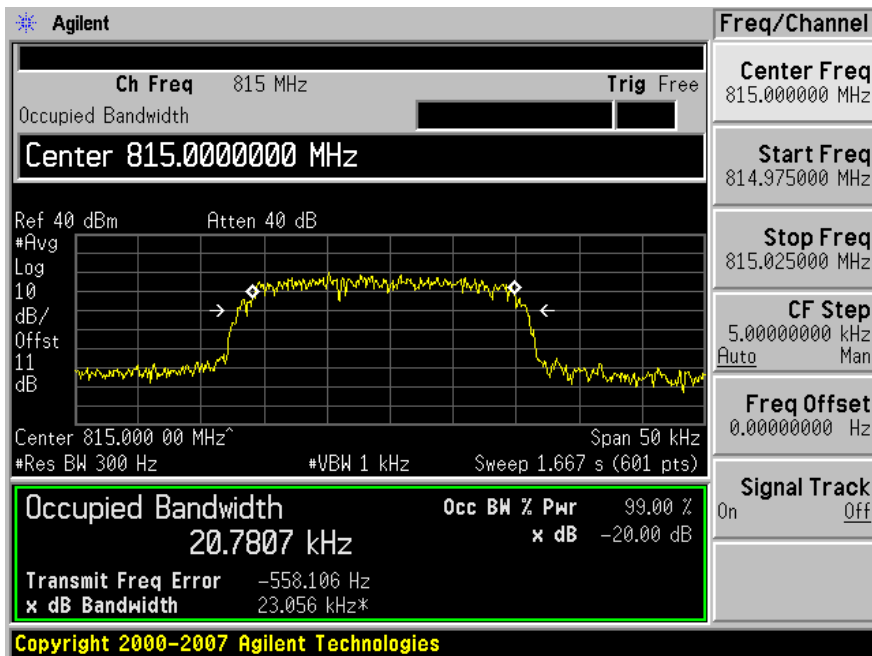


Middle Channel: 815 MHz

Input (Tetra)

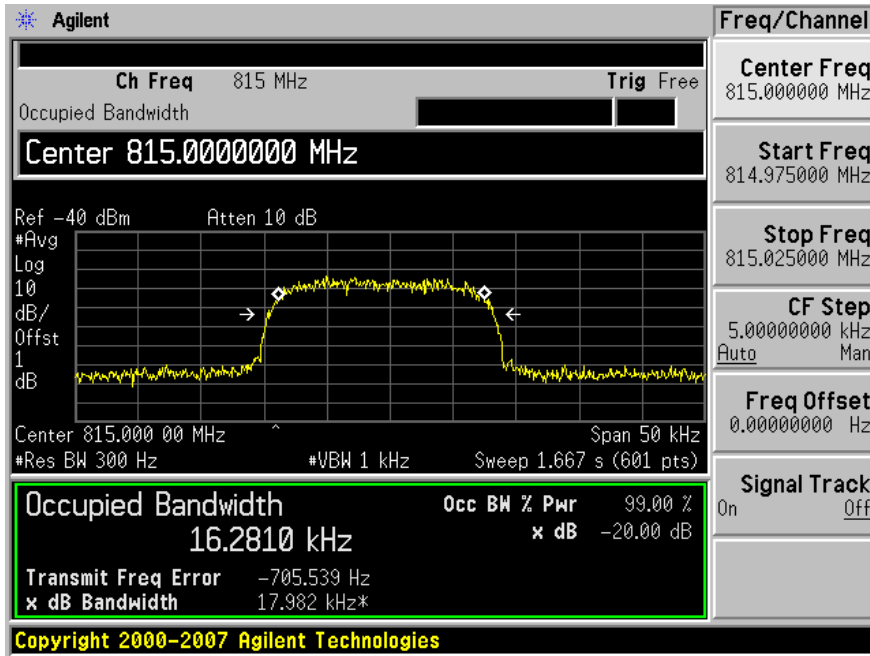


Output (Tetra)

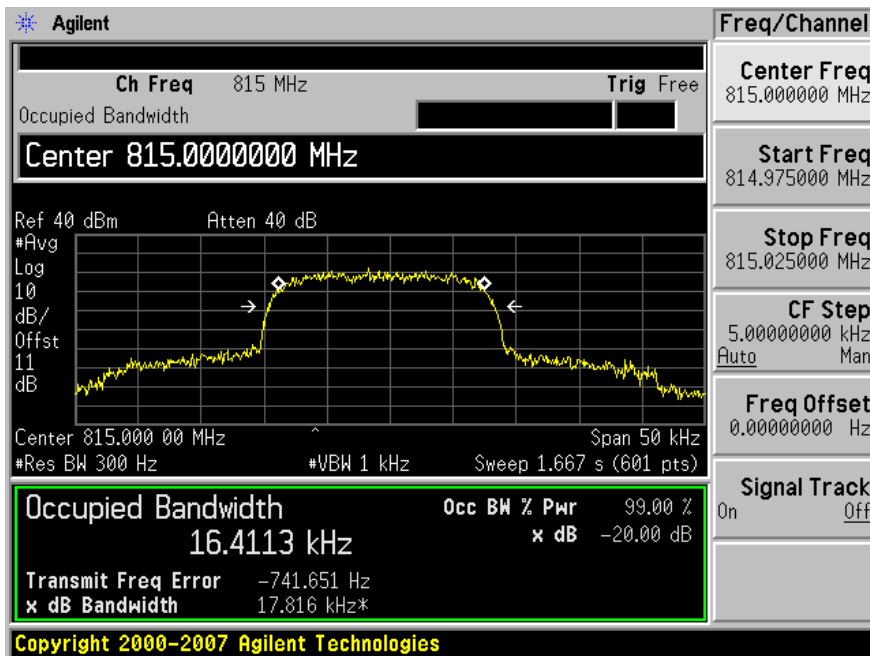


Middle Channel: 815 MHz

Input (iDEN)

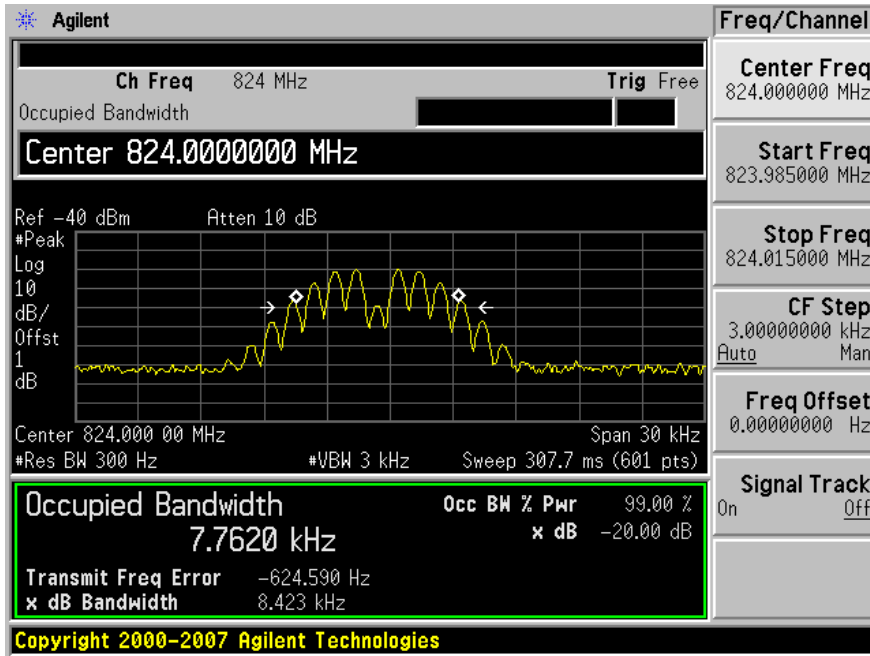


Output (iDEN)

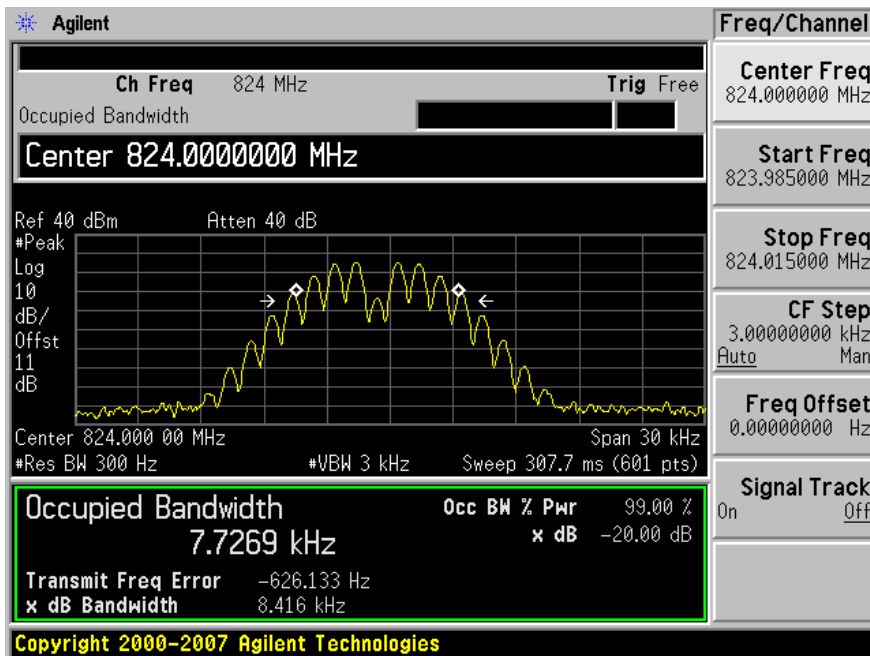


High Channel: 824 MHz

Input (FM with 2.5 kHz Sine Wave Audio Source)

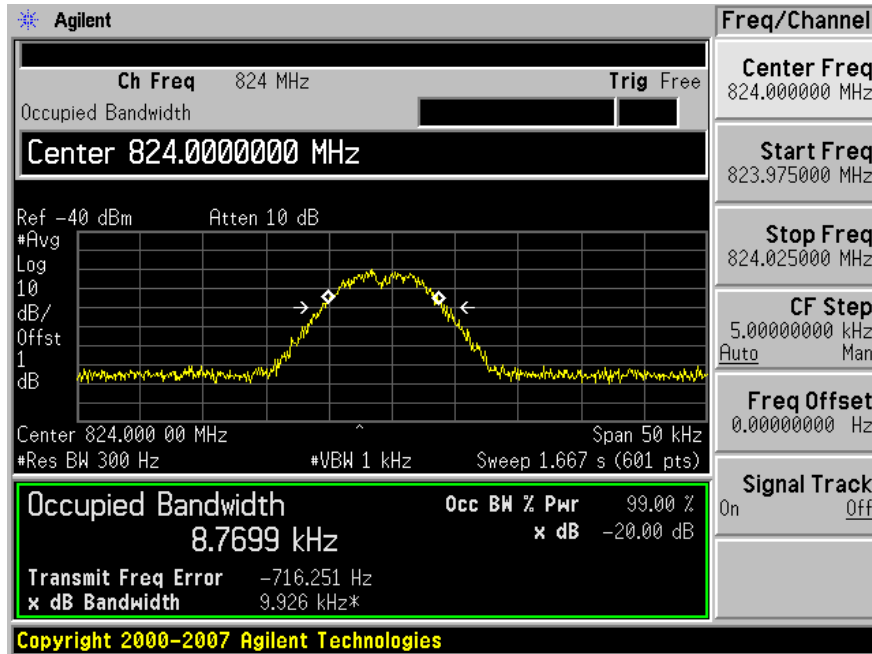


Output (FM with 2.5 kHz Sine Wave Audio Source)

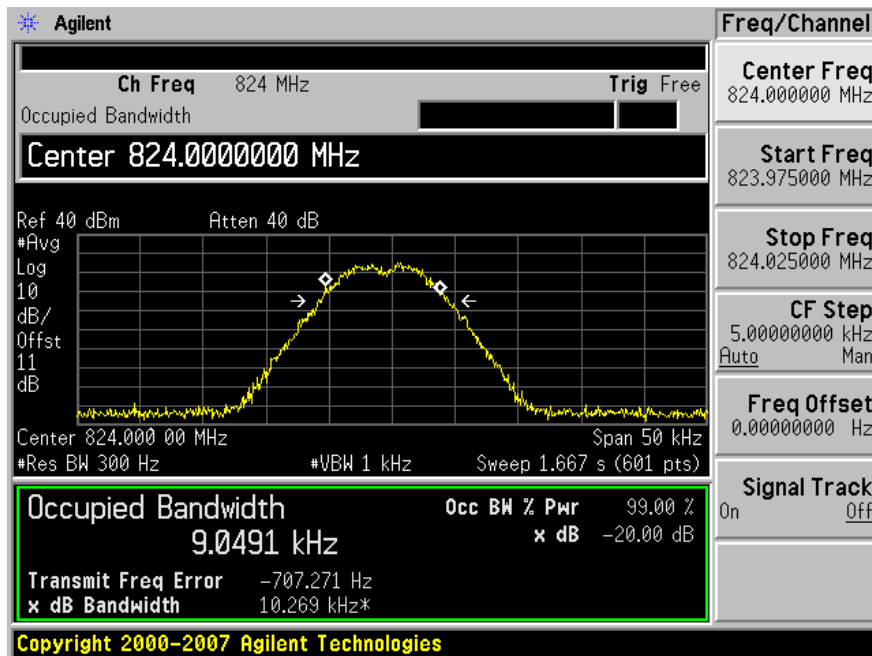


High Channel: 824 MHz

Input (FM with 9600bps Data Source)

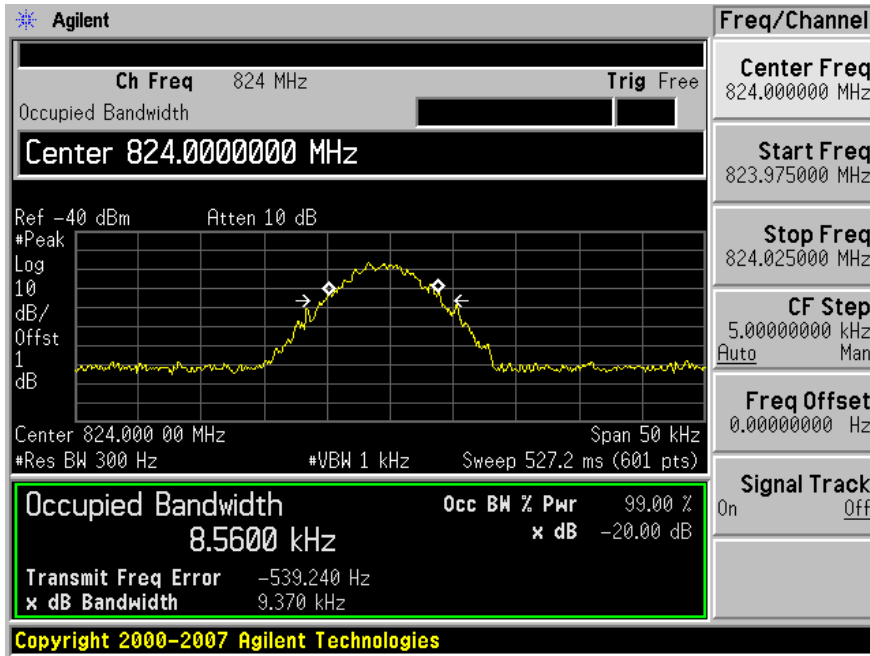


Output (FM with 9600bps Data Source)

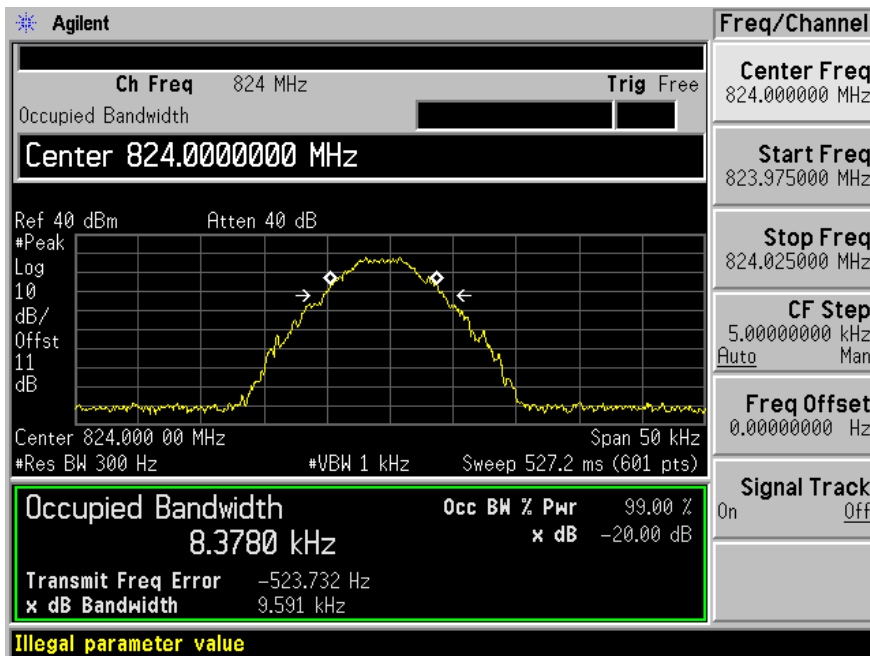


High Channel: 824 MHz

Input (C4FM)

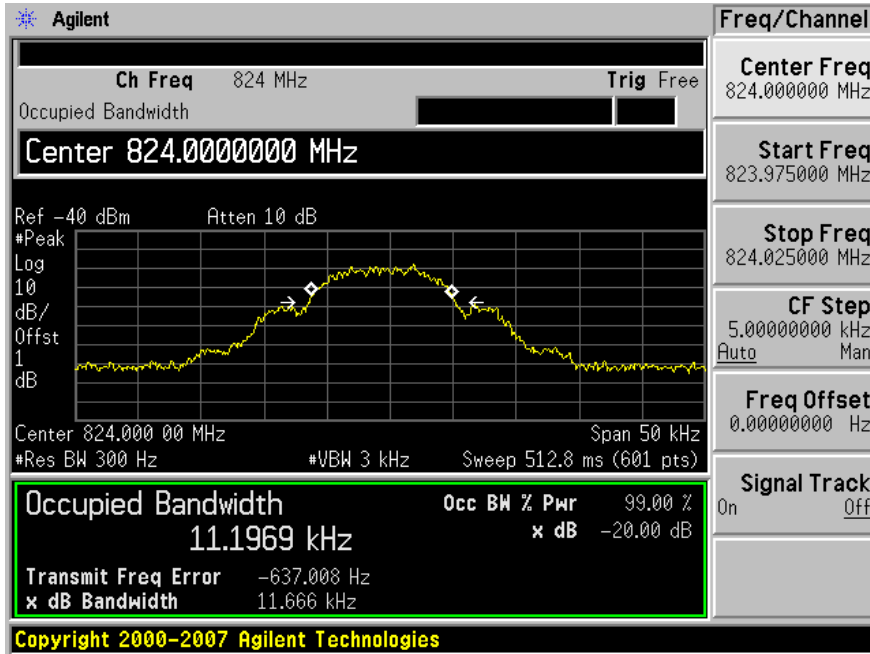


Output (C4FM)

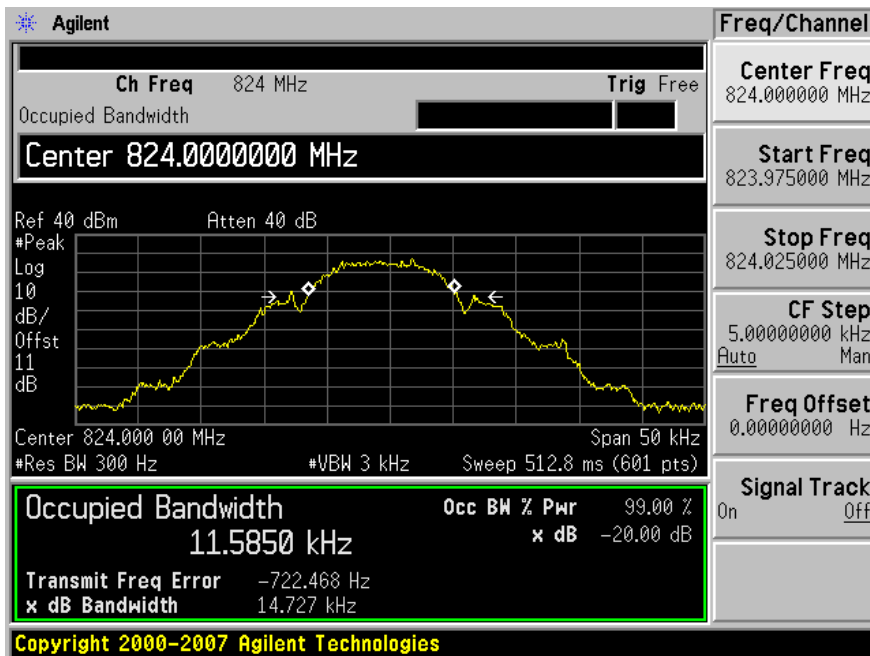


High Channel: 824 MHz

Input (2L-FSK)

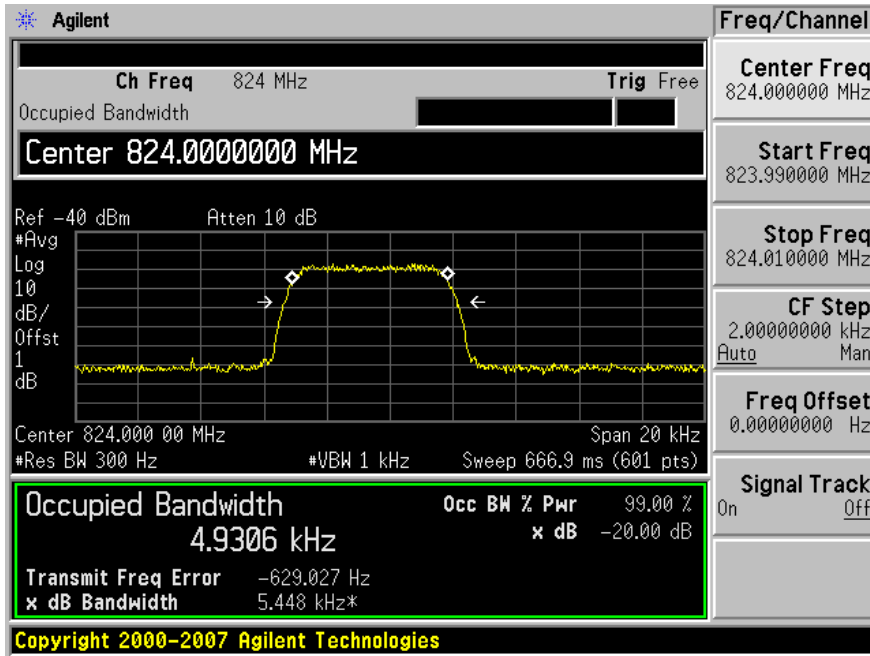


Output (2L-FSK)

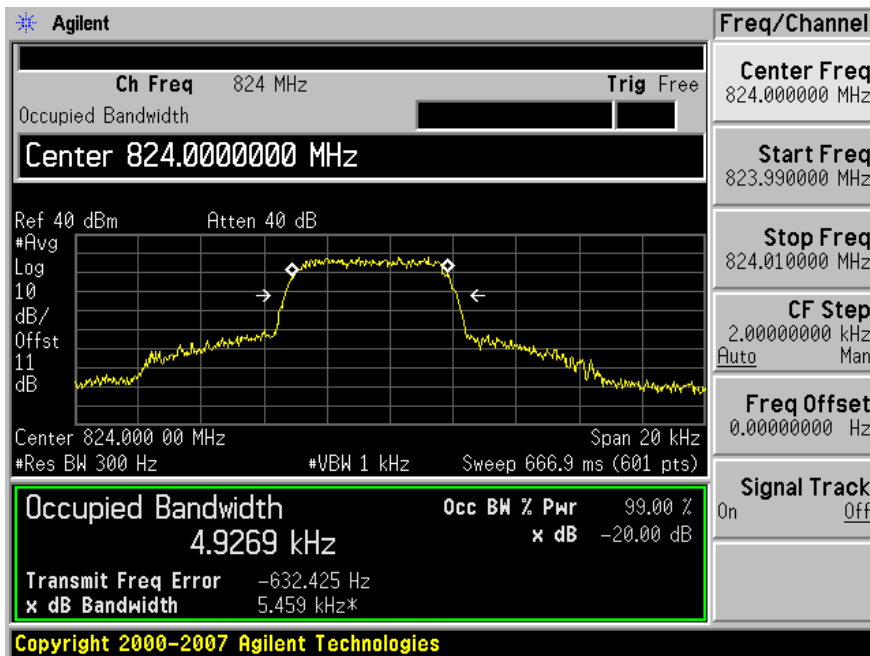


High Channel: 824 MHz

Input (CQPSK)

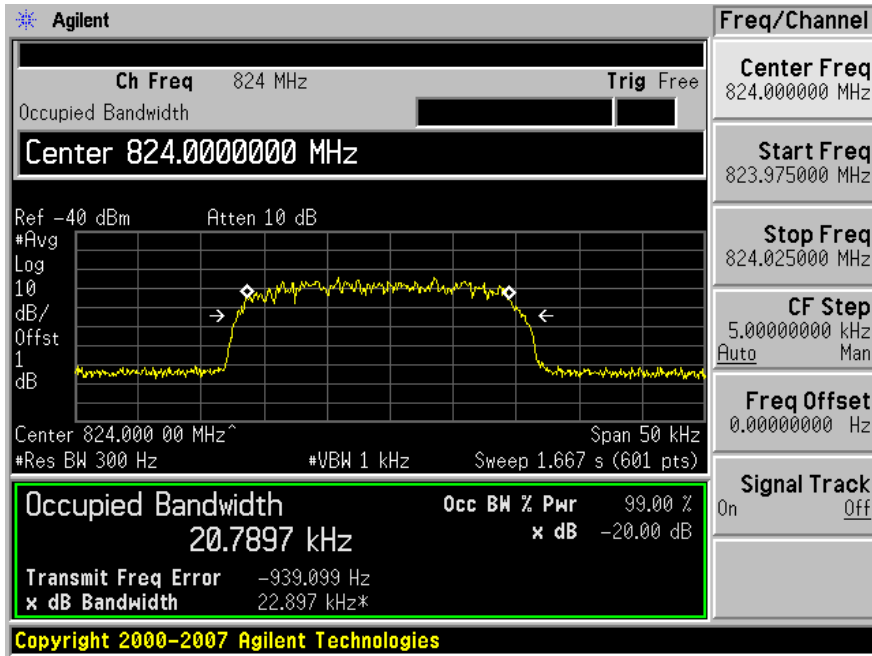


Output (CQPSK)

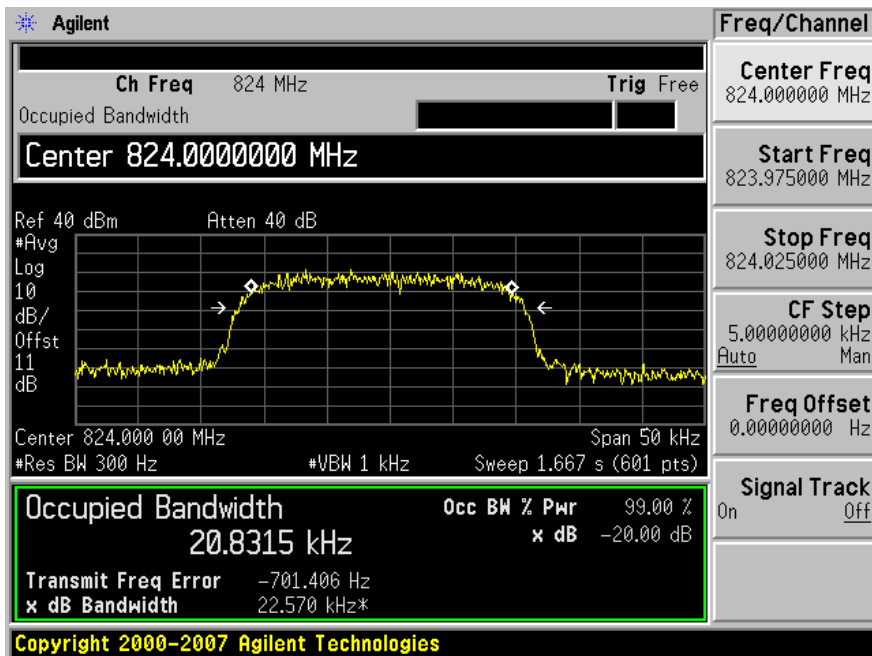


High Channel: 824 MHz

Input (Tetra)

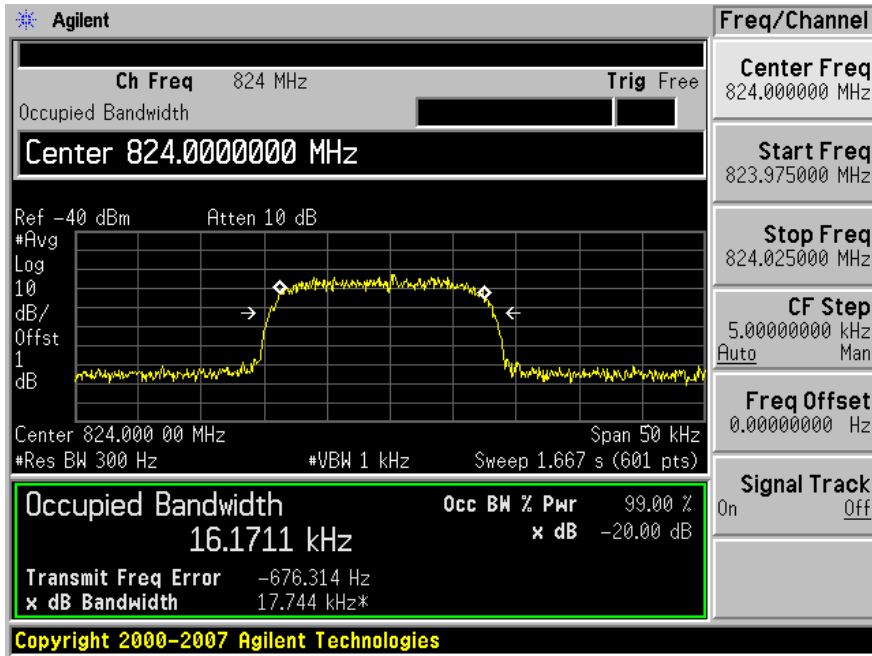


Output (Tetra)

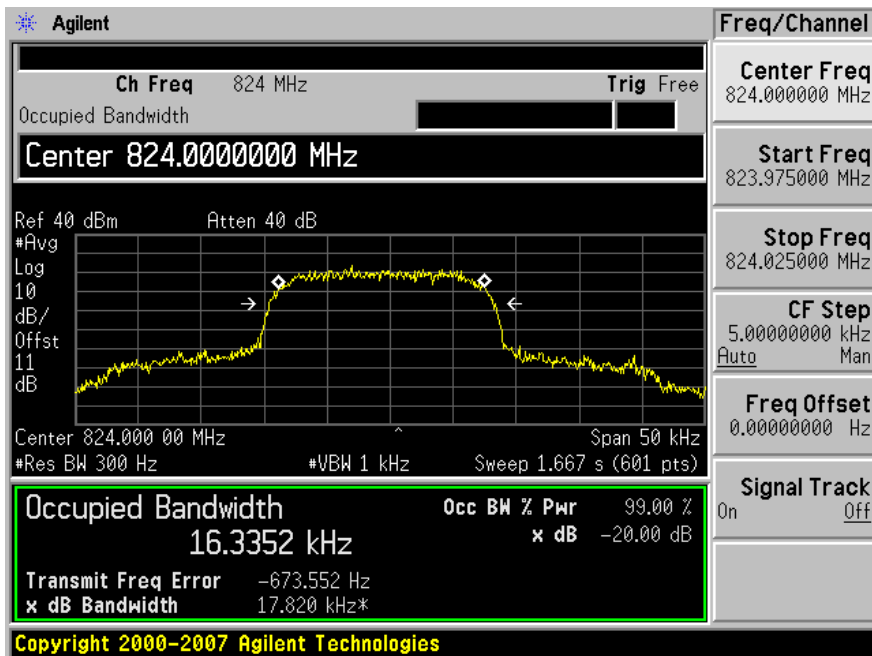


High Channel: 824 MHz

Input (iDEN)



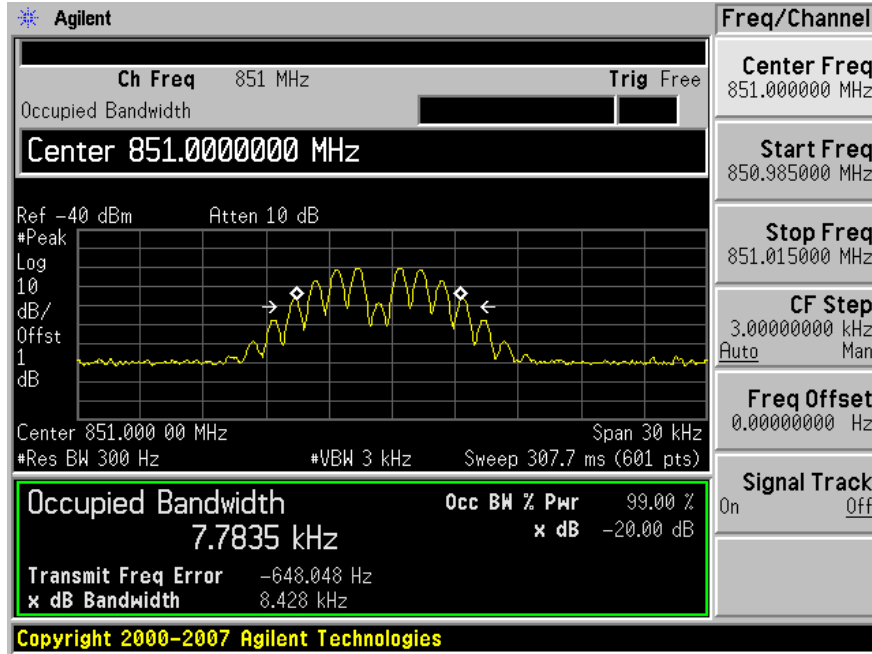
Output (iDEN)



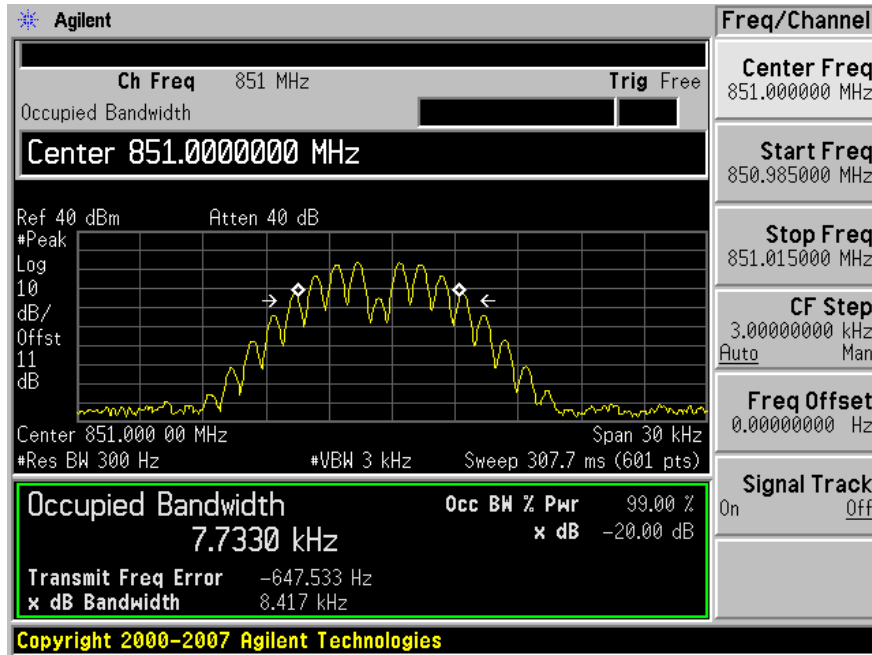
Operation Frequency Band – 851 to 869 MHz

