PERFORMANCE COMPARISON BETWEEN CWDM-PON AND DWDM-PON OVER FTTH TECHNOLOGY

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ABSTRAK

WDM-PON secara meluasnya dianggap sebagai satu cara untuk melaksanakan Fiber-To-Home (FTTH) dan menyampaikan akses jalur lebar untuk perniagaan dan pengguna di rumah. Kajian ini mengkaji simulasi awal pelaksanaan WDM-PON teknologi dan membandingkan prestasi rangkaian antara CWDM-PON dan DWDM-PON. Selain itu, senario perbandingan berbeza akan dipertimbangkan untuk menentukan teknologi yang sesuai dari segi tiga kategori utama: wajaran medan modal berlokasi (spatial modal field), ralat bit (BER) dan rajah mata (eye diagram). Secara umumnya, keputusan kajian ini menunjukkan bahawa teknologi DWDM-PON adalah lebih baik berbanding dengan teknologi CWDM-PON dari segi kekuatan jalinan mod (power modal coupling) dan ralat bit (BER).

ABSTRACT

WDM -PON is being widely considered as a means to implement Fiber-To-The-Home (FTTH) and deliver broadband access to business and home users. This research examines a preliminary simulation of the implementation of WDM-PON technology and compares the network performance between CWDM-PON and DWDM-PON. Moreover different comparison scenarios will be considered in order to determine the suitable and reasonable technology in terms of three major categories: weighted spatial modal field, bit error rate (BER) and eye diagram. The result shows that DWDM-PON technology is superior to CWDM-PON technology in term of power modal coupling BER.

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Yousef Fazea

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LIST OF ABBREVIATION

AWG	Arrayed Waveguide Grating
BER	Bit Error Rate
BPON	Broadband Passive Optical Network
BR	Back Reflection B
CO	Central Office
CPR	Coupled Power Ratio
CR	Coupling Ratio
CWDM	Coarse Wavelength Division Multiplexing
DEMUX	De-multiplexer
DSL	Digital Subscriber Line
DWDM	Dense Wavelength Division Multiplexing
EPON	Ethernet Passive Optical Network
FTTH	Fiber- To -The-Building
FTTC	Fiber- To -The-Curb
FTTH	Fiber- To -The-Home
FTTx	Fiber- Local Area Network
LED	Light Emitting Diode
MMF	Multi Mode Fiber
MUX	Multiplexer
NRZ	Non-Return to Zero
OLT	Optical Line Terminal
P2MP	Point-to-Multi-Point
P2P	Point-to-Point
PON	Passive Optical Network
PRBS	Pseudo Random Binary Sequence
SMF	Single Mode Fiber
TDM	Time Division Multiplexing
TDMA	Time Division Multiple Access
VCSEL	Vertical Cavity Surface Emitting Laser
WDM	Wavelength Division Multiplexing

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