

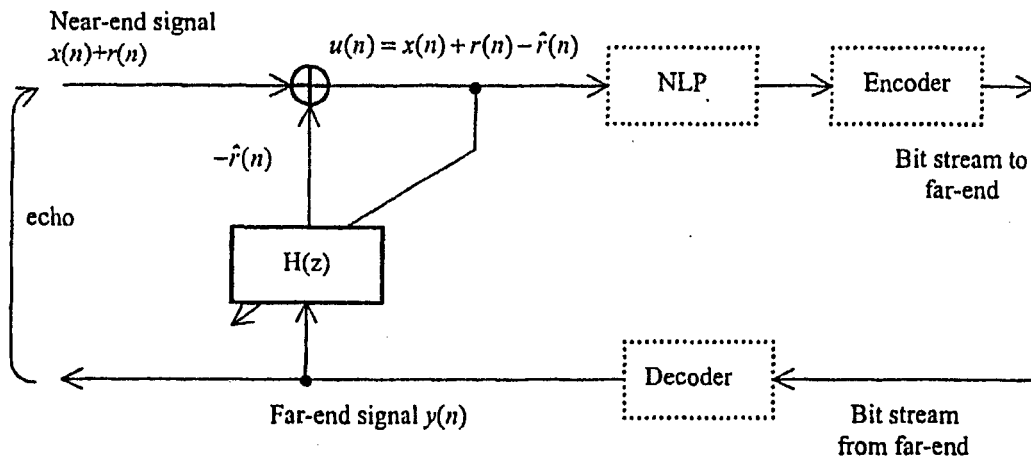


Figure 1 Conventional LMS echo canceller configuration (prior art 1)

