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SPECIFICATIONS

FOR
BLOCK D - BLOCK F

FiberLink®
BI-DIRECTIONAL AMPLIFIER

MW-FBDA-PCS-DF-50W

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1. OVERVIEW:

The FBDA is an interface unit between optical signals carrying RF information, and a RF antenna covering a defined user area. The system consists of uplink path and downlink path.

The uplink path receives RF signals from the Mobile antenna and amplifies them and converts them to optical signals. These optical signals are sent to the BTS.

The downlink path receives optical signals from the BTS, converts them to RF signals and amplifies these signals using a high power amplifier. The Mobile antenna transmits these RF signals.

A duplexing filter separates the frequencies of uplink path from the downlink path enabling the use of the same antenna for receiving and transmitting. The FBDA provides about 46 dB RF gain in both directions.

Both optical signals for Uplink and Downlink are carried on a single fiber using WDM.

Downlink gain can be adjusted on the fiber optic unit to set the FBDA downlink RF power.

Uplink gain can be adjusted by 16 dB continuous trim pot., however max gain is usually optimum.

The downlink path uses a 50 Watt power amplifier with AGC set to 40dBm, while the uplink uses an AGC amplifier to drive the uplink F/O transmitter. The AGC level in the uplink path is set to 0 dBm, which is the max power required by the F/O transmitter.

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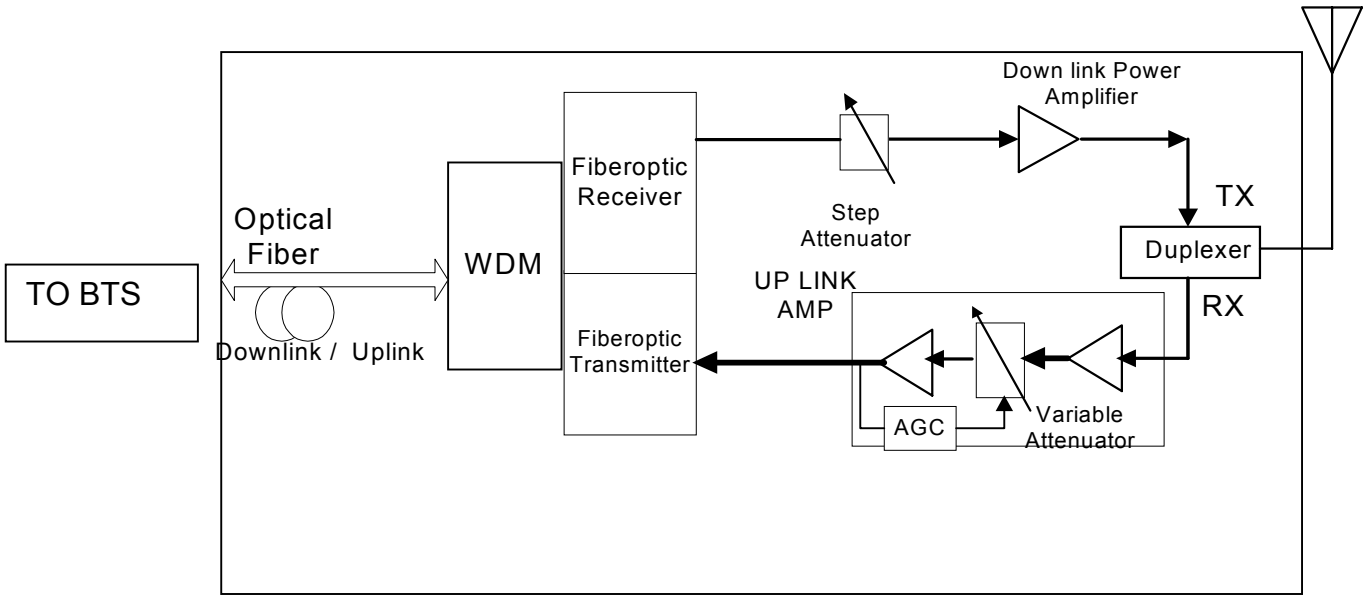

Fig. 1 : FBDA RF BLOCK DIAGRAM

2. COMPONENTS DESCRIPTION:

2.1 DUPLEXER

The duplexer serves to frequency separate uplink signals from downlink signals. The duplexer has sharp out of band attenuation for better isolation between the receiving and transmitting paths

2.2 UPLINK AMPLIFIER

The uplink amplifier contains AGC control circuitry. The AGC function helps to limit the signal at the F/O when high power signals are received while keeping high gain when receiving low power signals.

The **LED** on the amplifier illuminates when the power output of the amplifier is within the set limit (when the AGC is either On or OFF).

The **Switch** on the RF amplifier enables the AGC function. If the AGC is disabled then the amplifier gives maximum gain at all times. AGC switch should be on to prevent high power signals damage the fiber optic unit .

