

STATISTICAL TIME DIVISION MULTIPLEXING ARCHITECTURES AND DESIGN

A2

15 mV

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200mV

20mV



0.1 500ns

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27. Energy Threshold Sensitivity for Frame Loss

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27.0 Abstract

The energy of speech frames can be one of the ways to express least significant frames. The energy of a frame of speech is a time domain measure, speech frames having lower energy are correlated with low perception as well. In this chapter the lowest sensitivity energy frames are detailed and that can be utilised for STDM intelligent architectures.

27.1 Speech frames loss

Tests on the loss of speech frames based on the energy difference between original and reconstructed speech is carried out. The results are indicated in figure 6.15, frame loss versus threshold. The idea behind this was twofold to support the mean square error criterion and also observe the sensitivities of frame energies. As the threshold was raised beyond 105 the effect of loss was getting severe, and approximately 8% frame loss was received. The remaining percentage frames carry variable degree of sensitivity. This shows two meanings (a) if only these frames can be discarded then objective and subjective distortions will not be too disturbing, (b) as long as a frames of below 105 thresholds are discarded, the effect of loss would be minimal. That is the maximum capability of this criterion can be achieved at higher than 3% frame loss rate.

The SNRseg and CD are indicated in Tables 6.7 and 6.8 respectively. It can be observed in Table 6.7 that at 7% frame loss, all the speech utterances indicate more SNRseg, than only 3% frame loss at $2 * 108$ of threshold, as given in, 10th row of the Table 6.7. Similarly for higher sensitivity frame loss of 3% receive generally higher CD than 7% of lower sensitive frame loss as shown in Table 6.8. The MOS result indicated in Table 6.9, shows that at 7% frame loss for lower bound threshold scored better than 3% upper bound frame loss.