STATISTICAL TIME DIVISION MULTIPLEXING ARCHITECTURES AND DESIGN

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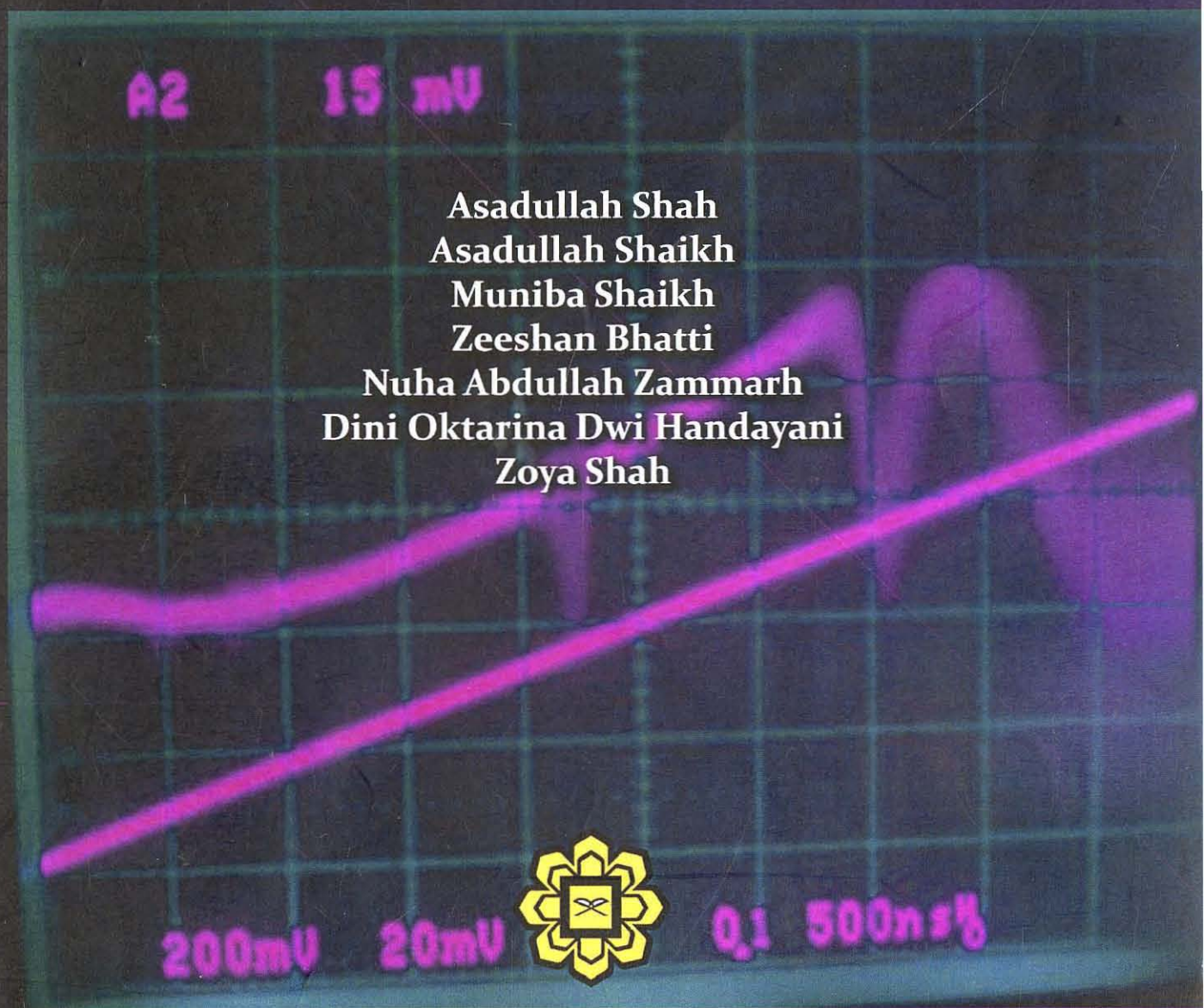

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16. Design of a Low Bit Rate STDM Multiplexer

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16.0 Abstract

A low bit rate STDM multiplexer architecture design for thing route channels is provided in this chapter. A thin route communication channel is able to transmit 64Kbps to 128Kbps. Allowing compressed speech using STDM maximize the bandwidth by allowing more users than the capacity of the channel. The design provided in this chapter is based upon, compressed speech as 6.4Kbps, packet discarding from the sources in case of overload and packet reconstruction to mitigate the effects of the lost (dropped) packets.

16.1 Introduction

The provision of economical thin route satellite service with voice, and other services capabilities has remained one of INTELSAT's targets since a decade ago. It was predicted upon the use of a 4.5m antenna and Single Channel Per Carrier (SCPC) technology, which leads to a relatively costly earth segment for thin route services. The combination of VSAT tech-nologies with advanced digital baseband processing techniques, mainly through voice, data and fax compression multiplexing and packetisation can now allow the introduction of less costly thin-route services using terminals with multichannel or single channel capabilities.

In section 16.2 the applications of low bit rate multiplexer in VSATs, SCPC service, and the option of ISDN services through VSATS are discussed. The operational scenarios, the capacity issues and signalling protocol are discussed in section 5.3. The speech coder used for simulation is presented in section 5.4. In section 5.5, the conceptual model of the proposed multiplexer, analysis of dynamic talker activity model, analysis of the traffic load, for both monologue and conversational speech and speech frames freeze-out are discussed in detail. The concept and techniques of frame discarding and their modeling and simulation are discussed in section 5.6. Finally, in section 5.7 the conclusion of this is presented.

16.2 Application Areas: Very Small Aperture Terminal

Very Small Aperture Terminal is usually defined as an antenna 2.4 m. The VSAT terminals in domestic communications satellite market tend to be smaller and less costly than conventional