Lab Code: 200167-0

FCC PART 22H, 24E
TEST AND MEASUREMENT REPORT

For

Hop-on Inc

2222 Michelson, Suite 182

Irvine, CA92612, USA

FCC ID: QHO-HOP1800
Model: HOP 1800

Report Type:	**Product Type:**
Original Report	GSM Dual Band Mobile Phone

Test Engineer:	Jack Liu
Report Number:	R0809233-2224
Report Date:	2008-11-05
Reviewed By:	Boni Baniqued Sr. RF Engineer
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R0809233-2224	Original Report	2008-11-05

1 GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

This test and measurement report has been compiled on behalf of *Hop-on Inc.* and their product model: *HOP 1800*, FCC ID:*QHO-HOP1800* which is a GSM 850/1900 Mobile Phone.

1.2 Mechanical Description

The *Hop-on Inc.* product model: *HOP1800*, FCC ID: *QHO-HO1800P* or the "EUT" as referred to in this report is a mobile phone. The EUT measures approximately 96.6mm (L) x 41.6 mm (W) x 14 mm (H), and weighs approximately 77 g.

** The test data gathered are from typical production sample, serial number: Hop1800-6 Sample ID: 72157 provided by the BACL.*

1.3 EUT Photo

Additional Photos in Exhibit C

1.4 Objective

This type approval report is prepared on behalf of *Hop-on Inc* in accordance with Part 2, Subpart J, Part 22 Subpart H, and Part 24 Subpart E 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.

This measurement and test report only pertains to the GSM 850/1900 portion of the EUT.

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 - Cellular Radiotelephone Service
Part 24 Subpart E - PCS

Applicable Standards: 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 $\pm$2.0 dB for Conducted Emissions tests and $\pm$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

An RFID simulation program was provided by the customer.

2.3 Equipment Modifications

No modifications were made to the EUT

2.4 Local Support Equipment

Manufacturer	Description	Model	Serial Number
HP	Laptop	T41	99-KHVP2

2.5 Power Supply and Line Filters

Manufacturer	Description	Model	Serial Number
BK PRECISION	DC Power Supply	1612A	D185052265
HOP-ON	Tavel Charger	HOP-ON	WY1862842

3 SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§2.1047	Modulation Characteristics	N/A*
§2.1053 §22.917 (a) §24.238 (a)	Field Strength of Spurious Radiation	Compliant
§2.1093	RF Exposure	Compliant Please See SAR report R0809233-SAR
§2.1046 §22.913 §24.232	RF Output Power	Compliant
§2.1049 §22.917 (a)(b) §24.238 (a)(b)	Occupied Bandwidth	Compliant
§2.1051, §22.917 §24.238 (b)	Spurious Emissions at Antenna Terminals	Compliant
§2.1055 (a),(d) §22.355 §24.235	Frequency Stability vs. Temperature Frequency Stability vs. Voltage	Compliant
§22.917 §24.238	Band Edge	Compliant

Note: *According to FCC §2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

4 §2.1047 - MODULATION CHARACTERISTIC

4.1 Applicable Standard

According to FCC §2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

4.2 Results

N/A

5 §1.1307(b) (1) & §2.1093 - RF EXPOSURE

5.1 Applicable Standard

According to §1.1310 and §2.1093 RF exposure is required.

5.2 Test Result

The EUT is a hand portable device and thus requires SAR evaluation; please see BACL SAR Report R0809233-SAR for measurement and testing details.

6 §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS

6.1 Applicable Standard

Requirements: CFR 47, §2.1053, §22.917, §24.238.

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.

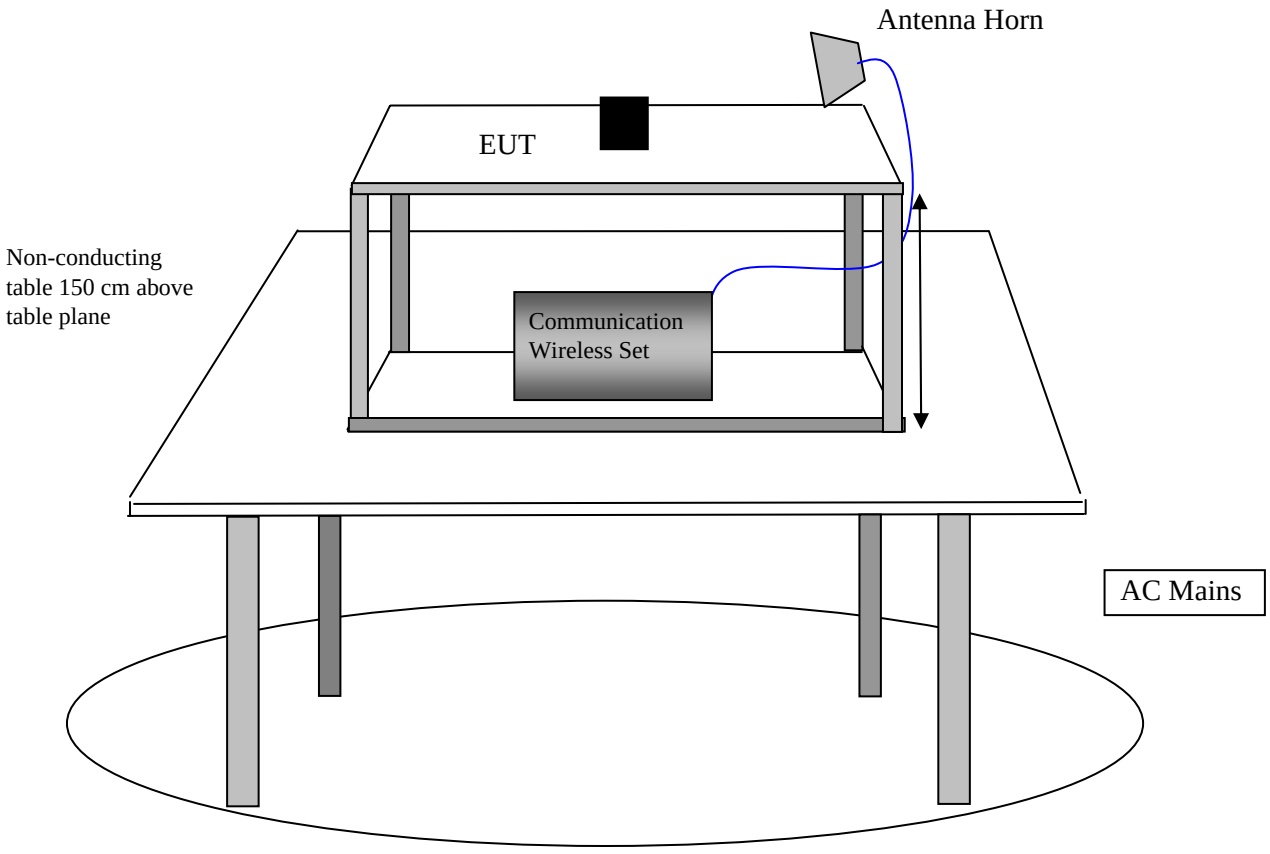
The frequency range up to tenth harmonic of the fundamental frequency was investigated.

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

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

6.3 Test setup Block Diagram for Radiated Emissions Tests



6.4 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
R & S	Communication, Radio Universal	CMU200	103492	2007-04-10*
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-05-07
Sunol Sciences	Antenna	JB1	A103105-3	2008-04-01
A.R.A	Horn Antenna	DRG-118/A	1132	2008-08-07
A. H. Systems	Antenna, Horn, DRG	SAS-200/571	261	2008-07-14
HP	Pre-Amplifier	8449B	3008A01978	2008-10-21
HP	Pre-Amplifier	8447D	2944A06639	2007-12-19

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

6.5 Environmental Conditions

Temperature:	21 °C ~ 25 °C
Relative Humidity:	40 % ~ 60 %
ATM Pressure:	101.1kPa ~ 101.6kPa

** Testing performed by Jack Liu on 2008-10-1 to 2008-10-7*

6.6 Summary of Test Results

Worst case reading as follows:

Cellular band PCS bands

Mode: Transmitting		
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**
-1.94	3760	Vertical

6.7 Test Data

Run # 1: 30MHz -10GHz Cellular Band Middle Channel (836.6 MHz)

Indicated		Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	Amp. (dBuV)		Height (m)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Antenna Cod. (dBi)	Cable Loss (dB)			
1673.2	70.39	155	2.3	H	1673.2	-34.07	8.8	1.05	-26.32	-13	-13.32
1673.2	66.73	360	2.0	V	1673.2	-39.95	8.8	1.05	-32.20	-13	-19.20
2510.0	57.25	140	1.4	V	2510.0	-44.44	8.9	1.37	-36.91	-13	-23.91
2510.0	53.10	210	1.7	H	2510.0	-51.37	8.9	1.37	-43.84	-13	-30.84
1500.0	47.98	0	1.0	V	1500.0	-58.70	8.8	0.96	-50.86	-13	-37.86
1500.0	44.48	0	1.0	H	1500.0	-59.98	8.8	0.96	-52.14	-13	-39.14

Run # 2: 30MHz -20GHz PCS Band Middle Channel (1880 MHz)

Indicated		Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	Amp. (dBuV)		Height (m)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Antenna Cod. (dBi)	Cable Loss (dB)			
3760	72.05	183	1.3	V	3760	-24.34	11.2	1.8	-14.94	-13	-1.94
3760	70.90	155	1.7	H	3760	-28.23	11.2	1.8	-18.83	-13	-5.83

7 §2.1046, §22.913(a) & §24.232 – RF OUTPUT POWER

7.1 Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (a), in no case may the peak output power of a base station transmitter exceed 2 watt.

7.2 Test Procedure

Conducted:

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

Radiated (ERP and EIRP):

TIA-603-C section 2.2.17

7.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
R & S	Communication, Radio Universal	CMU200	103492	2007-04-10*
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-05-07
Sunol Sciences	Antenna	JB1	A103105-3	2008-04-01
A.R.A	Horn Antenna	DRG-118/A	1132	2008-08-07
A. H. Systems	Antenna, Horn, DRG	SAS-200/571	261	2008-07-14
HP	Pre-Amplifier	8449B	3008A01978	2008-10-21
HP	Pre-Amplifier	8447D	2944A06639	2007-12-19

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

7.4 Environmental Conditions

Temperature:	21 °C ~ 25 °C
Relative Humidity:	40 % ~ 60 %
ATM Pressure:	101.1kPa ~ 101.6kPa

** Testing performed by Jack Liu on 2008-10-1 to 2008-10-7*

7.5 Summary of Test Results

Conducted Power

Cellular Band Part 22H:

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (dBm)
Low	824.2	32.52	1786	38.45
Middle	836.6	32.46	1761	38.45
High	848.8	32.36	1721	38.45

PCS Band Part 24E:

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (dBm)
Low	1850.2	30.69	1172	33
Middle	1880.0	30.43	1104	33
High	1909.8	29.84	963	33

Radiated Power (ERP and EIRP)

Cellular Band Part 22H:

