

FCC PART 22, 24 TYPE APPROVALS

EMI MEASUREMENT AND TEST REPORT

For

AnyDATA Corporation

18902 Bardeen Ave.
Irvine, CA 92612

FCC ID: P4M-DTEVDUAL

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: 850/1900MHZ CDMA Modular
	
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Report No.: <u>R0512053</u>	
Report Date: <u>2006-1-13</u>	
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Note: This test report is specially limited to the above client company and this particular sample only. It may not be duplicated without prior written consent of Bay Area Compliance Laboratory Corporation. This report **must not** be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the U.S. Government.

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *AnyDATA Corporation.*’s product, FCC ID: P4M-DTEVDUAL or the “EUT” as referred to in this report is a CDMA Modular, which measures approximately 67mmL x 42mmW x 3.0mmH.

** The test data gathered are from typical production sample, serial number: 002 provided by the manufacturer.*

Objective

This type approval report is prepared on behalf of *AnyDATA Corporation* 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 emission at antenna terminal, field strength of spurious radiation, frequency stability, band edge, and conducted and radiated margin.

Related Submittal(s)/Grant(s)

No Related Submittals

Test Methodology

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

Part 22 Subpart H - Public Mobile Services

Part 24 Subpart E - PCS

Applicable Standards: TIA EIA 98-C, TIA603-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.

Test Facility

The Open Area Test site used by BACL Corp. to collect radiated and conducted emission measurement data is located in the back parking lot of the building at 230 Commercial Street, Sunnyvale, California, USA with registration number: 90464.

Test site at BACL Corp. has 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 test methods and procedures set forth in ANSI C63.4-2003& TIA/EIA-603.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC 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 is attached hereinafter and can also be found at
<http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm>

SYSTEM TEST CONFIGURATION

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.

Block Diagram

Please refer to Exhibit D.

Equipment Modifications

No modifications were made to the EUT.

Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
Agilent	Wireless communication test set	8960	GB 44051221	DOC
BK Precision	DC Power supply	1740	26502000233	N/A
Dell	Laptop	Inspiron 300M	CN-0X0024-36521-377-000F	N/A

Interface Ports and Cabling

Cable Description	Length (M)	From	To
Power cable	0.4	DC Power supply	EUT
Data cable	0.5	Laptop	EUT

SUMMARY OF TEST RESULTS

FCC RULE	DESCRIPTION OF TEST	RESULT
§ 2.1047	Modulation Characteristics	Compliant
§ 2.1053	Field Strength of Spurious Radiation	Compliant
§ 2.1093	RF Exposure	Compliant
§ 2.1046, § 22.912 (d) § 24.232	RF Output Power	Compliant
§ 2.1049 § 22.917 § 22.905 § 24.238	Out of Band Emission, Occupied Bandwidth	Compliant
§ 2.1051, § 22.917 § 24.238(a)	Spurious Emissions at Antenna Terminals	Compliant
§ 2.1055 (a) § 2.1055 (d) § 22.355 § 24.235	Frequency stability vs. temperature Frequency stability vs. voltage	Compliant
§ 22.917 § 24.238	Band Edge	Compliant

§2.1047 - MODULATION CHARACTERISTIC

Applicable Standard

Requirement: FCC § 2.1047(d). As part 22H & 24E has not specific requirement for GSM modulation, therefore modulation characteristic is not presented.

§2.1053 - SPURIOUS RADIATED EMISSIONS

Applicable Standard

Requirements: CFR 47, § 2.1053.

Test Procedure

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

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

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

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Analyzer, Communications	E5515C	GB44051221	8/8/2005
Agilent	Analyzer, Spectrum	E4446A	US44300386	11/10/2005
HP	Amplifier, Pre	8447D	2944A10198	8/17/2005
HP	Amplifier, Pre, Microwave	8449B	3147A00400	8/10/2005
Rohde & Schwarz	Generator, Signal	SMIQ03	849192/0085	5/2/2005
A. H. Systems	Antenna, Horn, DRG	SAS-200/571	261	4/20/2005
HP	Generator, Signal	83650B	3614A00276	5/10/2005
A.R.A.	Antenna, Horn	DRG-118/A	1132	8/17/2005
Wainwright	Filter, Band Reject	WRCG823/850-813/860-40/8SS	2	N/A
Wainwright	Filter, Band Reject	WRCG1850/1910-1835/1925-40/8SS	5	N/A

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

Environmental Conditions

Temperature:	18° C
Relative Humidity:	55%
ATM Pressure:	1020mbar

* The testing was performed by Daniel Deng on 2005-12-29.

Test Result

Worst case reading as follows:

Cellular Band, Part22:

-18.2 dB at 1673.08 MHz

PCS Band, Part24:

-19.7 dB at 3759.98 MHz

Run # 1 : 30MHz -10GHz Cellular Band Mid Channel

Indicated		Table	Test Antenna		Substituted		Antenna Gain Correction	Cable Loss dB	Absolute Level dBm	Limit dBm	Margin dB
Frequency MHz	Ampl. dBuV/m	Angle Degree	Height Meter	Polar H/V	Frequency MHz	Level dBm					
1673.08	71.83	90	1.4	v	1673.08	-39.2	9.3	1.3	-31.2	-13	-18.2
1673.08	61.50	180	1.6	h	1673.08	-49.4	9.3	1.3	-41.4	-13	-28.4
2509.65	46.00	180	1.7	v	2509.65	-56.3	9.3	1.6	-48.6	-13	-35.6
3346.13	39.00	180	1.3	v	3346.13	-58.1	10	2.2	-50.3	-13	-37.3
3346.13	36.80	0	1.4	h	3346.13	-60.1	10	2.2	-52.3	-13	-39.3
2509.65	41.83	270	1.5	h	2509.65	-60.2	9.3	1.6	-52.5	-13	-39.5
1202.72	45.85	90	1.3	v	1202.72	-63.6	7.5	1.2	-57.3	-13	-44.3
1202.72	43.50	180	1.5	h	1202.72	-65.8	7.5	1.2	-59.5	-13	-46.5
1753.63	42.20	90	1.5	v	1753.63	-67.5	9.3	1.3	-59.5	-13	-46.5
1753.63	38.50	90	2	h	1753.63	-69.8	9.3	1.3	-61.8	-13	-48.8

Run # 2 : 30MHz -20GHz PCS Band Mid Channel

Indicated		Table	Test Antenna		Substituted		Antenna Gain Correction	Cable Loss dB	Absolute Level dBm	Limit dBm	Margin dB
Frequency MHz	Ampl. dBuV/m	Angle Degree	Height Meter	Polar H/V	Frequency MHz	Level dBm					
3759.98	57.33	30	1.3	v	3759.98	-41.1	10.7	2.3	-32.7	-13	-19.7
5640.50	56.12	0	1.6	v	5640.50	-45.2	11.2	3.1	-37.1	-13	-24.1
3759.98	50.60	270	1.4	h	3759.98	-47.7	10.7	2.3	-39.3	-13	-26.3
5640.50	53.50	180	2	h	5640.50	-47.9	11.2	3.1	-39.8	-13	-26.8
2336.60	46.33	90	1.7	v	2336.60	-55.8	9.9	1.6	-47.5	-13	-34.5
7520.05	36.20	180	1.8	v	7520.05	-58.7	11.1	3.5	-51.1	-13	-38.1
2336.60	41.80	90	1.5	h	2336.60	-60.1	9.9	1.6	-51.8	-13	-38.8
7520.05	33.60	90	1.7	h	7520.05	-61.4	11.1	3.5	-53.8	-13	-40.8

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

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.