Low Channel: 851 MHz

Input (FM with 2.5 kHz Sine Wave Audio Source)

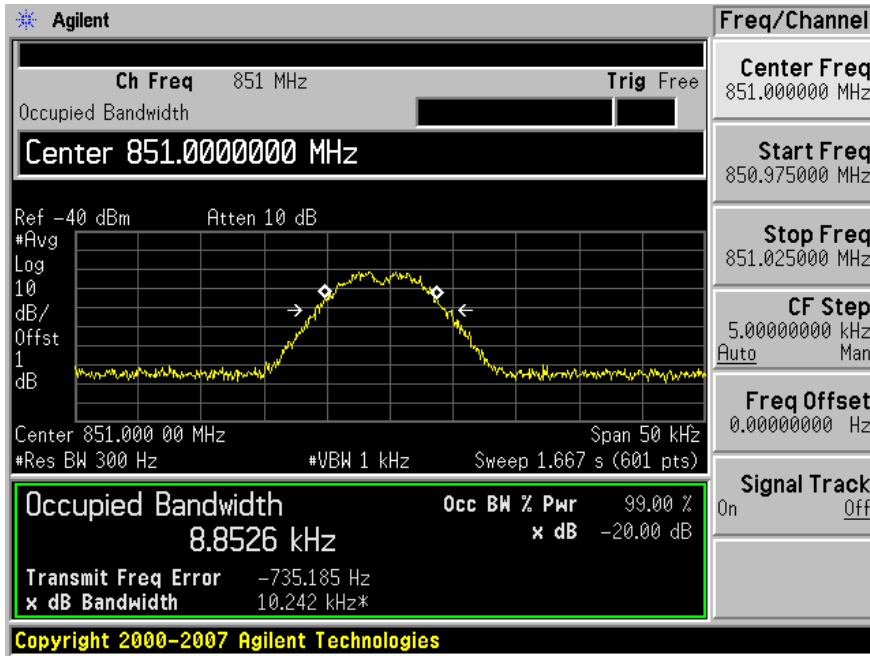


Output (FM with 2.5 kHz Sine Wave Audio Source)

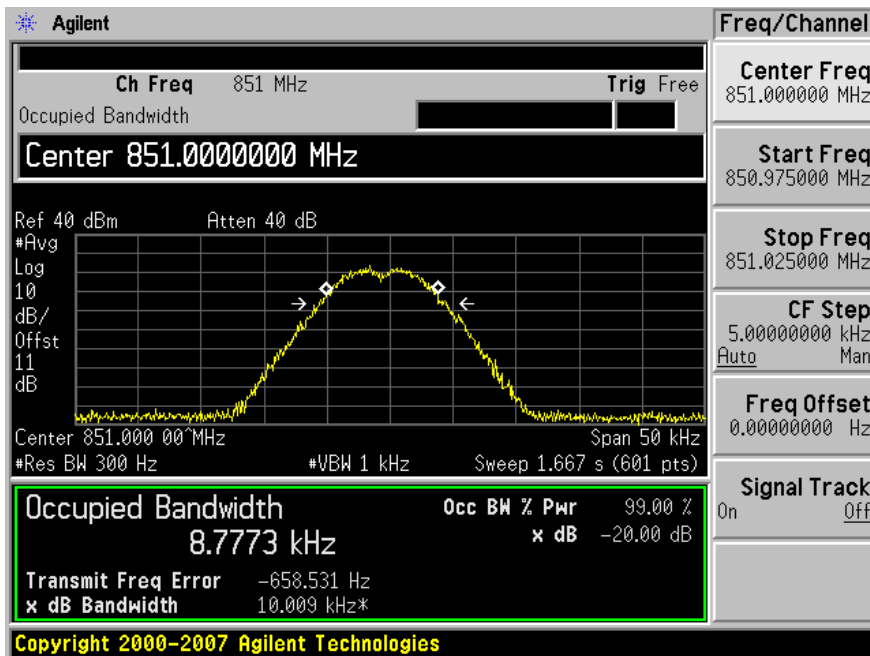


Low Channel: 851 MHz

Input (FM with 9600bps Data Source)

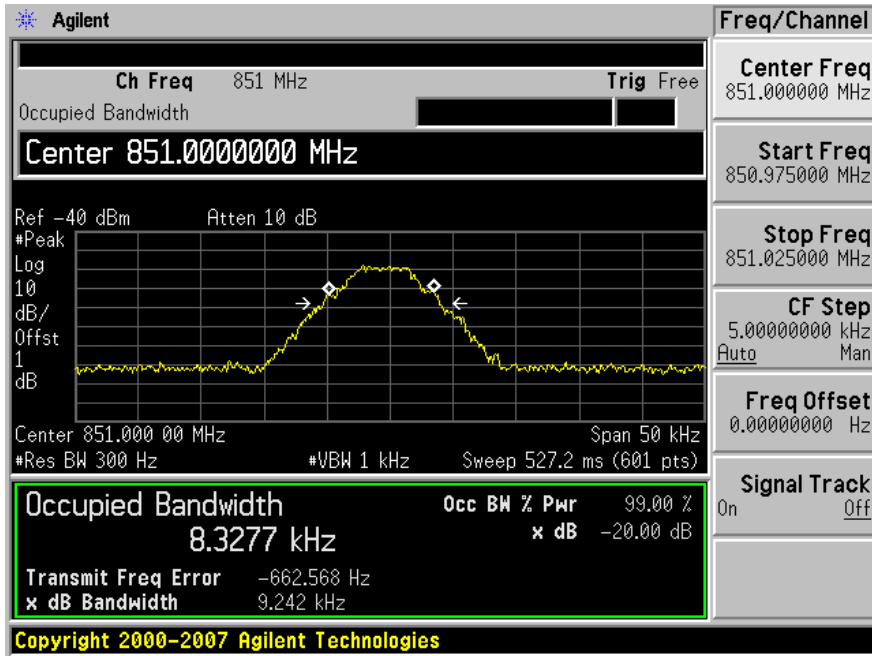


Output (FM with 9600bps Data Source)

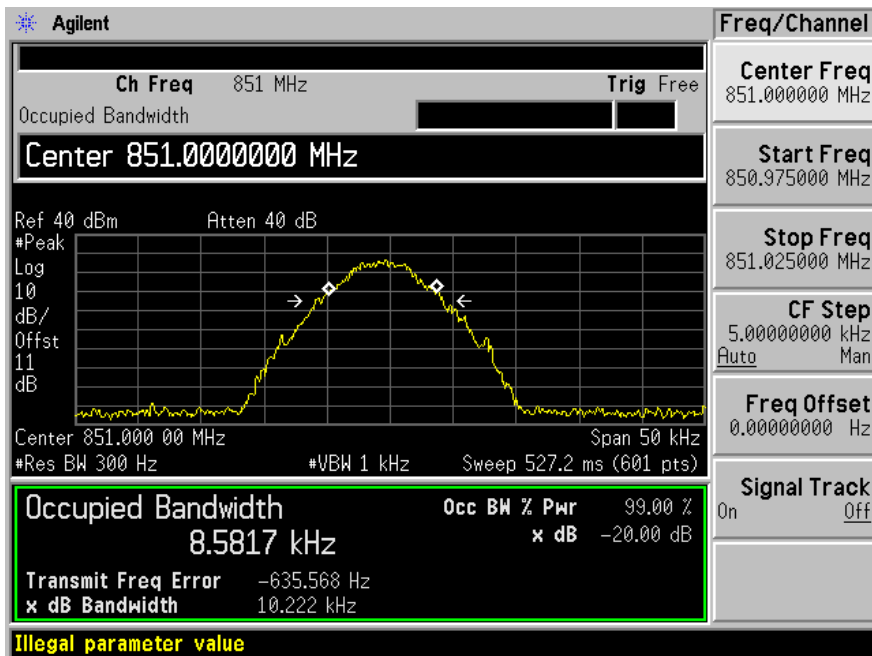


Low Channel: 851 MHz

Input (C4FM)

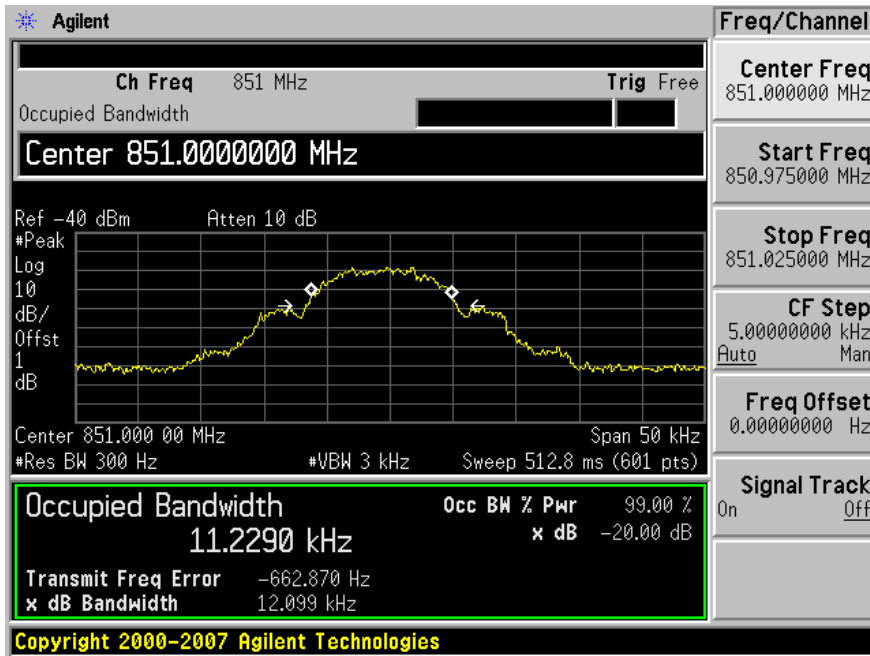


Output (C4FM)

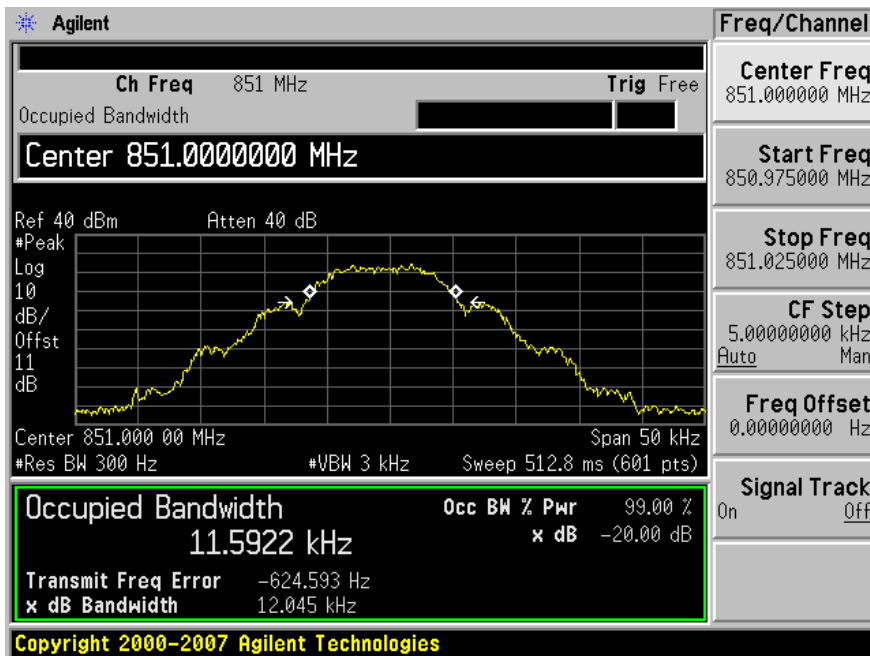


Low Channel: 851 MHz

Input (2L-FSK)

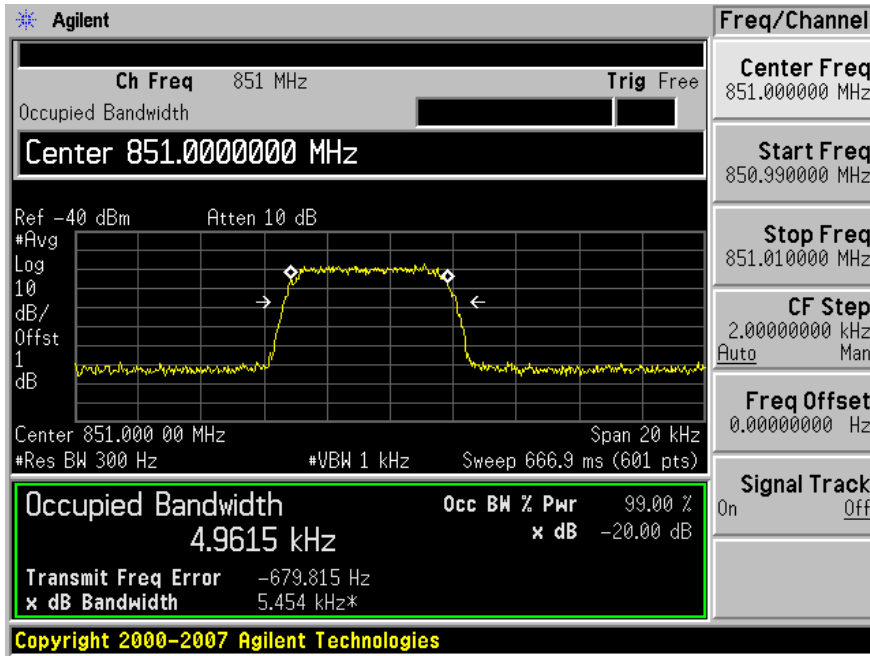


Output (2L-FSK)

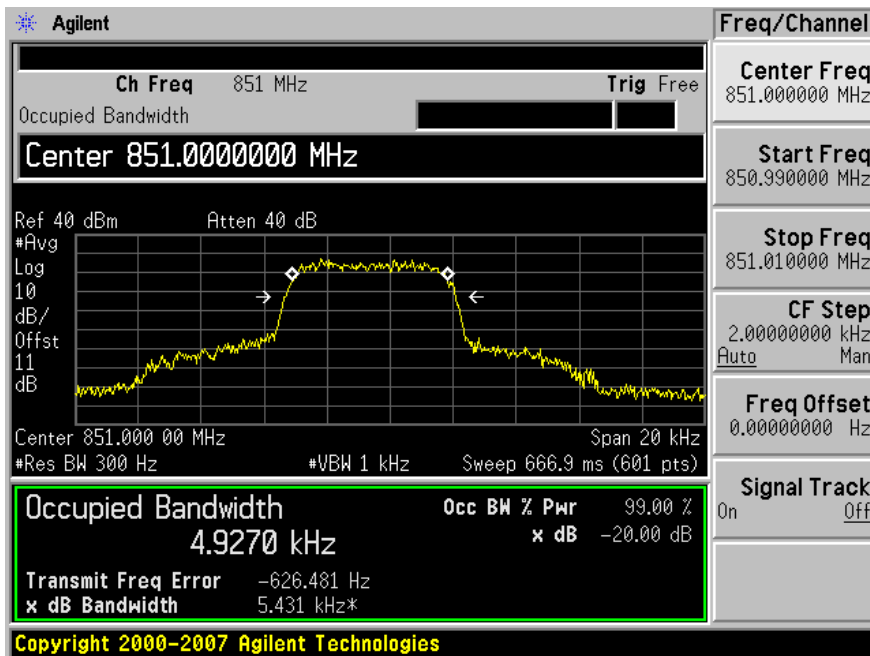


Low Channel: 851 MHz

Input (CQPSK)

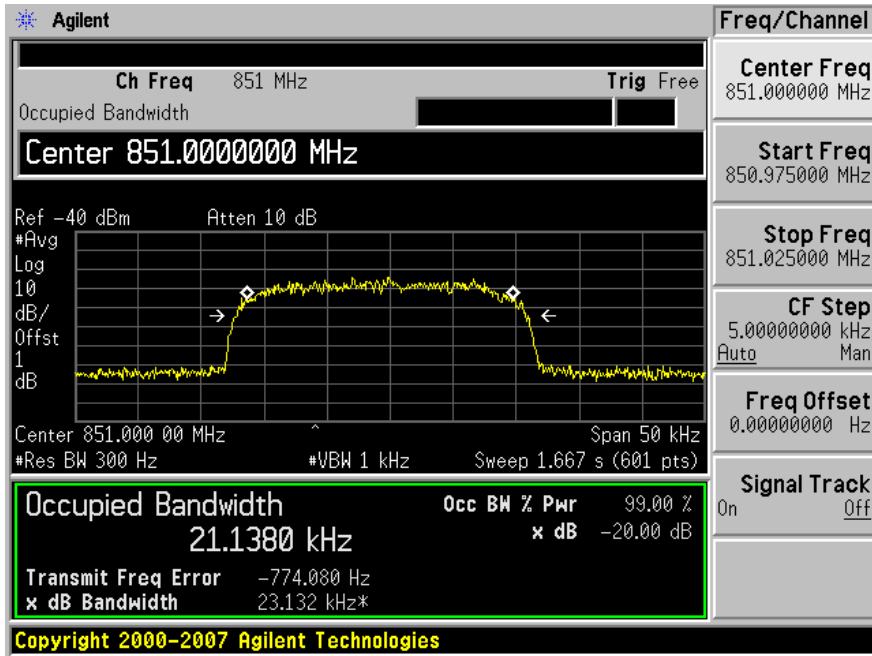


Output (CQPSK)

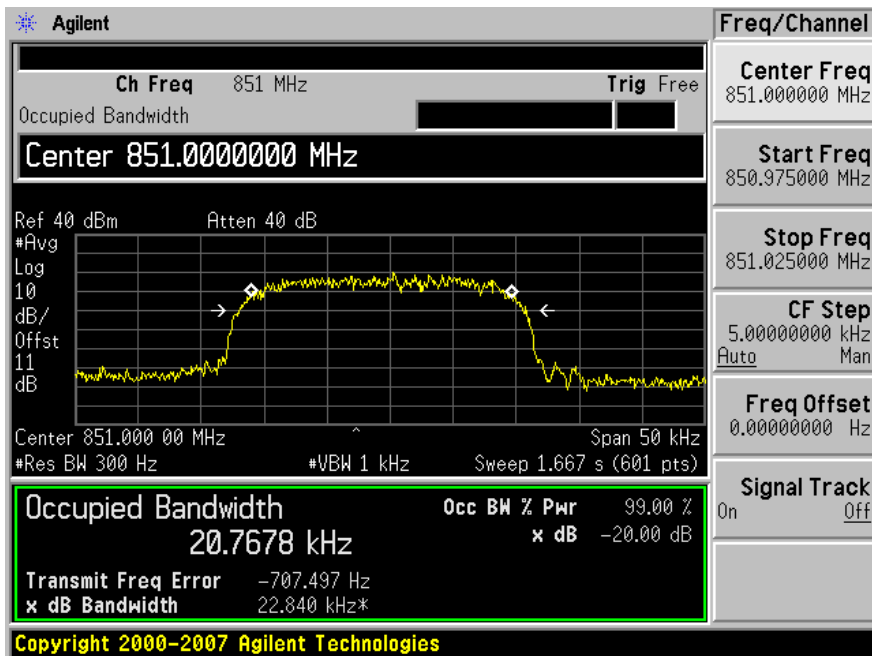


Low Channel: 851 MHz

Input (Tetra)

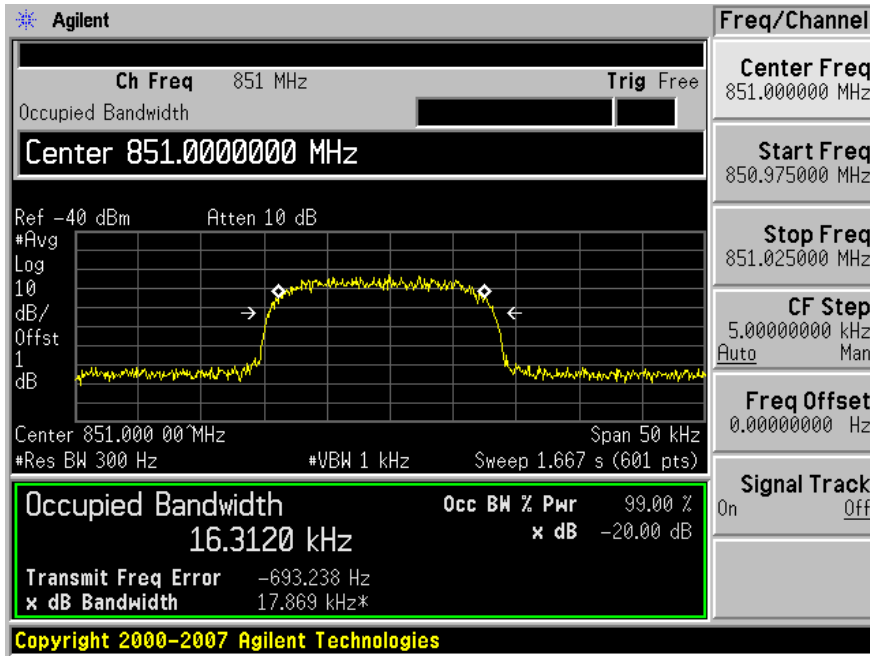


Output (Tetra)

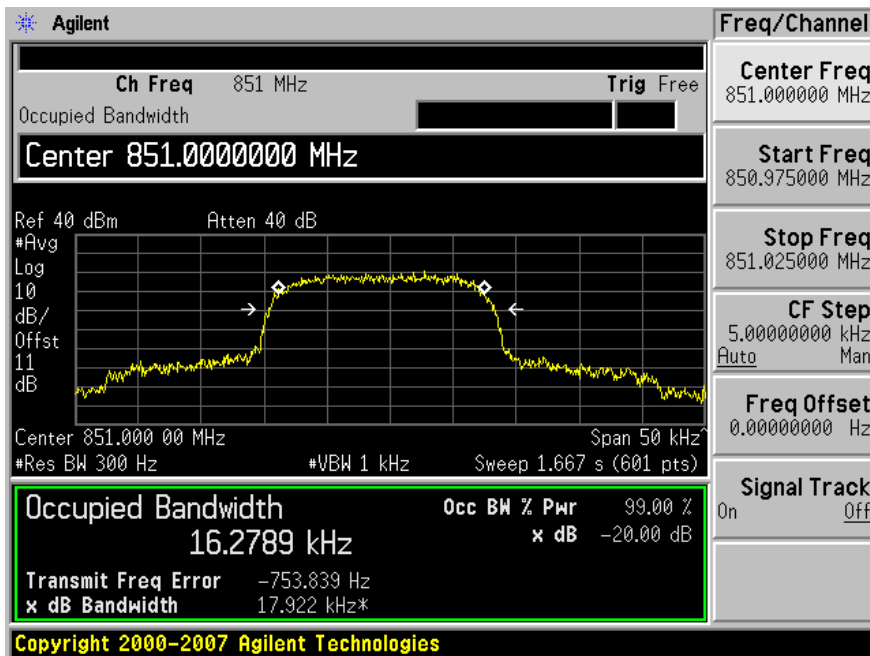


Low Channel: 851 MHz

Input (iDEN)

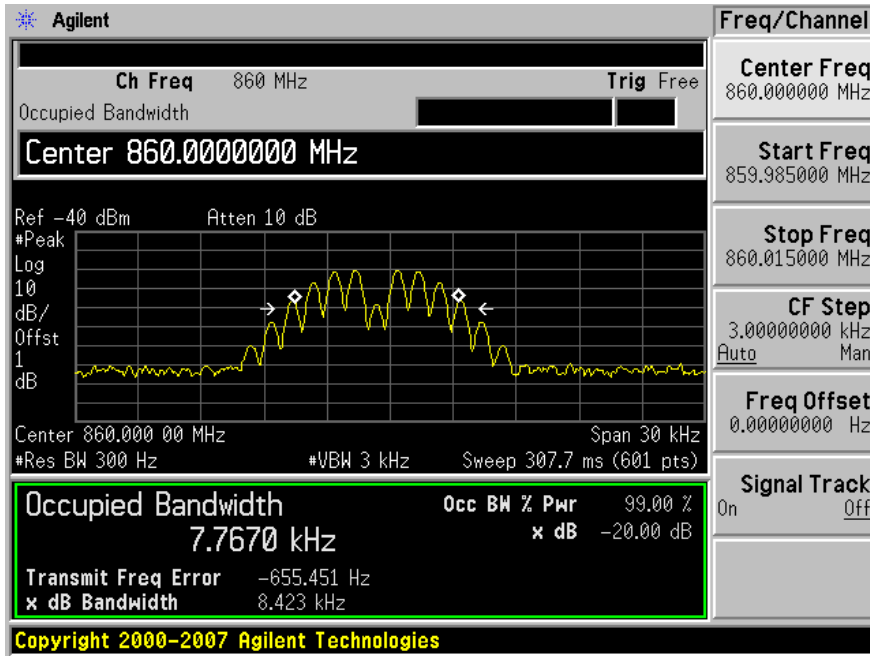


Output (iDEN)

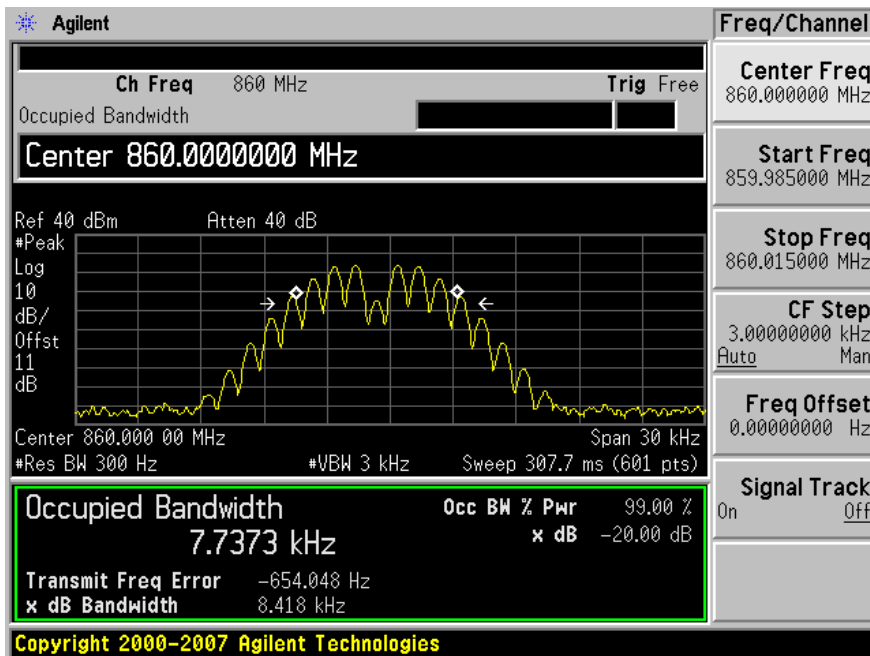


Middle Channel: 860 MHz

Input (FM with 2.5 kHz Sine Wave Audio Source)

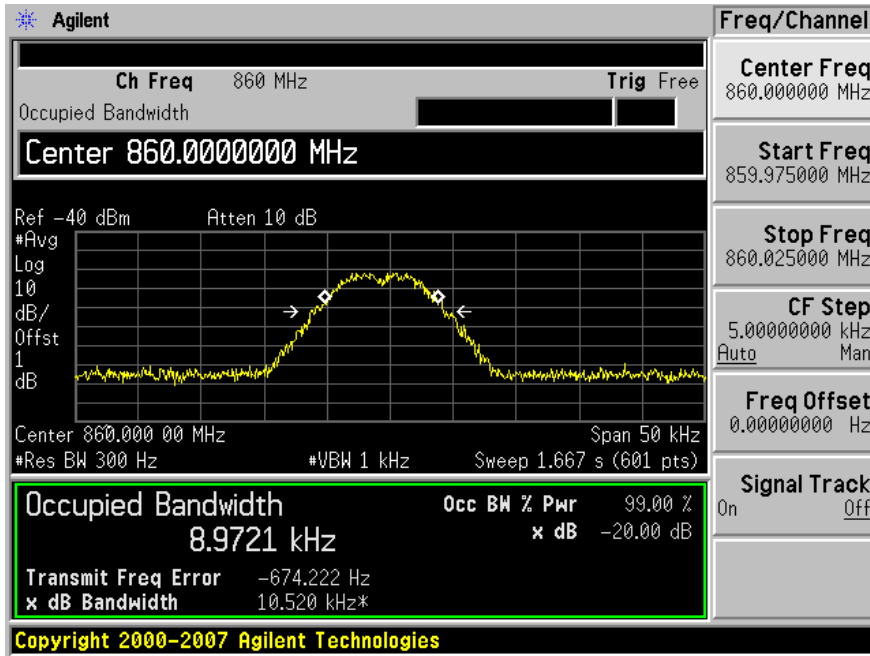


Output (FM with 2.5 kHz Sine Wave Audio Source)

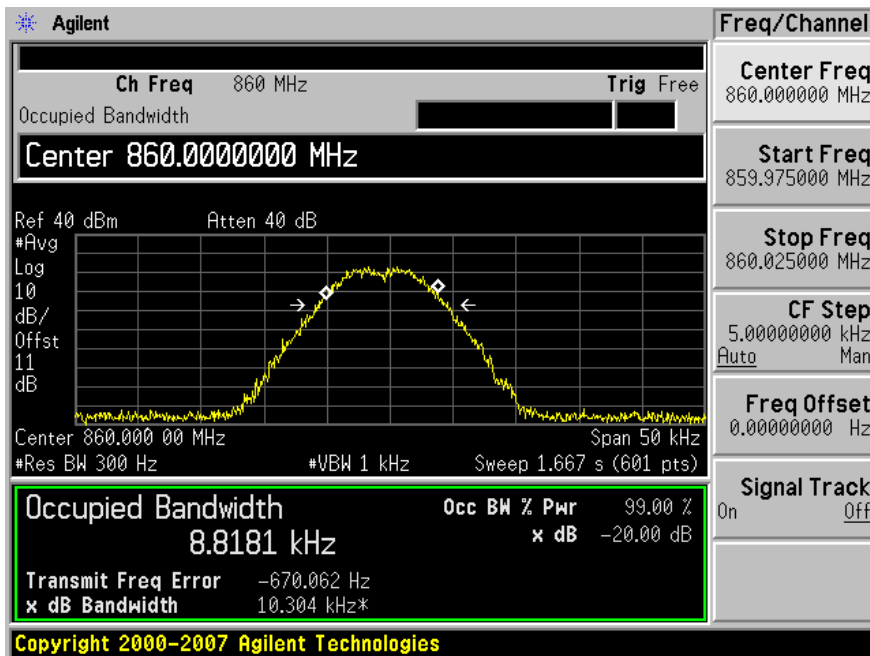


Middle Channel: 860 MHz

Input (FM with 9600bps Data Source)

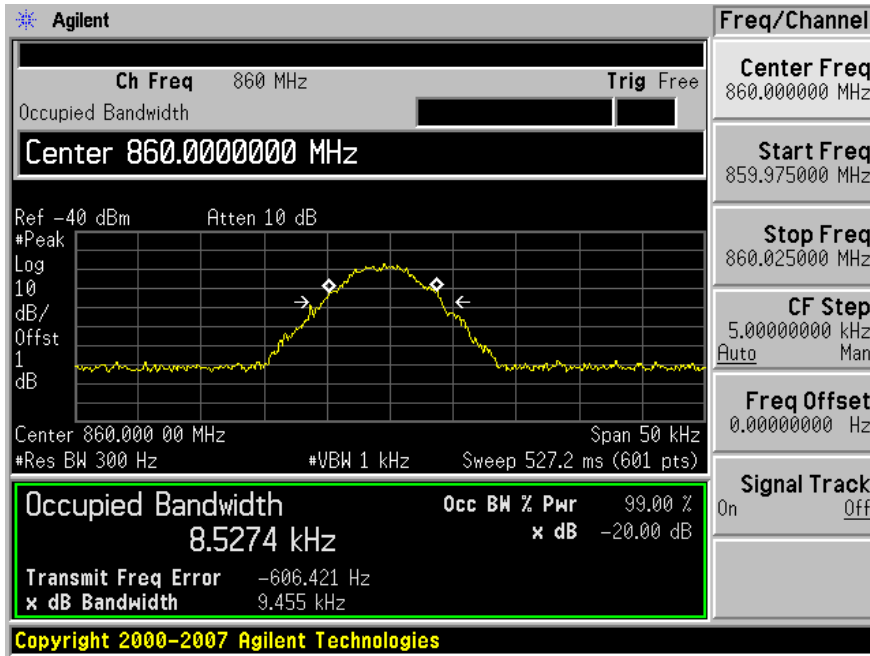


Output (FM with 9600bps Data Source)

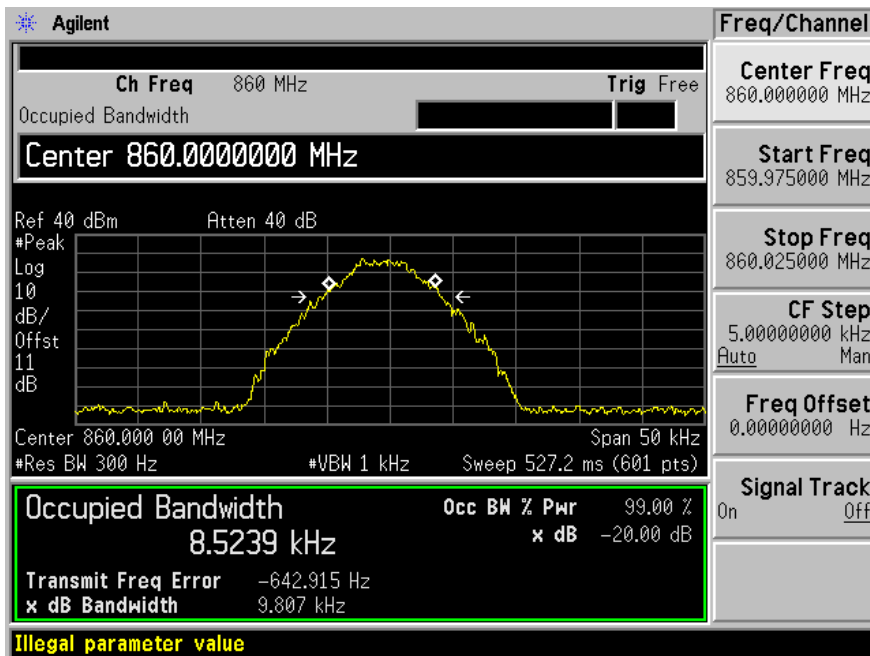


Middle Channel: 860 MHz

Input (C4FM)

