Design and Fabrication of CATV Optical Fiber Deep Node

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ABSTRACT

ABSTRACT In order to provide the CATV(Cable Television) subscribers'''' demands on ever increasing bandwidth and service quality of the currently implemented HFC(Hybrid Fiber Coax) network architecture, we proposes a new optical node architecture — Optical Fiber Deep Node - to extend the fiber delivery distance of HFC network in this thesis. With this concept, the fiber network can reach much deeper to the subscribers ’ ends and also reduce the number of the line extender amplifiers built within the coaxial cable network. We can therefore achieve the optimal architecture of increasing transmission bandwidth, improving system performance and reliability, and reducing the network maintenance cost. In the thesis, we will first introduce the HFC network fundamental, and then emphasize what the advantage and feasibility of this new Optical-Fiber-Deep-Node ’ s architecture over standard HFC network architecture by comparing their differences. Furthermore, we will also explore the theory, design and fabricating technologies of the embedded active devices (such as photo detector, RF amplifier) and passive devices (such as PAD, equalizer and diplex filter) that strongly affect the system performance.

Keywords : CATV ; HFC ; Optical Node ; Line Extender Amplifier ; Photo Detector ; RF Amplifier ; PAD ; Equalizer ; Diplex Filter

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