

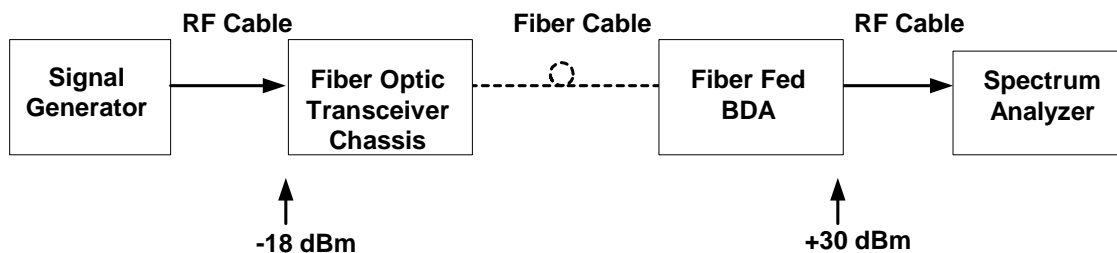
## BDA Installation & Gain Setup

### INSTALLATION

- 1 Install the BDA in a standard 19" rack. The BDA should be placed in a location where the interconnect cables (i.e. fiber, RF and serial cable) can be easily installed and not susceptible to damage. If the BDA is not installed in a controlled environment, a 5U high space should be located above and below the unit for airflow.
- 2 Plug the BDA into a 120 VAC single phase three wire grounded receptacle (5-15R).
- 3 Connect the RF antenna cable to the antenna port (Type-N Female) on the rear panel of the BDA. If a RF fed BDA was installed, connect the base station RF cable to the base station port (Type-N Female) on the rear panel of the BDA.
- 4 If a fiber fed BDA was installed, connect the fiber optic cable to the BDA front panel FC/APC connectors. If both fiber connection indicators (i.e. LEDs) are illuminating a green color, the connection between the optical source and the BDA was successful.

### DOWNLINK GAIN SETUP

The fiber fed BDA provides 18 dB of gain for 9 dB of optical loss. The factory gain setting for the fiber fed BDA is 48 dB, with a maximum FCC RF output limit of +30 dBm. Due to the various fiber optic link losses found in a communication system, the fiber optic gain must be adjusted so not to exceed the BDA FCC power limit. The equipment needed and the gain test setup required for this adjustment is shown in Figure 6.1 below.



**Figure 6.1 Downlink Gain Test Configuration**

- 1 Using the signal generator, inject a -18 dBm signal into the downlink operating passband of the fiber fed BDA.

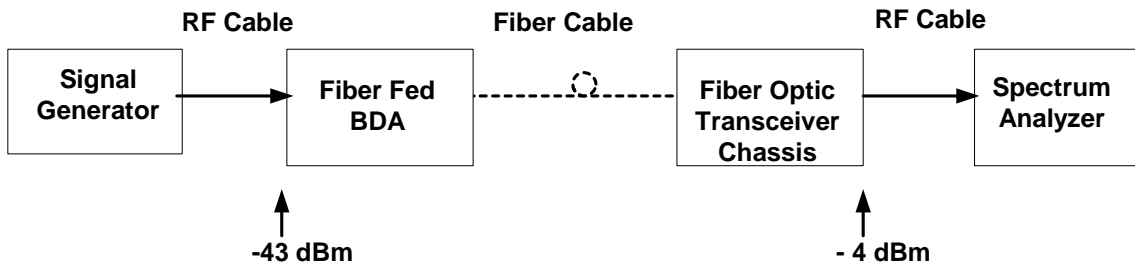
- 2 Measure the output signal level of the fiber fed BDA using the spectrum analyzer.
- 3 If the measured output signal level exceeds +30 dBm, reduce the fiber optic gain (i.e. adjust BDA's fiber optic transceiver front panel potentiometer) so that the output power level is equal to +30 dBm.

**NOTE:** No additional fiber gain adjustment will be required after the fiber optic gain has been set. If any additional gain adjustments are required they must be performed via the RS232 port.

The RF fed BDA gain setting is performed at the factory and no field adjustments are required. With a 48 dB factory gain setting, the maximum input signal level is -18 dBm. This input level will ensure that FCC power limit (+30 dBm) is not exceeded.

### UPLINK GAIN SETUP

The fiber fed BDA provides 18 dB of gain for 9 dB of optical loss. The factory gain setting for the fiber fed BDA is 48 dB. Due to the various fiber optic link losses found in a communication system, the uplink fiber optic gain must be adjusted so not to overdrive the fiber optic link when high power transmitters are operating near the BDA. The equipment needed and the gain test setup required for this adjustment is shown in Figure 6.2 below.



**Figure 6.2 Uplink Gain Test Configuration**

- 1 Using the signal generator, inject a - 43 dBm signal into the uplink operating passband of the fiber fed BDA.
- 2 Measure the output signal level of the fiber optic transceiver chassis (i.e. located near the base receiver station) using the spectrum analyzer.

- 3 If the measured output signal level exceeds  $-4$  dBm, reduce the fiber optic gain (i.e. adjust fiber optic transceiver front panel potentiometer) so that the output power level is equal to  $-4$  dBm.

**NOTE:** No additional fiber gain adjustment will be required after the fiber optic gain has been set. If any additional gain adjustments are required they must be performed via the RS232 port.

The RF fed BDA uplink gain setting was performed at the factory and no field adjustments are required. For a 48 dB gain setting, the maximum input signal level is  $-14$  dBm with ALC active and  $-43$  dBm without ALC active. Note, the ALC is activated at the factory and when the input level exceeds  $-43$  dBm, the ALC will go into operation.