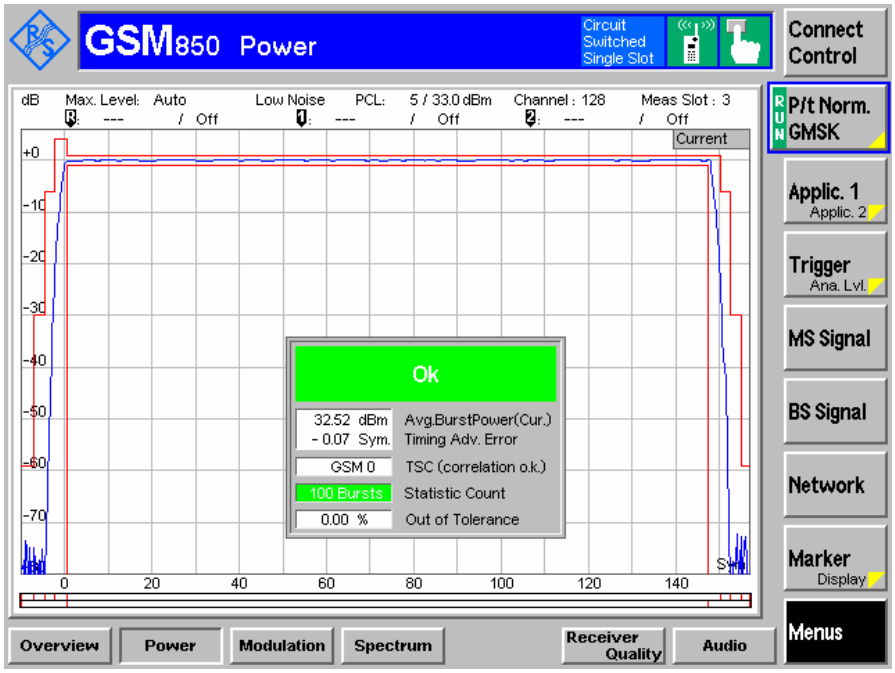
Indicated		Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	Amp. (dBuV)		Height (m)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Antenna Gain Correction	Cable Loss (dB)			
824.2	104.79	140	120	V	824.2	32.44	0	0.65	31.79	38.45	-6.66
836.6	103.29	140	150	V	836.6	30.64	0	0.65	29.99	38.45	-8.46
848.8	101.96	140	150	V	848.8	29.38	0	0.65	28.73	38.45	-9.72
824.2	98.19	140	100	H	824.2	24.24	0	0.65	23.59	38.45	-14.86
836.6	96.52	140	100	H	836.6	23.00	0	0.65	22.35	38.45	-16.10
848.8	94.57	140	100	H	848.8	21.01	0	0.65	20.36	38.45	-18.09

PCS Band Part 24E:

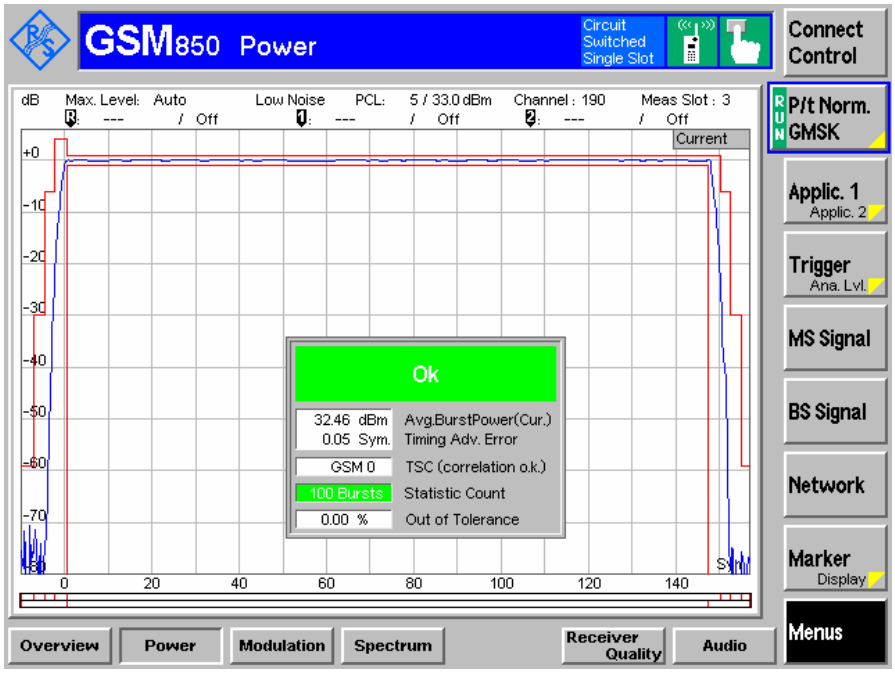
Indicated		Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	Amp. (dBuV)		Height (m)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Antenna Gain Correction	Cable Loss (dB)			
1850.2	85.12	154	1.9	H	1850.2	19.47	9.5	1.09	27.88	33	-5.12
1850.2	85.72	190	1.0	V	1850.2	19.35	9.5	1.09	27.76	33	-5.24
1880.0	84.21	154	1.9	H	1880.0	18.44	9.0	1.14	26.30	33	-6.70
1880.0	83.70	190	2.5	V	1880.0	17.37	9.0	1.14	25.23	33	-7.77
1909.8	82.12	151	2.1	H	1909.8	16.36	9.0	1.14	24.22	33	-8.78
1909.8	80.94	275	2.3	V	1909.8	14.76	9.0	1.14	22.62	33	-10.38

Plots of Conducted Output Power for Part 22H

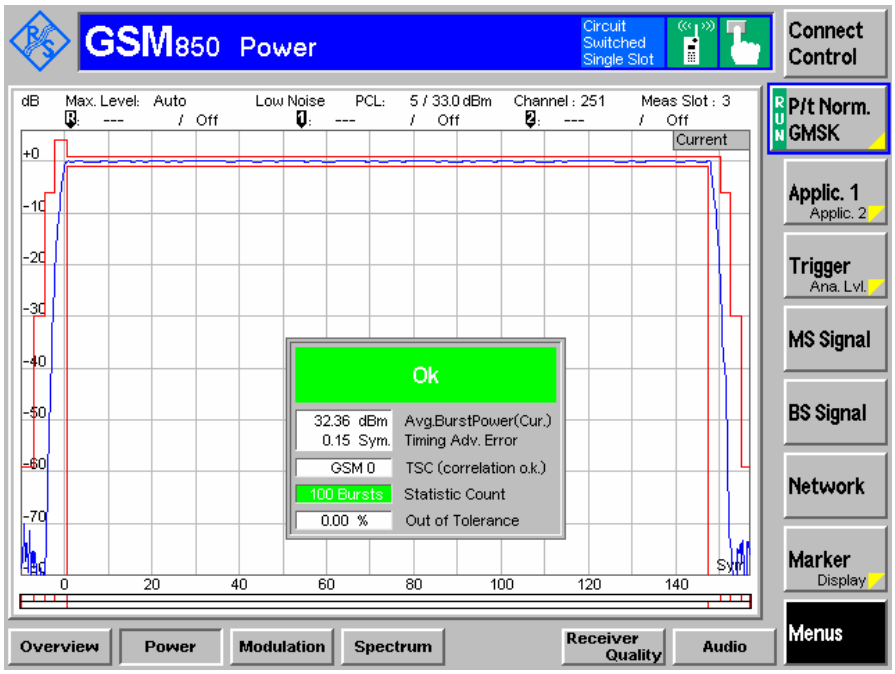
Low Channel



Middle Channel

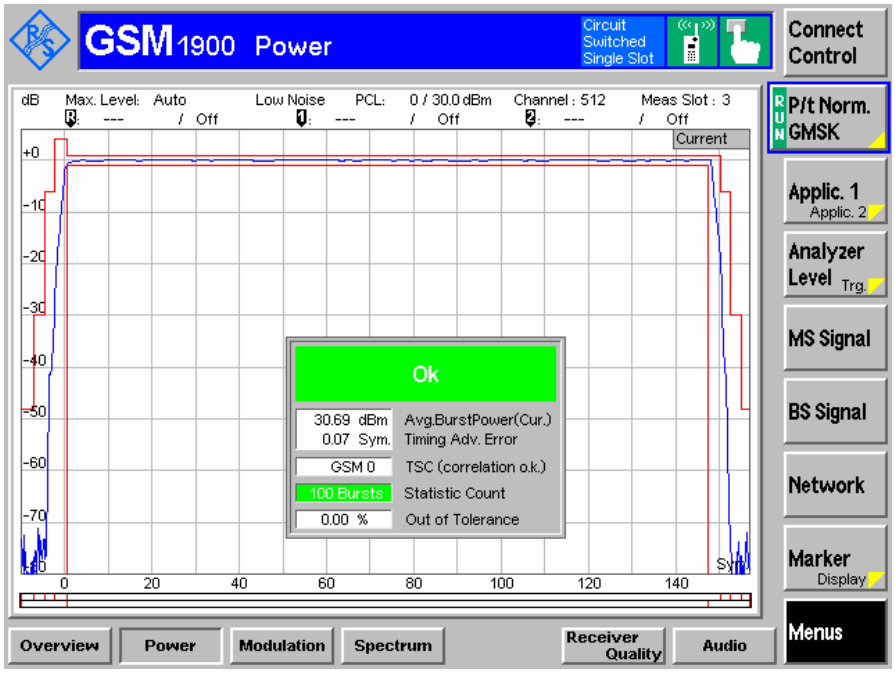


High Channel

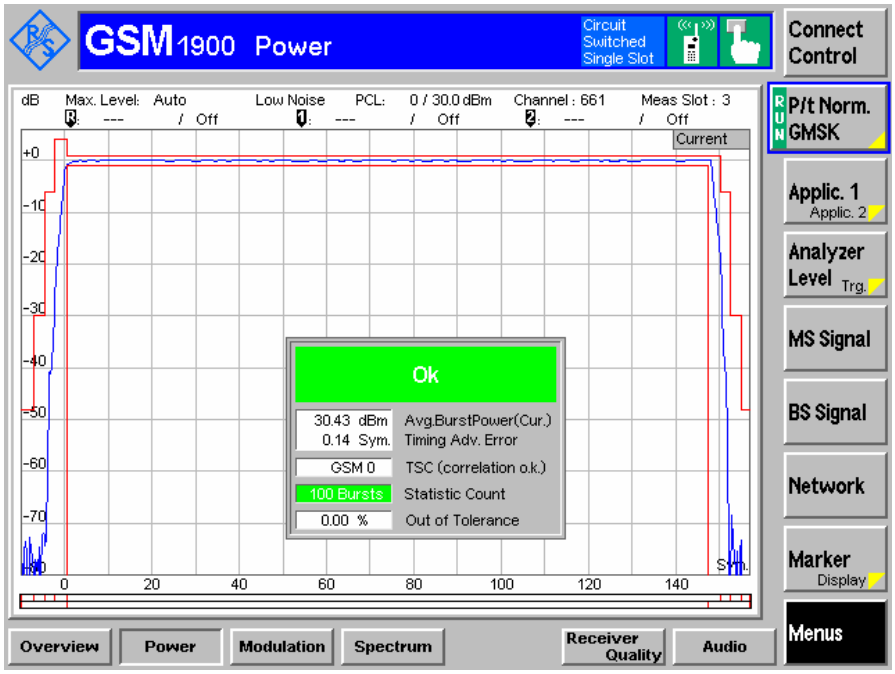


Plots of Conducted Output Power for Part 24E

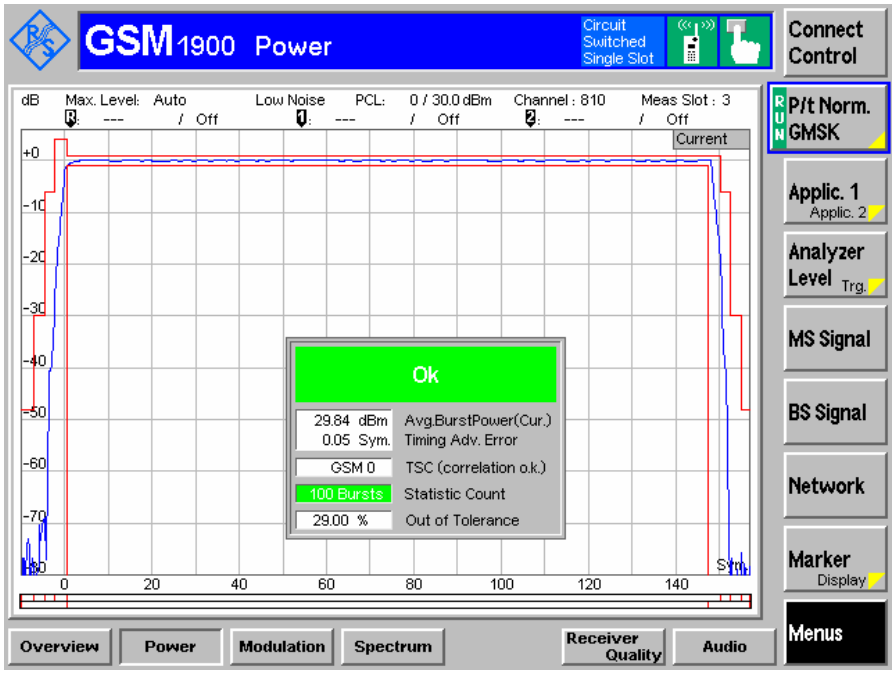
Low Channel



Middle Channel



High Channel



8 §2.1049, §22.917, §22.905 & §24.238 - OCCUPIED BANDWIDTH

8.1 Applicable Standard

Requirements: CFR 47, Section 2.1049, Section 22.901, Section 22.917 and Section 24.238.