2.3 50 WATT DOWNLINK POWER AMPLIFIER

This is the downlink power amplifier. It is attached to high power dissipation heat sink. A thermostat attached to this amplifier turns off the FBDA power supply when the temperature exceeds 80° C.

2.4 Fiberoptic to RF transceiver

The Fiberoptic transceiver includes a transmitter and receiver unit. The transmitter converts the RF signals into optical signals, which are then sent over optical fiber. The receiver converts light wave signals back to RF. Using optical fiber cable allows long distance transmission, up to 20 Km.

2.5 MONITOR UNIT

The FBDA monitor performs the following functions:

a) Monitors the DC supply voltage of the FBDA. The fault LED illuminates when the voltage is beyond the specified limits.

b) Monitors the current to each active element and the fan inside the FBDA. If the current is below or above the specified limits then a LED illuminates.

c) Monitor the optical receive signal using alarm output of the optical transceiver.

d) Provides automatic alarm function. A relay in the monitor box opens whenever any fault occurs or when the power is removed from the FBDA. The relay arms are normally open and close only when no fault occurs.

e) Provides self test for the alarm functions. The pushbutton switch on the Monitor unit turns on all the alarm LEDs and opens the relay arms.

f) Send summarized alarm signal to the base station via the F/O data port.

2.6 POWER SUPPLY

This is a high efficiency dual switching power supply providing +28 VDC at over 6 Amp for the power amp and +15VDC for other elements.

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3 . SPECIFICATIONS:

3.1 RF SPECIFICATIONS

	Uplink (RX)	Downlink (TX)
Frequency Range	1865-1895 MHz	1945-1975 MHz
Passband Gain @ min attenuation	46 dB Nominal	
Passband Ripple	± 1.0 dB typical	
Noise Figure @+25°C (optical loss less than 3 dB)	6.0 dB max @ max gain	N.A.
Manual Attenuation Range	0 to 16 dB continuous	30 dB in 2 db steps
Down-Link Output Composite Power	----------	+40 dBm typ.
Down-Link 3rd Order Intermodulation Products @two tones +37 dBm each at Output	----------	50 dBc min.
Up-Link 3rd Order Intermodulation Products @two tones -3 dBm each at F/O Transmitter Input	55 dBc typical	----------
Up-Link AGC Range	30 dB typ	----------
Power Output at AGC Setting (Factory Set)	0 ± 1 dBm	40±1 dBm
Impedance Level	50 Ohms	
VSWR	1.5 : 1 max	

3.2 FBDA ALARM SPECIFICATIONS

Remote Fault Indication (Summarized alarm)	Relay Contact open for any fault. Relay closed for no fault. Alarm is sent on the serial data link of the FO transmitter
Fault List :	Power Supply Over-voltage or Under-voltage
	Uplink Amplifier Over Current or Under Current
	Downlink Power Amplifier Over Current or Under Current
	FO Transceiver Over Current or Under Current
	FO Receiver Power fall (Bad Optical Connection)
	Fan Over Current or Under Current
Electrical Fault Indication LED	Illuminated LED on Monitor Box for each Electrical Fault
Fiber Optic Connection Fault Indication LED	Illuminated LED on FO Transceiver when Optical Connection is performing Correctly. LED is OFF when FO Receiver Power falls.

3.3 MECHANICAL SPECIFICATIONS:

Size	400x 400 x 300 mm approx.
RF Connectors	N-type Female
Weight	30 kg. Approx.
Enclosure Type	Weather proof Enclosure to IP65 for Wall Mounted Installation.
Power Supply	110/220VAC, 200W typ.