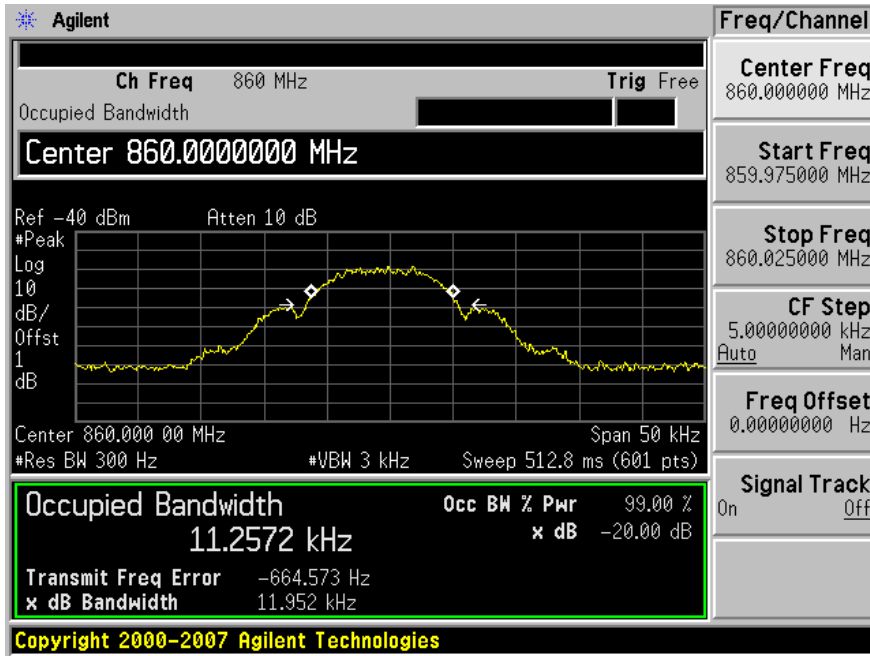


Output (C4FM)

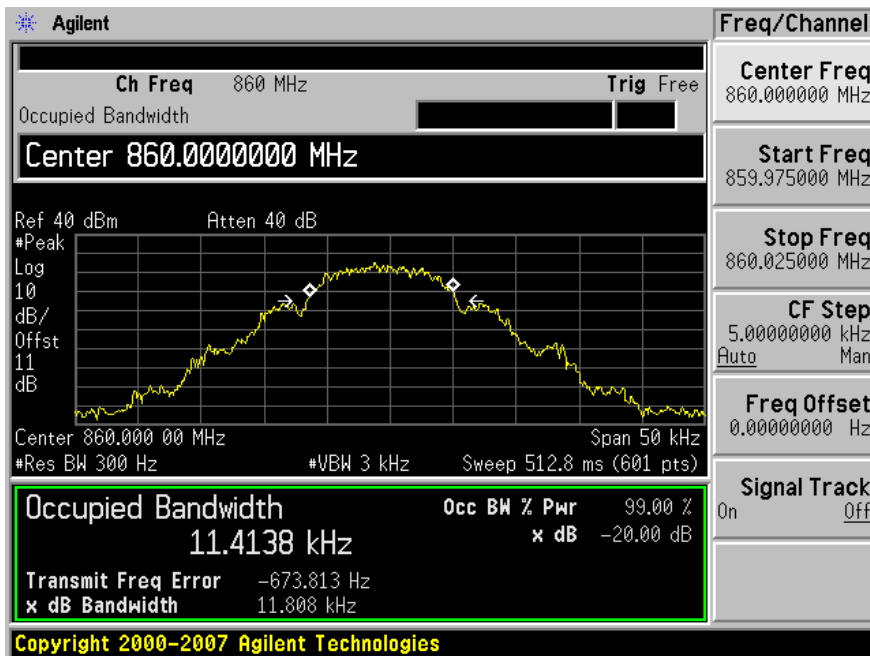


Middle Channel: 860 MHz

Input (2L-FSK)

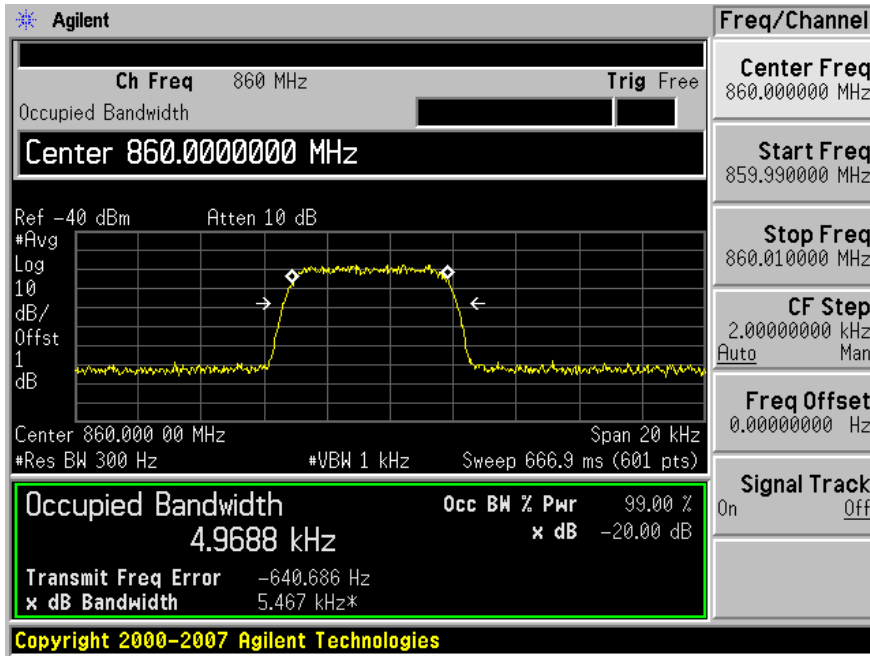


Output (2L-FSK)

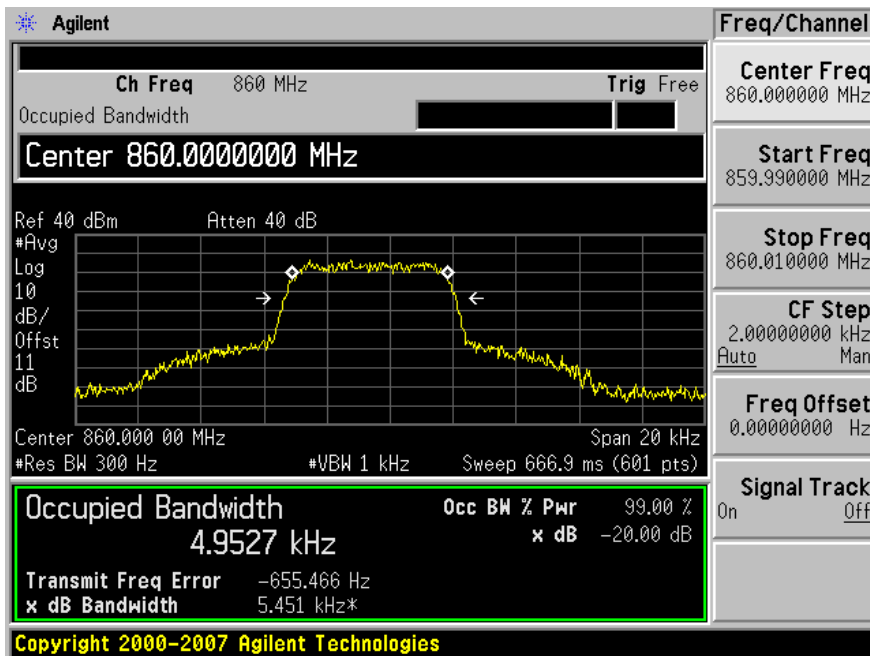


Middle Channel: 860 MHz

Input (CQPSK)

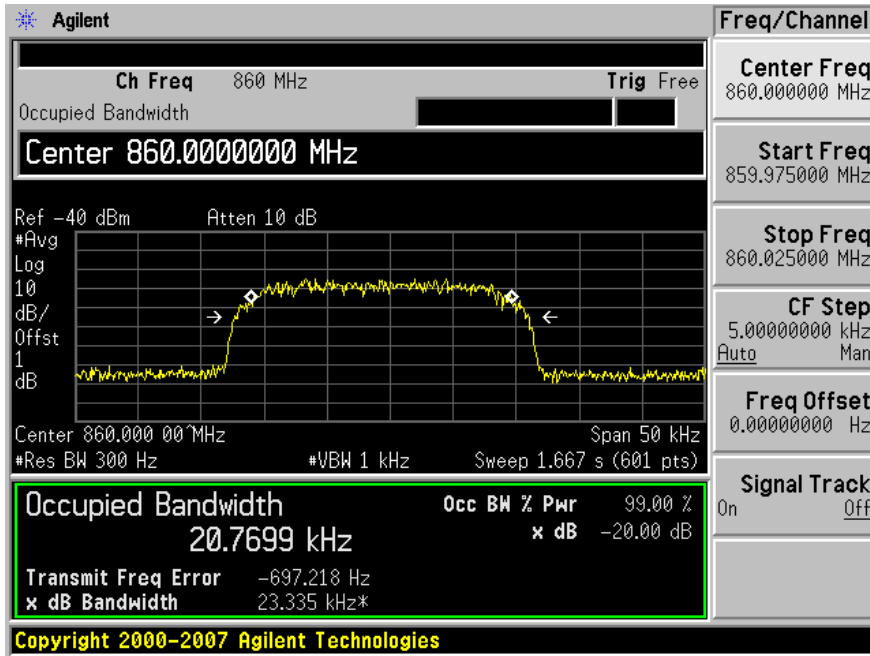


Output (CQPSK)

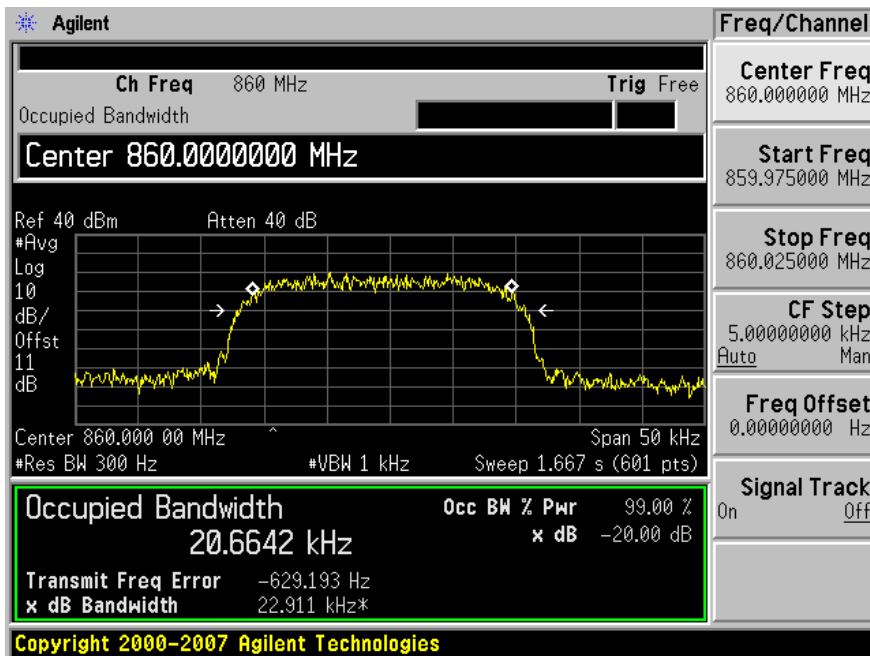


Middle Channel: 860 MHz

Input (Tetra)

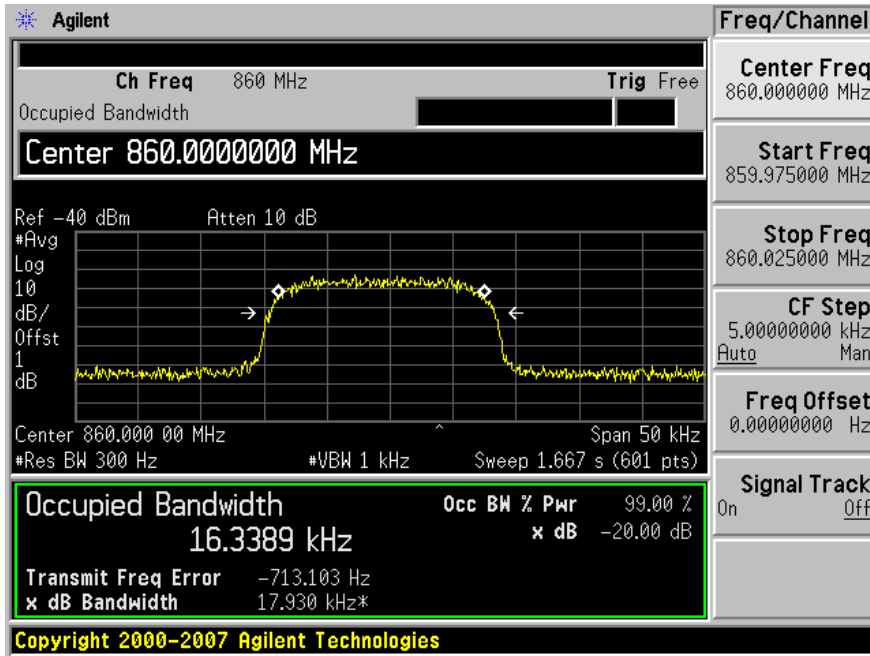


Output (Tetra)

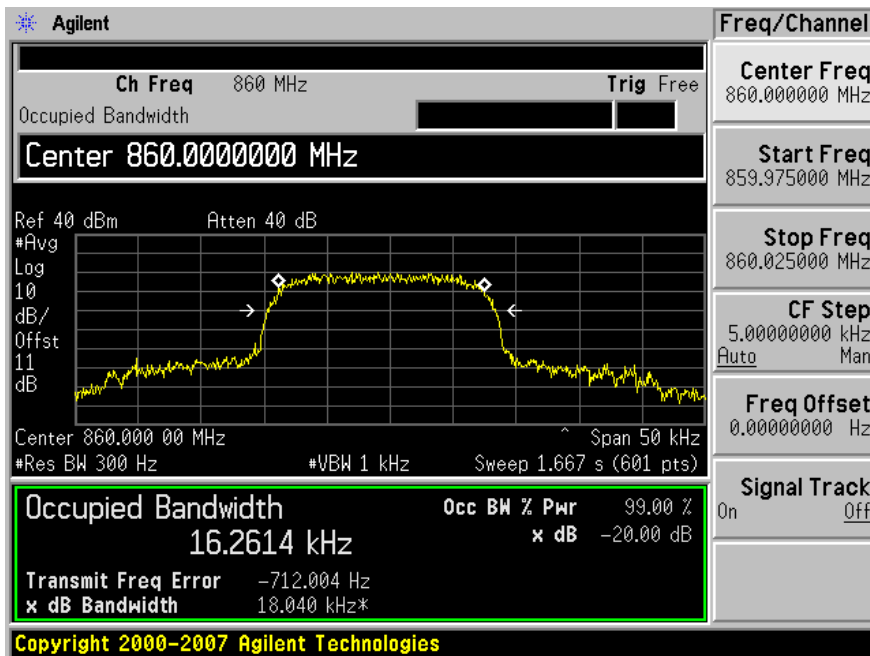


Middle Channel: 860 MHz

Input (iDEN)

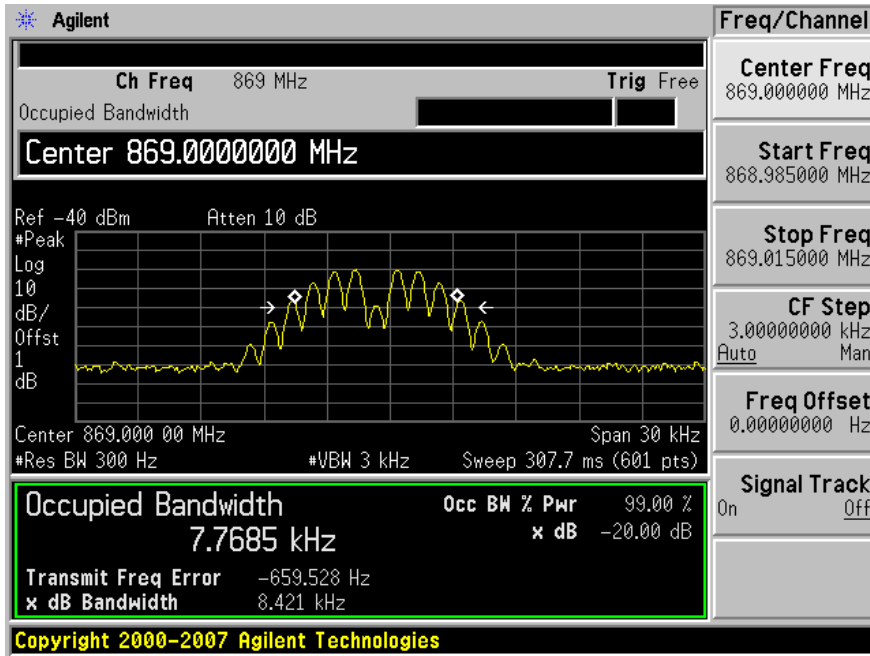


Output (iDEN)

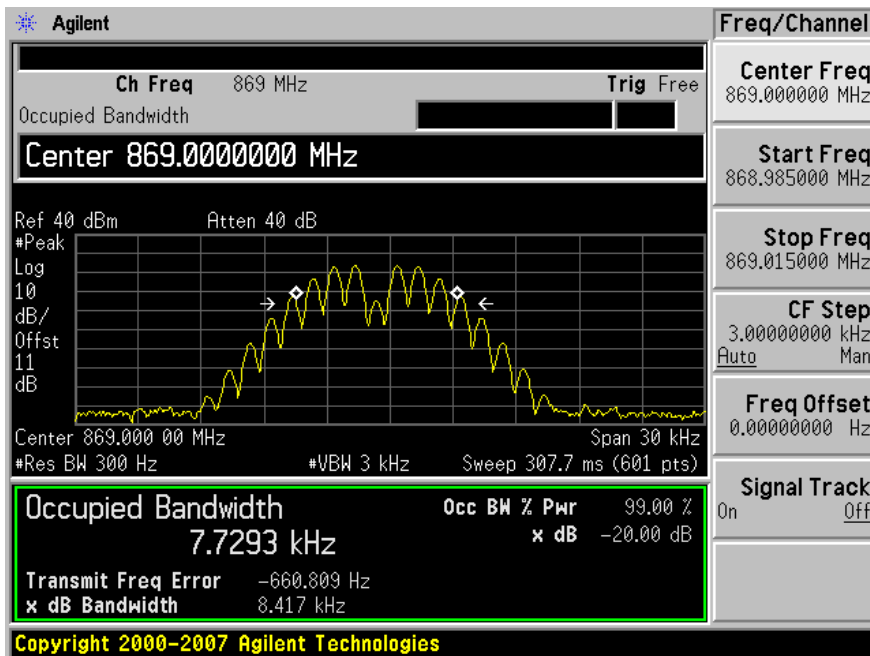


High Channel: 869 MHz

Input (FM with 2.5 kHz Sine Wave Audio Source)

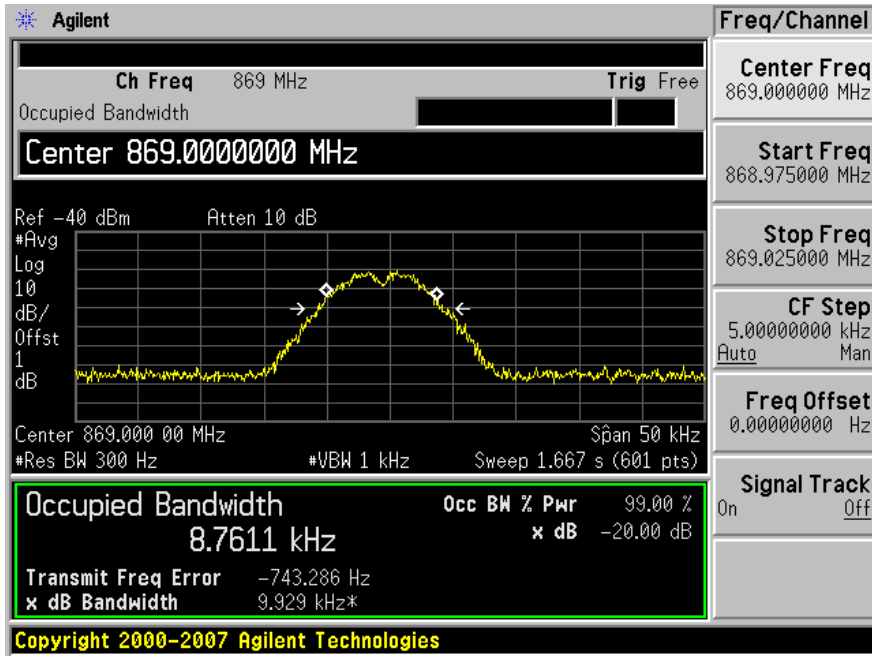


Output (FM with 2.5 kHz Sine Wave Audio Source)

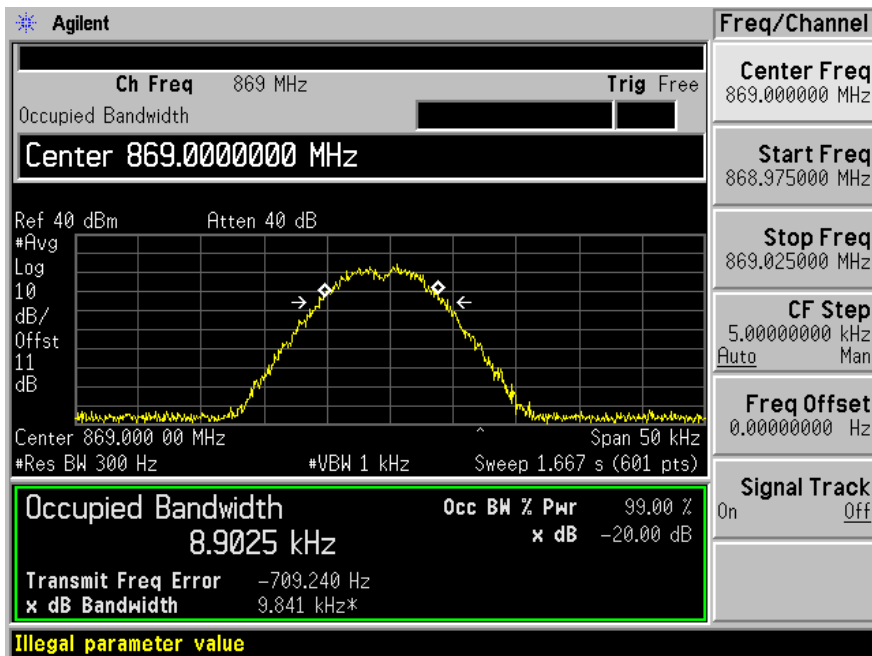


High Channel: 869 MHz

Input (FM with 9600bps Data Source)

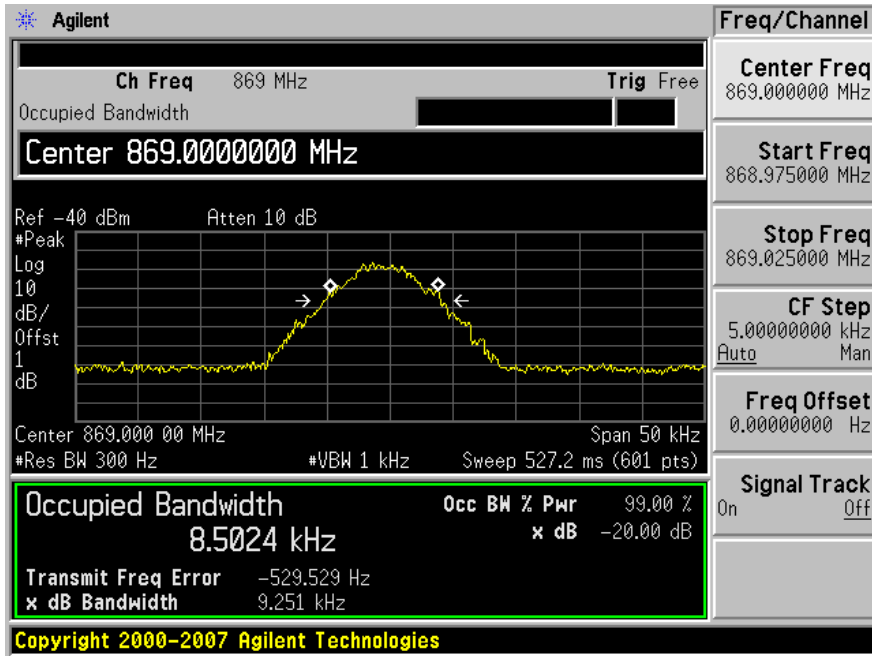


Output (FM with 9600bps Data Source)

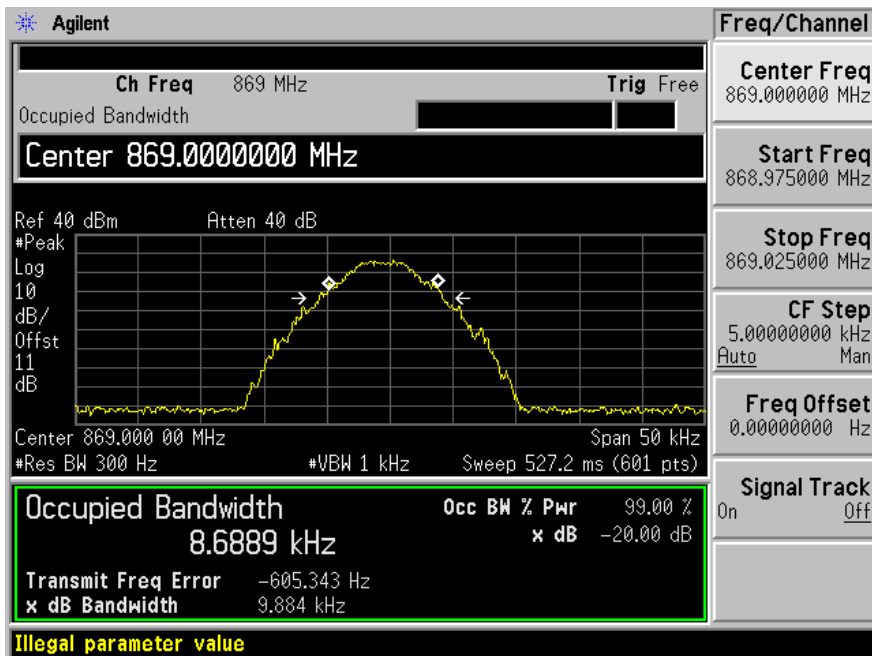


High Channel: 869 MHz

Input (C4FM)

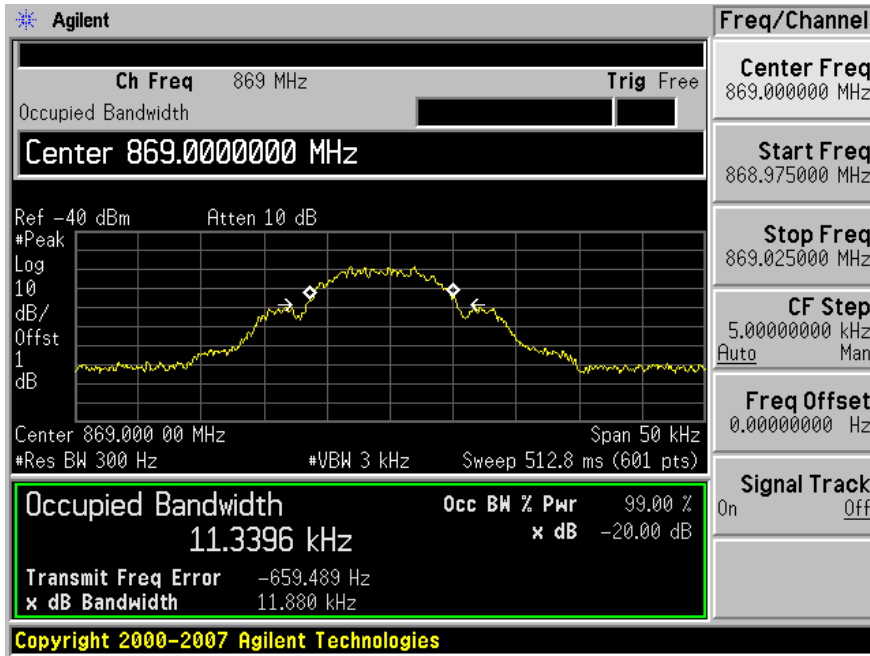


Output (C4FM)

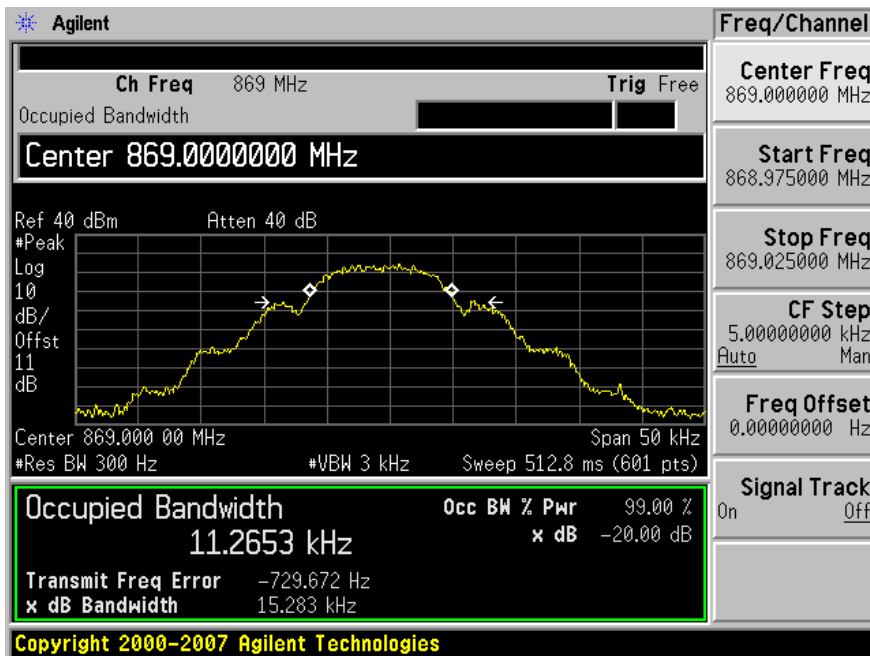


High Channel: 869 MHz

Input (2L-FSK)

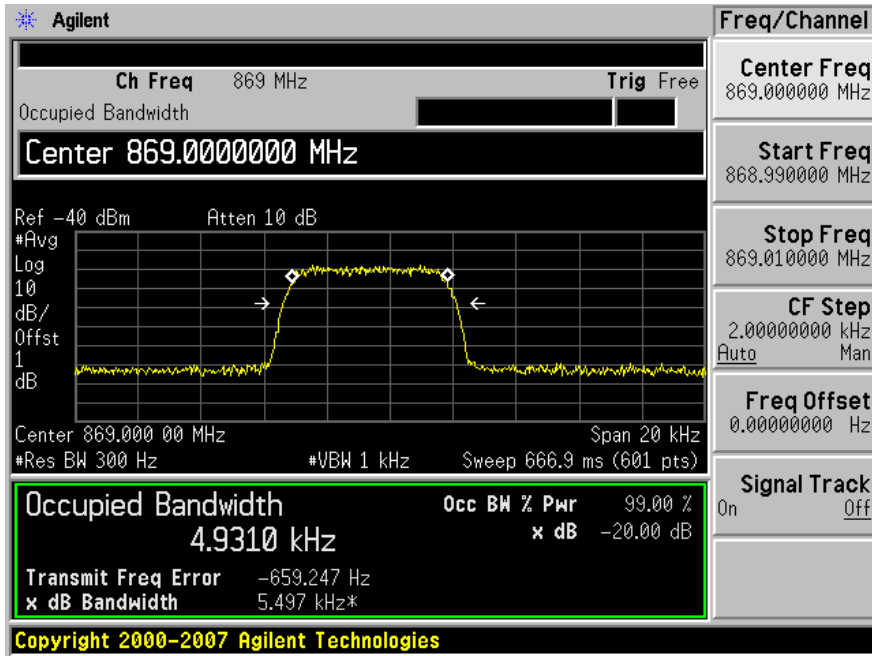


Output (2L-FSK)

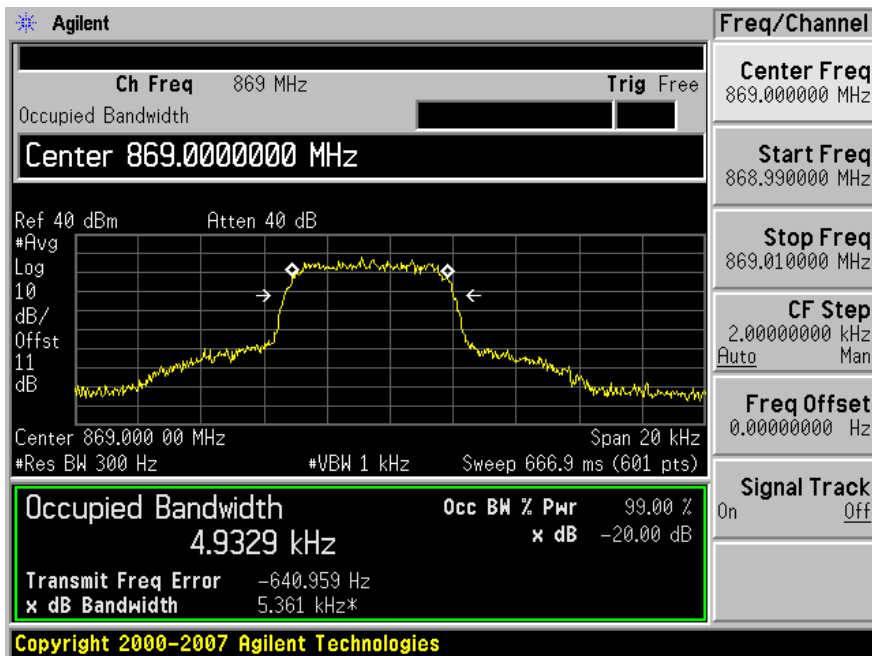


High Channel: 869 MHz

Input (CQPSK)

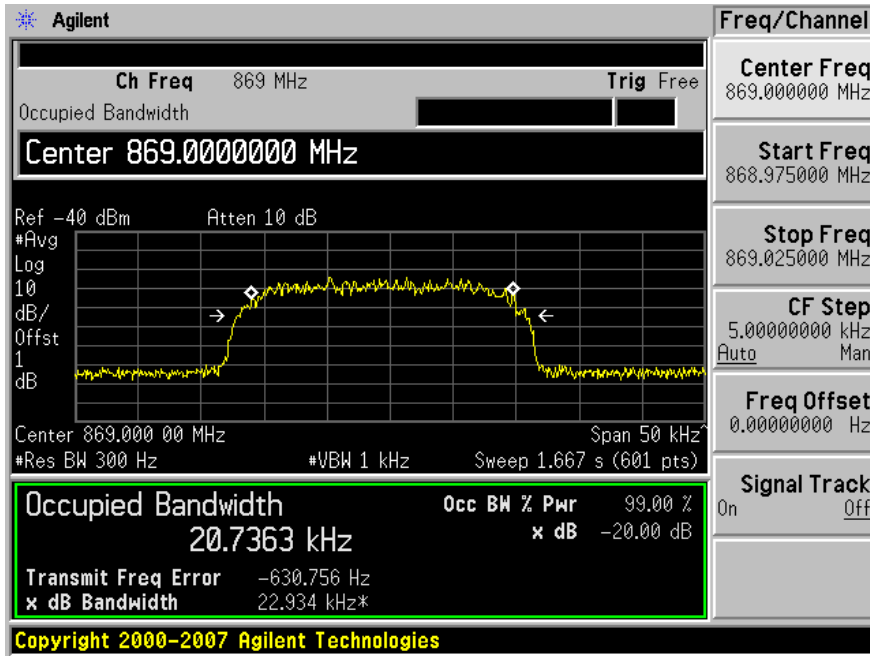


Output (CQPSK)

