

EXHIBIT 8:

DESCRIPTION OF THE CIRCUIT FUNCTIONS AND

BLOCK DIAGRAM ----- 47CFR 2.1033(4).

The following is a brief description of the circuit functions and block diagram of the MW-CBDA-ESMR-1W60 Cellular Bi-Directional Amplifier/Booster.

MW-CBDA-ESMR-1W60

BI-DIRECTIONAL AMPLIFIERS

(COMPACT BDA)

CIRCUIT FUNCTIONS

DESCRIPTION

TABLE OF CONTENTS

PARAGRAPH	PAGE No.
BDA OVERVIEW	4
BDA BLOCK DIAGRAM DESCRIPTION	4
BDA RF BLOCK DIAGRAM DRAWING	5
BDA DC CIRCUIT SCHEMATIC DIAGRAM	5
BDA INSTALLATION	6
POWER SUPPLY DESCRIPTION	7
RF AMPLIFIER DESCRIPTION	7
AGC FUNCTION DESCRIPTION	8
MECHANICAL OUTLINE	9

BDA OVERVIEW:

The BDA assembly provides an exceptional repeater/booster performances to extend the coverage area of radio communications in buildings and RF shielded environments.

Features such as high linearity power amplifiers are contributing for the overall improved system linearity performances. The unit is based on a duplexed path configuration, having sharp out of band attenuation for improved isolation between the receiving and transmitting paths.

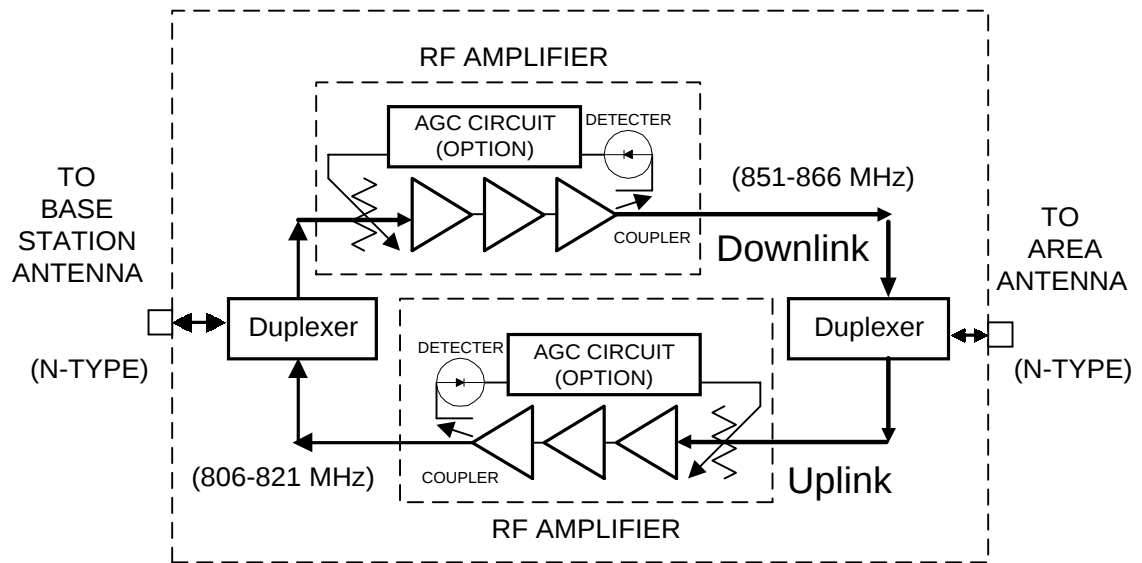
BDA BLOCK DIAGRAM DESCRIPTION:

The BDA Downlink path receives the RF signals from base station amplifies and transmits them to the subscriber. The BDA Uplink path receives the RF signals from the subscriber amplifies and transmits them to the base station. Two duplexers frequency separate the signals to the proper amplifying path and isolate the two signals.