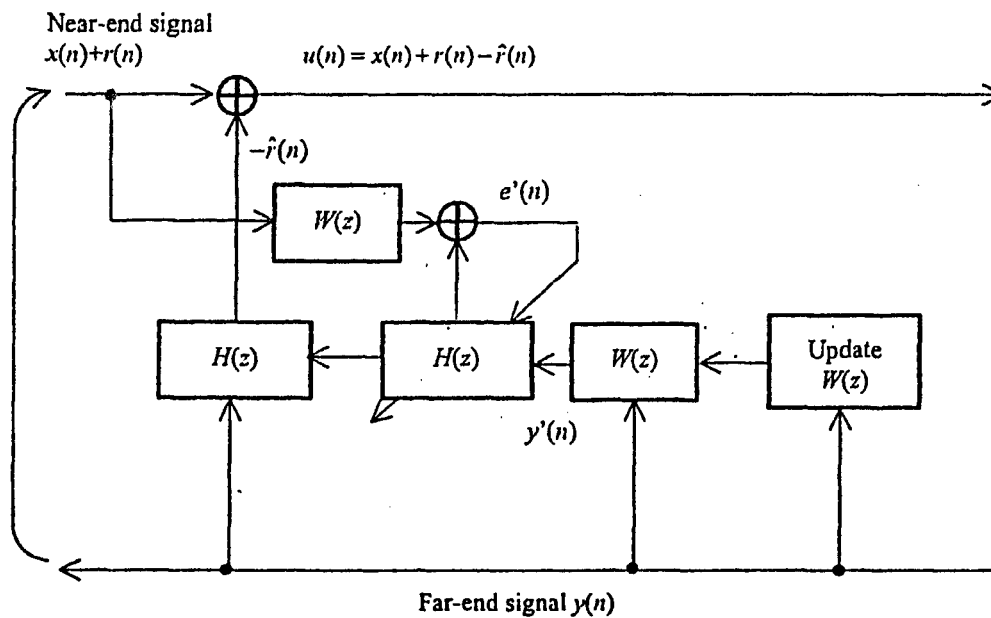


Figure 2 Conventional LMS echo canceller configuration with pre-whitening

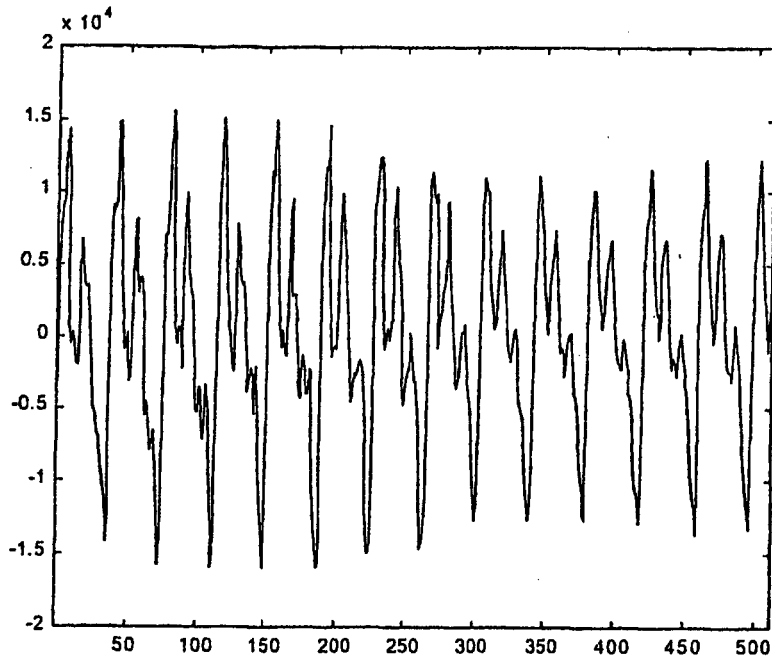


Figure 3 Illustrations of speech waveform
(y-axis:linear amplitude; x-axis: samples)

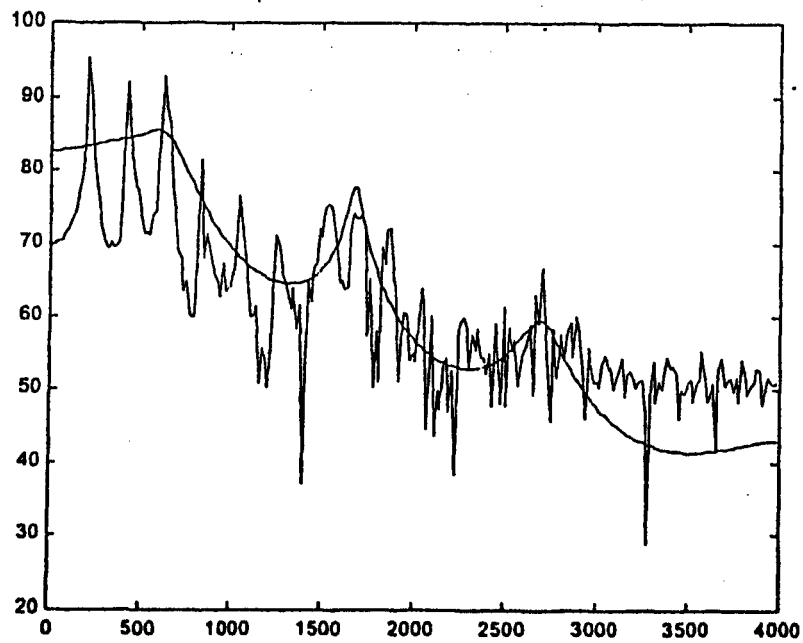


Figure 4 Illustrations of speech spectrum and its envelope
(y-axis:Magnitude in dB; x-axis:frequency in Hz)

