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A Wireless Communication System And A Precoder Device for Use in Such System

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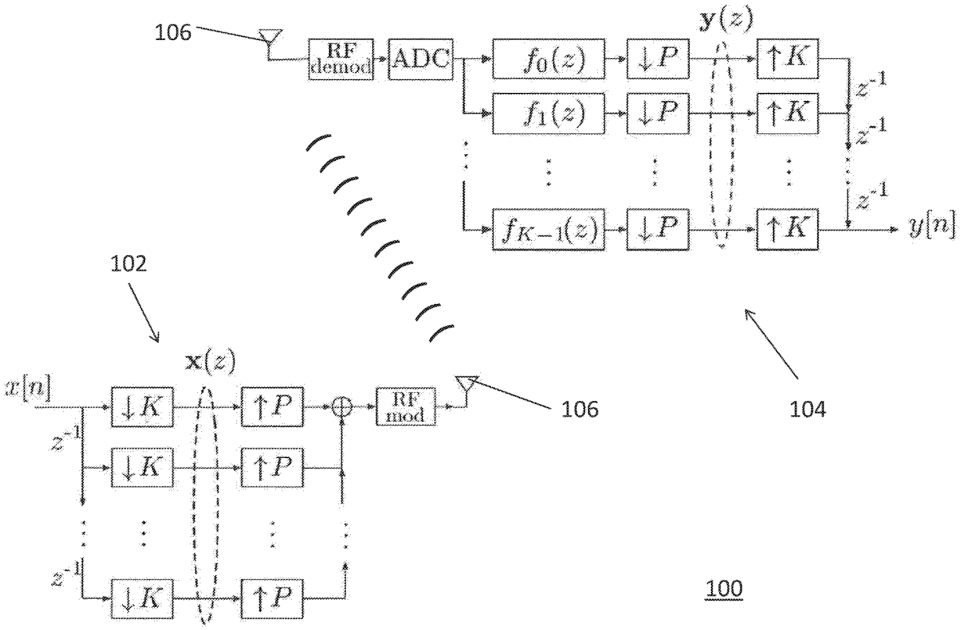

IP Status
Patent granted

Technology Readiness Level (TRL) ? 2

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Opportunity

Electronic data may fee transmitted using a communication network, such as a wire or a wireless network. For example, when a mobile client device downloads data packets from a remote server, the data packets may be transmitted through wired network, in form of bits of voltage logic, from the remote server to a base station in a cellular network, and then wirelessly transmitted to the mobile device in form of electromagnetic signals.

Beside conversion of form of signals which may occur, when data are transmitted from a source device to a destination device through different network means, data may also be converted between analogue and digital formats. For example, digital bits may be modulated into analogue signals which may be more easily transmitted in wireless network, however, the analogue signals are to be further converted back to digital form when reaching the receiver end for further processing.

Technology

The present invention relates to a wireless communication system and a precoder device to use in such system, and particularly, although not exclusively, to an analogue precoder device. The precoder device includes a delay element arranged to introduce a delay to a plurality of sub-channels of

a signal at a transmitter end of the communication system; wherein the delay in a plurality of sub-channels are associated with a process time of a receiver component at a receiver end of the communication system.

Advantages

- The analogue preceding only requires the use of relatively simple analogue delay components, such as delay-lines. The system has the advantage of low hardware complexity and does not require, the use of large memory module to construct the analogue precoder when compared with other example preceding systems.
- The system may perform with higher energy efficiency while maintaining the same communication efficiency, simply by using analogue precoder with analogue delay components in precoder-equalizer communication systems.
- The analogue precoder device makes use of an analogue delay-line or other simple analogue delay modules to alleviate the problem in the design and implementation of analogue precedes, and eliminate the use of high frequency analogue-to-digital converter (ADC) or nor large memory module in the receiver end.

Applications

- In some applications, multiple antennas on both transmitter and receiver ends may be used in communication signals using multiple bands or a plurality of sub-channels, and the signals may be transmitted in form of electromagnetic signals, such as radio frequency (RF) signals.