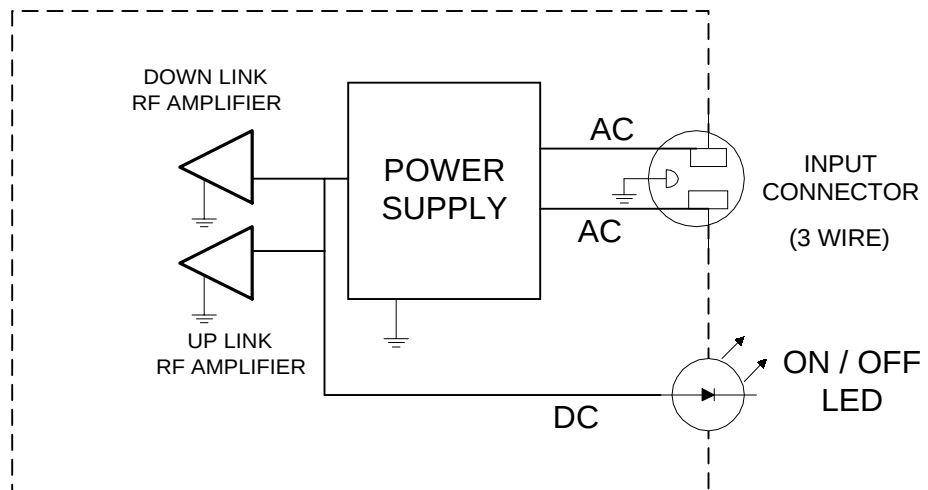
BDA with AGC (Option A)

The amplifiers in this BDA have an AGC feedback loop. The AGC circuit senses the output power and when it exceeds the preset level of +20 dBm it introduces more attenuation. In this manner the gain of the amplifier is reduced, its output power is limited to +20 dBm and the Intermodulation products are kept low.

The AGC Dynamic range is 30 dB.



**BDA
RF BLOCK DIAGRAM**



**BDA DC CIRCUIT
SCHEMATIC DIAGRAM**

BDA INSTALLATION

The BDA comes with a standard 3-wire male plug with phase, neutral and safety ground wires. The safety ground is connected to the BDA body. The AC power is only used to supply a high efficiency DC switching power supply. The power supply is CE and UL approved. The two amplifiers (Uplink and Downlink) and the Power On lamp use only DC power. DC power is fed to the amplifiers through feed-through connectors. The RF amplifiers have de-coupling capacitors in their circuits. These RF circuits (amplifiers and duplexers) use the BDA body as DC ground.

The RF connection is made via two type "N" female connectors. The RF connector labeled "Base" must be connected to the antenna pointing to the base station. The RF connection labeled "Mobile" must be connected to the antenna pointing into the area to be covered by the repeater.

The connections must be made through 50 ohms impedance cables.

The isolation between the base station antenna and the mobile antenna should be at least 12 dB higher than the BDA gain. If the isolation were less than the BDA gain oscillation would start and would saturate the amplifier. Isolation few dB higher than the BDA gain cannot start oscillations but would causes gain ripple in the band.

POWER SUPPLY DESCRIPTION

Power Supply Type: Nemic-Lambda AC/DC switching power supply.

Input Voltage Range: 85 to 265 VAC

Output Voltage: +24 VDC

Safety: Built to meet UL1950, CSA950, EN60950, DENTORI

Conducted Noise: Built to meet EN55022, FCC Class B, VCCI-II

RF AMPLIFIER DESCRIPTION

The RF amplifier is made up of three amplifier modules housed in one package. The first two amplifier modules have 20 dB RF gain each. These amplifiers use Heterojunction Bipolar Transistor (HBT) technology. The DC to these amplifiers is provided using DC regulator housed in the package.

