Title (en)

PHOTONIC-ASSISTED RF SPECTRUM SCANNER FOR ULTRA-WIDE BAND RECEIVERS

Title (de)

PHOTONENUNTERSTÜTZTER HF-SPEKTRUMSABTASTER FÜR ULTRABREITBANDIGE EMPFÄNGER

Title (fr)

ANALYSEUR DE SPECTRE RF ASSISTÉ PAR PHOTONS POUR DES RÉCEPTEURS À BANDE ULTRA-LARGE

Publication

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Application

EP 15736315 A 20150306

Priority

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- IB 2015051665 W 20150306

Abstract (en)

[origin: WO2015132772A2] Disclosed herein is a photonic-assisted radio frequency spectrum scanning device for use in a receiver (100), including: a first optical waveguide arm (110) comprising, in cascade, an input end, a first electro-optical modulator (111), a tunable optical filter (112) and an output end, wherein said first electro-optical modulator (111) is designed to be connected to an antenna to receive therefrom an incoming radio frequency signal; a second optical waveguide arm (120) comprising, in cascade, an input end, a second electro-optical modulator (121), an optical delay line (122) and an output end; a mode-locked laser (101) connected, through an optical splitter (102), to the input ends of the first and second optical waveguide arms (110,120) to supply the latter with optical pulses; an optical hybrid coupler (105) connected to the output ends of the first and second optical waveguide arms (110,120) and operable to combine optical signals received from the latter to produce corresponding output optical signals; and photodetection means (131,132) connected to the optical hybrid coupler (105) to receive the output optical signals and configured to convert the latter into corresponding baseband electrical analog signals. The first electro- optical modulator (111) is configured to modulate the optical pulses supplied by the mode-locked laser (101) by means of the incoming radio frequency signal so as to carry out an optical sampling of the latter, whereby a modulated optical signal is produced, which is indicative of said optical sampling. The tunable optical filter (112) is operable to filter the modulated optical signal so as to select a portion of spectrum of the latter. The second electro-optical modulator (121) is operable to decimate the optical pulses supplied by the mode-locked laser (101). The optical delay line (122) is operable to delay the decimated optical pulses.

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