

# TRX-1220-B Multi-Lane Transceiver for Dedicated Short Range Communication (DSRC)



The transceiver TRX-1220-B is a roadside device for communication with on-board units (OBU) or transponders (TRP) that follow DSRC standards according to CEN TC278. Full compliance with CEN DSRC standards and public documents like Global Specification for Short Range Communication (GSS), A1, Cardme 4 and Cesare II secures that interoperability with other EFC systems is achieved.

Within its core field of applications the TRX-1220-B is ideally suited for real multi-lane free-flow systems. Up to 8 transceivers can be connected in star or line topology to form a DSRC subsystem for the coverage of virtually any variant of road width. The DSRC subsystem interconnects via standard Ethernet interface to a lane controller or directly to a back office system.

The special bus system (IBB = Inter Beacon Bus) developed by Kapsch is optimized for MLFF environment. It ensures bit synchronous data transmission on all transceivers within the DSRC subsystem. The downlink data are synchronized to avoid interferences at the OBUs. The IBB protocol is a master/slave protocol with the transceiver controller TRC acting as the master and the transceivers acting as slaves. The transceivers are controlled by the TRC which coordinates the access to the bus and the transmission of the DSRC-Downlink frames.

After transmission of the DSRC data in the Downlink, the transceivers switch over to receiving uplink data from the OBU/TRP. The IBB protocol maintains a store and forward process in each transceiver. Data received are sent to the lane controller at the end of the Uplink phase within a dynamic TDMA scheme. The

protocol dynamically observes the communication load and optimises the data throughput on the bus. Full performance at maximum vehicle speed is guaranteed even with several OBU/TRP passing the toll station simultaneously.

## Antenna Characteristics

The built-in circular polarized antenna system consists of a receiving and a transmitting antenna designed in planar in microstrip technology. Electrical beam shaping is realized by combining the individual patches to a “phased array”. Two basic characteristics are available. For details please refer to the technical data.



