



**FCC Compliance Report Addendum
Part 22 Certification
For
GTE Railfone, LLC
Intelligent Booster Amplifier**

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Part 22 Certification
For
GTE Railfone, LLC
Intelligent Booster Amplifier**

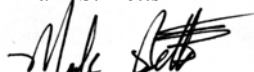
Date : 7/30/03
MJO # : 40371-04
File : 40371-04-1-add.VCE
Revision # : 0
Product : Intelligent Booster Amplifier
Manufacturer : GTE Railfone, LLC
P.O. # : C000420

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This report shall not be reproduced, except in full, without the written approval of NTS, Inc.
The test results relate only to the items tested.

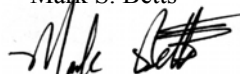


Product : Intelligent Booster Amplifier
Model : 51502
Serial Number : See Equipment List
Manufacturer : GTE Railfone, LLC
Address : 1515 Woodfield Road
Schaumburg, IL 60173
USA
Phone : 847 619 4145
Fax : 847 706 2493
Date Received : 6/6/03
Contact : John Pawlik
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Prepared By : Mark S. Betts Date: 7/30/03


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(Program Manager)

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(Facility Manager)



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1. General Description:

The Intelligent Booster Amplifier (IBA) is intended to improve cellular telephone coverage in weak signal areas. The IBA communicates with standard cell site transmitter/receiver network via an external antenna that is positioned within the coverage area of the standard system (primary antenna). Via radiating cable or other local antenna (secondary antenna), the IBA then amplifies and repeats these communications to mobile cellular handsets within the thusly-expanded coverage area.

2. Classification and Environment:

FCC Part 22, Public Mobile Services and TIA/EIA 603 Land Mobile FM or PM Communications Equipment Measurement and Performance standards are applied to the Intelligent Booster Amplifier.

3. Test Summary:

Tests
Transmitter Occupied Bandwidth
Band Edge Measurements
Intermodulation (Two-Tone Test)

4. Test Report Summary:

The Intelligent Booster Amplifier was tested to the specified standards.

4.1. Test Sample Description:

The Intelligent Booster amplifier consists of nine major subsystems. Each subsystem is assembled in standard 19” rack panels.



4.1.1. Block Diagram:

Not available

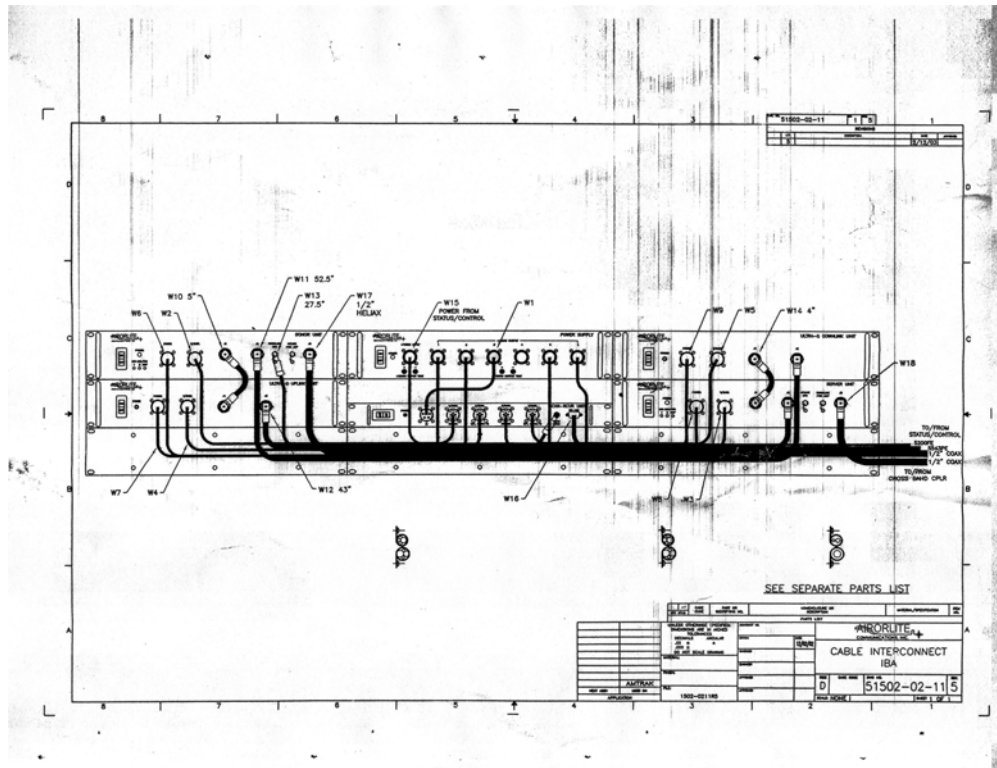
4.1.2. EUT Equipment List:

The table below displays what the EUT consists of during the tests.

Manufacturer	Make	Model	Serial Number
GTE Railfone, LLC	Status & Control Panel	51502-StatCtrl	1202-03
GTE Railfone, LLC	Ultra-Q Downlink Unit	51502-DLUQ	1202-02
GTE Railfone, LLC	Server Unit	51502-Server	1202-03
GTE Railfone, LLC	Power Supply	51502-PwrSupply	1202-03
GTE Railfone, LLC	Scan Receiver	51502-ScanRx	1202-03
GTE Railfone, LLC	Donor Unit	51502-Donor	1202-03
GTE Railfone, LLC	Ultra-Q Uplink Unit	51502-ULUQ	1202-02
Sony	Vaio Notebook Computer	PCG-Z505HS	28305530 3108025

4.1.3. EUT Cabling:

The diagram below displays the cable configuration of the EUT and accessories.



4.2. Test Configuration:

4.2.1. EUT Electrical Mode of Operation:

The EUT was operated at 72 VDC Nominal.
The EUT was run in Key On mode.

4.2.2. Software/Firmware:

IBA Exerciser Software

4.3. Test Procedure:

The EUT's testing was performed in accordance with approved test procedures specified in the applicable standards. All test procedures can be found with their appropriate tests.



4.4. Test Results and Data:

4.4.1. Transmitter Occupied Bandwidth:

Transmitter Occupied Bandwidth testing was conducted as defined in TIA/EIA-603, Paragraph 2.2.11

A spectrum analyzer was used to perform this test. The test was done on both uplink and downlink sides of the unit. A 2.5 kHz-modulated signal was used. The output of a signal generator was connected to the input of the unit. The output of the unit was connected to the input of the spectrum analyzer through a 30 dB attenuator. All measurements include attenuator and cable losses.

