STATISTICAL TIME DIVISION MULTIPLEXING ARCHITECTURES AND DESIGN

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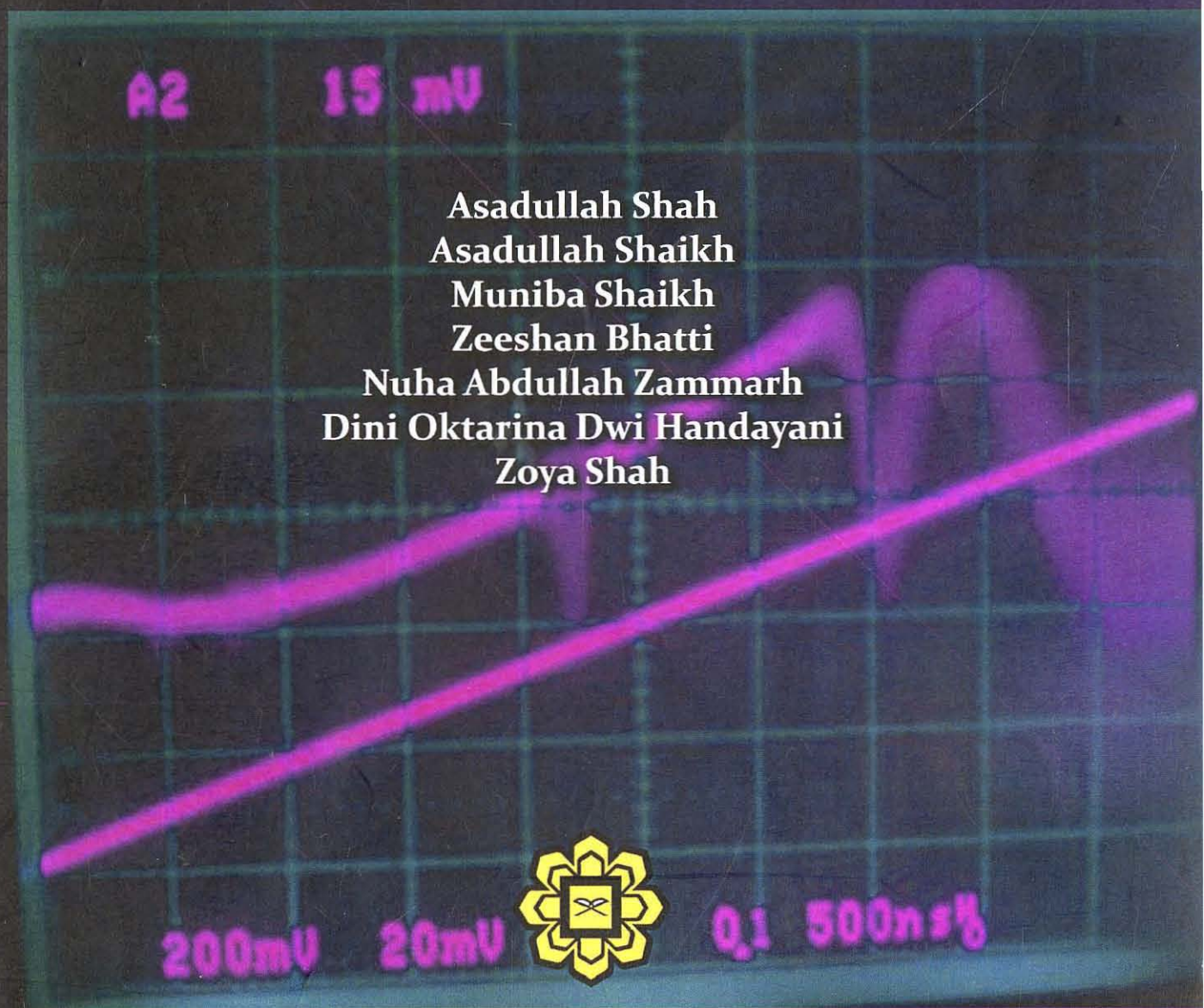

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10. Discontinuous Transmission and Multiplexing

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10.0 Abstract

Discontinuous Transmission (DTX) is a concept used in some mobile standards, mostly in Groupe Special Mobile (GSM) systems. In DTX systems, Voice Activity Detection (VAD) and comfort noise are essential element. The usage of DTX in the systems allows transmissions during activity periods and remains silent during non-activities. This chapter is dedicated for DTX and VAD, their usage in STDM designs.

The DTX concept has been implemented for the Groupe Special Mobile (GSM) standard, where VAD and comfort noise are the essential elements of the DTX system. When DTX is in operation, the transmitter is switched off during periods of silence. This increases system efficiency by reducing (a) the co-channel interference and (b) also reduces transmitter power consumption (an important consideration for hand-held portables). DTX comprises basically of two parts, a VAD at the transmitter to detect the speech from silences, and a comfort noise generator at the receiver. Comfort noise is generated by the receiver when DTX has switched the transmitter off. The purpose of this is to fill the gaps of silences with low level noise normally generated from normal distribution and scale it to eliminate the unpleasant subjective effect of switching between speech in high noise, and silence. The block diagram of figure shows the DTX system concept.