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Speech quality performance in
the presence of background noise:
Background noise transmission for
mobile terminals-objective test methods
Reference
RTS/STQ-224

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Speech and multimedia Transmission Quality (STQ).

The present document is to be used in conjunction with the ETSI standard series EG/S 202 396 [i.2] to [i.4]:

- ETSI ES 202 396 1: "Background noise simulation technique and background noise database";
- ETSI EG 202 396 2: "Background noise transmission - Network simulation - Subjective test database and results";
- ETSI EG 202 396-3: "Background noise transmission - Objective test methods".

The present document is based on the objective test method described in ETSI EG 202 396-3 [i.4] and contains modifications of the model required in order to provide a good prediction of the uplink speech quality in the presence of background noise of modern mobile terminals.

Modal verbs terminology

In the present document "shall", "shall not", "should", "should not", "may", "need not", "will", "will not", "can" and "cannot" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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1 Scope

The present document describes testing methodologies which can be used to objectively evaluate the performance of narrowband and wideband mobile terminals for speech communication in the presence of background noise. Background noise is a problem in mostly all situations and conditions and needs to be taken into account in both, terminals and networks. The present document provides information about the testing methods applicable to objectively evaluate the speech quality of mobile terminals with AMR and AMR-WB codecs in the presence of background noise. The present document includes:

- The method which is applicable to objectively determine the different parameters influencing the speech quality in the presence of background noise taking into account:
  - the speech quality;
  - the background noise transmission quality;
  - the overall quality.
- The description of the adaptation of the test method described in ETSI ES 202 396-1 [i.2].
- The model results in comparison with the underlying subjective tests used for the retraining of the objective model.
- The model validation results:
  - Additional validation results are provided for cases which include some conditions outside the scope of ETSI ES 202 396-1 [i.2]. These include music as background noise, and user holding a handset in other than nominal position, as defined in Recommendation ITU-T P.64 [i.24]. In addition, validation results are provided for Chinese language.

The present document is to be used in conjunction with:

- ETSI ES 202 396-1 [i.2] which describes a recording and reproduction setup for realistic simulation of background noise scenarios in lab-type environments for the performance evaluation of terminals and communication systems.
- ETSI EG 202 396-2 [i.3] which describes the simulation of network impairments and how to simulate realistic transmission network scenarios and which contains the methodology and results of the subjective scoring for the data forming the basis of the present document.
- ETSI EG 202 396-3 [i.4] which describes the basic objective model underlying to the Model described in the present document.
- American English speech sentences as enclosed in the present document.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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