

Cellular Specialties, Inc.

Model 110 Miniature In-Building Amplifier

Operation and Users Manual

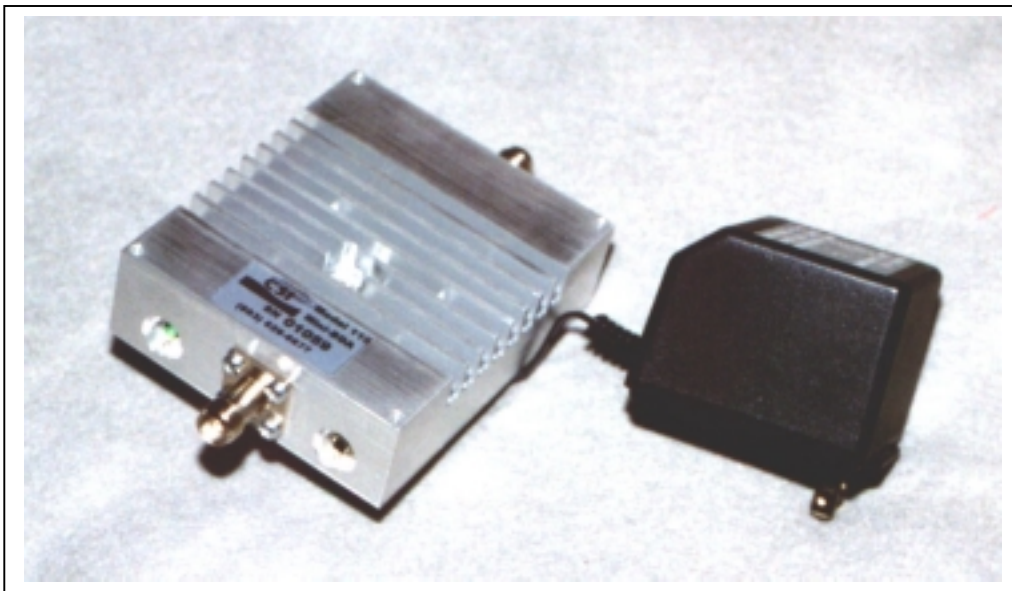


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1. Product Description

Background

The performance of a cell phone can be easily degraded when in enclosed structures where signals from a local cell site are not sufficient for reliable phone operation. The Model 110 Miniature In-Building Amplifier (Mini-IBA) was developed by Cellular Specialties, Inc. (CSI) to enhance cellular performance within these enclosed structures. Specifically, the Mini-IBA is designed to cover small areas such as home offices, small workshops, etc.

Functional Description

The Mini-IBA boosts the cellular performance by providing amplification of both transmit and receive signals. The unit receives the portable phone's signal through an interior antenna, amplifies it and then sends it to an outside antenna. This signal is referred to as the "Uplink". The Mini-IBA also receives signals from the Cell Site base station through the outside antenna. This signal is amplified and re-radiated to the portable phone and is referred to as the "Downlink". It is necessary that sufficient signal be available at the external antenna.

The external antenna is usually a directional type such as a "Yagi", however an Omni-directional antenna may be used when the structure is located in close proximity to one or more cell sites. Internal antennas are usually Omni-directional although other types, such as low profile wall or ceiling mount, may be used for special installations.

As shown in Figure 1, there are three stages of gain in the Downlink and 2 stages in the Uplink for a nominal gain of 40 dB in each link. The maximum linear output power for the Uplink is 500 milli-Watts and 30 milli-Watts for the Downlink.

An LED indicator on the unit shows the application of power.

