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Auditory Assessment of Super-Wideband Echo Impairments

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As speech transmission technologies advance, new types of impairments are introduced and existing impairment characteristics change. In order to anticipate the influence of super-wideband transmission, this contribution describes experiments to expand the scalable objective echo assessment method to the upcoming super-wideband use case. Similar to the development of a perception based echo assessment model for narrowband and wideband, a third party listening test according to ITU-T P.831 was conducted judging the annoyance of residual echo disturbances on a five-point DCR scale in the super-wideband context. Four different significant echo characteristics were varied for the listening examples, i.e. echo de-lay and attenuation, non-linear distortions and echo coloration. A total set of 180 conditions, i.e. 720 sentences, speech material of male and female speakers, was presented to 43 test subjects. The mean opinion scores acquired by this listening tests are analyzed and matched against the preliminary super-wideband extended echo assessment method. Disturbances caused by narrowband, wideband and super-wideband spectral echo content are directly compared.