Test Procedure

Conducted:

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Analyzer, Communications	E5515C	GB44051221	8/8/2005
Agilent	Analyzer, Spectrum	E4446A	US44300386	11/10/2005

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

Environmental Conditions

Temperature:	19° C
Relative Humidity:	58%
ATM Pressure:	1018mbar

* The testing was performed by Daniel Deng on 2005-12-28.

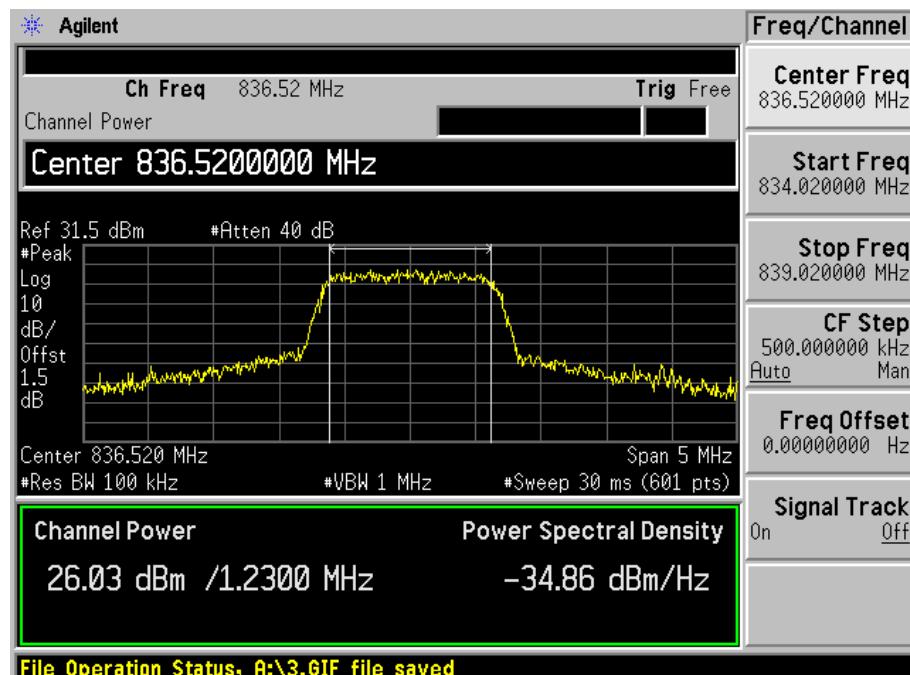
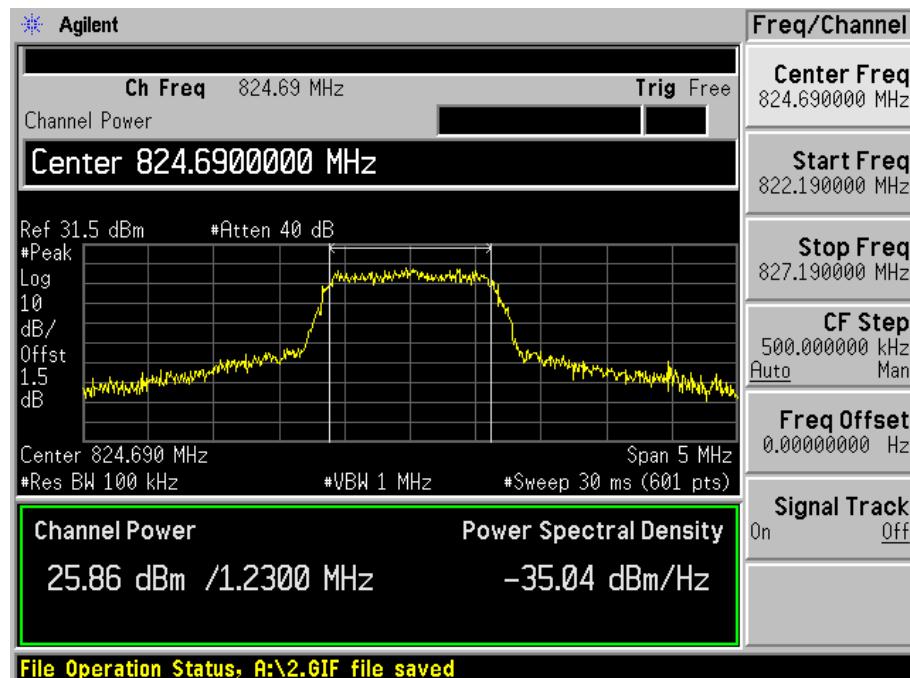
Test Results

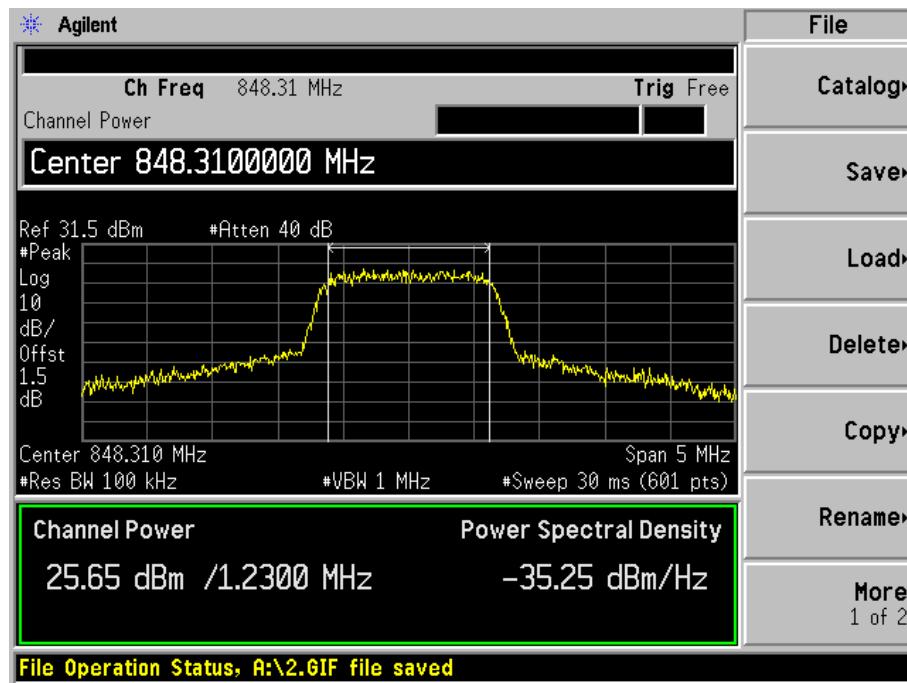
Cellular band, Part22:

