METHOD OF DESIGNING A BALANCED OPTICAL ACCESS NETWORK BASED ON GPON

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Access networks have recently aroused growing interest among professionals due to the fact that the service capabilities of these networks, constantly expanding, reach a qualitatively new level and cover almost all types of service. Therefore, the research and design of modern optical access networks based on GPON are very relevant. It is typical to consider and justify the choice of the optimal option of optical access technology (GPON-access network according to the FTTB architecture), taking into account the technical and economic aspects [1].

The method of calculating a balanced GPON-network is as follows: all ONT is assigned the same value of input power, the network is calculated "bottom-up" from ONT to OLT step by step, from the farthest ONT (the measure of distance in this case is not the distance but the number of branches OLT-ONT). At each iteration, the values of the splitter splitters are determined, which provide equal power at the input ports ONT. The initial result of this algorithm is the splitter distribution coefficients that ensure network balance and the optical radius of the network [2].

A subtree has been added to the existing network. Since the subtree uses a new splitter, its selection should be made so as to ensure the balance of the subtree and not increase the spread of the entire network. This variation is explained by the fact that the power level at the point of growth may not be consistent with the required power of the grafted subtree. For coordination it is necessary to calculate a new balanced network, to change distribution coefficients of all higher splitters [3].

Therefore, when designing an access network based on GPON, methods of building a balanced network will be used, as such a network has advantages, namely: loss of optical path losses is minimal, of all possible sets of splitter splitters, the optical radius of the network is minimal. As well as a balanced network has the maximum ability to expand in the absence of reliable forecasts and is optimal.

References

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