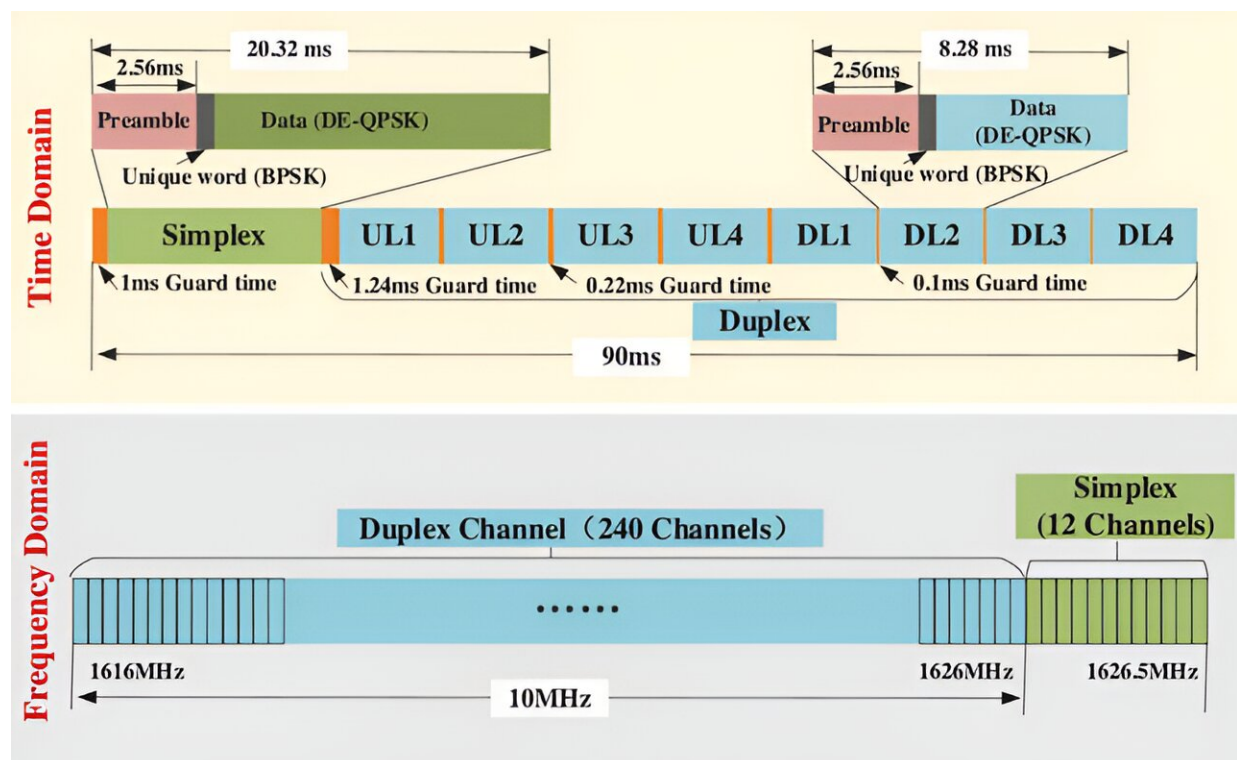


Research uncovers potential and challenge of iridium L-band burst transmission for opportunistic navigation

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Iridium L-band FDMA/TDMA structure. Credit: *Electronics Letters* (2023). DOI: 10.1049/ell2.12989

A research team from the Aerospace Information Research Institute (AIR) of the Chinese Academy of Sciences (CAS) has been delving into

the iridium L-band downlink burst transmissions to explore their potential as Signals of Opportunity (SoOP) for navigation. Their findings were published in [Electronics Letters](#).

Without [prior knowledge](#) or frame verification, iridium bursts were collected and analyzed in the study. These bursts have been comprehensively evaluated in both single-burst and multiband multi-burst modes to assess their suitability and capabilities for enhancing and supplementing the standard Global Navigation Satellite System (GNSS).

A critical component of the study is the Ambiguity Function (AF) characterization, which provides insights into waveform features such as [resolution](#) and sidelobes in both the Doppler and delay domains.

The findings revealed that those single bursts, despite reaching a maximum duration of 20.32 milliseconds, exhibit potential but fail to meet the requirements for optimal performance in navigation applications. Nevertheless, the implementation of the multiband mode substantially enhanced both [time delay](#) and Doppler resolution, albeit at the expense of some AF sidelobe degradation.

This study is expected to boost the resilient [navigation](#) via signals of opportunity in GNSS-denied environments as scientists continue to explore the potential of iridium L-band downlink burst transmissions.

More information: Ruidan Luo et al, Ambiguity function analysis of iridium burst transmissions for opportunistic navigation, *Electronics Letters* (2023). [DOI: 10.1049/ell2.12989](https://doi.org/10.1049/ell2.12989)

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