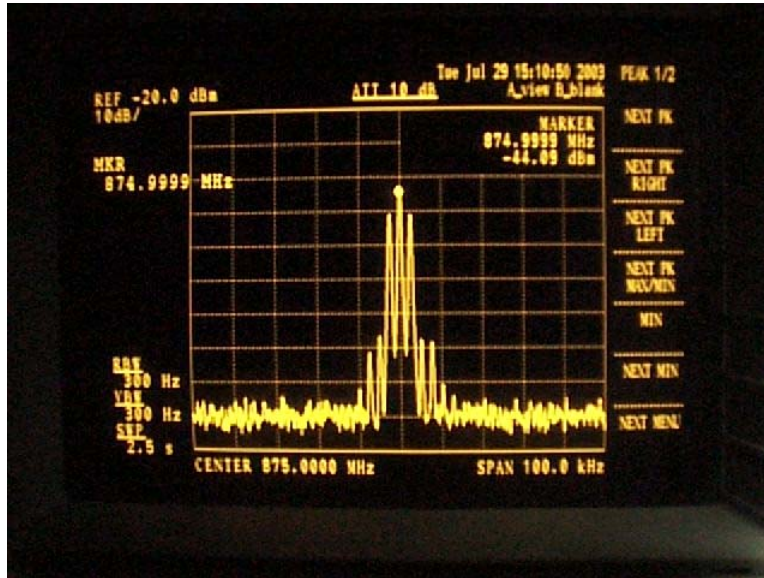


Transmitter Occupied Bandwidth Laboratory Report

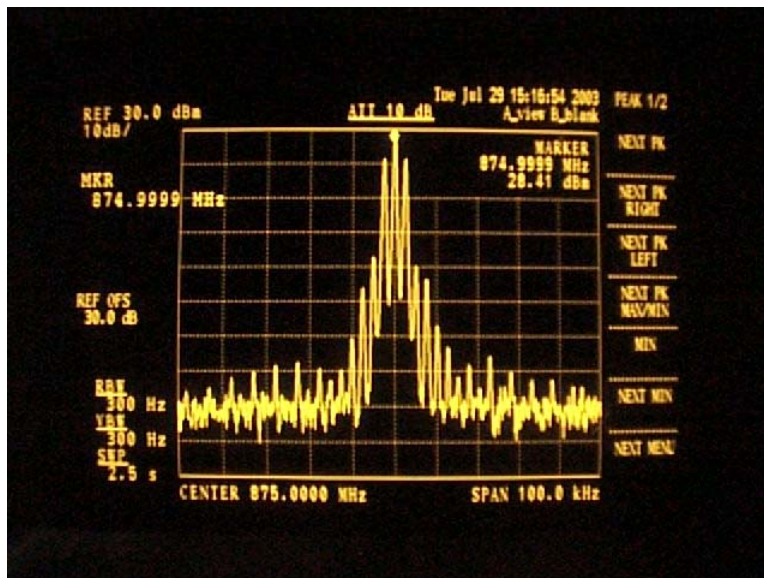
MJO #:	40371-04	Applied Standard:	TIA/EIA 603
Manufacturer Name:	GTE Railfone, LLC	Date of Test:	7/29/03
Product Name:	Intelligent Booster Amplifier	Tester:	Mark Betts
Model Number:	51502	Test Facility:	Safety Area
Serial Number:	See Equipment List	Temperature:	20°C
Performance Criteria:	N/A	Relative Humidity:	48%
EUT Mode:	Key On	EUT Power:	72 VDC

Transmitter Occupied Bandwidth Test Results:
Note: All levels include attenuator and cable losses.

