

## MIMO-OFDM SYSTEMS FOR AIRBORNE TACTICAL COMMUNICATION

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### Abstract

The Military is embracing the communication revolution, turning to a new generation of sophisticated systems to enable faster, less costly, more flexible, reliable, jam resistant, low probability of detection (LPI), re-configurable, multiuser and spectrally efficient communication. Many of these features can be added largely by utilizing MIMO-OFDM technology appropriately and judiciously. MIMO-OFDM finds applications in wireless communication, NLOS communication, Satellite communication and HF communication. OFDM waveform is designed to work in Multipath-fading wireless channels and MIMO increases reliability by providing Diversity. MIMO-OFDM will be highly effective to employ in Unmanned Aerial Vehicles (UAV) communication systems due to requirement for reliable high data rate and wide band communication link like Real-Time video streaming. In the physical layer, MIMO OFDM based system can be employed to improve the efficient spectrum usage and at the same time to increase the coexistence of various Radio-communication systems in the same band like L band (960-1215 MHz) DATA Link with L band based Secondary radar system IFF and TACAN. LTE, WiMAX and Wi-Fi are few examples where MIMO OFDM is already in use for commercial domain and has all the potential to fulfill the requirement of Military application.

**Keywords:** MIMO (Multiple Input and Multiple Output); OFDM (Orthogonal Frequency Division Multiplexing); Multipath-fading; High Data Rate; LPI