

THE VIEW OF CABLE CONNECTION LINE AS A FORM OF ANTENNAS FOR ASSESMENT OF ITS PROTECTABILITY FROM EXTERNAL NOISE DURING VIDEOINFORMATION TRANSMISSION

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Application of *xDSL* technologies is the know mean for information transmission quality improvement in cable connection lines (CCL) in the range of *0,1 to 100 MHz*. Contemporary communication networks development is based on digital subscribers (*xDSL*), its growth mainly occurs by using existing subscriber line and exactly data by noise protectability in those networks are absent for the present. This fact shows actuality of thesis theme – research of noise protectability of CCL with the using of *xDSL* technology.

The new model of cable connection line like the radiation system (progressive wave antenna) was presented in the thesis. This model allows to conduct analysis of CCL protectability from noises. In contrast to known models, author’s model allows to research cable radiation field and noise amplitude voltage , inducted on modem input, dependence on angular coordinates and distance, at which noise generator is situated. It should be mentioned that existing and widely used connection lines of TTP type are considered in thesis.

Previously presented model was supplemented with formulas of bit error rate (BER) and packet error rate (PER) to define transmitted by cable connection channel video information quality dependence on the influenced premeditated or unpremeditated noises. On the base of this model a number of numerical experiments was conducted:

- calculation of PER values dependence on azimuthal angular coordinate (fig. 1).
- calculation of packet error rate values dependence on electric field intensity by ground surface (fig 2.).

The acceptable values of PER for video information transmission by using different types of video sequence coding (*H.261,H.263,MPEG2*) was marked on the graph.

From comparative fig. 2 analysis follows that the acceptable value of *PER* can be reach at the $E=3-5$ V/m, and this corresponds to noise generator power equal several watt.

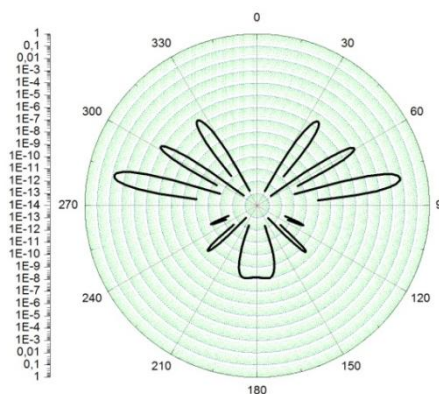


Fig. 1. *PER* value dependence on azimuthal coordinate

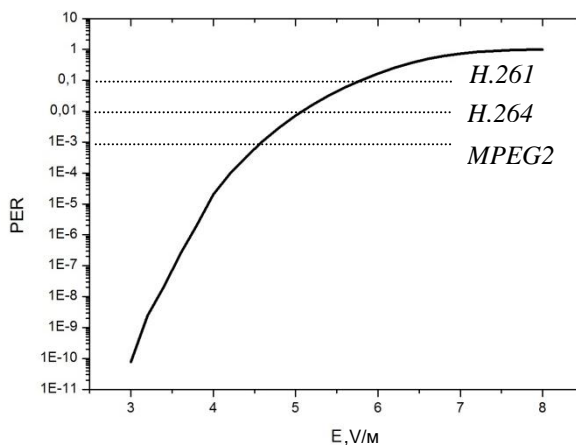


Fig. 2. *PER* values dependence on electric field intensity *E* by ground surface

Dependences on video information transmission quality from protectability capabilities of CCL was calculated for the first time. Values of packet error rate and of electric field intensity for different cable standards of video sequences coding was presented in the thesis.