3.4 ENVIRONMENTAL CONDITIONS:

6.1 Operating temperature	: - 20°C to + 50°C
6.2 Storage temperature	: - 30°C to + 70°C

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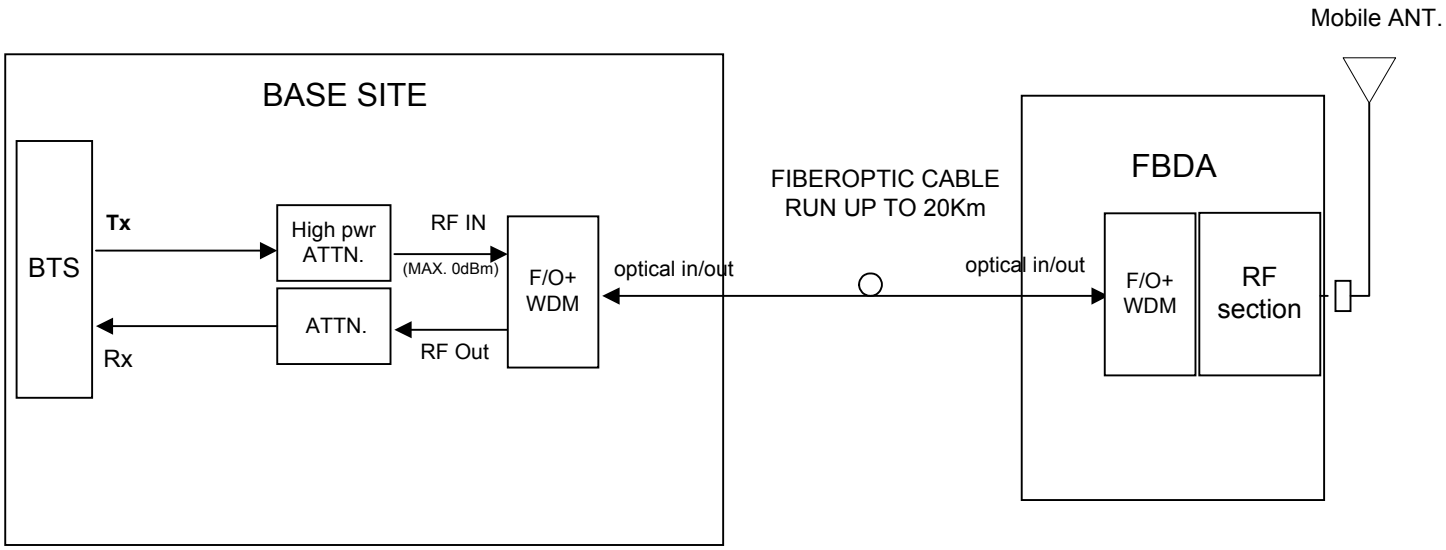

Fig.2 : FBDA SYSTEM BLOCK DIAGRAM

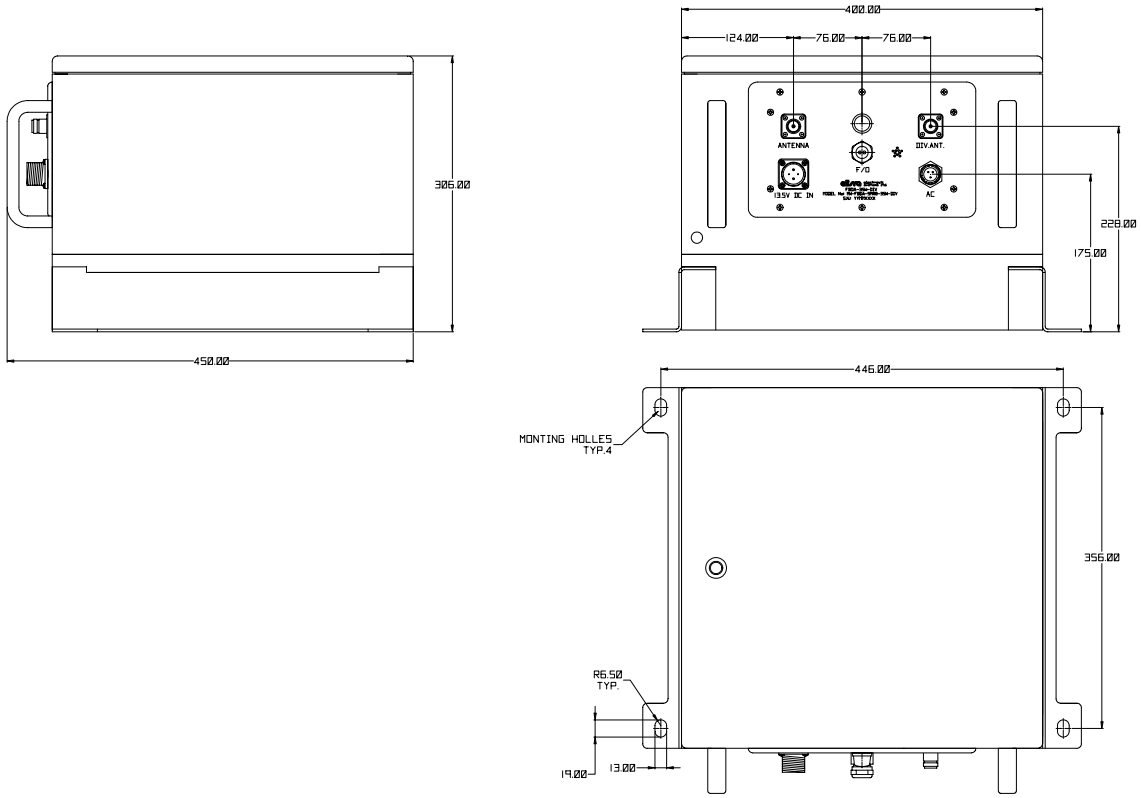

Fig. 3: MECHANICAL OUTLINE