

Advanced
Compliance Laboratory

6 Randolph Way
Hillsborough, NJ 08844
Tel: (908) 927 9288
Fax: (908) 927 0728

**Electromagnetic
Emission
Compliance
Test Report**



Equipment Under Test (EUT) Home Cellular Booster HB-20-800
Applicant Shyam Telecom Inc.

In Accordance With FCC Part 22, Subpart H

Test by Advanced Compliance Laboratory, Inc.
6 Randolph Way
Hillsborough, New Jersey 08844

Authorized by Wei Li
Lab Manager

Signature

Date March 1, 2005

AC Lab Report Number 0048-050221-01-800



Lab Code:200101-0

The test result in this report is supported and covered by the NVLAP accreditation.

Index

Section 1. Summary of Test Results	3
Section 2. General Equipment Specification.....	5
Section 3. RF Output Power.....	7
Section 4. Occupied Bandwidth	21
Section 5. Spurious Emissions at Antenna Terminals	35
Section 6. Field Strength of Spurious	71
Section 7. Frequency Stability	78
Section 8. Test Equipment List	79
Section 9. FCC ID Labeling	80
Section 10. Maximum Permissible Exposure.....	81
Section 11. Setup Photos	82
Section 12. EUT Photos	87

Section 1. Summary of Test Results

Manufacturer: Shyam Telecom Inc.
Model No.: Home Cellular Booster HB-20-800
Sample No.: HDCE-020002

General: **All measurements are traceable to national standards**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 22, Subpart H.

New Submission Production Unit
 Class II Permissive Change Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.

“See Summary of Test Data”



NVLAP LAB CODE: 200101-0

Advance Compliance Laboratory, Inc. authorizes the above named company to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Advance Compliance Laboratory, Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This report applies only to the items tested.

Summary of Test Data

RF Power Output	22.913(a)	500W ERP	Complies
Occupied Bandwidth (Voice & SAT)	22.917(c)	Mask	N/A*
Occupies Bandwidth (Wideband Data)	22.917(d)	Mask	N/A*
Occupied Bandwidth (Digital)	22.917(d)	Mask	Complies
Spurious Emissions at Antenna Terminals	22.917	-13 dBm	Complies
Field Strength of Spurious Emissions	22.917	-13 dBm E.I.R.P.	Complies
Frequency Stability	22.355	1.5 ppm	N/A*

* These items are NOT applied to the EUT.

The estimated uncertainty of the test result is given as following. The method of uncertainty calculation is provided in Advanced Compliance Lab. Doc. No. 0048-01-01.

	Prob. Dist.	Uncertainty(dB)	Uncertainty(dB)	Uncertainty(dB)
		30-1000MHz	1-6.5GHz	Conducted
Combined Std. Uncertainty u_c	norm.	± 2.36	± 2.99	± 1.83



Wei Li
Lab Manager
Advanced Compliance Lab

Date: March 1, 2005

Section 2. General Equipment Specification

Supply Voltage		9V DC				
	Downlink:	869-894MHz				
	Uplink:	824-849MHz				
Frequency Range	Modulation	CDMA (F9W) <input checked="" type="checkbox"/>	GSM (GXW) <input type="checkbox"/>	NADC (DXW) <input type="checkbox"/>	CDPD (F9W) <input type="checkbox"/>	AMPS (F8W, F1D) <input type="checkbox"/>
	Output Impedance	50ohm				
Frequency Translation		F1-F1 <input checked="" type="checkbox"/>	F1-F2 <input type="checkbox"/>	N/A <input type="checkbox"/>		
		Software <input type="checkbox"/>	Duplexer Change <input type="checkbox"/>	Full Band Coverage <input checked="" type="checkbox"/>		

DC voltages and DC currents per 2.1033(c)(8)

The input supply to the transmitter was set at 9 Volts DC. The RF power output was measured with the indicated voltage and current applied into the final RF amplifying device(s).

800 MHz Digital CDMA

RF Output, DC Current and RF Input Power are all average values.

Measured Maximum RF output: 14.7dBm (0.03W)

Measured DC voltage: 9.1V

Measured DC current: 672mA.

Measured Minimum RF output: -55.2dBm

Measured DC voltage: 9.1V

Measured DC current: 660mA

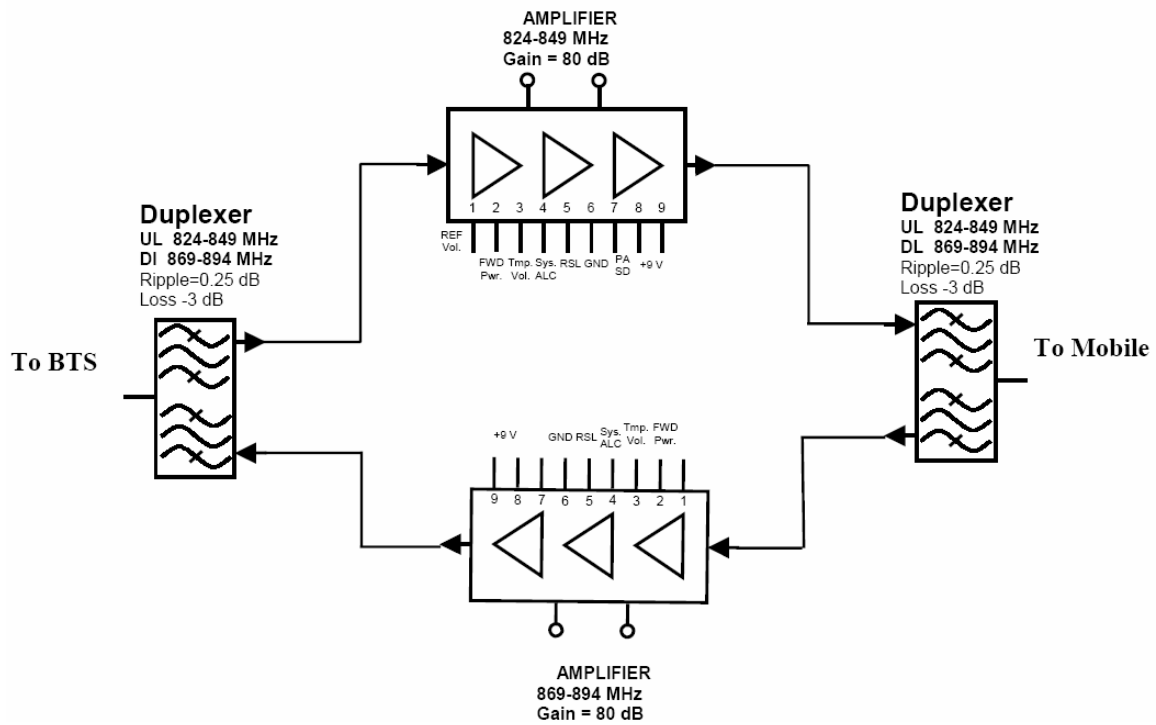
Tune-up procedure per 2.1033(c) (9)

There are no user accessible adjustments or tuning in this portable cellular transceiver. All necessary adjustments and tuning are performed during manufacture of the product. Any adjustments or tuning after service or repair are done as part of that process as special equipment is required to perform such adjustments.

Description of Operation

This device is a cellular booster operating in both downlink and uplink spectrums of CDMA bands.

System Diagram



Section 3. RF Output Power

Name of Test:	<i>RF Output Power</i>	Test Standard:	<i>22.913(a)</i>
Tested By:	EDWARD LEE	Test Date:	02/22/2005

Minimum Standard: Para. No. 22.913(a). The maximum effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts.

Method of Measurement: Detachable Antenna:
The peak power at antenna terminals is measured using spectrum analyzer.

Integral Antenna:

If the antenna is not detachable from the circuit then the Peak Power Output is derived from the peak radiated field strength of the fundamental emission by using the plane wave relation

$$\frac{GP}{4\pi R^2} = \frac{E^2}{120\pi}$$

and proceeding as follows:

$$P = \frac{E^2 R^2}{30G} = \frac{E^2 3^2}{30G}$$

where,

P = the equivalent isotropic radiated power in watts

E = the maximum measured field strength in V/m

R = the measurement range (3 meters)

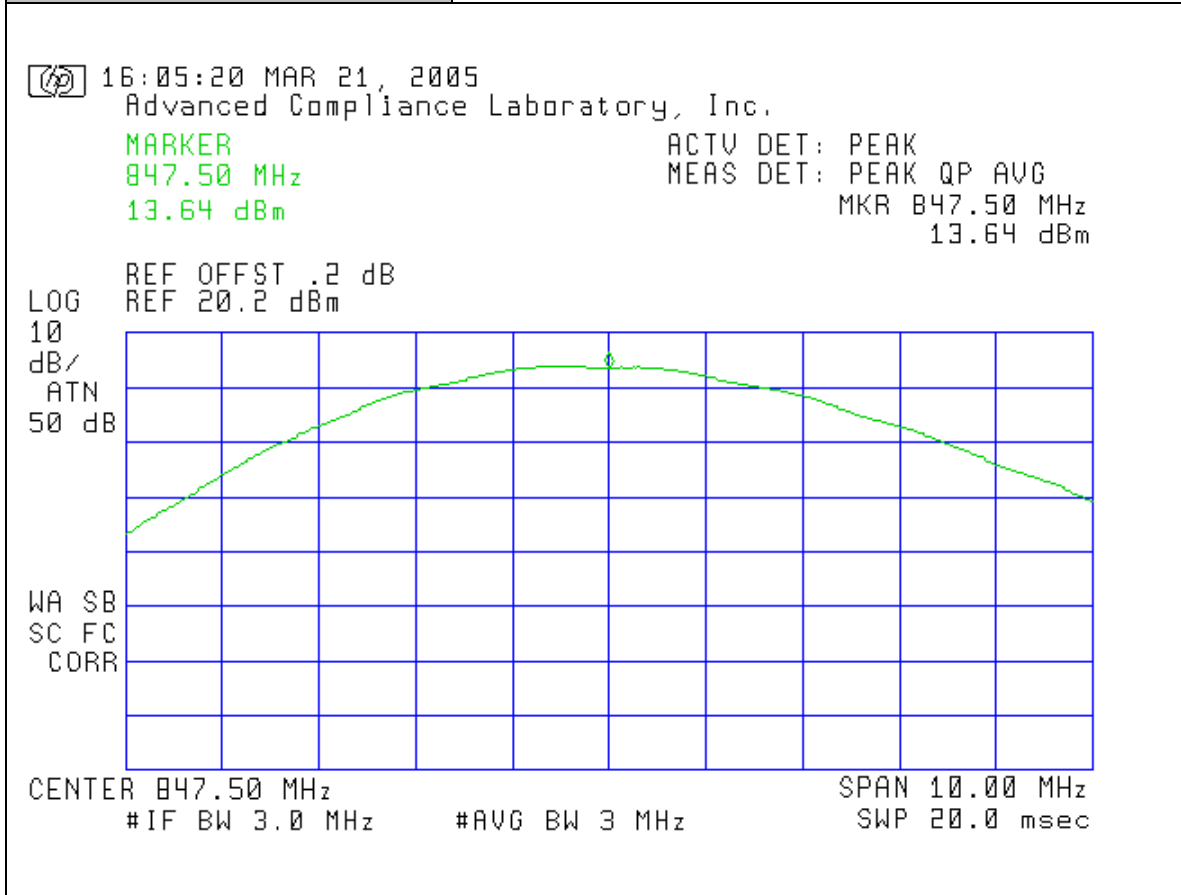
G = the numeric gain of the transmit antenna in relation to an isotropic radiator

Test Result:**Complies****Test Data:**

Band	Channel	Modulation CDMA	Power Output (dBm)	Limit (dBm)	Margin
Uplink	Hi	ON	13.64	57	43.36
	Mid	ON	14.92	57	42.08
	Low	ON	14.78	57	42.22
	Hi	OFF	14.13	57	42.87
	Mid	OFF	14.95	57	42.05
	Low	OFF	14.90	57	42.10
Downlink	Hi	ON	15.49	57	41.51
	Mid	ON	15.21	57	41.79
	Low	ON	14.55	57	42.45
	Hi	OFF	15.52	57	41.48
	Mid	OFF	15.28	57	41.72
	Low	OFF	14.63	57	42.37
Input Power (dBm)	-50 (Maximum gain)				
Ref Offset	Ref offset=Cable Factor+Attenuation=0.2dB				

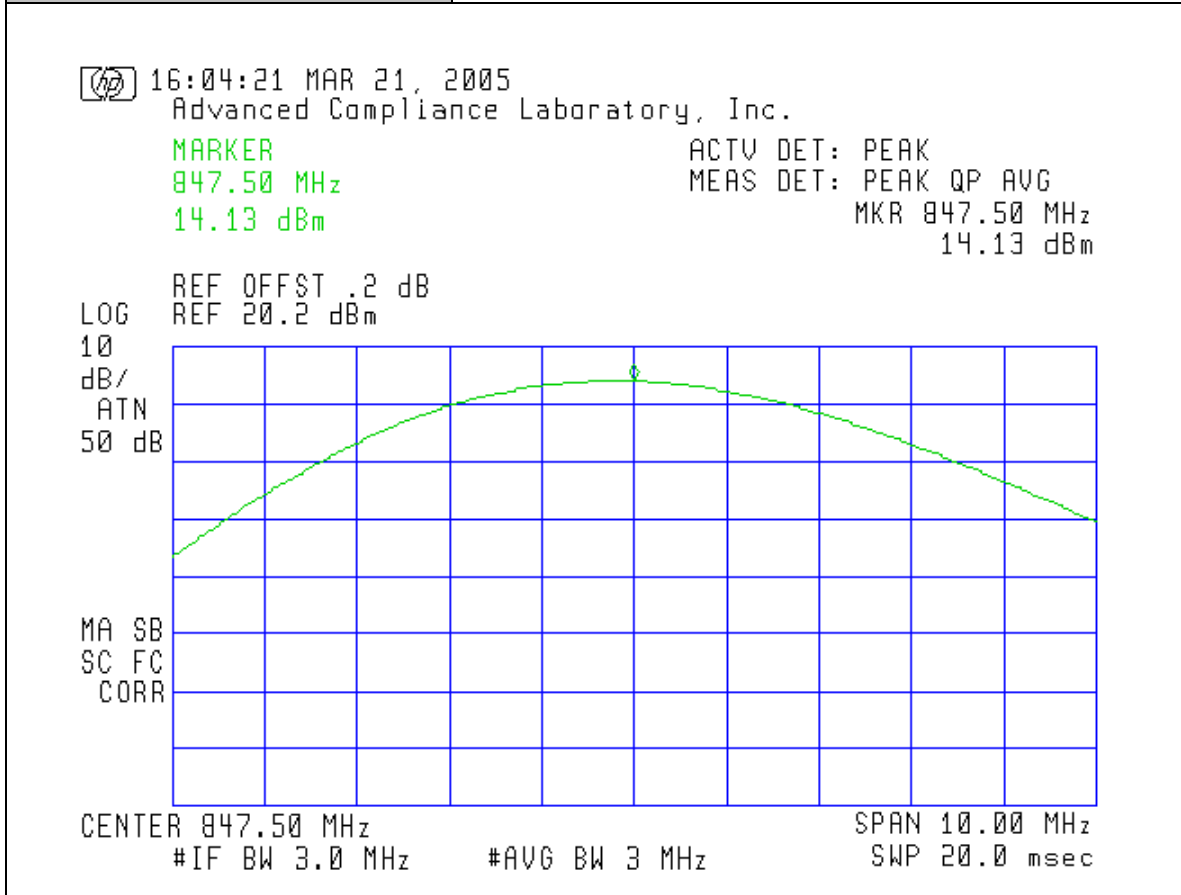
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	RF Output Power
Plot Name:	Uplink, Hi-Channel w/ Modulation
Configuration:	Server Antenna Connector was connected to SG. Input: -50dBm



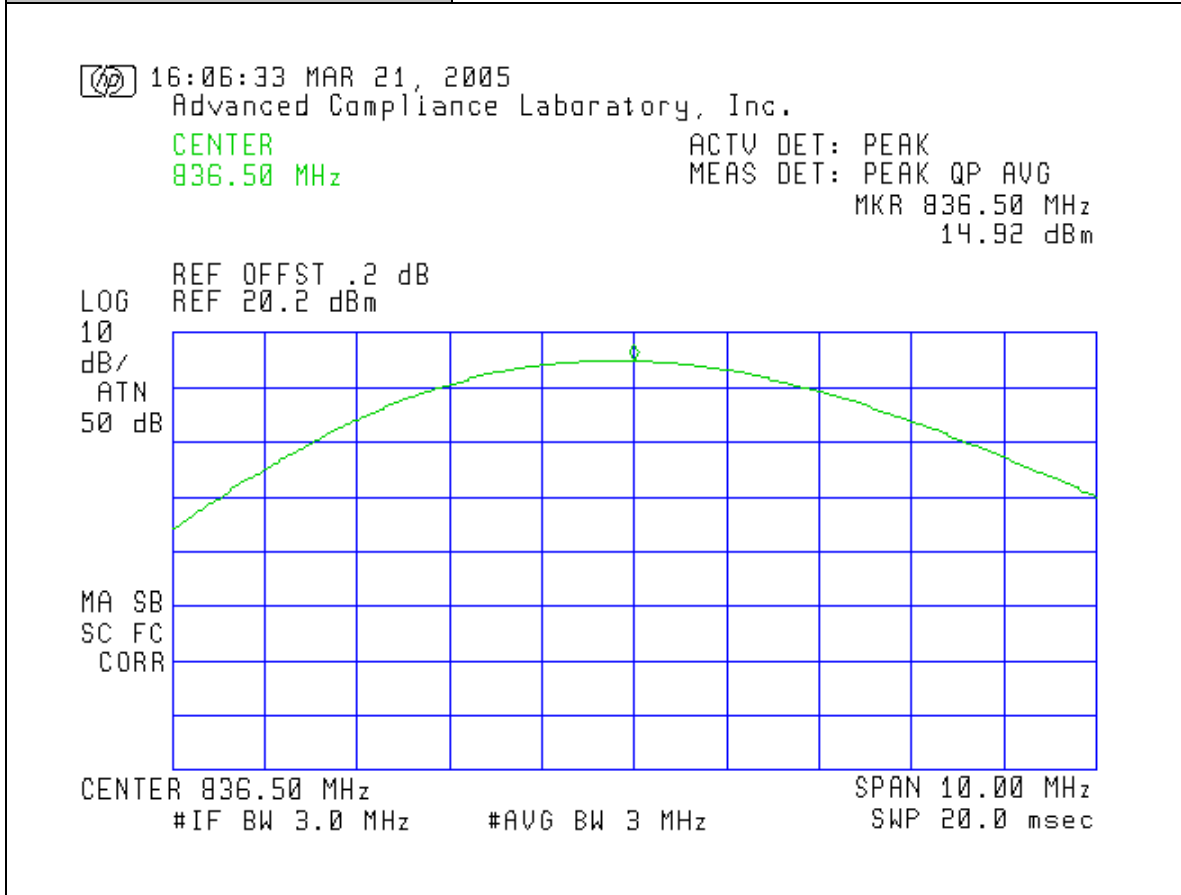
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	RF Output Power
Plot Name:	Uplink, Hi-Channel w/o Modulation
Configuration:	Server Antenna Connector was connected to SG. Input: -50dBm



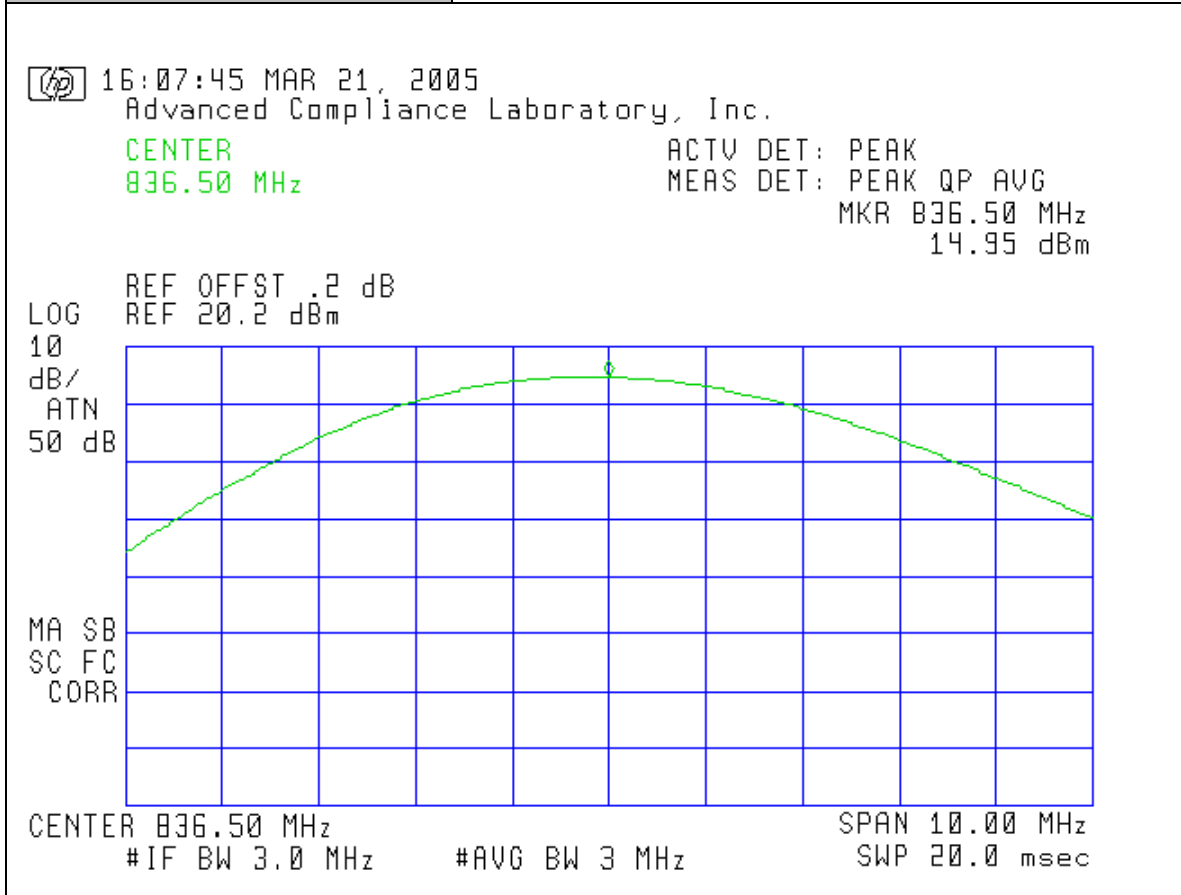
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	RF Output Power
Plot Name:	Uplink, Mid-Channel w/ Modulation
Configuration:	Server Antenna Connector was connected to SG. Input: -50dBm



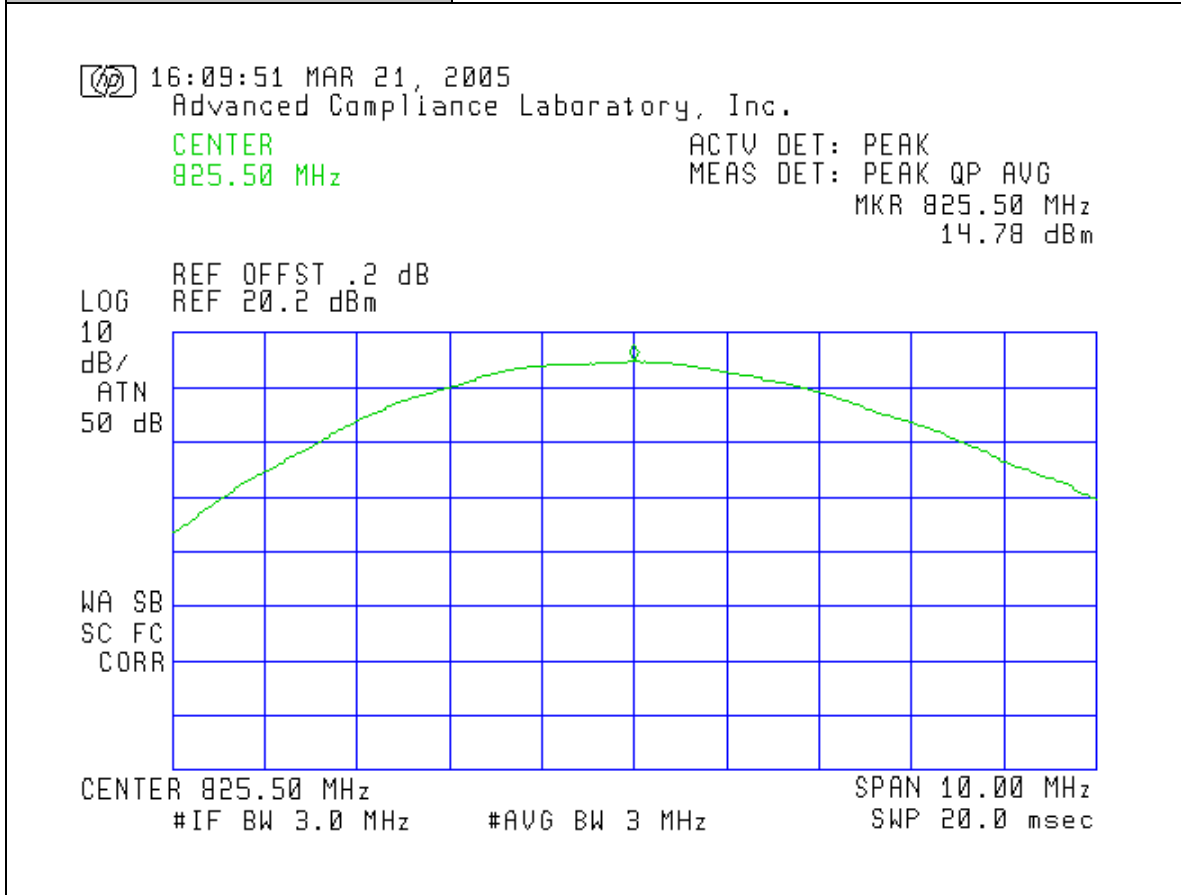
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	RF Output Power
Plot Name:	Uplink, Mid-Channel w/o Modulation
Configuration:	Server Antenna Connector was connected to SG. Input: -50dBm