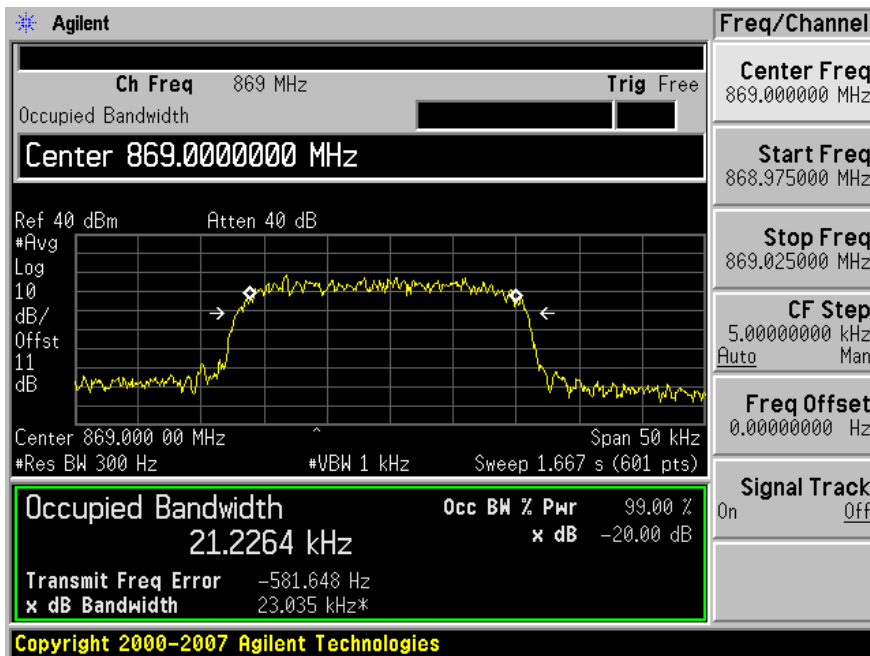


High Channel: 869 MHz

Input (Tetra)

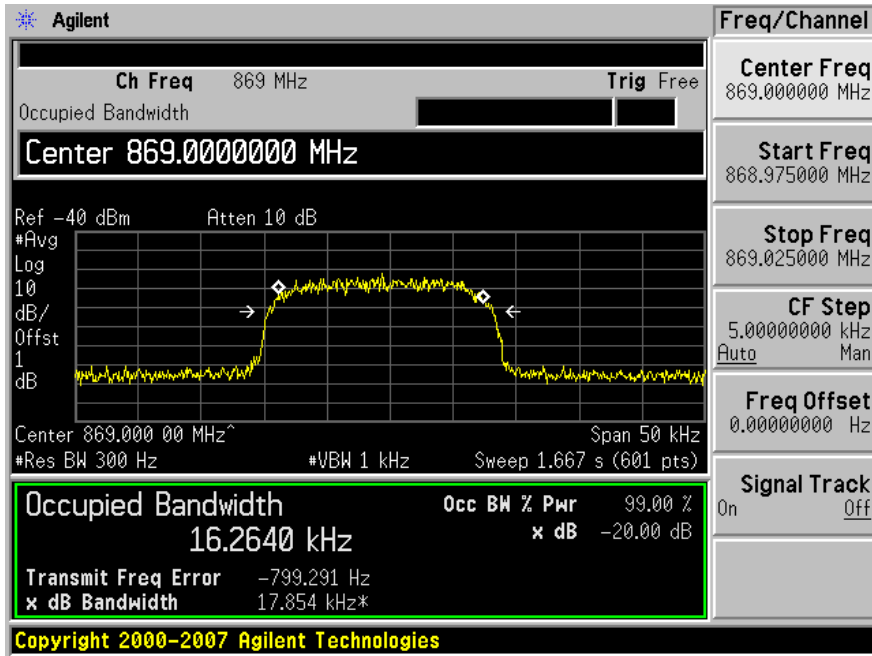


Output (Tetra)

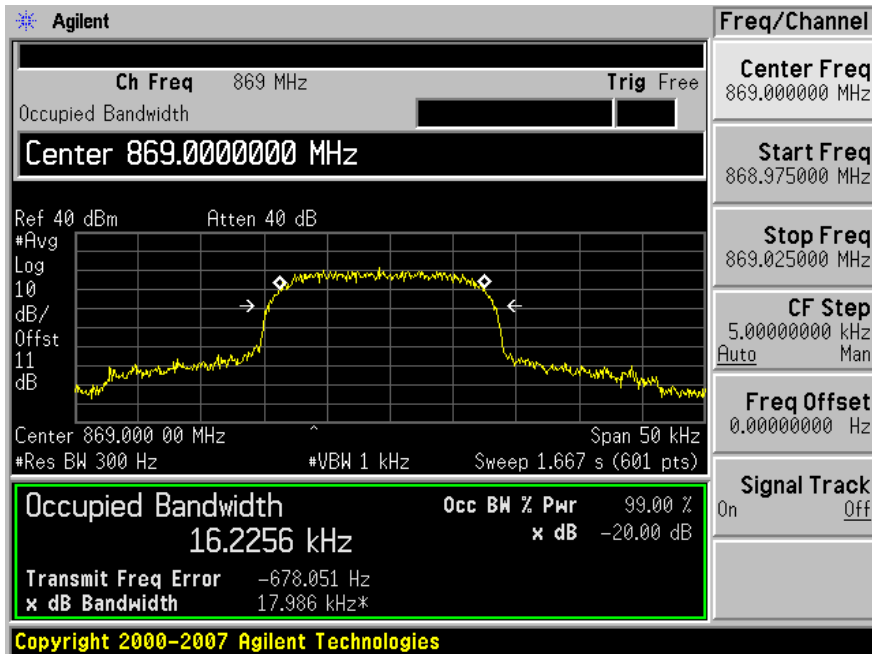


High Channel: 869 MHz

Input (iDEN)



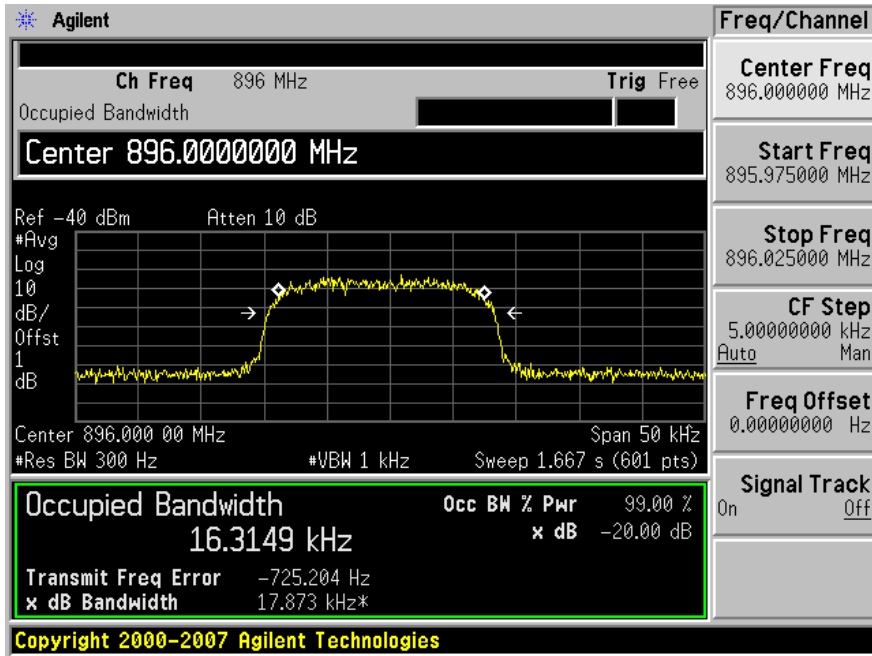
Output (iDEN)



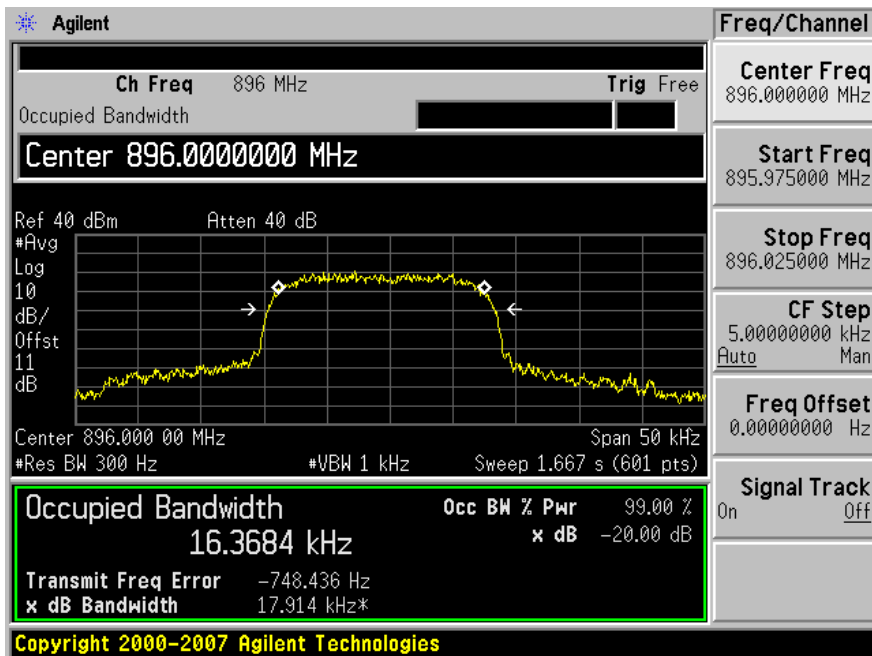
Operation Frequency Band – 896 to 901 MHz

Low Channel: 896 MHz

Input (iDEN)

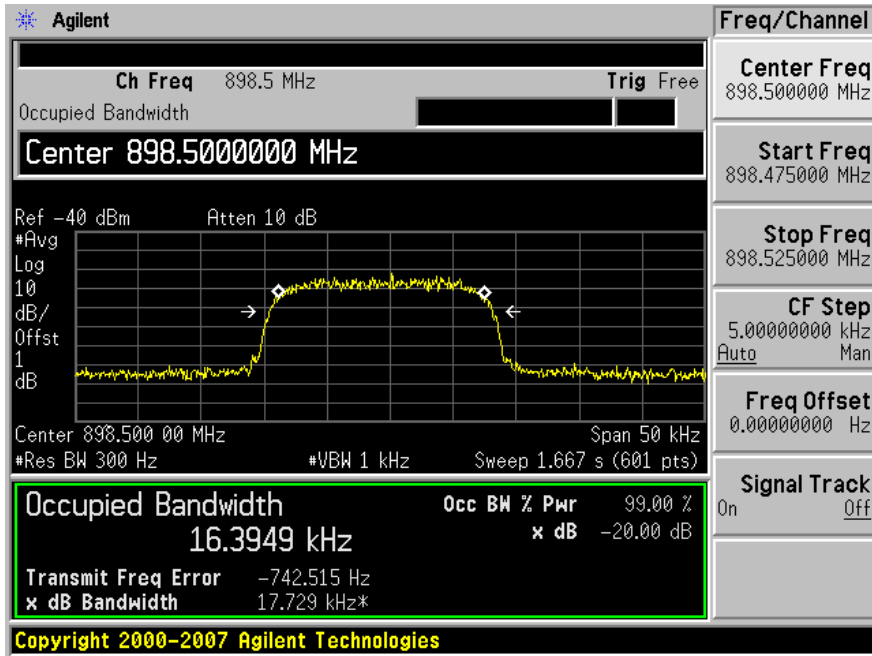


Output (iDEN)

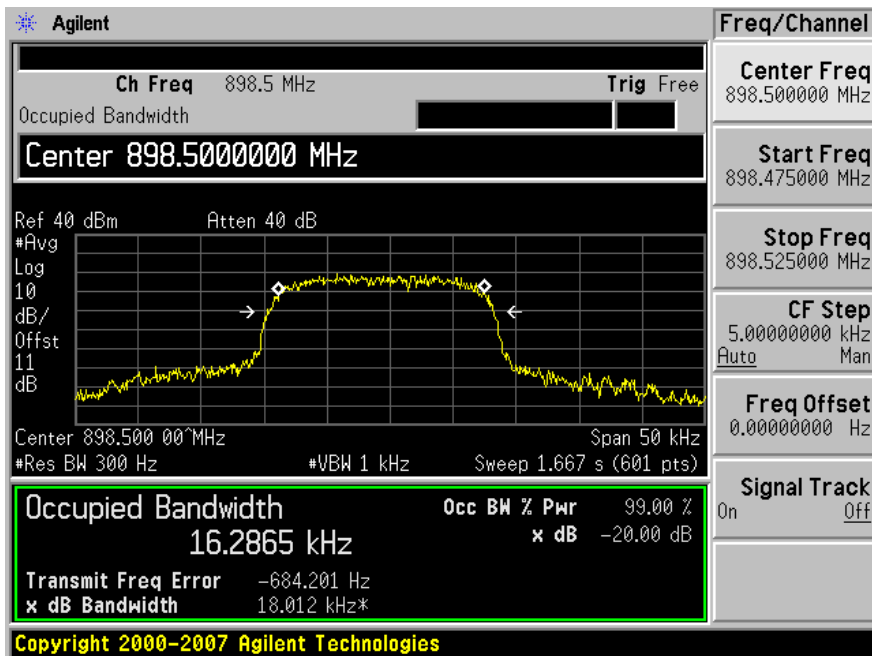


Middle Channel: 898.5 MHz

Input (iDEN)

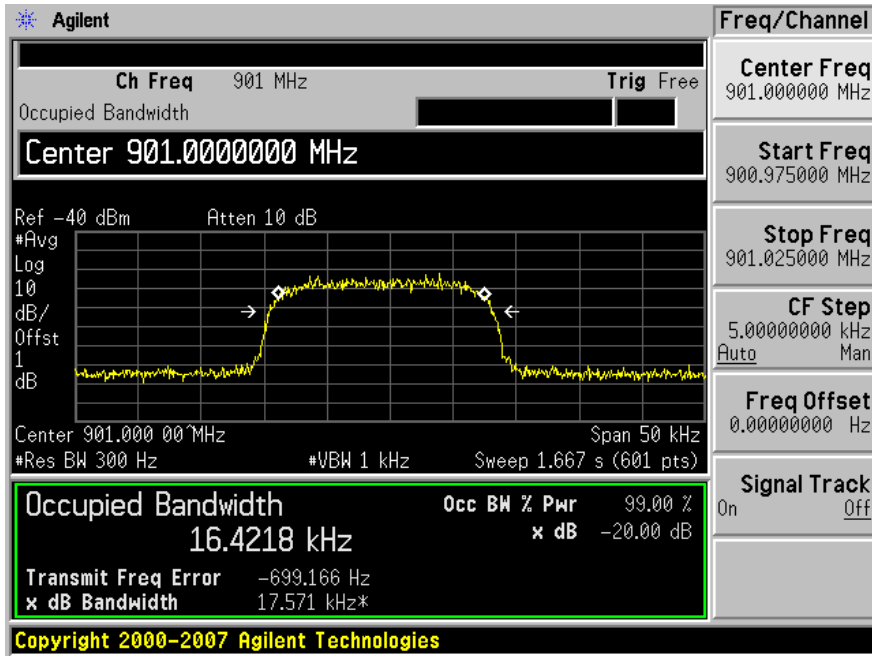


Output (iDEN)

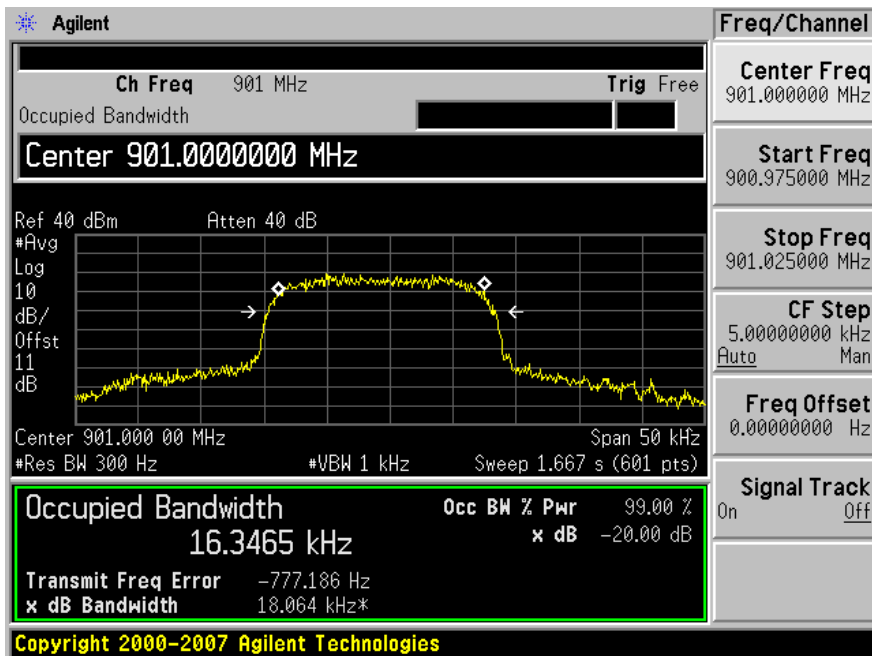


High Channel: 901 MHz

Input (iDEN)



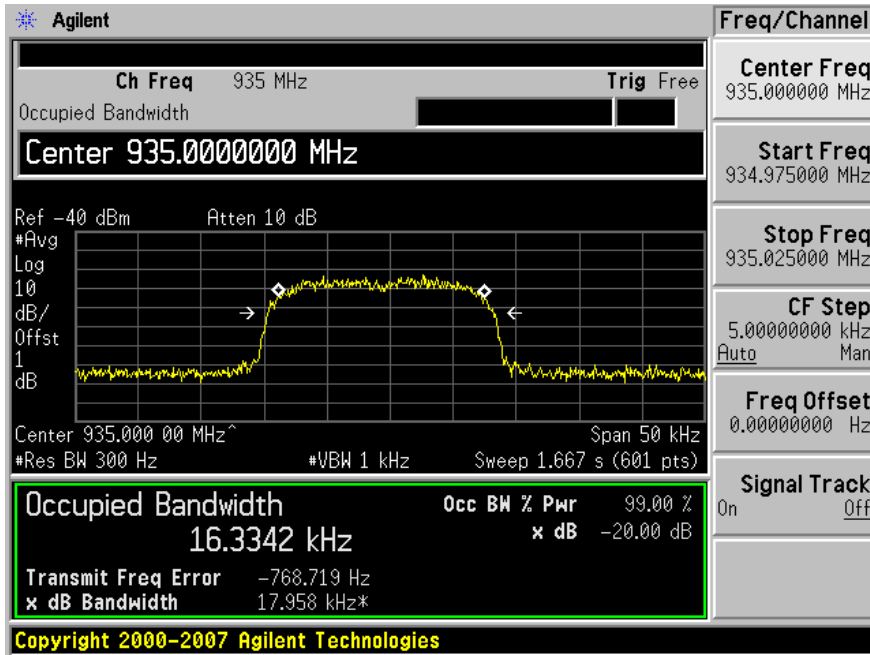
Output (iDEN)



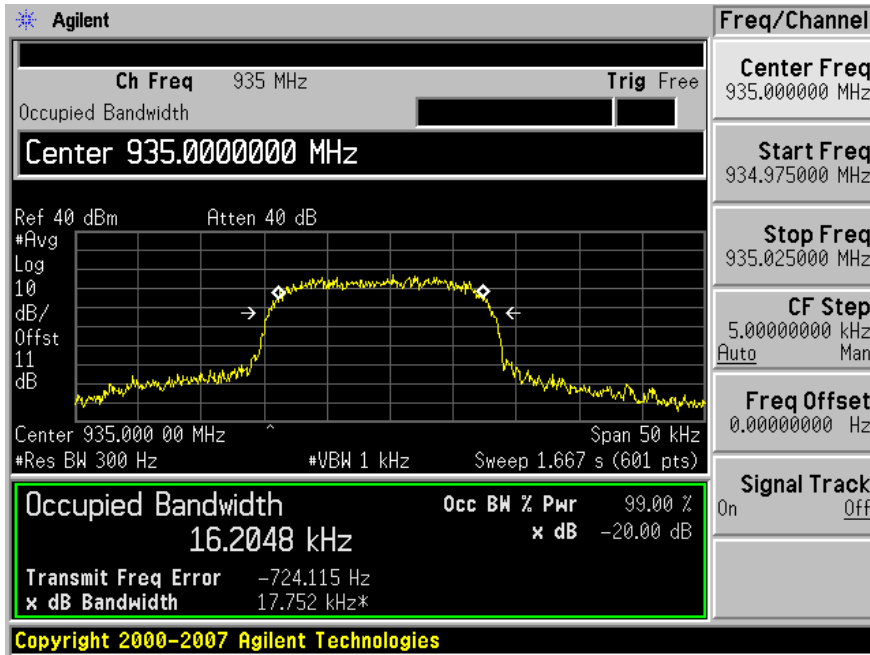
Operation Frequency Band – 935 to 940 MHz

Low Channel: 935 MHz

Input (iDEN)

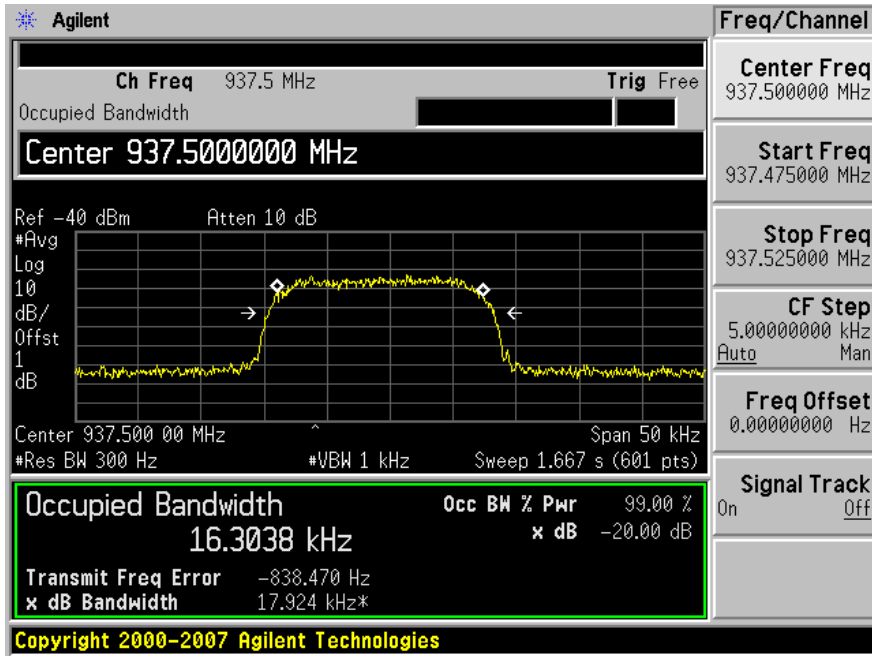


Output (iDEN)

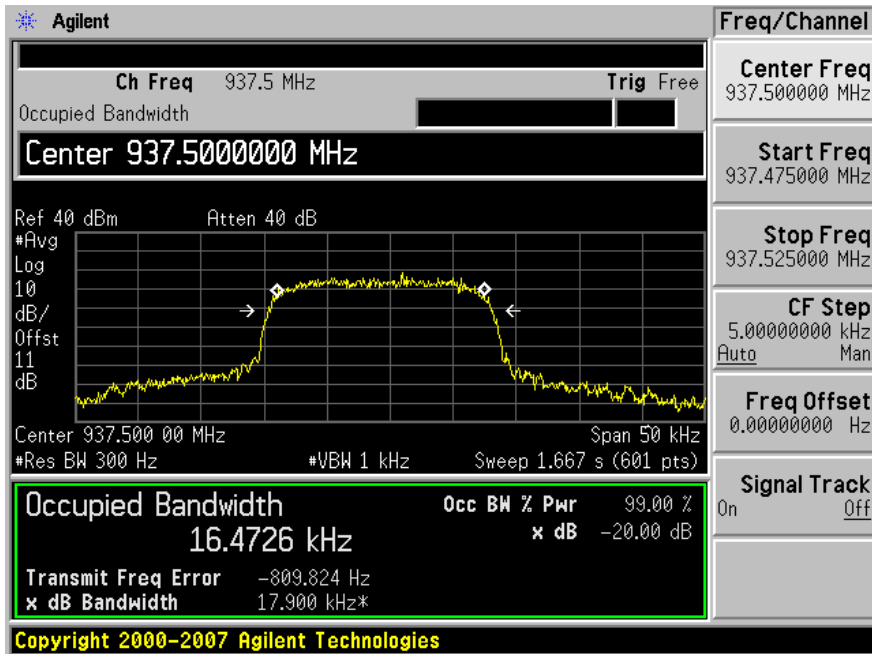


Middle Channel: 937.5 MHz

Input (iDEN)

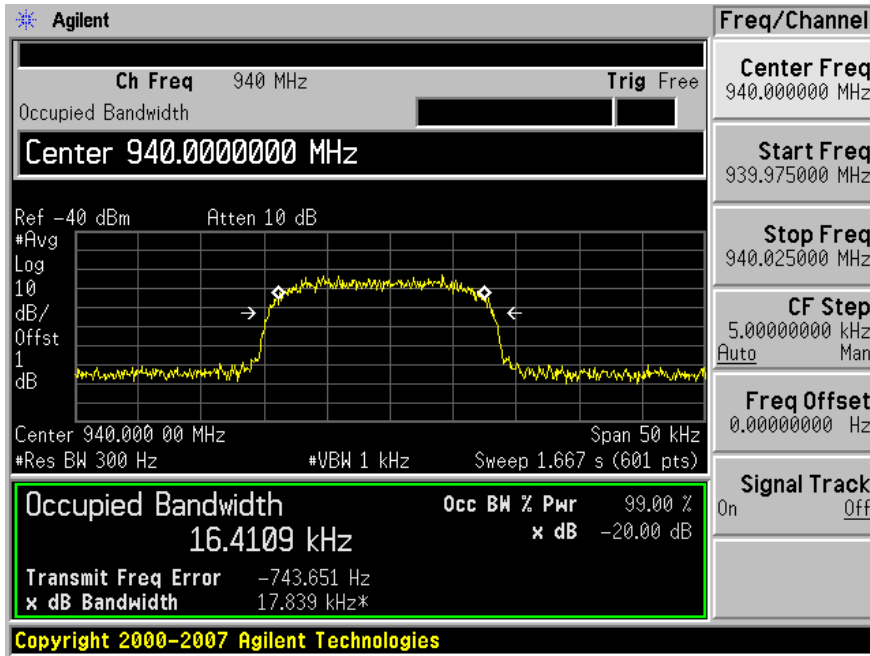


Output (iDEN)

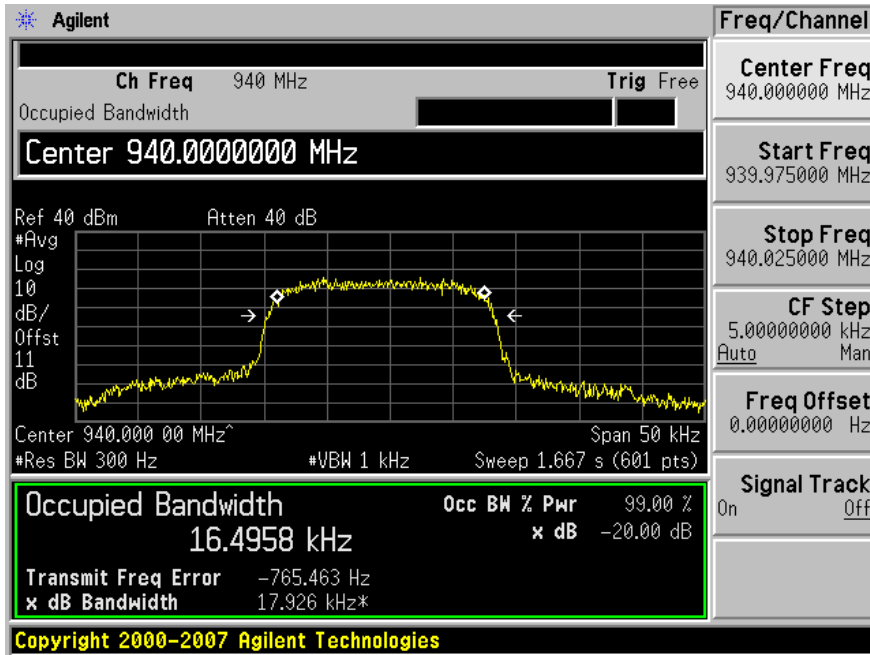


High Channel: 940 MHz

Input (iDEN)



Output (iDEN)



7 §2.1049, §90.210 – Emission Mask

7.1 Applicable Standard

Except as indicated elsewhere in this part, transmitters used in the radio services governed by this part must comply with the emission masks outlined in this section. Unless otherwise stated, per paragraphs (d)(4), (e)(4), and (m) of this section, measurements of emission power can be expressed in either peak or average values provided that emission powers are expressed with the same parameters used to specify the unmodulated transmitter carrier power. For transmitters that do not produce a full power unmodulated carrier, reference to the unmodulated transmitter carrier power refers to the total power contained in the channel bandwidth. Unless indicated elsewhere in this part, the table in this section specifies the emission masks for equipment operating in the frequency bands governed under this part.

Applicable Emission Masks

Frequency band (MHz)	Mask for equipment with audio low pass Filter	Mask for equipment without audio low pass filter
Below 25 \1\	A or B	A or C
25-50	B	C
72-76	B	C
150-174 \2\	B, D, or E	C, D, or E
150 Paging-only	B	C
220-222	F	F
421-512 \2\	B, D, or E	C, D, or E
450 Paging-only	B	G
806-821/851-866 \3\	B	G
821-824/866-869	B	H
896-901/935-940	I	J
902-928	K	K
929-930	B	G
Above 940	B	C
All other bands	B	C

Note:

1. Equipment using single sideband J3E emission must meet the requirements of Emission Mask A. Equipment using other emissions must meet the requirements of Emission Mask B or C, as applicable.
2. Equipment designed to operate with a 25 kHz channel bandwidth must meet the requirements of Emission Mask B or C, as applicable. Equipment designed to operate with a 12.5 kHz channel bandwidth must meet the requirements of Emission Mask D, and equipment designed to operate with a 6.25 kHz channel bandwidth must meet the requirements of Emission Mask E.
3. Equipment used in this band licensed to EA or non-EA systems shall comply with the emission mask provisions of Sec. 90.691.

7.2 Test Procedure

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

7.3 Environmental Conditions

Temperature:	22-24 °C
Relative Humidity:	45-47 %
ATM Pressure:	101-102.1kPa

* The testing was performed by Victor Zhang from 2009-03-16 to 2009-03-22 in RF Site.

7.4 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28
HP	Signal Generator	8648C	3426A00417	2008-05-28
Agilent	ESG Vector Signal Generator	E44387C	MY45092922	2009-01-23

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

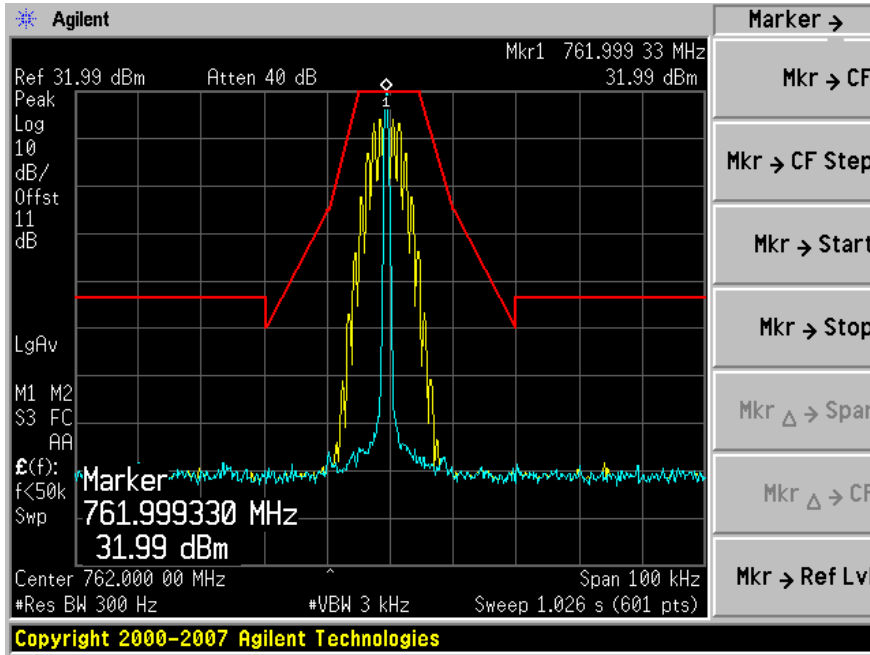
7.5 Test Results

Please refer to the plots hereinafter.

