

A. N. Cheeran, and P. C. Pandey, Dichotic presentation to overcome the effect of increased spectral masking and frequency dependent hearing threshold shifts in persons with bilateral sensorineural hearing impairment, J. Acoust. Soc. Am., vol. 114(4), p. 2359, 2003

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***Abstract* - A binaural dichotic presentation scheme for reducing the effects of increased spectral masking in persons with bilateral sensorineural loss, using spectral splitting with complementary comb filters based on auditory critical bands, has been earlier reported [Cheeran et al., J. Acoust. Soc. Am. 110, 2705 (2001)]. The 256-coefficient linear phase FIR filters designed using frequency sampling technique had transition crossovers adjusted within -6 to -4 dB for perceptual balance, and had 78 -117 Hz transition, 1dB passband ripple, and 30 dB stopband attenuation. We evaluated the scheme by conducting listening tests on 5 normal hearing subjects with simulated loss, using a closed set identification of 12 vowel-consonant-vowel syllables. Based on significant improvement, further tests were conducted on 5 hearing-impaired persons with moderate bilateral sensorineural loss. Significant improvement in response time, recognition scores, and transmission of consonantal features, particularly place and duration, was obtained, indicating reduction in the effect of spectral masking. In order to partly compensate for frequency dependent hearing threshold shifts, a pair of filters with the frequency response adjusted within a 6dB range, based on the audiogram for the corresponding ear, was cascaded with the comb filters. These filters resulted in additional improvement, particularly for persons with relatively uniform loss.**