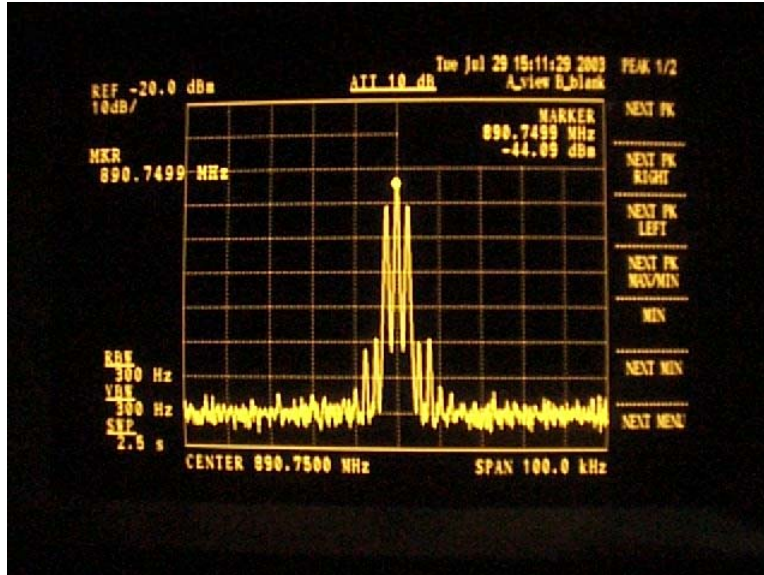
Input @ 875 MHz-Downlink



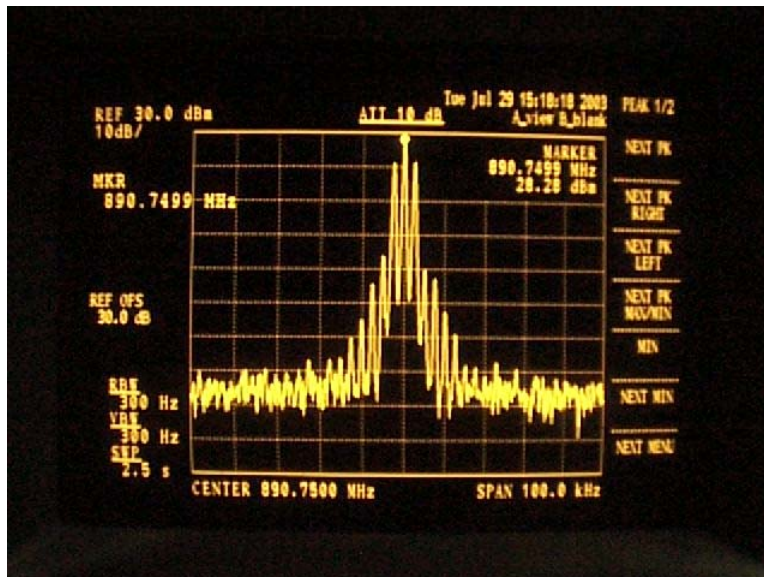
Output @ 875 MHz-Downlink



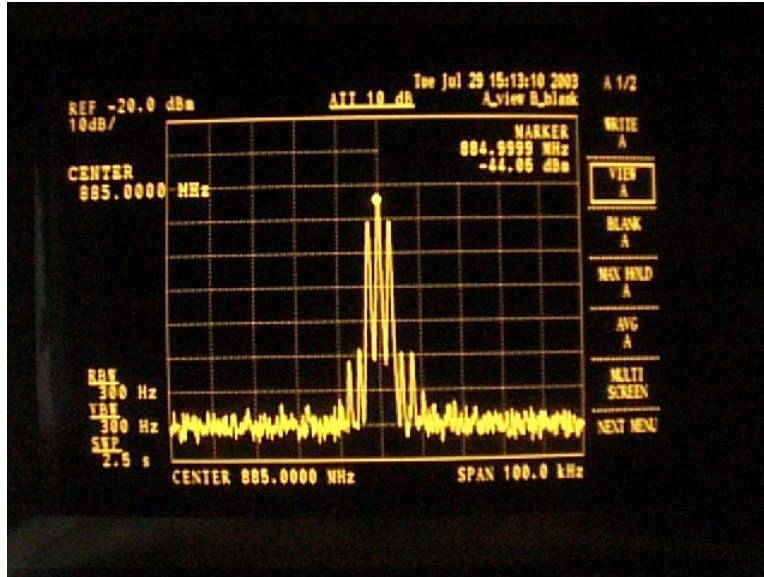
Input @ 890.75 MHz -Downlink



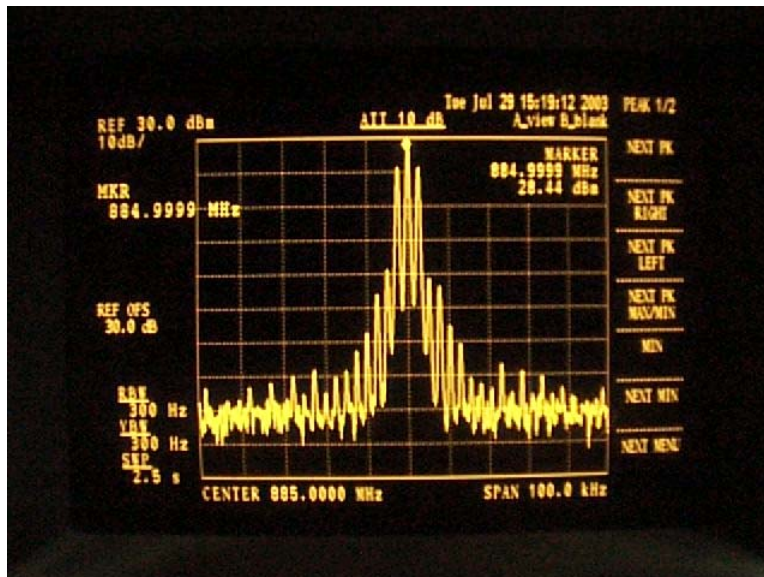
Output @ 890.75 MHz-Downlink



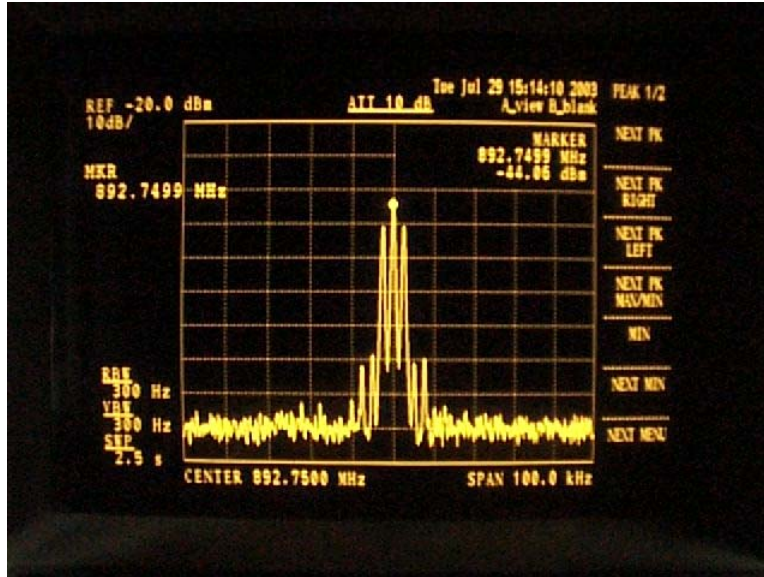
Input @ 885 MHz-Downlink



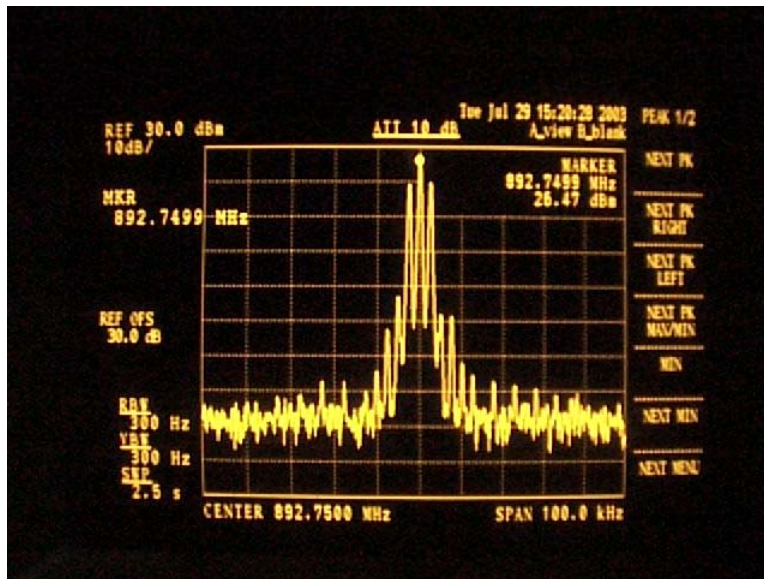
Output @ 885 MHz-Downlink



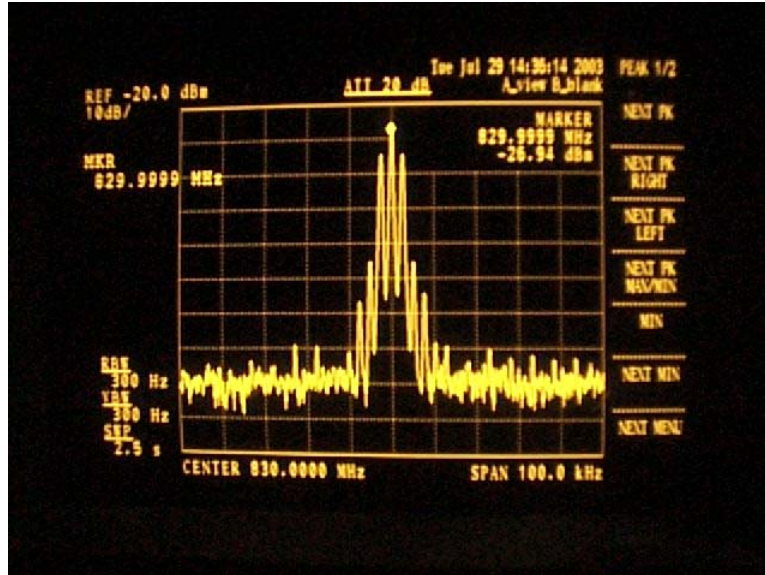
Input @ 892.75 MHz-Downlink



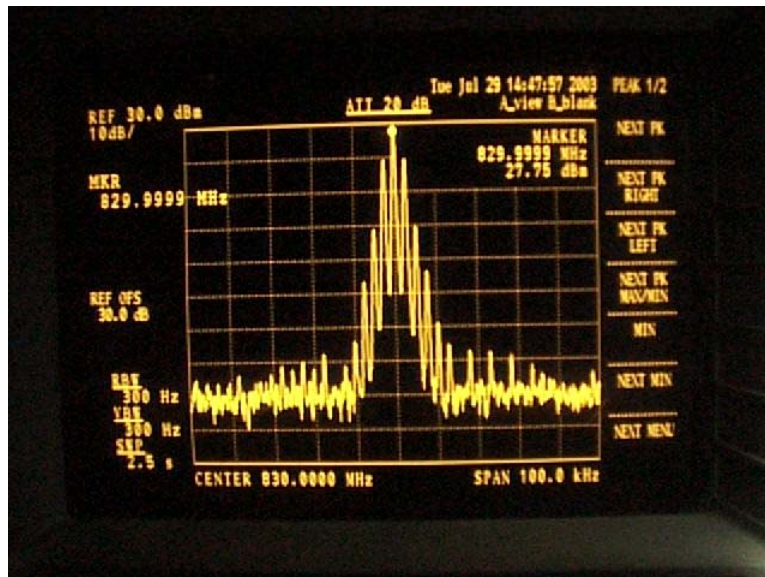
Output @ 892.75 MHz-Downlink



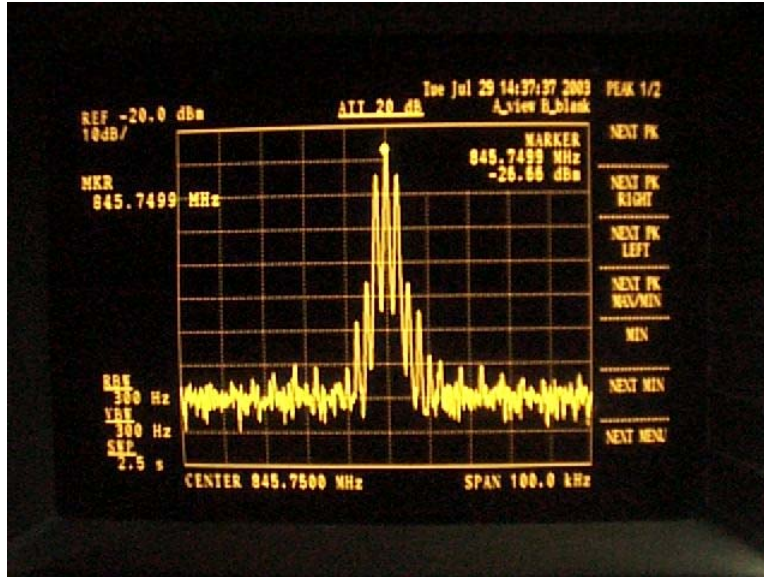
Input @ 830 MHz-Uplink



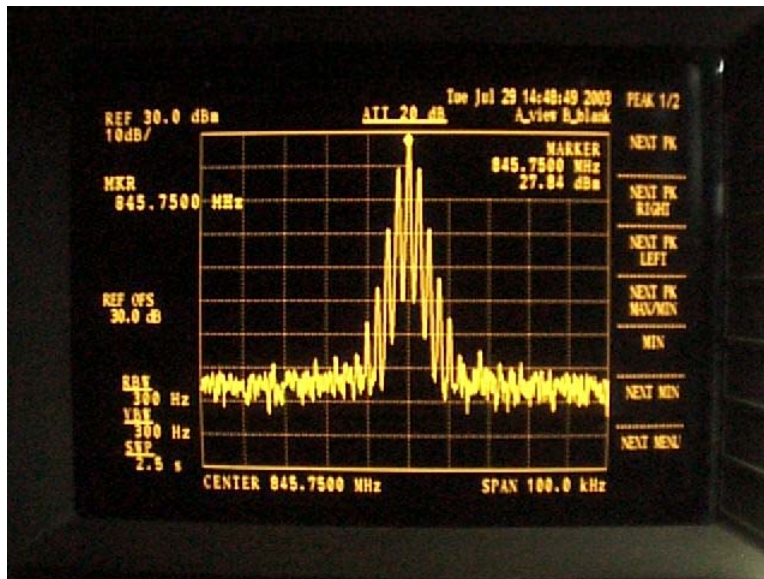
Output @ 830 MHz-Uplink



Input @ 845.75 MHz-Uplink



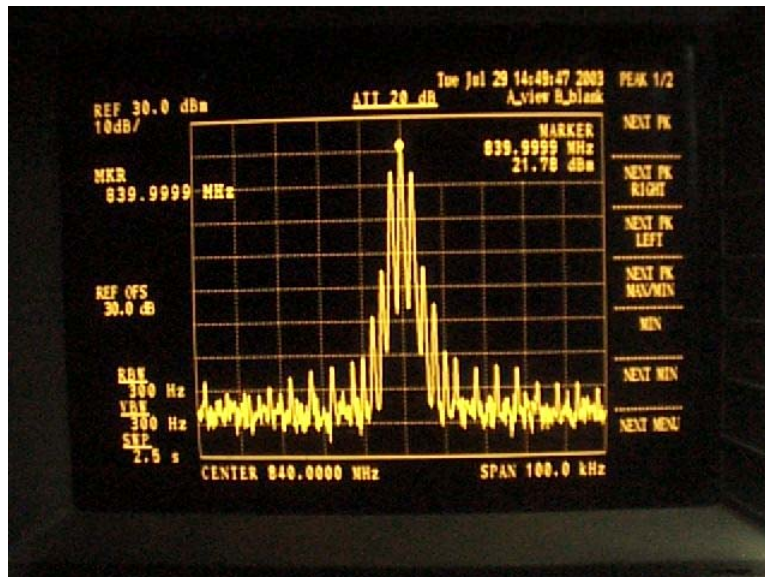
Output @ 845.75 MHz-Uplink



Input @ 840 MHz-Uplink



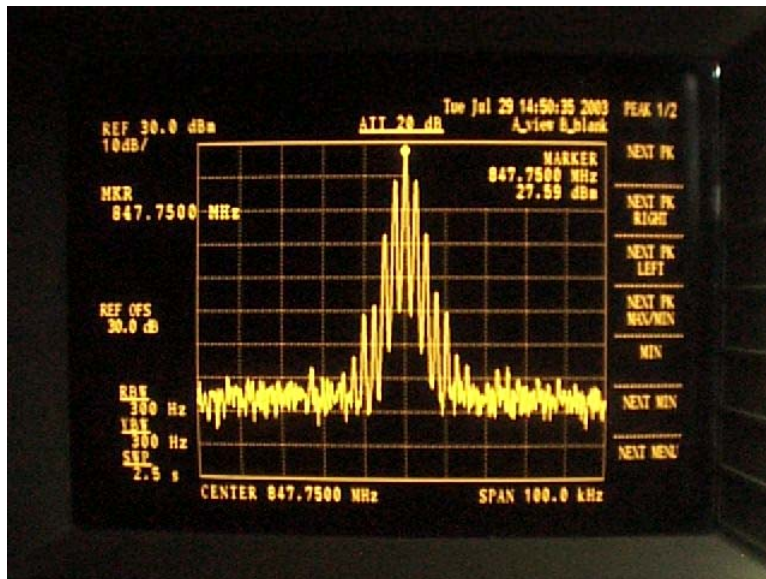
Output @ 840 MHz-Uplink



Input @ 847.75 MHz-Uplink



Output @ 847.75 MHz-Uplink





Transmitter Occupied Bandwidth Equipment List:

Property Number	Manufacturer	Make	Model	S/N	Cal. Date	Cal. Due
WA527	Advantest	Spectrum Analyzer	RS3271A	45050124	12/16/02	12/16/03
SG370	Rohde & Schwarz	RF Signal Generator	SMG	883/725/032	08/30/02	08/30/03



4.4.2. Transmitter Band Edge:

Transmitter Band Edge testing was conducted as defined in TIA/EIA-603, Paragraph 2.2.11

A spectrum analyzer was used to perform this test. The test was done on both uplink and downlink sides of the unit. A 2.5 kHz-modulated signal was used. The output of a signal generator was connected to the input of the unit. The output of the unit was connected to the input of the spectrum analyzer through a 30 dB attenuator. All measurements include attenuator and cable losses.

