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| **CONTRIBUTION** |
| **Source:** | Volkswagen AG, Technische Universität Braunschweig |
| **Title:** | Proposal of a Noise Distortion Measure |

**Proposal of a Noise Distortion Measure**

**(Signal Enhancement Subsystem)**

Along the lines of the ITU-T Recommendation P.1100 and P.1110, where in sections 8 (digital interfaces) possibilities were shown how to achieve processed components of the signal in send direction (speech component, echo component, noise component), we now propose a new noise distortion measure. It shall be an instrumental quality measure of the Signal Enhancement Subsystem, and has been proven to be extremely useful in optimizing noise reduction algorithms.

It is proposed as in eq. (1) of the attached study, being a modified log kurtosis ratio. It reflects well the behaviour of a certain system w.r.t. musical tones, and can be used to optimize a noise reduction system. The larger the log kurtosis ratio is, the less musical tones are present in the output (i.e., filtered) noise component of the Signal Enhancement Subsystem. Although it will be hard to identify absolute quality thresholds referring to certain qualities of service (QoS) classes (see attached report which shows the behaviour of four different noise reduction approaches), we strongly encourage the inclusion of such measure into the current draft of the subsystem requirements document. A major reason is that using this noise distortion measure along with two other independent measures, we were able to automatically optimize the parameterization of an SNR estimator as part of a noise reduction scheme, yielding surprisingly different values as typically published. These values however, lead to superior performance, also proven in an informative listening test.

If the CARCOM group comes to the conclusion that such instrumental measure is of value to be included into the current draft, we would offer to prepare a specific text proposal for the draft document of the new Recommendation for the next meeting.

Attachment:

