

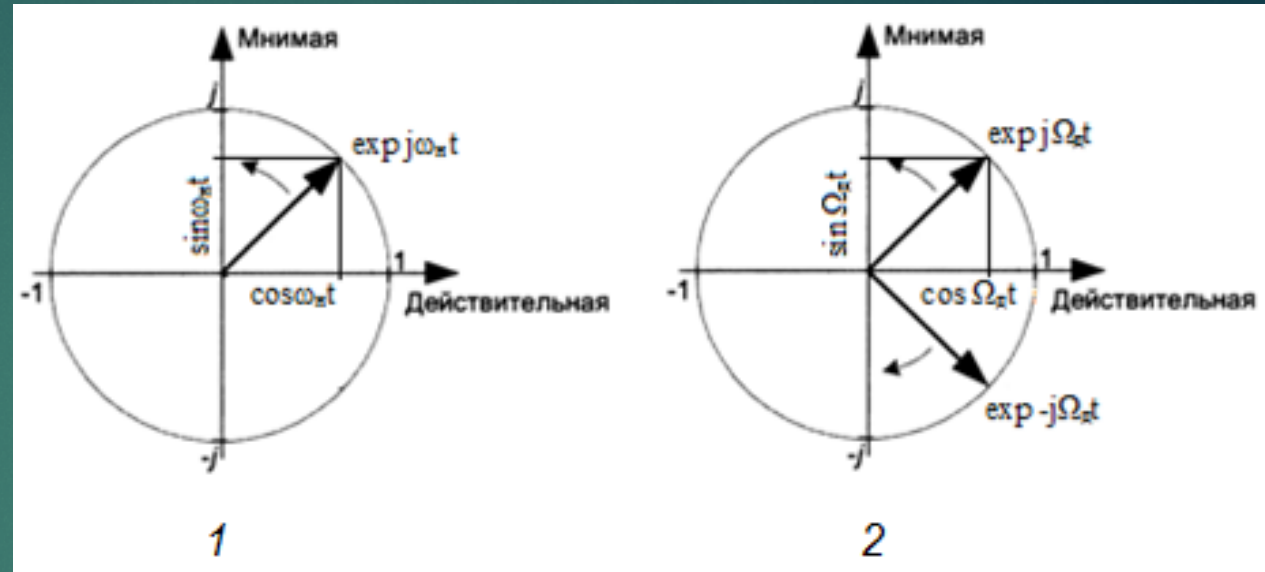


The study on the possibility of forming quadrature components based on Barker codes