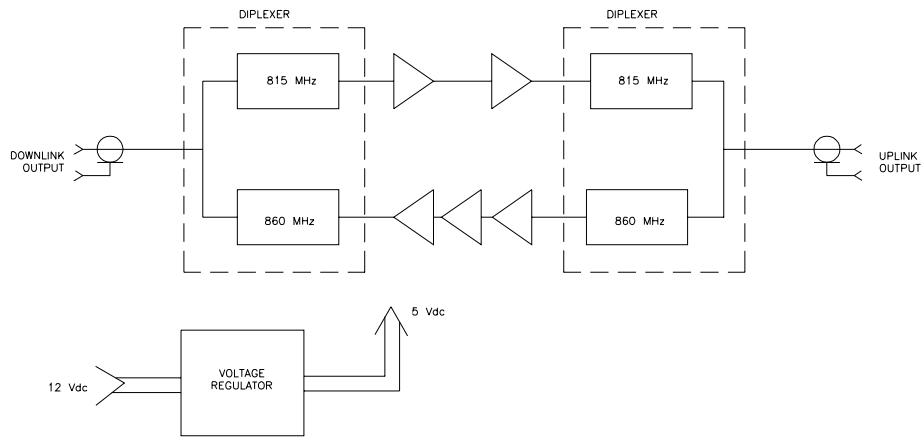


FIGURE 1 Functional Block Diagram

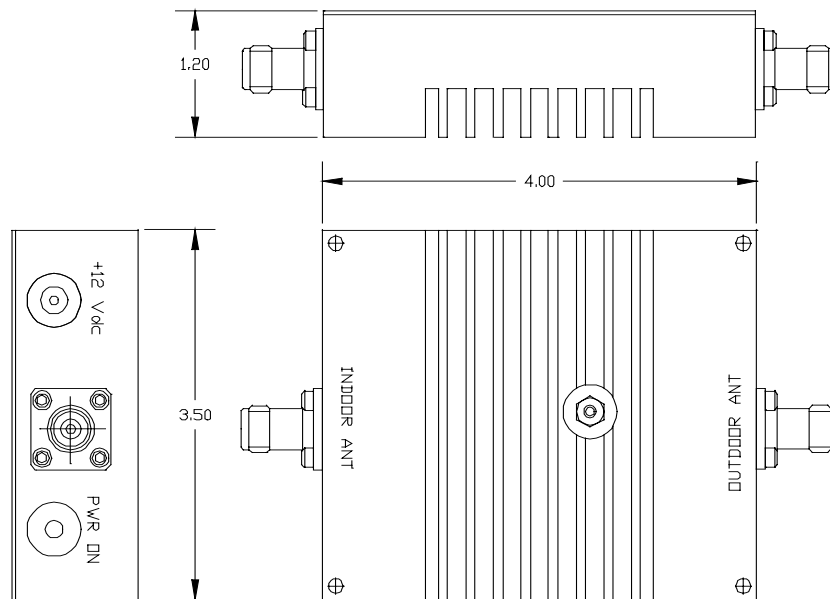


FIGURE 2 Outline Drawing

2. General Specifications

All specifications stated as typical unless otherwise noted. Cellular Specialties, Inc. reserves the right to change these specifications at any time without prior notice.

	Downlink	Uplink
Frequency Band	851-866 MHz	806-821 MHz
Gain	40 dB	40 dB
Typical Power Out	+28 dBm	+15 dBm
Noise Figure	6 dB	6 dB
3 rd Order Intercept	+43 dBm	+27 dBm
Propagation Delay	<1 microsecond	<1 microsecond
VSWR	<2:1	<2:1
Passband Ripple (max)	2 dB pk-pk	2 dB pk-pk
Connectors	Mini-UHF	
Power Requirements	+6 Vdc, 1.0 A	
Dimensions	3.5" x 4.0" x 1.2"	
Weight	1 lbs.	
Indicator LED	"Power-On"	

3. Inspection and Installation

Inspection

Inspect the equipment as soon as possible after purchase. If any part of the equipment has been damaged in transit, report the damage to the transportation company and also to the company where purchased.

Contents

The unit package contains the following:

- Model 110 Mini-IBA
- Power Transformer, 110 volt to 6 volt – model number ()
- User Manual

Optional Accessories

Accessories are available directly from Cellular Specialties, Inc. or any of CSI's distributors.

- Exterior High Gain Antenna – model number ()
- Exterior Omni Antenna – model number ()
- Interior Omni Antenna – model number ()
- Power Cable w/cigarette lighter adapter – model number ()

Installation

The installation of the Mini-IBA is relatively simple. If possible, measurements of the Received Signal Strength Indicator (RSSI) should be recorded as close as possible to the proposed exterior antenna location. Optimum performance will be obtained with RSSI readings greater than –85 dBm.

With the exact location of the exterior antenna and the coordinates of the cell sites closest to the building in which the unit is being installed, the distance and bearings to each of the local cells can be determined. The first choice would be the closest site unless there is blockage in the form of buildings or terrain. If blockage exists, an alternate site may be available.

If coordinates are not available, measure the RSSI at the external antenna output by connecting a phone to the external antenna and slowly rotating the antenna until a maximum reading is obtained.

The Mini-IBA and interior antenna should be centrally located, keeping coaxial cable runs to a minimum. A maximum length of 100 feet of low loss cable is recommended. The actual coax used should be RG-8 type with a flame retardant rating as a minimum. If the coax is run through an area where heating and/or cooling air is channeled, a plenum rated coax should be used. When mounting the amplifier, take care to avoid areas of high heat or extreme cold. In general, do not place the unit on or near the top of high ceilings, by heaters or in cold storage areas.

During installation, care must be taken to provide the maximum isolation between interior and exterior antennas. This isolation should be in the order of 70 dB to prevent any re-generative feedback in the system. Feedback of this nature may cause the amplifier to emit a continuous signal at maximum amplitude and could, in some cases, interfere with the normal operation of the cell site.

There are no installation or user adjustments or tuning on this unit.