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 3 kHz (Cellular /PCS) and the -26 dB bandwidth was recorded.

8.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
R & S	Communication, Radio Universal	CMU200	103492	2007-04-10*
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-05-07

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

8.4 Environmental Conditions

Temperature:	21 °C ~ 25 °C
Relative Humidity:	40 % ~ 60 %
ATM Pressure:	101.1kPa ~ 101.6kPa

** Testing performed by Jack Liu on 2008-10-1 to 2008-10-7*

8.5 Summary of Test Results

Cellular Band Part 22H:

Channel	Frequency (MHz)	26 dB Bandwidth (kHz)	99% Bandwidth (kHz)
Low	824.2	317.013	244.2975
Middle	836.6	314.978	245.2668
High	848.8	313.688	242.0026

PCS Band Part 24E:

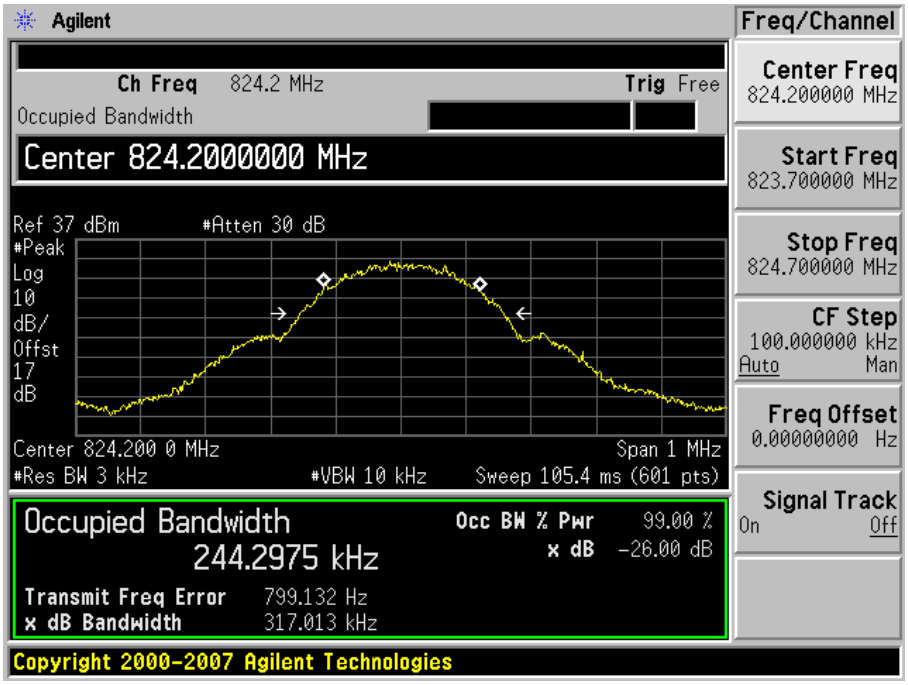
Channel	Frequency (MHz)	26 dB Bandwidth (kHz)	99% Bandwidth (kHz)
Low	1850.2	311.661	246.4210
Middle	1880.0	316.130	246.4555
High	1909.8	312.933	242.2969

8.6 Test Data & Plots

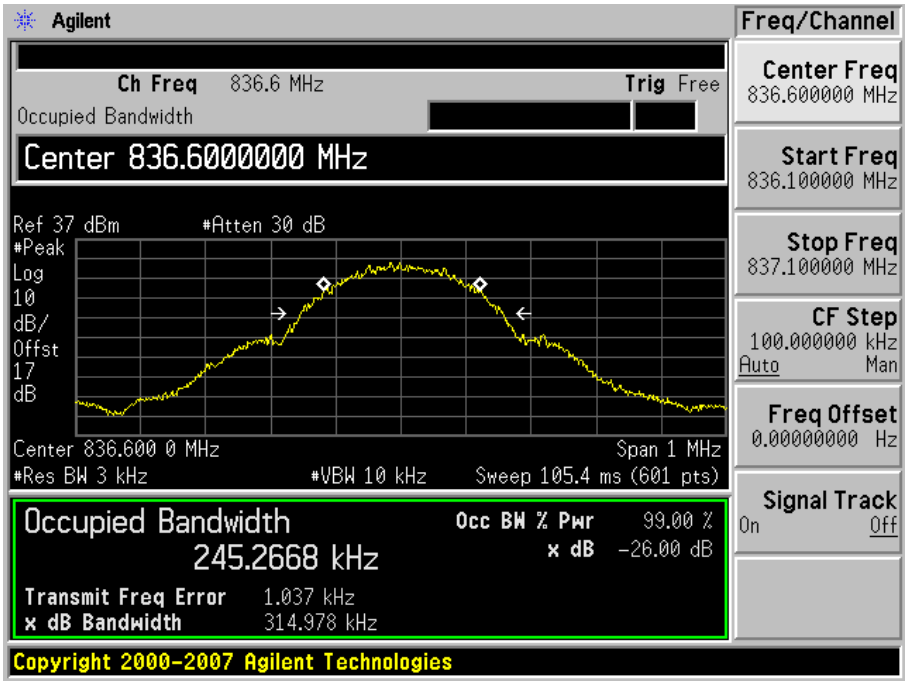
Please refer to the following plots.

