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Speech and multimedia Transmission Quality (STQ);
Speech quality performance
in the presence of background noise;
Part 1: Background noise simulation technique
and background noise database

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Foreword

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

The present document is part 1 of a multi-part deliverable covering Speech and multimedia Transmission Quality (STQ); Speech quality performance in the presence of background noise, as identified below:

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".

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Introduction

Background noise is present in most of the conversations today. Background noise may impact the speech communication performance to terminal and network equipment significantly. Therefore testing and optimization of such equipment is necessary using realistic background noises. Furthermore reproducible conditions for the tests are required which can be guaranteed only under lab type condition.

The present document addresses this issue by describing a methodology for recording and playback of background noises under well-defined and calibratable conditions in a lab-type environment. Furthermore a database with real background noises is included.

1 Scope

The quality of background noise transmission is an important factor, which significantly contributes to the perceived overall quality of speech. Existing and even more the new generation of terminals, networks and system configurations including broadband services can be greatly improved with a proper design of terminals and systems in the presence of background noise. The present document:

- describes a noise simulation environment using realistic background noise scenarios for laboratory use;
- contains a database including the relevant background noise samples for subjective and objective evaluation.

The present document provides information about the recording techniques needed for background noise recordings and discusses the advantages and drawbacks of existing methods. The present document describes the requirements for laboratory conditions. The loudspeaker setup and the loudspeaker calibration and equalization procedure are described. The simulation environment specified can be used for the evaluation and optimization of terminals and of complex configurations including terminals, networks and other configurations. The main application areas should be: office, home and car environment.

The setup and database as described in the present document are applicable for:

- Objective performance evaluation of terminals in different (simulated) background noise environments.
- Speech processing evaluation by using the pre-processed speech signal in the presence of background noise, recorded by a terminal.
- Subjective evaluation of terminals by performing conversational tests, specific double talk tests or talking and listening tests in the presence of background noise.
- Subjective evaluation in third party listening tests by recording the speech samples of terminals in the presence of background noise.

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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The following referenced documents are necessary for the application of the present document.

Not applicable.

2.2 Informative references

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