

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
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DEVELOPMENT AND EXPERIMENT OF DIGITAL CHANNELIZER FOR DISASTER SATELLITE
COMMUNICATIONS SYSTEM**Abstract**

Satellite communication network is effective as communication measure when terrestrial communication infrastructure is destroyed by large-scale disaster. Therefore, the National Institute of Information and Communications Technology (NICT) conducts the research and development on disaster satellite communications system. A transparent digital channelizer prototype has been developed as a framework of the R&D. The channelizer flexibly re-allocates channels to each port depending on temporally-changing traffic demand in disaster situation to increase spectral efficiency. The developed channelizer is a transparent channelizer which has three IF ports for input and output sides. It consists of A/D, demultiplexer, switch, multiplexer, D/A, and control unit. Total bandwidth for each port is 200MHz. EVM degradation measured by using modulated signal is less than 1%, which indicates that the degradation of signal quality with the channelizer is small enough. To demonstrate the effectiveness of the channelizer, the communication experiment was conducted by using the satellite link of the experimental satellite WINDS which provides wideband and wide coverage communications. The channelizer was put on one earth station side. Terminals were connected via IP to transmit video signal. In normal situation, wide band is allocated by the channelizer to small number (two) of users. On the other hand, in disaster situation, narrow band is allocated by the channelizer to large number (four) of users in disaster area. Video signals were successfully transmitted in either situation through the satellite link. From these results, it is confirmed that the developed channelizer is the effective communication equipment to realize communication function required in disaster situation.