

STF 294

Phase 1, Step 1: Initial Recordings

STQ Workshop (Sophia Antipolis, May, 23th 2007)

H.W. Gierlich, S. Poschen
HEAD acoustics GmbH

Overview

- The Background Noise Simulation Setup**
- Recording Environments**
- Initial Recordings**
- Output**

Introduction

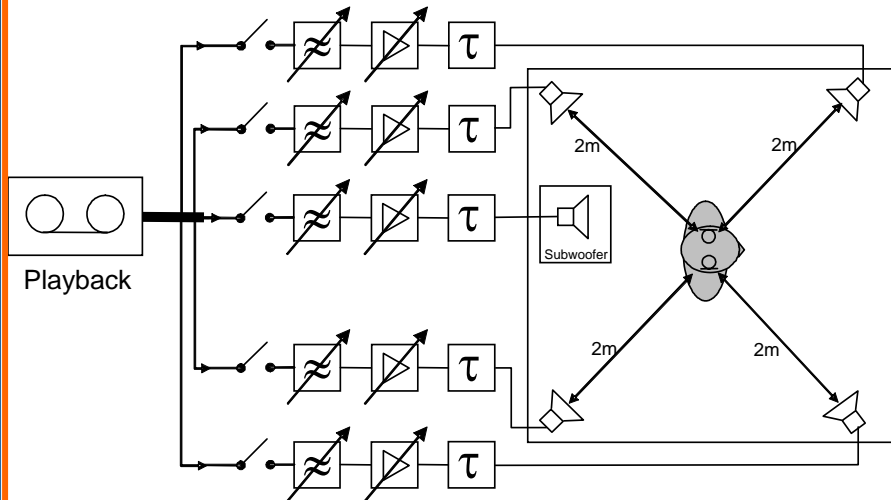
Output of STF 273 was the first step towards the new objective method developed by STF 294:

1. Development of
 - ❑ a Background Noise Simulation Setup and
 - ❑ a **Background Noise Database** for common use in test rooms and cars→ EG 202 396-1 (STF 273)
2. Preparing and Realization of a listening test using wideband speech, different background noises, codecs and network qualities
→ EG 202 396-2 (STF 294)
3. Development of a new objective method calculating Speech-MOS, Noise-MOS and Global-MOS scores for wideband scenarios
→ EG 202 396-3 (STF 294)

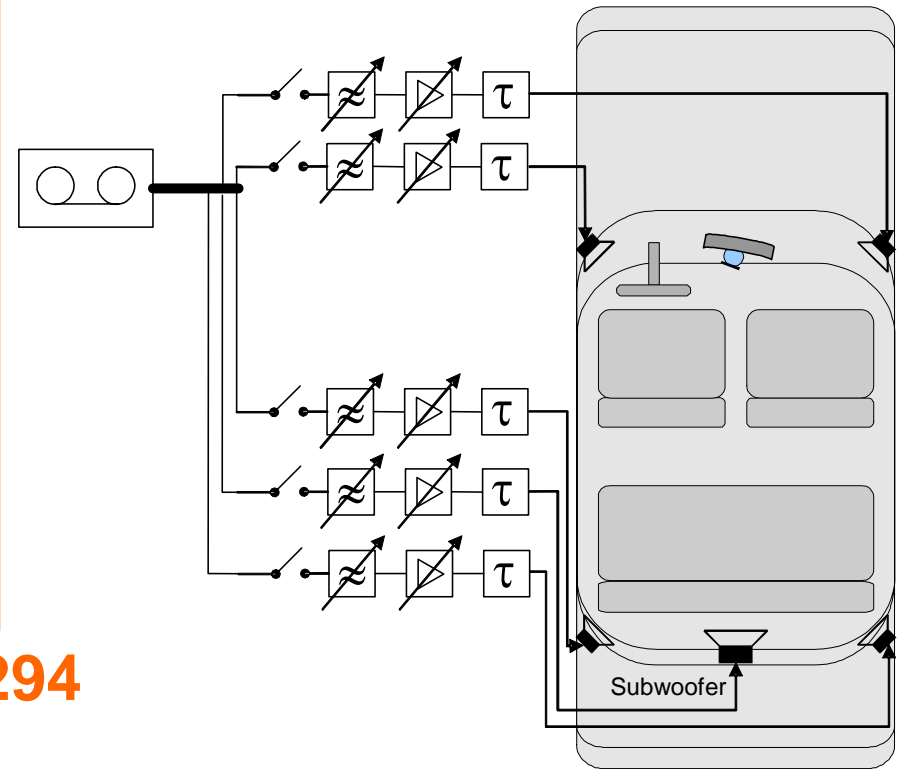
Background Noise Simulation EG 202 396-1