Plots of Occupied Bandwidth for Part 22H

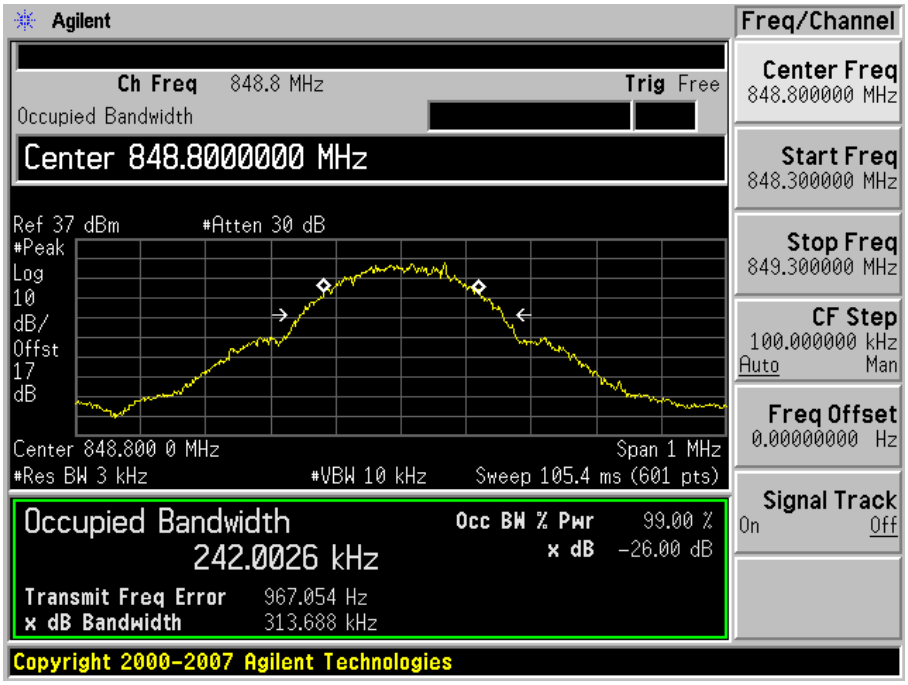
Low Channel



Middle Channel

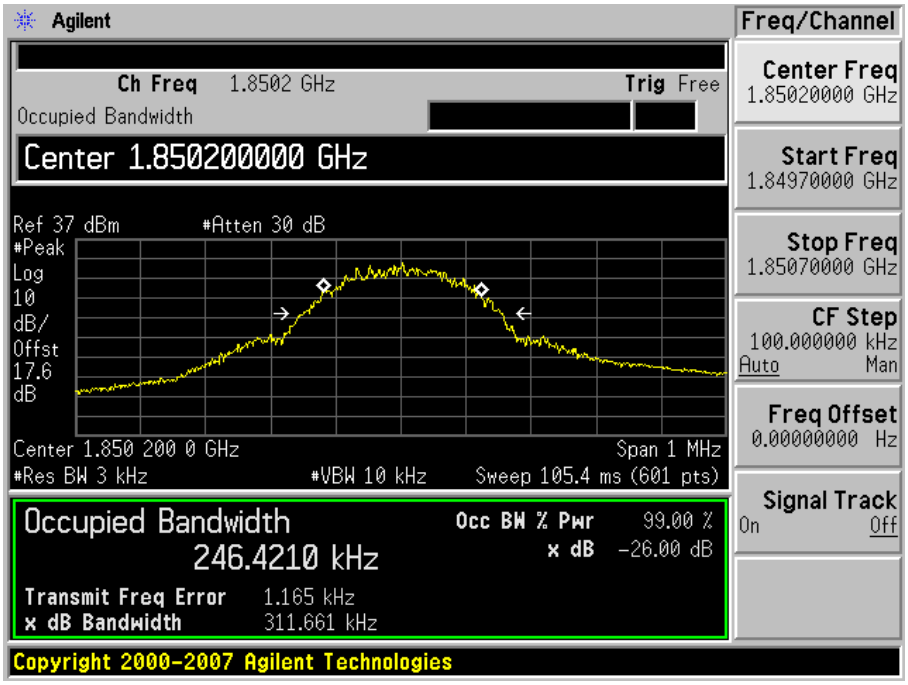


High Channel

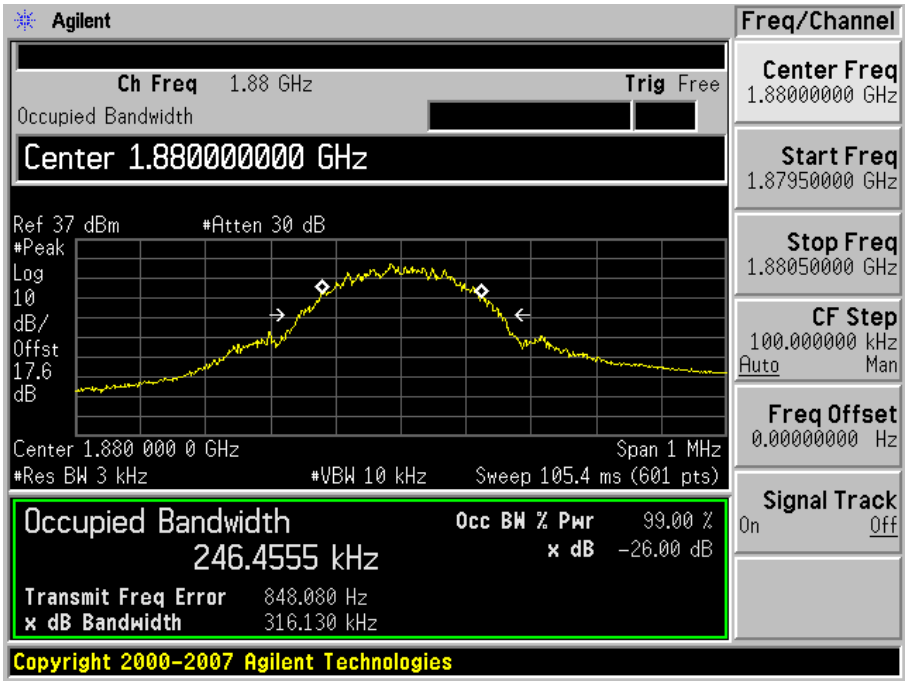


Plots of Occupied Bandwidth for Part 24E

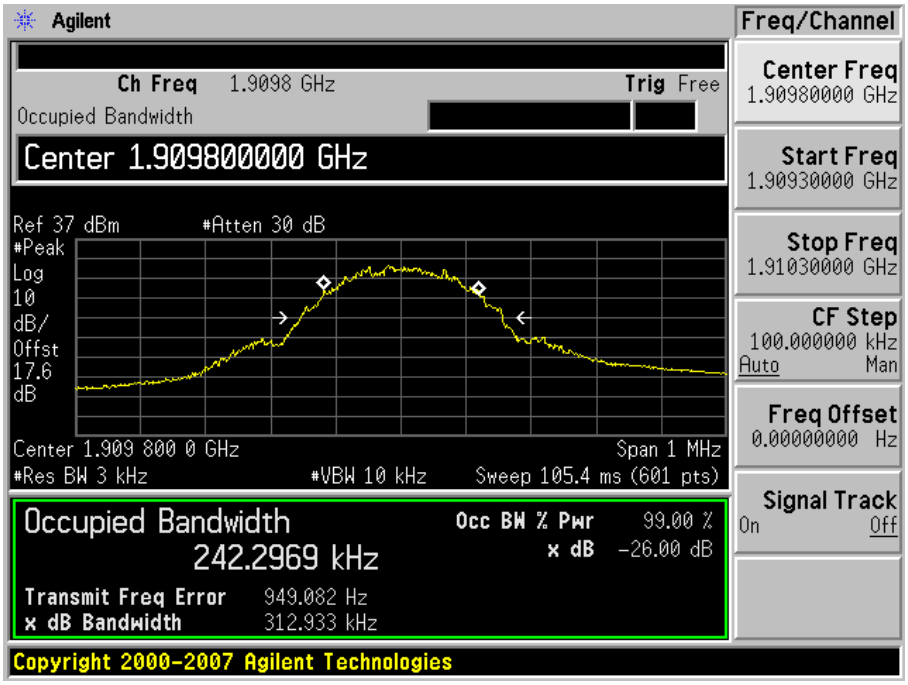
Low Channel



Middle Channel



High Channel



9 §2.1051, §22.917 & §24.238(a) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

9.1 Applicable Standard

Requirements: CFR 47, § 2.1051. § 22.917 & §24.238(a).

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 10^{th} harmonic.

9.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
R & S	Communication, Radio Universal	CMU200	103492	2007-04-10*
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-05-07

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

9.4 Environmental Conditions

Temperature:	21 °C ~ 25 °C
Relative Humidity:	40 % ~ 60 %
ATM Pressure:	101.1kPa ~ 101.6kPa

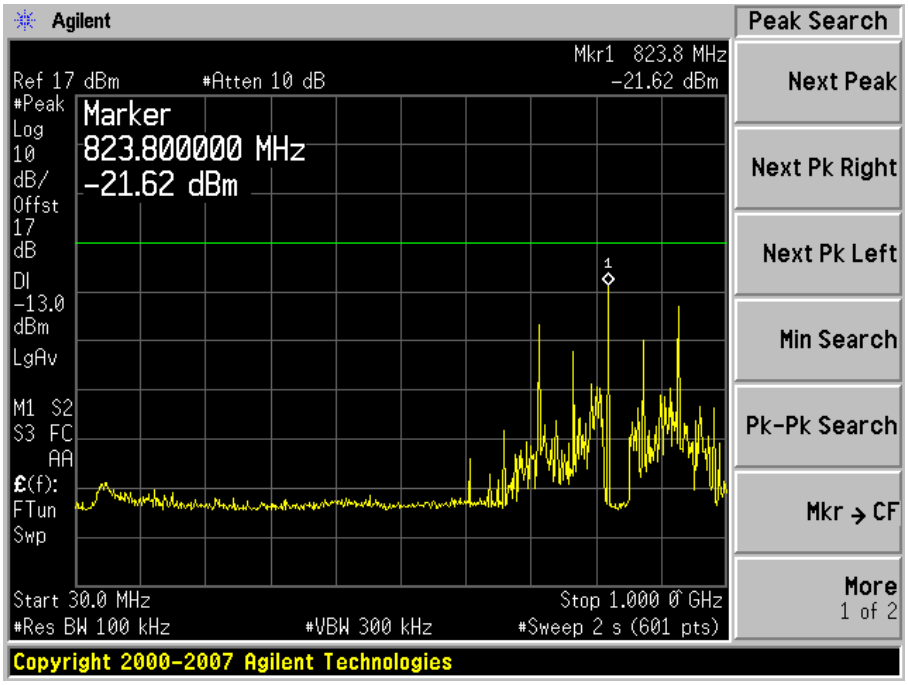
** Testing performed by Jack Liu on 2008-10-1 to 2008-10-7*

9.5 Test Results

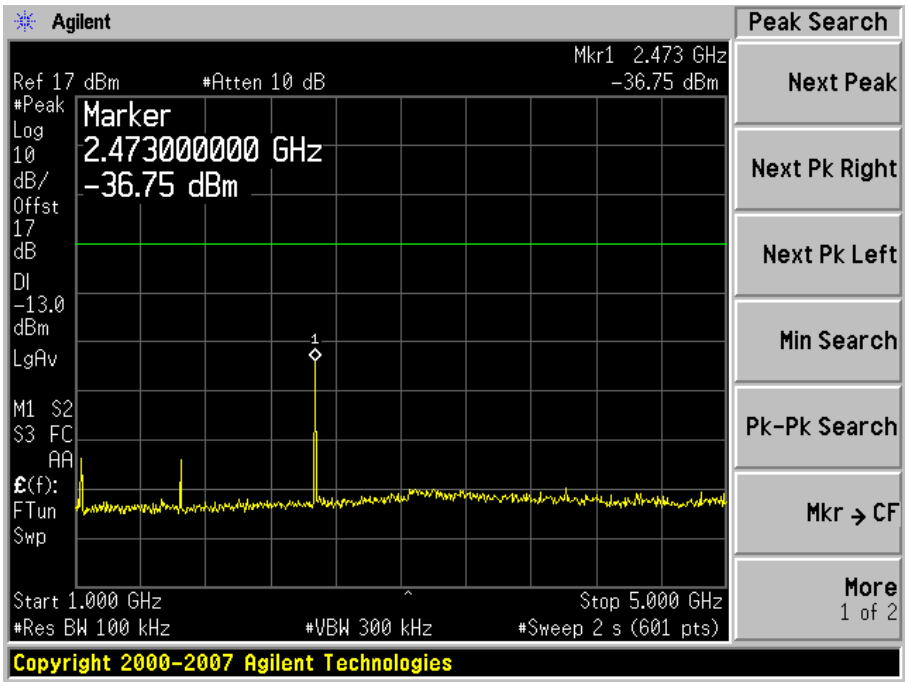
Please refer to the plots featured hereinafter

Plots of Spurious Emissions for Part 22H

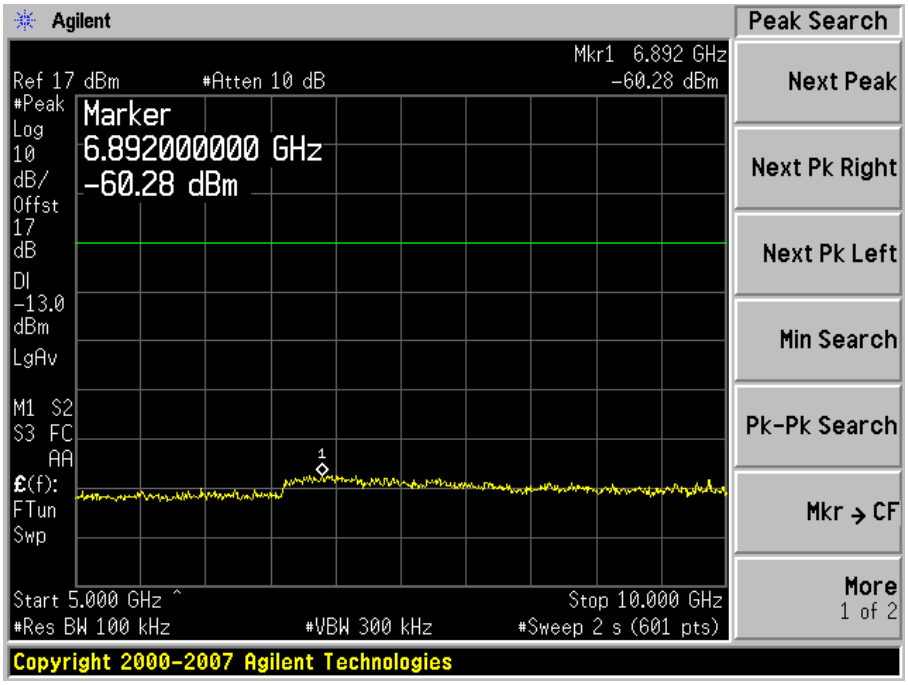
Low Channel (f =824.2 MHz)



