ACOUSTICS2008/1469
Behavioral evidence for off-frequency compression at 4 kHz

Dhany Arifianto and Christopher Plack
University of Zagreb, Psychology Department, Lancaster University, LA1 4YF Lancaster, UK

Most behavioral techniques for estimating the basilar-membrane response rely on the assumption that the response to an off-frequency masker is linear at the signal place. To test this assumption, we modified the additivity of forward masking technique. The signal was a 4-kHz, 10-ms pure tone, presented at 10 dB sensation level. The maskers were 500-Hz-wide bands of noise centered on 1.5, 2, or 4 kHz. Masker 1 had a duration of 200 ms and was followed immediately by masker 2 with a duration of 20 ms. The masker 2-signal silent interval ranged from 10 to 60 ms. For each interval, the masker level required to mask the signal was determined, for each masker presented individually, and for the two maskers combined. In the combined case, the levels of the two maskers were set to be roughly equally effective, and adaptively varied together. Combining two equally effective maskers should produce a 3-dB reduction in masker level at threshold if the system is linear. A reduction greater than this indicates compression. Although compression was greatest for the 4-kHz maskers, compression was also observed at 1.5 and 2 kHz, suggesting that the assumption of a linear off-frequency response may not valid.