

Frequency conversion device for radio frequency signals

Multiplication of frequencies used by different ways of radio communication impose ever greater complexities of electronic architectures, the use of many components and therefore an increase in mass and bulk of the system.

Our solution consists of a radiofrequency (RF) receiving device substituting the conventional frequency conversion block with a single system composed of a double filter.

DESCRIPTION*

The technological solution developed is based on the use of specific active RF filters, N-Path filters or switched capacitance filters (where N is the number of switches in parallel), for frequency conversion. The key points of the device are:

- Sampling of the signal by a clock frequency; the input signal is converted into frequency to a low band, filtered and converted back to the RF band
- Good linearity and a low noise factor
- Reconfigurable filter in frequency and easy to integrate into chips on silicon substrates



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TECHNICAL SPECIFICATIONS

Frequency conversion	Double sampling (in/out) by N-Path
Composants	CMOS or bipolar transistors
Frequency band	From 1 kHz to 40 GHz
Surface puce	900 x 1000 μm^2

COMPETITIVE ADVANTAGES

- No filter linked to specific frequency band
- Very low parasitic noise
- Bandwidth and work frequency flexibilities

APPLICATIONS

- IoT:
 - Remote health care
 - Remote manufacturing, training, surgery
- Traffic safety and control
- Smart grid automation
- Industrial application and control
- Space telecommunications

INTELLECTUAL PROPERTY

- Patent application filed

DEVELOPMENT STAGE

- Experimental proof of concept



LABORATORY



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