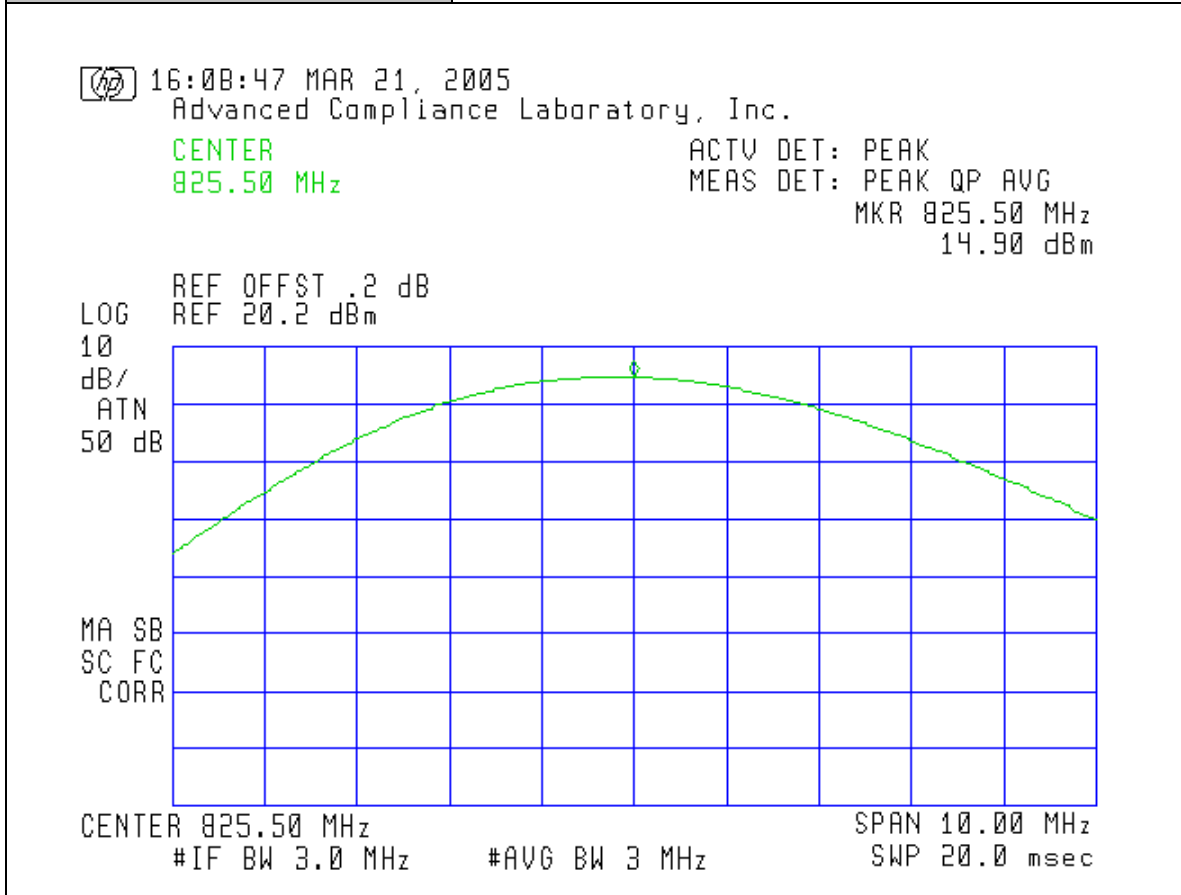
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	RF Output Power
Plot Name:	Uplink, Low-Channel w/ Modulation
Configuration:	Server Antenna Connector was connected to SG. Input: -50dBm



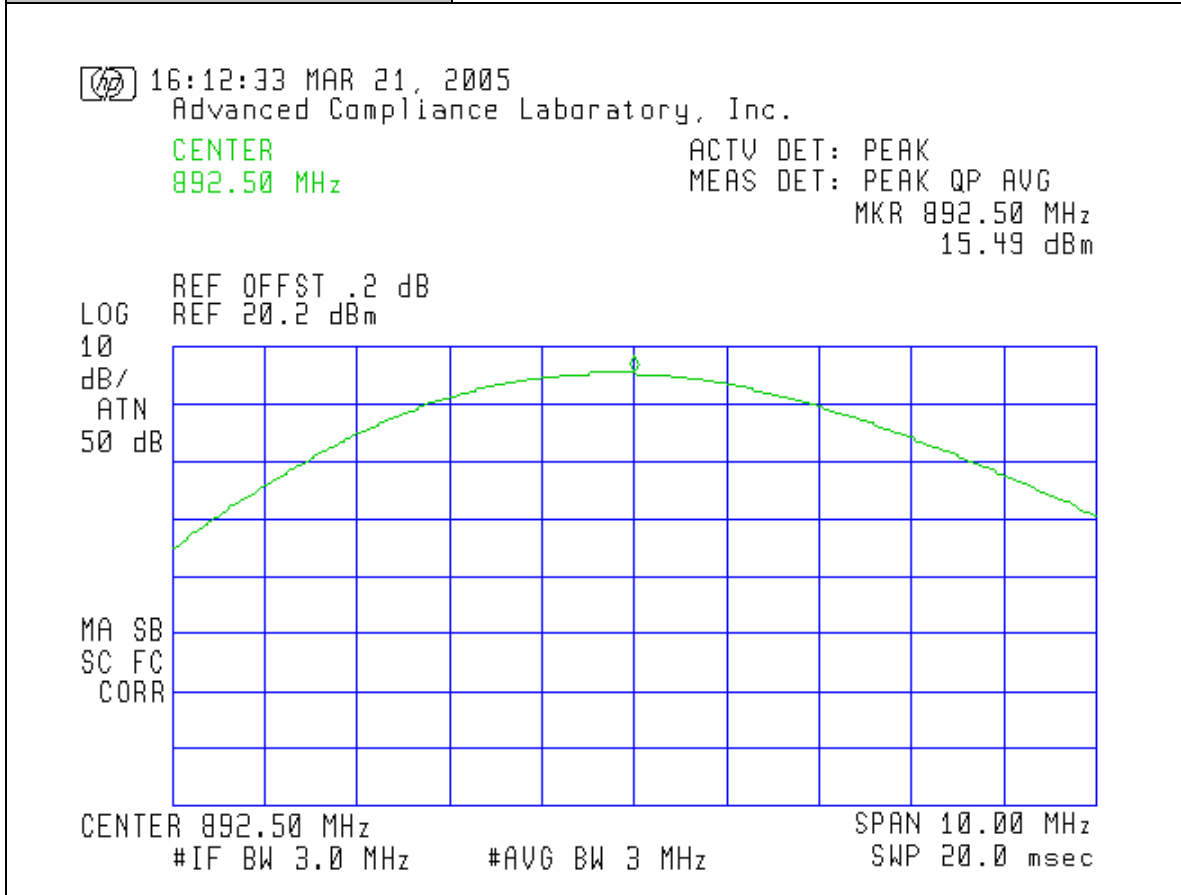
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	RF Output Power
Plot Name:	Uplink, Low-Channel w/o Modulation
Configuration:	Server Antenna Connector was connected to SG. Input: -50dBm



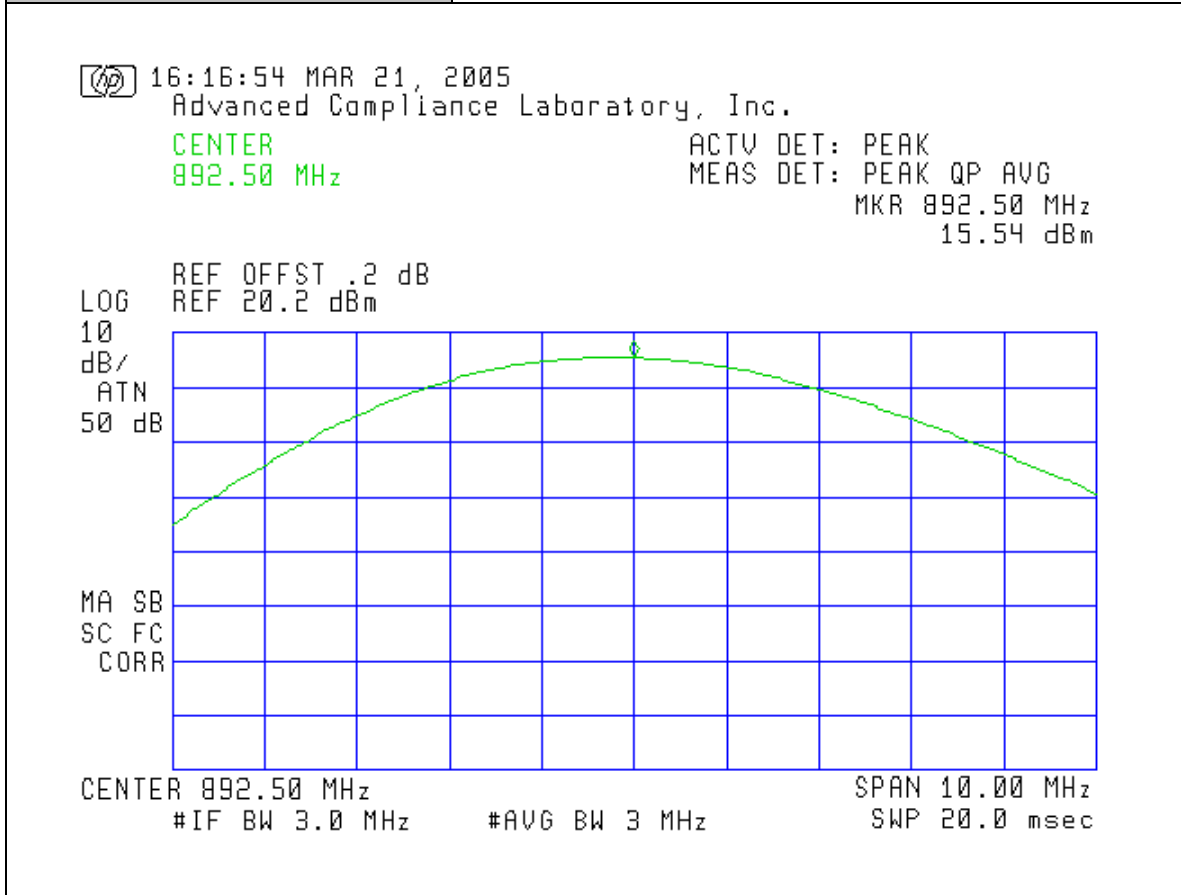
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	RF Output Power
Plot Name:	Downlink, Hi-Channel w/ Modulation
Configuration:	Donor Antenna Connector was connected to SG. Input: -50dBm



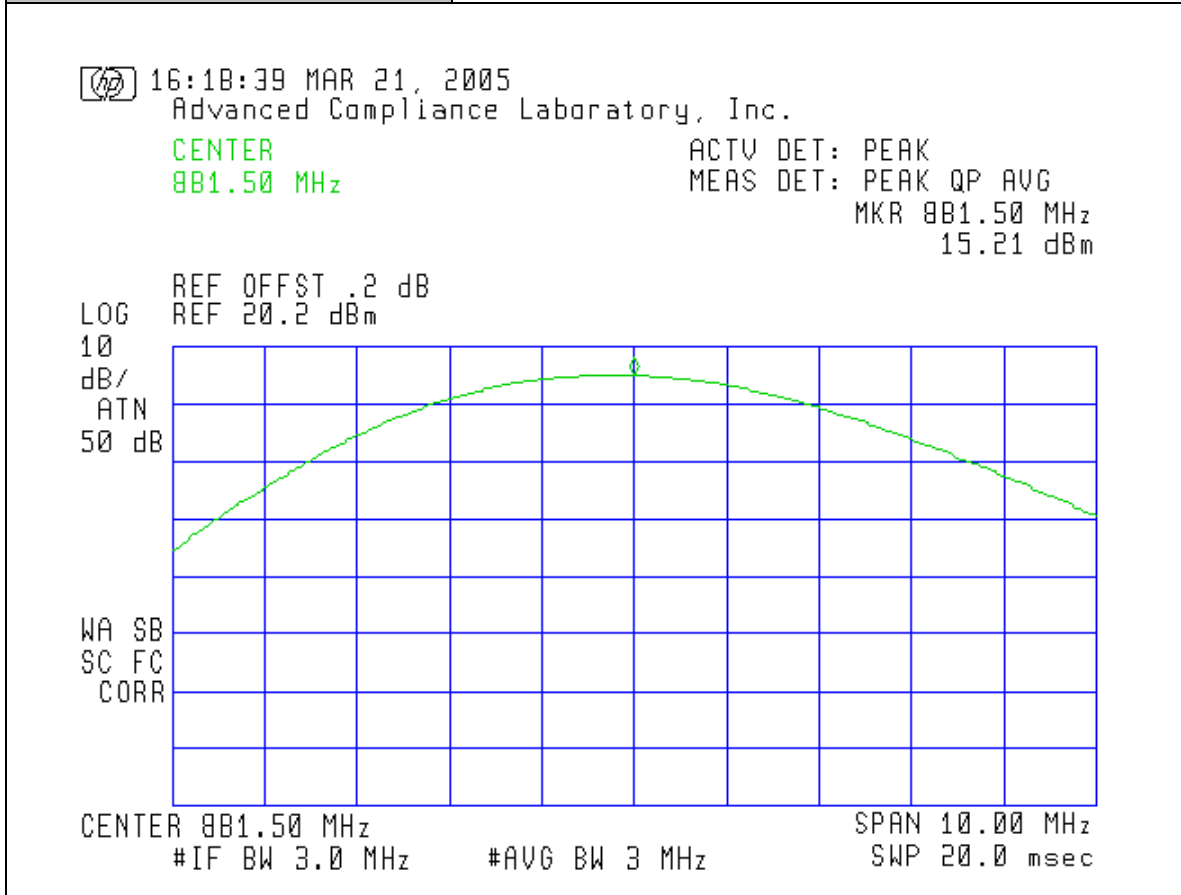
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	RF Output Power
Plot Name:	Downlink, Hi-Channel w/o Modulation
Configuration:	Donor Antenna Connector was connected to SG. Input: -50dBm



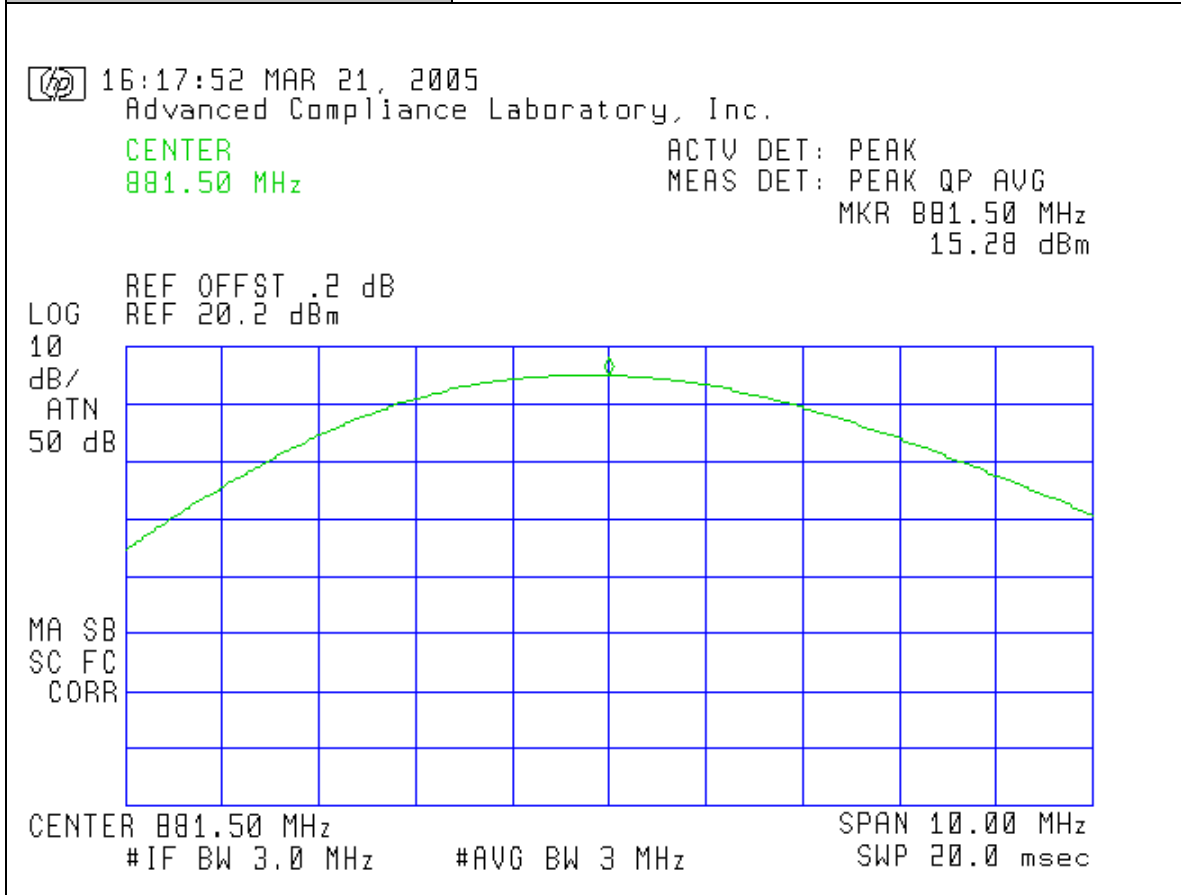
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	RF Output Power
Plot Name:	Downlink, Mid-Channel w/ Modulation
Configuration:	Donor Antenna Connector was connected to SG. Input: -50dBm



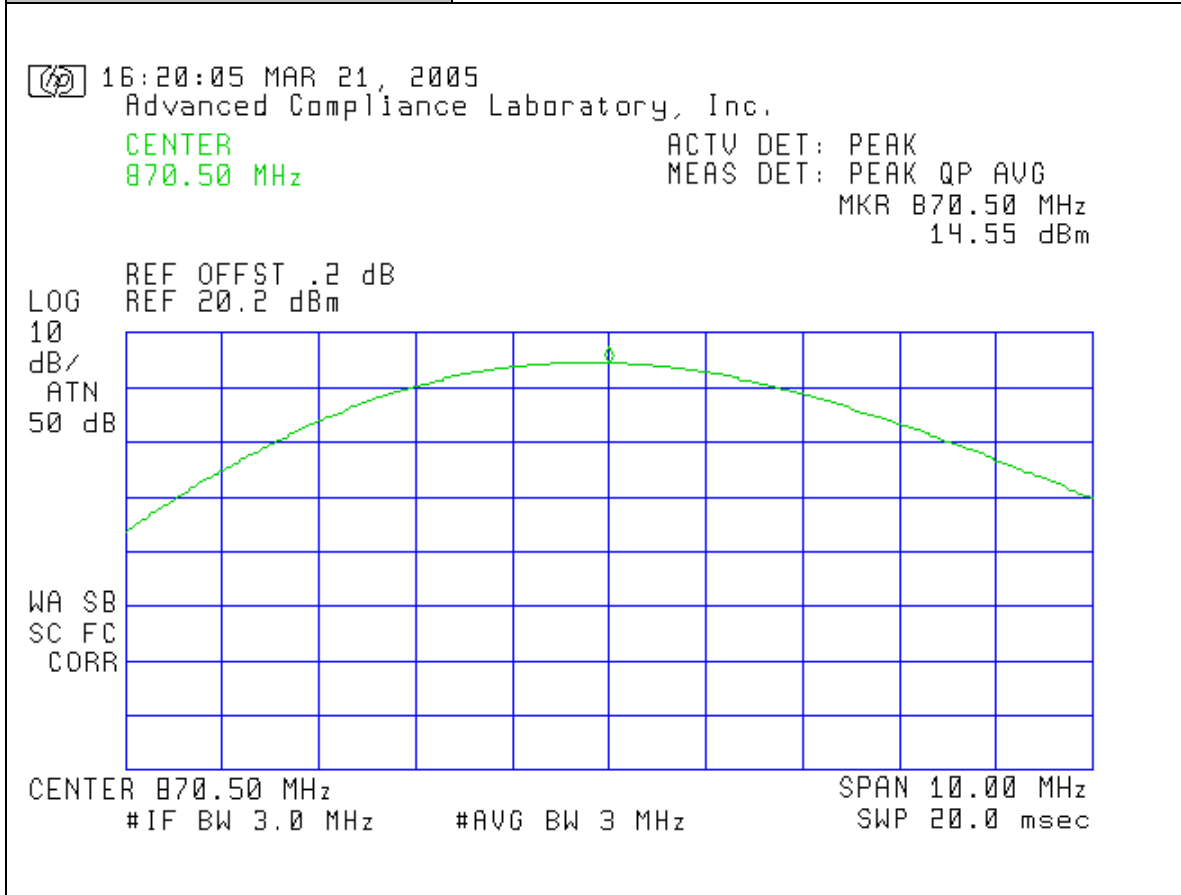
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	RF Output Power
Plot Name:	Downlink, Mid-Channel w/o Modulation
Configuration:	Donor Antenna Connector was connected to SG. Input: -50dBm



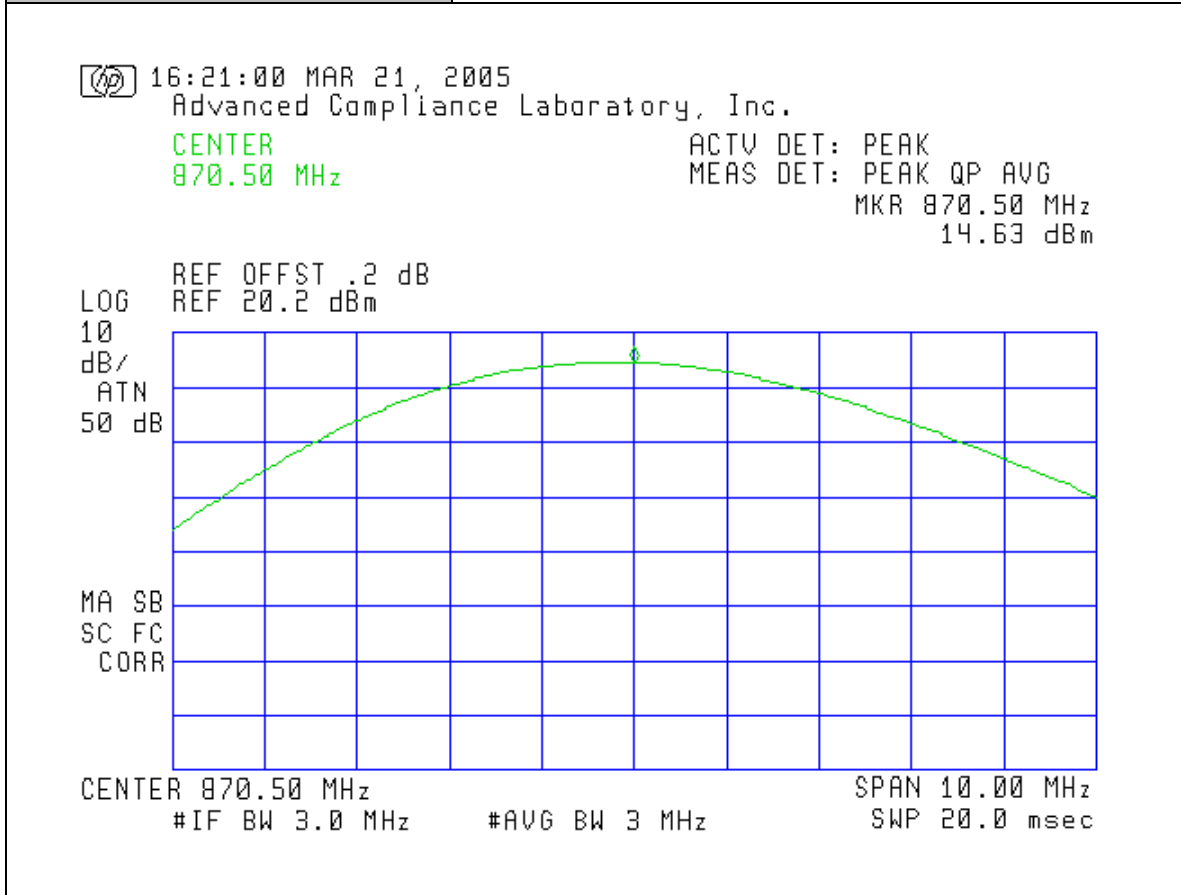
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	RF Output Power
Plot Name:	Downlink, Low-Channel w/ Modulation
Configuration:	Donor Antenna Connector was connected to SG. Input: -50dBm



Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	RF Output Power
Plot Name:	Downlink, Low-Channel w/o Modulation
Configuration:	Donor Antenna Connector was connected to SG. Input: -50dBm



Section 4. Occupied Bandwidth

Name of Test:	<i>Occupied Bandwidth</i>	Test Standard:	<i>22.917(d)</i>
Tested By:	EDWARD LEE	Test Date:	02/24/2005

Minimum Standard: Not defined by FCC. Input vs. Output.

