

TRANSMISSION CHANNELS, THEIR RELEVANCE

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Abstract: *In this article, Transmission channel or telecommunication channel is the basic concepts of telecommunication systems and network techniques.*

Key words: *Transmission, channel, telecommunication, Transmission channel, information, Analog channels, Telephone channel stability,*

INTRODUCTION

The transmission channel is a complex of technical means and their propagation medium that provide transmission of telecommunication signals in a certain frequency band or with a certain transmission speed between the last or intermediate points of telecommunication networks.

Transmission channels (hereinafter referred to as "channels") are classified as follows.

According to the methods of transmission of telecommunication signals, there are analog and digital channel types. Analog channels, in turn, are divided into continuous and discrete types, depending on the change of the presented (information) parameter of the signal (see "Primary signals of electrical communication"). Digital channels are divided into channels using pulse code modulation (PCM), channels using differential PCM and channels based on delta modulation; channels using analog methods of signal transmission in one network of channels, and digital methods in another network are called mixed transmission channels; depending on the width of the transmission band through which telecommunication signals are transmitted and the compliance of the channel parameters with the established standards, to audio frequency analog sample channels, to primary, secondary, tertiary and pulse wideband analog sample channels; audio broadcasting signals, television image and sound transmission signals are divided into analog sample channels; to the main digital channel, depending on the transmission speed and compliance of the channel parameters with the established standards; divided into primary, secondary, tertiary, secondary and fifth digital channels; according to the medium in which telecommunication signals are propagated, they are divided into wired channels organized through cable and, in some cases, air communication lines, and radio communication channels organized through radio, radio relay, and satellite communication lines.

The technical means and the complex of their transmission medium, which provide the transmission of the primary signals of electrical communication from a converter that converts data to a primary signal or a converter that converts a primary signal to data, is called a telecommunication channel.

In addition to the above-mentioned classifications, telecommunication channels are divided into the following: according to the type of primary signals (data) transmitted: telephone channels, sound broadcasting channels, television channels, telegraph channels and data transmission channels; To ensure dialogue between two subscribers (person-person, person-machine, machine-machine), the transmission channel must be two-way or a two-way channel.

Organization of two-way channels. To ensure dialogue between two subscribers (person-person, person-machine, machine-machine), the transmission channel must be two-way or a two-way channel.

The sample channels discussed above are unidirectional, so two unidirectional sample-simplex channels must be used to establish a two-way - duplex connection. In this case, while preserving the mutual independence of one-way channels, they are combined into a single two-way system. Since telephone communication is the most popular type of communication, let's consider the principles of organizing two-way telephone channels. The resulting connections and conclusions will be appropriate for the organization of two-way channels of transmission of other types of information.

Stability of the two-way channel When the two-way channels are built, electrical systems are undoubtedly created. They are distinguished by the use of differential systems with a finite amount of fading between opposite directions, or separation devices (AQ) that work on the basis of directional filters.

Telephone channel stability, Telephone channel is a term for two telephone frequency channels in opposite directions combined by means of differential systems (usually transformers) Currently, telephone channels consist mainly of four-wire single-band or two-wire dual-band (electrically four-wire* systems Unnecessary feedback currents in telephone channels are created as a result of insufficient balancing of the end diphtsymes.

Disturbances caused by feedback, between transmission lines. The presence of isolating devices (AQ) when creating two-way channels with a finite value transient decay (even if the conditions of stability are observed) leads to the generation of useless currents of the reverse connection (TB). In this case, the amplifier in the desired directions of transmission can be considered as a feedback amplifier, where the following designations are adopted:

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