

BF-OFDM: 5G MULTISERVICE TRANSMISSION

FLEXIBLE AIR INTERFACE FOR SCALABLE SERVICE DELIVERY

Combines enhanced mobile broadband, massive machine-type communications, ultra-reliable and low latency communications.

WHAT IS BF-OFDM?

Leti's Block-Filtered OFDM (BF-OFDM) is a quasi-orthogonal, multicarrier waveform for 5G transmission, which overcomes the shortcomings inherent in conventional LTE waveforms (out-of-band emission, weakness when exposed to asynchronous communications).

Real-time HW/SW is implemented on a custom SDR prototyping board built around a high end FPGA (Zynq 7045), ARM processors and an agile RF front end (AD9361).

APPLICATIONS

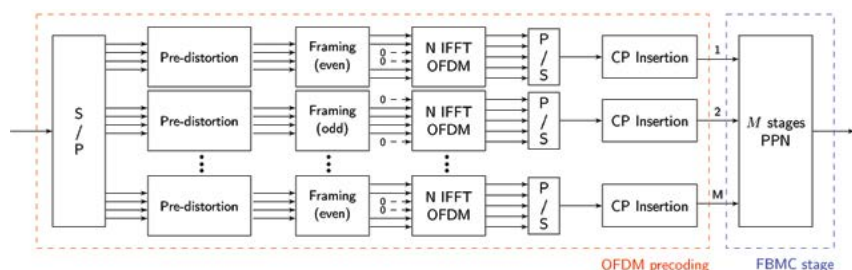
- Multiservice transmission
- Fragmented spectrum usage
- High throughput
- Backhaul link
- Mission critical applications
- Coexistence with legacy LTE standard using limited guard band
- Verticals: smart factory, automotive, energy

+ WHAT'S NEW?

BF-OFDM waveform combines the **advantages of OFDM and FBMC** waveforms and offers significant gains for 5G applications. Its OFDM receiver remains simple, while its transmitter is slightly more complex.

Spectral localization and multi-user performance are better than those of OFDM, while **similar equalization and MIMO methods** can be implemented using a typical OFDM receiver. CP insertion ensures signal circularity, offering **identical performance to legacy CP-OFDM with a multipath channel**.

BF-OFDM is highly flexible and is configured by setting filter bank FFT size (M), carrier bandwidth, OFDM precoding FFT size (N) and CP size parameters. It is scalable and different configurations can be used to optimize performance for a given indicator to provide greater resistance in high mobility situations or low latency. The Leti solution's scalability paves the way for **future multiservice applications**.



KEY FACTS:

- Publications: ICC 2017, EuCNC 2017, ISWC 2017
- Patented technology



+ WHAT'S NEXT?

5G field trials are currently being undertaken at Leti (Minatec Campus, Grenoble, France) for a 3.5 GHz TDD band with 40MHz bandwidth (6-month ARCEP authorization).

Backhaul link tests in TVWS bands (690MHz) are being conducted in Scotland (H2 2017).

INTERESTED IN THIS TECHNOLOGY?

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