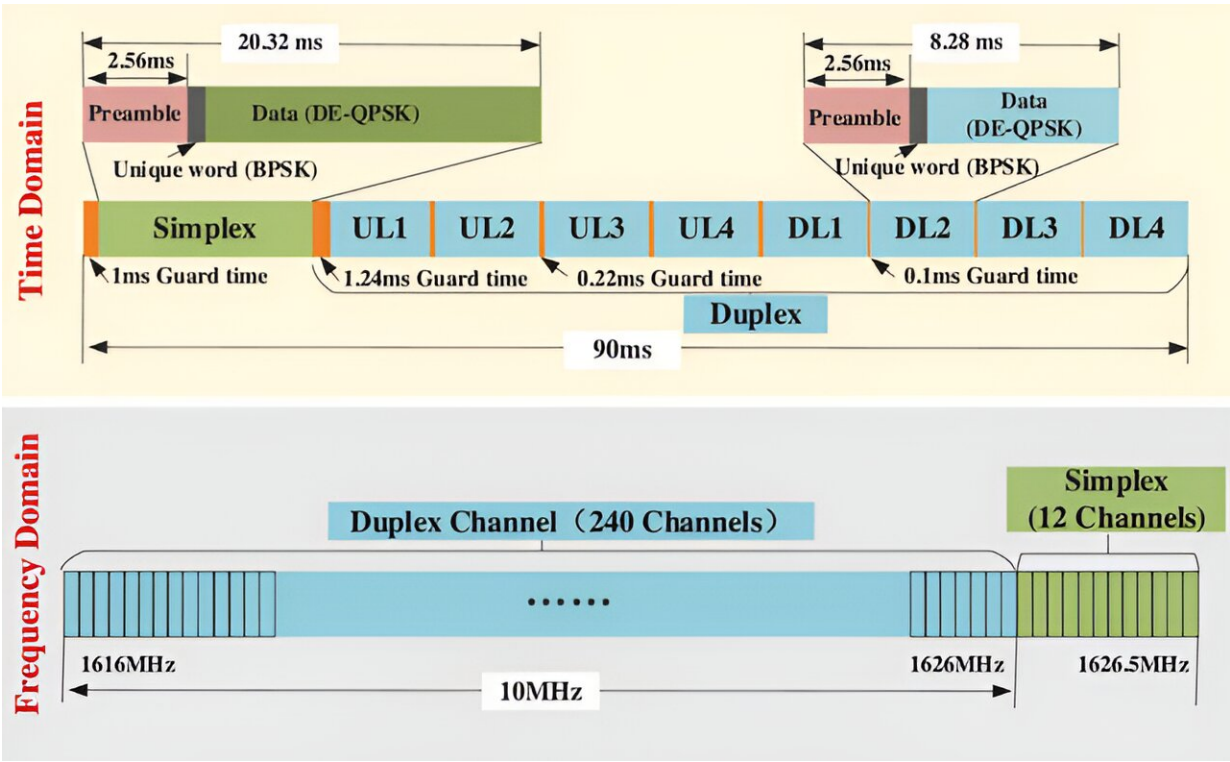


Research uncovers potential and challenge of iridium L-band burst transmission for opportunistic navigation

November 8 2023, by Liu Jia



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)

Provided by Chinese Academy of Sciences

Citation: Research uncovers potential and challenge of iridium L-band burst transmission for opportunistic navigation (2023, November 8) retrieved 27 April 2024 from <https://techxplore.com/news/2023-11-uncovers-potential-iridium-l-band-transmission.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.