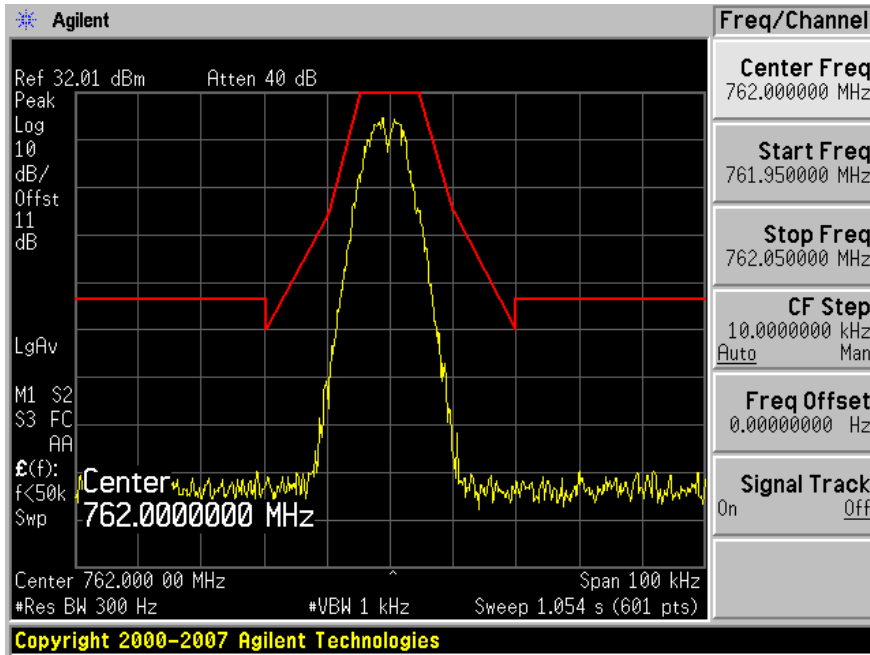
Operation Frequency Band – 762 to 776 MHz

Low Channel: 762 MHz

FM with 2.5 kHz Sine Wave Audio Source

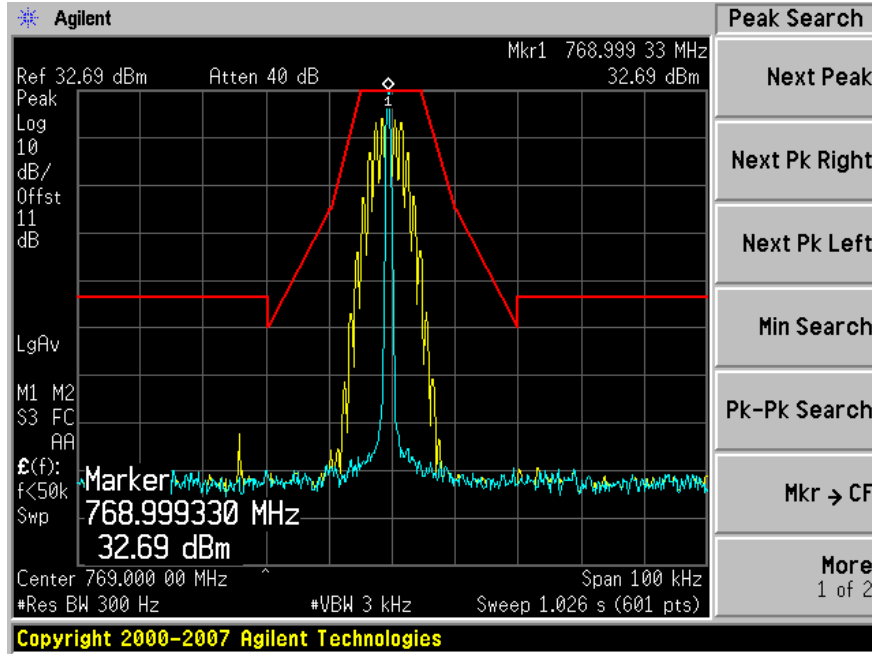


FM with 9600bps Data Source

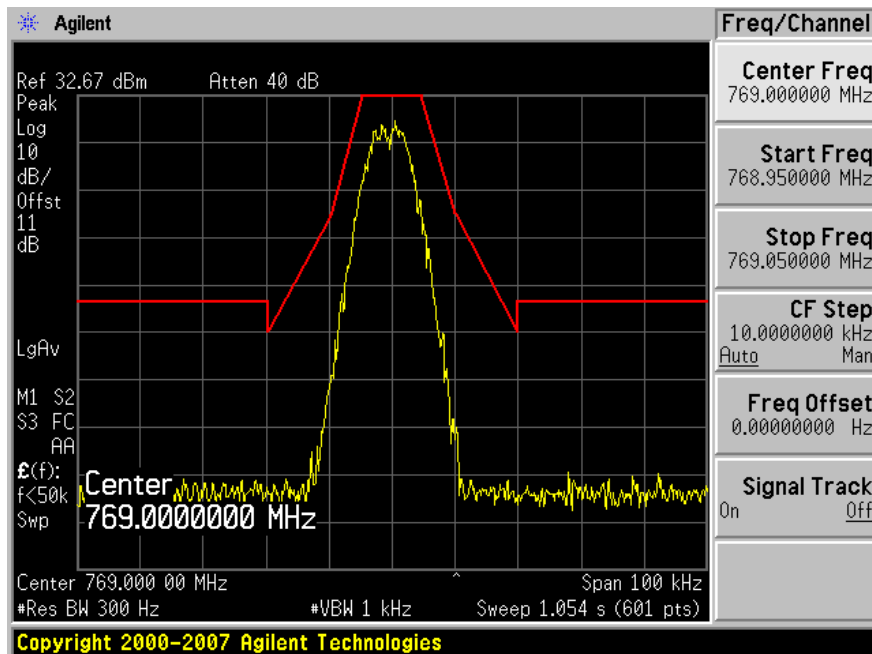


Middle Channel: 769 MHz

FM with 2.5 kHz Sine Wave Audio Source

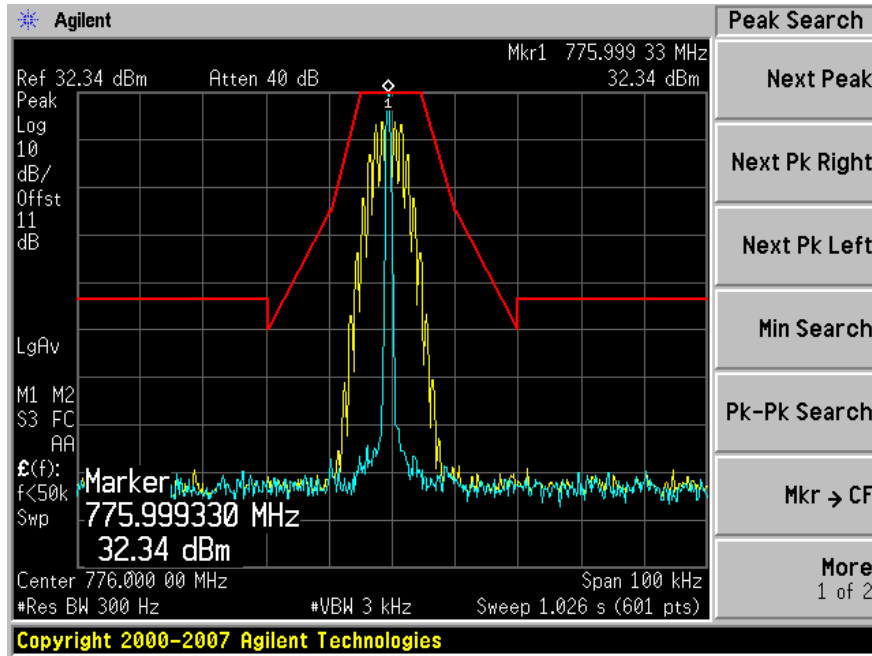


FM with 9600bps Data Source

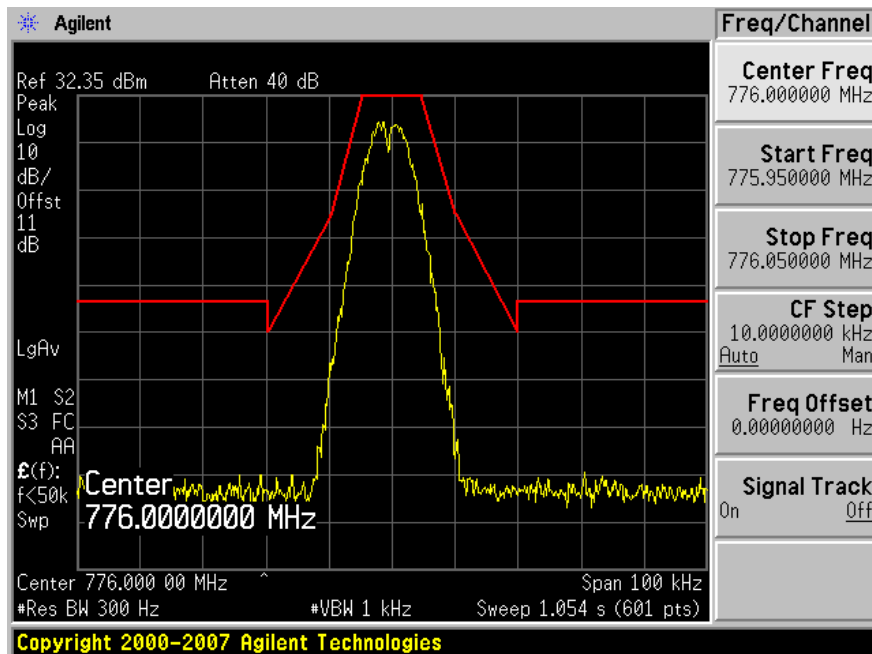


High Channel: 776 MHz

FM with 2.5 kHz Sine Wave Audio Source



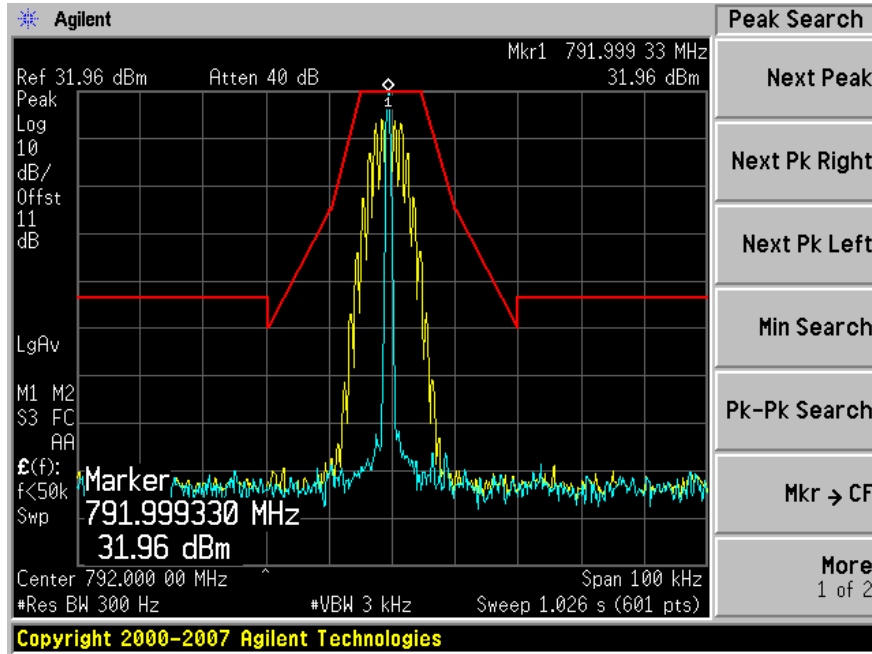
FM with 9600bps Data Source



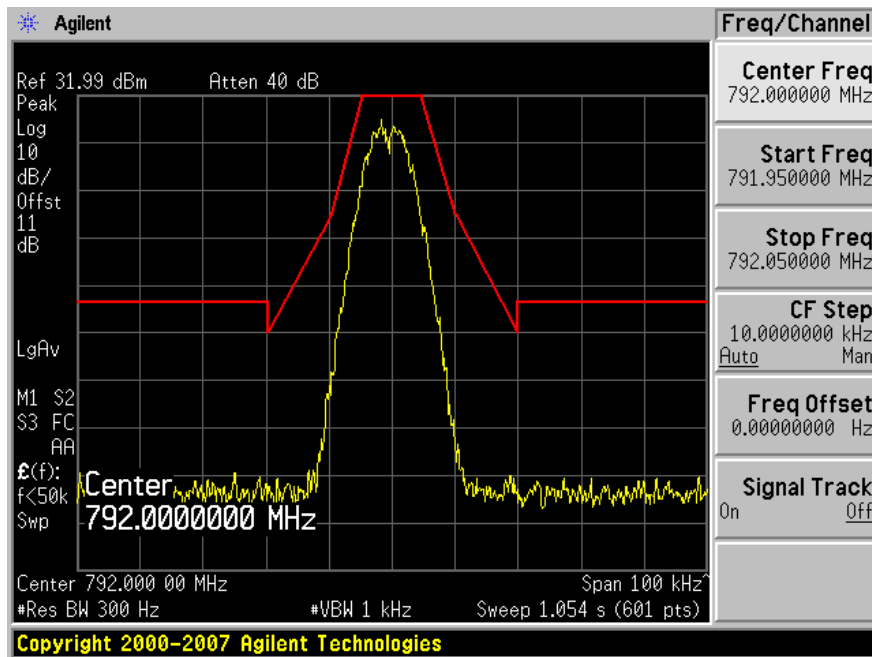
Operation Frequency Band – 792 to 824 MHz

Low Channel: 792 MHz

FM with 2.5 kHz Sine Wave Audio Source

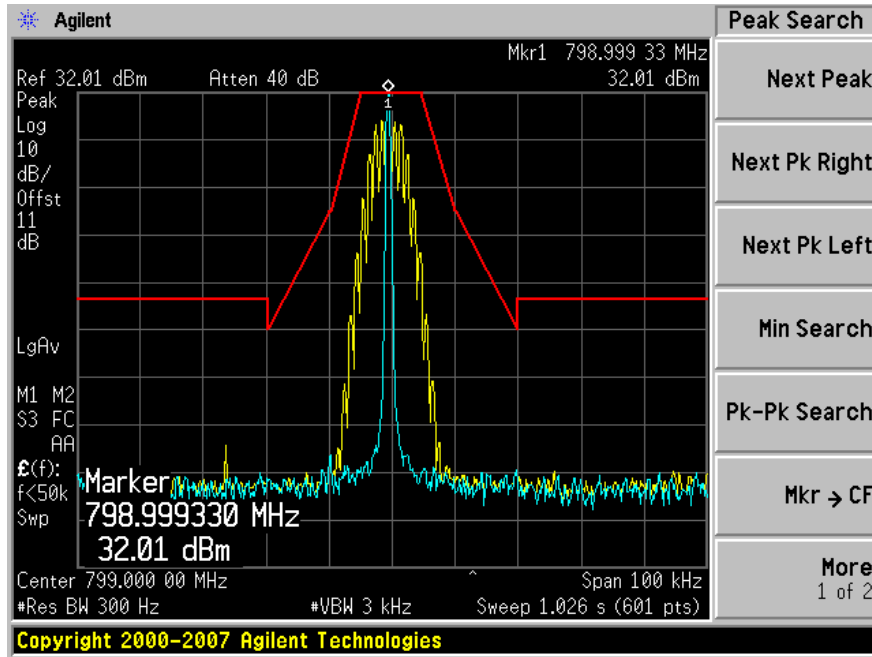


FM with 9600bps Data Source

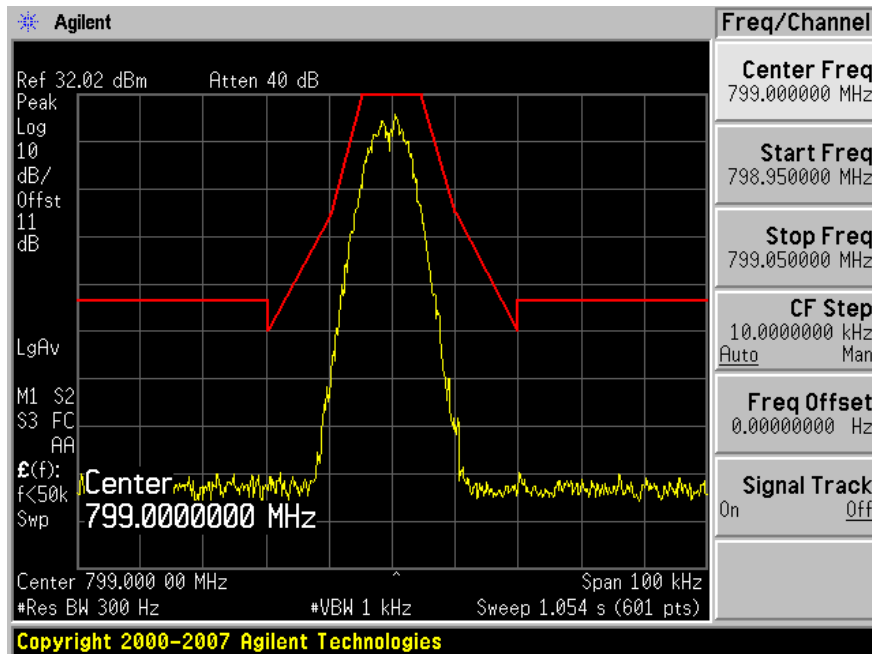


Middle Channel: 799 MHz

FM with 2.5 kHz Sine Wave Audio Source

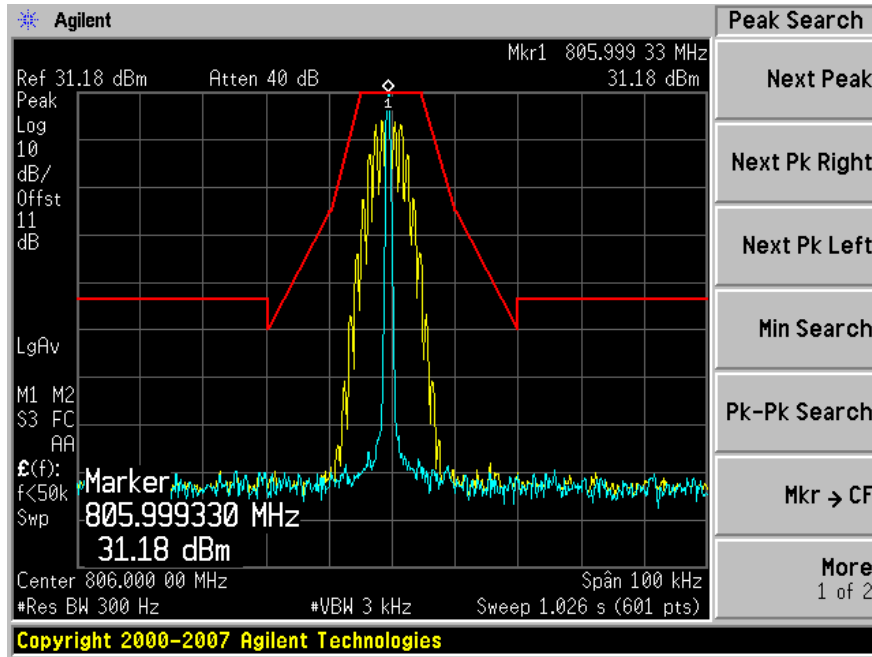


FM with 9600bps Data Source

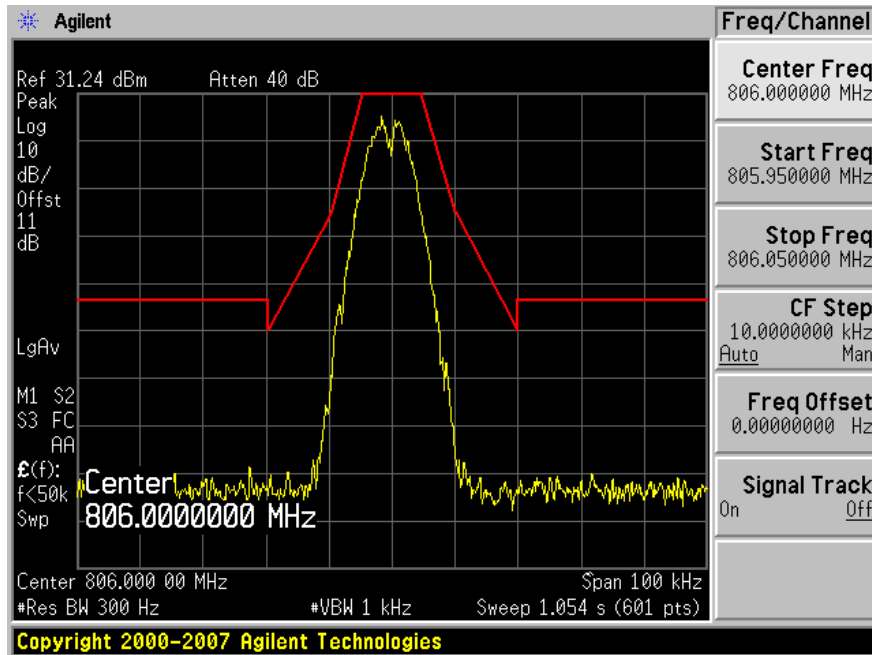


High Channel: 806 MHz

FM with 2.5 kHz Sine Wave Audio Source



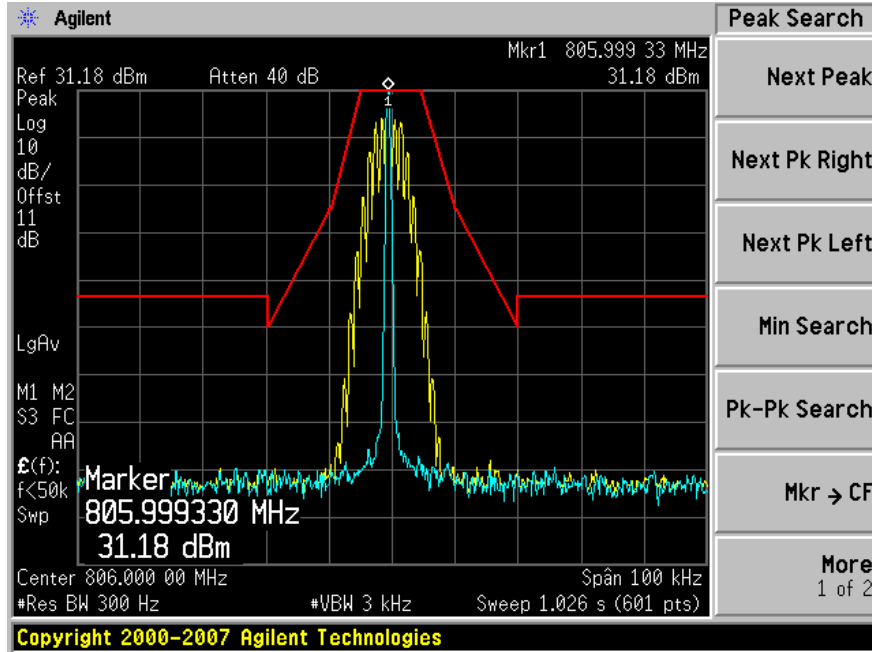
FM with 9600bps Data Source



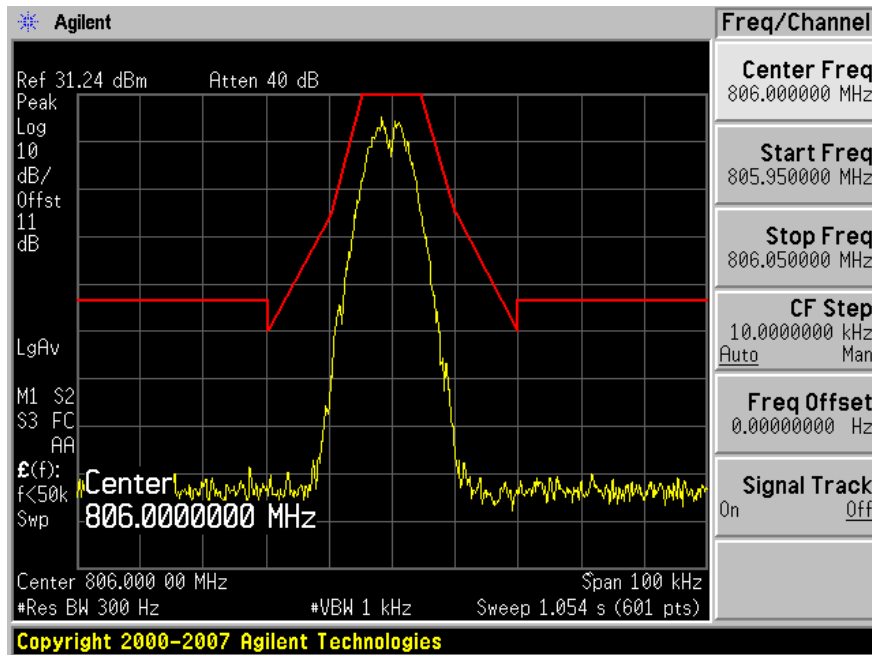
Operation Frequency Band – 806 to 824 MHz

Low Channel: 806 MHz

FM with 2.5 kHz Sine Wave Audio Source

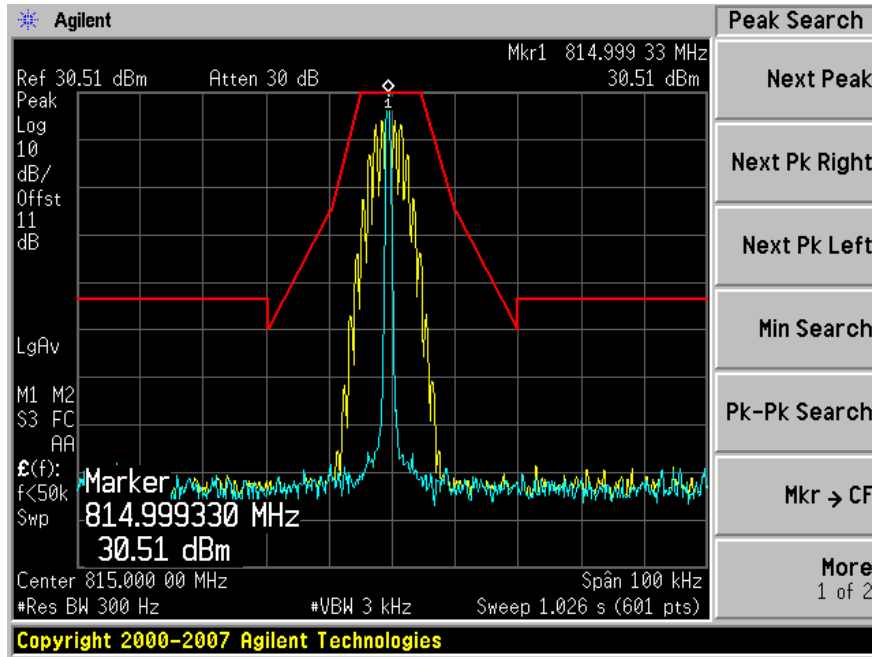


FM with 9600bps Data Source

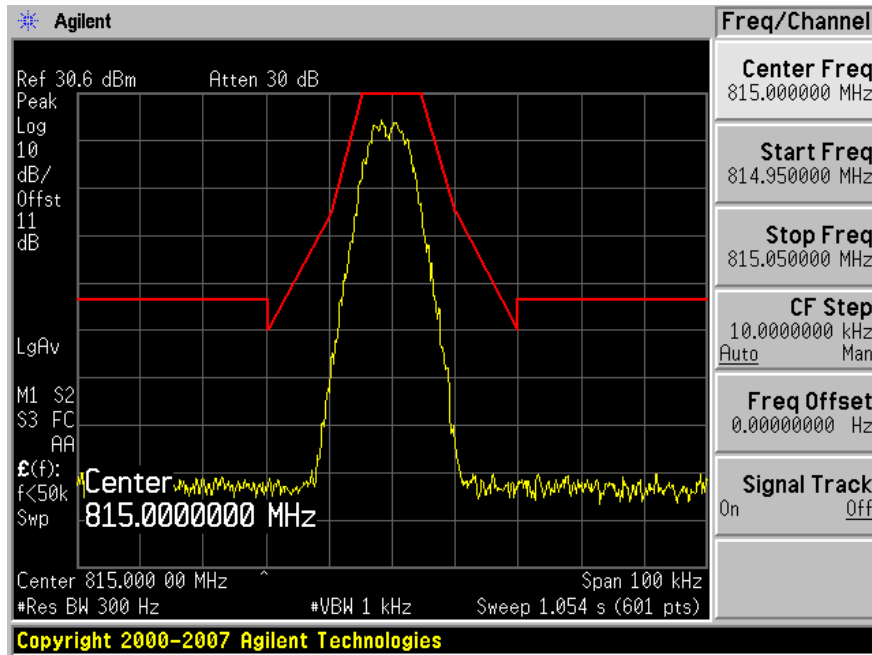


Middle Channel: 815 MHz

FM with 2.5 kHz Sine Wave Audio Source

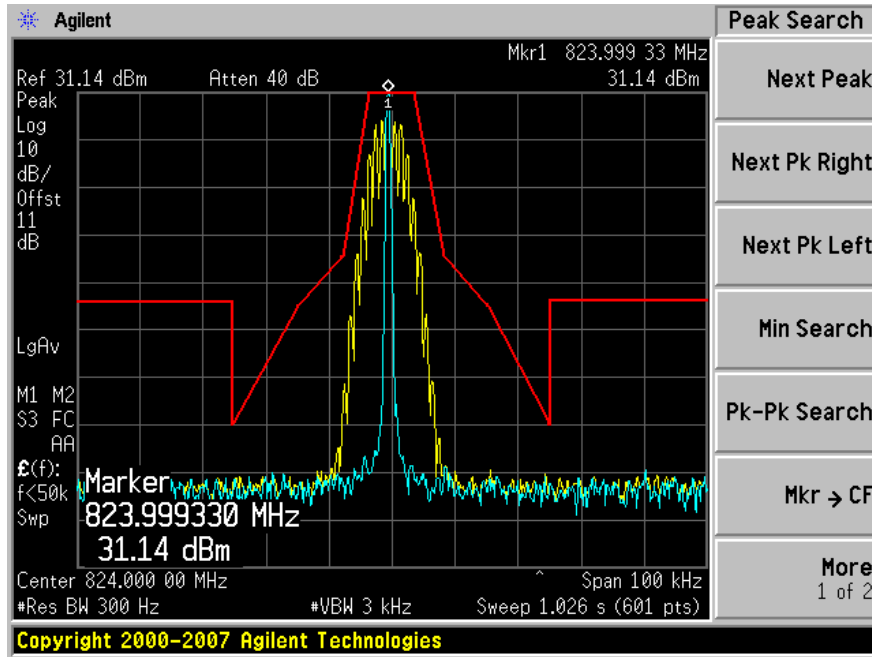


FM with 9600bps Data Source

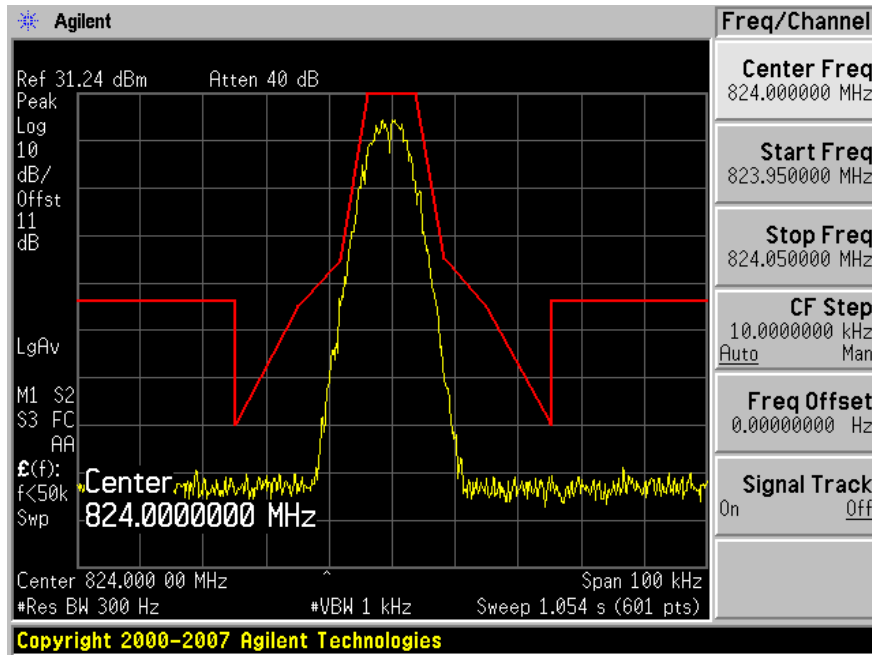


High Channel: 824 MHz

FM with 2.5 kHz Sine Wave Audio Source



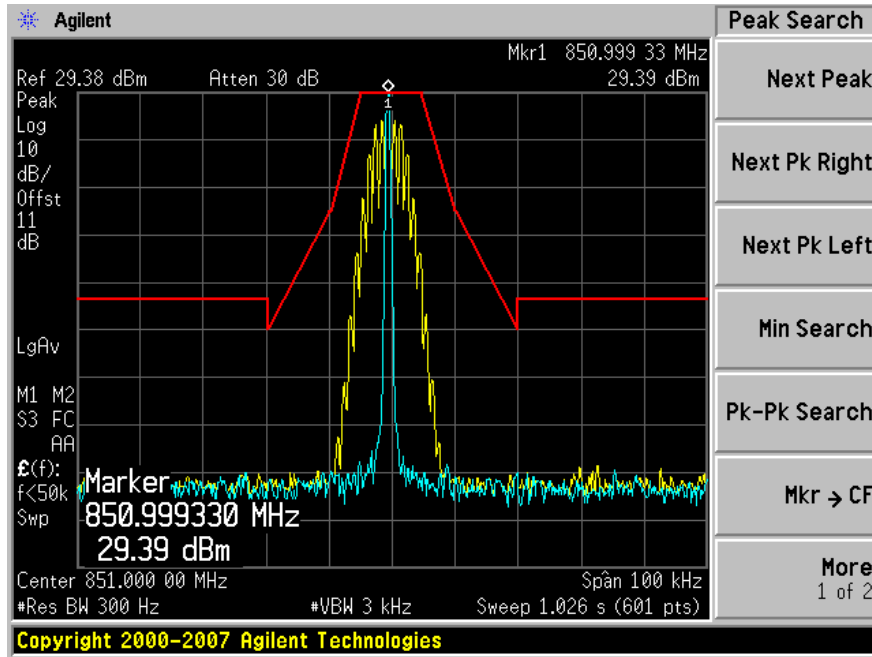
FM with 9600bps Data Source



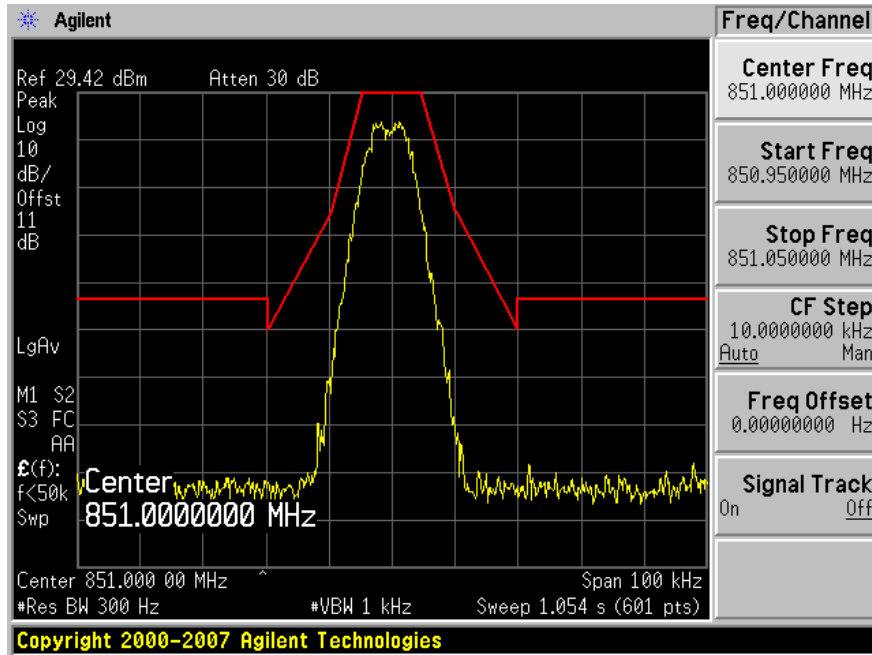
Operation Frequency Band – 851 to 869 MHz

Low Channel: 851 MHz

FM with 2.5 kHz Sine Wave Audio Source

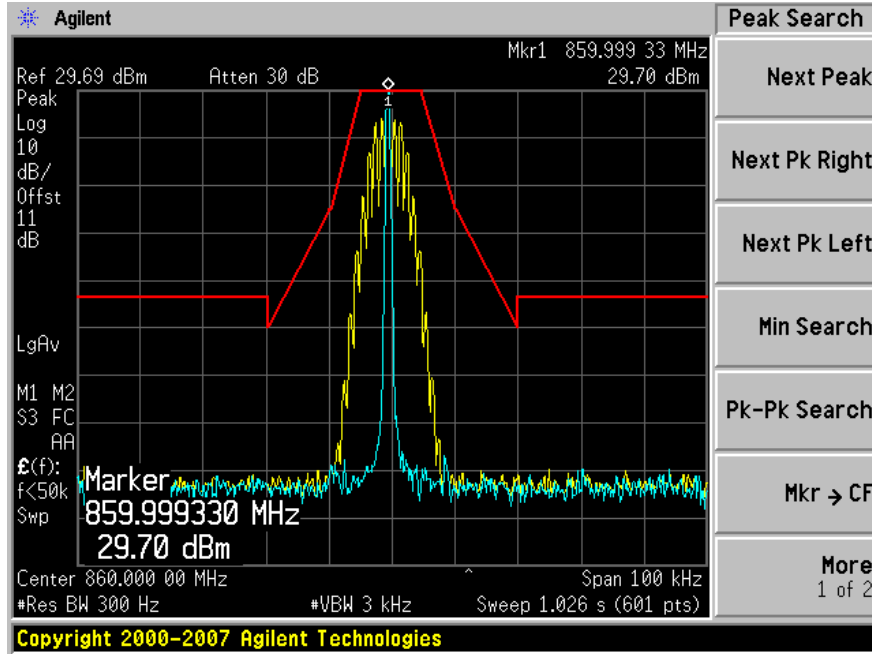


FM with 9600bps Data Source

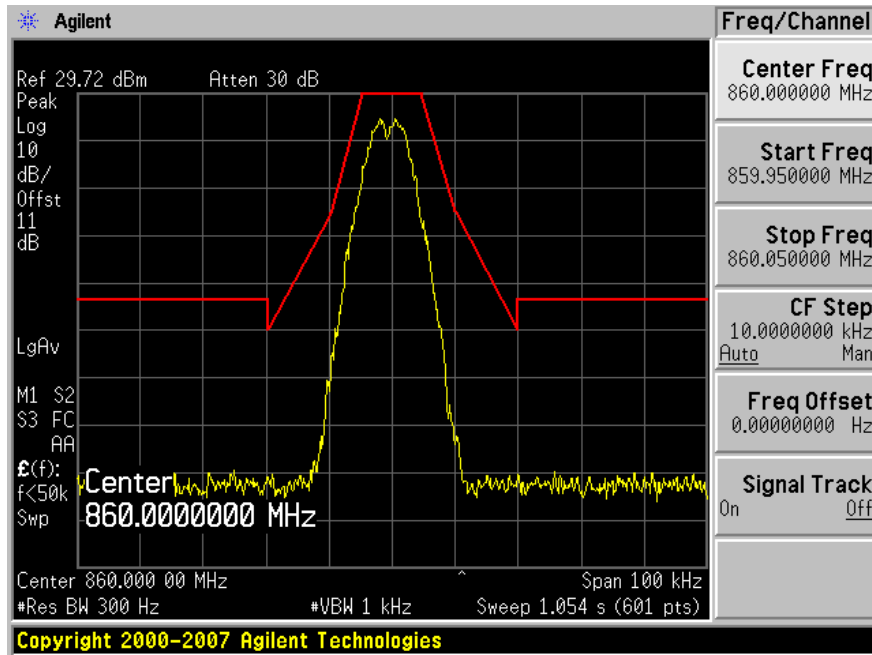


Middle Channel: 860 MHz

FM with 2.5 kHz Sine Wave Audio Source

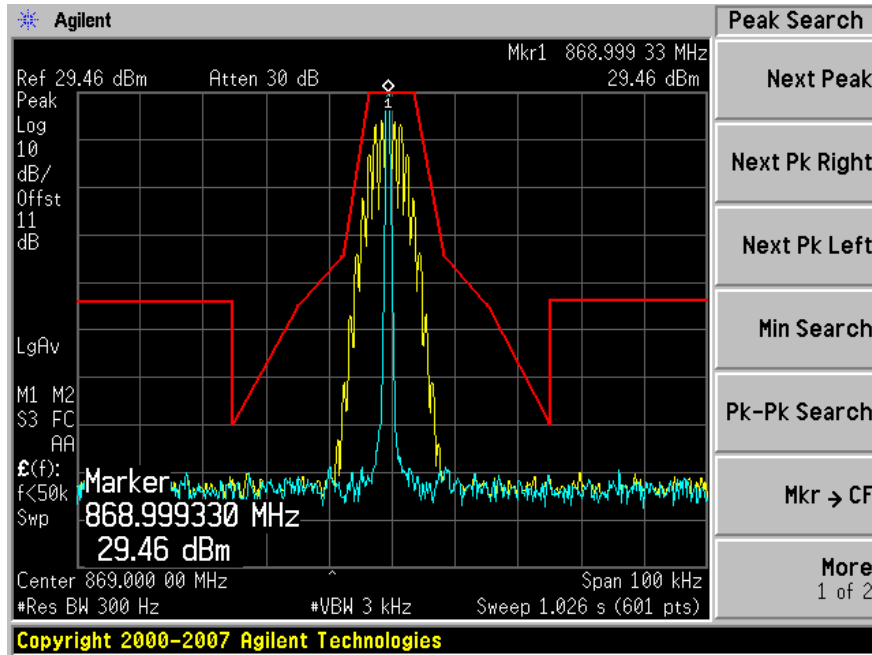


FM with 9600bps Data Source

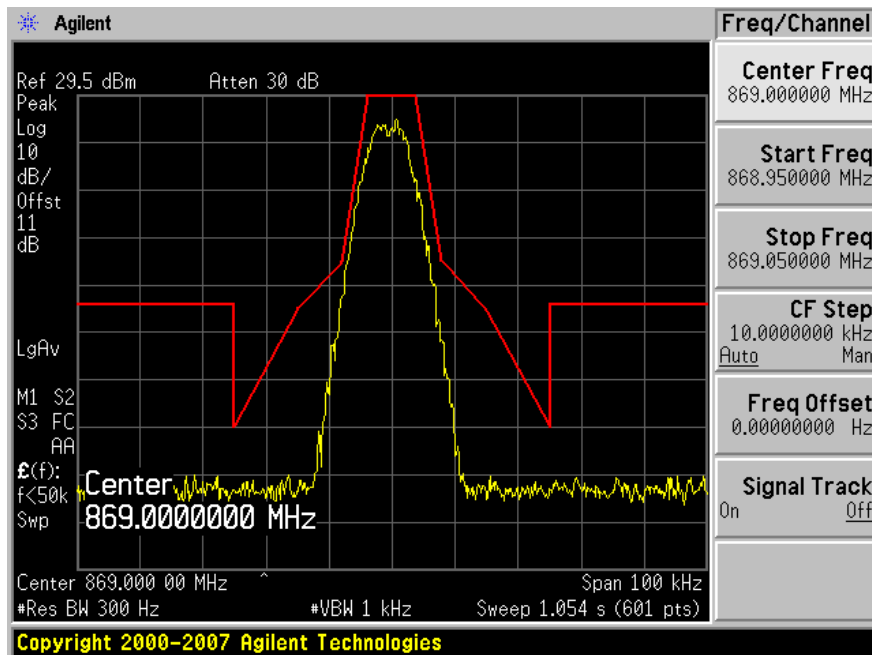


High Channel: 869 MHz

FM with 2.5 kHz Sine Wave Audio Source



FM with 9600bps Data Source



8 §2.1051, §90.210 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

8.1 Applicable Standard

Requirements: CFR 47, § 2.1051. § 90.210.