developed in STF 273

Setup for use in test rooms:



Setup for use in cars:

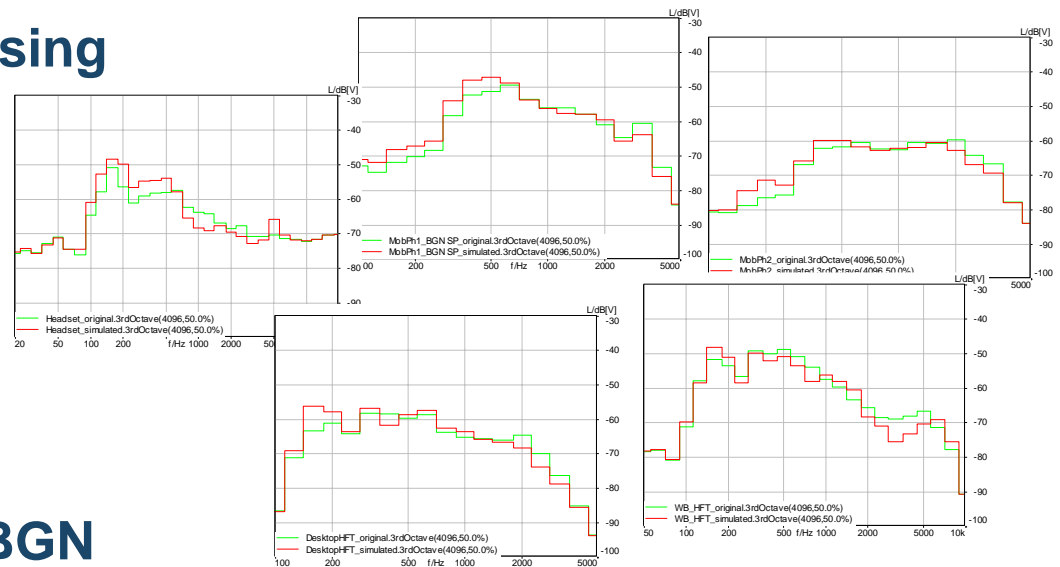


Setup used in STF 294

Accuracy in Test Rooms

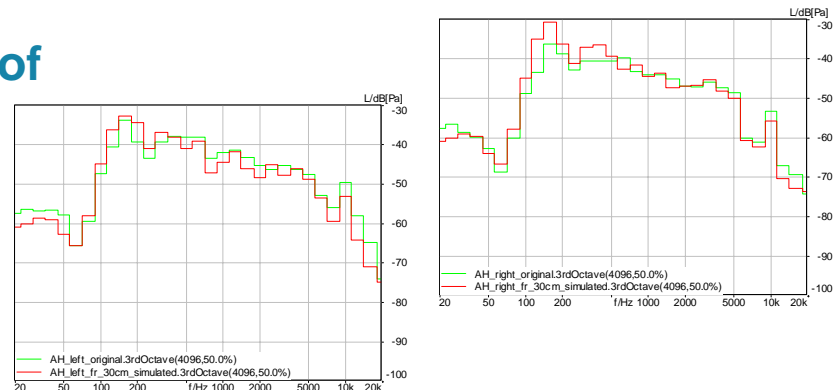
□ Verification of accuracy using

- mobile phones
- wideband headset
- desktop hands-free
- conference system



□ Check of insensitivity of BGN Simulation system:

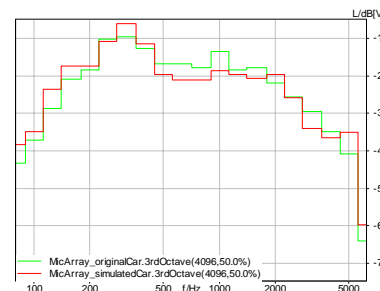
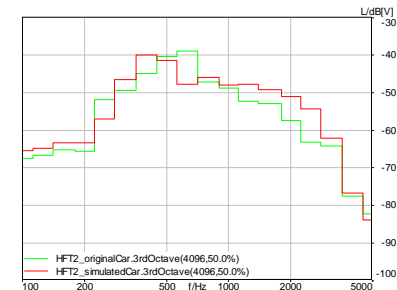
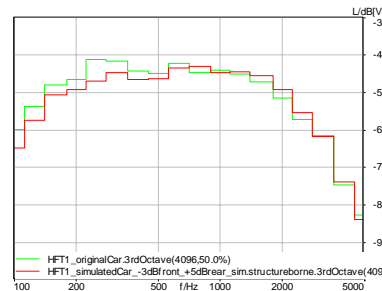
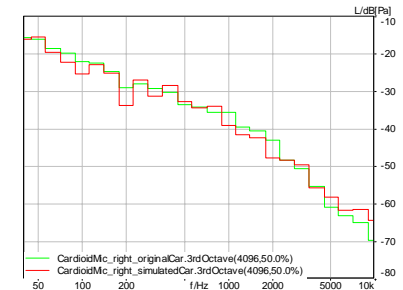
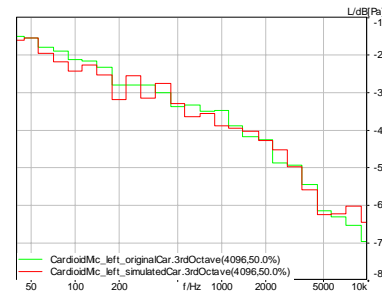
- insensitive for displacement of artificial head of up to 30 cm



Accuracy in Cars

□ Verification of accuracy using

- a pair of cardioid microphones
- 2 common car hands-free devices
- a microphone array with included background noise signal processing



Recordings in STF 294

- Artificial Head (acc. to ITU-T P.58)
- “4.1” setup in a test room
- 5 different background noises
 - cafeteria noise;
 - office room noise;
 - road noise;
 - crossroads; and
 - car noise (car hands-free at 130 km/h)
- Simulation of handset and hands-free scenario