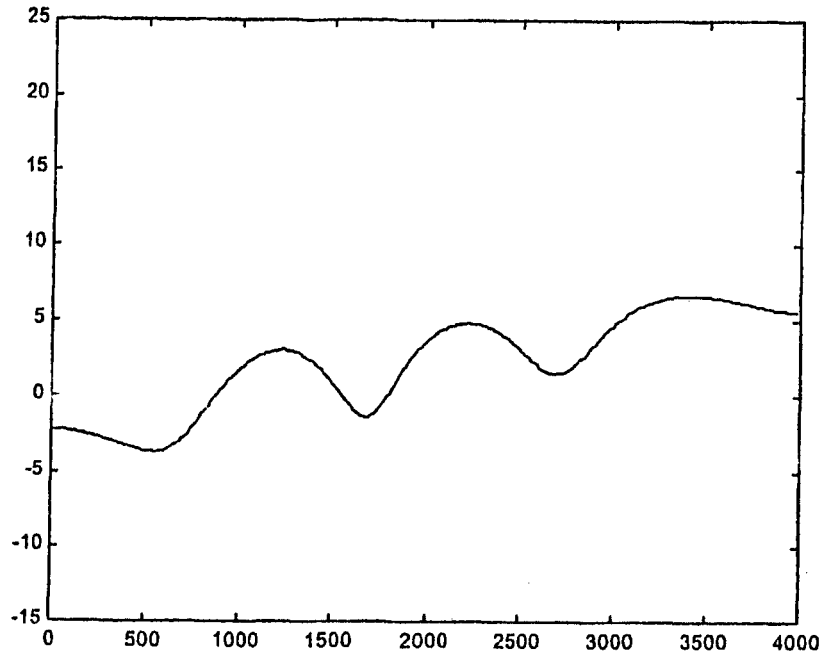


Figure 5 Weighting factors $\gamma_1 = 0.7, \gamma_2 = 0.9$ and $p=10$
(y-axis Magnitude in dB, x-axis Frequency in Hz)

