TECHNOLOGY
DATASHEET

UBIQUITI NETWORKS

DUAL-ANTENNA ARCHITECTURE

- Innovative Dual-Antenna Architecture
- Synchronous Data Transmission and Reception
- Robust Mechanical Assembly

Innovative Dual-Antenna Architecture

The Ubiquiti Networks™ R&D (Research and Development) team created airFiber® for outdoor PtP (Point-to-Point) bridging and high-performance network backhauls. The team invented a market-leading, dual-antenna architecture. Each airFiber unit features a radical departure from industry practice: a one-piece "monocoque" molding comprising two complete antenna systems and a mechanical back-plane. "Monocoque" means that the exterior skin supports the structural load of the airFiber hardware; this same concept is used to construct lightweight, rigid structures, such as those used for Formula One race cars. Due to its single-piece, injection-molded architecture, airFiber adds lightness in weight and affordability to its list of advantages.

Synchronous Data Transmission and Reception

If airFiber had been constructed using conventional methods and individual mechanical parts, collimation distortion (the two antenna beams being skewed with respect to one another) would likely have a negative impact on link budgets and overall system performance. With airFiber's innovative, one-piece assembly, the two antennas can be aimed at exactly the same point in space with a high degree of accuracy and repeatability.

airFiber features a dual-independent, 2x2 MIMO, high-gain reflector antenna system. On each airFiber unit, the smaller antenna on the bottom transmits, and the larger antenna on the top receives. The main lobe of the receiver is more narrow than that of the transmitter, in both azimuth and elevation, so peak performance requires precise aiming and fine-tuning of the alignment between the airFiber units during installation.

Robust Mechanical Assembly

An independent lab has tested the airFiber mechanical assembly to meet MIL-STD-810G, a rigorous United States military standard that defines a variety of challenging environmental conditions. The airFiber mechanical assembly has also undergone vibration testing using an extended version of IEC 60068-2-6, an environmental standard of the IEC (International Electrotechnical Commission). By industry standards, the typical test looks for no observable mechanical failures after 3 hours of sinusoidal sweeps. The airFiber R&D team set the bar higher for airFiber, which passed an extended, 3-axis test that ran for 9 hours to ensure no mechanical failures. (Extended 9-hour testing is often done for MIL-STD compliance.)

airFiber AF24 shown without the radome