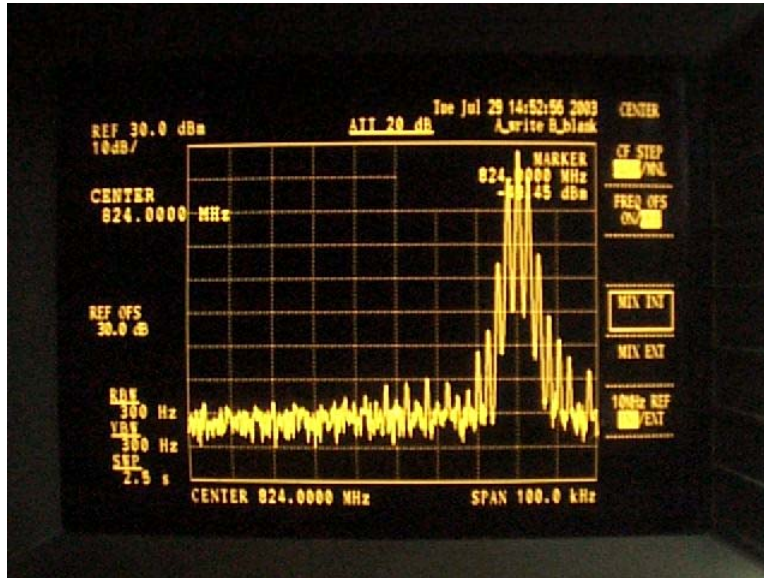


Transmitter Band Edge Laboratory Report

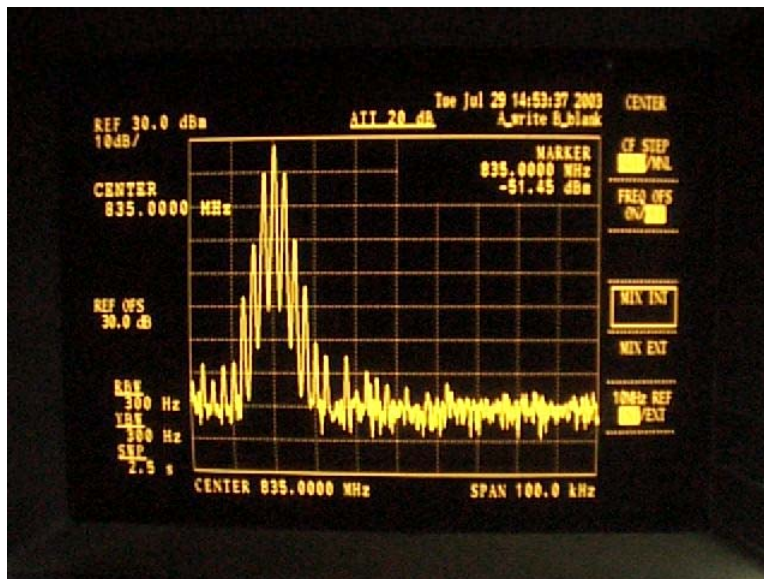
MJO #:	40371-04	Applied Standard:	TIA/EIA 603
Manufacturer Name:	GTE Railfone, LLC	Date of Test:	7/29/03
Product Name:	Intelligent Booster Amplifier	Tester:	Mark Betts
Model Number:	51502	Test Facility:	Safety Area
Serial Number:	See Equipment List	Temperature:	20°C
Performance Criteria:	N/A	Relative Humidity:	48%
EUT Mode:	Key On	EUT Power:	72 VDC

Transmitter Band Edge Test Results:
Note: All levels include attenuator and cable losses.