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

§ 90.210 & § 90.669 Emission limit:

On any frequency in an MTA licensee's spectrum block that is adjacent to a non-MTA frequency, the power of any emission shall be attenuated below the transmitter power(P) by at least $43 + 10\log_{10}(P)$ dB or 80 dB, whichever is the lesser attenuation.

8.2 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.

8.3 Environmental Conditions

Temperature:	22-24 °C
Relative Humidity:	45-47 %
ATM Pressure:	101-102.1kPa

* The testing was performed by Victor Zhang from 2009-03-16 to 2009-03-22 in RF Site.

8.4 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28
HP	Signal Generator	8648C	3426A00417	2008-05-28
Agilent	ESG Vector Signal Generator	E44387C	MY45092922	2009-01-23

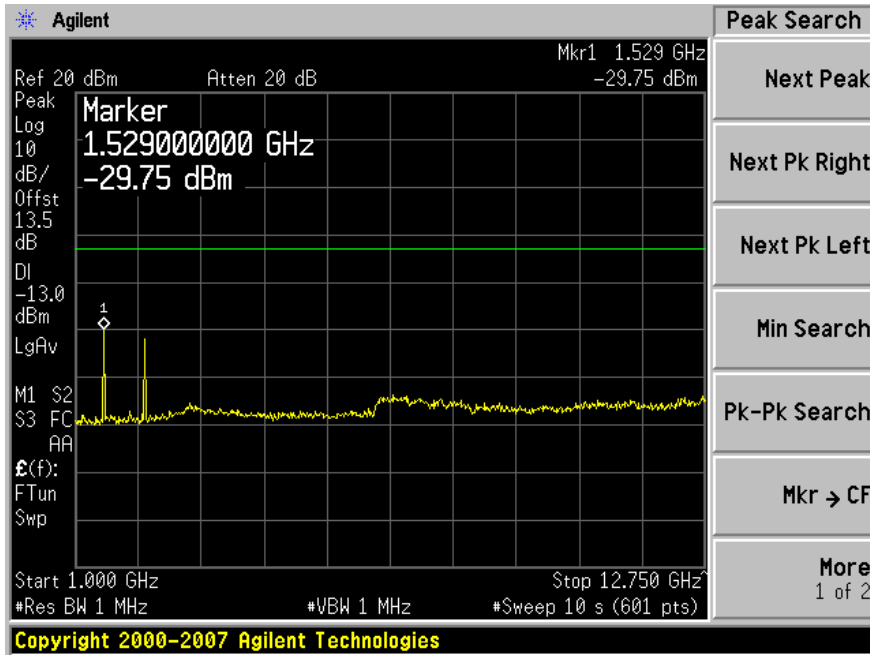
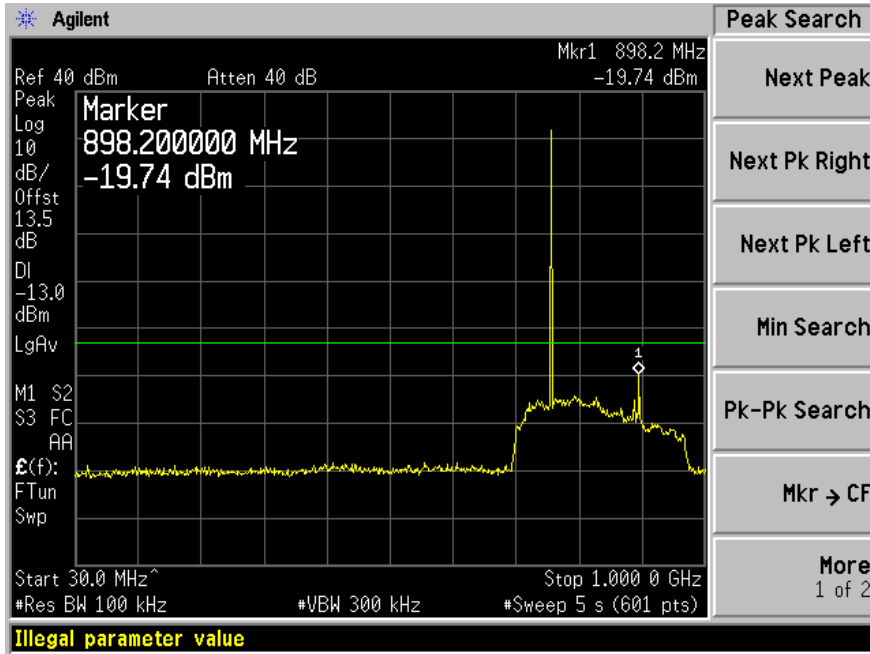
* **Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

8.5 Test Results

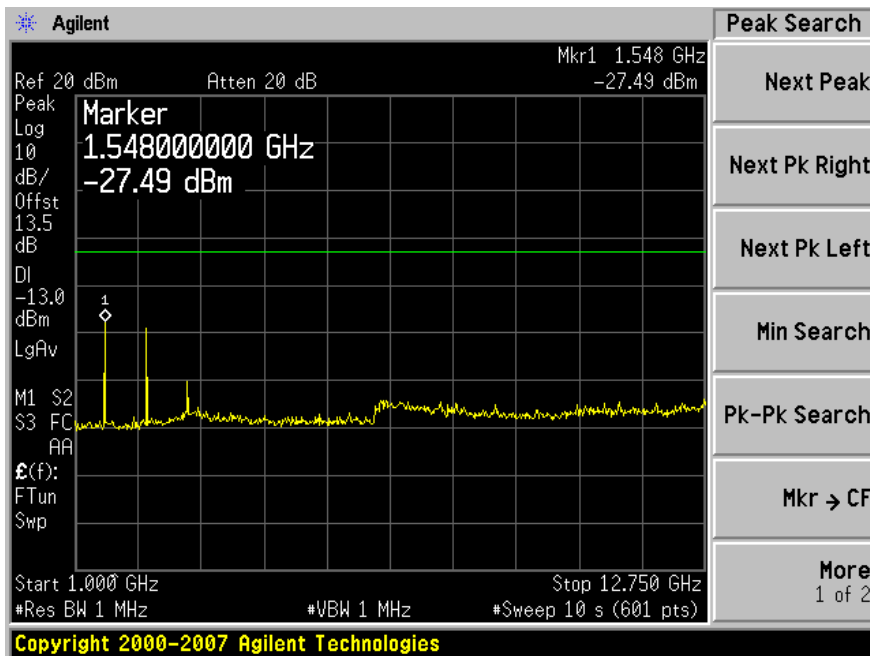
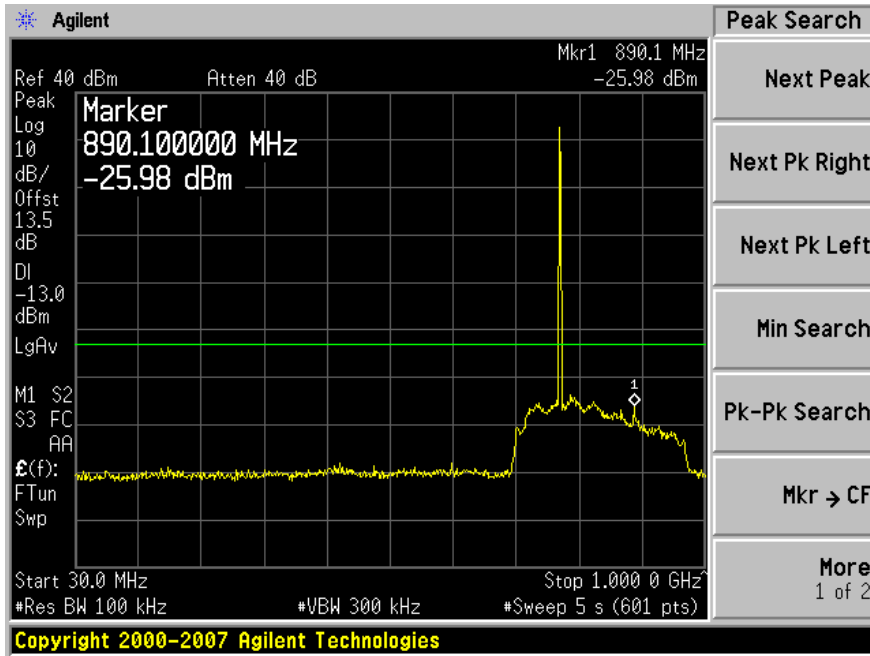
Please refer to the hereinafter plots.

Operation Frequency Band – 762 to 776 MHz

Low Channel (762 MHz)

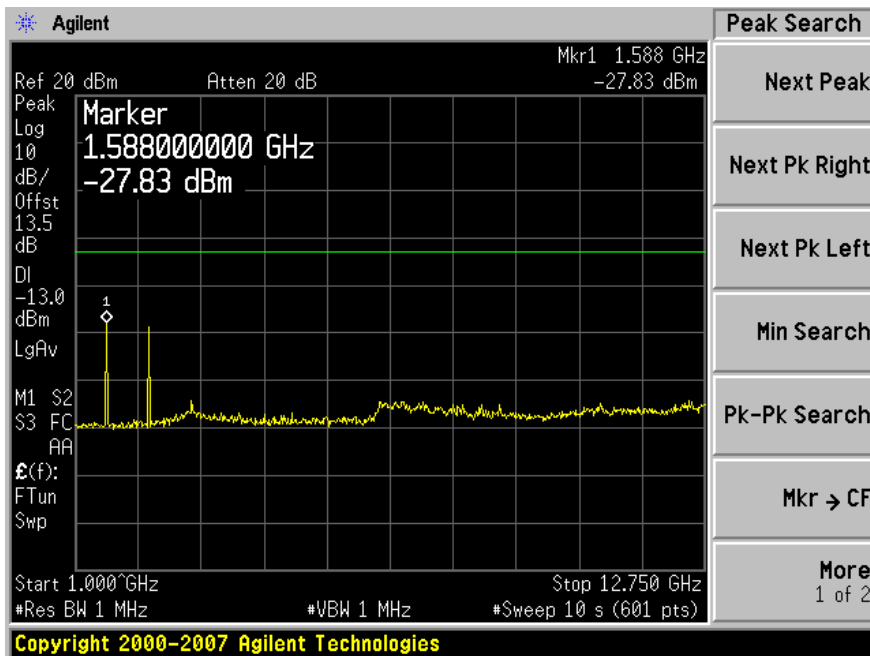
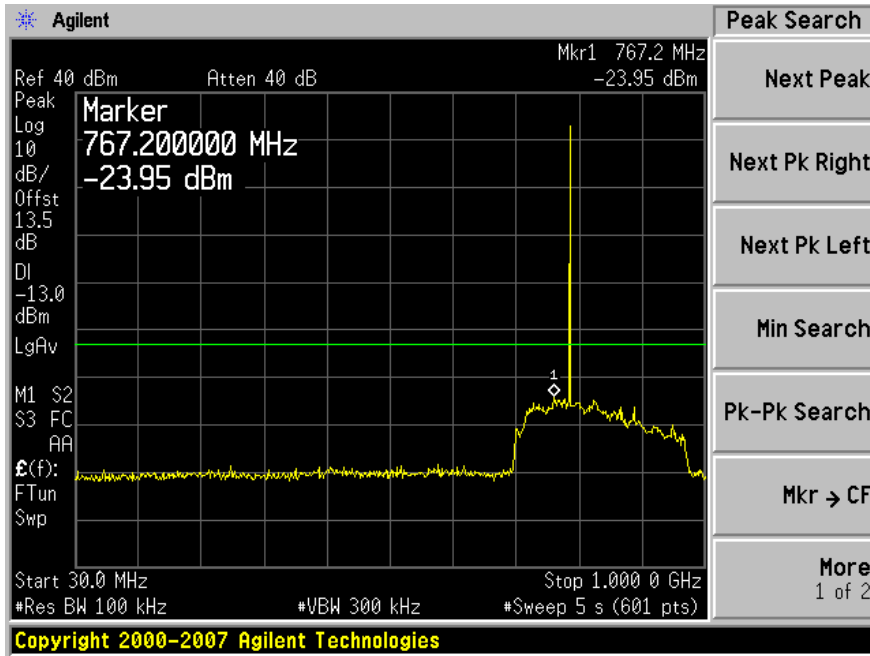


High Channel (776 MHz)

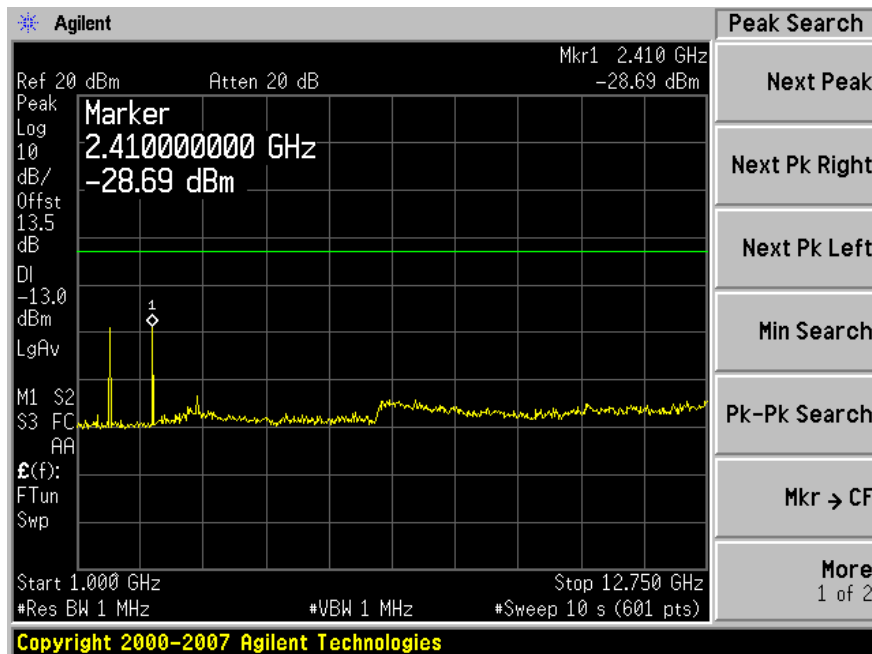
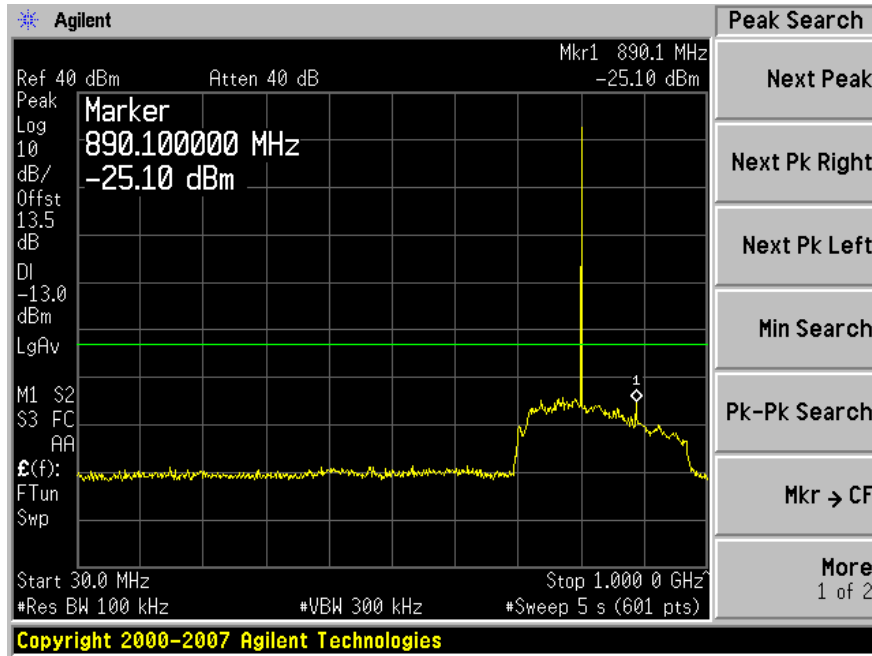


Operation Frequency Band – 792 to 806 MHz

Low Channel (792 MHz)

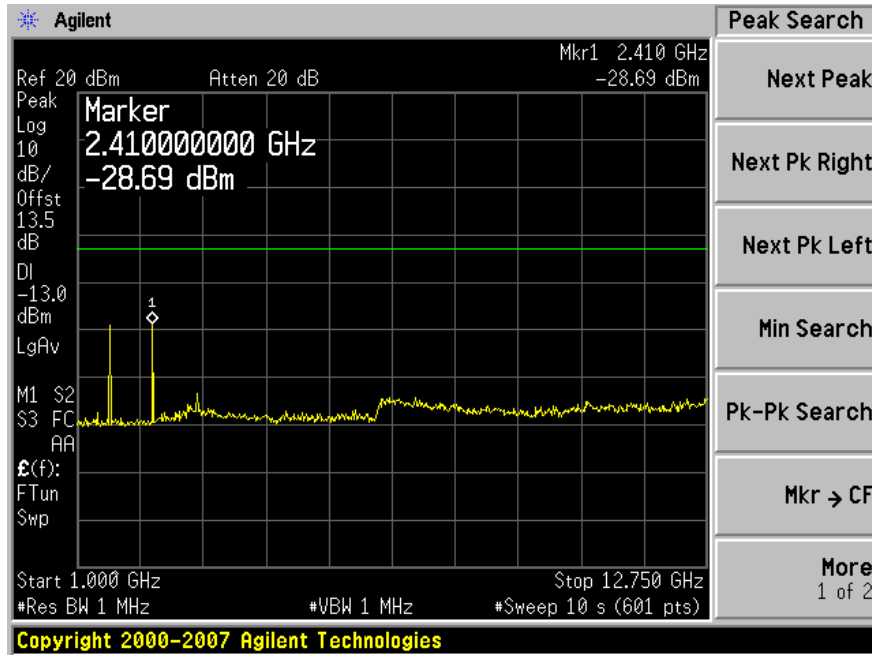
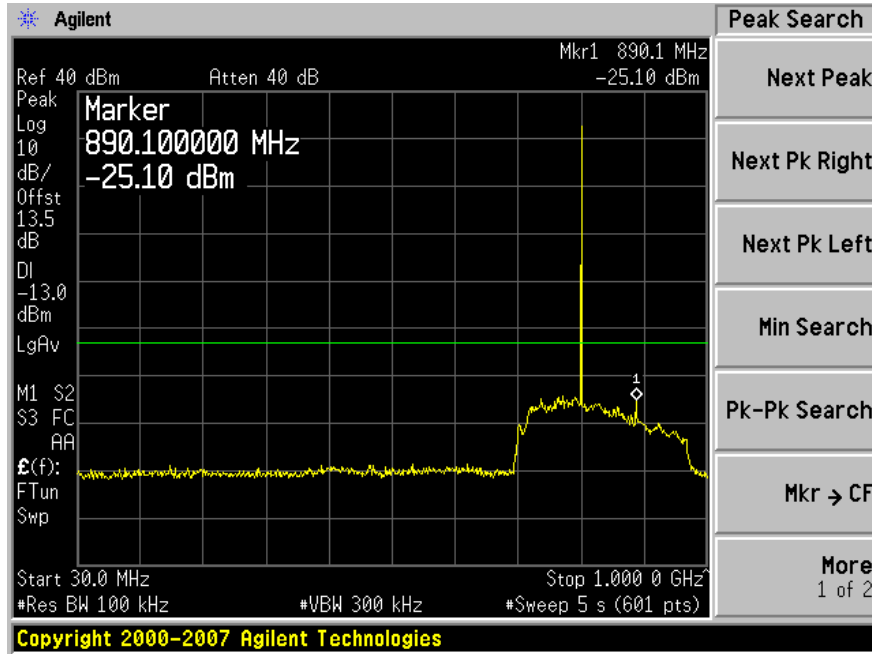


High Channel (806 MHz)

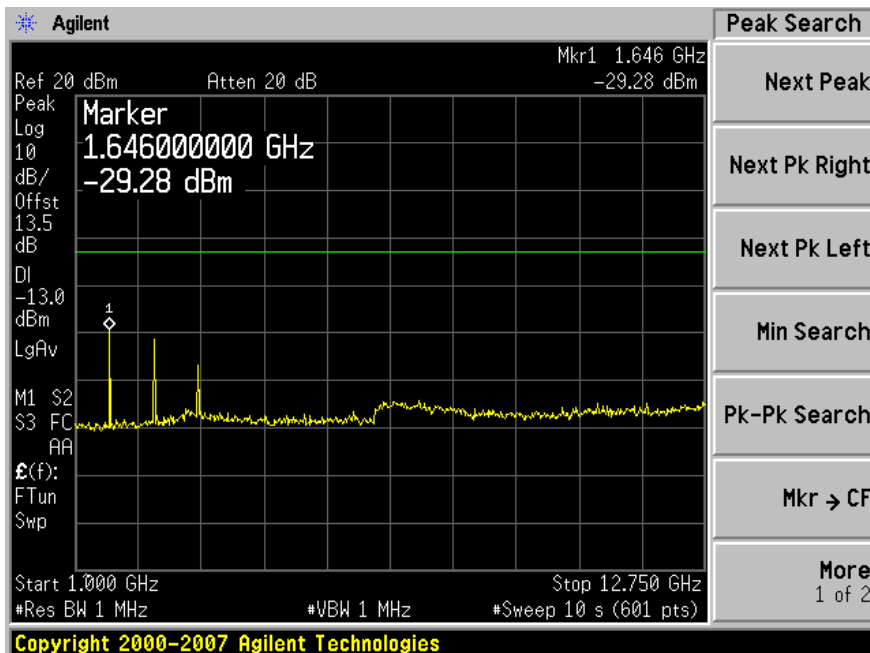
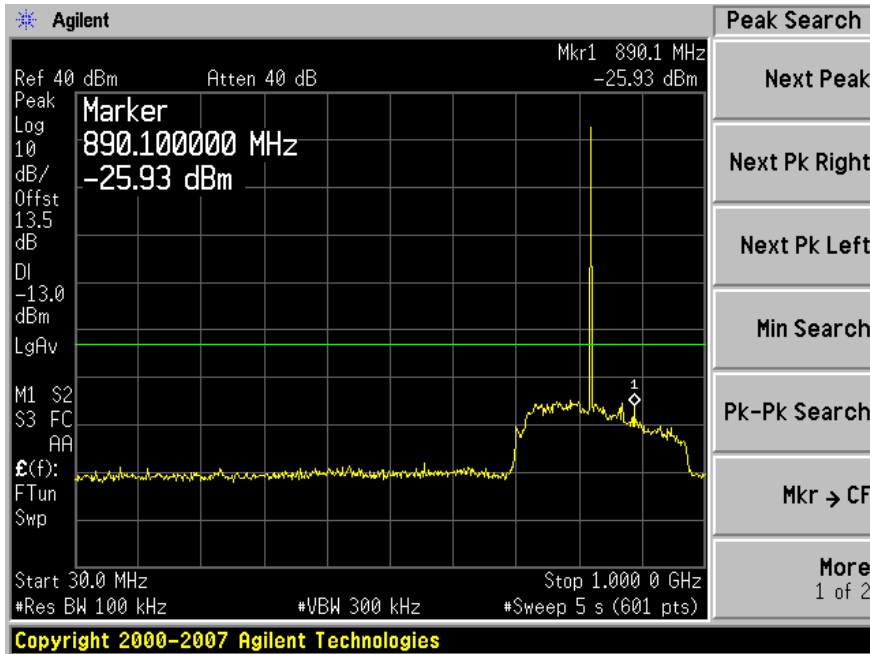


Operation Frequency Band – 806 to 824 MHz

Low Channel (806 MHz)

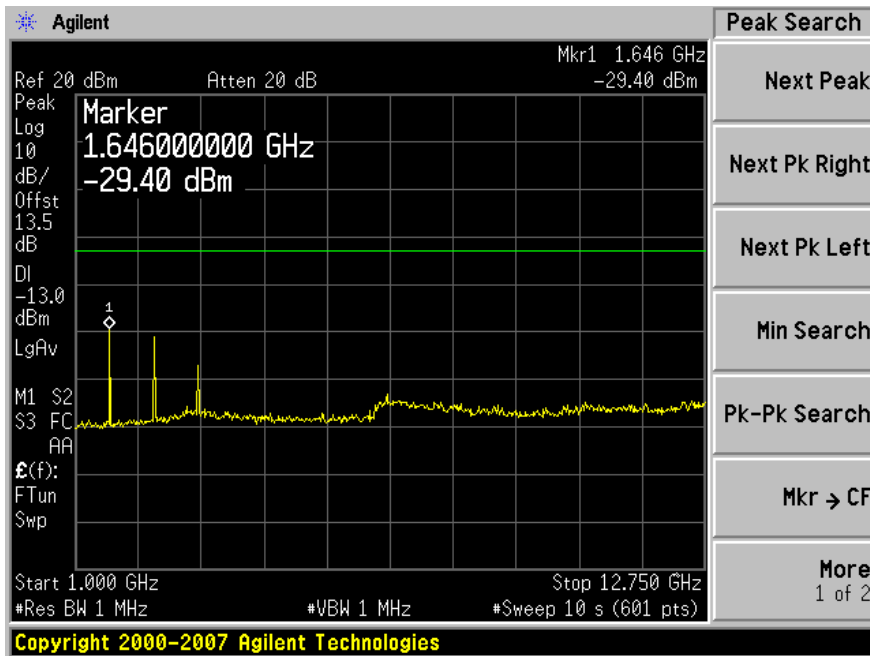
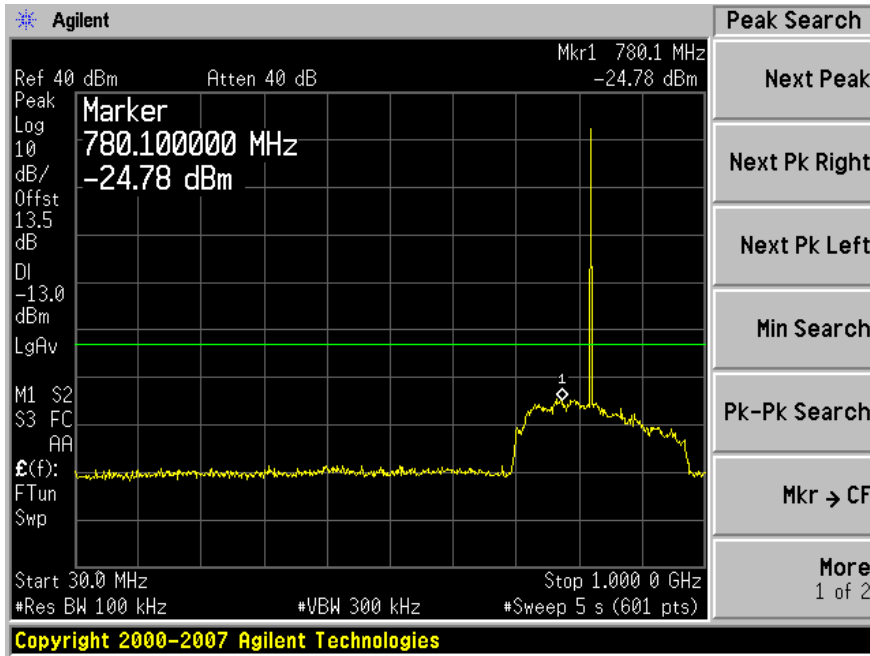


High Channel (824 MHz)

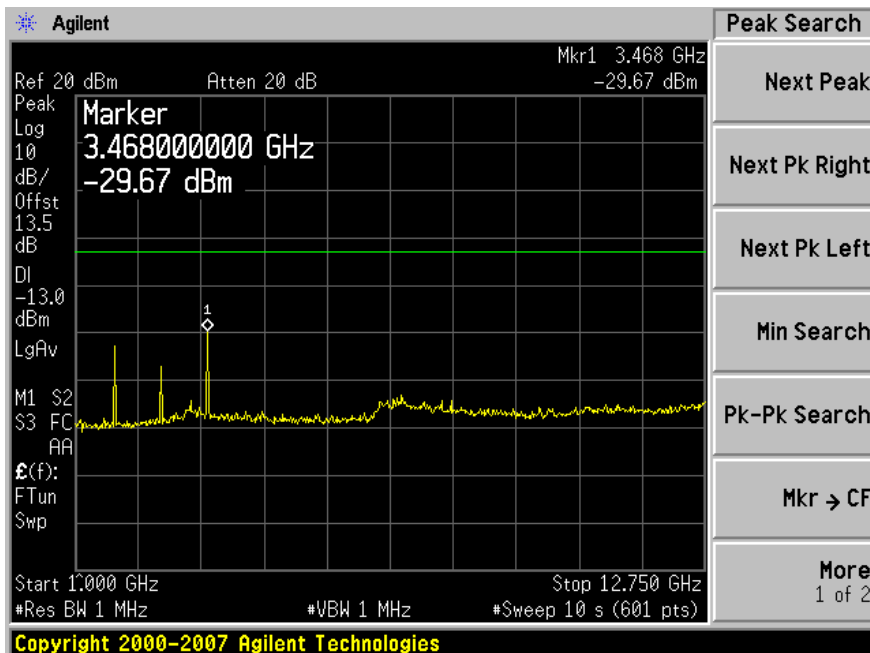
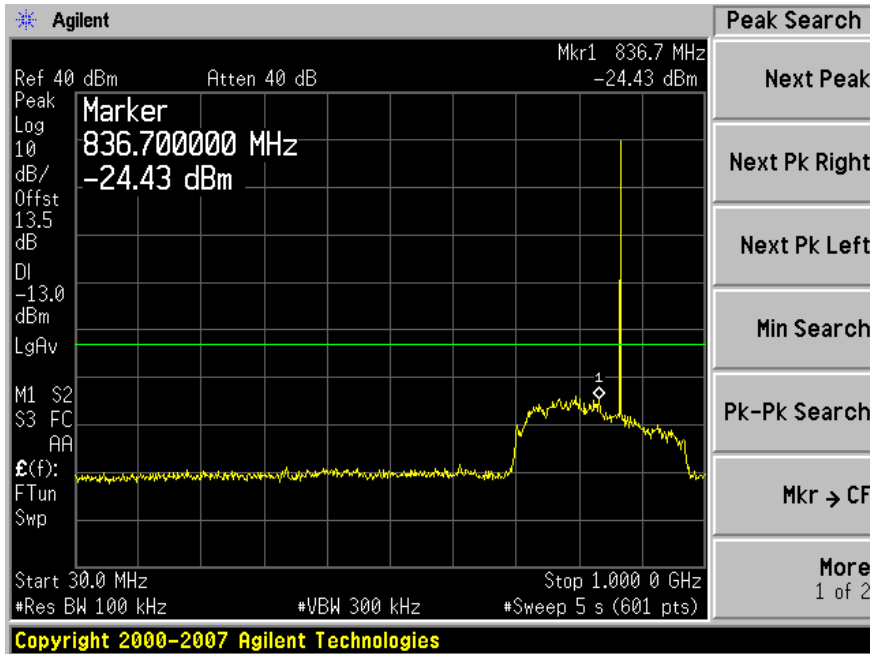