Plot 1a: 30 MHz – 1 GHz

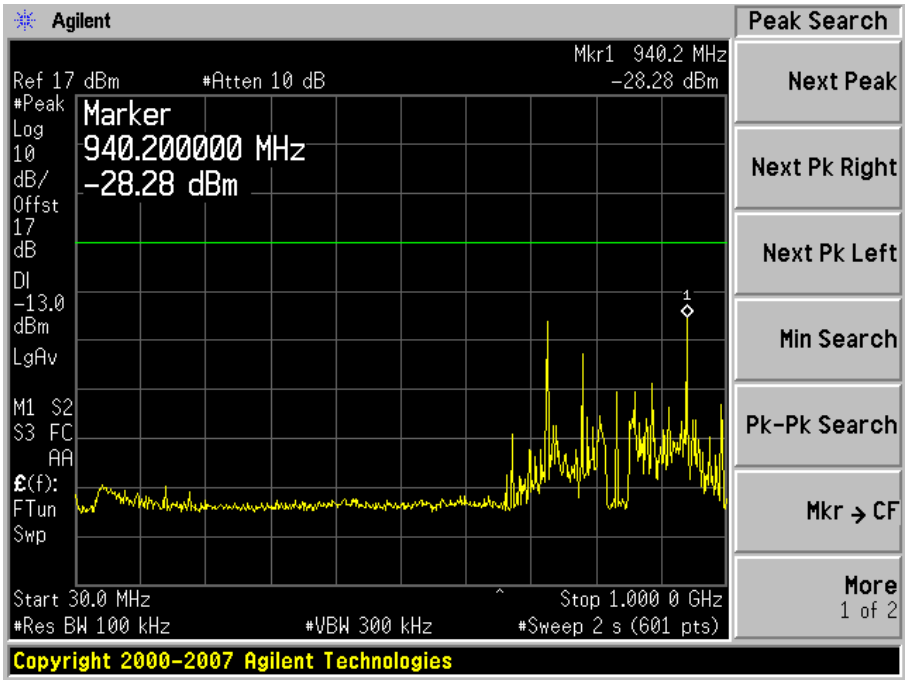


Plot 2a: 1 – 5 GHz

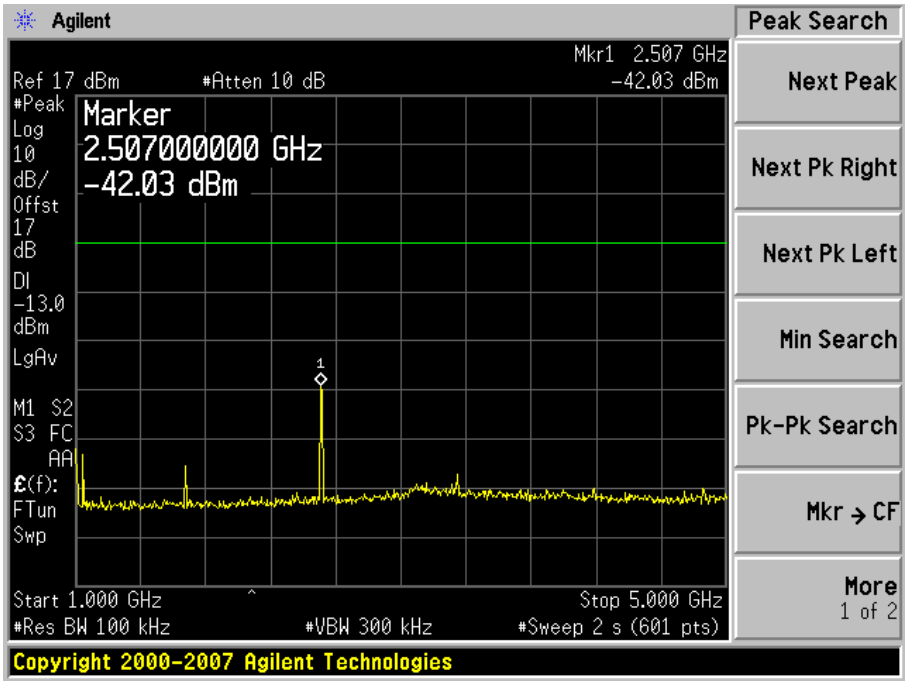


Plot 3a: 5 – 10 GHz

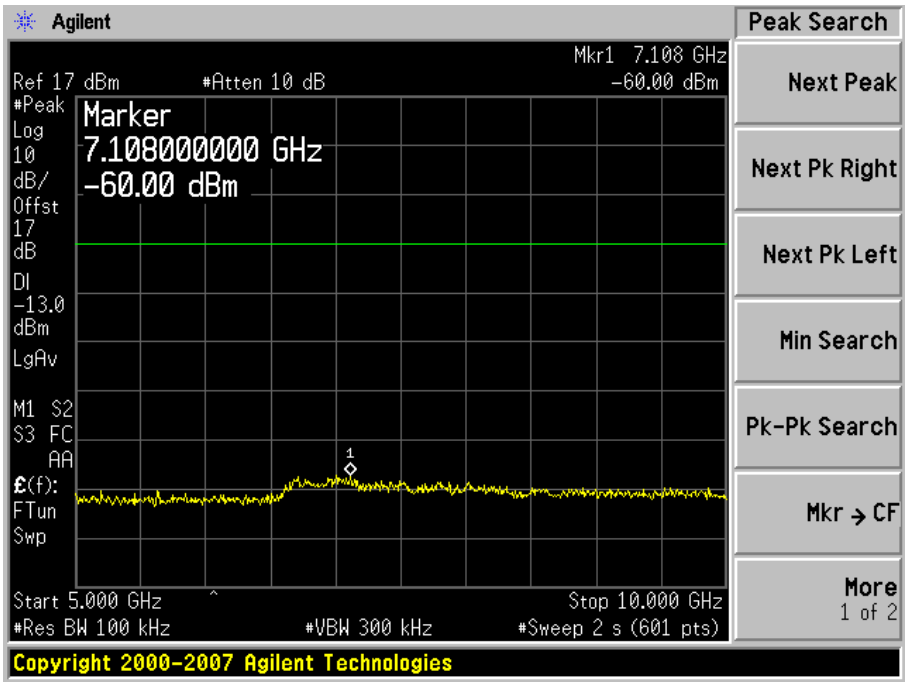
Middle Channel (f = 836.6 MHz)



Plot 1b: 30 MHz – 1 GHz

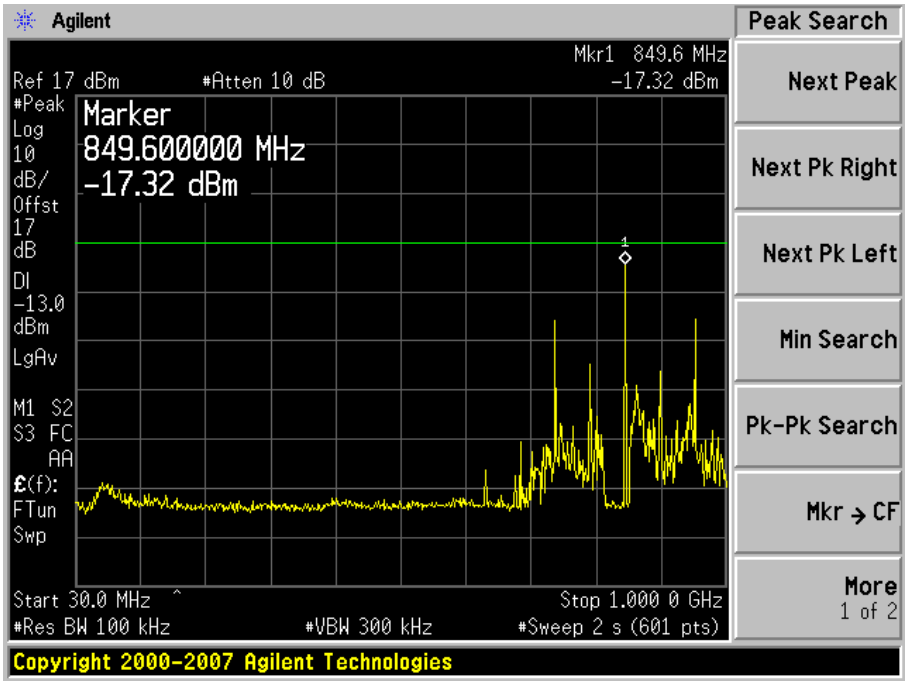


Plot 2b: 1 – 5 GHz

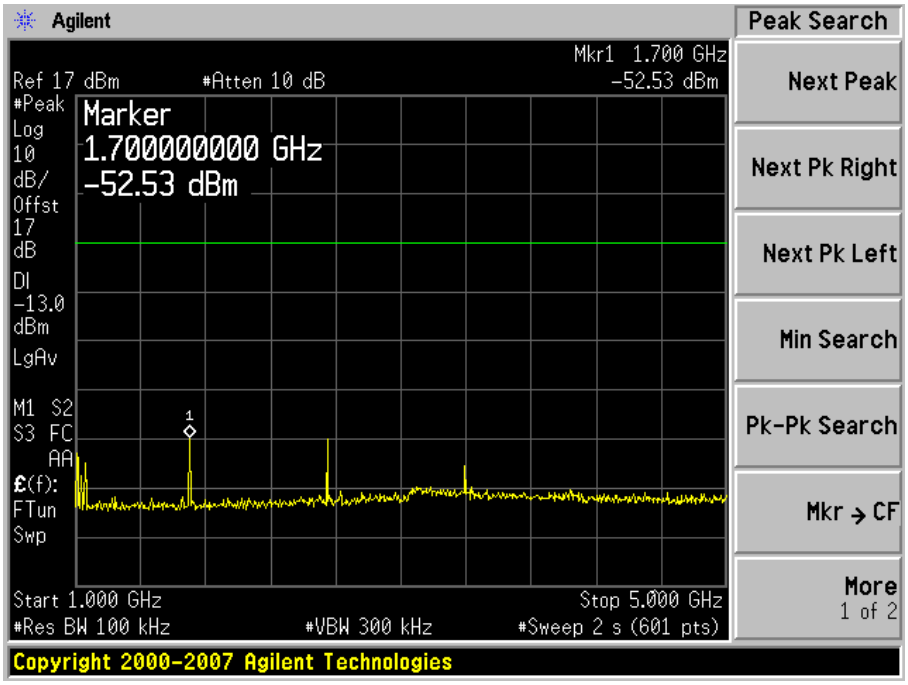


Plot 3b: 5 – 10 GHz

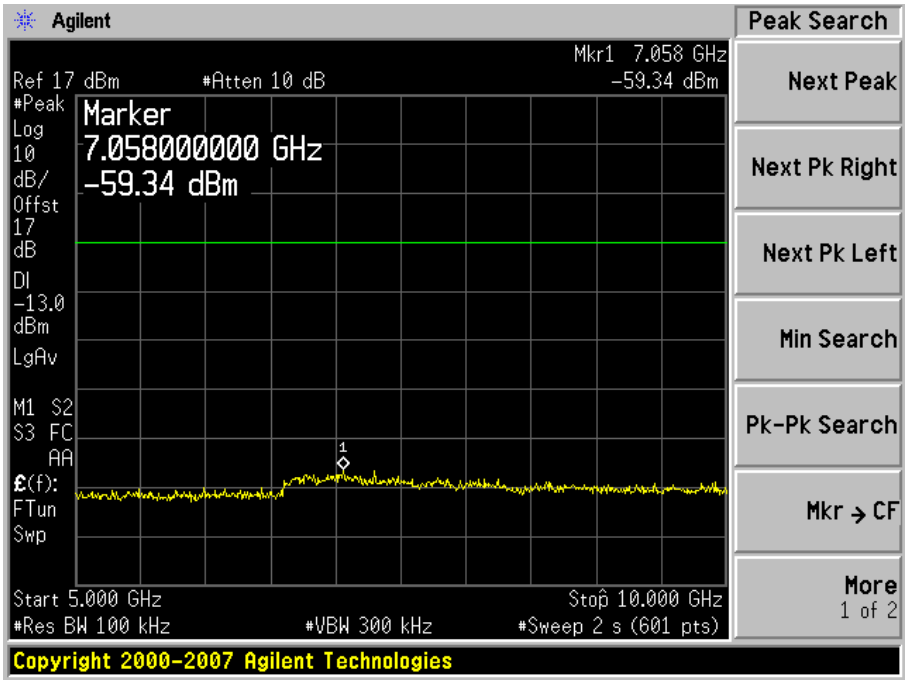
High Channel (f = 848.8 MHz)