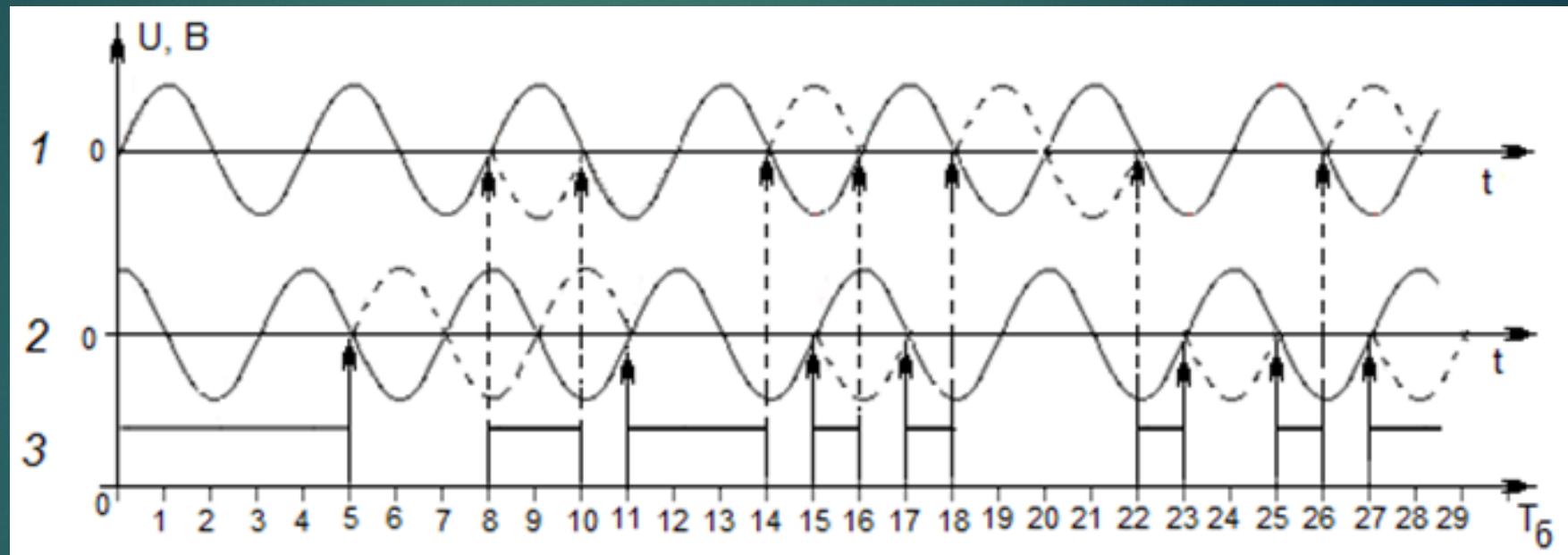
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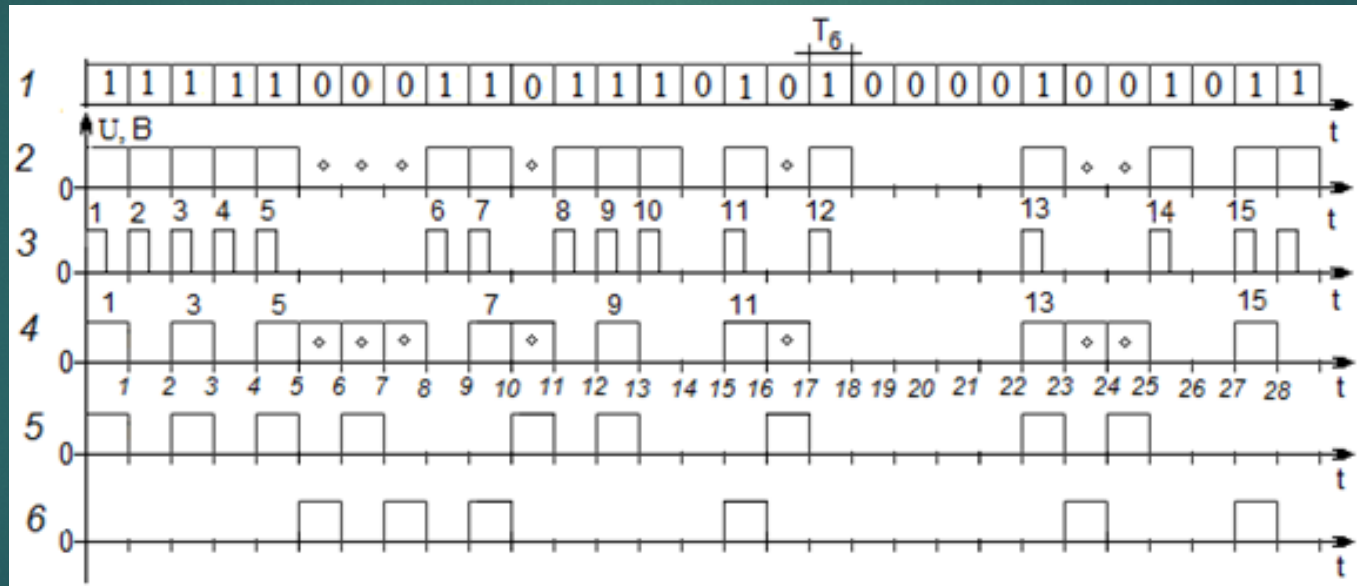
- ▶ For the viewed signal with the minimum frequency modulation without breaking the phase amplitude of the signal is taken constant, equal to one, and $m = 0.5$, using the minimum possible frequency difference equal to $2\Omega_d$, which still maintains the orthogonality of the oscillations of the opposite bits on a symbolic interval.