Method of Measurement: Spectrum Analyzer Settings:
RBW: CDMA (30 kHz), GSM (30 kHz), NADC (1 kHz) and CDPD (1 kHz)
VBW: =RBW
Span: As required
Sweep: Auto
Input Signal Characteristics:
RF level: Maximum recommended by manufacturer

Test Result:

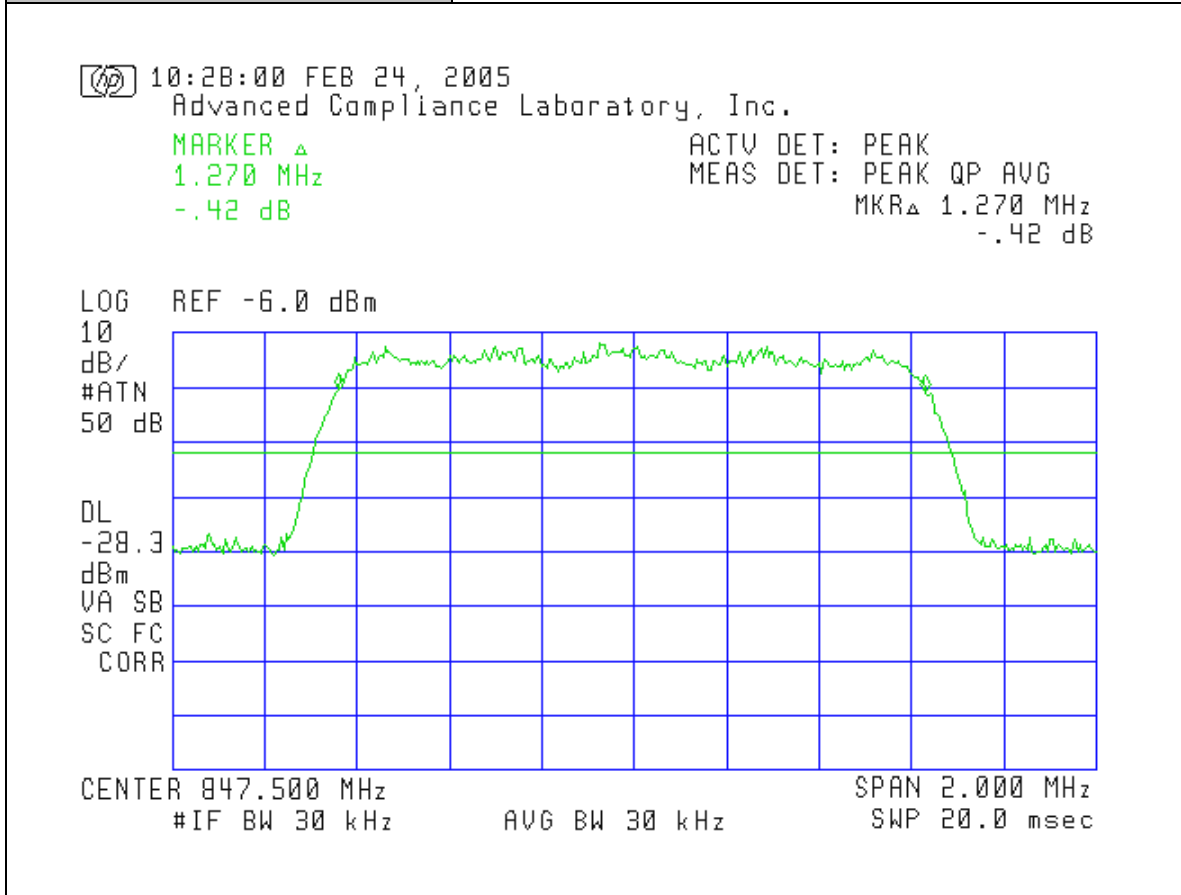
Complies

Test Data:

Attached Plots

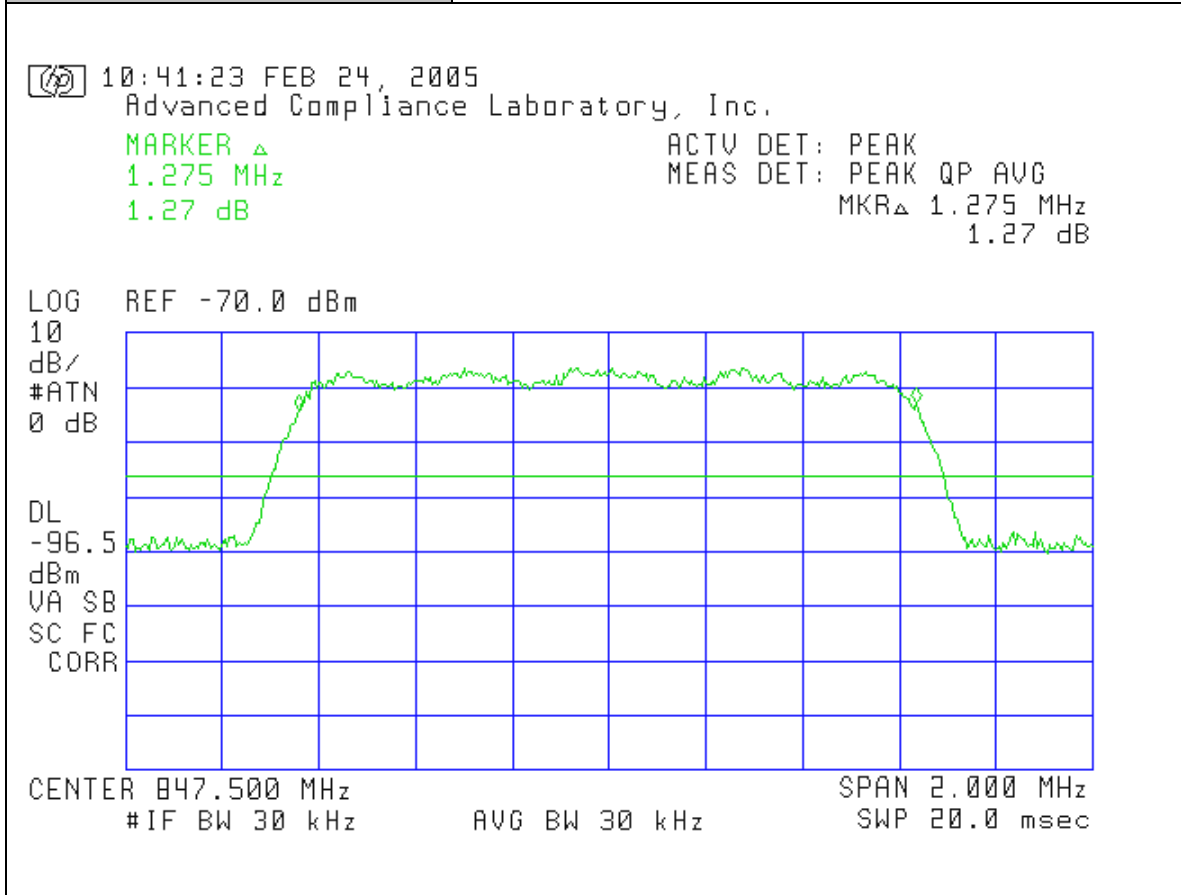
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth
Plot Name:	Uplink, Hi-Channel
Configuration:	SG Input: -70dBm, Output Port: EUT BTS



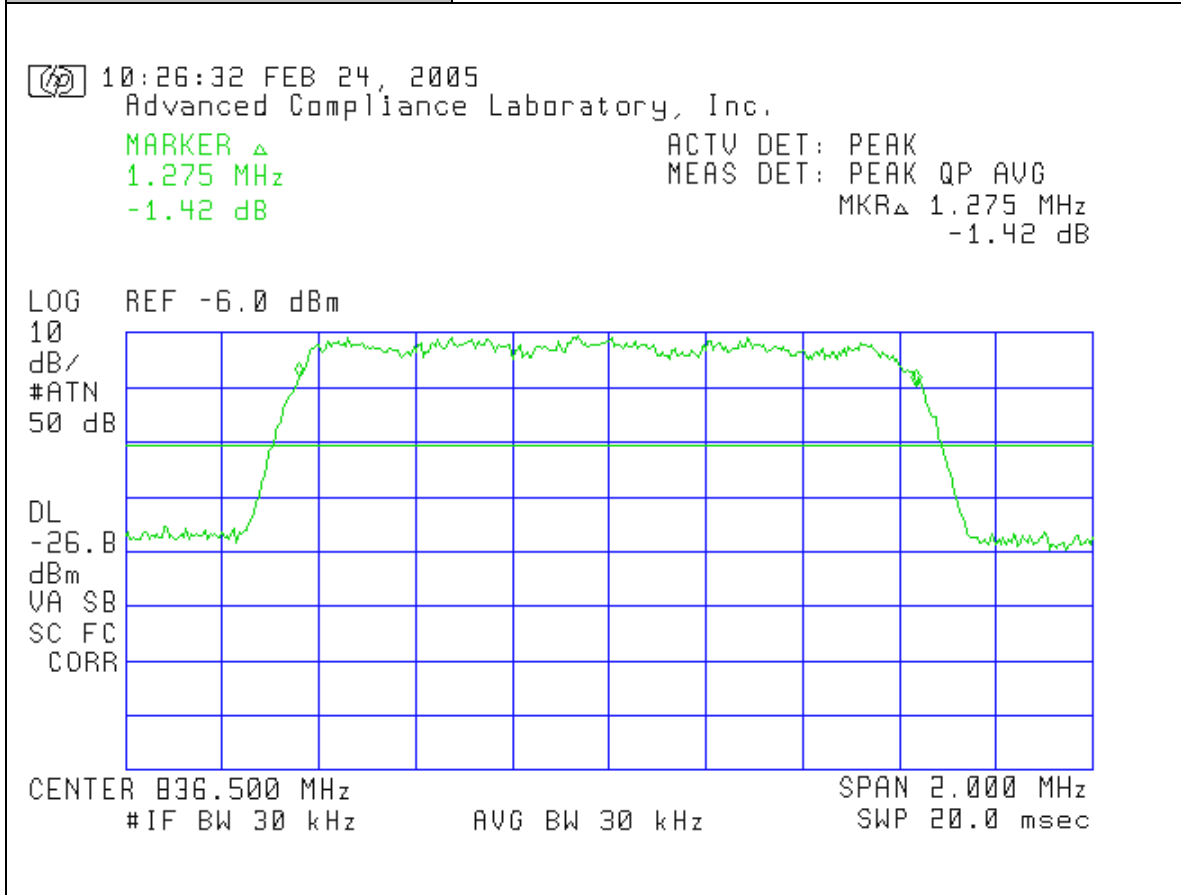
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth
Plot Name:	Uplink, Hi-Channel
Configuration:	SG Input: -70dBm, Output Port: SG



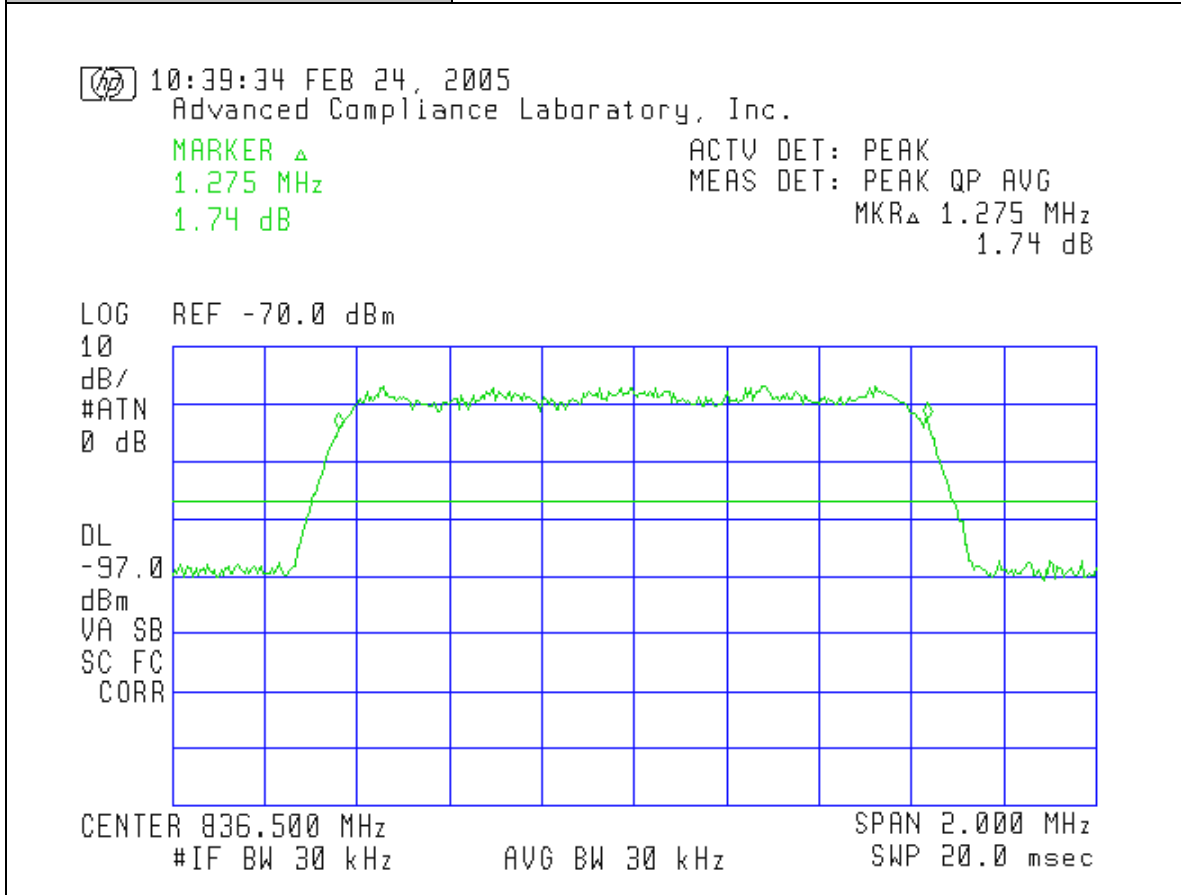
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth
Plot Name:	Uplink, Mid-Channel
Configuration:	SG Input: -70dBm, Output Port: EUT BTS



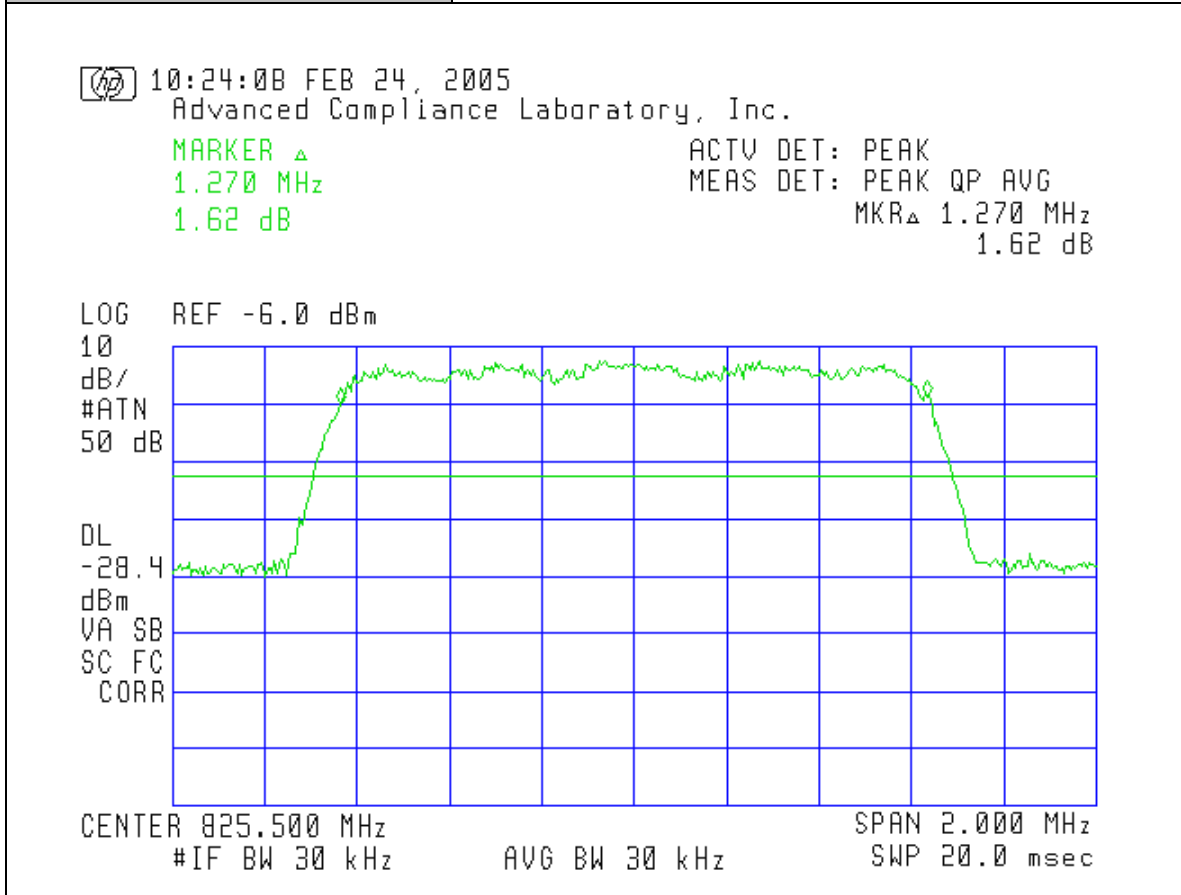
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth
Plot Name:	Uplink, Mid-Channel
Configuration:	SG Input: -70dBm, Output Port: SG



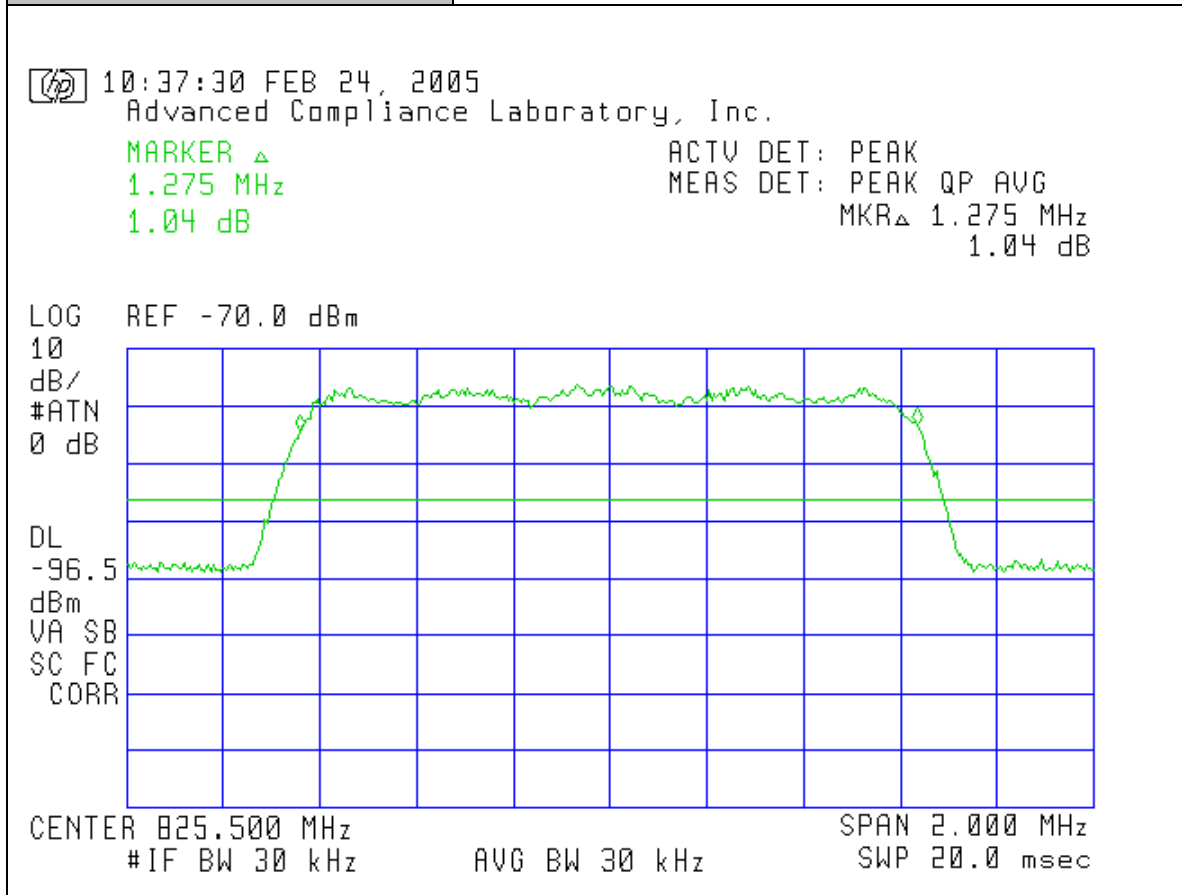
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth
Plot Name:	Uplink, Low-Channel
Configuration:	SG Input: -70dBm, Output Port: EUT BTS



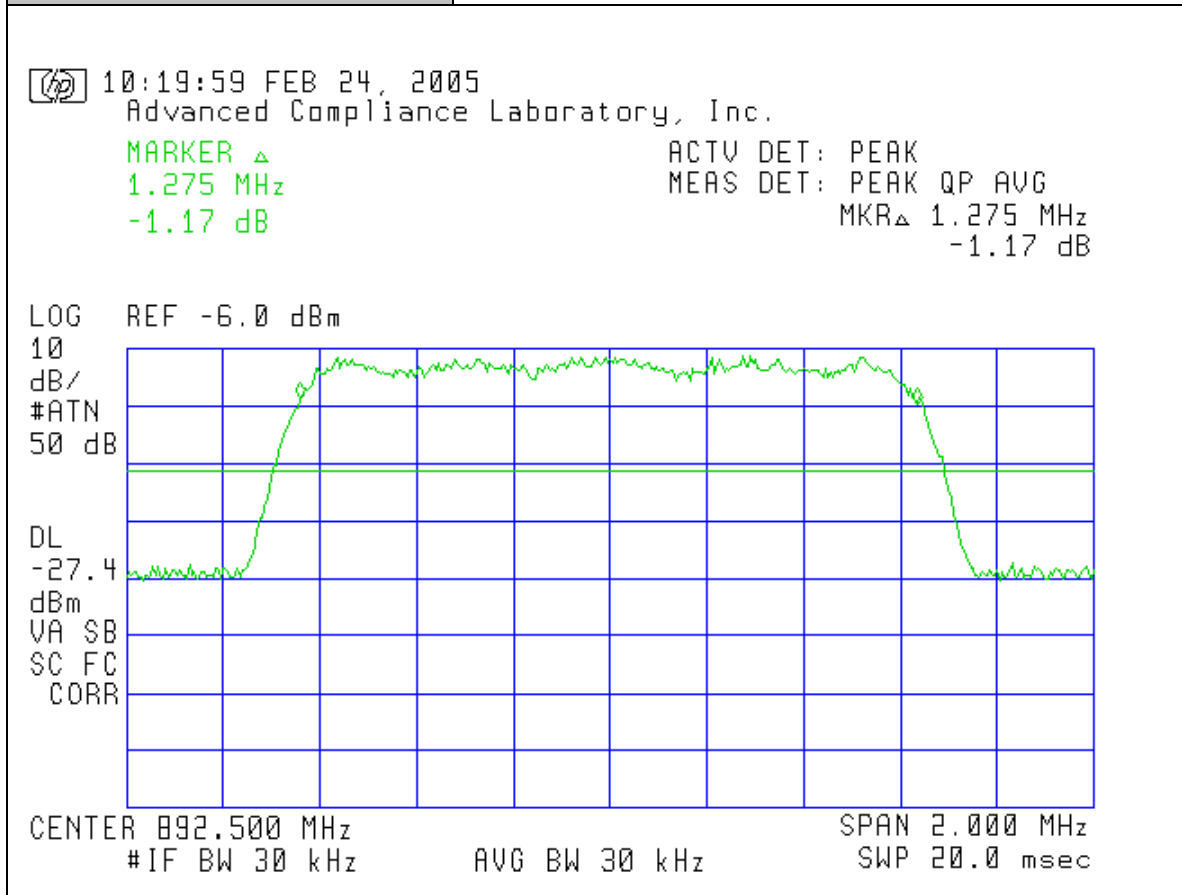
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth
Plot Name:	Uplink, Low-Channel
Configuration:	SG Input: -70dBm, Output Port: SG



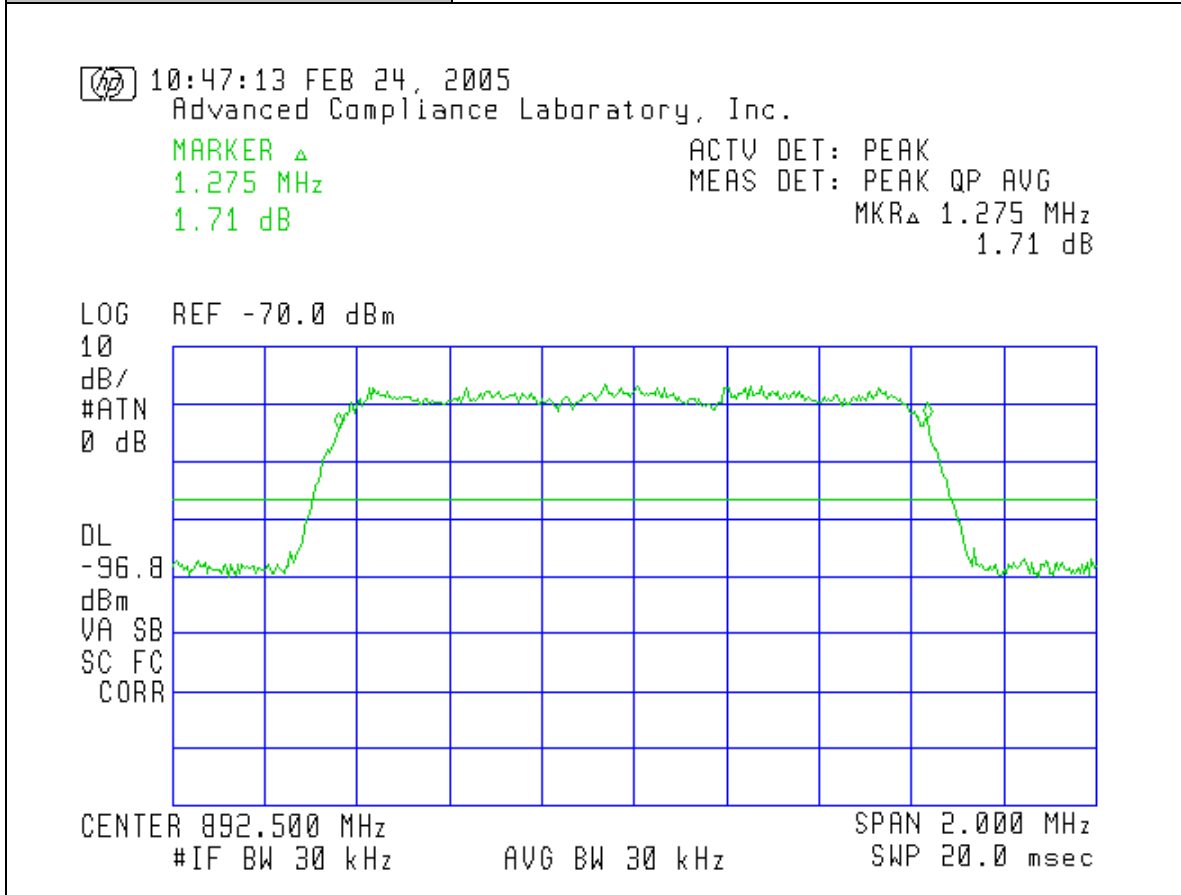
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth
Plot Name:	Downlink, Low-Channel
Configuration:	SG Input: -70dBm, Output Port: EUT Mobile



