

THEORY OF OPERATION

The Multi-frequency Telemetry Repeater is a device that functions as a signal relay between an implanted DSI Physiotel[®] transmitter and a Repeater Receiver. It is used in large animal and primate telemetry applications. It offers greater flexibility and capabilities in cage design, housing and data acquisition than the standard DSI transmitter-receiver option. This is accomplished by retransmitting the original implant data on a different frequency than the implant frequency as explained below.

There are several different frequency models of the Repeater available all transmitting in the 902 – 926 MHz band. The availability of these different frequency models allows the animals to be in closer proximity with one another or group housed. The Repeaters also have a larger transmission range than implanted transmitters, enabling greater separation between an animal and its receiver.

In a system, each animal is implanted with a Physiotel transmitter. Each animal is then outfitted with a Repeater and has a repeater receiver associated with it. The Physiotel transmitter transmits a localized signal that is detected by the animal's repeater receiver. This signal is demodulated, fed through a comparator and then a one shot chip that modulates the carrier in the 902 – 926 MHz band. The repeater transmit signal is recognized by a separate remote receiver which demodulates the signal and feeds it to the data acquisition system. There is no time delay introduced into the data acquisition process because of the Repeater's involvement in the signal relay.

Each Repeater has two modes of operation: short-range and long-range. The factory default setting for the Repeater is short-range mode (3m transmitting distance) but the long-range mode (8m transmitting distance) may be useful for some applications. These ranges indicate the shortest or minimum transmission distance that would be encountered in an environment without obstructions. Ranges will vary depending on the environment and based on the orientation of the Repeater with respect to its Repeater Receiver and the influence of environmental conditions and variables such as personnel.