

Power Saving Analysis in Integrated Optical Wireless Access Network Using User Profile Dimensioning

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Abstract—The paper presents the network user profile, and the potential of energy savings based on real traffic data in the integrated optical wireless access network (IOW). The total power consumption and energy efficiency of the IOW link were analysed with active fraction of Integrated Optical and Base Station (IOBs) ranging from 0.3 to 0.8. When power saving is implemented, the energy consumption decreases with the increasing fraction of IOBs. Furthermore, the proposed model is compared with a conventional approach, the findings show significant differences highlight the higher accuracy of the proposed model in estimating network power consumption and energy savings. In this research, sleep modes are identified as effective tools for achieving energy efficiency, with 11% energy savings observed when 50% of the Integrated Optical Backhaul (IOB) units are active. The analysis also shows the impact of various power consumption components on energy savings, emphasizing the efficiency of sleep mode under specific network conditions.

Keyword— Integrated optical wireless access (IOW), Integrated Optical and Base Station (IOB), Power consumption, Sleep mode. User profile.



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