

5G IoT NETWORK

FLEXIBLE AIR INTERFACE FOR SCALABLE SERVICE DELIVERY OVER TERRESTRIAL AND SATELLITE NETWORKS

WHAT IS THE IOT FLEXIBLE AIR INTERFACE?

Leti's IoT air interface is a patented, scalable waveform for 5G cellular networks. This technology overcomes shortcomings inherent in conventional LTE waveforms, such as out-of-band emission and weakness when exposed to non-synchronous access. The proposed air interface is also fully compatible with requirements of satellite and terrestrial networks.

The proof of concept was built on a custom SDR prototyping board based on a high-end FPGA (Zynq045), ARM processors and an agile RF front-end (AD9361).

- Wireless sensor network
- Mission critical applications
- Smart cities, smart countries
- Massive and critical IoT (traffic safety, smart grid...)
- Coverage, Reliability, Longevity

🕂 WHAT'S NEW?

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> Leti's flexible IoT air interface includes terrestrial air interface capabilities and the capability of satellite deployment. This waveform combines two Leti technologies: **Block Filtered OFDM and Turbo-FSK**.

BF-OFDM is highly flexible, with very good **spectral localization**. It can be implemented using up-to-date **OFDM-based receivers**. This technology overcomes the shortcomings inherent in conventional OFDMA waveforms, such as out-of-band emission and weakness when exposed to non-synchronous access, and can fulfill many deployment requirements, including licensed and unlicensed band.

Turbo-FSK, a powerful **joint modulation coding** system, allows the transmission of low- rate information close to Shannon's limit, while preserving compatibility with the NB-IoT framework, and constant envelope signal. The latter is particularly relevant for maximizing battery life. Turbo-FSK technology is compatible with a large set of requirements, including low latency and high demands for reliability, as well as low-cost devices with low energy consumption and good coverage.

KEY FACTS:

- Publications: ICC2017, Globecom 2017
- Best Paper Award ICC2017
- 3 Leti patents



WHAT'S NEXT?

Field trials are underway at Leti (Minatec Campus, Grenoble, France) for terrestrial application and tests will be conducted on a satellite component (H1 2018), using a dedicated real-time channel emulator.

INTERESTED IN THIS TECHNOLOGY?

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