WIDEBAND ECHO PERCEPTION

Silvia Poschen[1], Frank Kettler[1], Alexander Raake[2], Sascha Spors[2]

1 HEAD acoustics GmbH (Germany), Ebertstrasse 30a, 52134 Herzogenrath, Germany
{Silvia.Poschen, Frank.Kettler}@head-acoustics.de
2 Deutsche Telekom Laboratories (Germany), Ernst-Reuter-Platz 7, 10587 Berlin, Germany
{Alexander.Raake, Sascha.Spors}@telekom.de

ABSTRACT

The migration of telecommunication towards wideband transmission may also introduce new types of degradations. This paper focuses on the influence of echoes. The different frequency content of un-cancelled residual echoes in wideband transmission, especially the signal energy in higher frequency ranges above 3 kHz, significantly changes the echo perception and echo disturbance compared to the narrowband case. The results of subjective tests presented in this paper point out that the spectral content of residual echoes may influence the quality rating by more than 2 MOS on a Degradation Category Rating (DCR) scale. Especially the frequency range between approximately 3 and 6 kHz needs to be addressed in wideband communication in order to avoid echo disturbances. The results presented here motivate new tolerance schemes for the echo analysis which differ from commonly used methods, as e.g. given in standards like ETSI 202 739 or TIA 920 for wideband telephony.

Index Terms — Wideband transmission, echo perception, echo attenuation, subjective testing