

Effective Design for Fiber-to-the-Home Access Network Using Flexible Cross Correlation (FCC) Code

Abstract

This paper presented a new class of codes for Fiber-To-The-Home (FTTH) network design based on Spectral Amplitude Coding (SAC) - Optical Code Division Multiple Access (OCDMA) coding approaches. The FTTH SAC-OCDMA network is demonstrated by utilizing the Flexible Cross Correlation (FCC) code. The FCC code has an ability to suppress and cancels the effect of Multi Access Interference (MAI). The results indicated good performance whereas the FCC code offers 100%, 287% and 331% percentage larger cardinality compared to MDW $W=4$, MFH $W=8$ and Hadamard codes respectively. Finally, the FCC code accommodates low effective receive power $P_{sr} = -23\text{dBm}$ which is expected to be more significant for future FTTH network development for future usages.

Keywords; FCC Code, FTTH Access Network, MAI, SAC-OCDMA