STF 294 - Initial Recordings



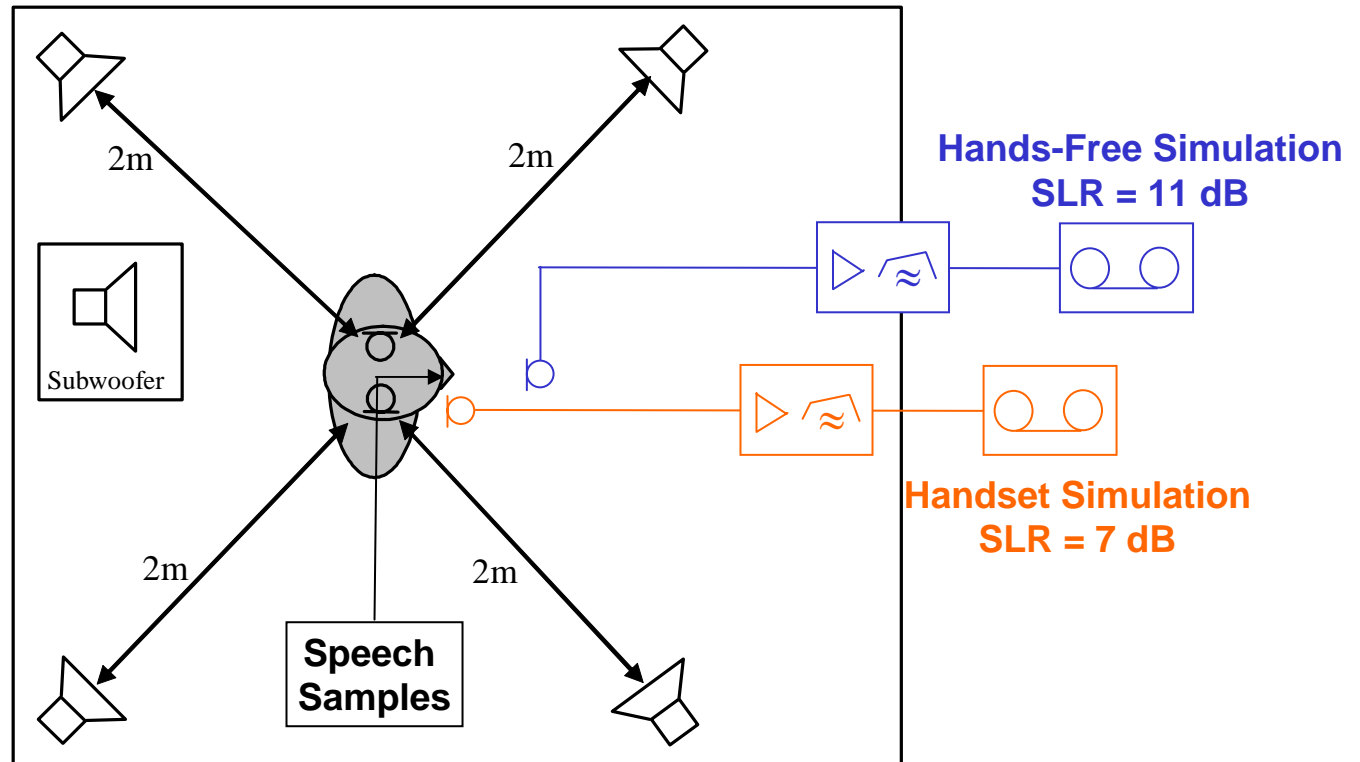
Recording Environments

- ❑ Recordings with handset and hands-free simulation in a test room

- ❑ **NOTE:** instead of a wideband phone a free-field microphone was used and positioned close at the typical position of a handset or hands-free device!

- ❑ The microphone output level was adjusted to a corresponding SLR of
 - 11 dB for hands-free
 - 7 dB for handset

Setup



Initial Recordings

The conditions:

- 5 background noises
- 2 telephone simulations (handset, hands-free)
- 2 languages (French, Czech)
- 4 speakers (2 male, 2 female, 8 sentences per speaker)

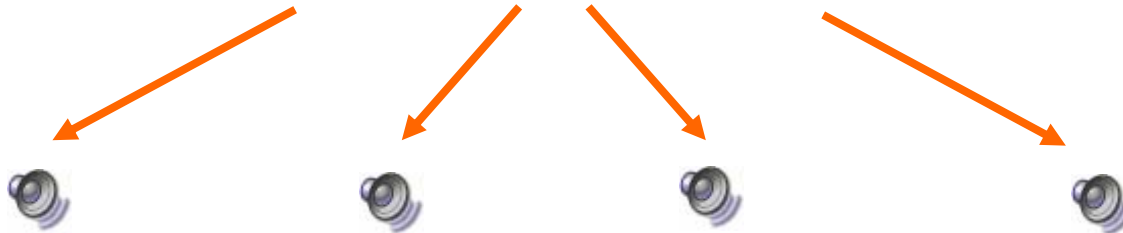
Resulting in a total of

$5 \times 2 \times 2 \times 4 = 80$ recordings

Czech and French sentences were provided by MESAQIN and France Telecom

Output

- 48 kHz, 16 bit
- Wave format
- No level adjustment
- For calibration purposes: delivery of a calibration sine with a defined level



Car Noise, Hands-Free

Office, Handset

Pub, Handset

Road Noise, Handset

Input for Further Signal Processing

Speech data with background noise



Noise cancellation
Speech coding
Network impairment simulation