ABSTRACT

Echo phenomenon usually appear in nature, also can be happen in voice telecomunication network. Which could decraesing voice QoS value. Echo couses by hybrid impedance mis'match, when built connections 2-wire at local loop to 4-wire at central, wich known as Circuit echo. Implementation use Echo Cancellation methode to make echo disappear.

Adaptive filter use FIR filter structure as basic to built echo cancellation. Filter coefficient adapted by NLMS algorithm which able to decrease gradien noise from algorithm LMS. Echo in hybrid, models by delay and attenuation (3.5dB), then convoluted with input signal. Adaptive filter build by convolutioning input signal with weight which limited by N (taps filter value), to produce estimation echo. Hybrid echo signal subtract with echo estimation signal, if both of the signal have a same value, then it will produce output free from echo. But if the substraction of those signal produce the remainder then it'll built error signal. The error signal use as a component to produce new weigth at the NLMS adaptive algorithm. The new weigths are use to update filter adaptive coefficient. Which aim to minimalize the average of MSE. While TMS320VC33 is DSP (Digital Signal Processor's) Card which has operation valocity 13,34 ns to excute one instruction, so there's probability for the system to operate as a real time system and minimalize the delay effect.

After examine the implementation of echo cancelllation at TMS320VC33, then resulting ***step size*** (μ) value optimum at μ = 0.6, when MSE value very minimum. Then time process reach 39.87 ms base on duty cycle calculation, for minimum taps filter in use. ERL value result 5.24 dB where the CCITT Rec G.131 standard, 6 ± 2.5 dB. Then ERLE value result 17.65 dB where the ERLE ITU-T G.168 standard, 20 dB. The result of the implementation echo cancellation in TMS320VC33 still in range of the standard parameter values.