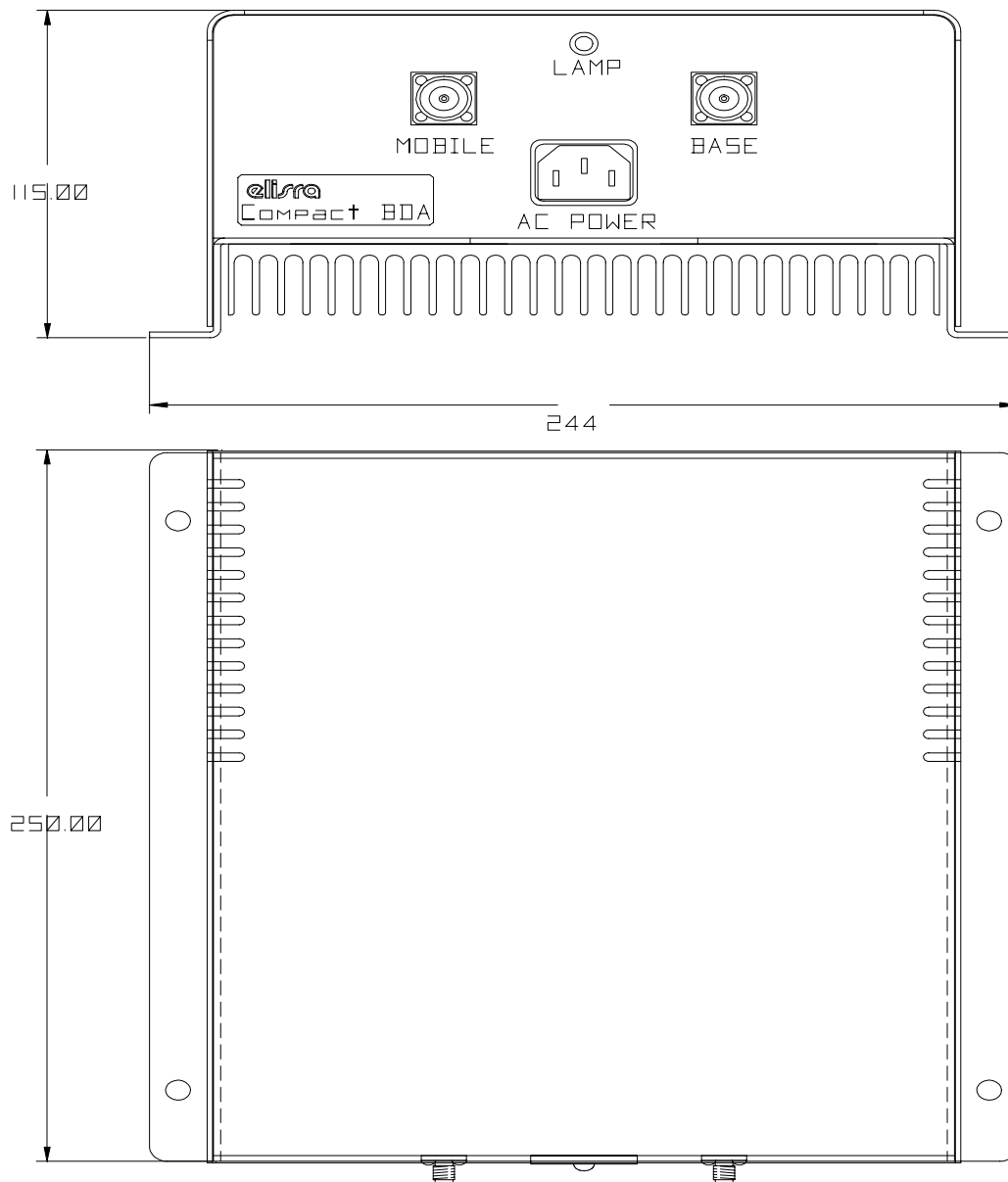
The RF power amplifier at the output is LDMOS type; Lateral MOSFET Class A amplifier. It has a gain of 30 dB and power output of about 2 Watt.

DC to the RF amplifier package is fed through RFI feedthrough solder pins

AGC FUNCTION DESCRIPTION (AGC Option A only)

The BDA with option A have AGC function. Their amplifier has a directional coupler and a detector at the output of the high power amplifier to monitor the output power. When a high signal is received the automatic level control detects the amplitude and sends a feedback signal to a voltage variable attenuator at the amplifier input which attenuates the signal level so that the output power of the amplifier does not exceed the preset limit. The AGC dynamic range is over 30 dB limited only by the dynamic range of the voltage variable attenuator own dynamic range.

All these circuits are integral part of the amplifier and need no maintenance.



BDA MECHANICAL OUTLINE