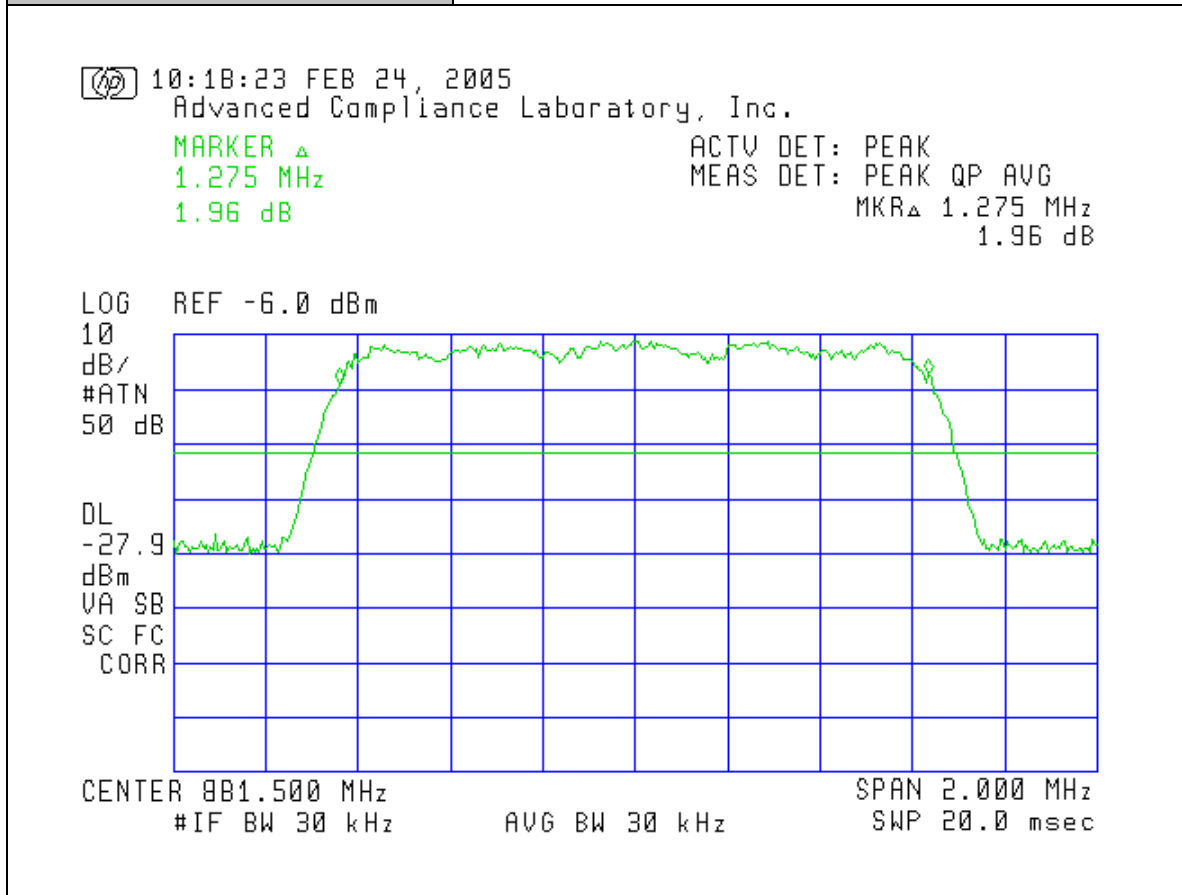
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth
Plot Name:	Downlink, Low-Channel
Configuration:	SG Input: -70dBm, Output Port: SG



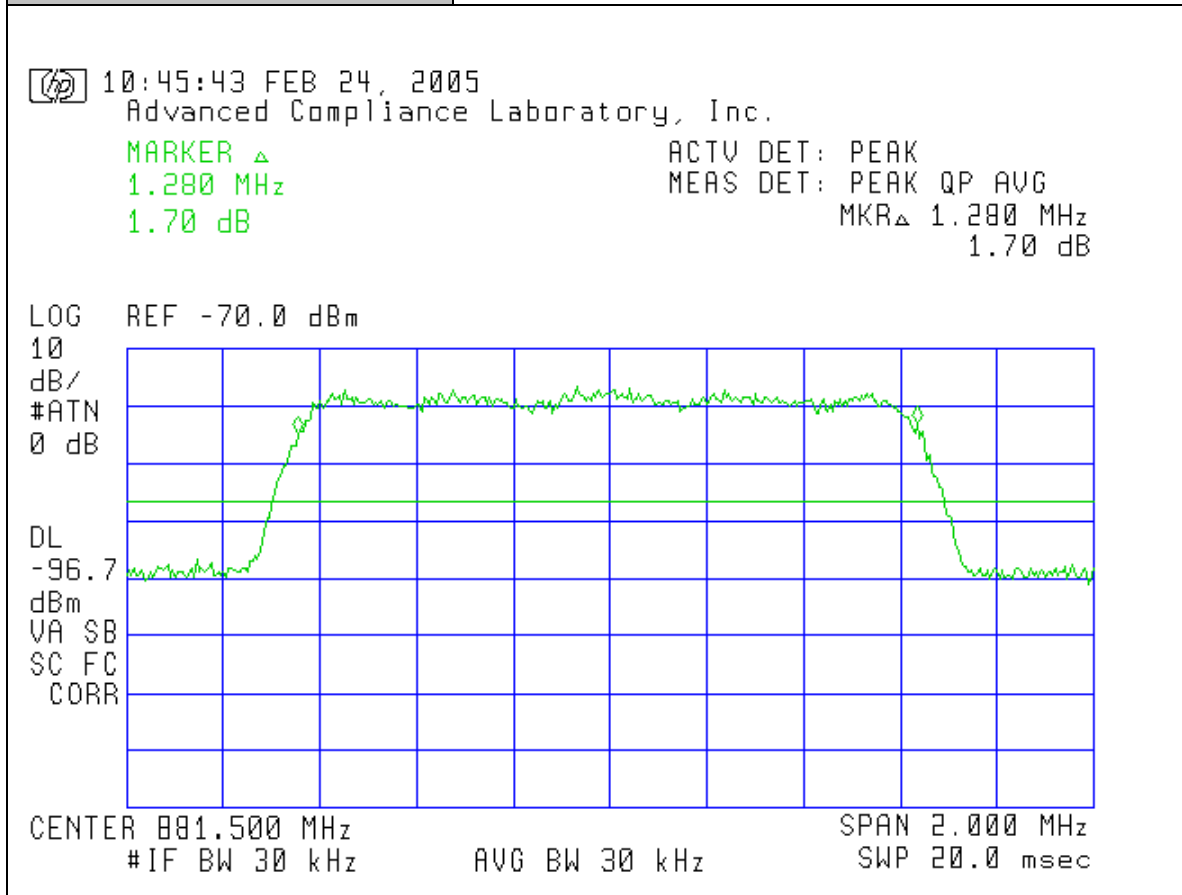
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth
Plot Name:	Downlink, Mid-Channel
Configuration:	SG Input: -70dBm, Output Port: EUT Mobile



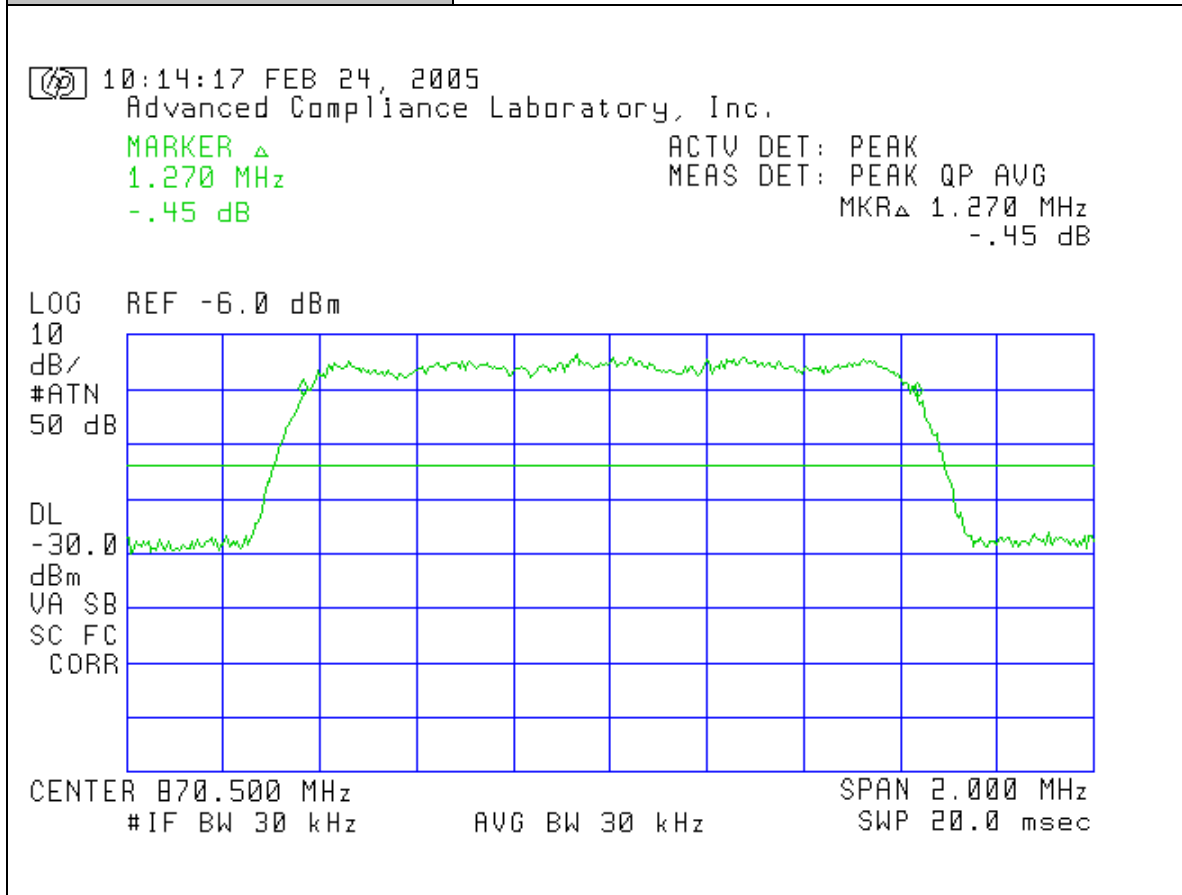
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth
Plot Name:	Downlink, Mid-Channel
Configuration:	SG Input: -70dBm, Output Port: SG



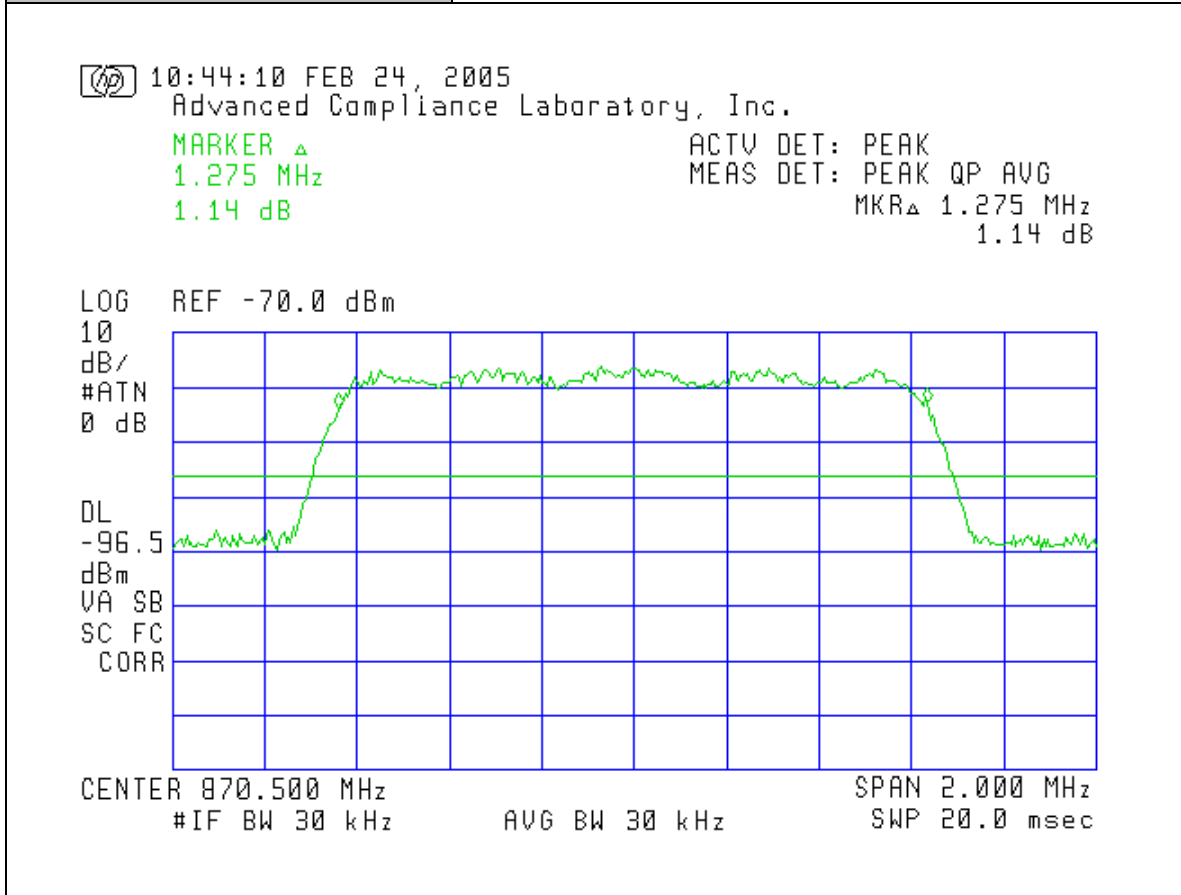
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth
Plot Name:	Downlink, Low-Channel
Configuration:	SG Input: -70dBm, Output Port: EUT Mobile



Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth
Plot Name:	Downlink, Low-Channel
Configuration:	SG Input: -70dBm, Output Port: SG



Section 5. Spurious Emissions at Antenna Terminals

Name of Test:	<i>Spurious Emissions at Antenna Terminals</i>	Test Standard:	<i>22.917</i>
Tested By:	EDWARD LEE	Test Date:	02/22/2005-03/01/2005

Minimum Standard: Para. No. 22.917(e). The mean power of emissions must be attenuated below the mean power of the unmodulated carrier on any frequency twice or more than twice the fundamental emission by at least $43 + 10 \log P$. This is equivalent to -13 dBm absolute power.

Method of Measurement: Spectrum Analyzer Settings:
 RBW: 100 kHz. As required for digital modulations.
 RBW: 1MHz. When frequency is located above 1GHz.
 VBW: \geq RBW
 Start Frequency: 0 MHz
 Stop Frequency: 13 GHz
 Sweep: Auto

Test Result:

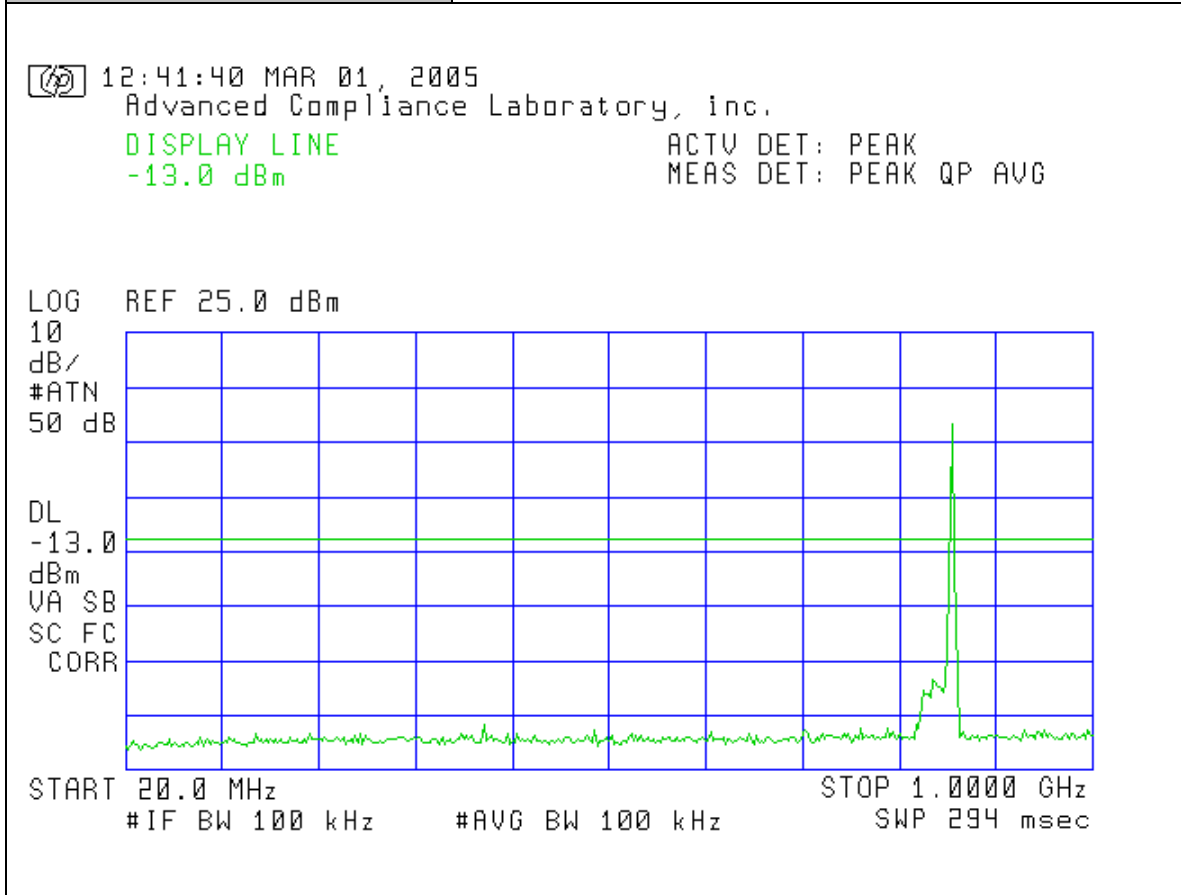
Complies

Test Data:

Attached Plots

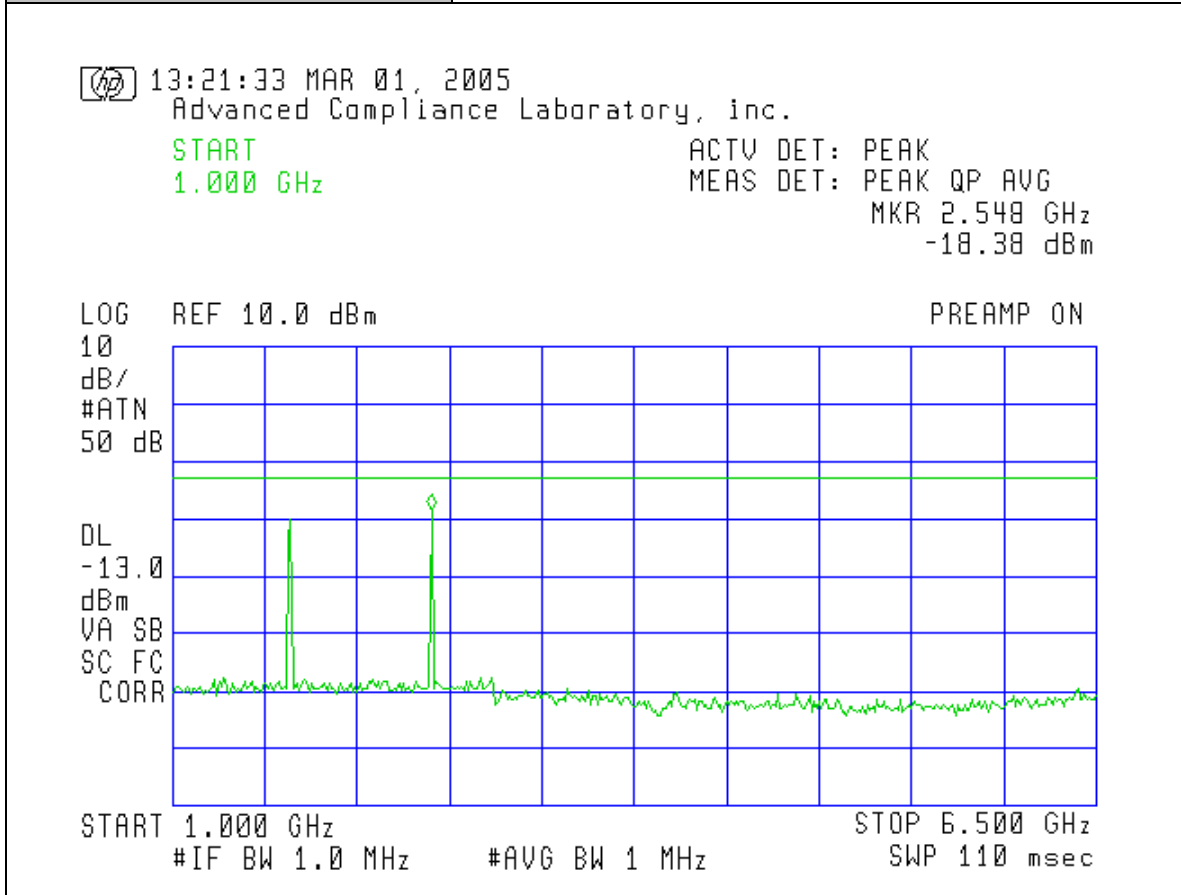
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Hi-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



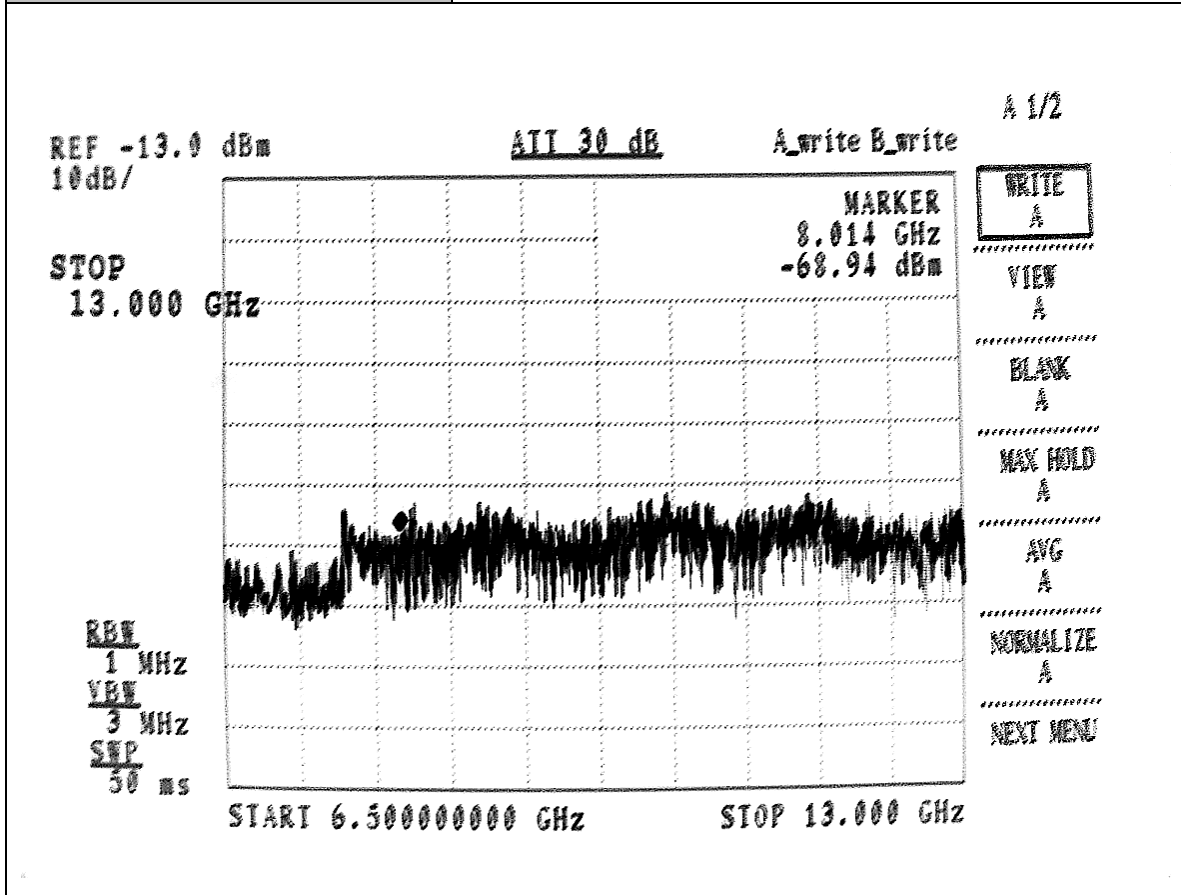
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Hi-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



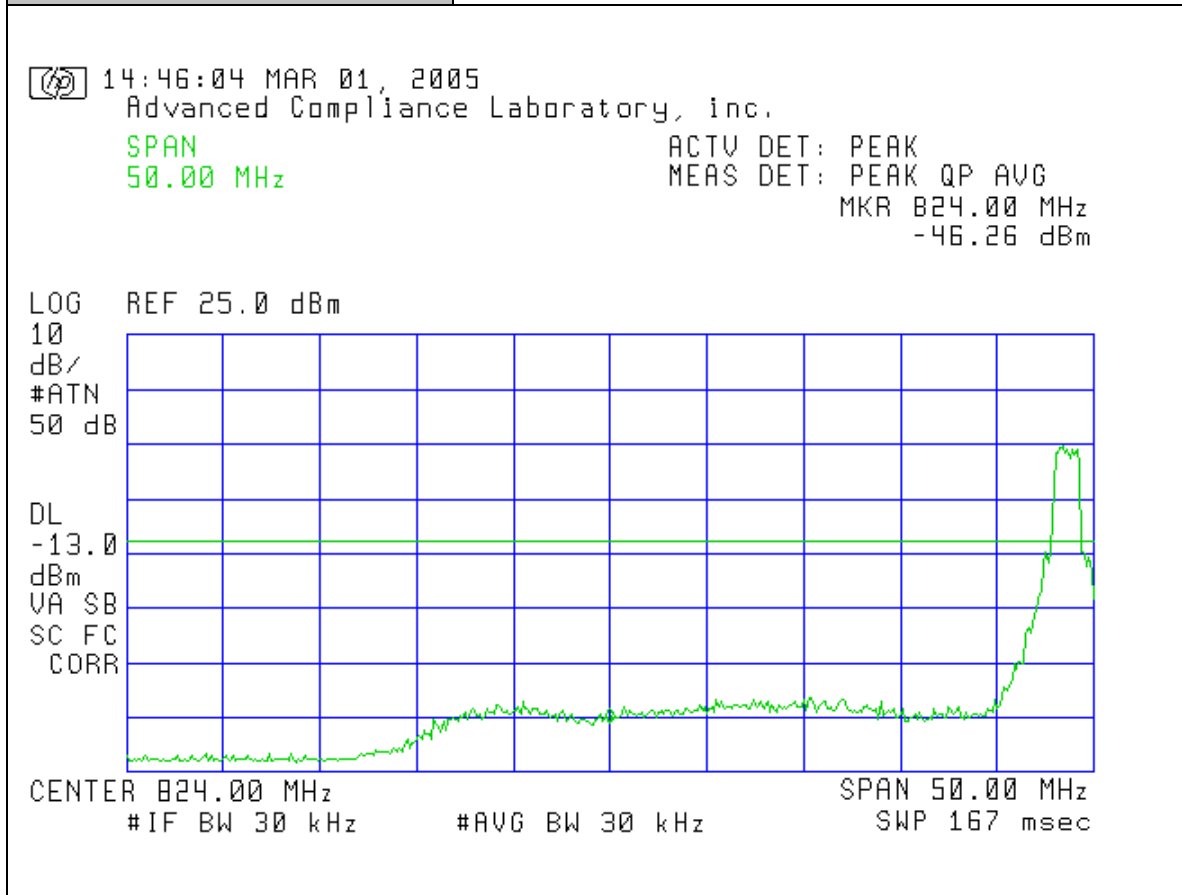
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Hi-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