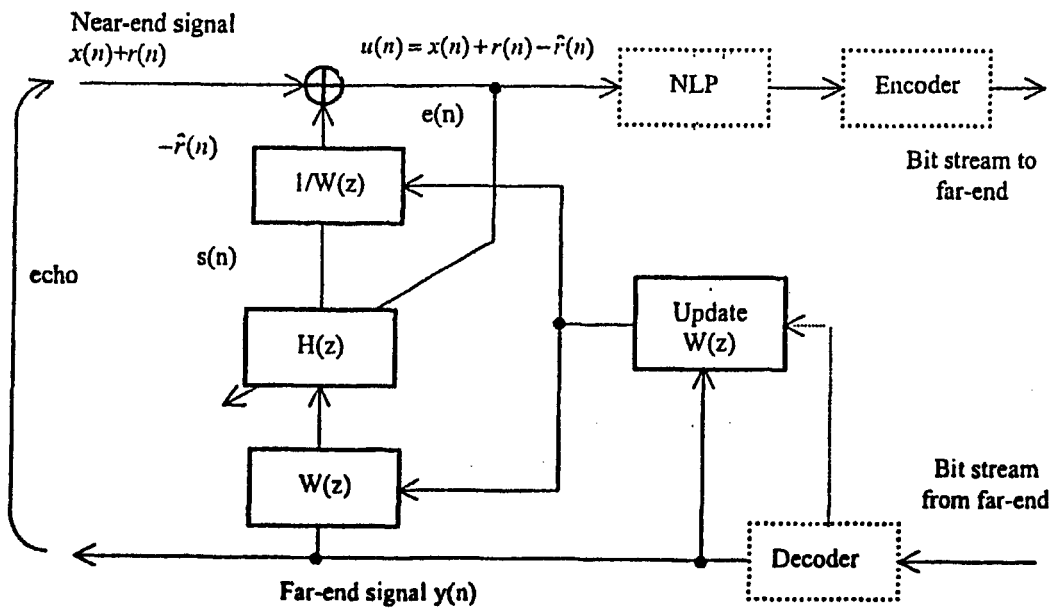


Figure 6 General structure of proposed echo canceller

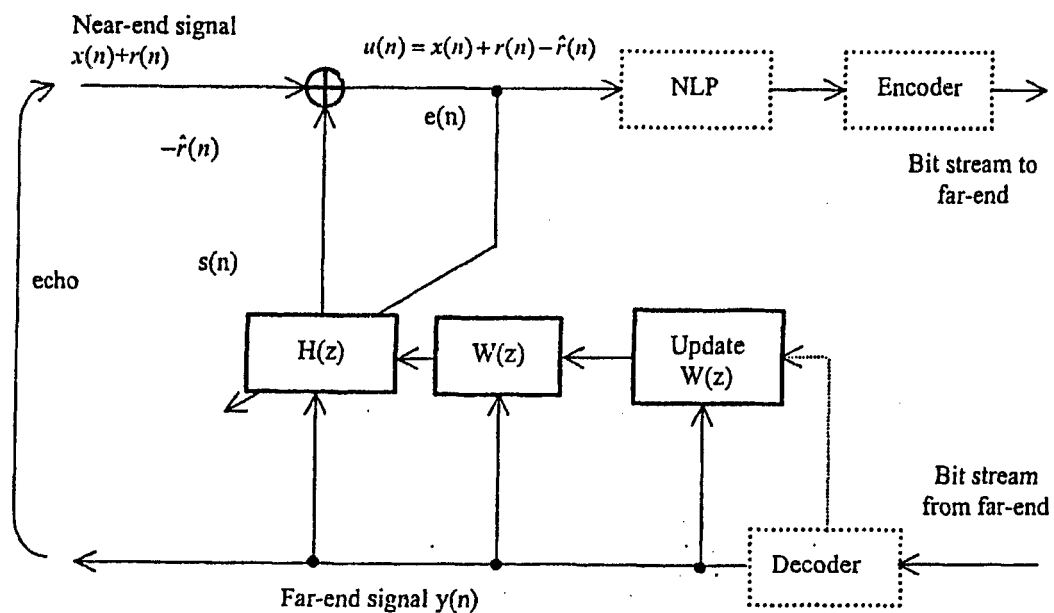