Operation Frequency Band – 851 to 869 MHz

Low Channel (851 MHz)

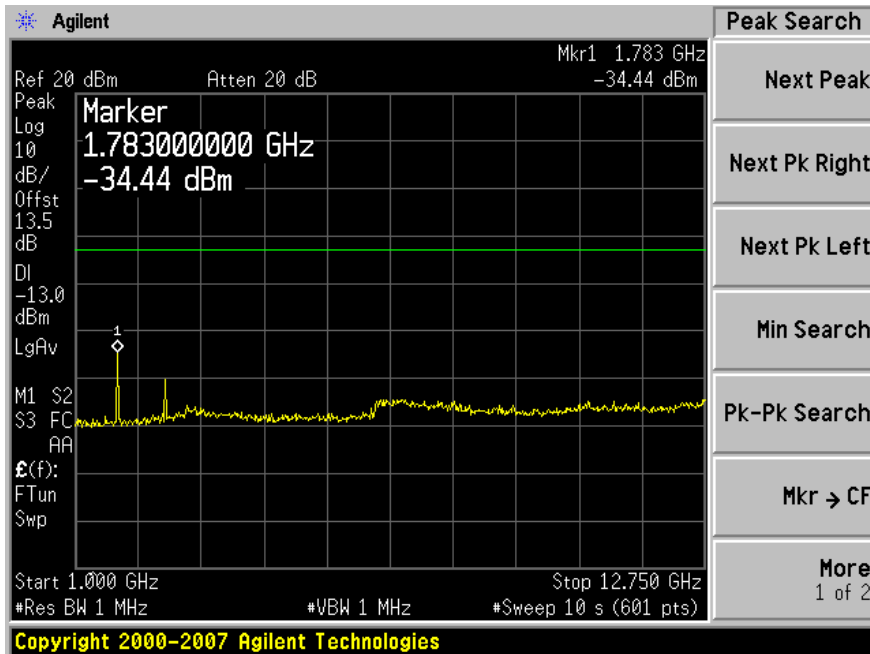
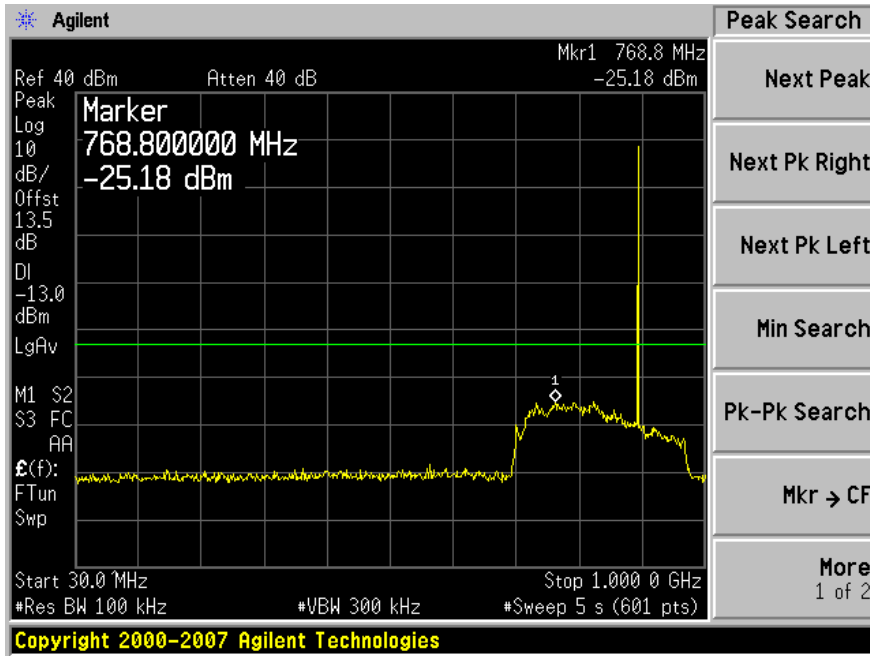


High Channel (869 MHz)

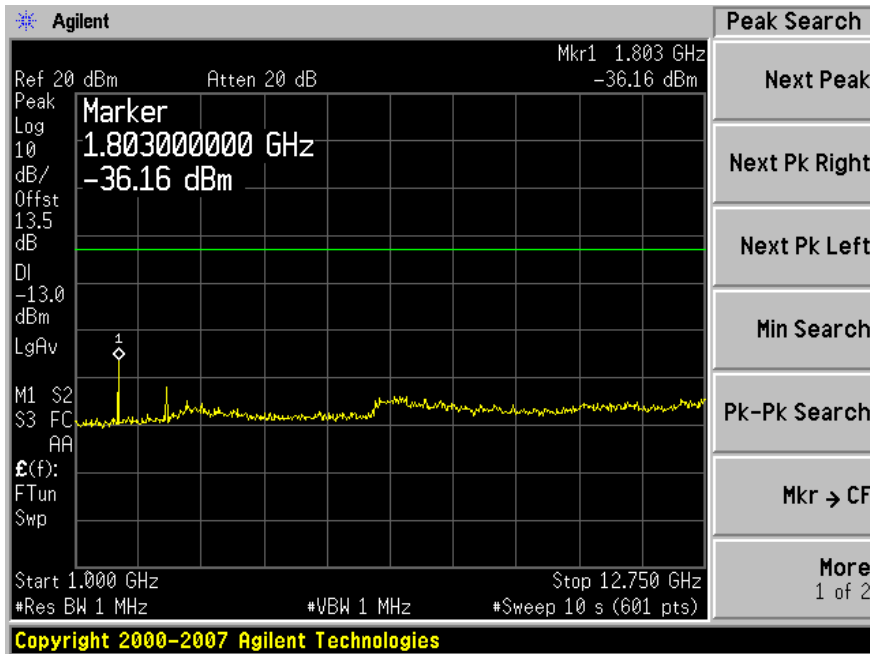
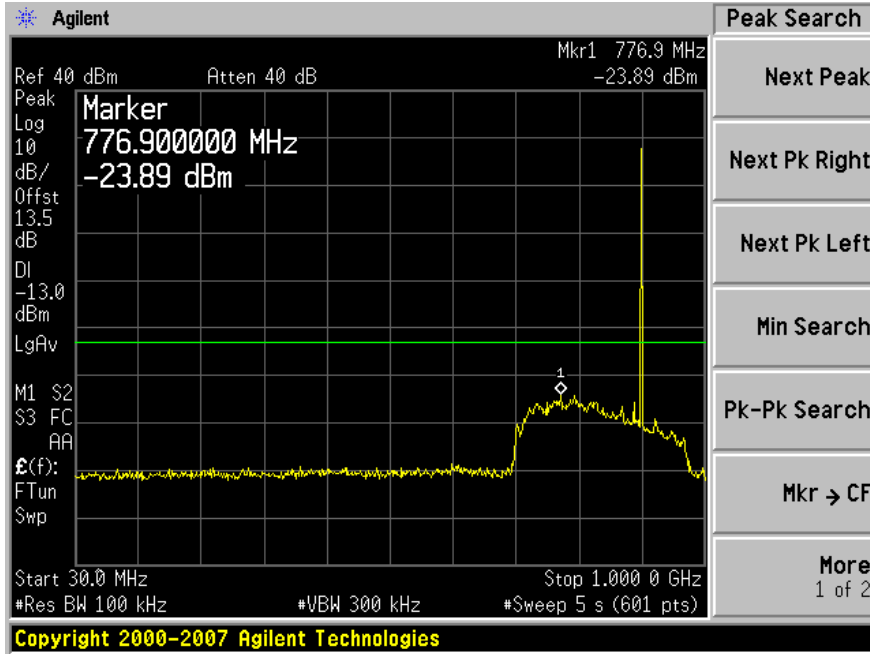


Operation Frequency Band – 896 to 901 MHz

Low Channel (896 MHz)

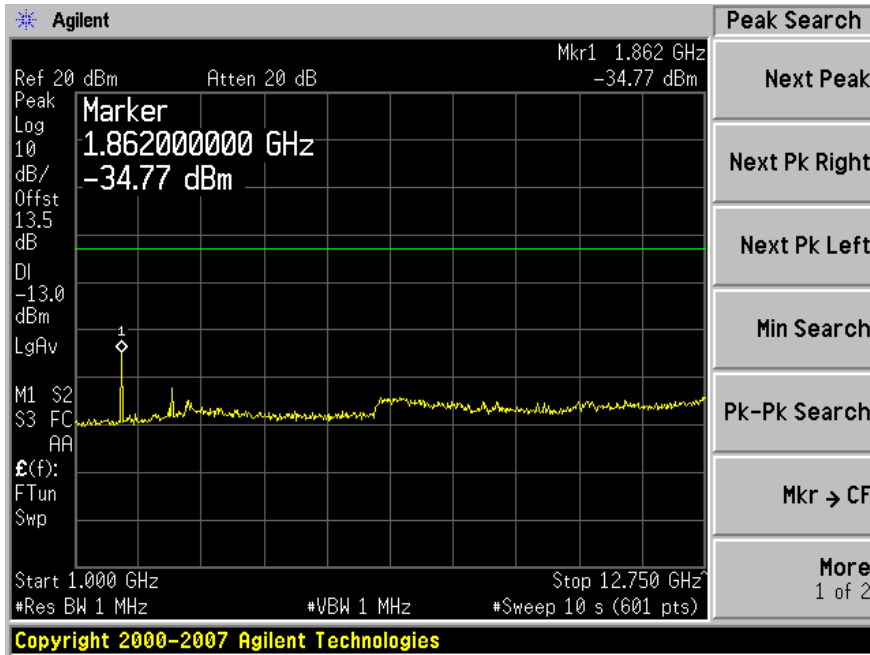
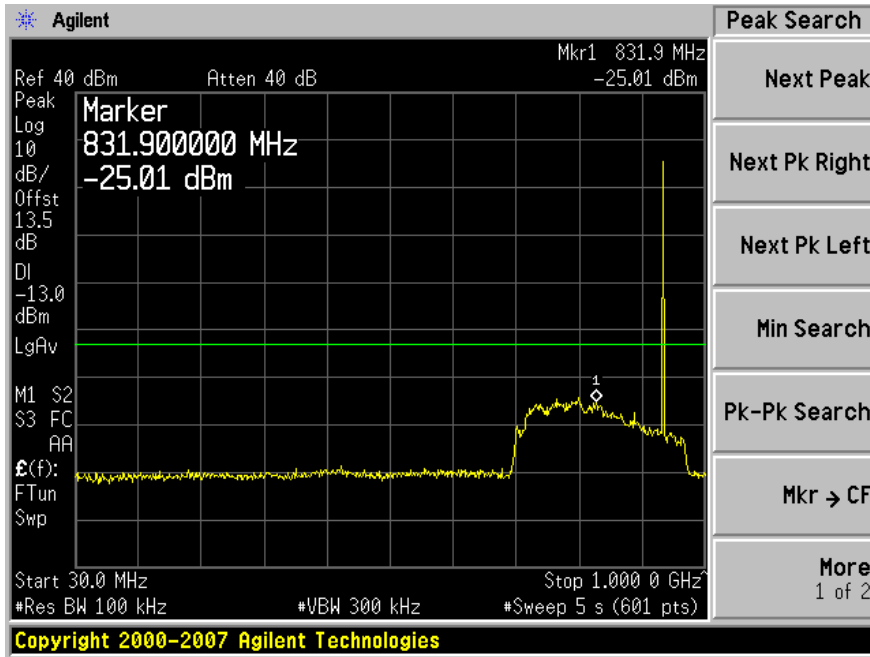


High Channel (901 MHz)

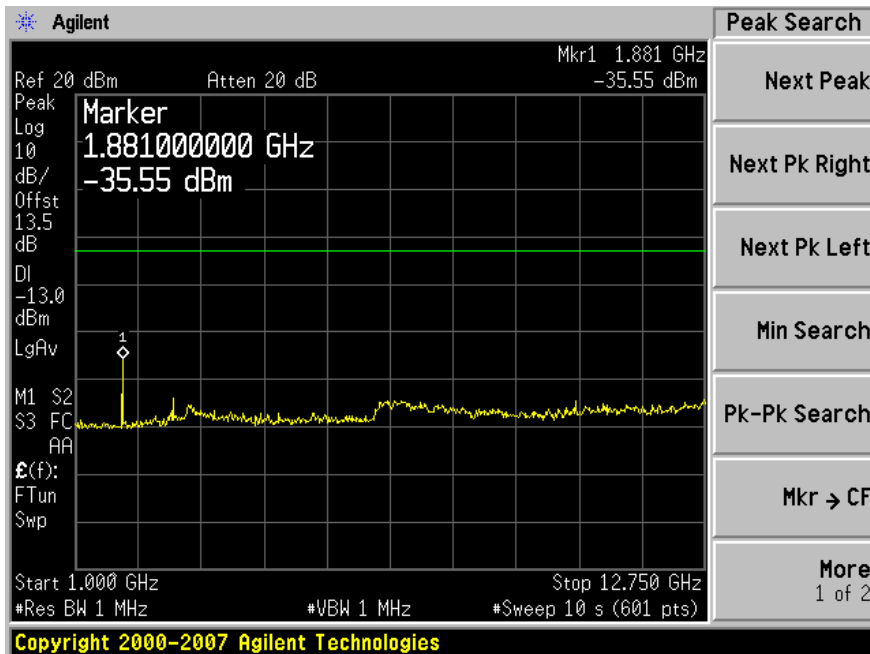
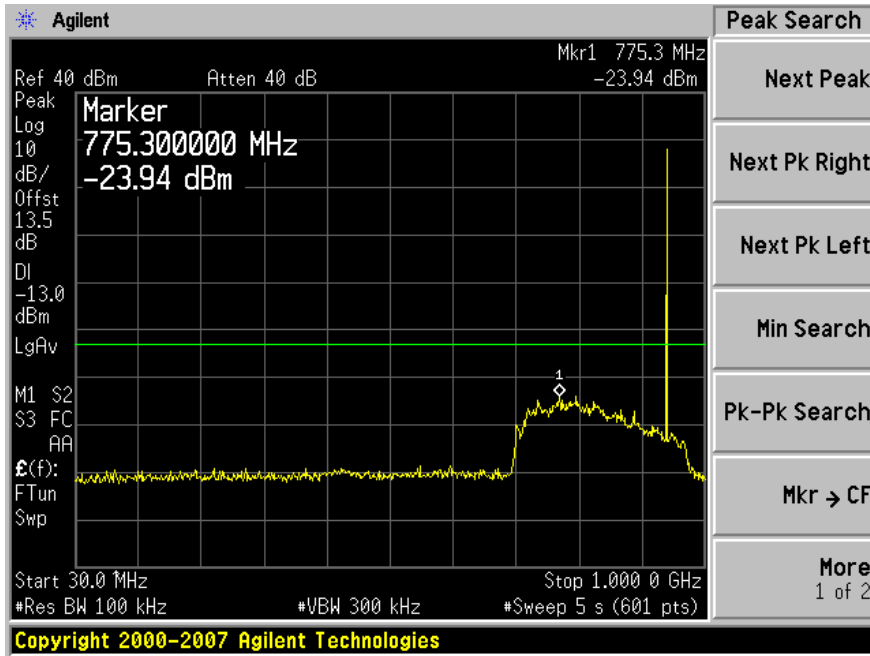


Operation Frequency Band – 935 to 940 MHz

Low Channel (935 MHz)



High Channel (940 MHz)

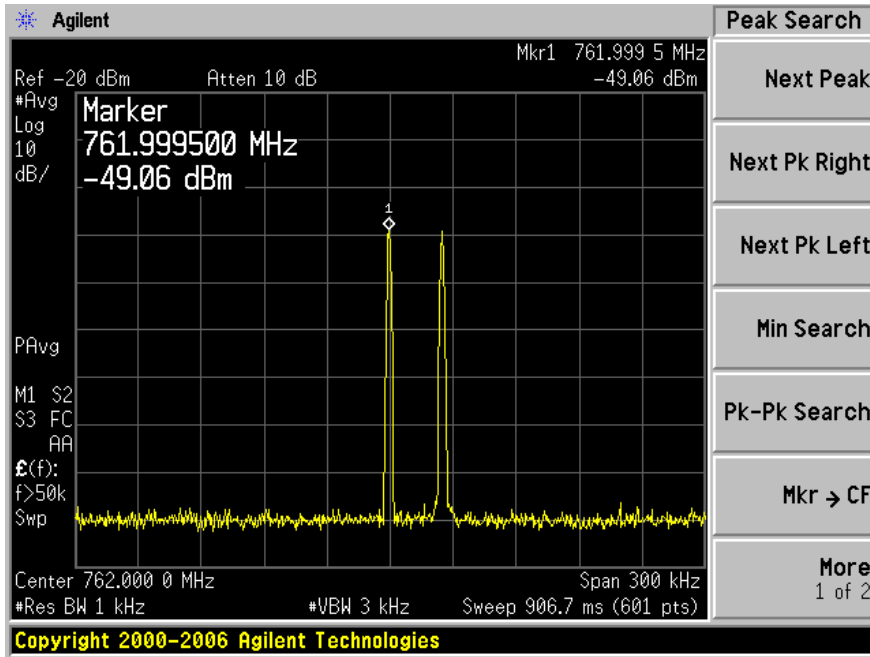


Intermodulation

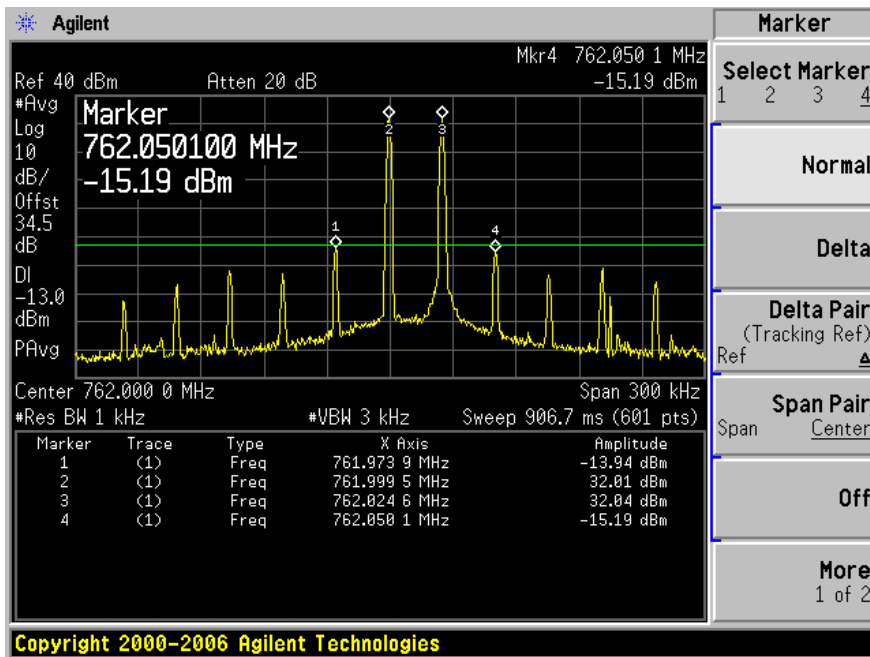
Operation Frequency Band – 762 to 776 MHz

Low Channel: 762 MHz

Input

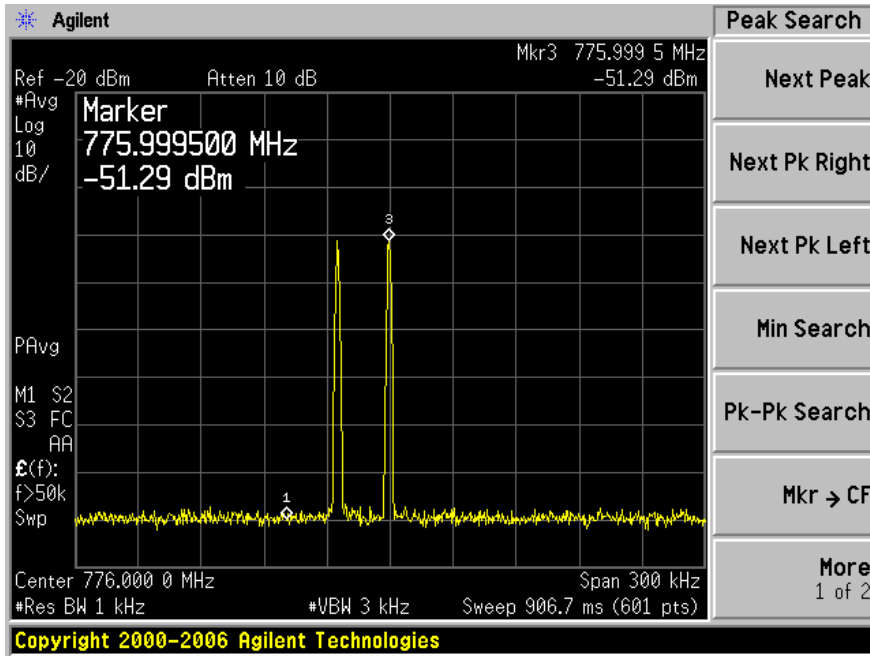


Output

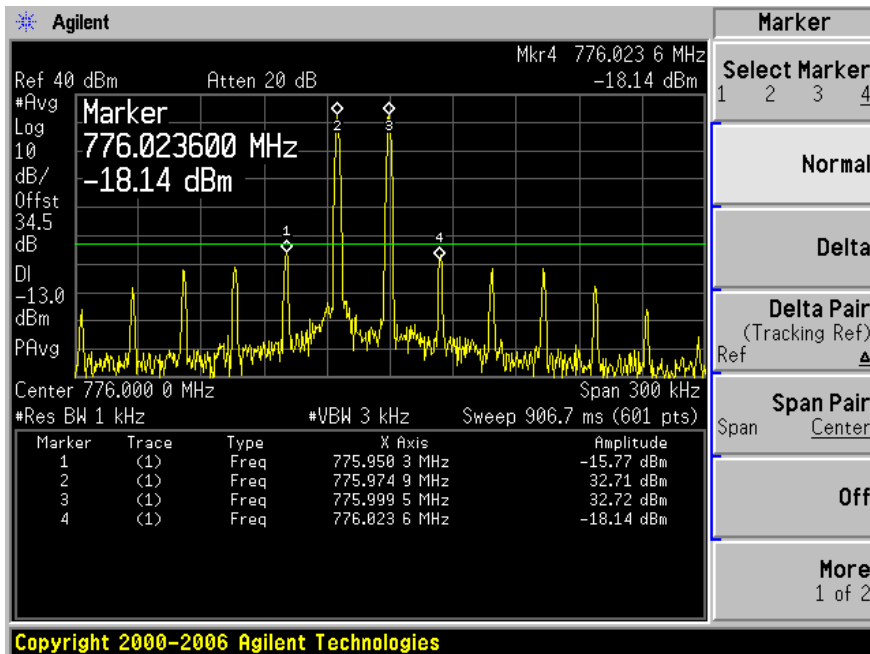


High Channel: 776 MHz

Input



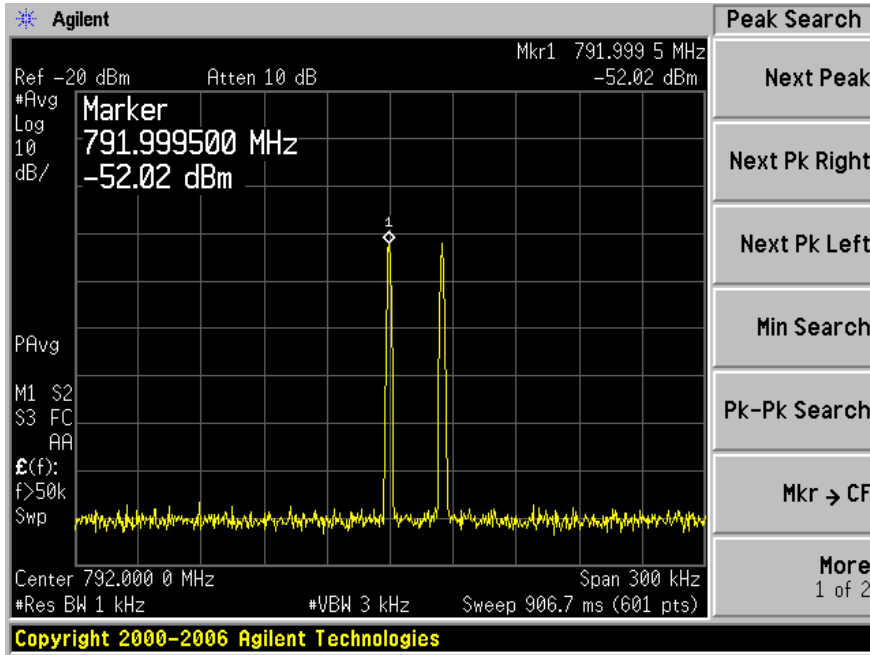
Output



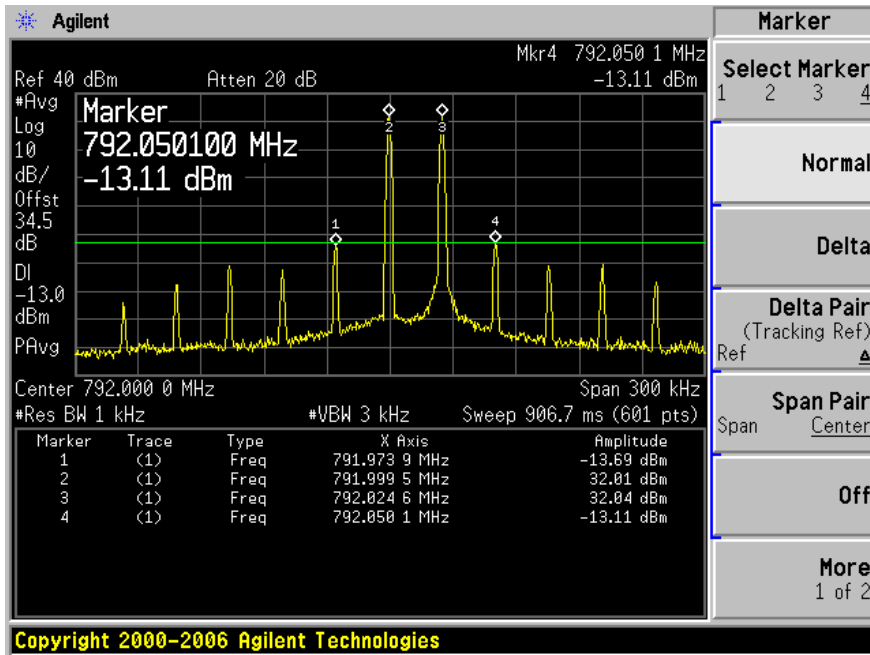
Operation Frequency Band – 792 to 806 MHz

Low Channel: 792 MHz

Input

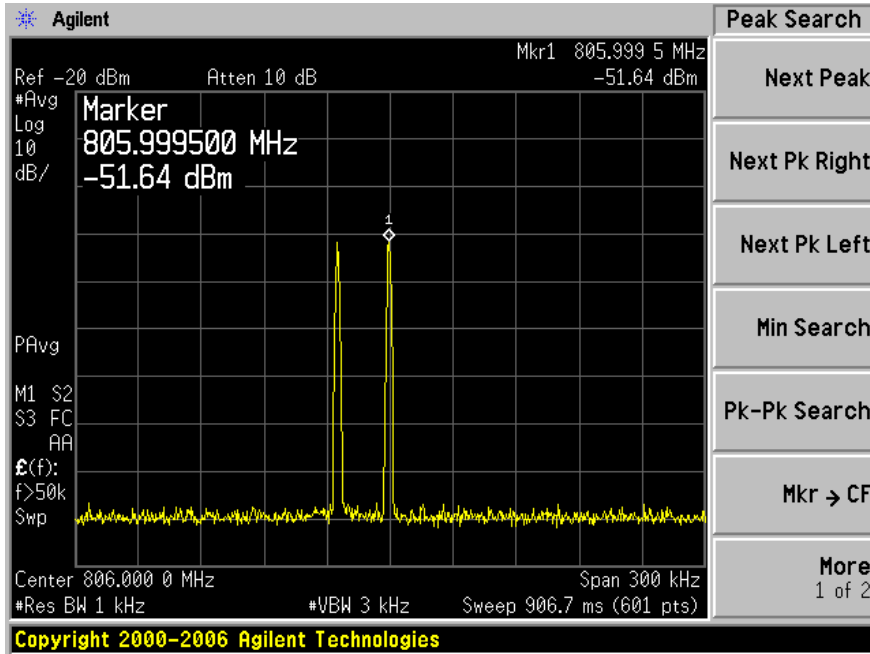


Output

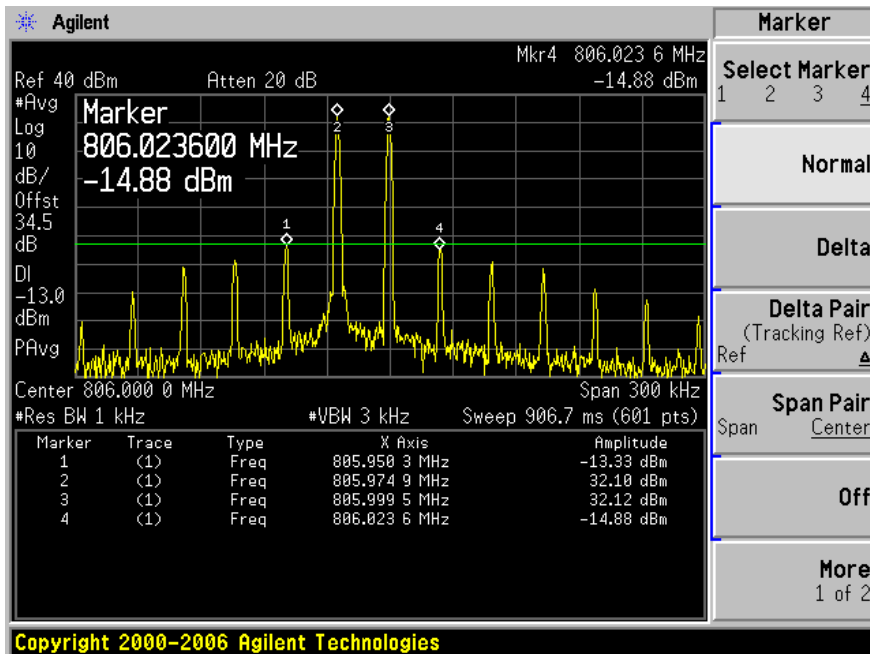


High Channel: 806 MHz

Input



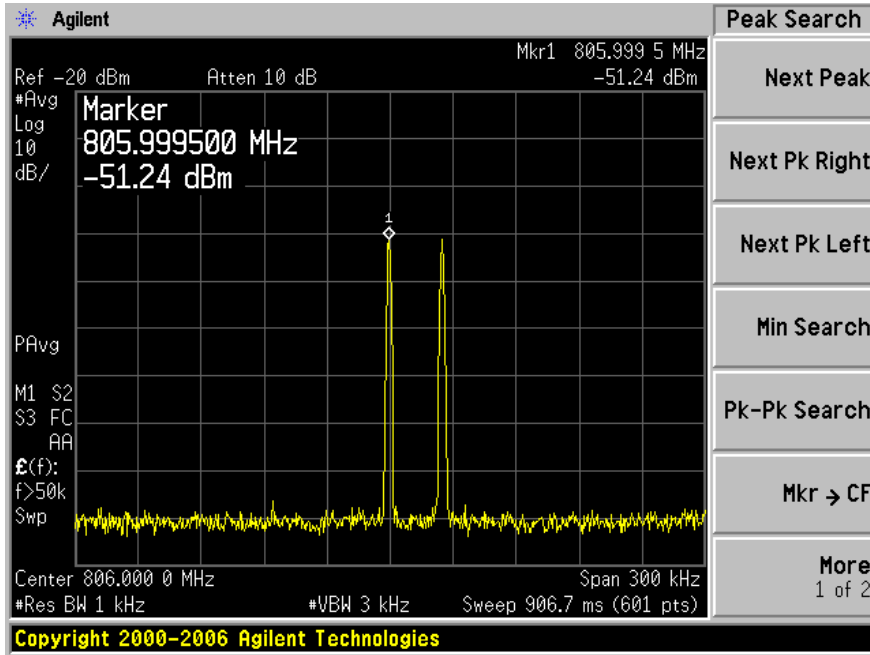
Output



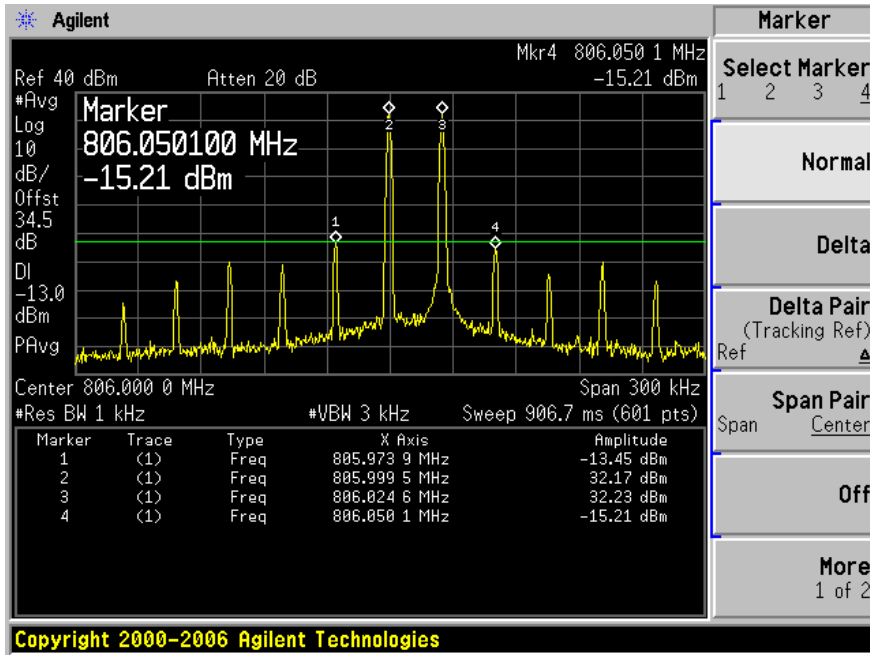
Operation Frequency Band – 806 to 824 MHz

