

ABSTRACT

Along with the completeness of the data rate needs of the community will then technology GPON (Gigabit Passive Optical Network) is now increasingly high technology-based, one of the technologies developed at this time is the XG-PON technology. XG-PON (10 Gigabit Optical Passive Network) is a technological development of GPON. XG-PON is expected to deliver data transmission more effectively and optimally. XG-PON is one of the technologies developed by ITU-T (International Telecommunication Union). XG-PON is expected to accommodate an increasingly bursting broadband service in the future to serve the needs of customers who are increasing both in data, voice and television services.

In this study differs from previous research conducted by the Bandung Institute of Technology research group that discusses the performance analysis XGPON using a 1:64 splitter. In this study the authors wanted to develop the research by analyzing the performance of technology XG-PON (Passive Optical Networks 10 Gigabit Passive) on various types of optical splitter ratio. Research conducted in simulated using optical simulation software to facilitate the process of data analysis.

The results of this study show that XG-PON performance using 1: 2 to 1:64 splitter shows a decent network implemented for upstream transmission distance of 20 km can use power of 2 dBm, splitter 1: 2 to 1:16 distance 40 km using power equal to 2 dBm and 4 dBm power for 1:32 splitter. Then a decent network is implemented for 1: 2 to 1: 4 splitter up to 60 km distance data can use 2 dBm of power, 4 dBm power for 1: 8 splitter and 6 dBm power for 1:16 splitter. A decent network implemented for 1: 2 splitter of upstream data at a distance of 80 km can use 2 dBm of power, 4 dBm power for 1: 4 splitter and 7 dBm power for 1: 8 splitter. A decent network implemented for downstream splitter transmission 1: 4 to 1:64 can use 4 dBm power. A decent network implemented for 1: 2 splitters up to 1:16 downstream distance of 40 km can use power of 2 dBm, 5 dBm for 1:32 splitter and 6 dBm 1:64 distance 40 km. A decent network implemented for 1: 2 to 1: 8 downstream splitters can use 2 dBm of power at a distance of 60 km. A decent network is implemented for a 1: 2 downstream splitter using 4 dBm of power at a distance of 80 km .

Keywords: XG-PON (10-Gigabit-capable Passive Optical Network), splitters, optical simulation software.