Figure7 Equivalent structure of Figure 2

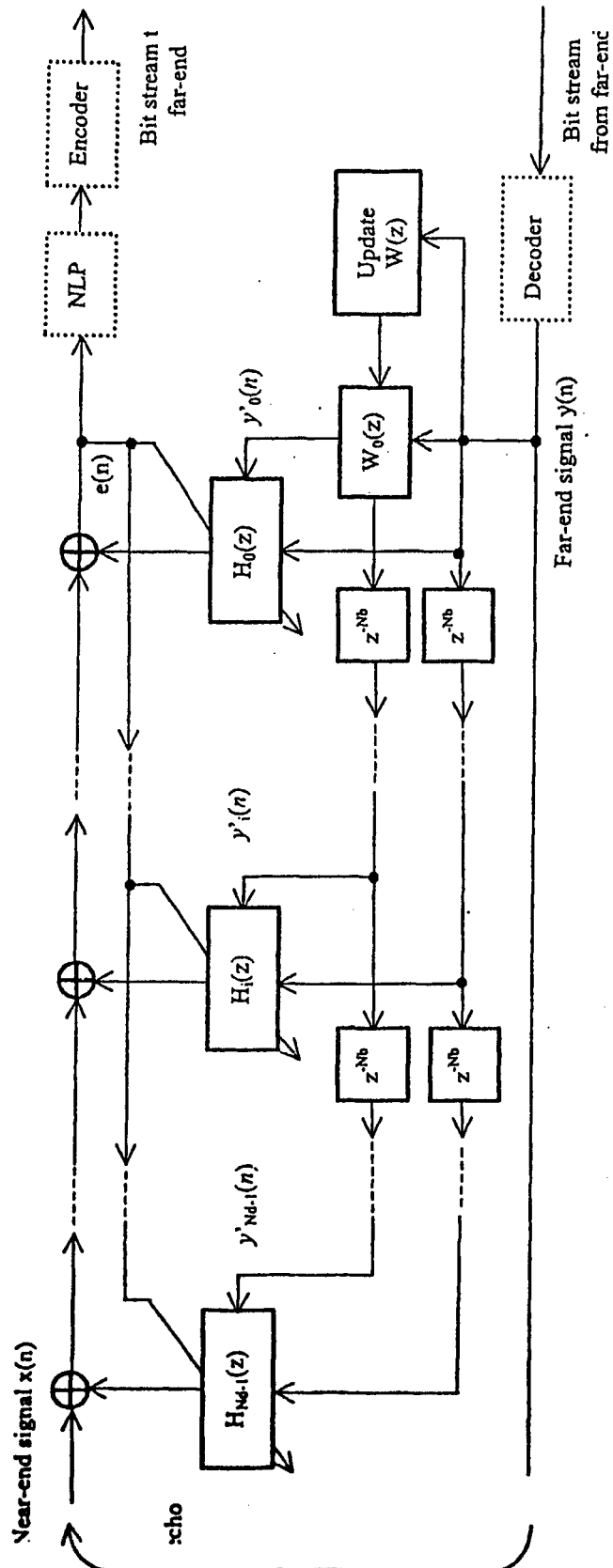


Figure 8 Equivalent structure of Figure 2 with multi-weighting filters.