Channel	Frequency (MHz)	Output Power in dBm	Output Power in W	Limit in W
LOW	824.69	25.86	0.385	7
MIDDLE	836.52	26.03	0.400	7
HIGH	848.31	25.65	0.367	7

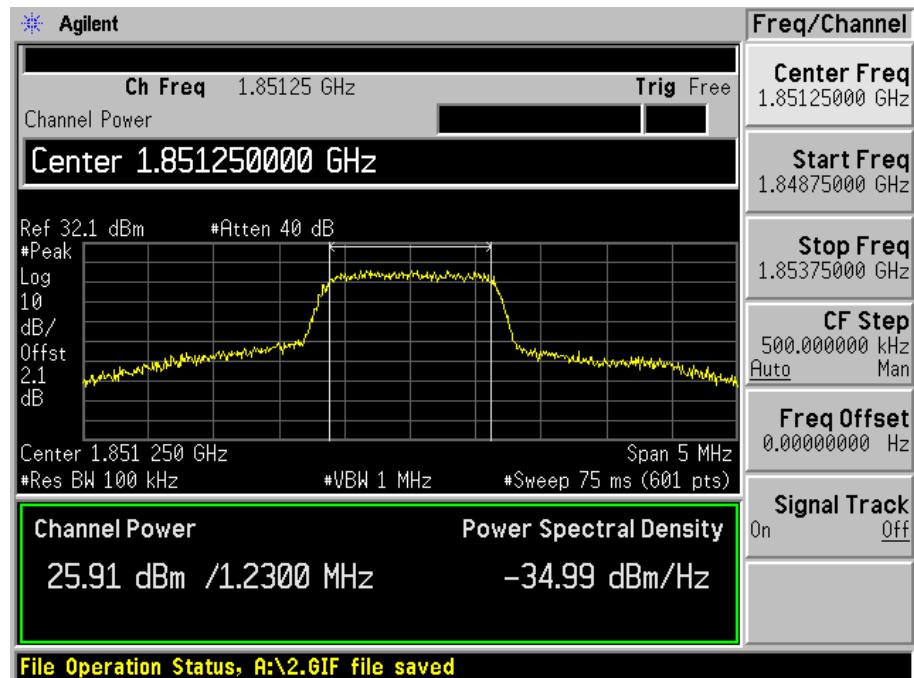
PCS band, Part24:

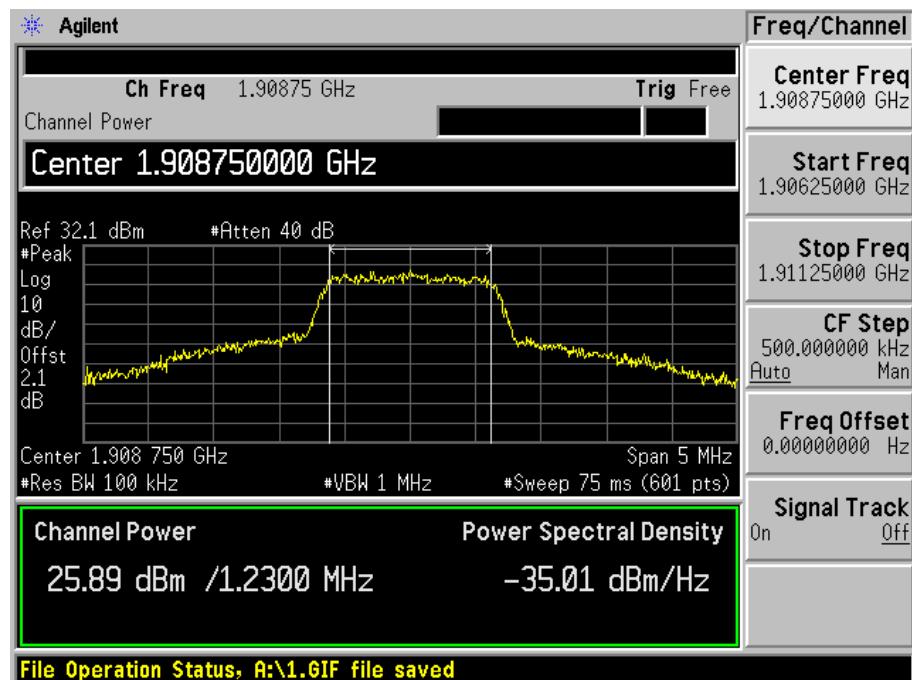
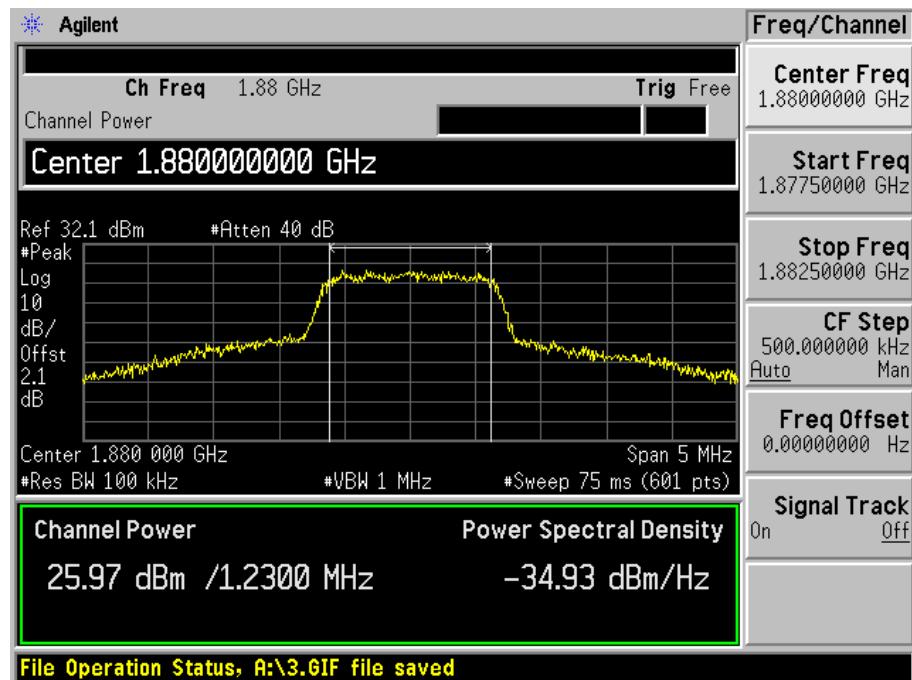
Channel	Frequency (MHz)	Output Power in dBm	Output Power in W	Limit in W
LOW	1851.25	25.91	0.390	2
MIDDLE	1880.00	25.97	0.395	2
HIGH	1908.7	25.89	0.388	2