Plot 1c: 30 MHz – 1 GHz



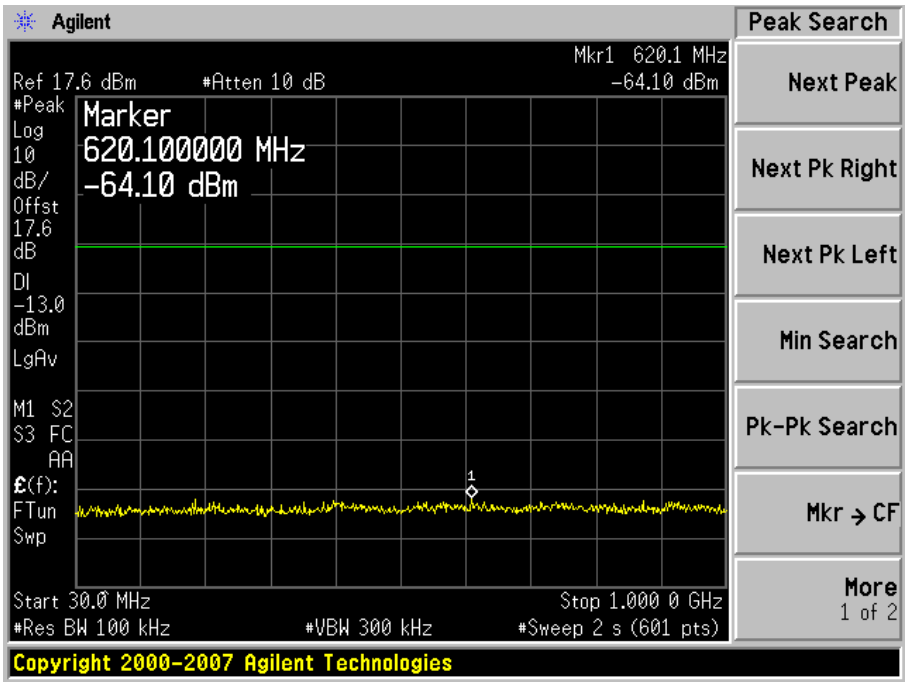
Plot 2c: 1 – 5 GHz



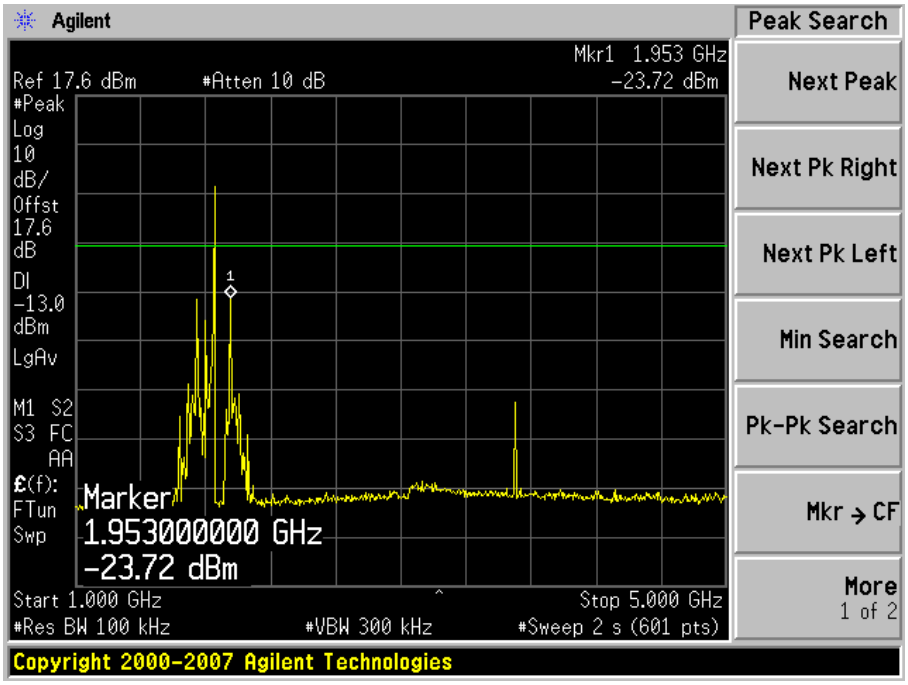
Plot 3c: 5 – 10 GHz

Plots of Spurious Emissions for Part 24E

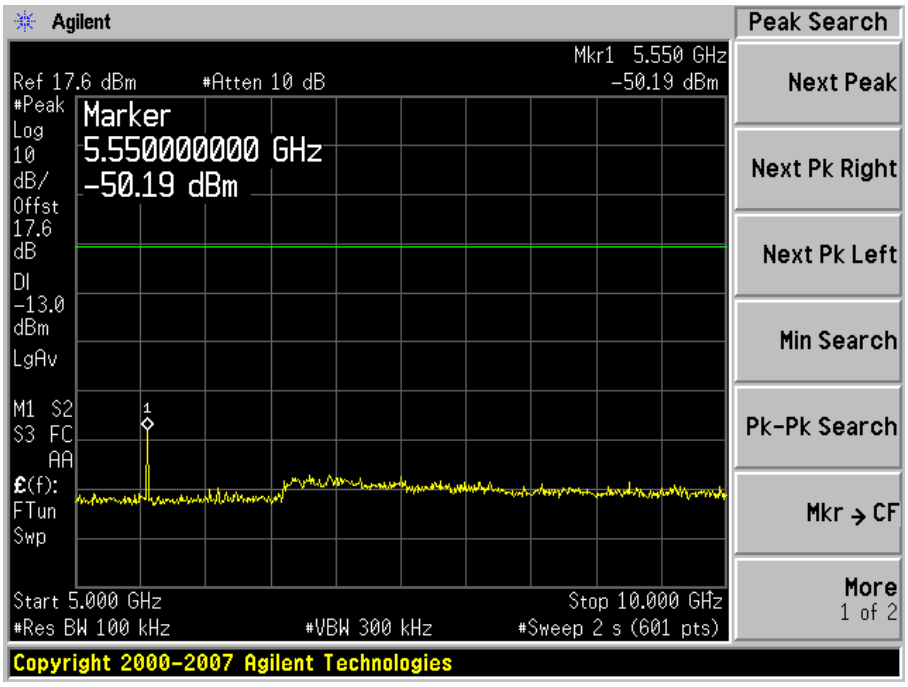
Low Channel (f = 1850.2 MHz)



