Theory of Operation

This amplifier/repeater system is identical to the previously approved MR801Bi (FCC ID. BCR-RPT-MR801BI) except that the downlink input / uplink output from the system is connected to a base station transmitter via fiber optic cables. Since the link between the base station and the MOR801Bi is not wireless, only the downlink transmit direction requires approval. The MOR 801Bi can be operated at 20 W or 1 W maximum rf output, depending on the amplifier module installed.

The repeater is comprised of two amplifier chains. The signals to and from the mobiles are combined and forwarded to an antenna by a frequency duplexer. The optical signals to and from the Master Unit are converted by the optical transceiver.

In the downlink direction, the optical signals from the Master Unit are converted into RF-signals by the tranceiver. The RF signal passes the four way splitter, which then forwards them to the conversion modules. After the conversion they are combined by the active combiner and afterwards amplified by the feed forward / final amplifier. The feed forward / final amplifier provides the required power output. Finally the signals are fed to the antenna by the duplexer.

In the uplink direction, the signals from the mobiles are separated by the duplexer, go to a pre-amplifier and afterwards to a conversion module. The signals are combined by the active combiner, then are converted to optical signals by the transceiver and are finally transmitted to the Master Unit.

In the downlink path, a power detection measures the output power and controls the gain. In the uplink direction, the gain is controlled by the active combiner, to protect the optical transceiver. This control detection is called the Automatic Level Control (ALC).

System Diagram