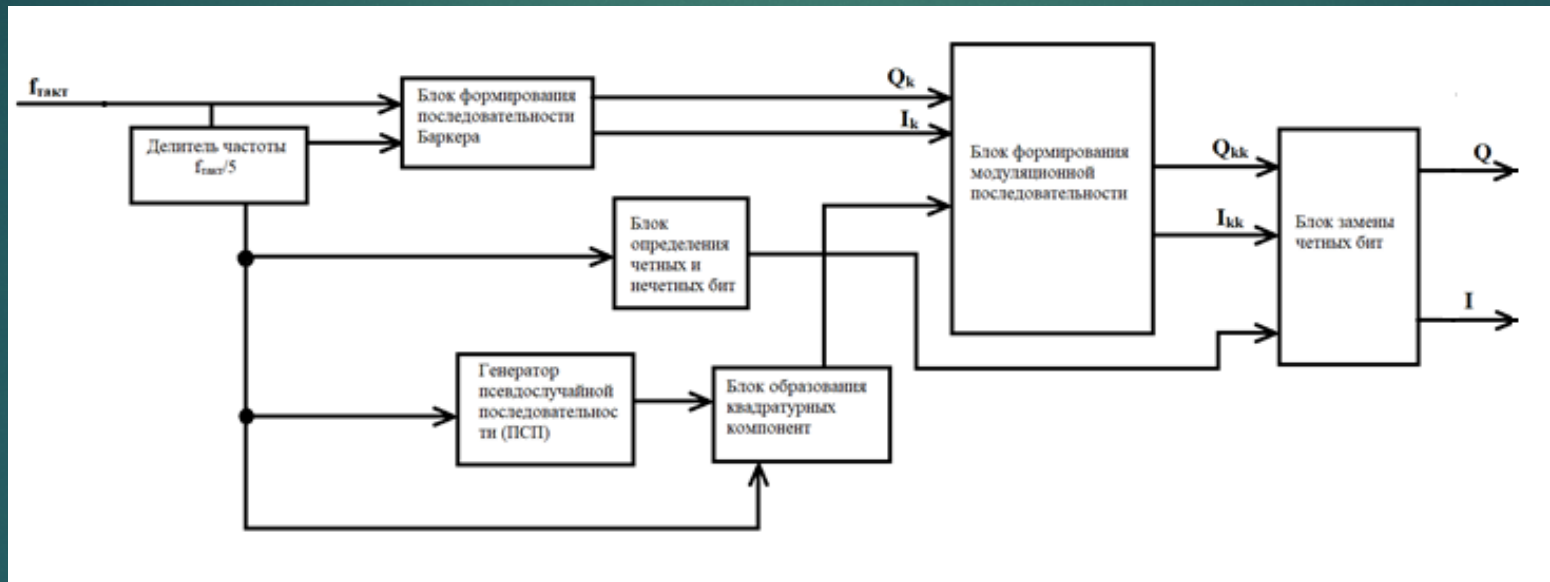
- ▶ To maintain phase continuity, the modulating signal must be time-related to the code sequence.




- ▶ The next step is to select a sequence corresponding to the single bits of the previous code, the pulse duration is equal to half the duration of the bits of the code. Further, the sequence is passed through the frequency divider by two and the output is a sequence containing odd bits and zero bits.



- ▶ In order to experimentally confirm the theory, we carried out a number of experiments on schematic implementation which was mentioned above using FPGA, the program was written in the Quartus II development environment in the Verilog electronic hardware description language.



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- ▶ The considered principle of formation of the quadrature and in-phase channels code sequence is realized and it works, stages of changing and forming the carrier frequency phase that are graphically and mathematically described match with the practical ones. The results prove the reliability of the method and allow us to continue research to obtain a device to implement the above modulation method.