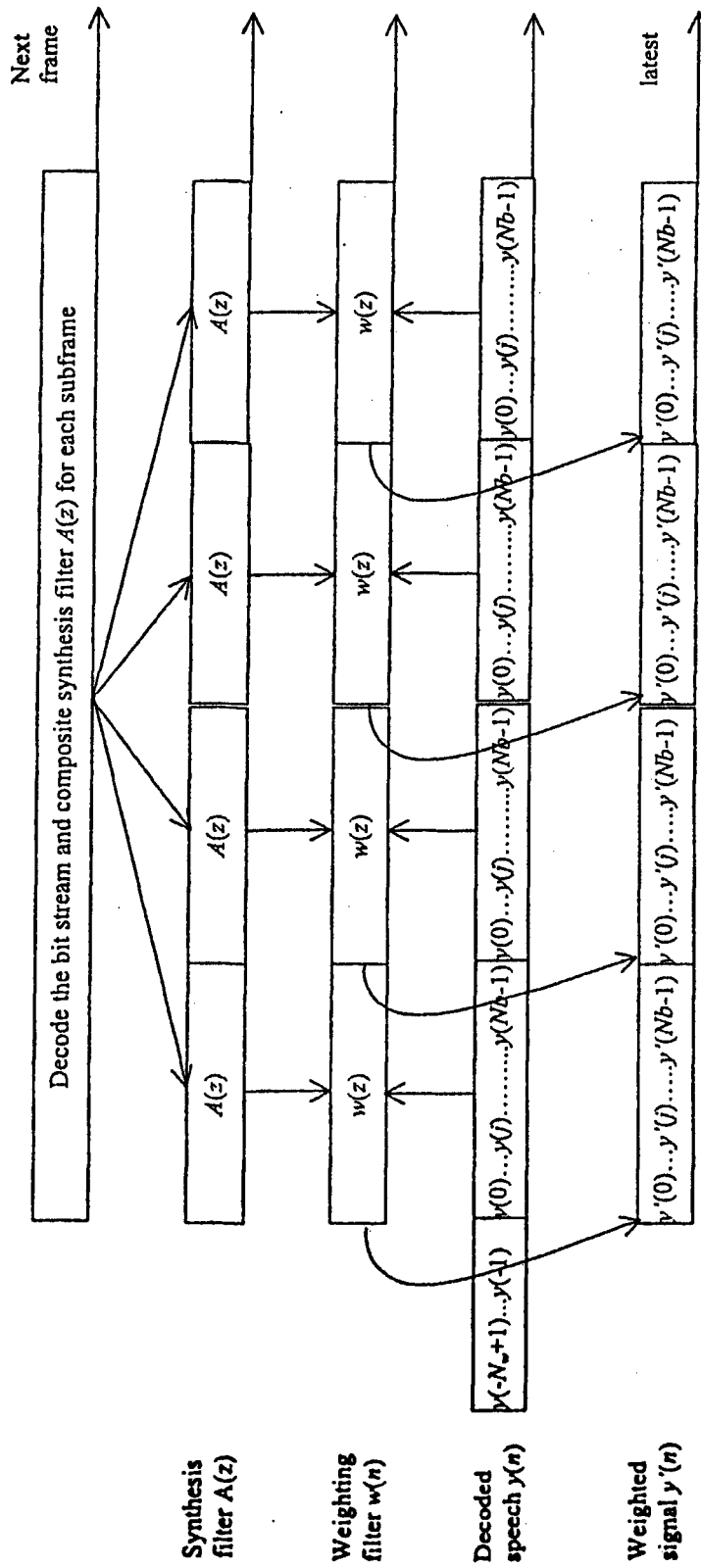


Figure 9 Procedures to use G.723.1 LPC coefficient to calculate the whitened far-end speech

