



# OPTIMISED WAVEFORM RADIO NAVIGATION SIGNALS

*Generation and reception of signals adapted to future standards of  
GNSS systems*

## Potential applications

### GNSS transmitters

Satellites, land-based beacons  
Ground test bench, GNSS simulator

### GNSS receiver

Ground and on-board, all vehicles  
Receiver manufacturers for space, civil aviation,  
consumer applications, etc.

## Invention overview

A method and device for transmitting and receiving a radio navigation signal having a spreading waveform composed of a real linear combination of two binary waveforms (BOC) with different frequencies.

A clever phasing of these components enables bringing the constant-envelope signal to transmission. Two receiving architectures are possible:

- composite signal search
- signal broken down into BOC components, then recombined.

## Technological benefits

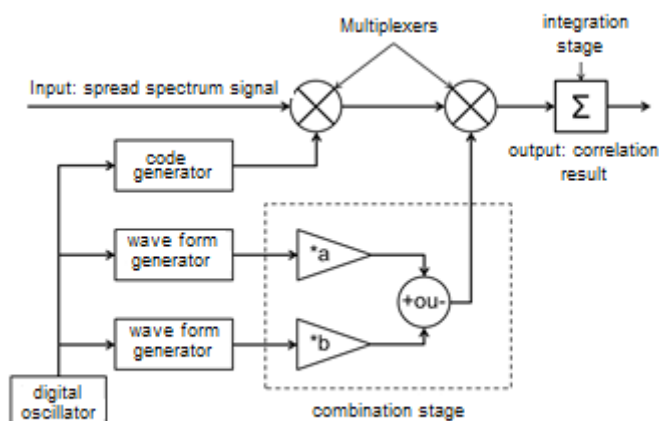
### Use of innovative signals

Performance optimisation solution for new navigation signals within the constraints of pre-existing signals  
Transmitting and receiving device for "M-BOC" implementation in GALILEO, which capitalises on the increased performance of these innovative signals

### Optimised performance

Reduced measuring noise and multi-path impacts  
Possibility of using only the low frequency component of CBOC

Reception with the signal being broken down into elementary BOC optimises the use of computing resources



Block diagram of an example of a receiving device

## Commercial benefits

### A modern and adaptable system

Process already in place on GALILEO satellites

Ability to have two receiver ranges:

- basic receiver using only the low-frequency component
- high-end receiver using the entire signal

TRL : 9

*Invention patented by CNES*