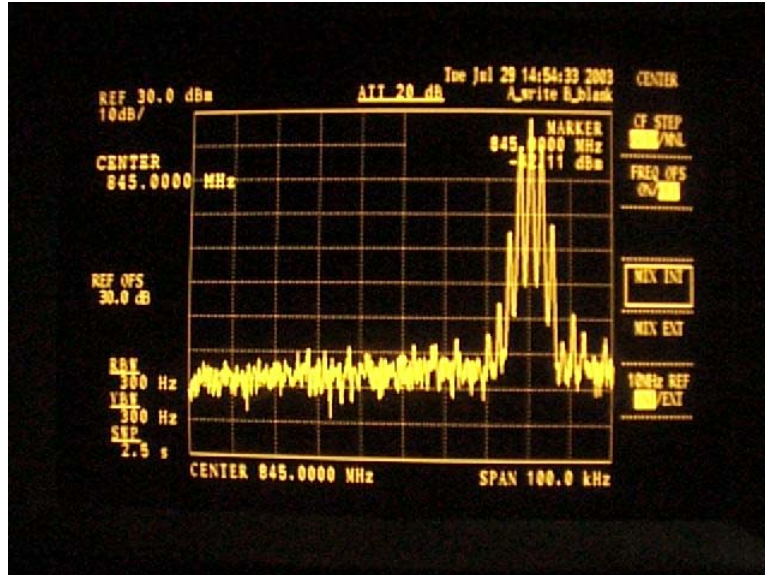
824 MHz-Uplink-Lower Band Edge



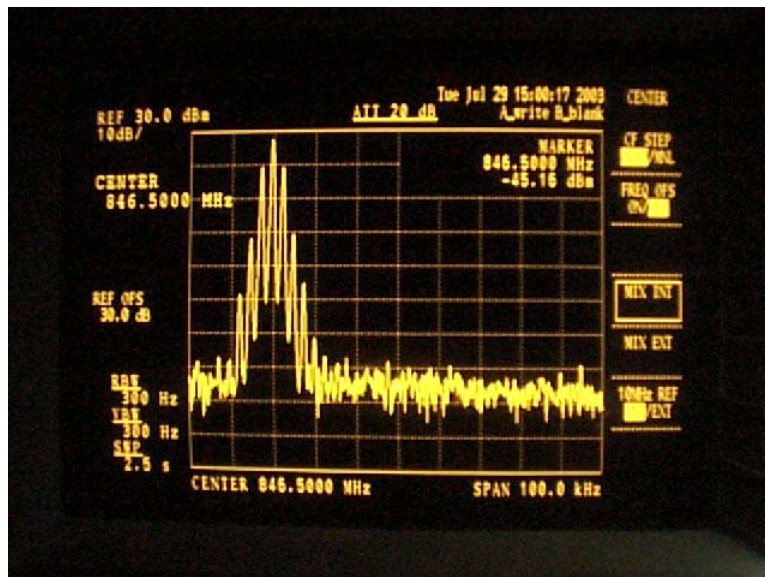
835 MHz-Uplink-Upper Band Edge



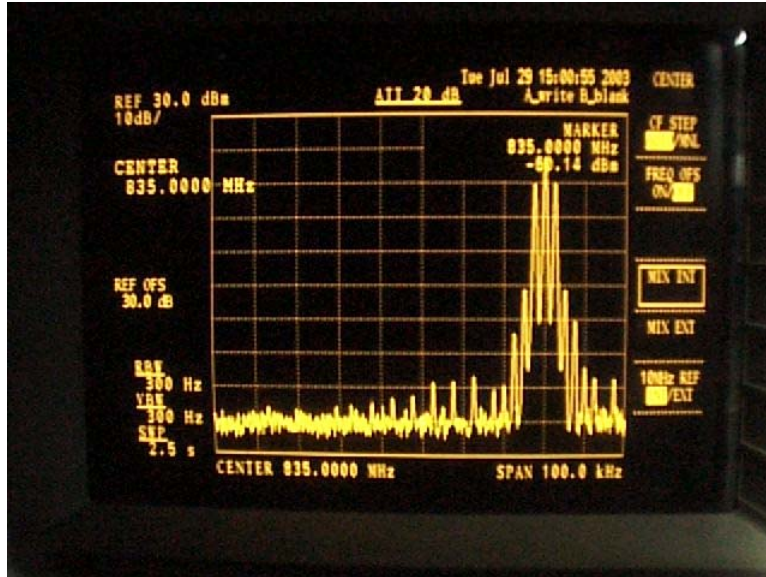
845 MHz—Uplink-Lower Band Edge



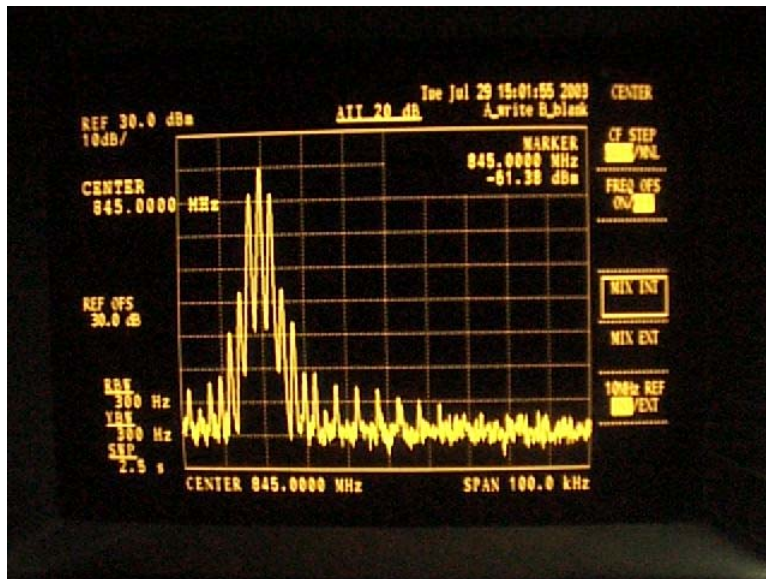
846.5 MHz—Uplink-Upper Band Edge



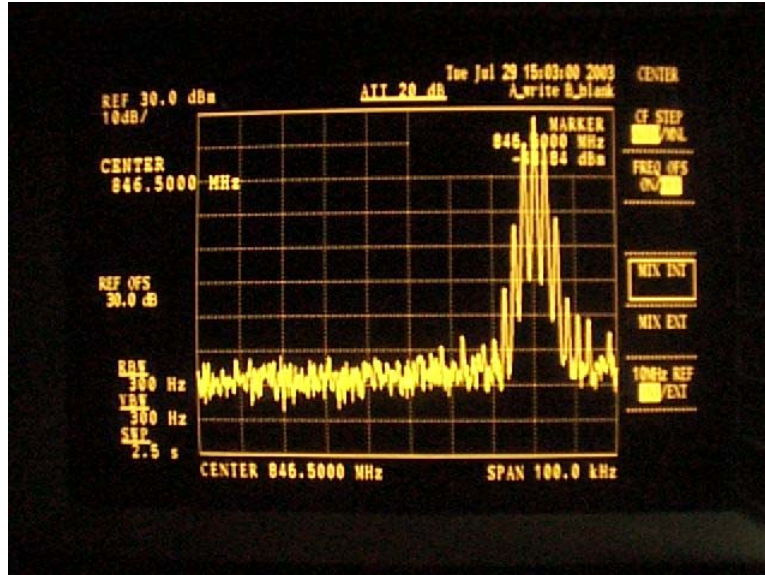
835 MHz-Uplink-Lower Band Edge



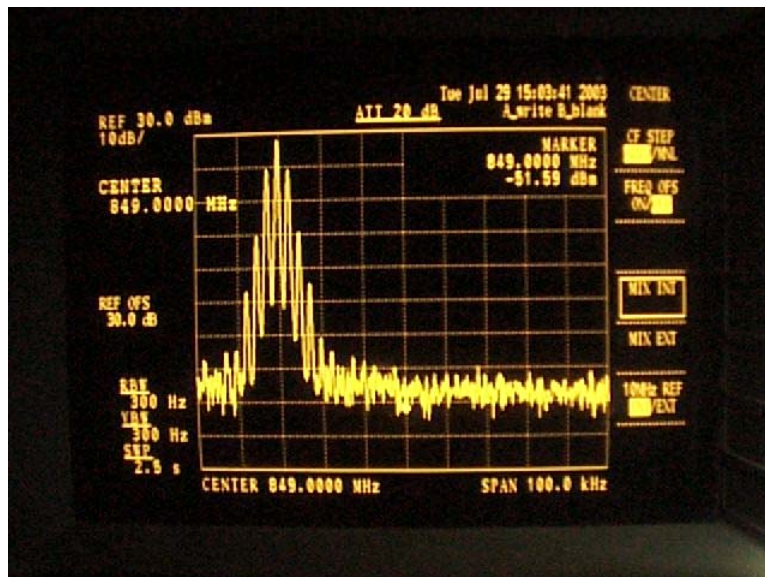
845 MHz-Uplink-Upper Band Edge



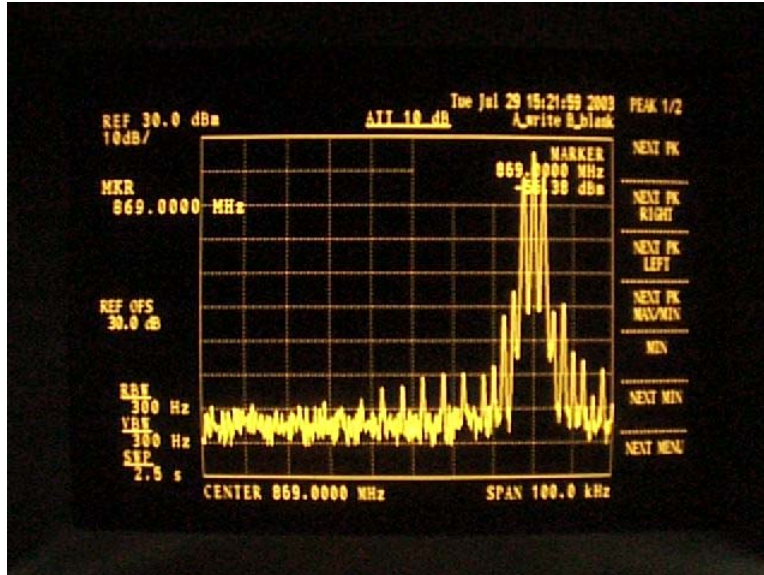
846.5 MHz-Uplink-Lower Band Edge



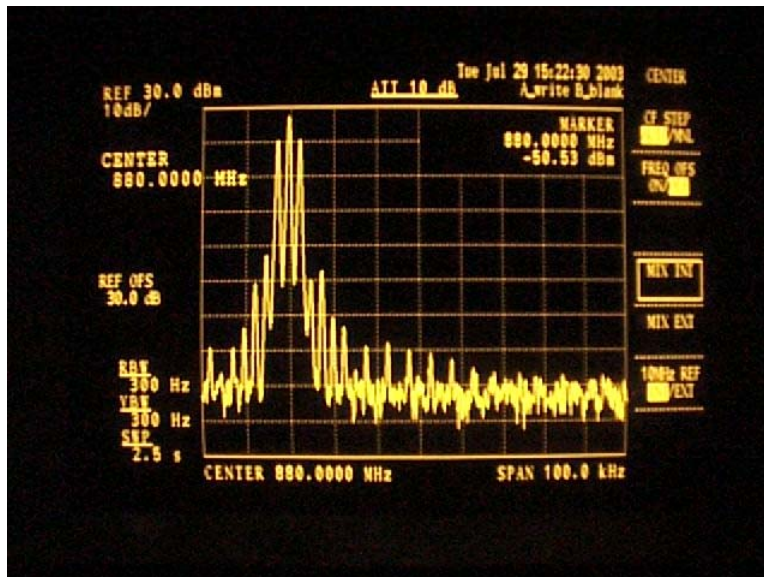
849 MHz-Uplink-Upper Band Edge



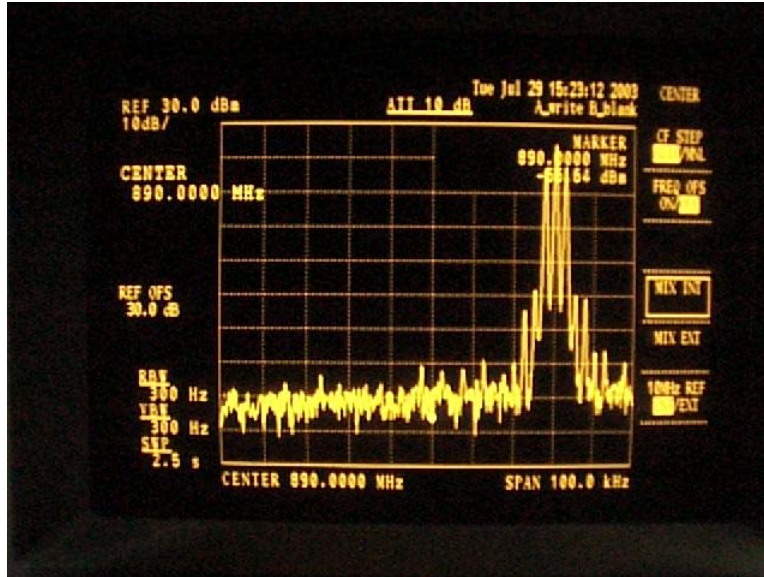
869 MHz-Downlink-Lower Band Edge



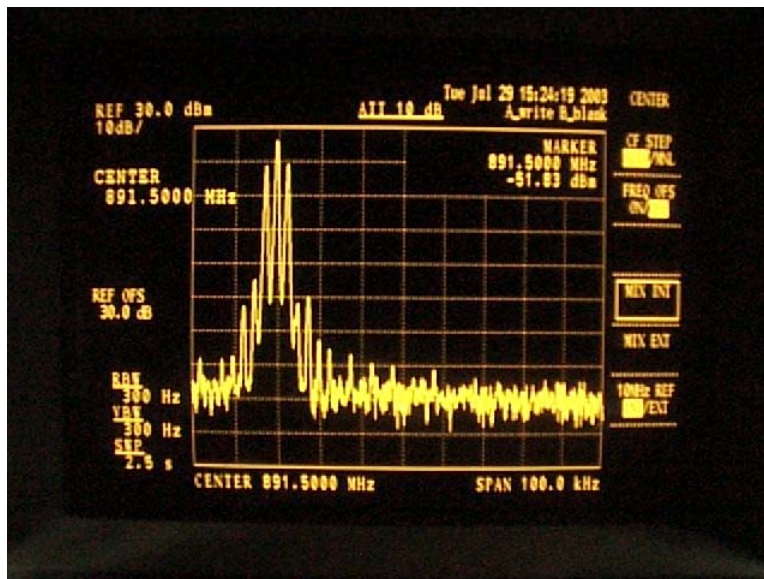
880 MHz-Downlink-Upper Band Edge



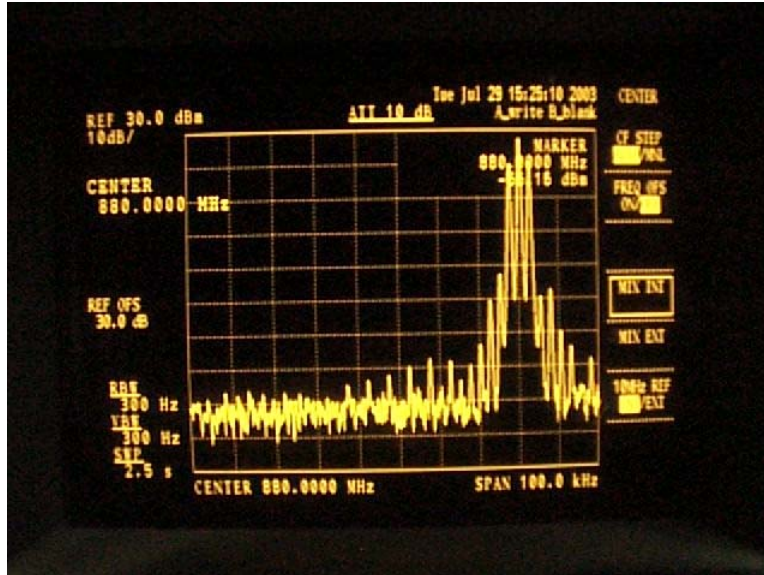
890 MHz-Downlink-Lower Band Edge



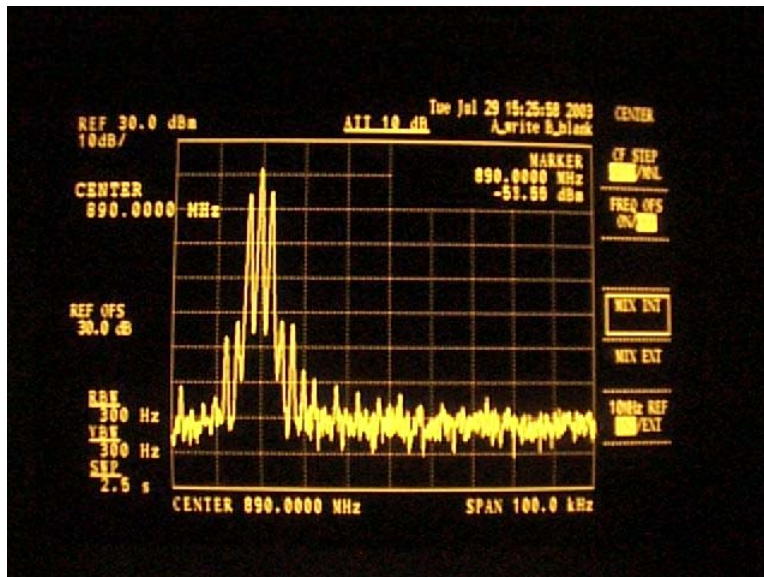
891.5 MHz-Downlink-Upper Band Edge



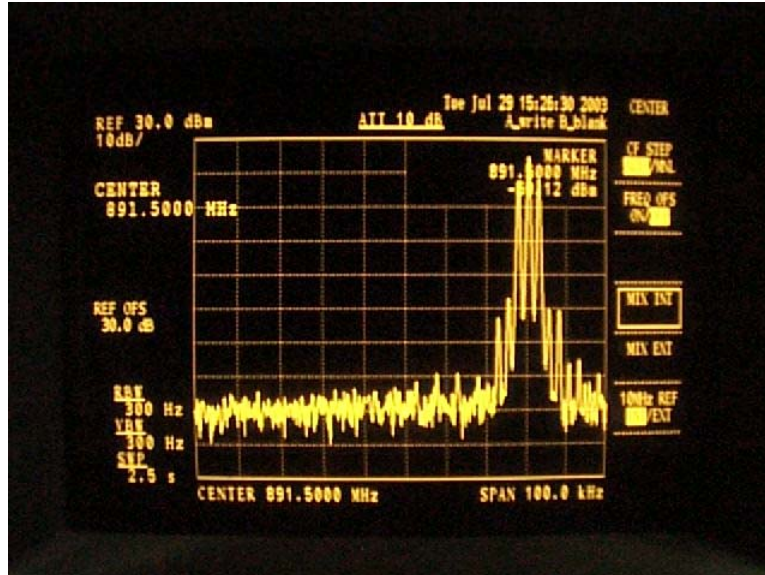
880 MHz-Downlink-Lower Band Edge



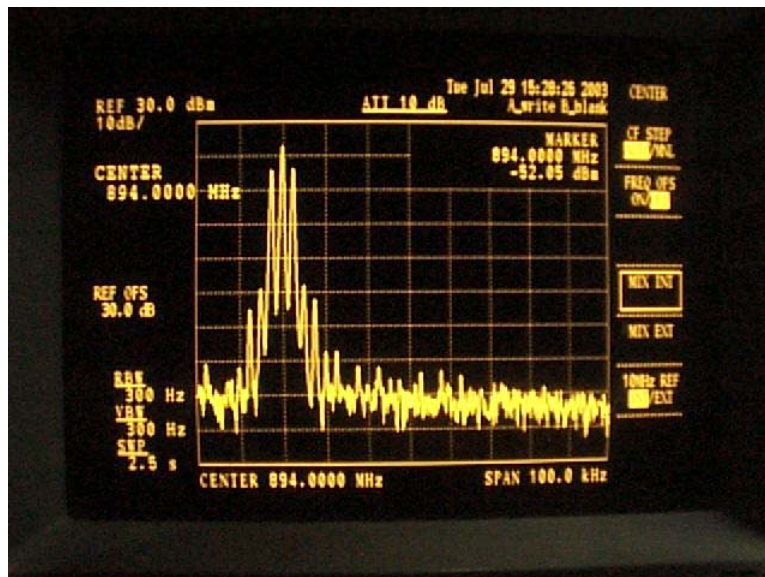
890 MHz-Downlink-Upper Band Edge



891.5 MHz-Downlink-Lower Band Edge



894 MHz-Downlink-Upper Band Edge





Transmitter Band Edge Equipment List:

Property Number	Manufacturer	Make	Model	S/N	Cal. Date	Cal. Due
