Abstracts

Computer and Measurement Simulation of a New Digital Receiver Operating Directly at Millimeter-Wave Frequencies

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A novel digital millimetric receiver (DMR) scheme is introduced. Using a six-port phase/frequency discriminator (SPD) in conjunction; with a digital signal processor (DSP), the receiver performs various PSK and QAM demodulations directly at microwave and millimeter-wave frequencies. An important feature of the new DMR is that hardware imperfections such as phase/amplitude imbalance are readily eliminated by a simple calibration procedure. The concept is proved through computer simulation and measurements at 26.5 GHz. This receiver scheme is proposed for small/medium capacity digital terminals typical found in various wireless communication networks.

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