Plots of Conducted Output Power for Part 22



Plots of Conducted Output Power for Part24





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

Applicable Standard

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

Test Procedure

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

The resolution bandwidth of the spectrum analyzer was set at 30/47 kHz(Cellular /PCS) and the 26 dB & 99% bandwidth was recorded.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Analyzer, Communications	E5515C	GB44051221	8/8/2005
Agilent	Analyzer, Spectrum	E4446A	US44300386	11/10/2005

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

Environmental Conditions

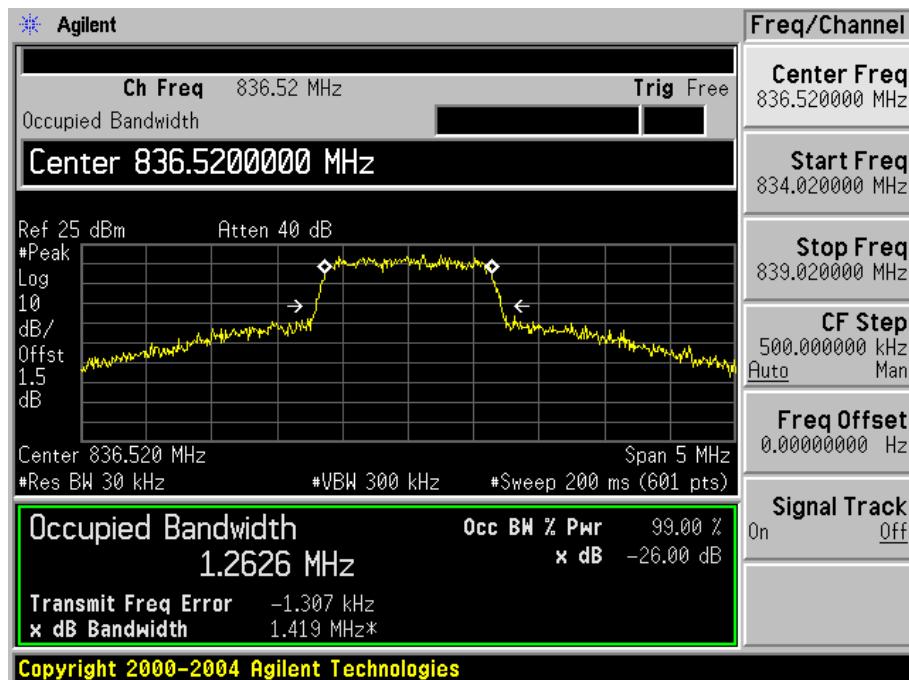
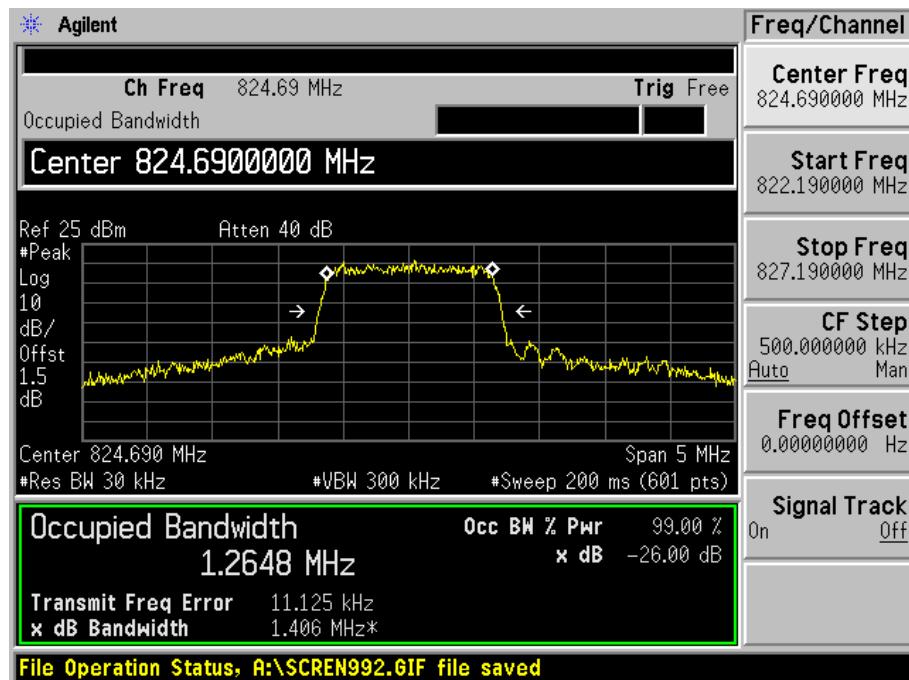
Temperature:	19° C
Relative Humidity:	58%
ATM Pressure:	1018 mbar

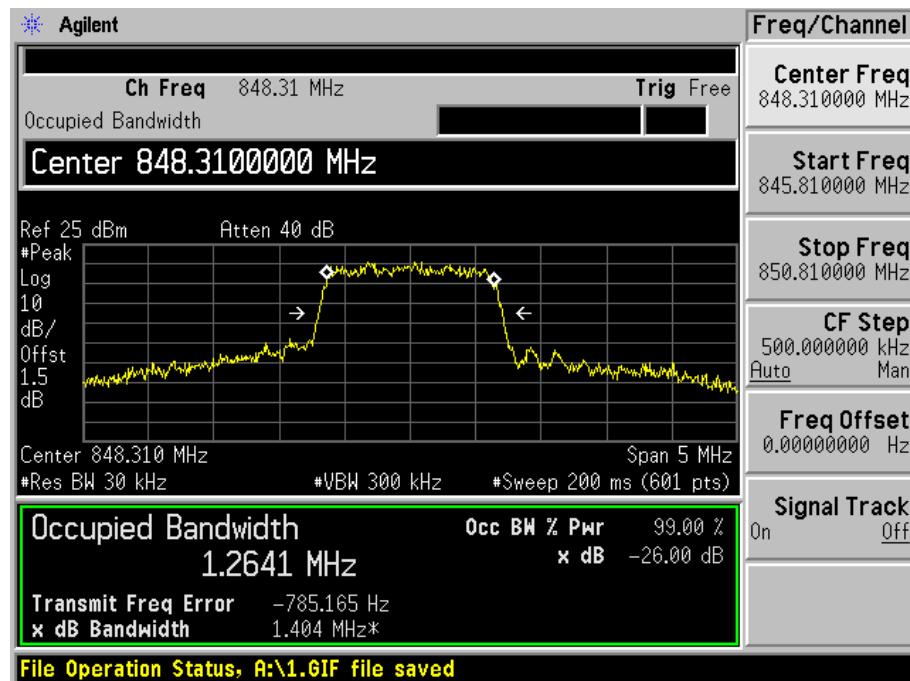
* The testing was performed by Daniel Deng on 2005-12-28.

