

Phase Synchronization of Digitally Modulated Burst Carriers in TDMA Systems - A Technology Overview

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Time division use of the radio spectrum has created new multiple access techniques involving transmission of bursts of digitally modulated carriers using phase shift keyed modulation. Such systems are known as TDMA and involve burst carriers incorporating data rates from kilobits to gigabits per second. In order for these digitally modulated bursts to be demodulated at a terminal remote from the transmitter or source, it is necessary to provide a means to "recover" carrier frequency and phase from the received burst in order to be able to operate a coherent receiver. This paper will discuss the types of carrier burst synchronization techniques now in use, including the use of preambles to each burst which contain modulation by unique bit words which can be used to phase synchronize the receiver demodulator oscillator on a burst-to-burst basis. This paper will discuss the new microwave techniques of multipliers, tracking filters, anti-hangup resonators, which can be used to accomplish this synchronization for data rates from 40 Mbps to 1.6 Gbps.

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