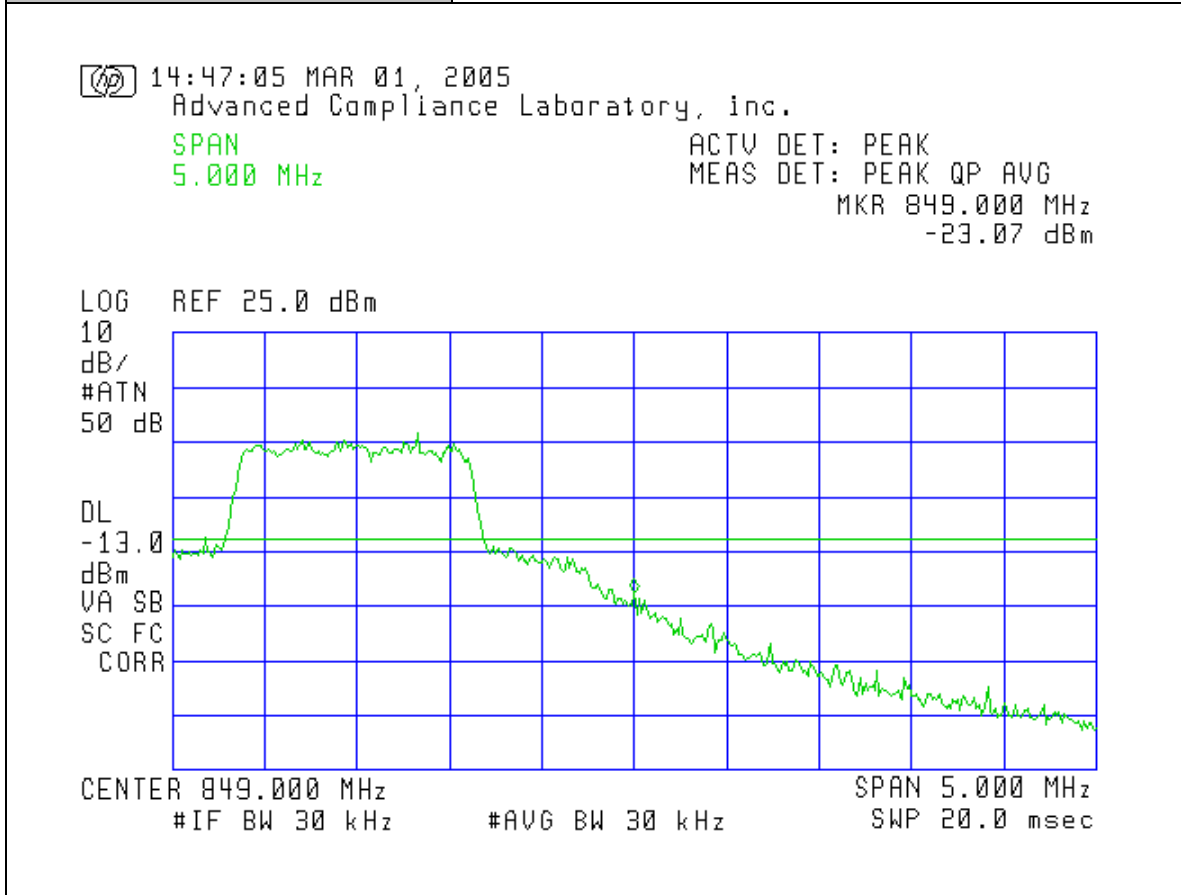
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Hi-Channel, Lower Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



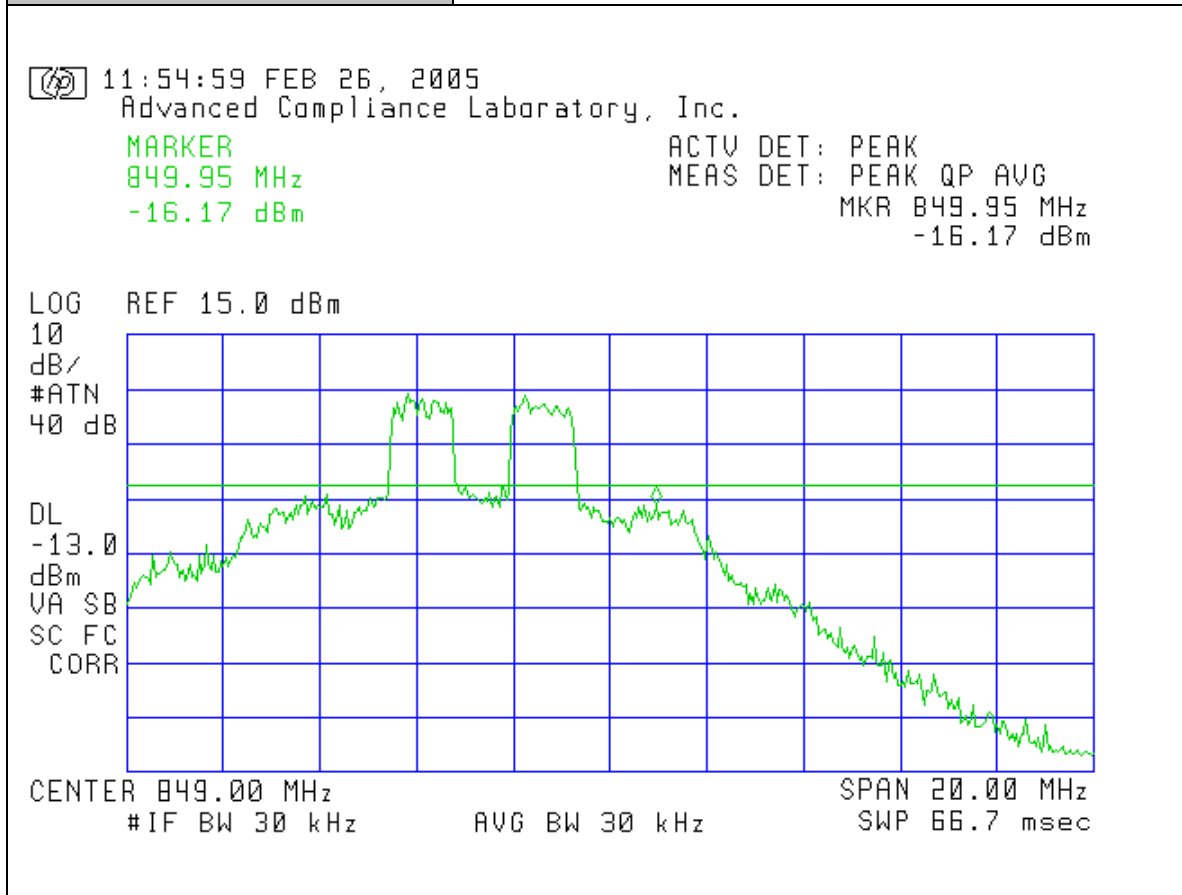
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Hi-Channel, Upper Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



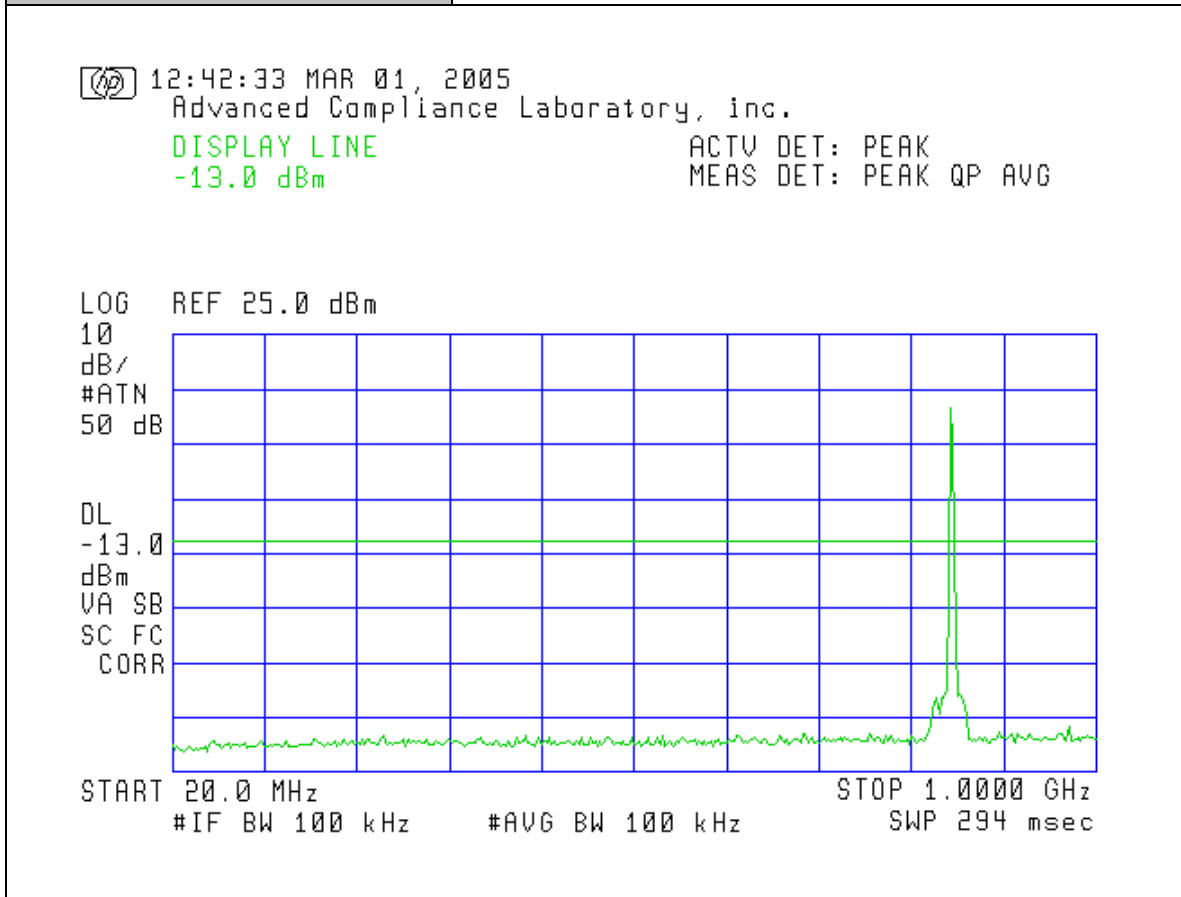
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	UL, Hi-Chn, Intermodulation, Upper Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



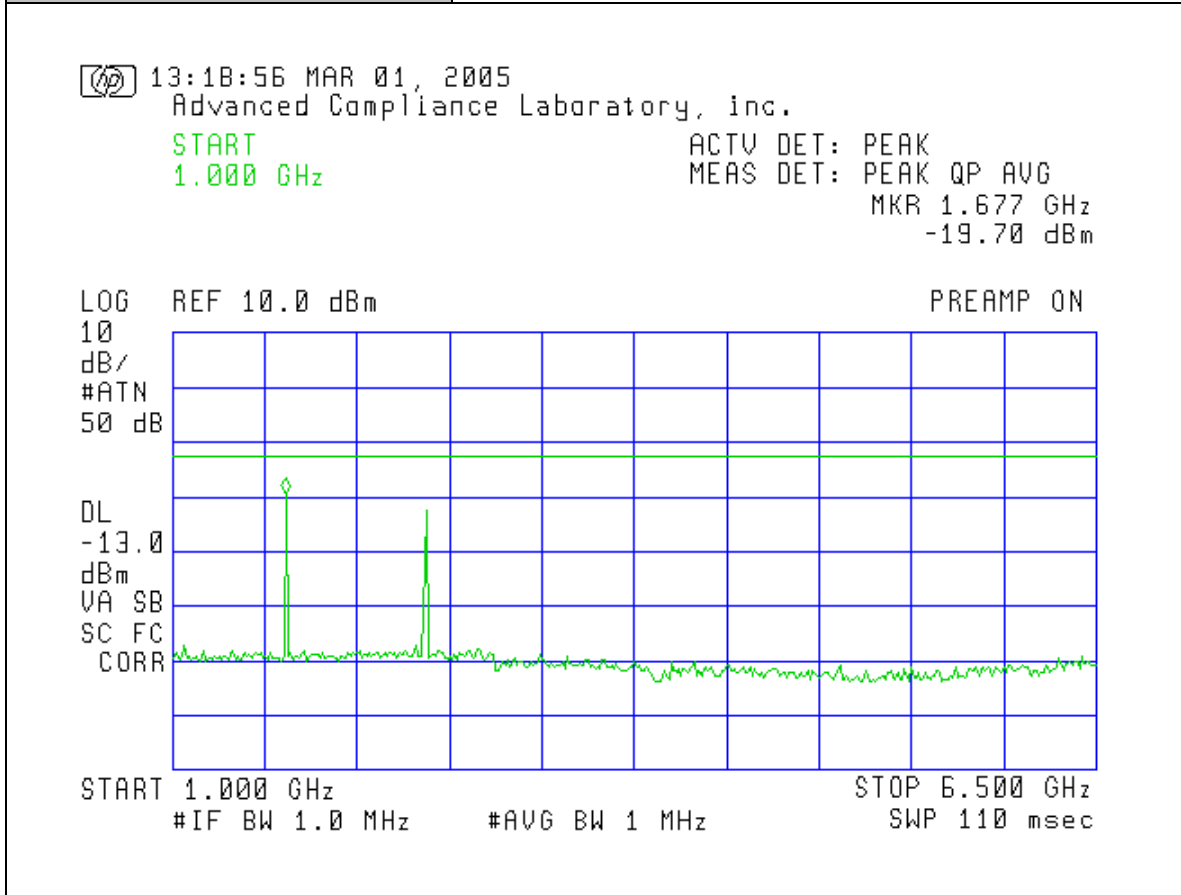
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Mid-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



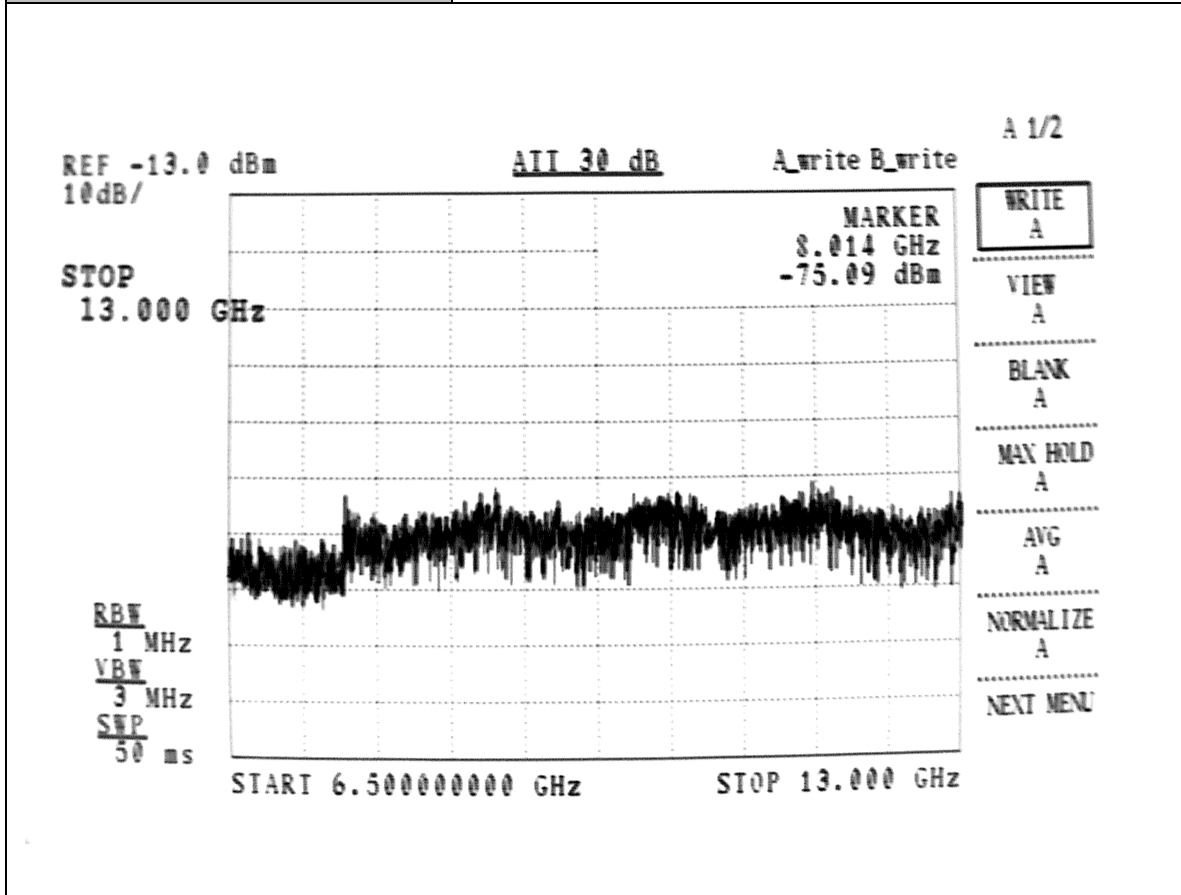
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Mid-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



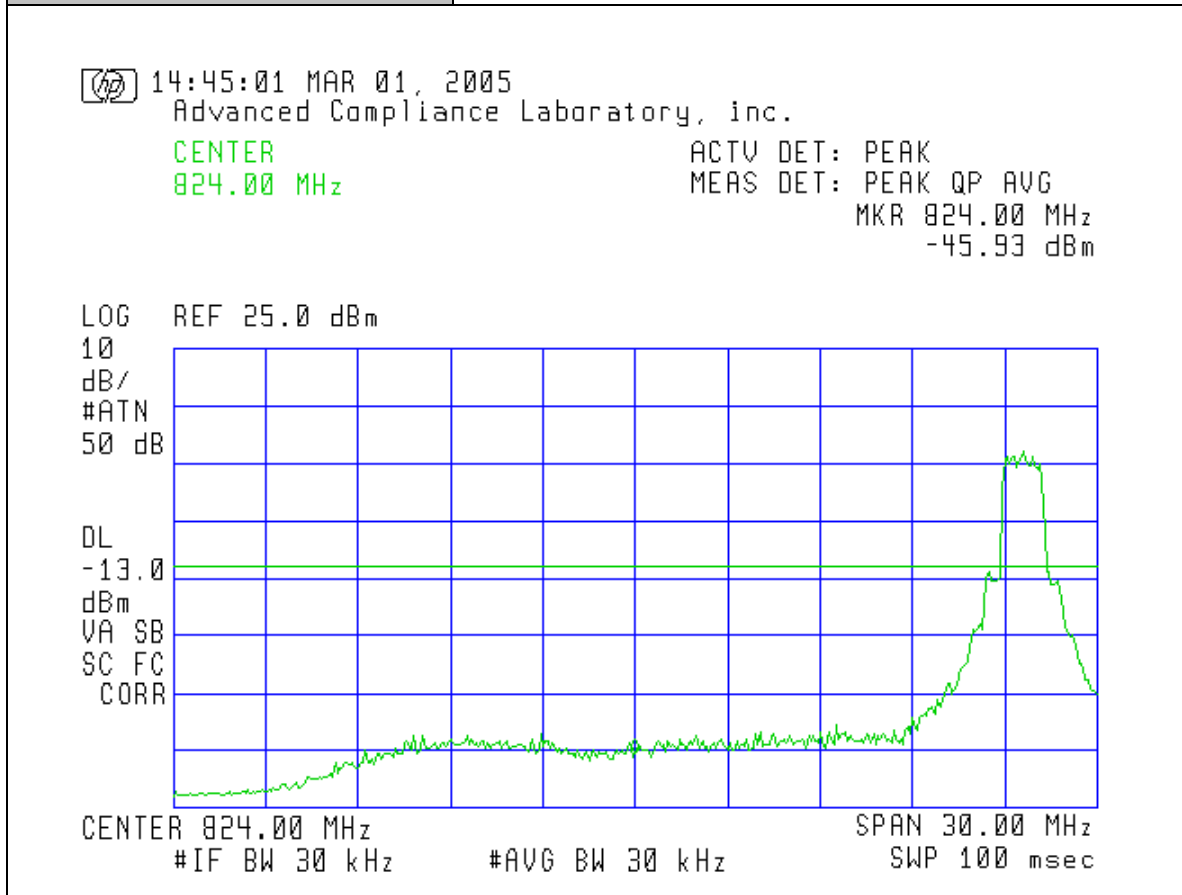
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Mid-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



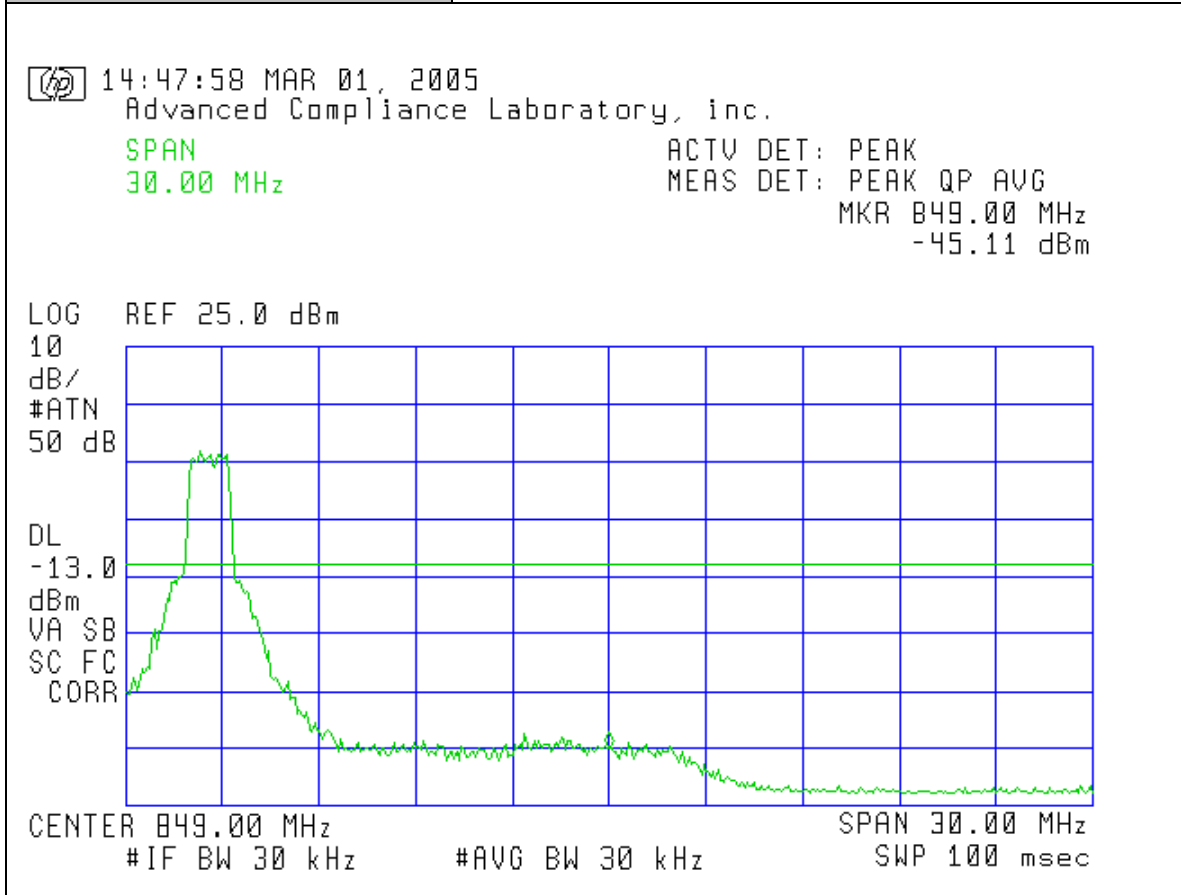
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Mid-Channel, Lower Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



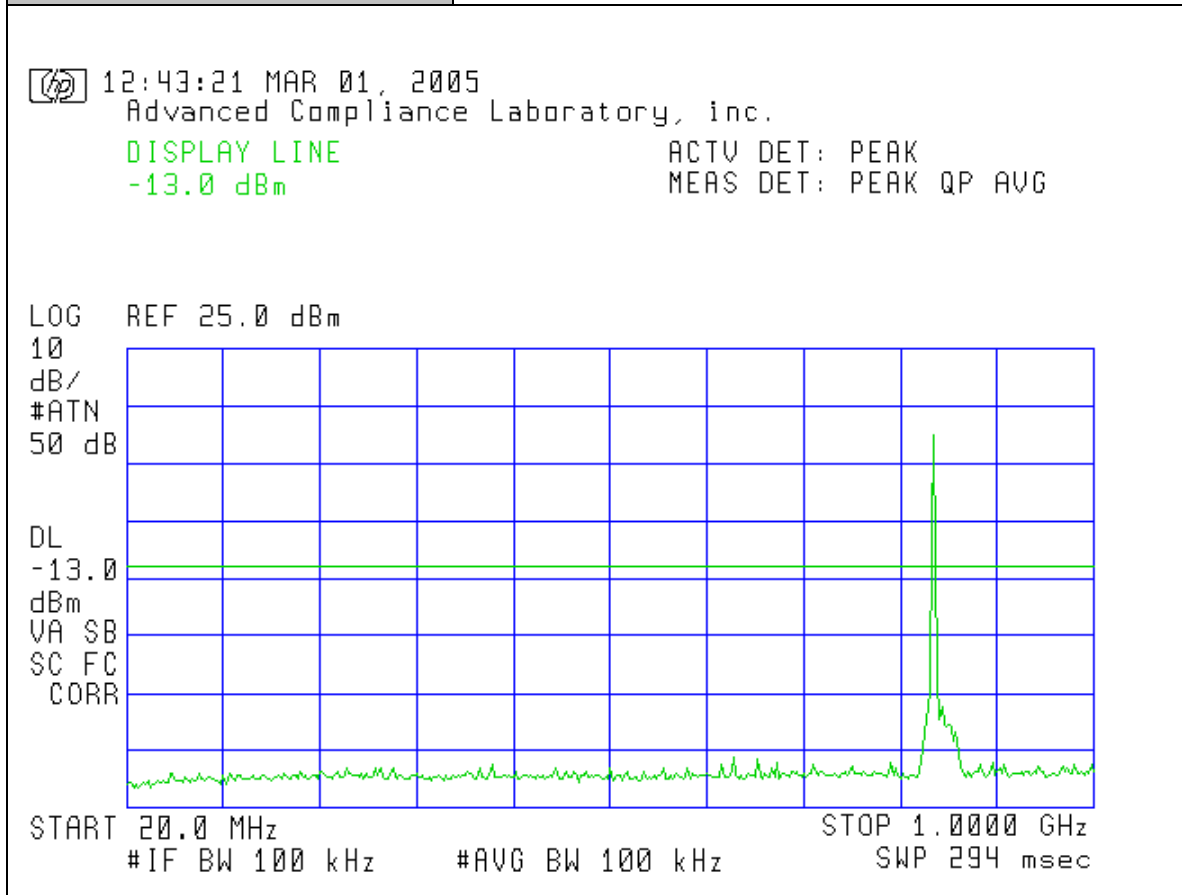
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Mid-Channel, Upper Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