Test Results

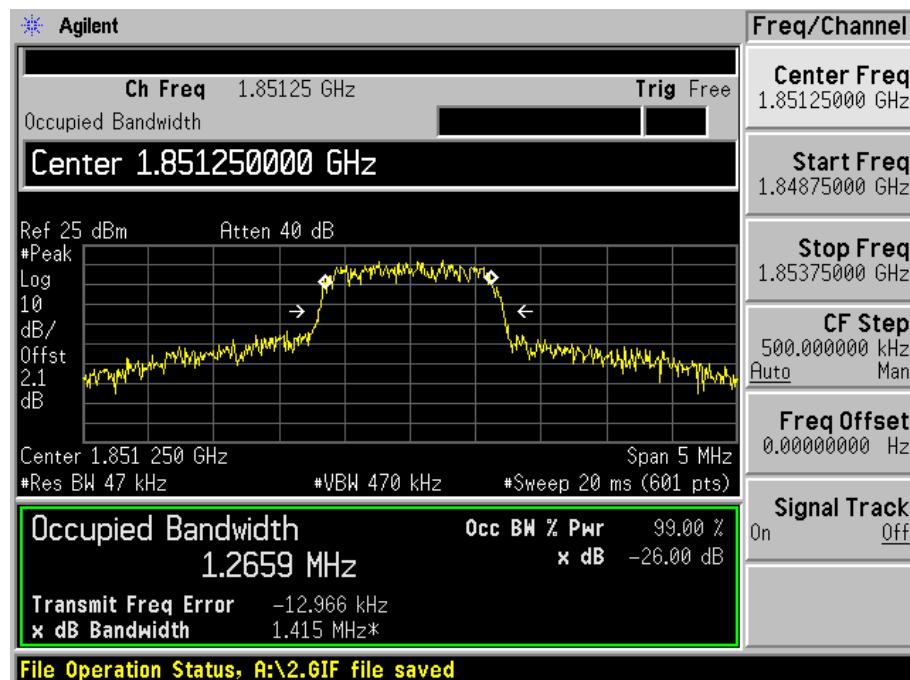
Please refer to the following plots.

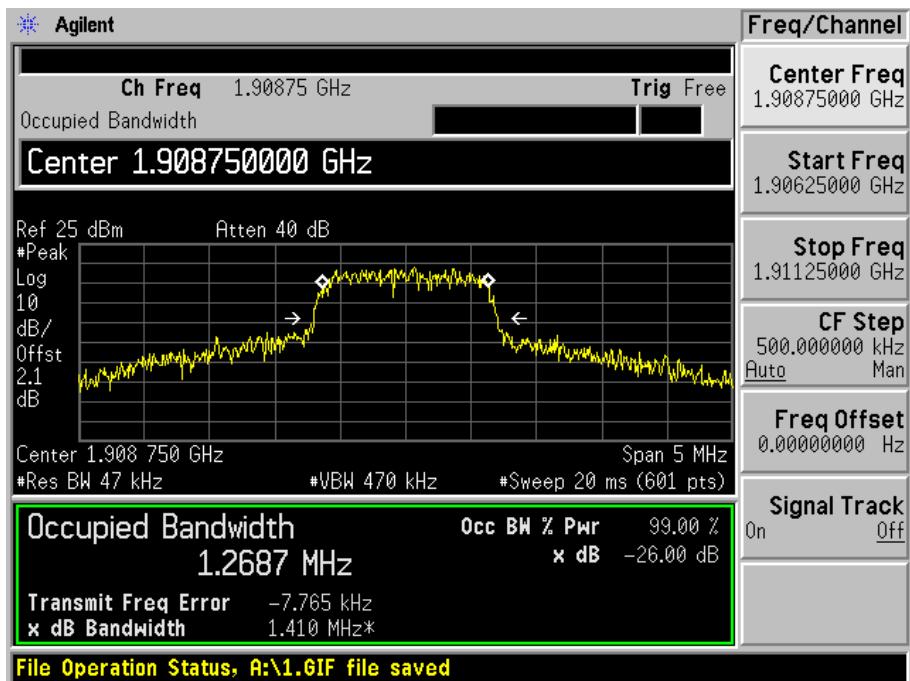
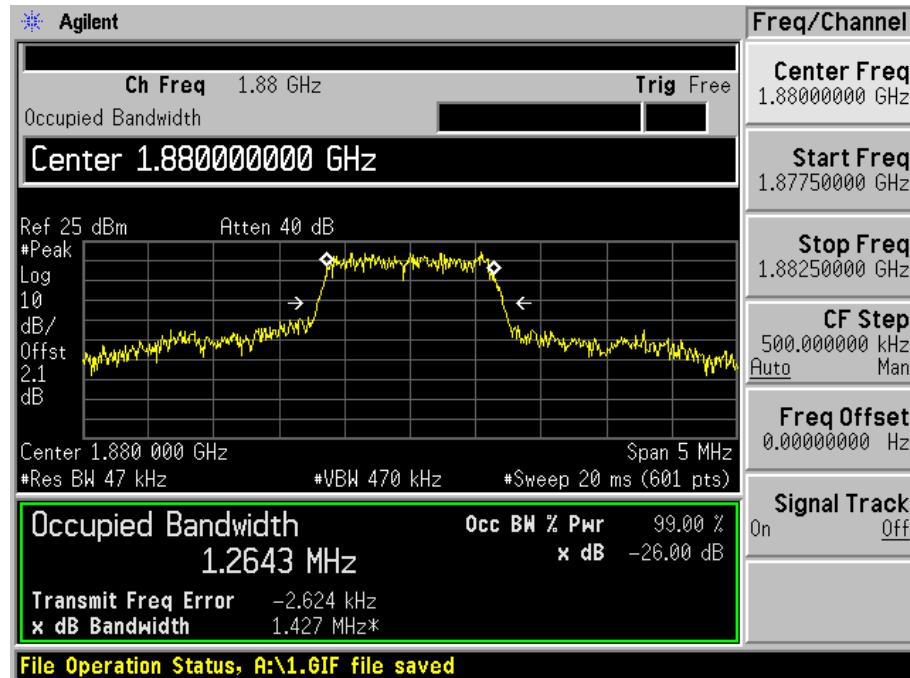
Plots of Occupied Bandwidth for Part22





Plots of Occupied Bandwidth for Part24





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

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.

