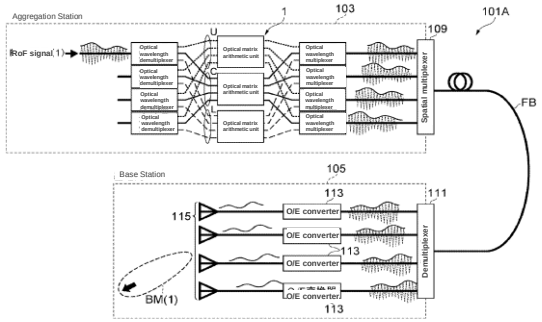
Hokkaido Univ. Technology

The most Advanced Analog RoF technology of Beyond 5G (6G)

High-precision control of radio signals with simple configuration



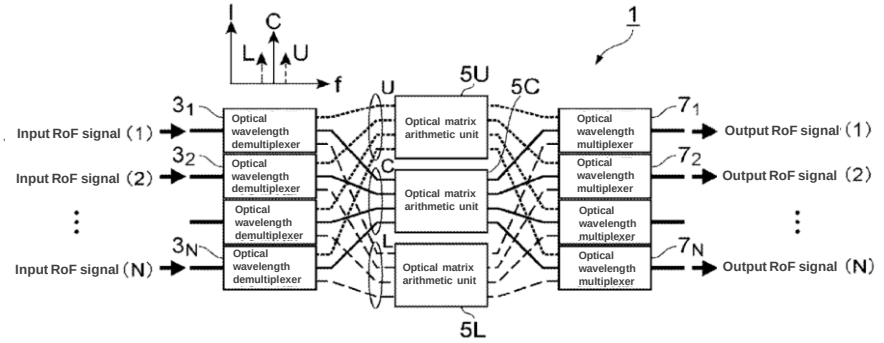
Example of Base Station/Aggregation Station Configuration

Overview

In order to increase the transmission capacity in wireless communication, the use of high frequency bands is being promoted, and it is required to reduce the load of signal processing in the base station. Specifically, the transition from digital optical wireless technology to analog radio-over-fiber (RoF) technology is being studied. However, in A-RoF, it is difficult to control the phase of radio waves in the base station, so MIMO (Multiple Input Multiple Output) signal processing also needs to be performed in the aggregation station. However, in the conventional A-RoF communication system, there is a problem that it is necessary to accurately control the phase of the A-RoF signal for each antenna element.

According to the present invention, it has become possible to provide a MIMO signal processing device and an optical wireless communication system that enable MIMO signal processing for beamforming that accurately controls the phase of the A-RoF signal that enable MIMO signal processing for multi-beamforming that accurately controls the phase of the A-RoF signal with monochromatic optical carrier wave.

Features・Outstandings



1. MIMO signal processing device
5C/5L/5U. Optical matrix arithmetic unit
3_1～3_N. Optical wavelength demultiplexer
7_1～7_N. Optical wavelength multiplexer

The present technology is composed of N optical wavelength demultiplexers to which N input optical signals are respectively input, a first optical matrix arithmetic unit for outputting carrier frequency components of M output optical signals by performing a matrix operation equivalent to NxM on complex amplitude intensities of carrier frequency components of the N input optical signals, and M optical wavelength multiplexers for multiplexing combinations of optical signals and outputting them as M output optical signals.

Product Application

- Application to Aggregation Stations in Beyond 5G (6G) Communication Systems
- Application to Aggregation Stations in other high-speed, large-scale Communication Systems

IP Data

IP No. : WO2023/145692
Inventor : SATO Takanori
Admin No. : HK24-009

Contact

Tohoku Techno Arch Co., Ltd.
Please visit CONTACT here