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*Innovative Radio Frequency Solutions*

## **WaveRider EUM3000 Antenna Functional Overview**

The WaveRider EUM3000 Antenna consists of four basic units:

1. RF Splitter/Combiner,
2. Control Circuitry
3. Phase Shifter, and
4. Radiating Elements.

The RF signal and DC diversity control signal are coupled and sent from the EUM3000 Modem Unit to the Antenna via a single coaxial cable. During transmission, the RF Splitter divides the power of the incoming RF signal equally between the feed paths of the two radiating elements. The RF and DC signals from the Modem Unit are decoupled and the DC diversity control signal is then decoded in the Control Circuitry to provide control signals for the switching components. To achieve pattern diversity, the two antenna elements are fed in phase or 180° out of phase to give two distinct radiation patterns. The RF signal path of one of the antenna elements is therefore switched between an in-phase path and a 180° phase-shifted path using RF switches, which is controlled by the DC diversity signal from the Modem Unit.

In the receive mode, the received signal path of one of the antenna elements is switched between in-phase and phase-shifted paths, depending on the diversity mode chosen by the Modem Unit. The state of this switch is again controlled by the DC diversity control signal from the Modem Unit. The received RF signals from the antenna elements are combined in the RF combiner and sent to the Modem Unit via the coaxial cable.