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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Analyzer, Communications	E5515C	GB44051221	8/8/2005
Agilent	Analyzer, Spectrum	E4446A	US44300386	11/10/2005

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

Environmental Conditions

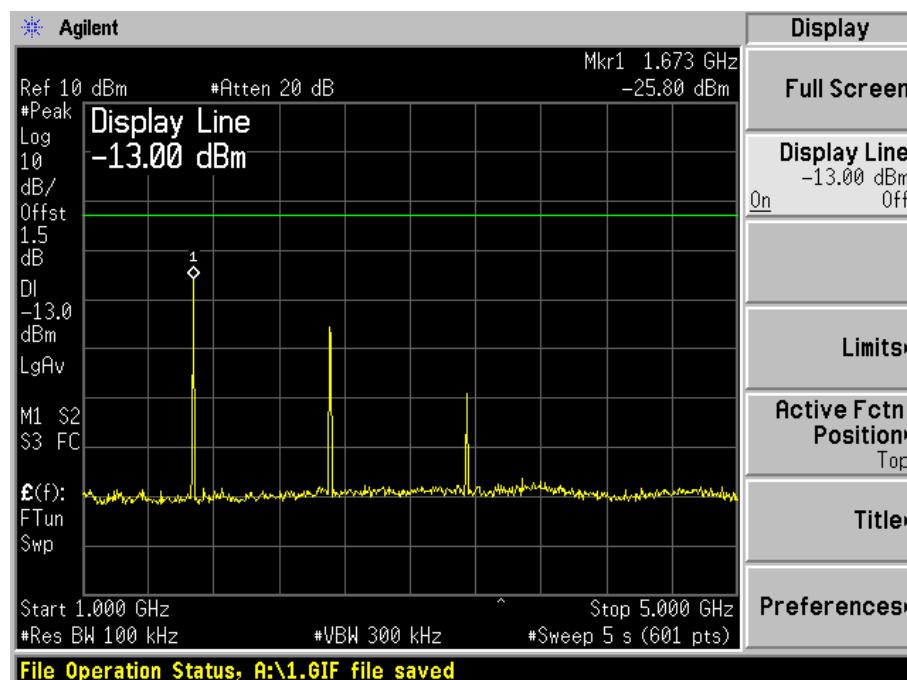
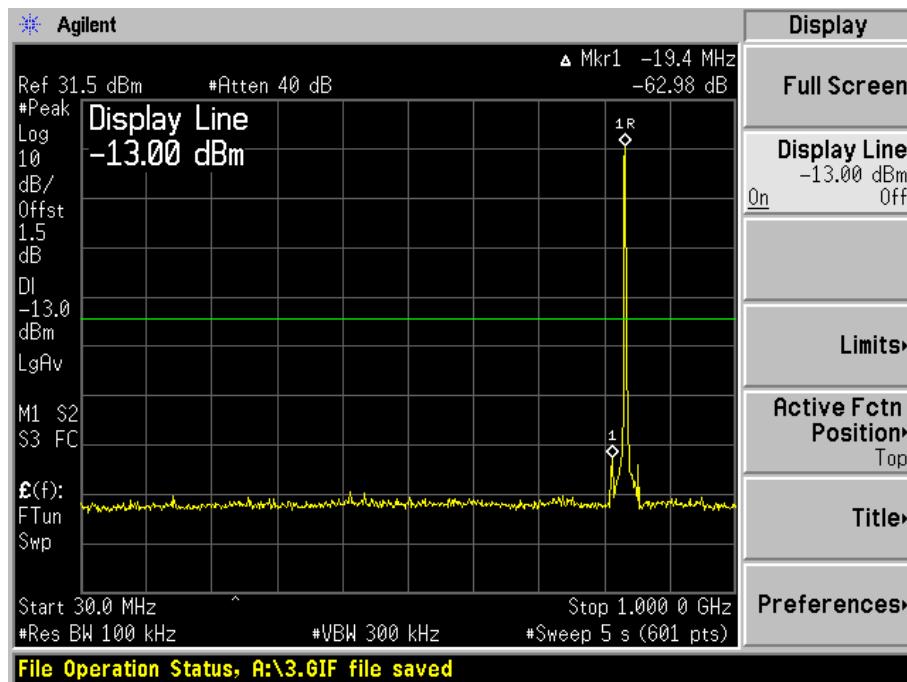
Temperature:	19° C
Relative Humidity:	58%
ATM Pressure:	1018 mbar

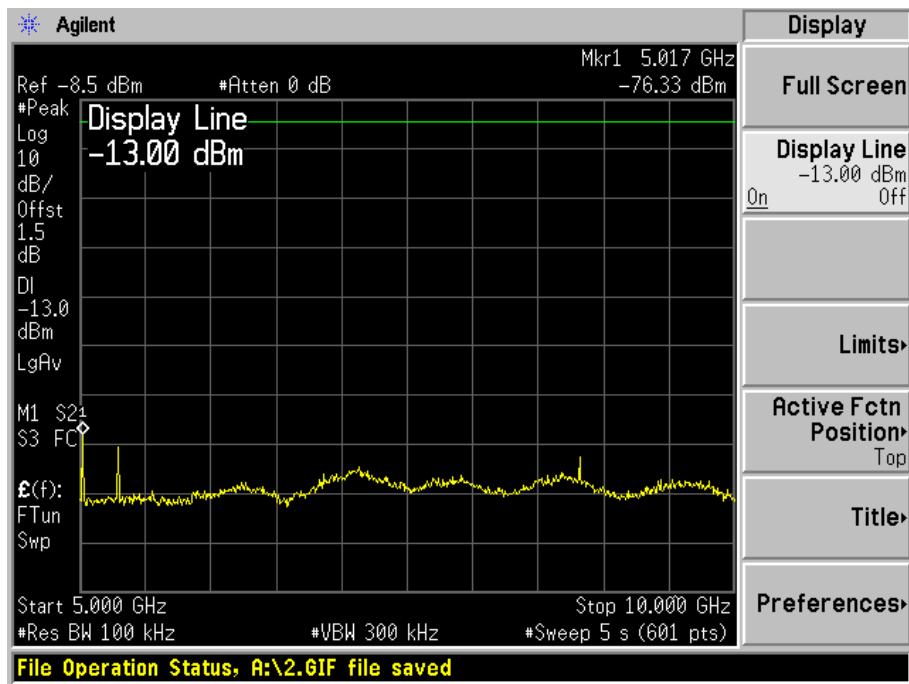
* The testing was performed by Daniel Deng on 2005-12-28.

