DELTA / SenseLab

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Report

Listening room characteristics

Client: 3GPP SA4 EVS

SenseLab
Project no.:

0 annexes

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3GPP SA4 EVS

Summary

This short report summarised the primary physical and acoustics characteristics of DELTA SenseLab listening room and listening booths. Additionally the performance of other listening rooms under consideration for the 3GPP SA4 EVS codec selection listening tests are described, including Aalto University, Department of Signal Processing and Acoustics.

In cases the labs under consideration are either dedicated listening rooms or booths for performing listening tests or else studio like spaces with high acoustical specification.

DELTA, 26 July 2013

Nick Zacharov
SenseLab

Contents

1. DELTA SenseLab 4
1.1 EBU 3276 listening room 4
1.1.1 Background noise 4
1.1.2 Reverberation 5
1.1.3 Hoth noise reproduction 6
1.2 Listening booths (#2) 7
1.2.1 Background noise 7
1.2.2 Hoth noise reproduction 8

2. Aalto University, Department of Signal Processing and Acoustics 9
2.1 ITU-R BS.1116-1 listening room 9
2.1.1 Background noise 9
2.1.2 Reverberation 10

1. DELTA SenseLab

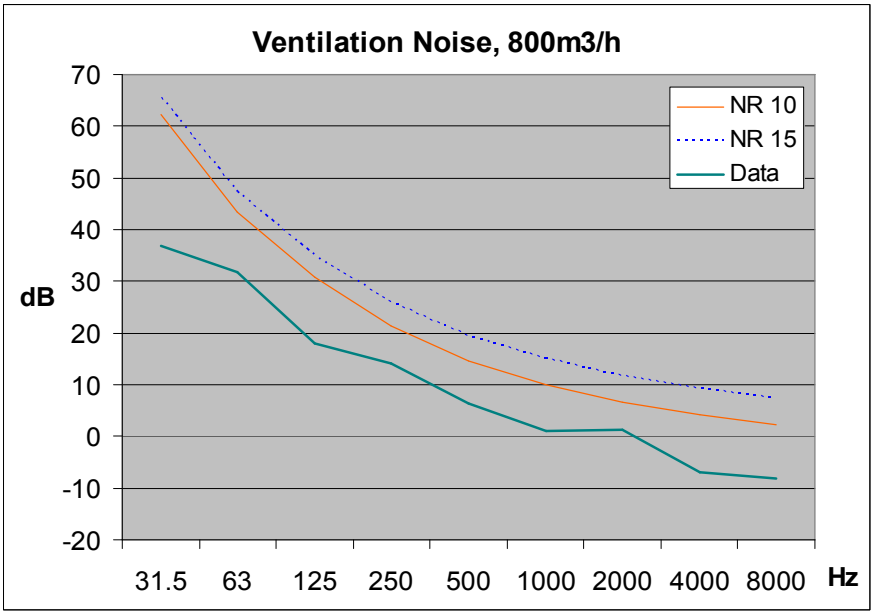
1.1 EBU 3276 listening room

The DELTA SenseLab listening room, located in Hørsholm, north of Copenhagen was designed and tested in accordance to EBU 3276. In practice the room also meets the ITU-R BS.1116-1 specification. The room is a double wall full floating construction with lower noise background noise and ventilation as defined in EBU 3276 and ITU-R BS.1116-1.

The room is of inner dimensions: 4.69 x 7.84 x 2.62 m (W x L x H).