WA527	Advantest	Spectrum Analyzer	RS3271A	45050124	12/16/02	12/16/03
SG370	Rohde & Schwarz	RF Signal Generator	SMG	883/725/032	08/30/02	08/30/03



4.4.3. Intermodulation (Two-Tone Test):

Intermodulation testing was conducted as defined in TIA/EIA-603.

A spectrum analyzer was used to perform this test. The test was done on both uplink and downlink sides of the unit. The output of two signal generators was connected to the input of the unit. The output of the unit was connected to the input of the spectrum analyzer through a 30 dB attenuator. All measurements include attenuator and cable losses.

Intermodulation was checked to the 10th harmonic of the fundamental frequencies.



Intermodulation Report

MJO #:	40371-04	Applied Standard:	TIA/EIA 603
Manufacturer Name:	GTE Railfone, LLC	Date of Test:	7/23/03
Product Name:	Intelligent Booster Amplifier	Tester:	Mark Betts
Model Number:	51502	Test Facility:	Safety Area
Serial Number:	See Equipment List	Temperature:	20°C
Performance Criteria:	N/A	Relative Humidity:	48%
EUT Mode:	Key On	EUT Power:	72 VDC



Transmitter Conducted Spurs Test Results
Note: All levels include attenuator and cable losses.

Frequency (MHz)	Level (dBm)	Limit (dBm)	Delta (dBm)