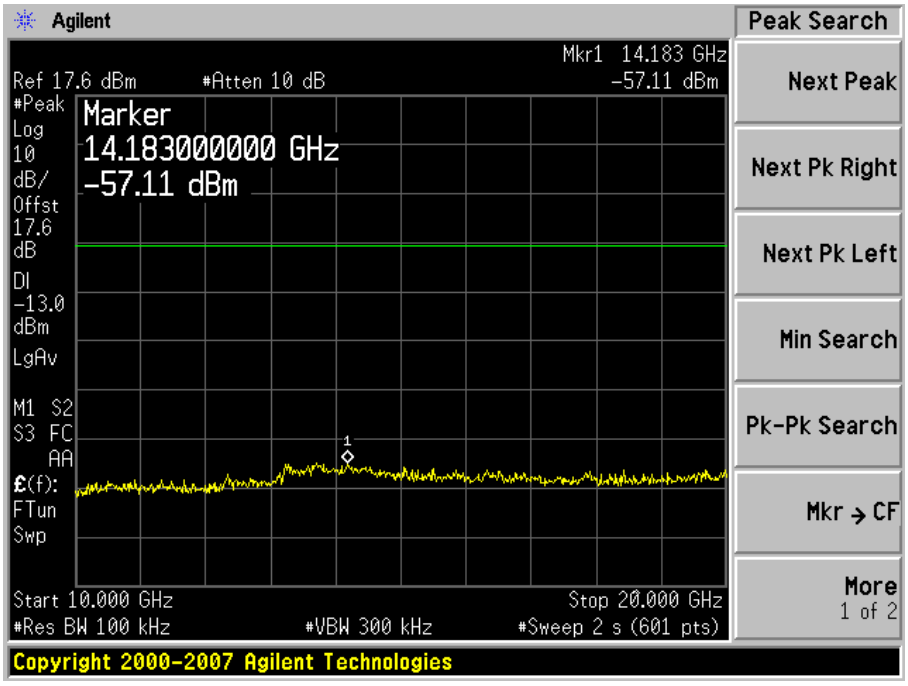
Plot 1d: 30 MHz – 1 GHz



Plot 2d: 1 – 5 GHz

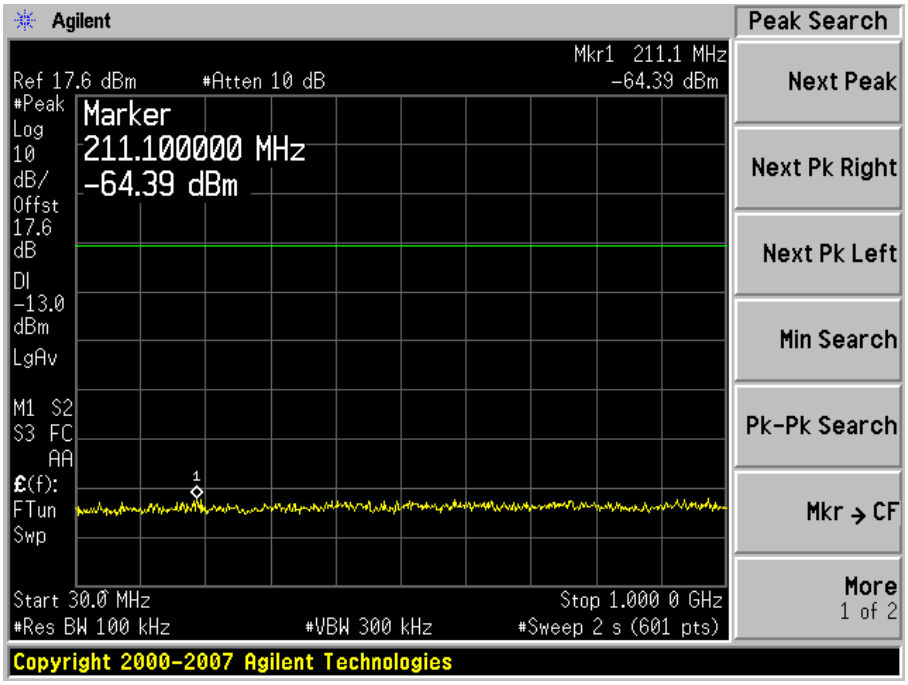


Plot 3d: 5 – 10 GHz

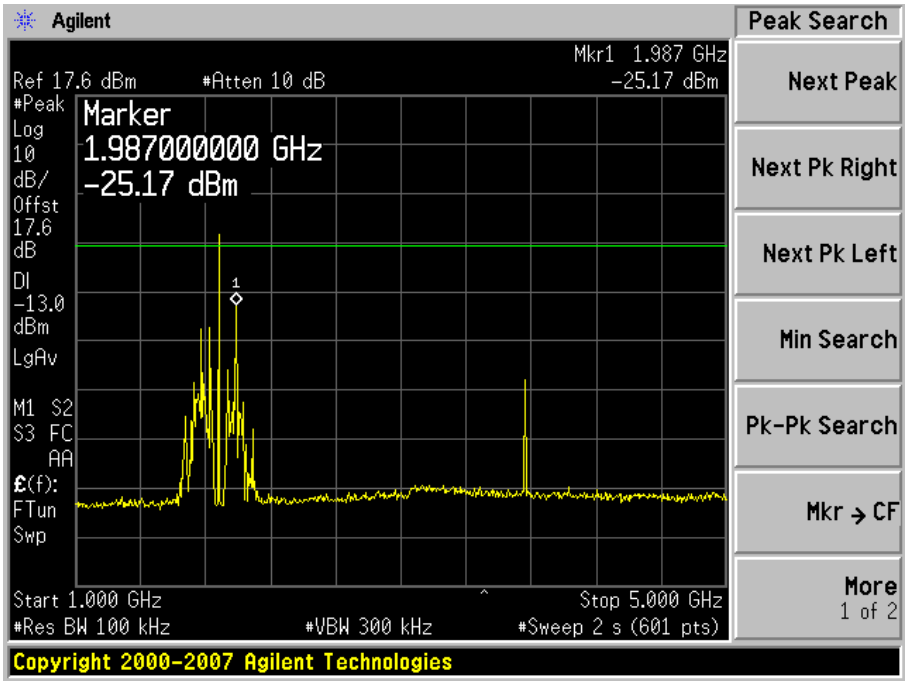


Plot 4d: 10 – 20 GHz

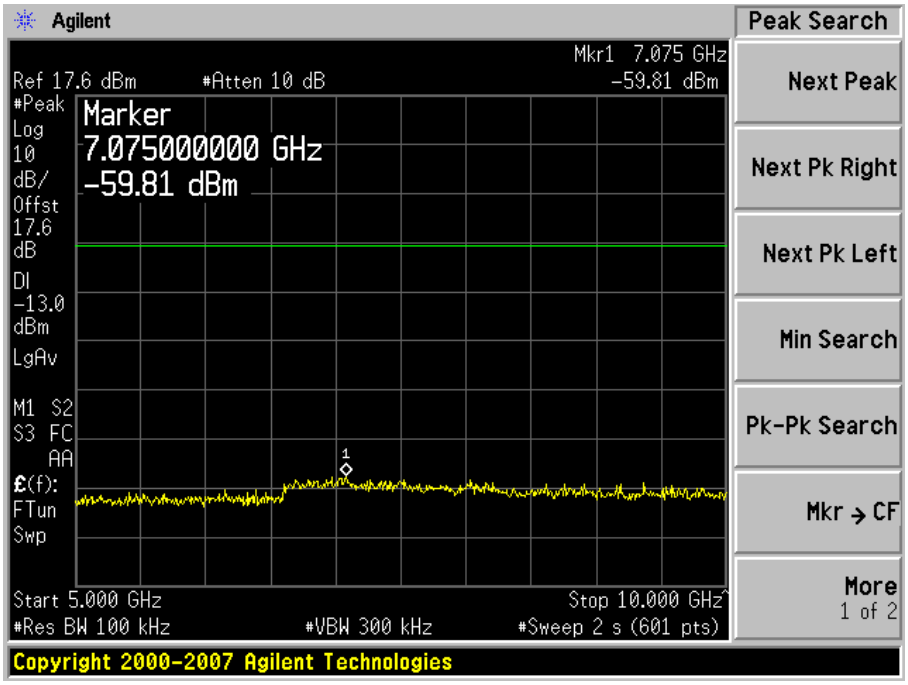
Middle Channel (f = 1880 MHz)



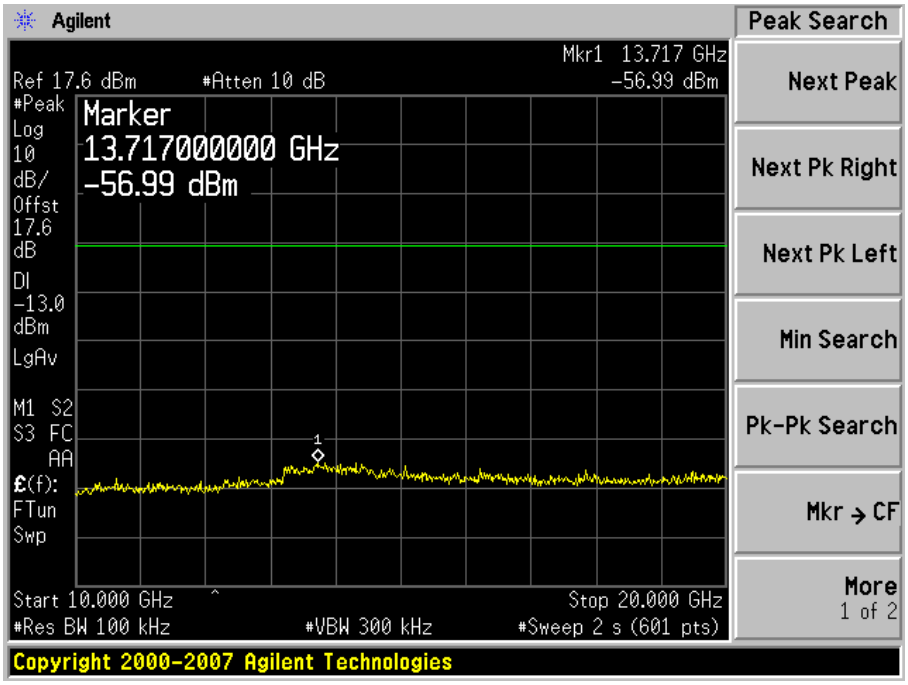
Plot 1e: 30 MHz – 1 GHz



Plot 2e: 1 – 5 GHz

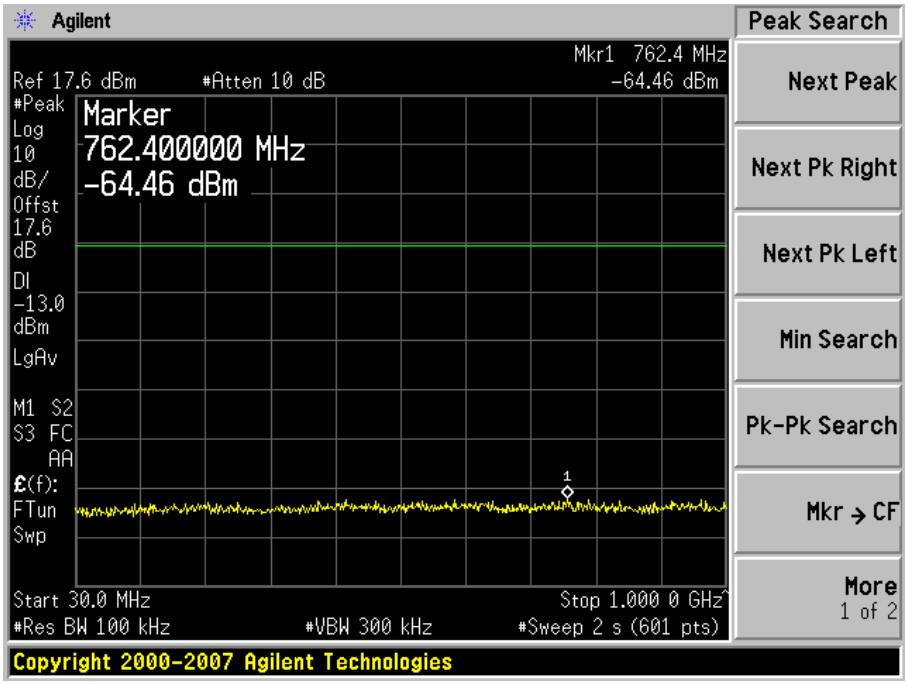


Plot 3e: 5 – 10 GHz

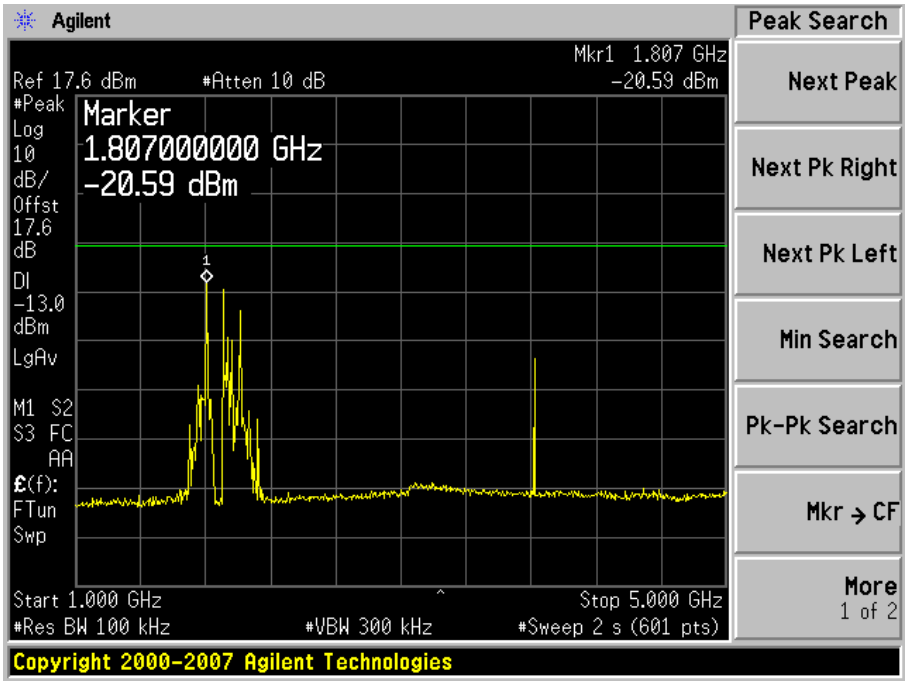


Plot 4e: 10 – 20 GHz

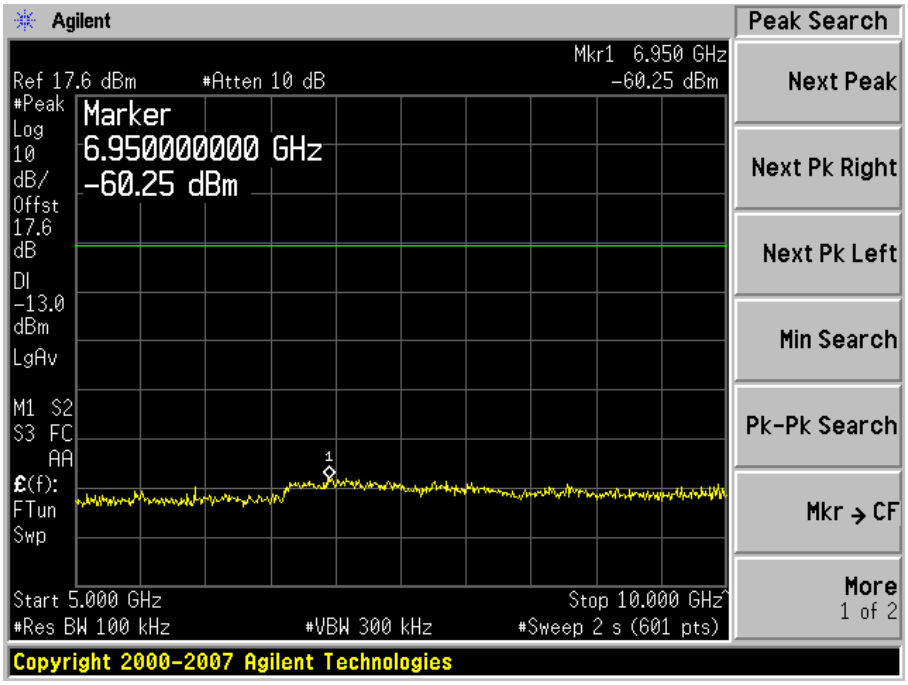
High Channel (f = 1909.8 MHz)