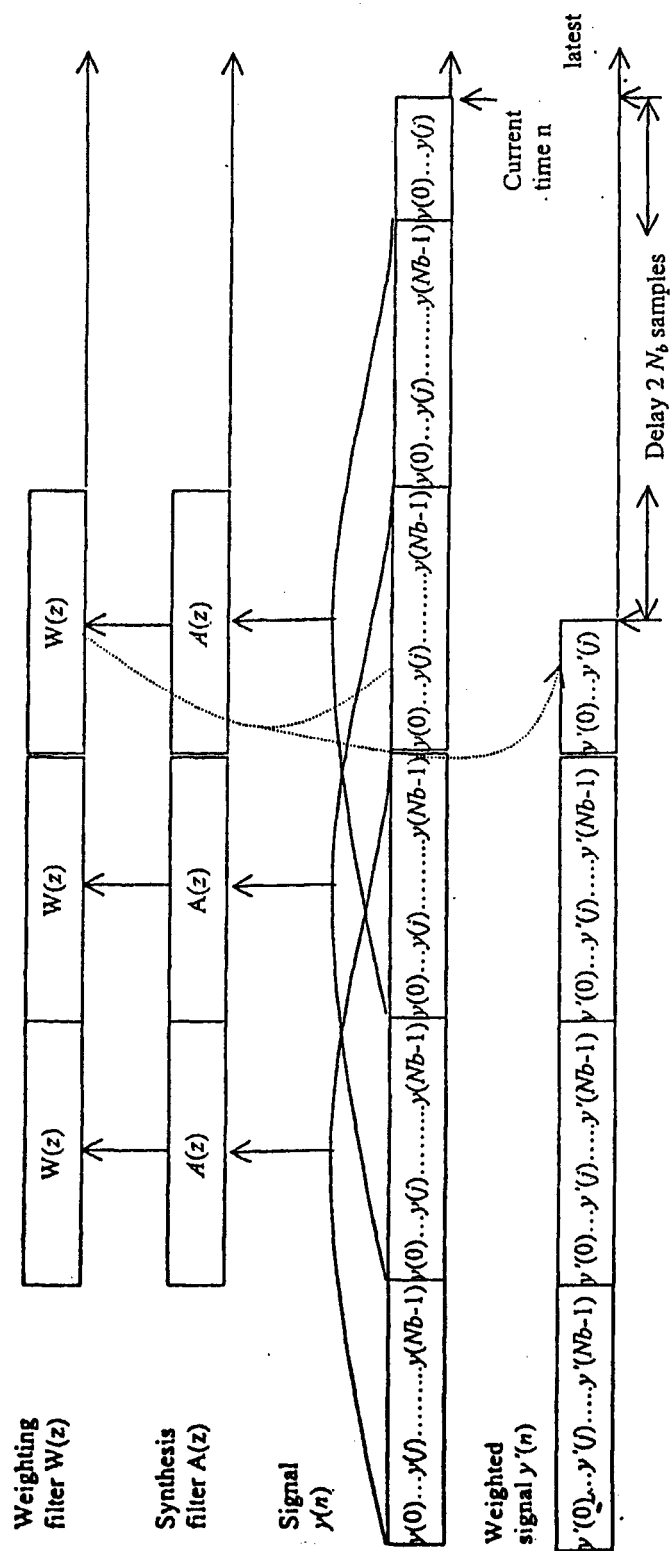
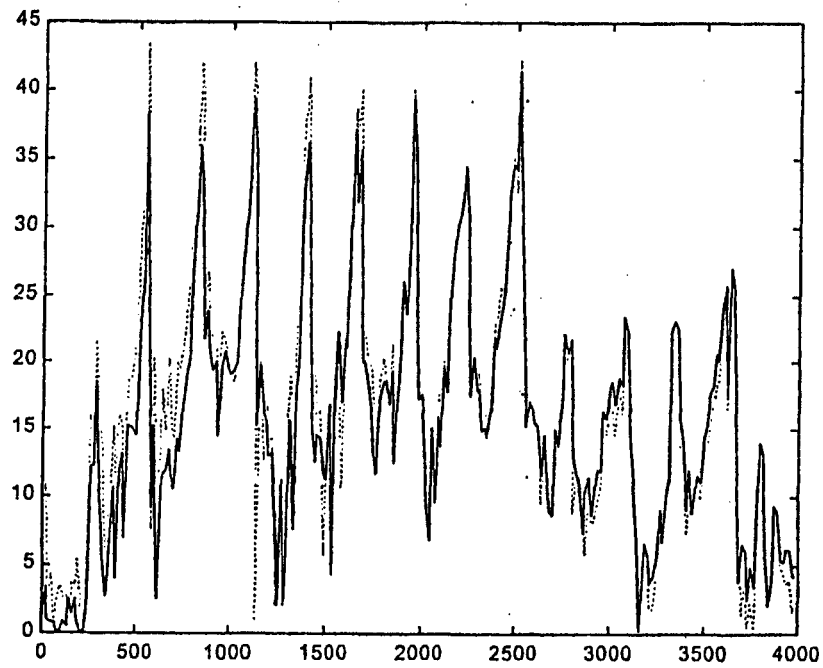
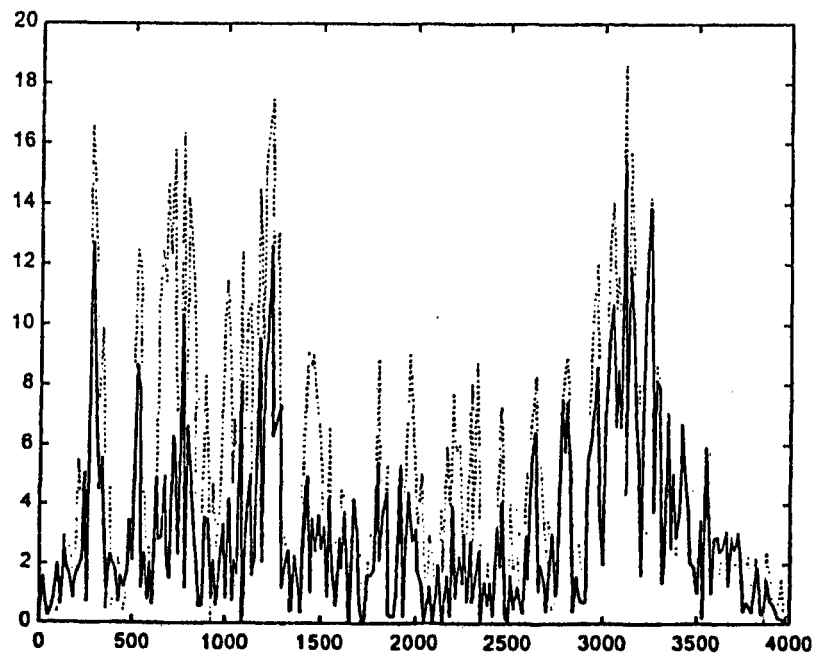


Figure 10 Procedures to calculate LPC coefficient and to whiten the far-end speech

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**Figure 11 Spectrum comparison 1 as an example after 128 ms
(y-axis in dB and x-axis in Hz)**



**Figure 12 Spectrum comparison 2 as an example after 3072ms
(y-axis in dB and x-axis in Hz)**