Low Channel: 806 MHz

Input

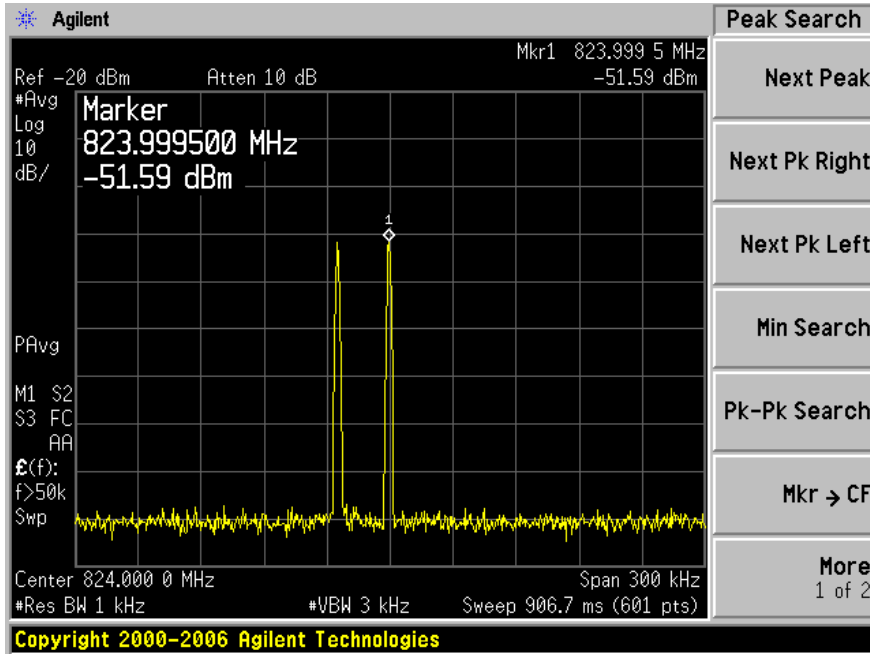


Output

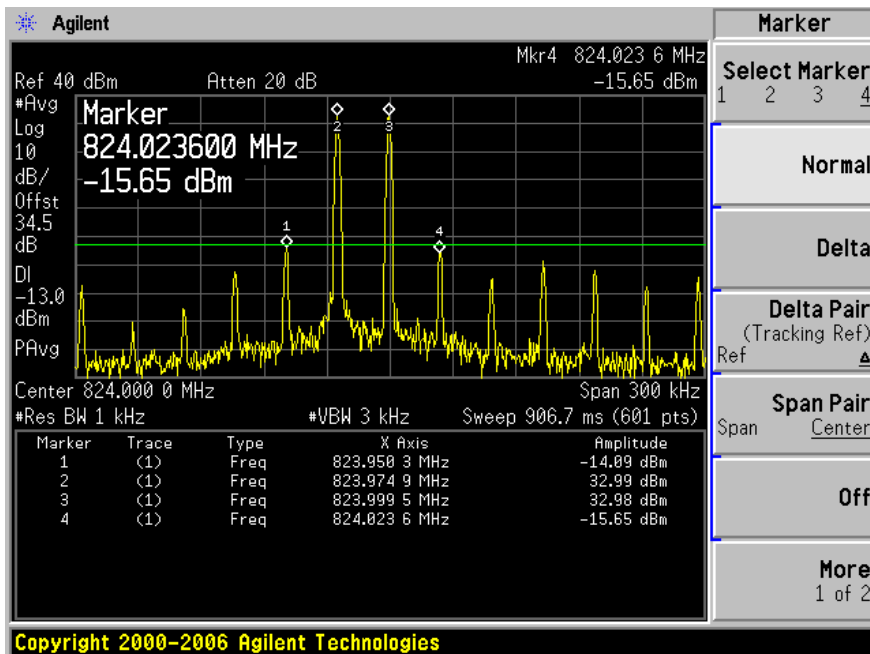


High Channel: 824 MHz

Input



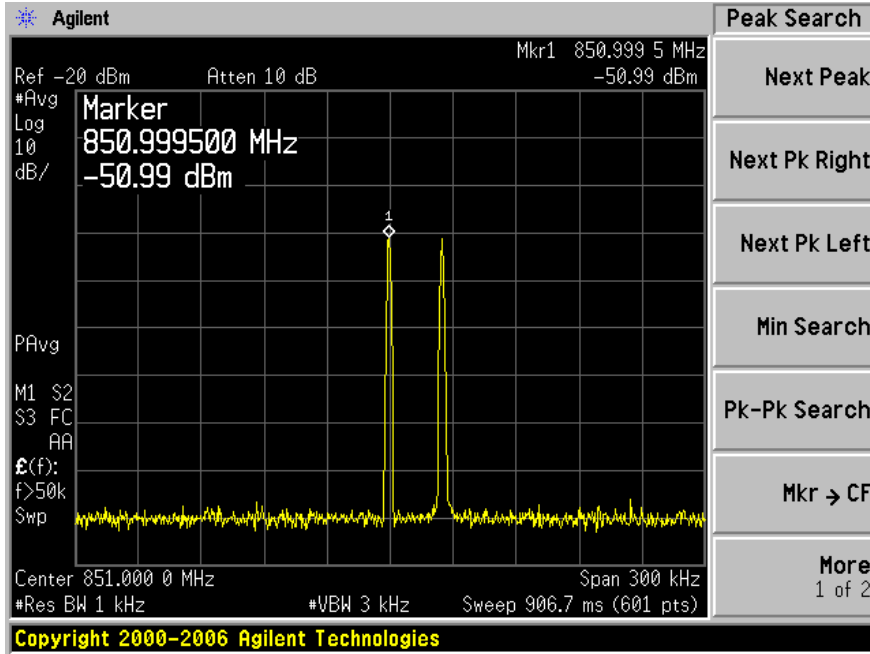
Output



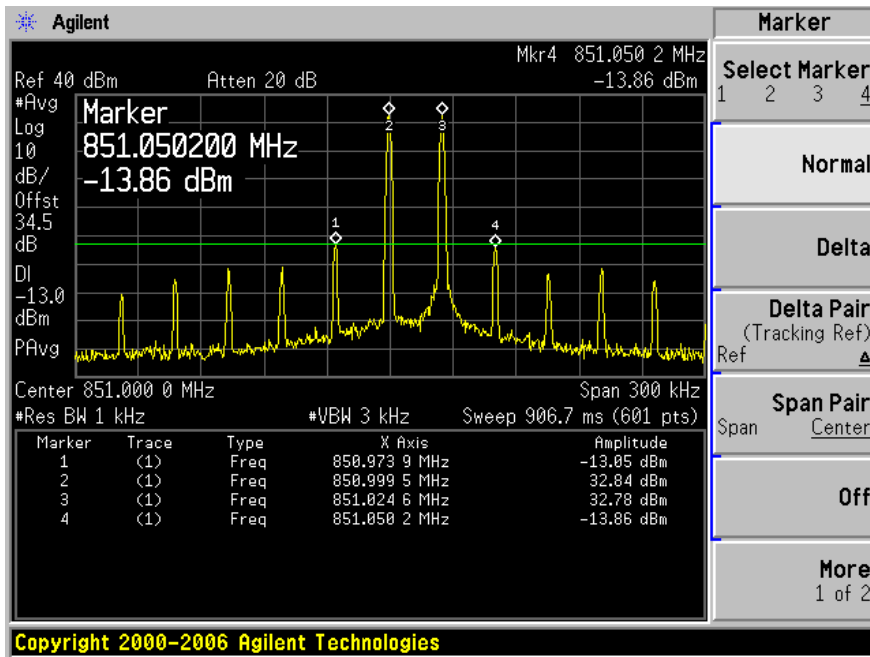
Operation Frequency Band – 851 to 869 MHz

Low Channel: 851 MHz

Input

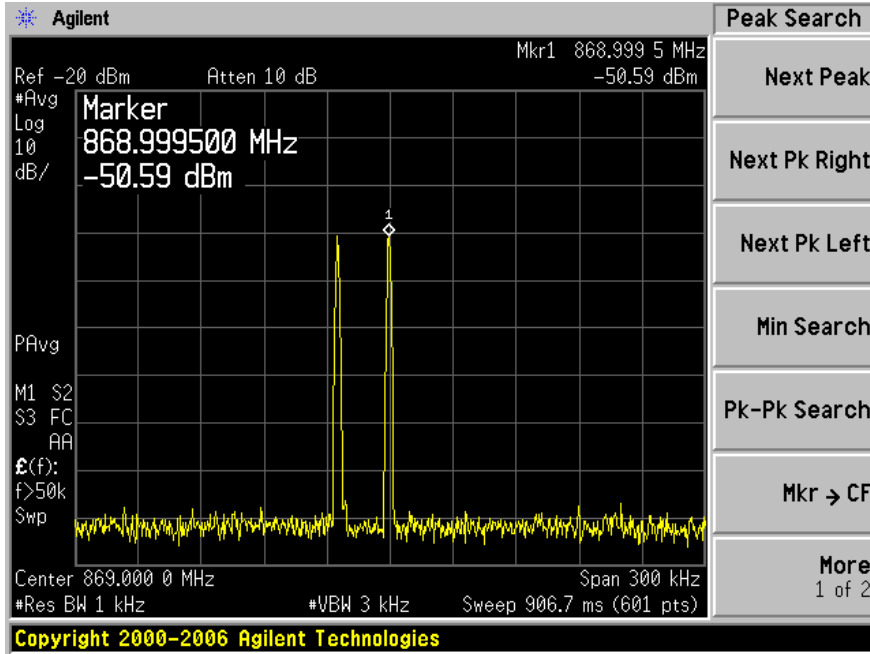


Output

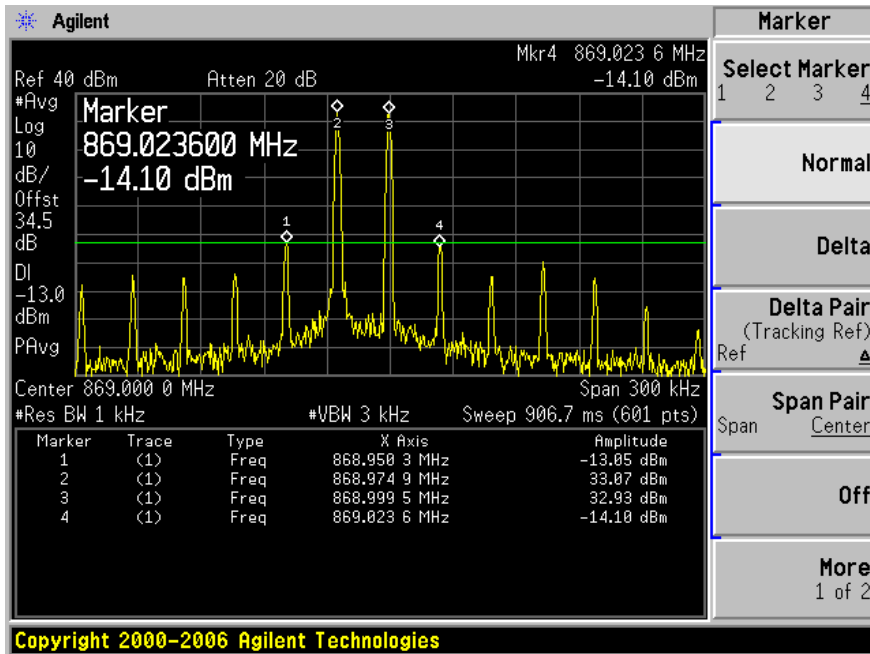


High Channel: 869 MHz

Input



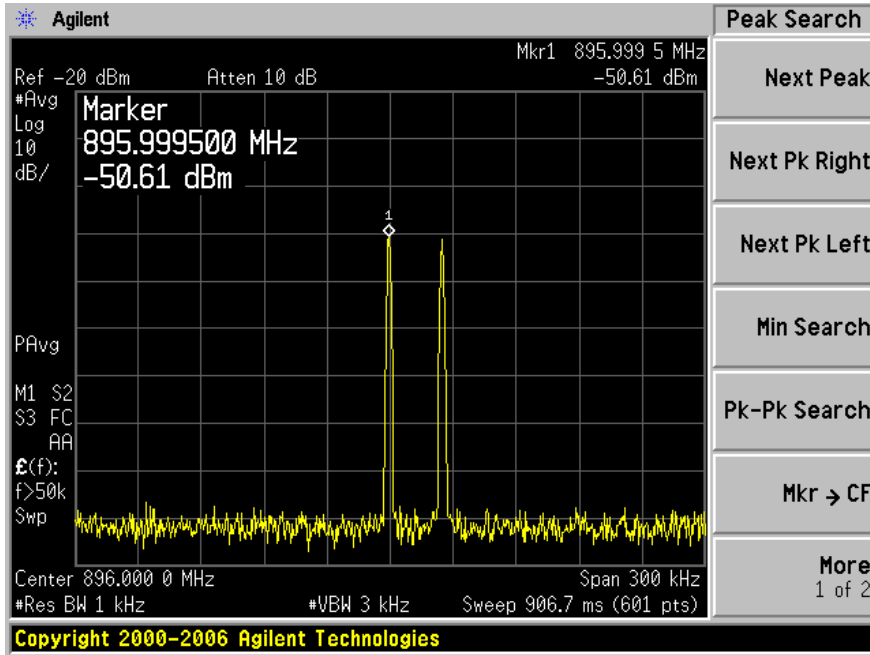
Output



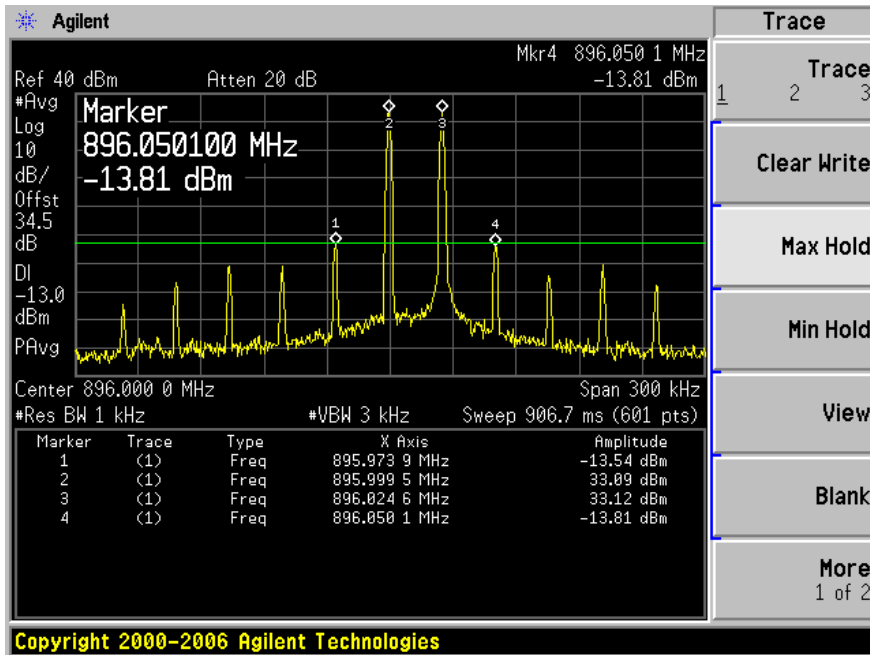
Operation Frequency Band – 896 to 901 MHz

Low Channel: 896 MHz

Input

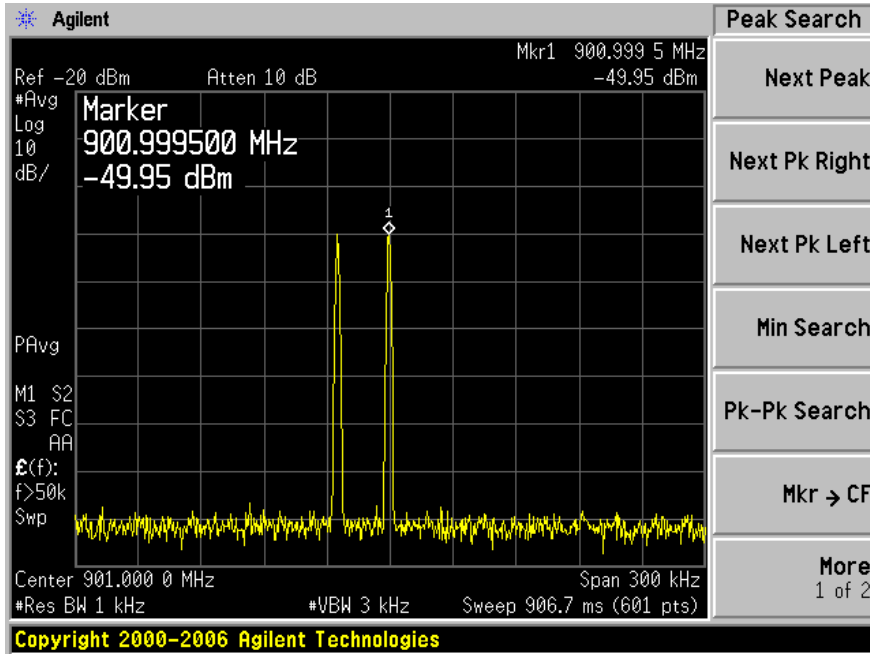


Output

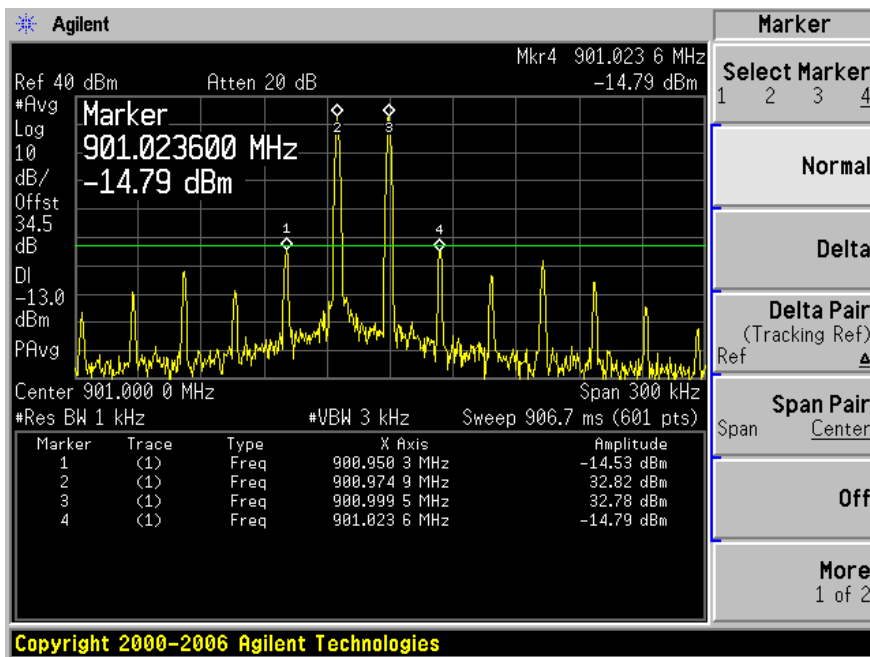


High Channel: 901 MHz

Input



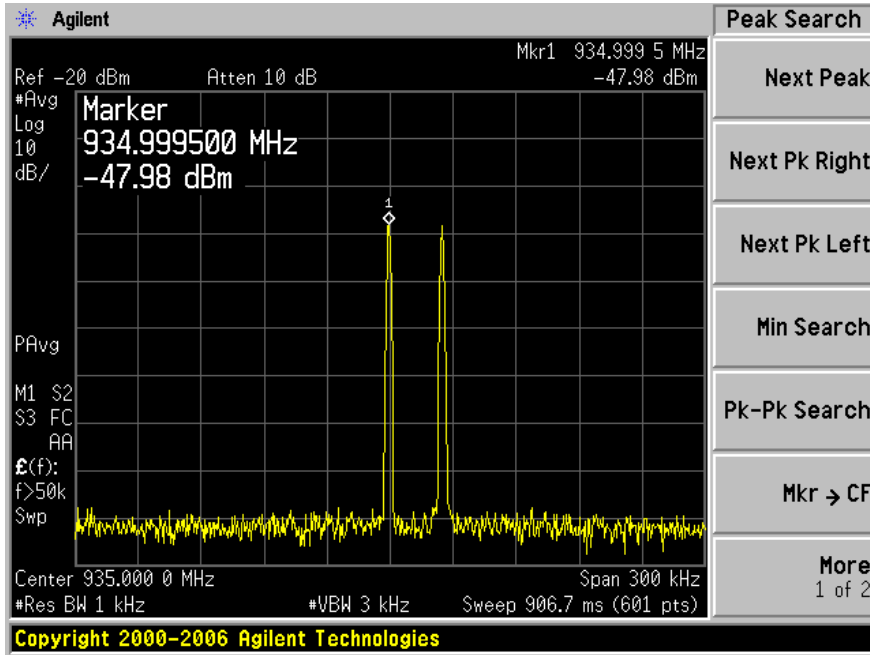
Output



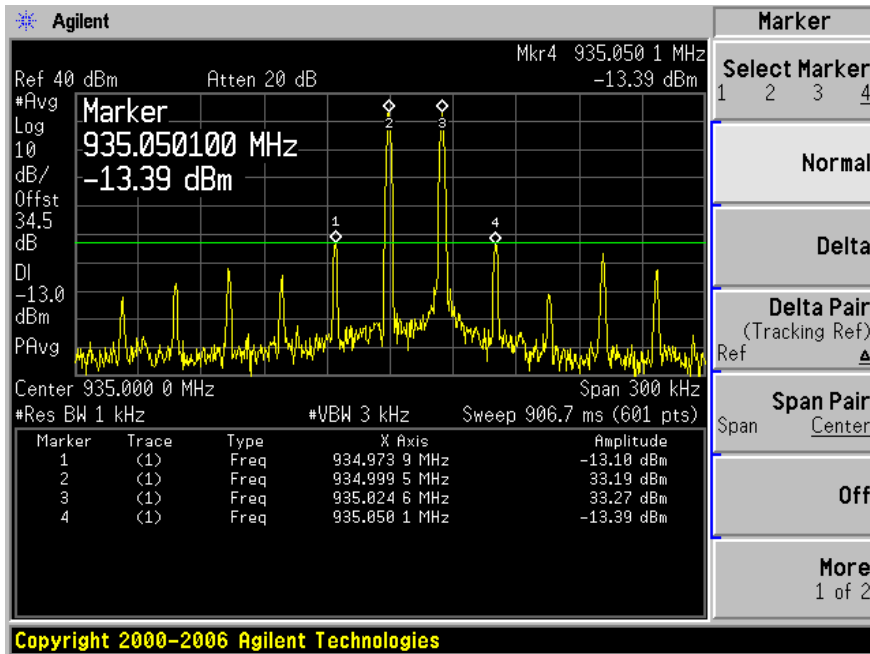
Operation Frequency Band – 935 to 940 MHz

Low Channel: 935 MHz

Input

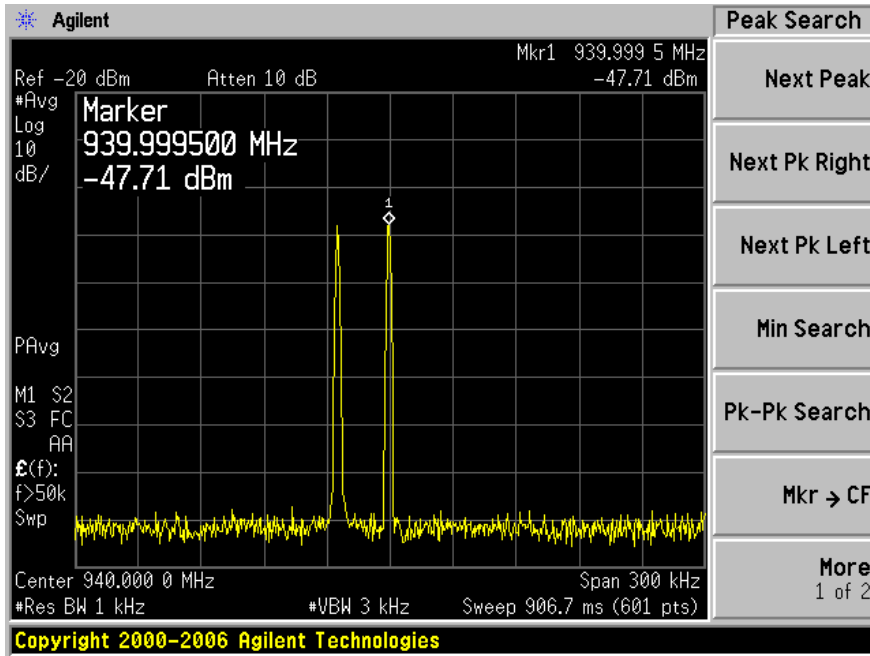


Output

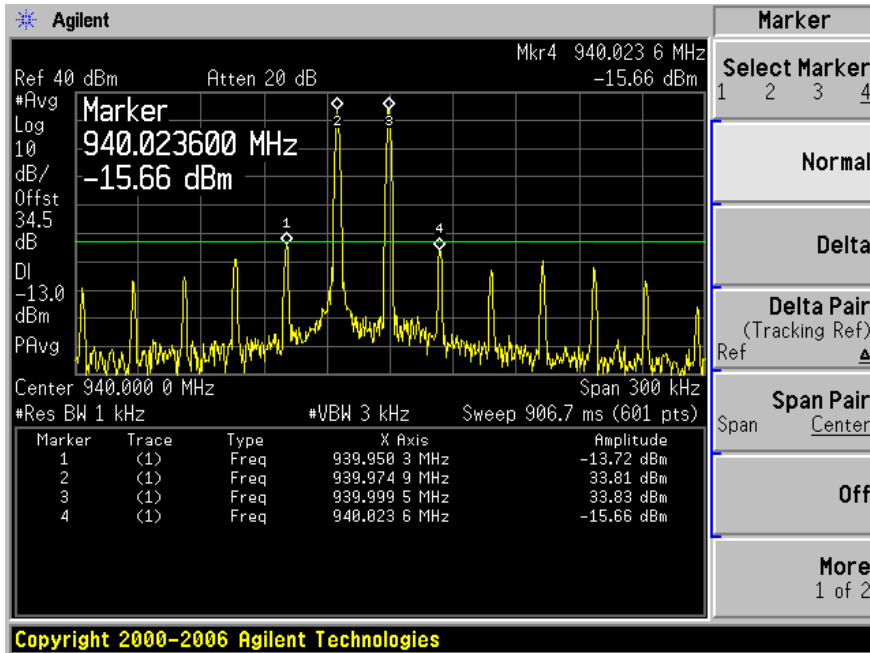


High Channel: 940 MHz

Input



Output



9 §2.1053- SPURIOUS RADIATED EMISSIONS

9.1 Applicable Standard

Requirements: CFR 47, § 2.1053.

9.2 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 log (TX Power in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log10 (power out in Watts)

9.3 Environmental Conditions

Temperature:	22.5 °C
Relative Humidity:	41 %
ATM Pressure:	101.1kPa

* The testing was performed by Victor Zhang on 2009-03-21 in 5 Meter Chamber #3.

9.4 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Agilent	Analyzer, Spectrum	E4446A	US44300386	2008-05-19
HP	Generator, Signal	83650B	3614A00276	2008-05-28
Ducommun Technologies	Amplifier, Pre	1-18GHz	9909297-01	2008-08-27
A. H. Systems	Antenna, Horn, DRG	SAS-200/571	261	2008-07-01
A.R.A.	Antenna, Horn	DRG-118/A	1132	2008-06-18
Agilent	ESG Vector Signal Generator	E44387C	MY45092922	2009-01-23

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

9.5 Summary of Test Results

The worst case reading as follows:

Operating Frequency Band: 762MHz – 776MHz			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Input Frequency
-21.50	1538.00	Vertical	769 MHz

Operating Frequency Band: 792MHz – 806MHz			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Input Frequency
-8.10	1598.00	Vertical	799 MHz

Operating Frequency Band: 806MHz – 824MHz			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Input Frequency
-11.37	1630.00	Vertical	815 MHz

Operating Frequency Band: 851MHz – 869MHz			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Input Frequency
-25.44	1720.00	Vertical	860 MHz

Operating Frequency Band: 896MHz – 901MHz			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Input Frequency
-20.02	1797.00	Vertical	898.5 MHz

Operating Frequency Band: 935MHz – 940MHz			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Input Frequency
-24.83	1875.00	Vertical	937.5 MHz

9.6 Test Results

Operating Frequency Range: 762 – 776 MHz

Indicated		Azimuth (degree)	Test Antenna		Substituted					Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Amp. (dBuV)		Height (m)	Polarity (H/V)	Frequency (MHz)	Level (dBm)	Antenna Gain Correction (dB)	Cable Loss (dB)	Absolute Level (dBm)		
1538.00	70.44	185	1.89	V	1538.00	-43.06	8.90	0.34	-34.50	-13	-21.50
1538.00	68.07	108	1.00	H	1538.00	-45.98	8.90	0.34	-37.42	-13	-24.42
2307.00	52.28	193	1.50	V	2307.00	-55.16	9.40	0.42	-46.18	-13	-33.18
2307.00	45.13	85	1.44	H	2307.00	-63.08	9.40	0.42	-54.10	-13	-41.10

Operating Frequency Range: 792 – 806 MHz

Indicated		Azimuth (degree)	Test Antenna		Substituted					Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Amp. (dBuV)		Height (m)	Polarity (H/V)	Frequency (MHz)	Level (dBm)	Antenna Gain Correction (dB)	Cable Loss (dB)	Absolute Level (dBm)		
1598.00	83.26	159	1.58	V	1598.00	-29.95	9.20	0.35	-21.10	-13	-8.10
1598.00	74.75	223	1.63	H	1598.00	-39.26	9.20	0.35	-30.41	-13	-17.41
2397.00	53.70	182	1.62	V	2397.00	-53.17	9.60	0.43	-44.00	-13	-31.00
2397.00	47.81	232	1.65	H	2397.00	-59.51	9.60	0.43	-50.34	-13	-37.34

Operating Frequency Range: 806 – 824 MHz

Indicated		Azimuth (degree)	Test Antenna		Substituted					Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Amp. (dBuV)		Height (m)	Polarity (H/V)	Frequency (MHz)	Level (dBm)	Antenna Gain Correction (dB)	Cable Loss (dB)	Absolute Level (dBm)		
1630.00	79.71	152	1.46	V	1630.00	-33.22	9.20	0.35	-24.37	-13	-11.37
1630.00	73.53	146	2.00	H	1630.00	-40.30	9.20	0.35	-31.45	-13	-18.45
2445.00	55.05	183	1.77	V	2445.00	-51.26	9.50	0.43	-42.19	-13	-29.19
2445.00	47.05	0	1.55	H	2445.00	-60.05	9.50	0.43	-50.98	-13	-37.98

Operating Frequency Range: 851 – 869 MHz

Indicated		Azimuth (degree)	Test Antenna		Substituted					Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Amp. (dBuV)		Height (m)	Polarity (H/V)	Frequency (MHz)	Level (dBm)	Antenna Gain Correction (dB)	Cable Loss (dB)	Absolute Level (dBm)		
1720.00	64.00	128	1.49	V	1720.00	-47.38	9.30	0.36	-38.44	-13	-25.44
2580.00	54.59	158	1.45	V	2580.00	-51.31	9.20	0.45	-42.56	-13	-29.56
1720.00	56.35	82	1.00	H	1720.00	-55.34	9.30	0.36	-46.40	-13	-33.40
2580.00	49.13	324	1.46	H	2580.00	-57.15	9.20	0.45	-48.40	-13	-35.40

Operating Frequency Range: 896 – 901 MHz

Indicated		Azimuth (degree)	Test Antenna		Substituted					Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Amp. (dBuV)		Height (m)	Polarity (H/V)	Frequency (MHz)	Level (dBm)	Antenna Gain Correction (dB)	Cable Loss (dB)	Absolute Level (dBm)		
1797.00	67.62	173	1.96	V	1797.00	-42.15	9.50	0.37	-33.02	-13	-20.02
1797.00	60.72	107	1.57	H	1797.00	-49.31	9.50	0.37	-40.18	-13	-27.18
2695.50	51.80	149	1.15	V	2695.50	-52.92	9.30	0.46	-44.08	-13	-31.08
2695.50	46.30	219	1.17	H	2695.50	-59.03	9.30	0.46	-50.19	-13	-37.19

Operating Frequency Range: 935 – 940 MHz

Indicated		Azimuth (degree)	Test Antenna		Substituted					Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Amp. (dBuV)		Height (m)	Polarity (H/V)	Frequency (MHz)	Level (dBm)	Antenna Gain Correction (dB)	Cable Loss (dB)	Absolute Level (dBm)		
1875.00	62.24	193	2.00	V	1875.00	-46.45	9.00	0.38	-37.83	-13	-24.83
2812.50	49.75	152	1.35	V	2812.50	-55.05	9.90	0.48	-45.63	-13	-32.63
1875.00	50.85	223	1.53	H	1875.00	-58.12	9.00	0.38	-49.50	-13	-36.50
2812.50	45.30	225	1.55	H	2812.50	-59.80	9.90	0.48	-50.38	-13	-37.38

10 §90.213 – Frequency Stability

10.1 Applicable Standard

§ 90.213

±1 ppm of the Operating Frequency Tuned

10.2 Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to the Spectrum Analyzer via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Spectrum Analyzer.

Frequency Stability vs. Voltage: An external variable DC power supply Source. The voltage was set to 110% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

10.3 Test Results

N/A. The EUT is an amplifier, not a transmitter. There is no oscillator circuit in the EUT, therefore there is no frequency stability measurement required.

11 §1.1307(b) (1) & §2.1091 - RF EXPOSURE

11.1 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

11.2 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

Operation Frequency Band – 762 to 776 MHz

Maximum peak output power at antenna input terminal (dBm): 36.43
Maximum peak output power at antenna input terminal (mW): 4395.4
Prediction distance (cm): 100
Prediction frequency (MHz): 769
Antenna Gain, typical (dBi): 10
Maximum Antenna Gain (numeric): 10
Power density at predication frequency and distance (mW/cm²): 0.3498
MPE limit for uncontrolled exposure at predication frequency (mW/cm²): 0.5127

Operation Frequency Band – 792 to 806 MHz

Maximum peak output power at antenna input terminal (dBm): 36.79
Maximum peak output power at antenna input terminal (mW): 4775.3
Prediction distance (cm): 40
Prediction frequency (MHz): 799
Antenna Gain, typical (dBi): 2
Maximum Antenna Gain (numeric): 1.585
Power density at predication frequency and distance (mW/cm²): 0.3764
MPE limit for uncontrolled exposure at predication frequency (mW/cm²): 0.5327

Operation Frequency Band – 806 to 824 MHz

Maximum peak output power at antenna input terminal (dBm): 37.86
Maximum peak output power at antenna input terminal (mW): 6109.4
Prediction distance (cm): 100
Prediction frequency (MHz): 815
Antenna Gain, typical (dBi): 10
Maximum Antenna Gain (numeric): 10
Power density at predication frequency and distance (mW/cm²): 0.4862
MPE limit for uncontrolled exposure at predication frequency (mW/cm²): 0.5433

Operation Frequency Band – 851 to 869 MHz

Maximum peak output power at antenna input terminal (dBm): 37.96
Maximum peak output power at antenna input terminal (mW): 6251.7
Prediction distance (cm): 40
Prediction frequency (MHz): 860
Antenna Gain, typical (dBi): 2
Maximum Antenna Gain (numeric): 1.585
Power density at predication frequency and distance (mW/cm²): 0.4928
MPE limit for uncontrolled exposure at predication frequency (mW/cm²): 0.5734

Operation Frequency Band – 896 to 901MHz

Maximum peak output power at antenna input terminal (dBm):	<u>37.60</u>
Maximum peak output power at antenna input terminal (mW):	<u>5754.4</u>
Prediction distance (cm):	<u>100</u>
Prediction frequency (MHz):	<u>898.5</u>
Antenna Gain, typical (dBi):	<u>10</u>
Maximum Antenna Gain (numeric):	<u>10</u>
Power density at predication frequency and distance (mW/cm ²):	<u>0.4579</u>
MPE limit for uncontrolled exposure at predication frequency (mW/cm ²):	<u>0.5990</u>

Operation Frequency Band – 935 to 940 MHz

Maximum peak output power at antenna input terminal (dBm):	<u>35.82</u>
Maximum peak output power at antenna input terminal (mW):	<u>3819.4</u>
Prediction distance (cm):	<u>40</u>
Prediction frequency (MHz):	<u>937.5</u>
Antenna Gain, typical (dBi):	<u>2</u>
Maximum Antenna Gain (numeric):	<u>1.585</u>
Power density at predication frequency and distance (mW/cm ²):	<u>0.3011</u>
MPE limit for uncontrolled exposure at predication frequency (mW/cm ²):	<u>0.6250</u>

11.3 Test Results

The device is compliant with the requirement MPE limit for uncontrolled exposure.

The indoor antenna prediction distance should be greater then 40 cm, and outdoor antenna prediction distance should be greater then 100 cm.