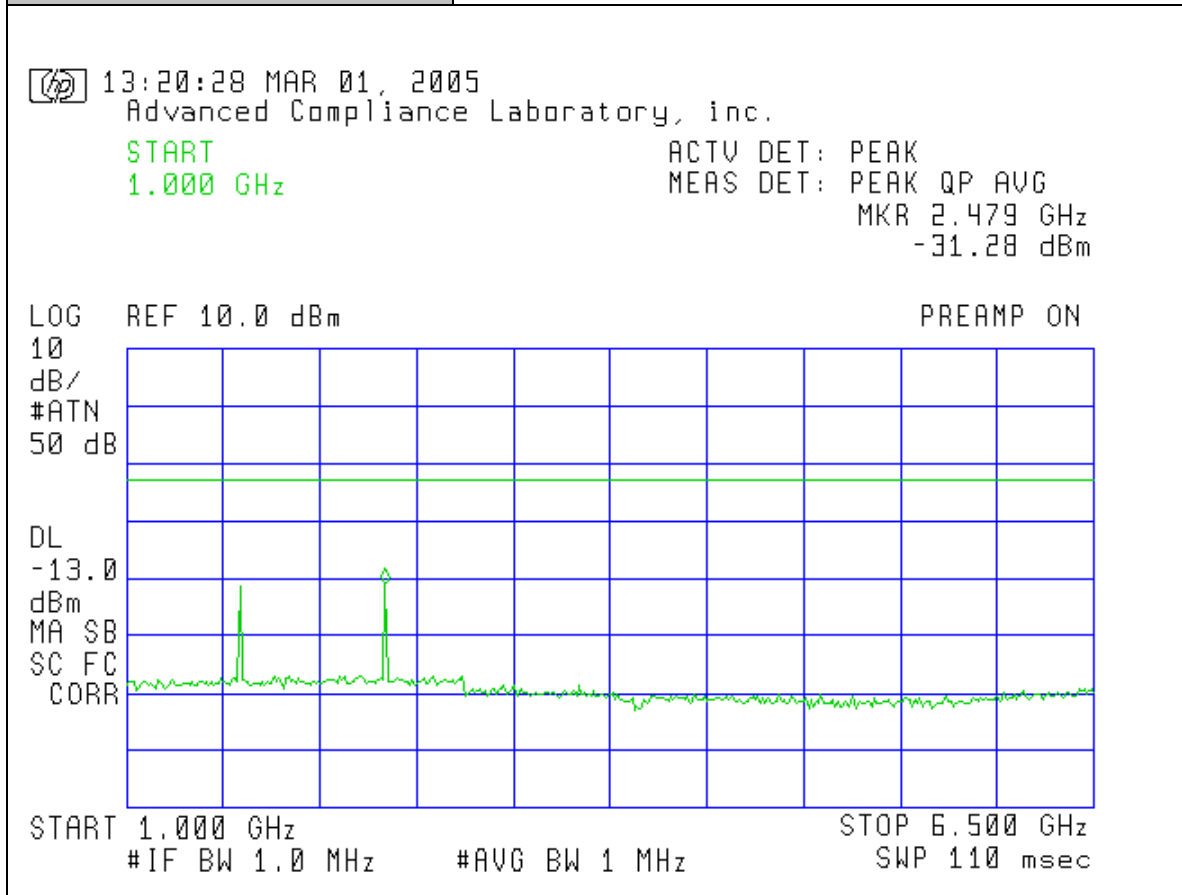
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Low-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



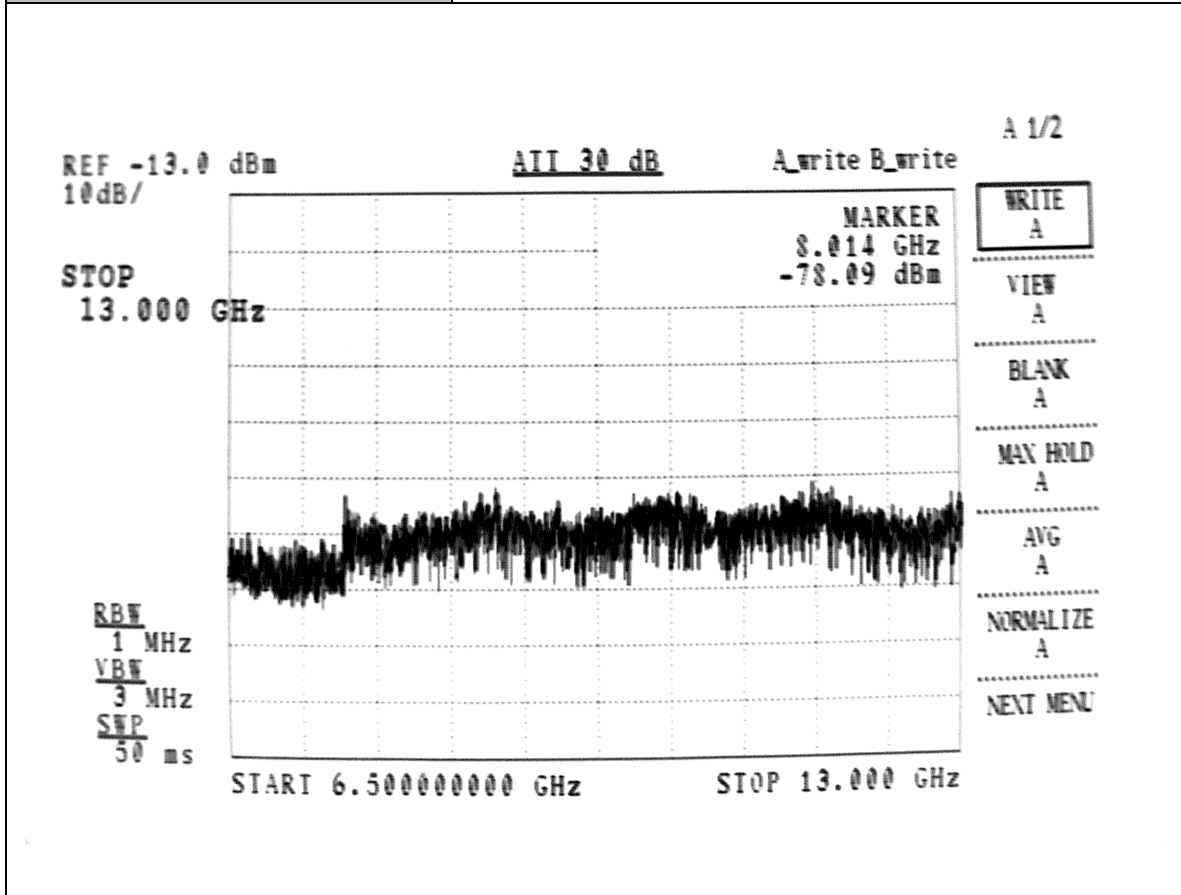
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Low-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



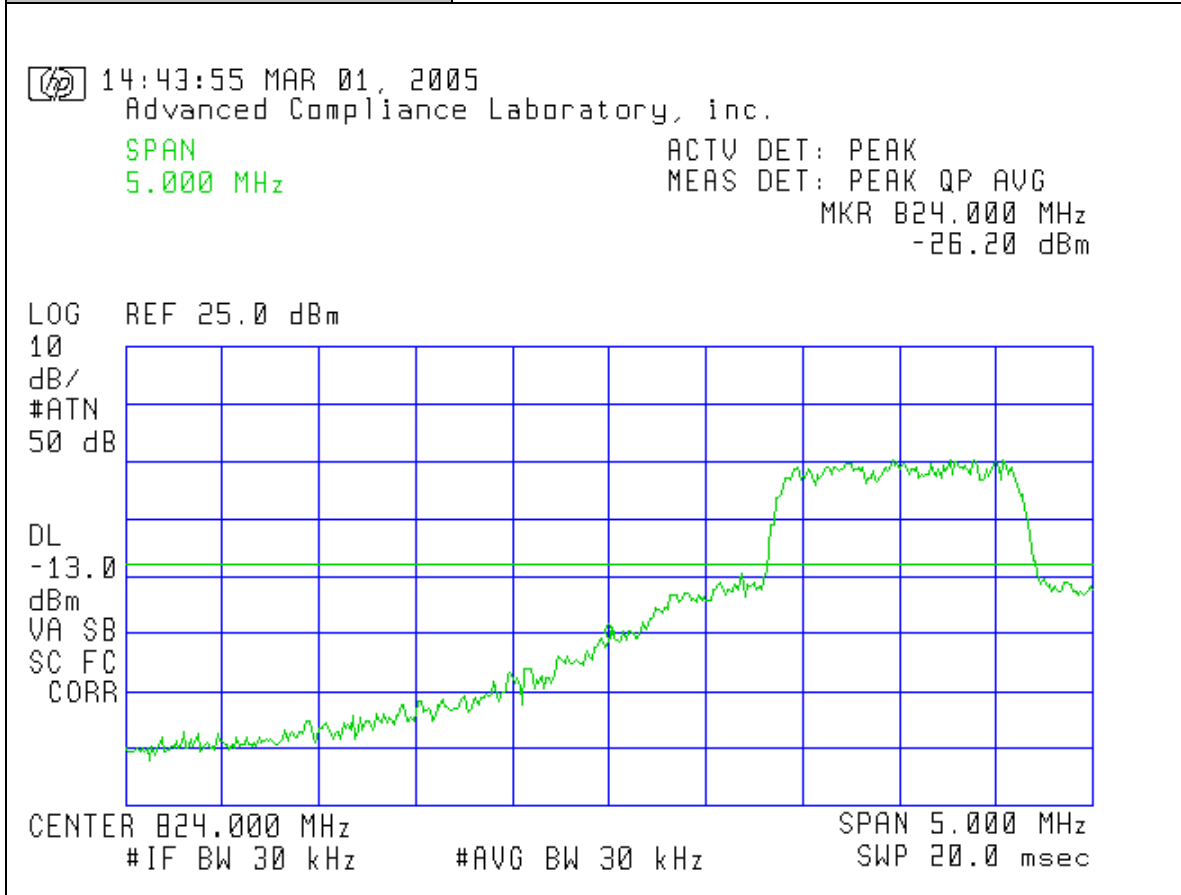
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Low-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



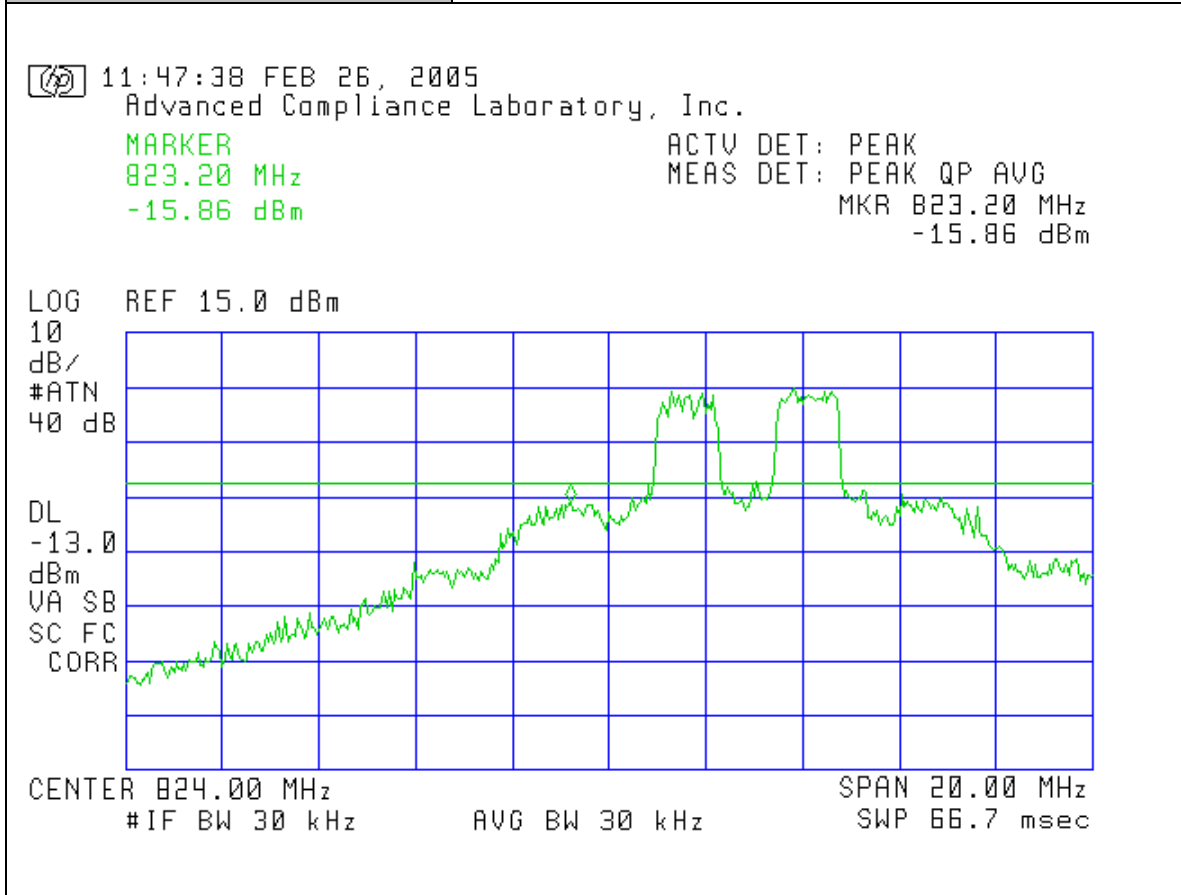
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Low-Channel, Lower Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



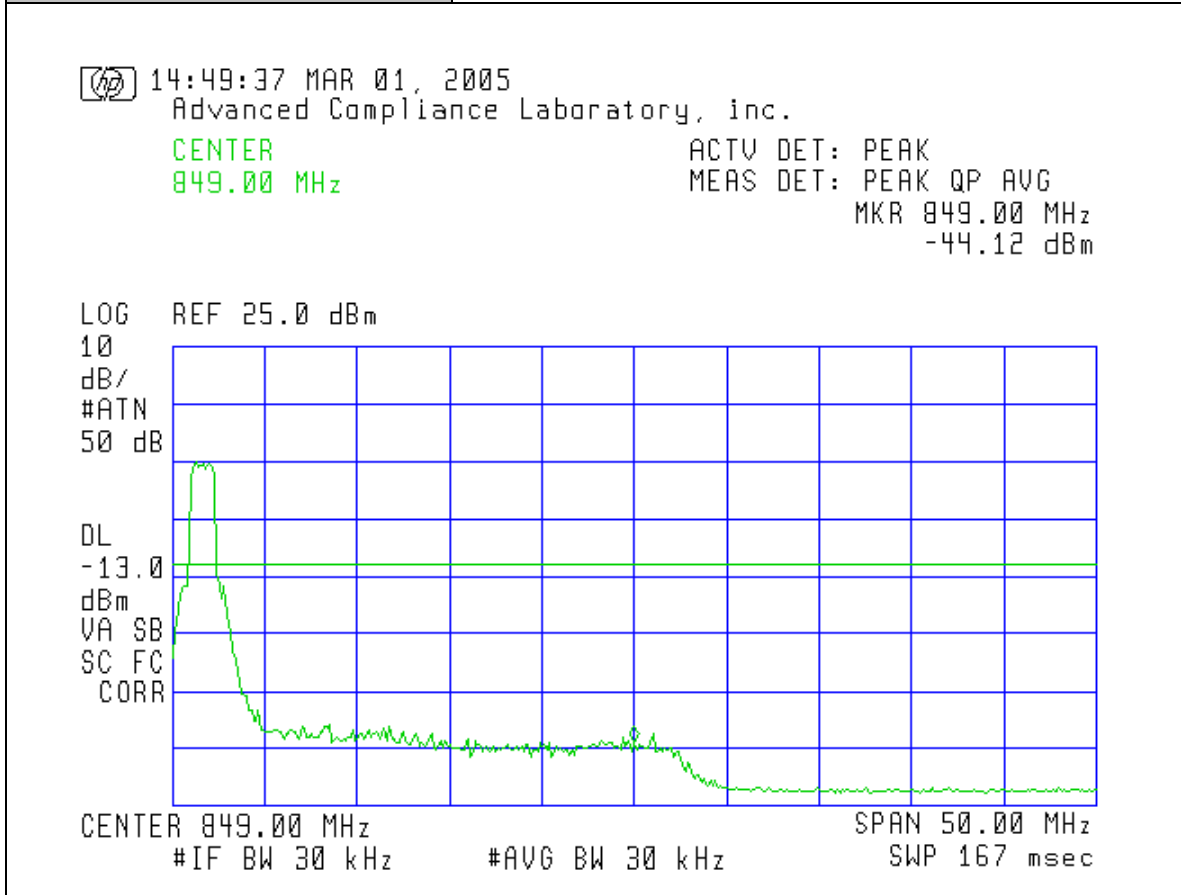
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	UL, Low-Chn, Intermodulation, Lower Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



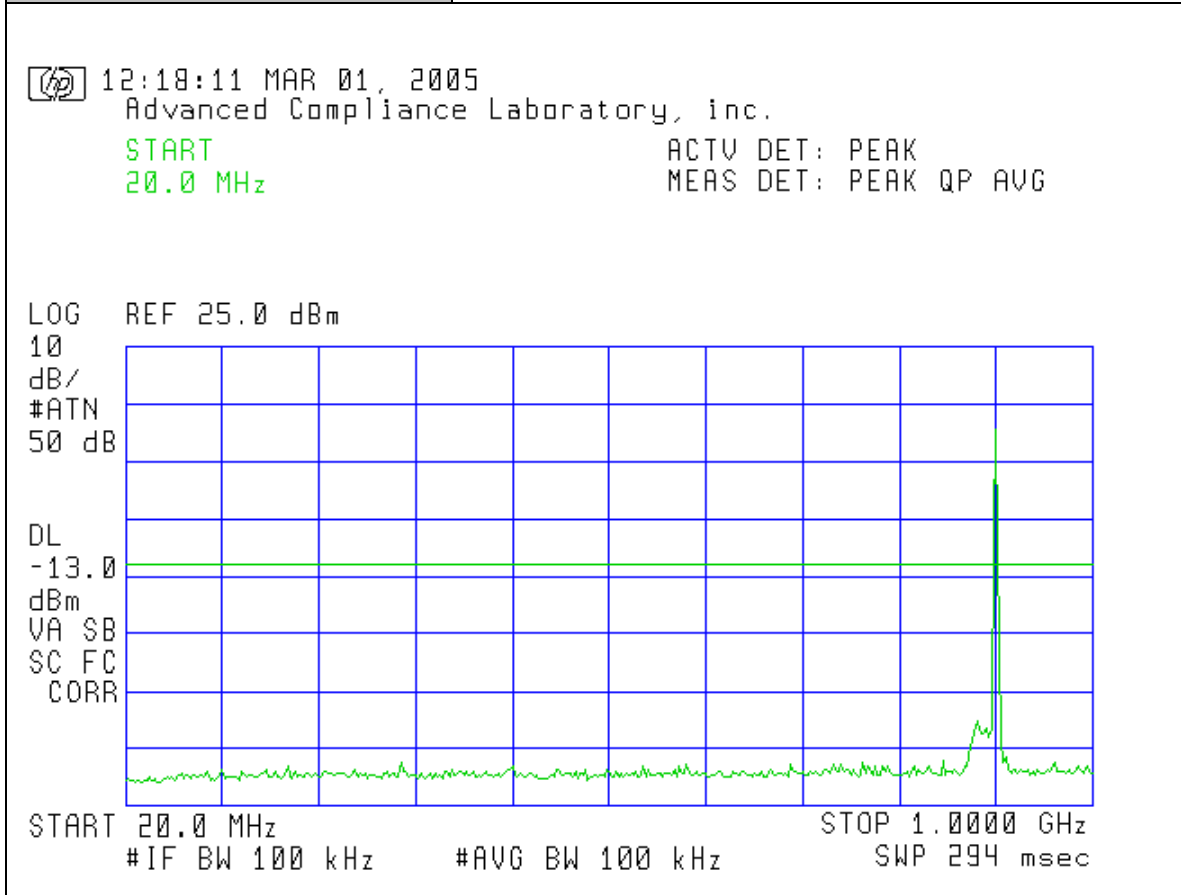
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Uplink, Low-Channel, Upper Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT BTS



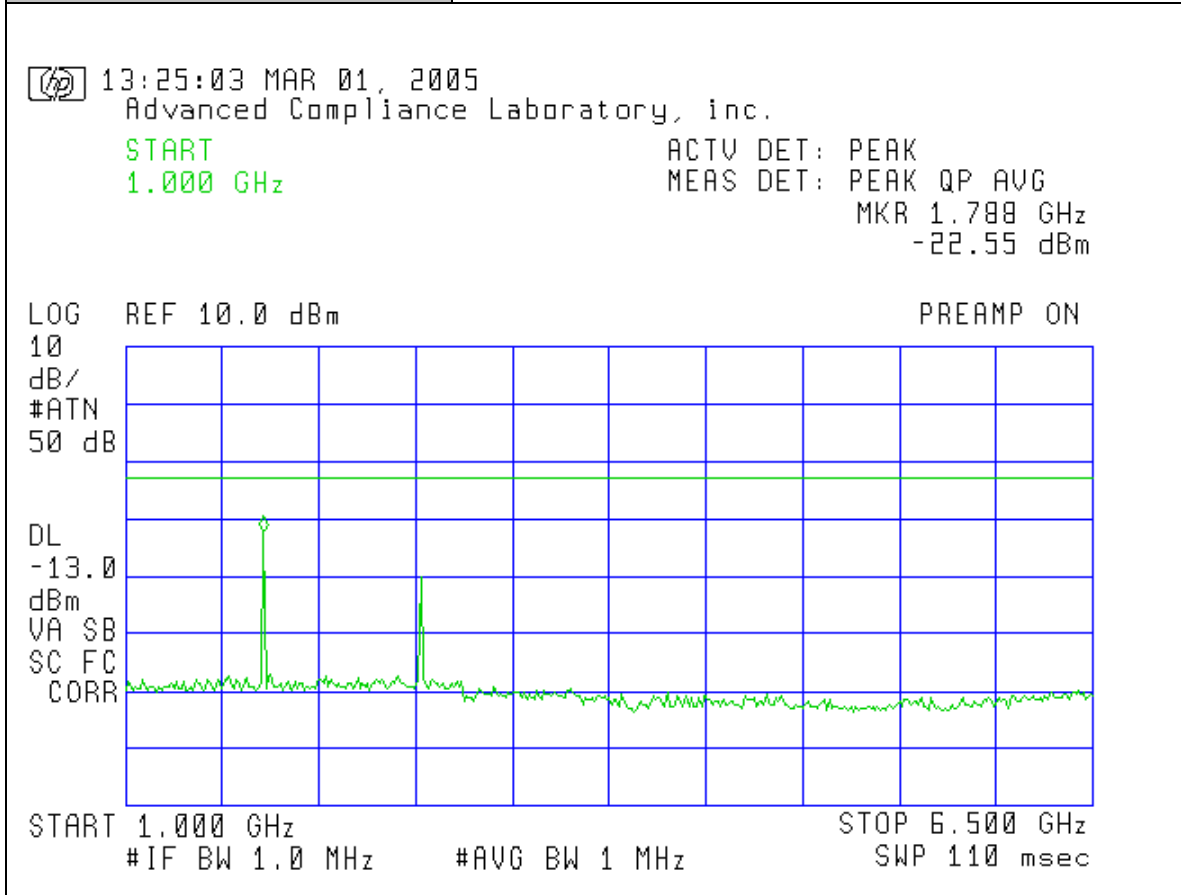
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Hi-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