Test Results

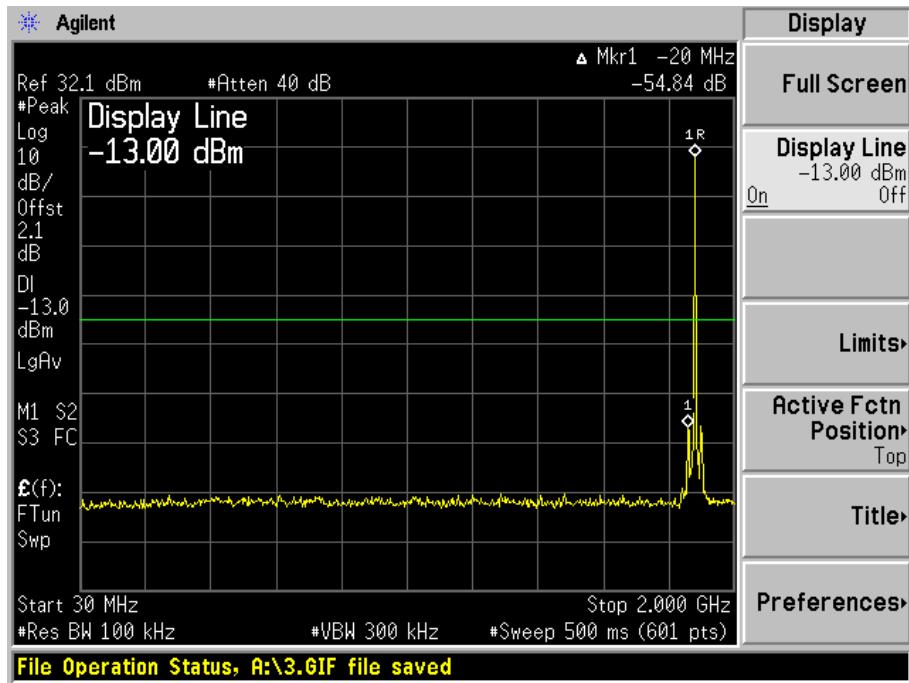
Please refer to the hereinafter plots.

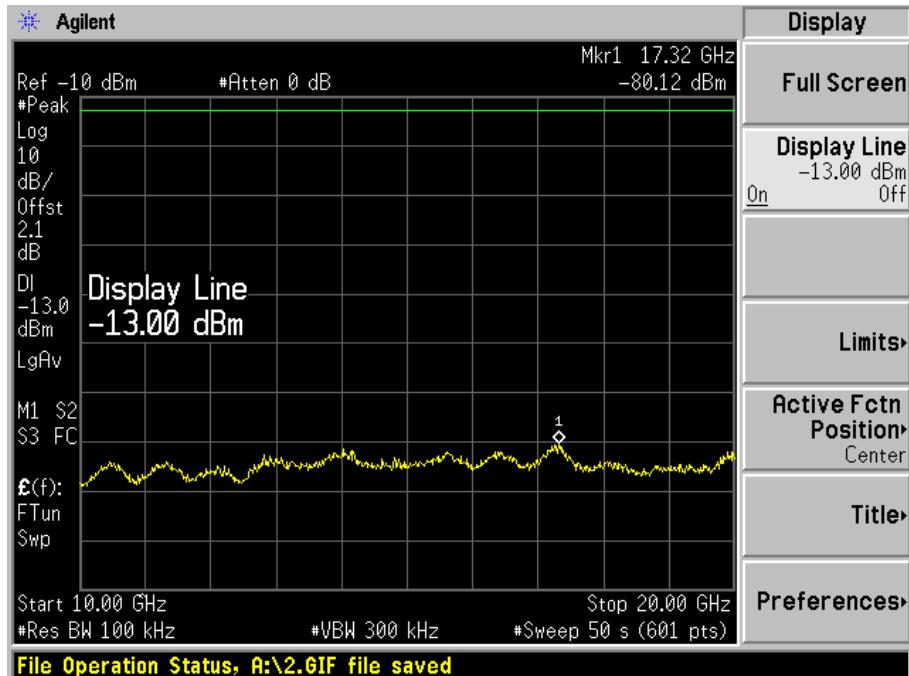
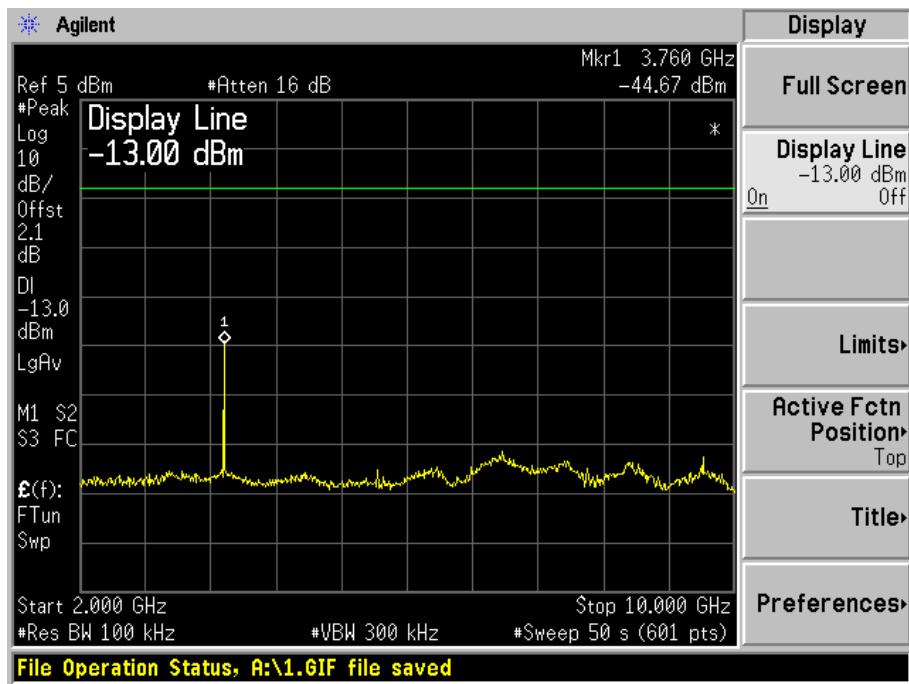
Plots of Spurious Emission for Part22





Plots of Spurious Emission for Part24





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

Table C-1_Frequency Tolerance for Transmitters in the Public Mobile Services

Table C-1_Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency range (MHz)	Base, fixed	Mobile	Mobile
	(ppm)	(ppm)	(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 emission stays within the authorized frequency block.

