

Ku-band Airborne Mini-TCDL Description

This document describes the Radiant Solutions Ku-Band airborne Tactical Communication Data Link (TCDL) built by L3 Communication for the purpose of obtaining an experimental FCC license for a test site location near Ypsilanti, MI.

System Description and Operational Area

The TCDL will provide a full duplex 10/100BASE-T LAN connection for the purpose of transmitting high speed image data from an aircraft to a ground station. The airborne TCDL will be located on an aircraft flying between 5,000 and 10,000 feet AGL. The airborne TCDL will operate within a 50-mile radius of the Ypsilanti, MI Test area located near N 42° 13' 54.0", W 83° 30' 22.8". The ground station TCDL will be setup at a fixed location within a 2-mile radius of the same test area.

Antenna

Both the airborne and ground station TCDL are on rotational pedestals that will always keep the antenna pointed at each other. The antennas are a hemispherical constant index lens that provides 19 dBi gain of Ku-band gain and are right-hand-circularly polarized.

RF Frequency and Transmit Power

The transceivers operate in full-duplex mode with the uplink operating at 15.15-15.35 GHz and the Downlink operating at 14.40-14.83 GHz. The transmitters have an output power up to 15W. Factoring in the antenna gain, the peak ERP (effective radiated power; transmit power multiplied by antenna gain) is 1.19kW (30.76 dBW).