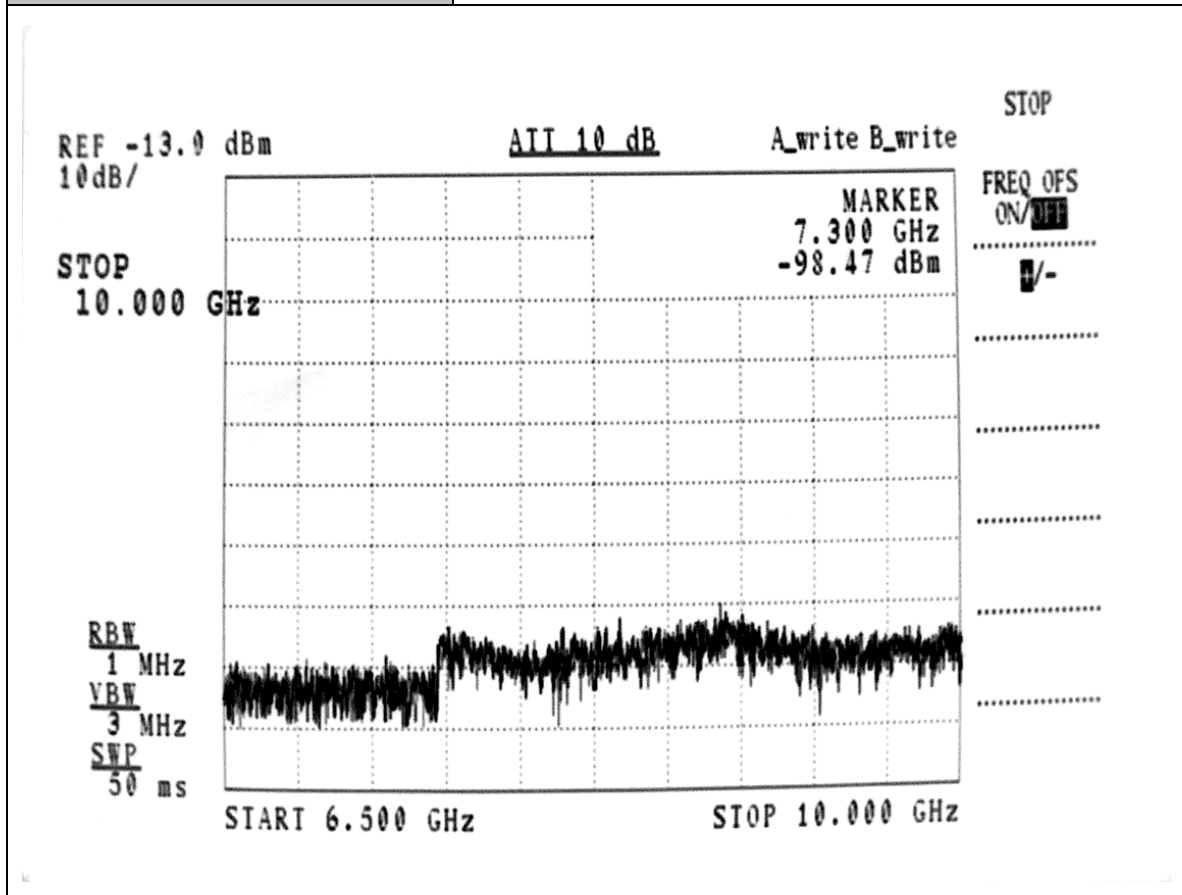
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Hi-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



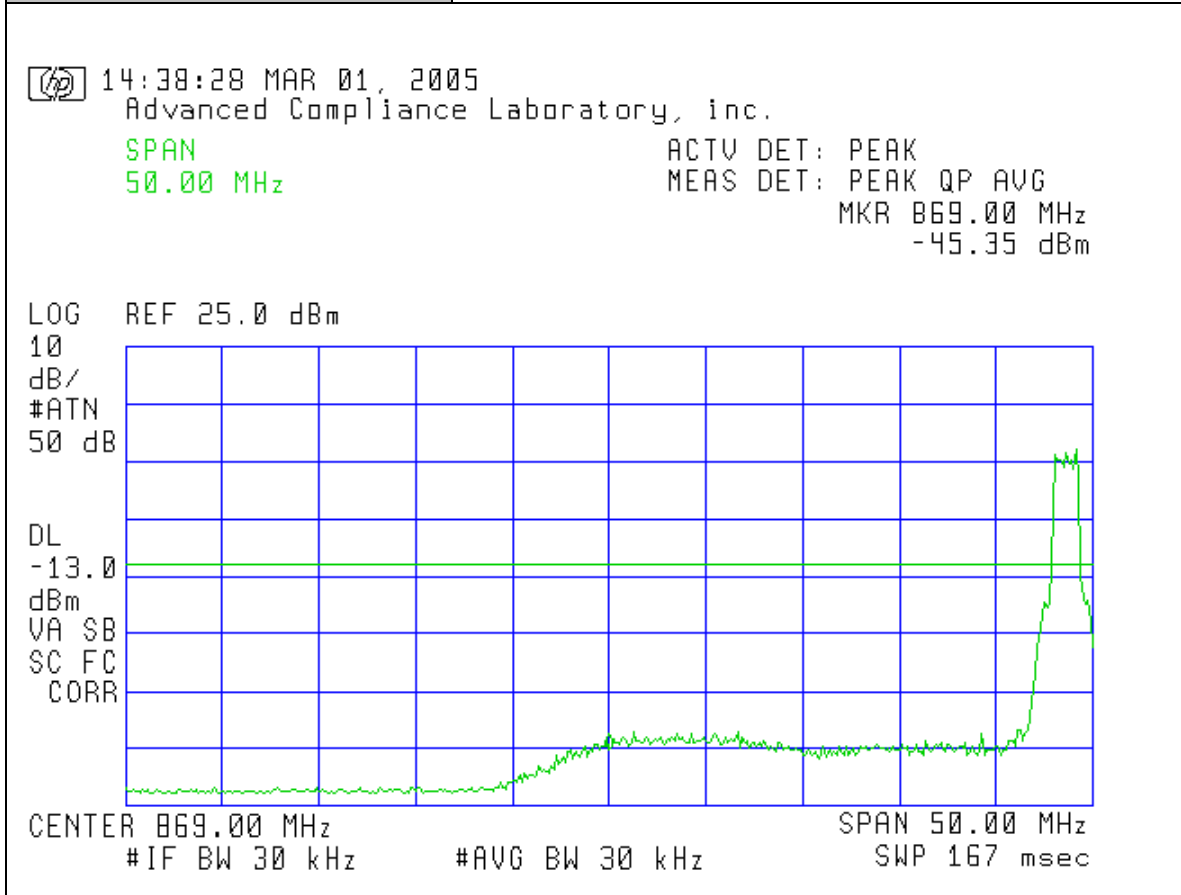
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Hi-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



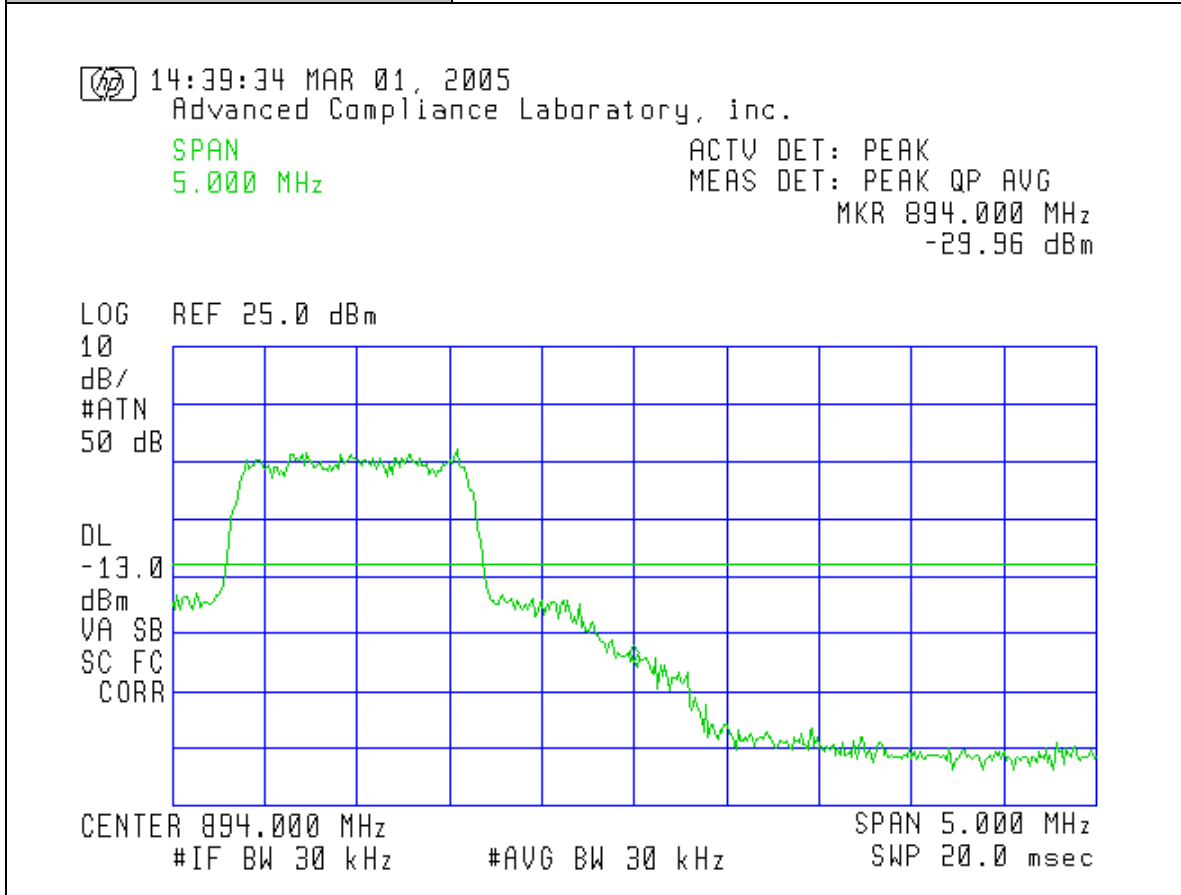
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Hi-Channel, Lower Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



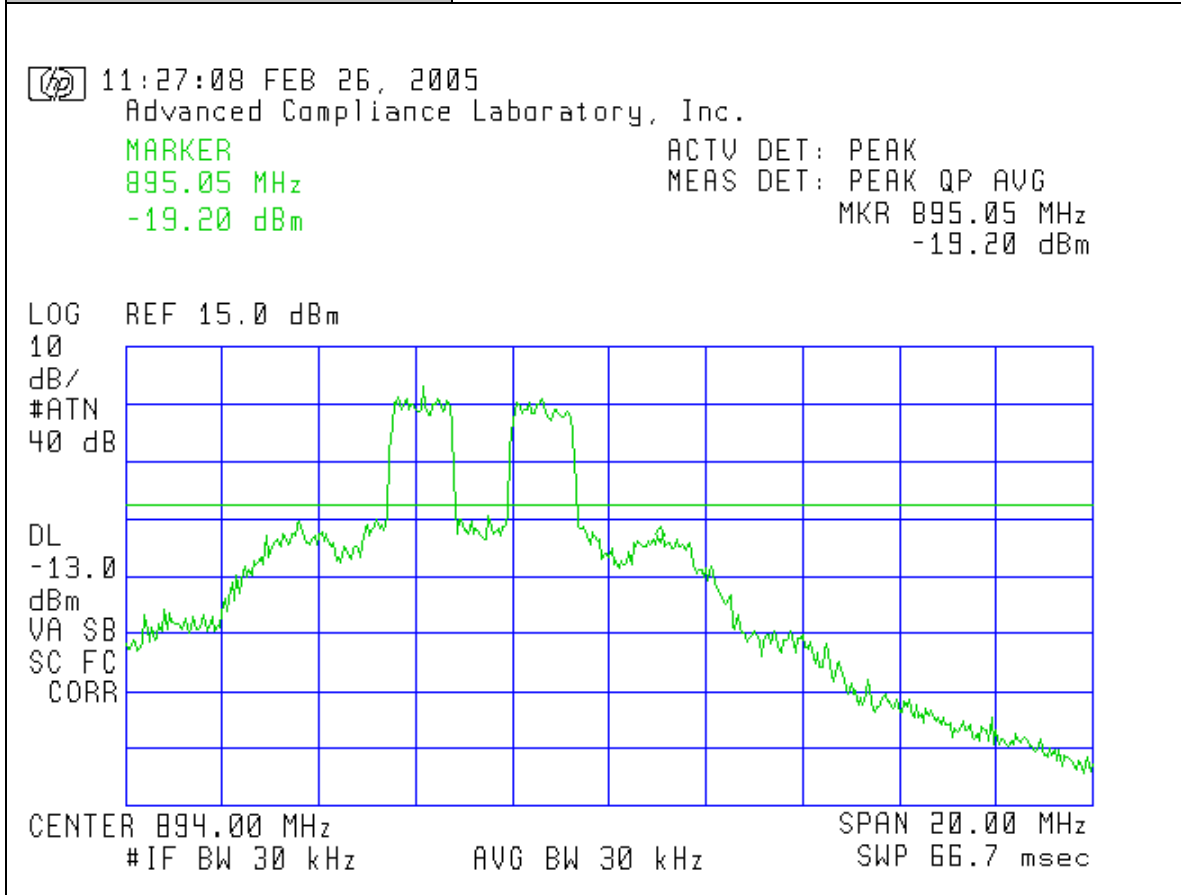
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Hi-Channel, Upper Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



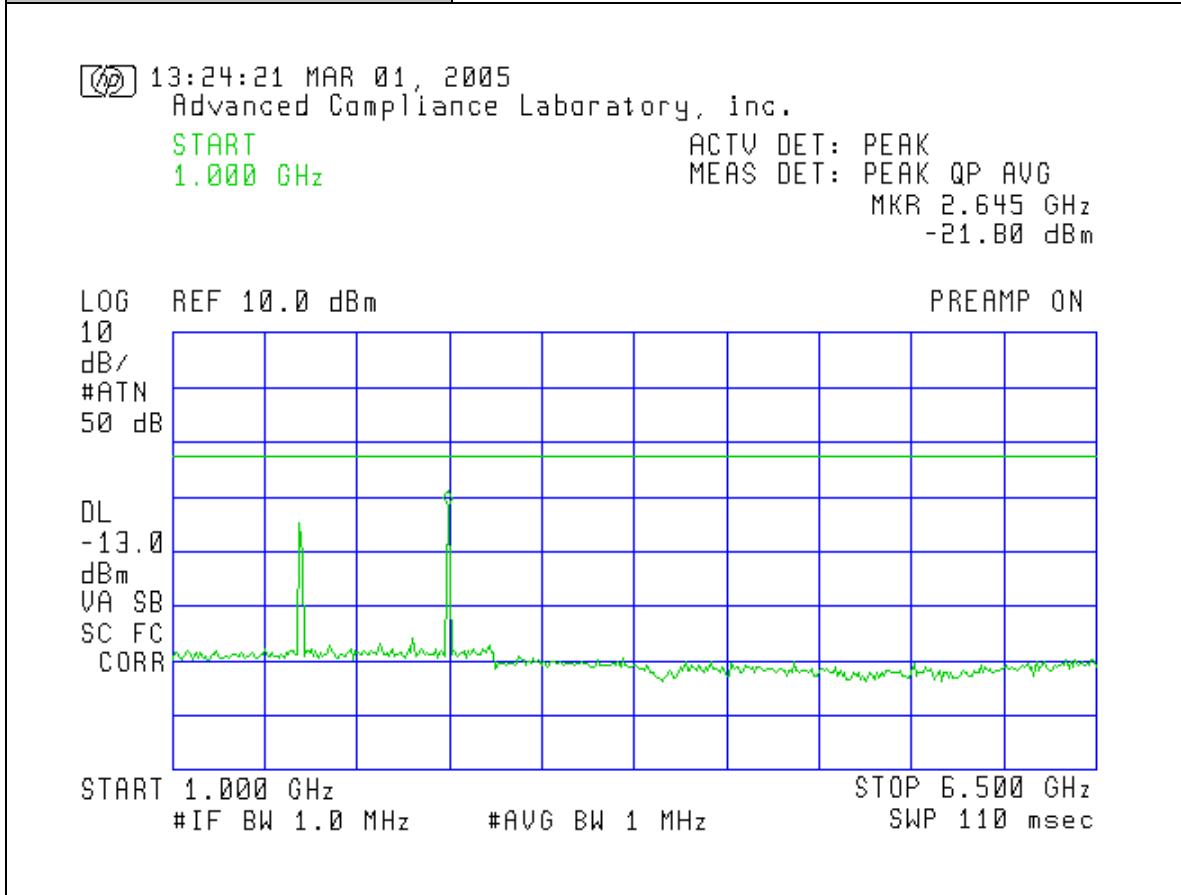
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	DL, Hi-Chn, Intermodulation, Upper Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



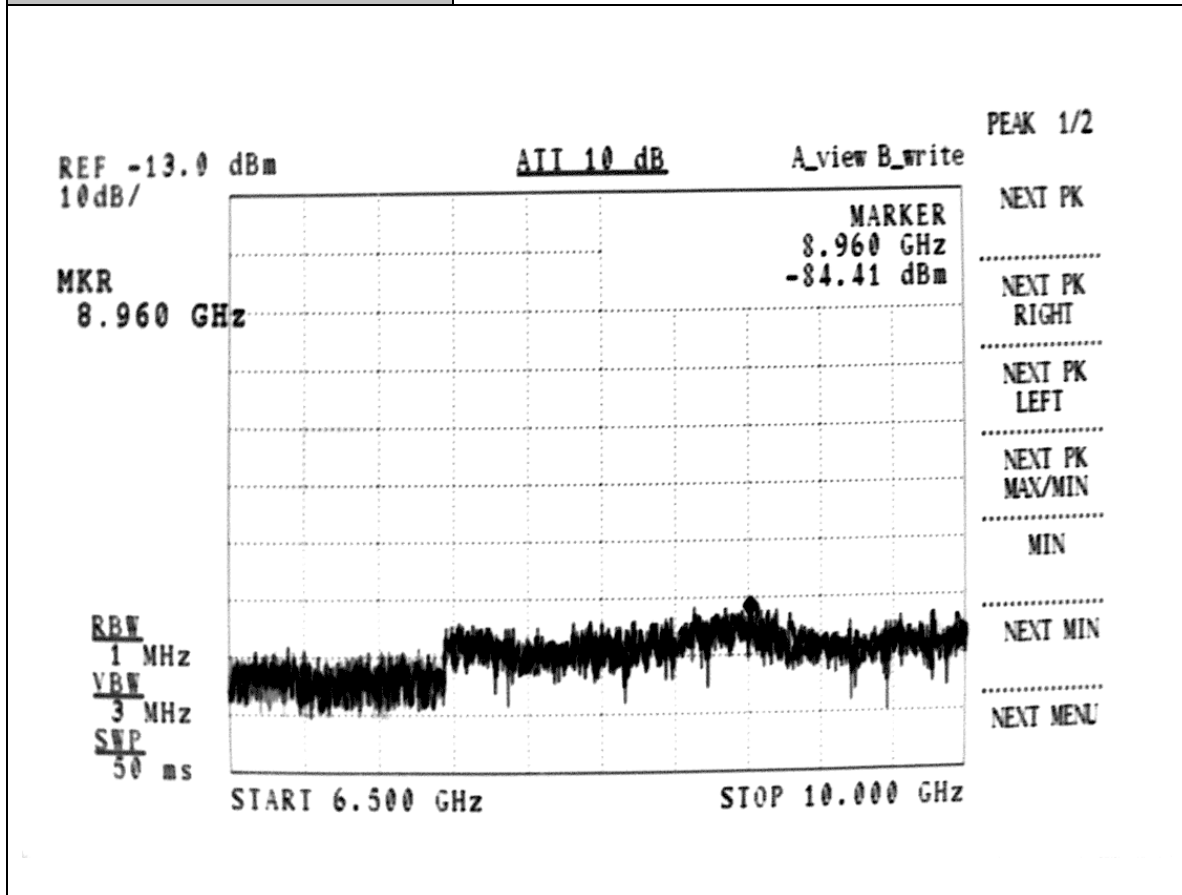
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Mid-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



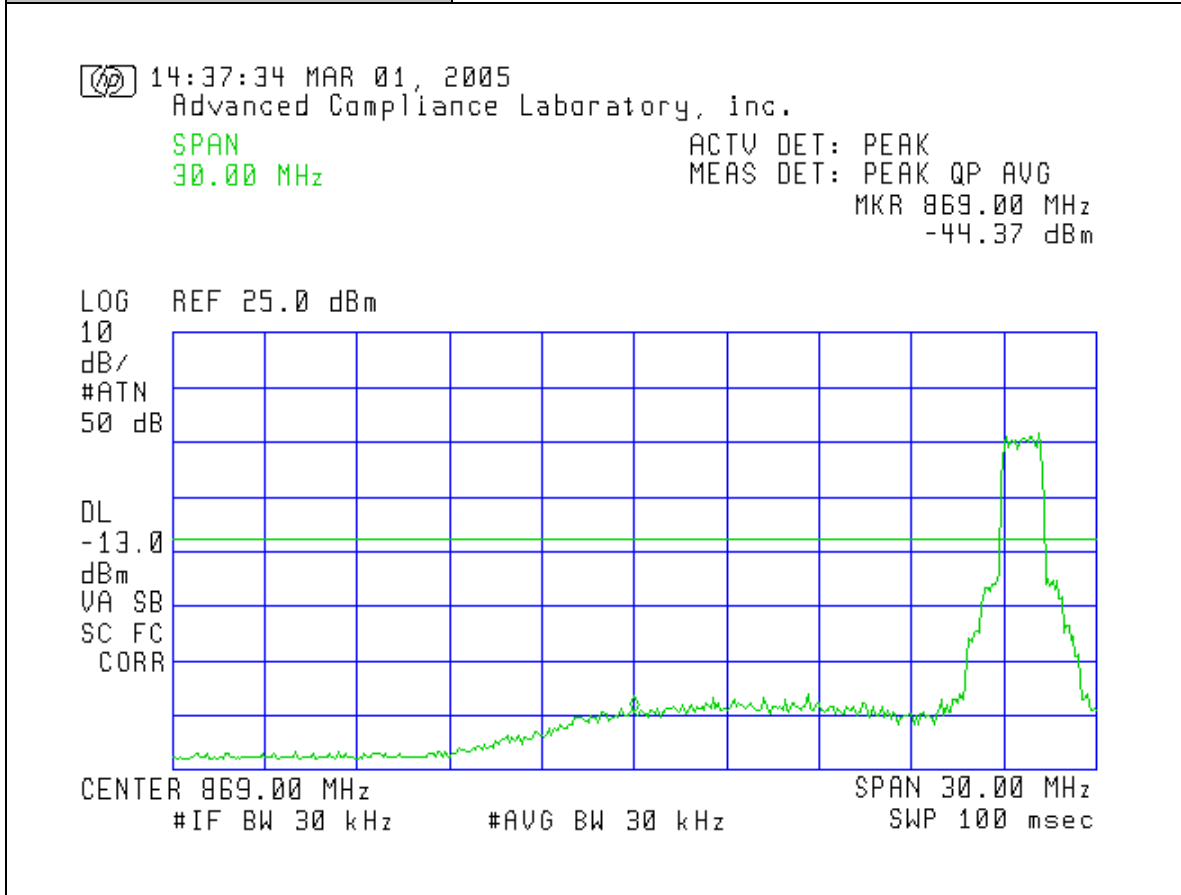
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Mid-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



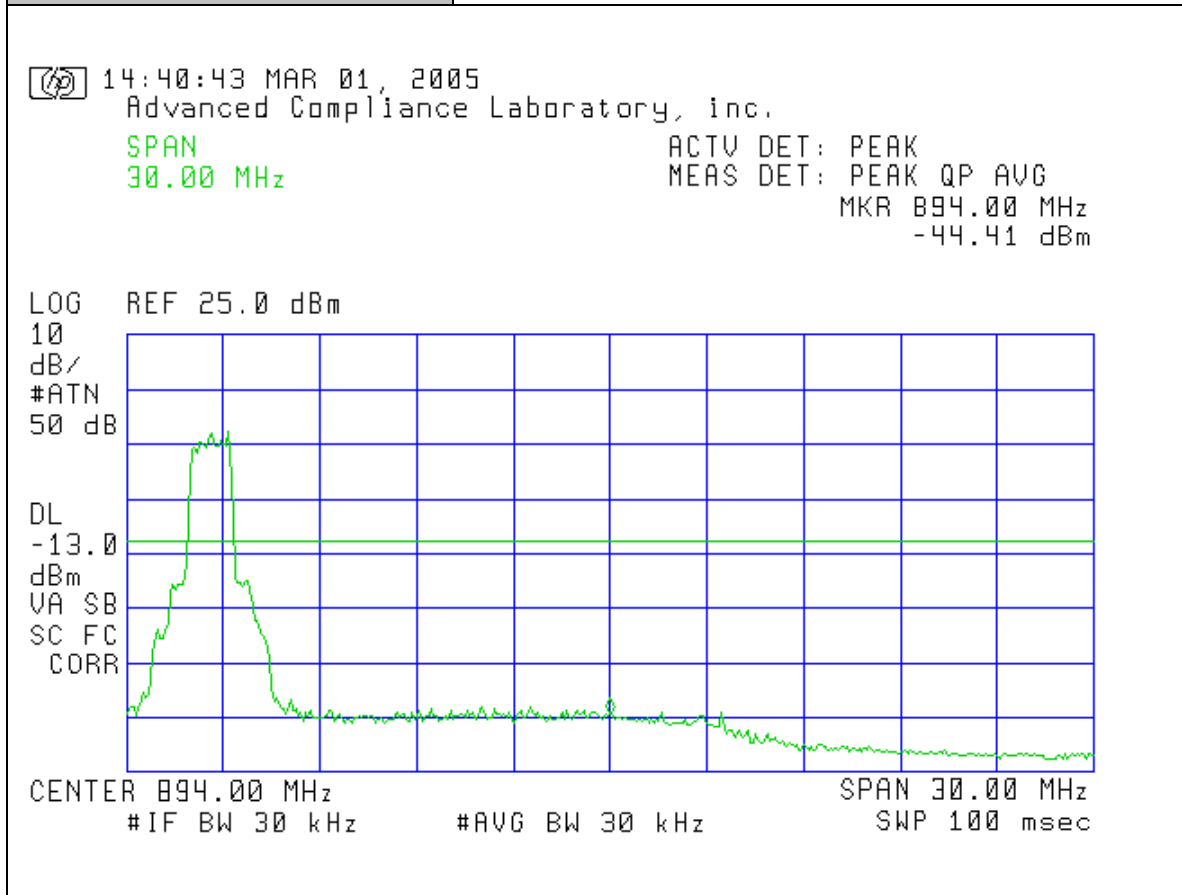
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Mid-Channel, Lower Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