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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Analyzer, Communications	E5515C	GB44051221	8/8/2005
Agilent	Analyzer, Spectrum	E4446A	US44300386	11/10/2005
Tenney	Oven, Temperature	VersaTenn	12.222-193	6/4/2005

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

Environmental Conditions

Temperature:	19° C
Relative Humidity:	58%
ATM Pressure:	1018 mbar

* The testing was performed by Daniel Deng on 2005-12-28.

Test Results

Cellular Band

Reference Frequency: 836.52 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency error (HZ)	PPM Error
50	3.5	13.5	0.017
40	3.5	12.6	0.015
30	3.5	13.5	0.017
20	3.5	8.5	0.010
10	3.5	13.9	0.017
0	3.5	12.7	0.015
-10	3.5	15.5	0.019
-20	3.5	18.2	0.022
-30	3.5	17.6	0.021

Frequency Stability Versus Voltage

Reference Frequency: 836.52 MHz, Limit: 2.5ppm			
Power Supplied (VDC)	Environment Temperature (°C)	Frequency error (HZ)	
		PPM Error	
3.2	20	10.1	0.012

PCS Band*Frequency Stability Versus Temperature*

Reference Frequency: 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency error (HZ)	PPM Error
50	3.5	33.5	0.018
40	3.5	30.5	0.016
30	3.5	25.9	0.014
20	3.5	23.5	0.013
10	3.5	20.6	0.011
0	3.5	22.5	0.012
-10	3.5	21.6	0.011
-20	3.5	26.6	0.014
-30	3.5	35.2	0.019

Frequency Stability Versus Voltage

Reference Frequency: 1880 MHz, Limit: 2.5ppm			
Power Supplied (VDC)	Environment Temperature (°C)	Frequency error (HZ)	
		PPM Error	
3.2	20	25.5	0.014

§22.917 & §24.238 – BAND EDGE

Applicable Standard

According to § 22.917, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to §24.238, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

Test Procedure

The RF output of the transmitter was connected to 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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Analyzer, Communications	E5515C	GB44051221	8/8/2005
Agilent	Analyzer, Spectrum	E4446A	US44300386	11/10/2005

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

Environmental Conditions

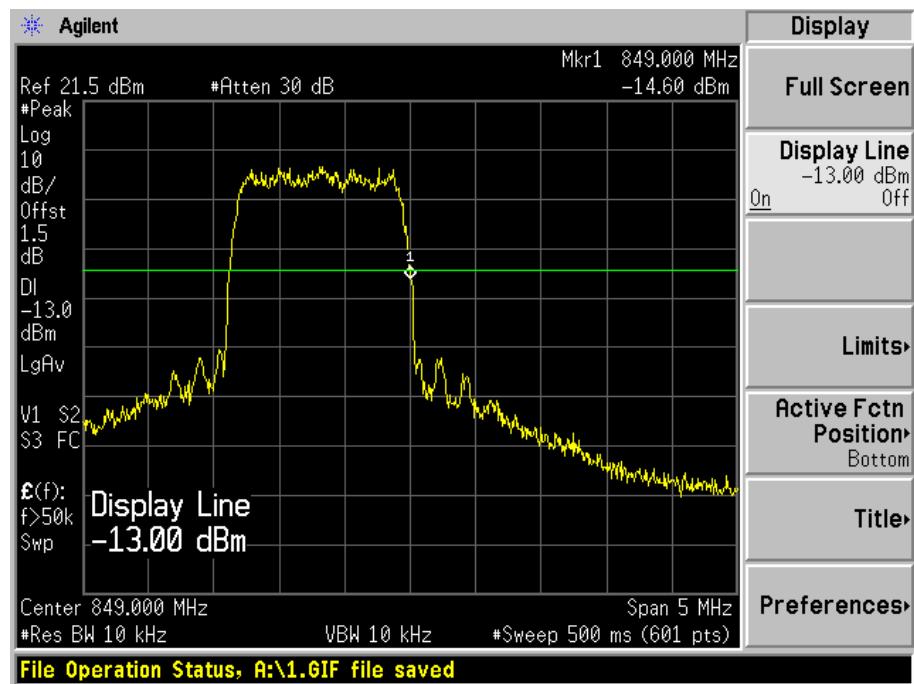
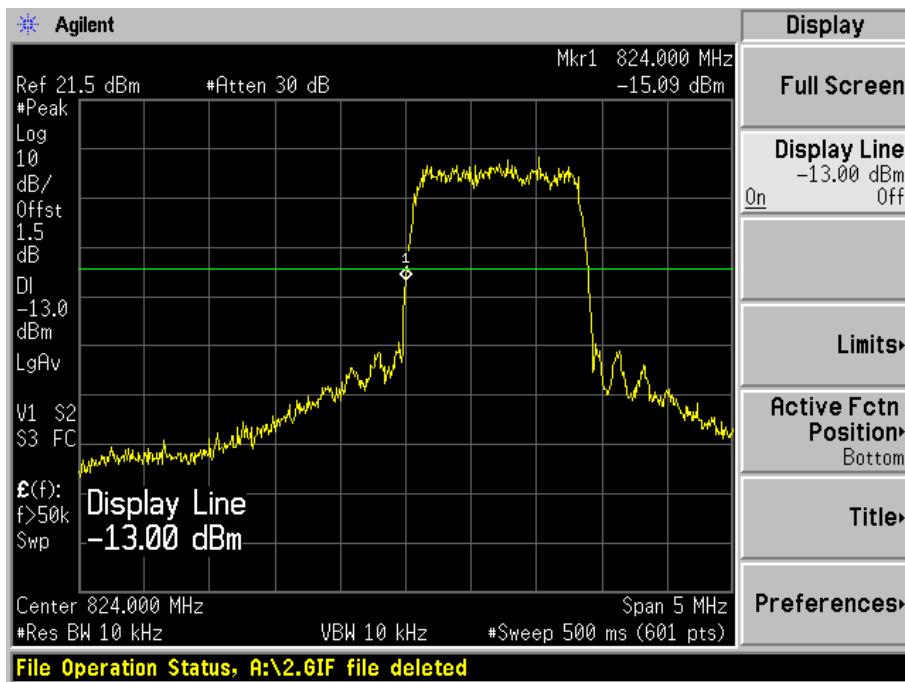
Temperature:	19° C
Relative Humidity:	58%
ATM Pressure:	1018 mbar

* The testing was performed by Daniel Deng on 2005-12-28.

Test Results

Please refer to the following plots.

Plots of Band Edge for Part 22



Plots of Band Edge for Part 24