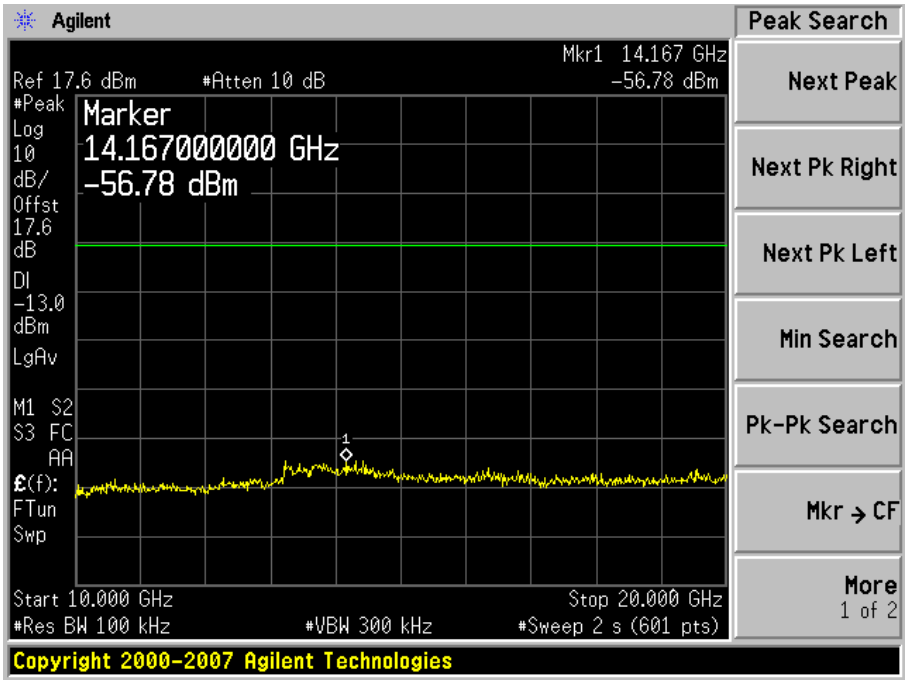
Plot 1f: 30 – 1 GHz



Plot 2f: 1 – 5 GHz



Plot 3f: 5 – 10 GHz



Plot 4f: 10 – 20 GHz

10 §2.1055 (a), §2.1055 (d), §22.355 & §24.235 - FREQUENCY STABILITY

10.1 Applicable Standard

Requirements: FCC § 2.1055 (a), § 2.1055 (d) & following:

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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 communication test set 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 communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.

10.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
ESPEC	Temp/ Humidity chamber	ESL-4CA	018010	2008-01-02
R & S	Communication, Radio Universal	CMU200	103492	2007-04-10*
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-05-07

** 2-year calibration cycle*

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

10.4 Environmental Conditions

Temperature:	21 °C ~ 25 °C
Relative Humidity:	40 % ~ 60 %
ATM Pressure:	101.1kPa ~ 101.6kPa

** Testing performed by Jack Liu on 2008-10-1 to 2008-10-7*

10.5 Test Results

Cellular Band Part 22H:

Frequency Stability versus Temperature (battery operated mode)

Reference Frequency: 836.6 MHz, Limit: 2.5ppm				
Environment Temperature (°C)	**Power Supplied (Vdc)**	**Frequency Measure with Time Elapsed**		
		Measured Frequency (Hz)	**Frequency Error (Hz)**	**Error (ppm)**
50	3.7	836600008	8	0.009562515
40	3.7	836600009	9	0.010757829
30	3.7	836600005	5	0.005976572
20	3.7	836600004	4	0.004781257
10	3.7	836600004	4	0.004781257
0	3.7	836600006	6	0.007171886
-10	3.7	836600007	7	0.008367201
-20	3.7	836600008	8	0.009562515
-30	3.7	836600005	5	0.005976572

Frequency Stability versus Voltage (battery operated mode)

Reference Frequency: 836.6 MHz, Limit: 2.5ppm				
Environment Temperature (°C)	**Power Supplied (Vdc)**	**Measured Frequency (Hz)**	**Frequency Error (Hz)**	**Error (ppm)**
20	3.3	836600009	9	0.010757829
20	4.2	836600006	6	0.007171886

PCS Band Part 24E:

Frequency Stability versus Temperature (battery operated mode)

Reference Frequency: 1880.0 MHz, Limit: 2.5ppm				
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed		
		Measured Frequency (Hz)	Frequency Error (Hz)	Error (ppm)
50	3.7	1880000028	28	0.014893617
40	3.7	1880000026	26	0.013829787
30	3.7	1880000030	30	0.015957447
20	3.7	1880000025	25	0.013297872
10	3.7	1880000025	25	0.013297872
0	3.7	1880000023	23	0.012234043
-10	3.7	1880000033	33	0.017553191
-20	3.7	1880000031	31	0.016489362
-30	3.7	1880000030	30	0.015957447

Frequency Stability versus Voltage (battery operated mode)

Reference Frequency: 1880.0 MHz, Limit: 2.5ppm				
Environment Temperature (°C)	Power Supplied (Vdc)	Measured Frequency (Hz)	Frequency Error (Hz)	Error (ppm)
20	3.3	1880000029	29	0.015425532
20	4.2	1880000031	31	0.016489362

11 §22.917 & §24.238 – BAND EDGE

11.1 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.

According to §24.238, 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.

11.2 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.

11.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
R & S	Communication, Radio Universal	CMU200	103492	2007-04-10*
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-05-07

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

11.4 Environmental Conditions

Temperature:	21 °C ~ 25 °C
Relative Humidity:	40 % ~ 60 %
ATM Pressure:	101.1kPa ~ 101.6kPa

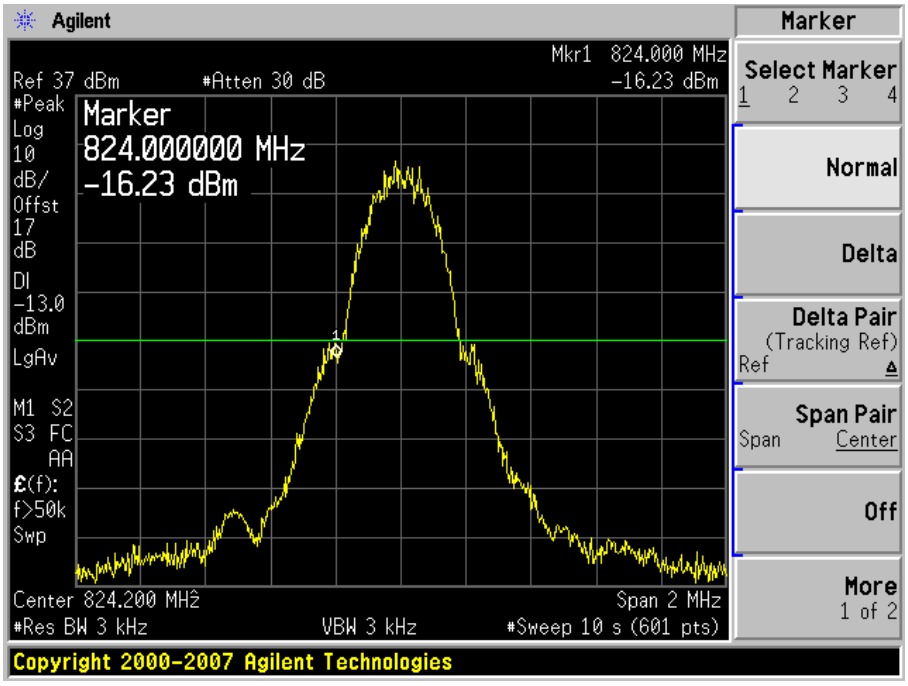
** Testing performed by Jack Liu on 2008-10-1 to 2008-10-7*

11.5 Test Results

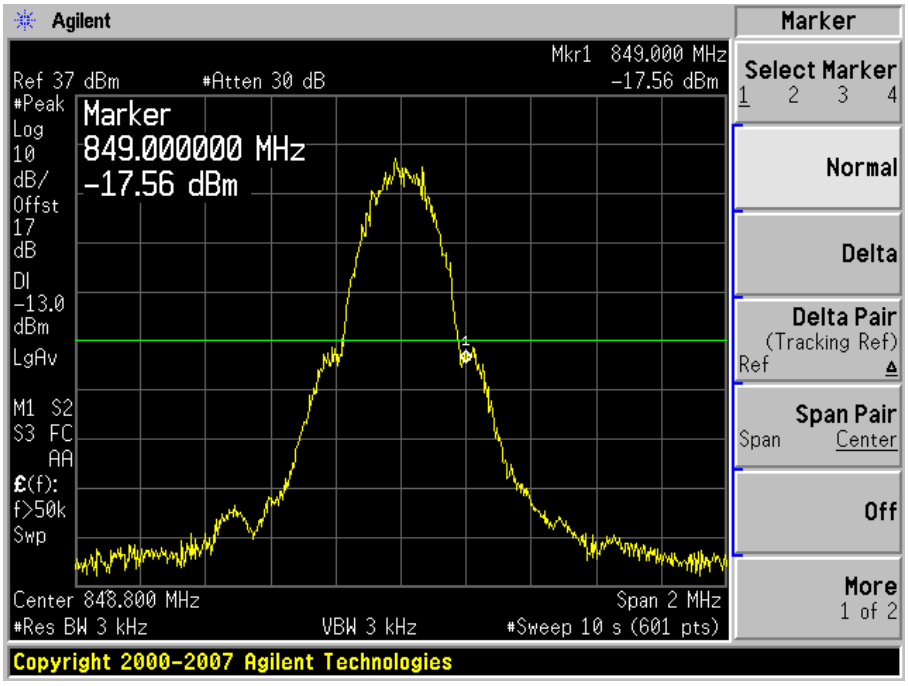
Please refer to the following plots.

Plots of Band Edge for Part 22H

Lowest Channel

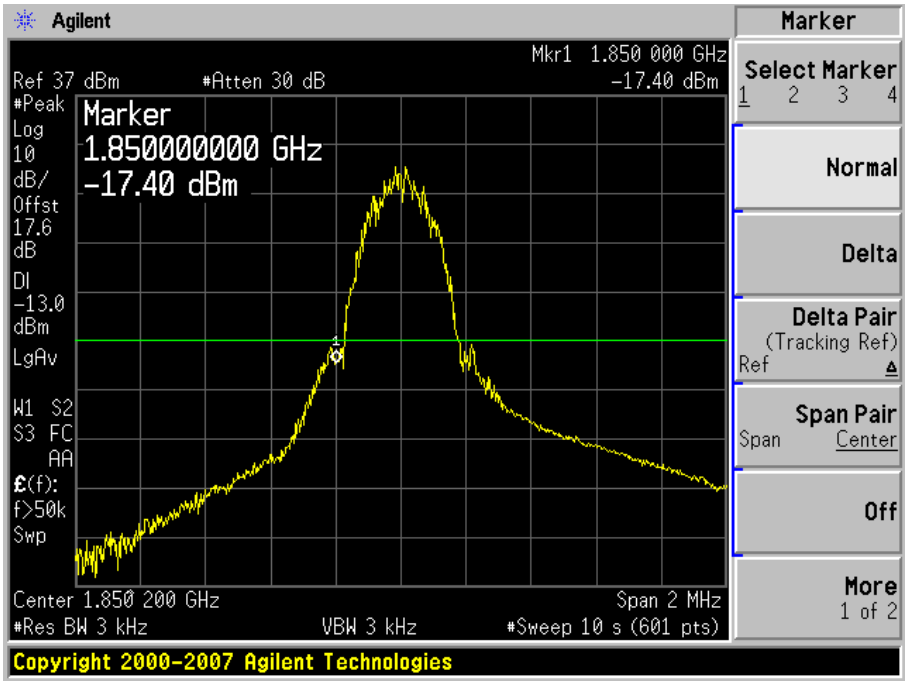


Highest Channel



Plots of Band Edge for Part 24E

Lowest Channel



Highest Channel