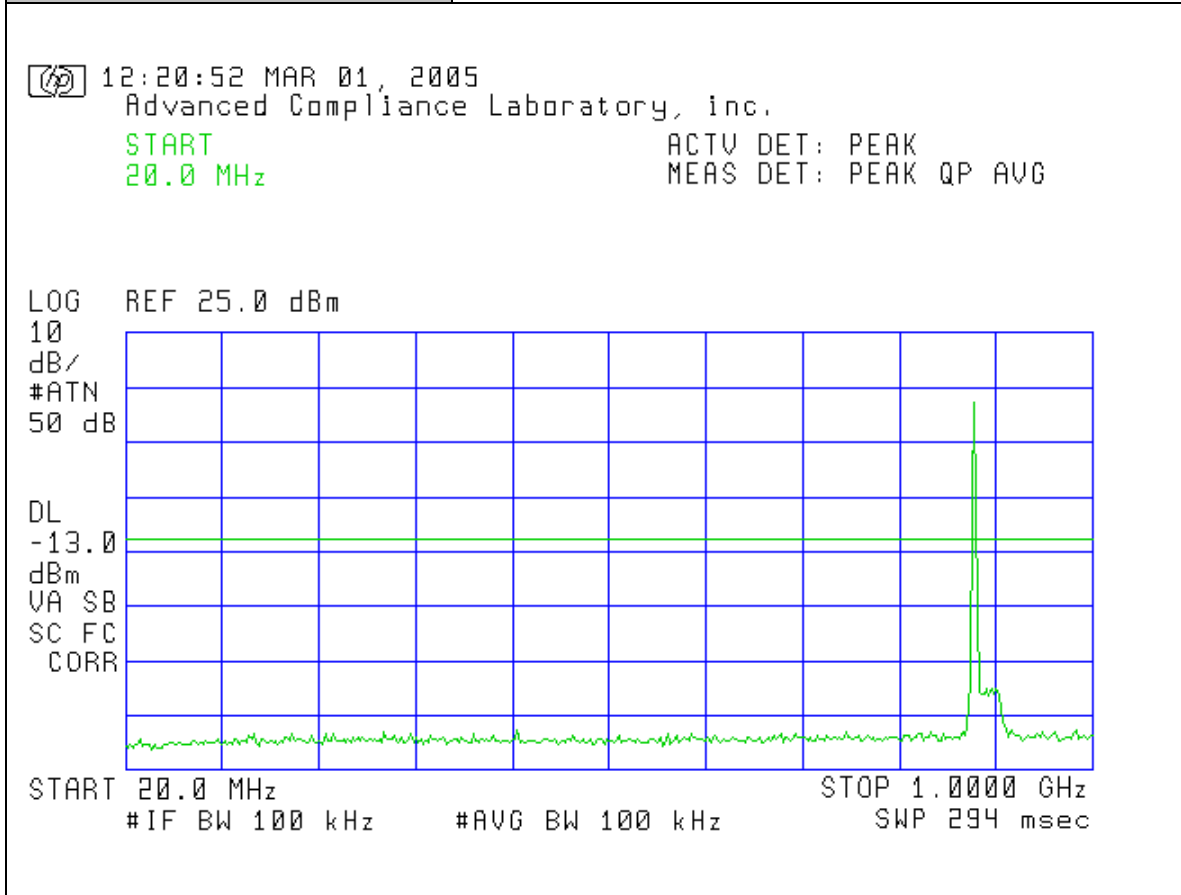
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Hi-Channel, Upper Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



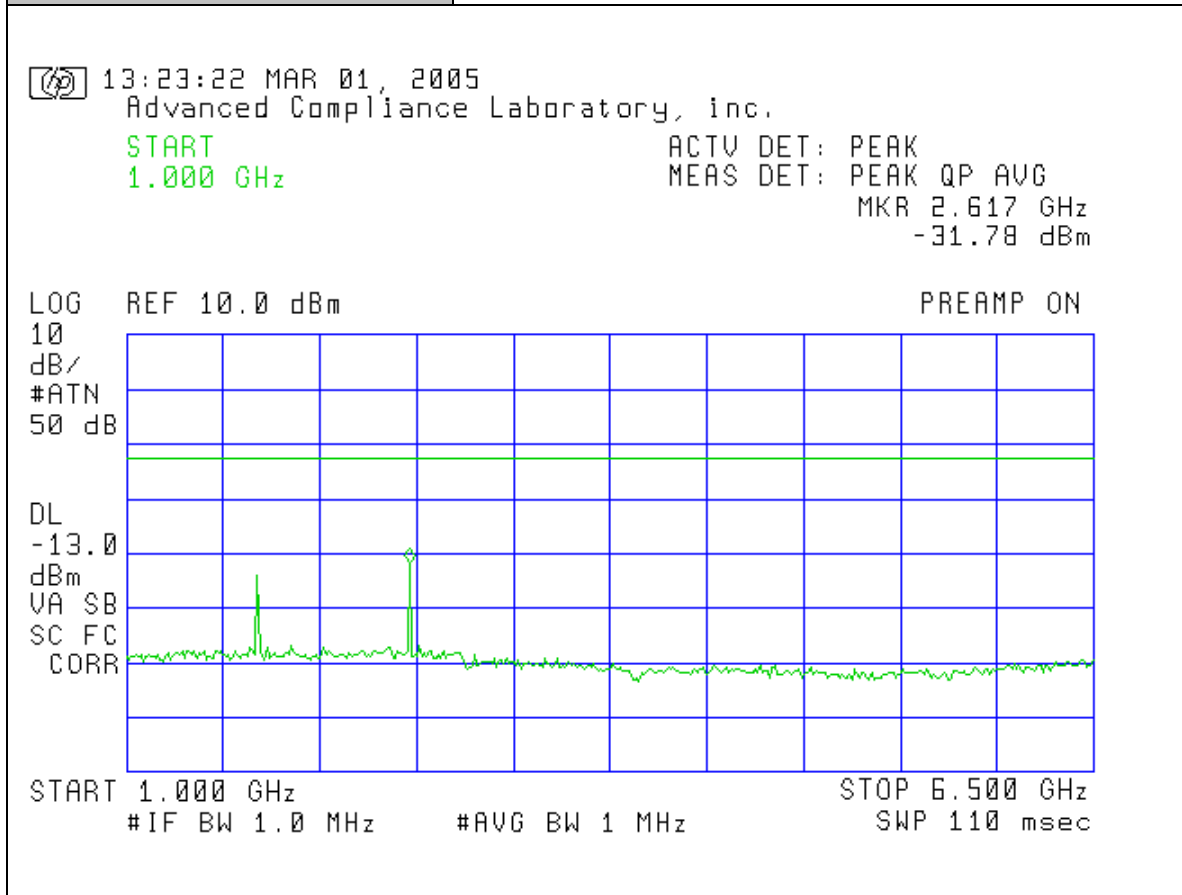
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Low-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



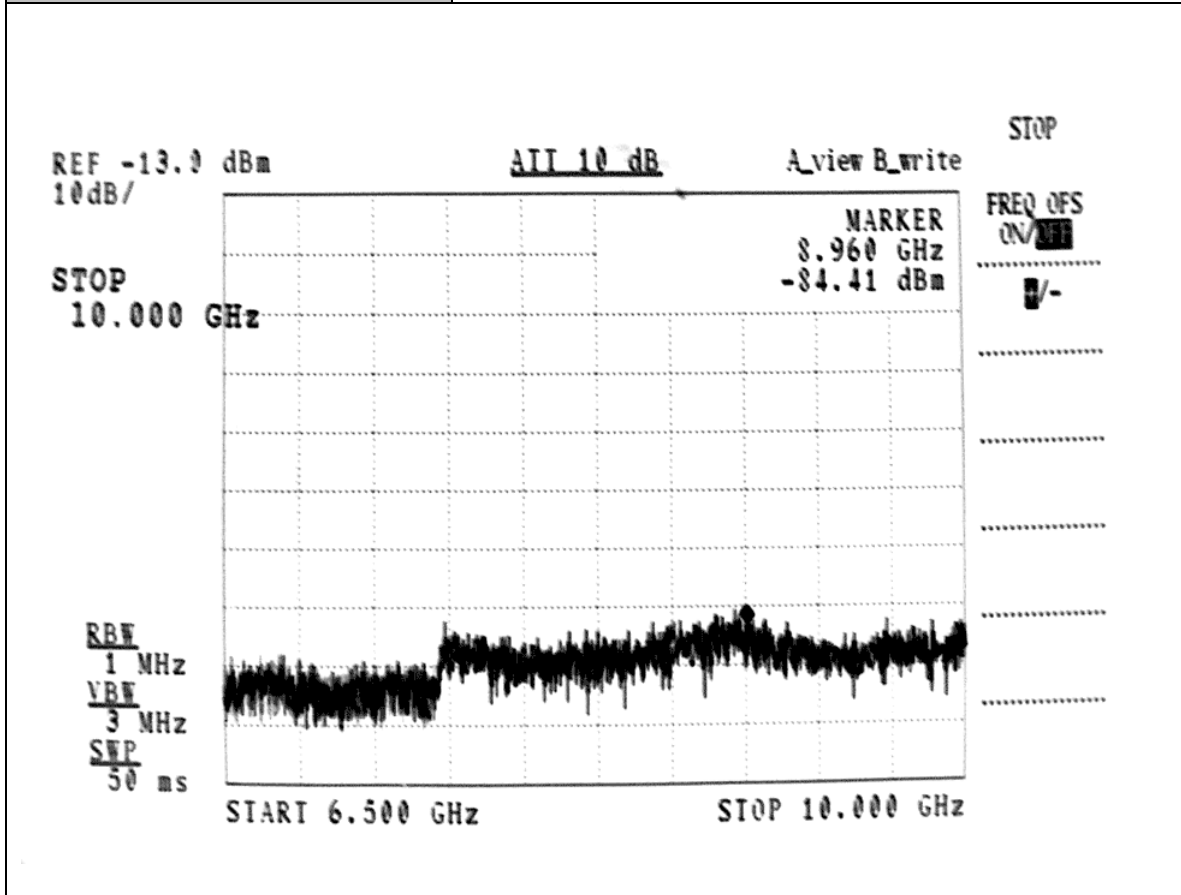
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Low-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



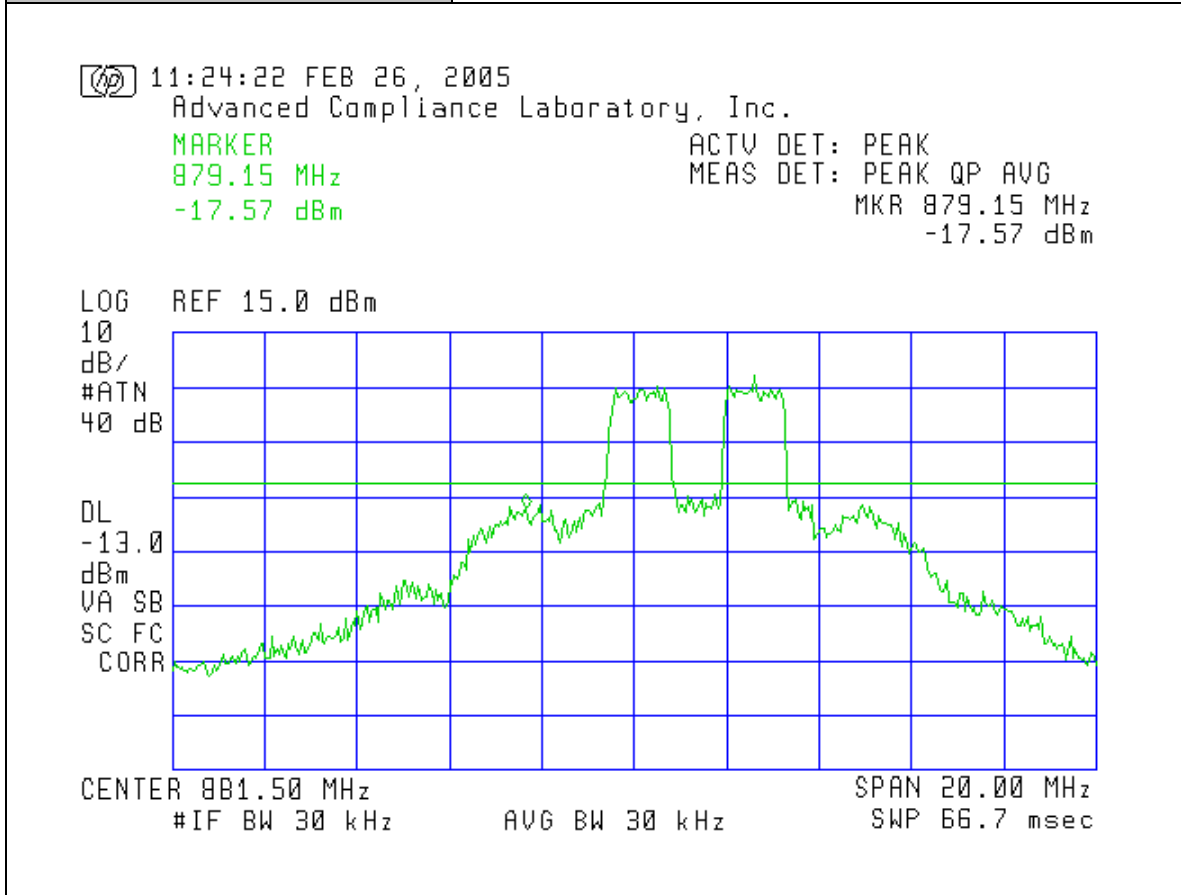
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Low-Channel
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



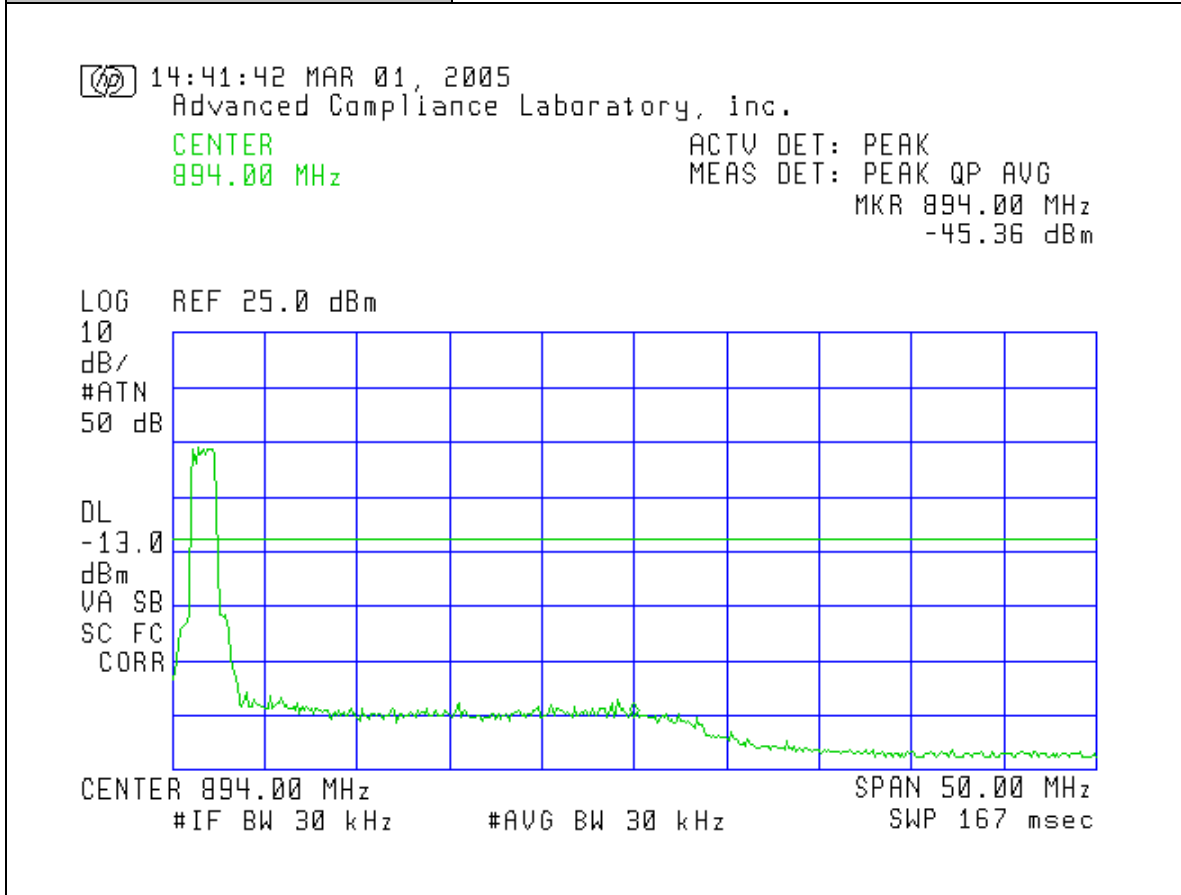
Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	DL, Low-Chn, Intermodulation, Lower Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



Project Number:	0048-050221-01-800
EUT:	Shyam Home Cellular Booster HB-20-800
SN:	HDCE-020002
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals
Plot Name:	Downlink, Low-Channel, Upper Bandedge
Configuration:	SG Input: -55dBm, Output Port: EUT Mobile



Section 6. Field Strength of Spurious

Name of Test:	<i>Field Strength of Spurious</i>	Test Standard:	<i>22.917</i>
Tested By:	EDWARD LEE	Test Date:	02/24/2005

Minimum Standard: Para. No. 22.917(e). The mean power of emissions must be attenuated below the mean power of the unmodulated carrier on any frequency twice or more than twice the fundamental emission by at least $43 + 10 \log P$. This is equivalent to -13 dBm absolute power.

Method of Measurement: TIA/EIA-603-1992, Section 2.2.12
The antenna substitution method was used to determine the equivalent radiated power at spurious frequencies. The spurious emissions were measured at a distance of 3 meters. The EUT was then replaced with a reference substitution antenna with a known gain referenced to a dipole. This antenna was fed with a signal at the spurious frequency. The level of the signal was adjusted to repeat the previously measured level. The resulting ERP is the signal level fed to the reference antenna corrected for gain referenced to a dipole.

Test Result:

Complies

Test Data:

See Attached Table(s)

Configuration	EUT Mobile Port/with server antenna
Band	Downlink
Channel	Hi

Freq. (MHz)	H,V	SA Reading (dBuV)	SG Reading (dBm)	CL (dB)	Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
1785	V	59.0	-59.2	1.2	7.3	-55.25	-13	-46.2
2677.5	V	56.0	-64.7	1.4	9.2	-59.05	-13	-51.7
3570	V	38.0*	-81.9	1.7	9.6	-76.15	-13	-68.9
4462.5	V	37.0*	-84.7	1.9	10.5	-78.25	-13	-71.7
5355	V	38.6*	-82.2	2.1	10.1	-76.35	-13	-69.2
6247.5	V	39.0*	-82.3	2.4	11.2	-75.65	-13	-69.3
7140	V	39.0*	-82.1	2.5	10.7	-76.05	-13	-69.1
8032.5	V	39.1*	-81.7	2.8	10.0	-76.65	-13	-68.7
8925	V	39.5*	-82.3	2.9	10.8	-76.55	-13	-69.3

NOTE:

* **Measured noise floor**
SA: Spectrum Analyzer
SG: Signal Generator
CL: SMA cable loss (6ft)

H=horizontal and V=vertical
Vertical is the worst case.
ERP = SG reading - CL + Gain (dBi)-2.15
Margin = ERP - Limit

Configuration	EUT Mobile Port/with server antenna
Band	Downlink
Channel	Mid

Freq. (MHz)	H,V	SA Reading (dBuV)	SG Reading (dBm)	CL (dB)	Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
1763	V	54.1	-64.6	1.2	7.1	-60.85	-13	-51.6
2644.5	V	48.6	-72.6	1.4	9.1	-67.05	-13	-59.6
3526	V	38.0*	-81.7	1.7	9.2	-76.35	-13	-68.7
4407.5	V	37.0*	-83.7	1.9	10.5	-77.25	-13	-70.7
5289	V	38.6*	-82.0	2.1	10.2	-76.05	-13	-69.0
6170.5	V	39.0*	-82.5	2.4	11.1	-75.95	-13	-69.5
7052	V	39.0*	-81.8	2.5	10.6	-75.85	-13	-68.8
7933.5	V	39.1*	-81.3	2.8	10.1	-76.15	-13	-68.3
8815	V	39.5*	-82.1	2.9	10.9	-76.25	-13	-69.1

NOTE:

* Measured noise floor
SA: Spectrum Analyzer
SG: Signal Generator
CL: SMA cable loss (6ft)

H=horizontal and V=vertical
Vertical is the worst case.
ERP = SG reading - CL + Gain (dBi)-2.15
Margin = ERP - Limit

Configuration	EUT Mobile Port/with server antenna
Band	Downlink
Channel	Low

Freq. (MHz)	H,V	SA Reading (dBuV)	SG Reading (dBm)	CL (dB)	Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
1741	V	60.4	-58.3	1.2	7.0	-54.65	-13	-45.3
2611.5	V	56.7	-62.6	1.4	9.1	-57.05	-13	-49.6
3482	V	38.2*	-81.3	1.7	9.1	-76.05	-13	-68.3
4352.5	V	37.4*	-82.2	1.9	10.0	-76.25	-13	-69.2
5223	V	38.0*	-82.0	2.1	10.0	-76.25	-13	-69.0
6093.5	V	38.6*	-82.5	2.4	11.0	-76.05	-13	-69.5
6964	V	38.7*	-81.8	2.5	10.5	-75.95	-13	-68.8
7834.5	V	39.0*	-81.1	2.8	10.0	-76.05	-13	-68.1
8705	V	39.5*	-82.0	2.9	10.9	-76.15	-13	-69.0

NOTE:* **Measured noise floor****SA:** Spectrum Analyzer**SG:** Signal Generator**CL:** SMA cable loss (6ft)**H=horizontal and V=vertical****Vertical is the worst case.****ERP** = SG reading - CL + Gain (dBi)-2.15**Margin** = ERP - Limit

Configuration	EUT Mobile Port Terminated
Band	Downlink
Channel	Hi+Mid+Low

Freq. (MHz)	H,V	SA Reading (dBuV)	SG Reading (dBm)	CL (dB)	Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
1785	V+H	34.5*	-83.2	1.2	7.3	-79.45	-13	-70.2
2677.5	V+H	37.3*	-82.9	1.4	9.2	-77.35	-13	-69.9
3570	V+H	38.6*	-81.6	1.7	9.6	-76.25	-13	-68.6
4462.5	V+H	37.8*	-83.5	1.9	10.5	-77.05	-13	-70.5
5355	V+H	38.3*	-82.1	2.1	10.1	-76.15	-13	-69.1
6247.5	V+H	38.5*	-82.6	2.4	11.2	-76.05	-13	-69.6
7140	V+H	38.6*	-81.6	2.5	10.7	-75.65	-13	-68.6
8032.5	V+H	39.2*	-81.2	2.8	10.0	-76.05	-13	-68.2
8925	V+H	39.3*	-81.8	2.9	10.8	-75.95	-13	-68.8

NOTE:* **Measured noise floor****SA:** Spectrum Analyzer**SG:** Signal Generator**CL:** SMA cable loss (6ft)**H=horizontal and V=vertical****ERP** = SG reading - CL + Gain (dBi)-2.15**Margin** = ERP - Limit

Configuration	EUT BTS Port Terminated
Band	Uplink
Channel	Hi+Mid+Low

Freq. (MHz)	H,V	SA Reading (dBuV)	SG Reading (dBm)	CL (dB)	Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
1763	V+H	34.0*	-83.4	1.2	7.1	-79.65	-13	-70.4
2644.5	V+H	37.0*	-83.1	1.4	9.1	-77.55	-13	-70.1
3526	V+H	38.2*	-81.7	1.7	9.2	-76.35	-13	-68.7
4407.5	V+H	37.4*	-83.7	1.9	10.5	-77.25	-13	-70.7
5289	V+H	38.0*	-82.0	2.1	10.2	-76.05	-13	-69.0
6170.5	V+H	38.3*	-82.5	2.4	11.1	-75.95	-13	-69.5
7052	V+H	38.7*	-81.8	2.5	10.6	-75.85	-13	-68.8
7933.5	V+H	39.0*	-81.3	2.8	10.1	-76.15	-13	-68.3
8815	V+H	39.0*	-82.1	2.9	10.9	-76.25	-13	-69.1

NOTE:* **Measured noise floor****SA:** Spectrum Analyzer**SG:** Signal Generator**CL:** SMA cable loss (6ft)**H=horizontal and V=vertical****EIRP** = SG reading - CL + Gain (dBi)-2.15**Margin** = ERP - Limit

Section 7. Frequency Stability

Name of Test:	<i>Frequency Stability</i>	Test Standard:	22.355
Tested By:	n/a	Test Date:	n/a

Test Result: N/A

Test Data: N/A

Not Applicable

Section 8. Test Equipment List

Manufacture	Model	Serial No.	Description	Last Cal dd/mm/ yy	Cal Due dd/mm/ yy
HP	HP8546A	3448A00290	EMI Receiver	12/01/05	12/01/06
HP	E4432B	US38220355	250K-3GHz Signal Generator	17/09/03	17/09/05
EMCO	3104C	9307-4396	20-300MHz Biconical Antenna	12/02/05	12/02/06
EMCO	3146	9008-2860	200-1000MHz Log-Periodic Antenna	09/02/05	09/02/06
Fischer Custom	LISN-2	900-4-0008	Line Impedance Stabilization Networks	23/08/04	23/08/05
Fischer Custom	LISN-2	900-4-0009	Line Impedance Stabilization Networks	23/08/04	23/08/05
EMCO	6502	2665	10KHz-30MHz Active Loop Antenna	27/02/05	27/02/06
EMCO	3115	4945	Double Ridge Guide Horn Antenna	11/08/04	11/08/05
Advantest	R3271	5003583	100Hz-26.5GHz Spectrum Analyzer	27/04/04	27/05/05

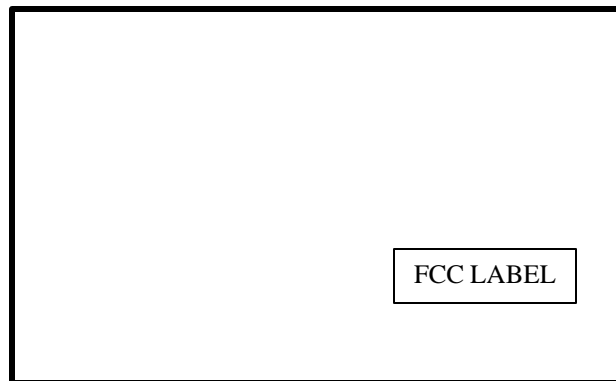
Section 9. FCC ID Labeling

FCC ID: S3CHB-20-800

This device complies with Part 2, 15 & 22 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference. and
- (2) this device must accept any interference received, including interference that may cause undesired

FCC ID Label



Location of Label on Lower Side Wall

Section 10. Maximum Permissible Exposure**MPE estimate is given per 2.1091 of FCC Rules:****Calculation Equation:**

$$d = 0.282 \times \frac{10^{\frac{P+G}{20}}}{\sqrt{S}}$$

Where, P=16 dBm, G=0 dBi (Server Antenna), G=7 dBi (Donor Antenna), and from §1.1310 Table 1 (B), S = 0.55 mW/cm²

Plug all three items into the equation, and yields,

Power Density MPE Limit (mW/ cm ²)	Output Power (dBm)	Server Antenna Gain (dBi)	Donor Antenna Gain (dBi)	Server MPE Distance (cm)	Donor MPE Distance (cm)
0.55	16	0	7	2.3	5.4

NOTE:

For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.