Downlink			
Input 1 869	Band A		
Input 2 891.5			
866.9	-31.98	-13	-18.98
902.3	-30.68	-13	-17.68
1783	-56.26	-13	-43.26
2660	-49.06	-13	-36.06
Input 1 880	Band B		
Input 2 894			
886	-33.25	-13	-20.25
896	-28.41	-13	-15.41
900	-34.25	-13	-21.25
1788	-45.89	-13	-32.89
2682	-42.77	-13	-29.44
Uplink			
Input 1 824	Band A		
Input 2 846.5			
820.7	-31.97	-13	-18.97
857.1	-37.93	-13	-24.93
1671	-42.23	-13	-29.23
1683	-40.40	-13	-27.4
1696	-48.81	-13	-35.81
Input 1 835	Band B		
Input 2 849			
1698	-37.76	-13	-24.76



Frequency (MHz)	Level (dBm)	Limit (dBm)	Delta (dBm)
2547	-51.91	-13	-38.91



Transmitter Conducted Spurs Equipment List:

Property Number	Manufacturer	Make	Model	S/N	Cal. Date	Cal. Due
WA527	Advantest	Spectrum Analyzer	RS3271A	45050124	12/16/02	12/16/03
SG370	Rohde & Schwarz	RF Signal Generator	SMG	883/725/032	08/30/02	08/30/03



5. Test Equipment:

All test equipment used in the compiling of test data can be found in the test laboratory reports.

6. References:

40371-04rev4.VCE	Original Test Report for EUT
40371-04-1-add.VCE	Addendum for EUT
FCC Part 22	FCC part 22- Public Mobile Services
TIA/EIA 603	Land Mobile FM Or PM Communications Equipment Measurement and Performance Standards