1.1.1 Background noise

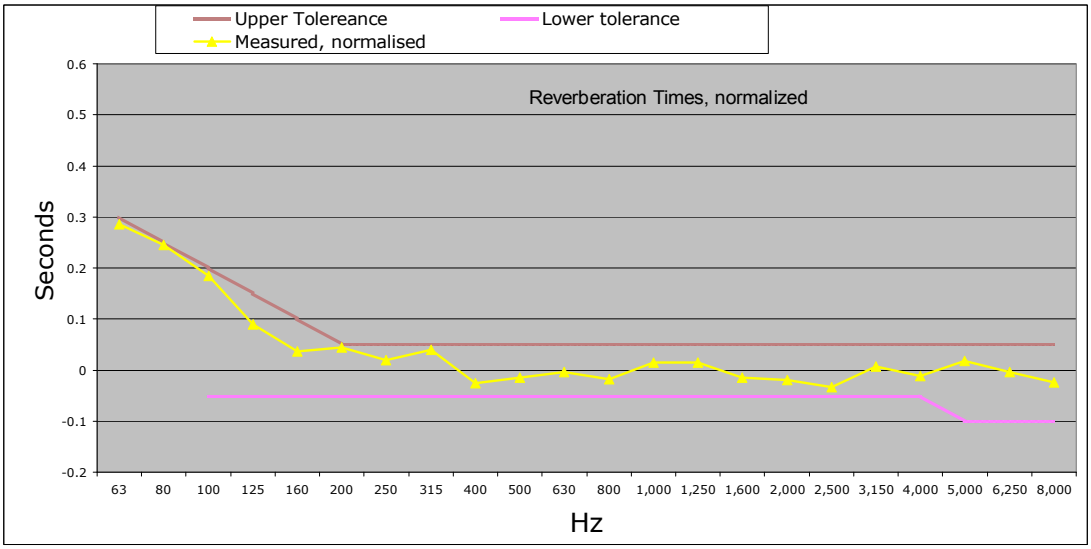
Background noise level within the room has been measured in a number of different manners. In order to summarise the performance of the room, the following measurement condition is employed: Ventilation on (800m3/hr), light on



The performance of the room falls well below the NR10 characteristic. This is well below the ITU-T P.800 NC25/NR25 requirement.

1.1.2 Reverberation

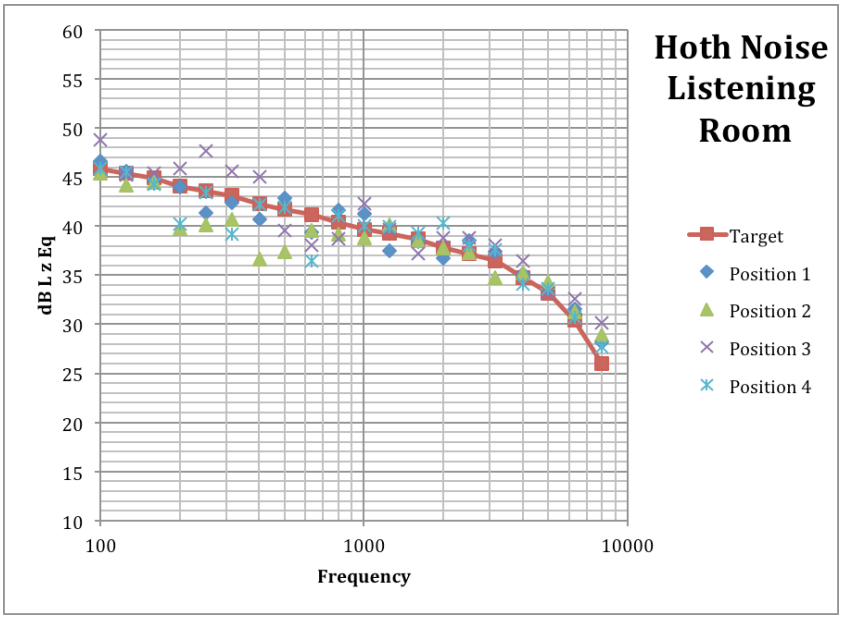
The reverberation time of the room is 0.21s and is characterised in the figure below with the tolerances defined in EBU 3276



1.1.3 Hoth noise reproduction

Hoth noise is reproduced into the room, so that the level at each of the listening positions is 50 dBA (fast), as defined in ITU-T P.800.

The 1/3rd Octave band characteristics for each listening positions is presented in the figure below.



The overall SPL at each listening position is given in the table below

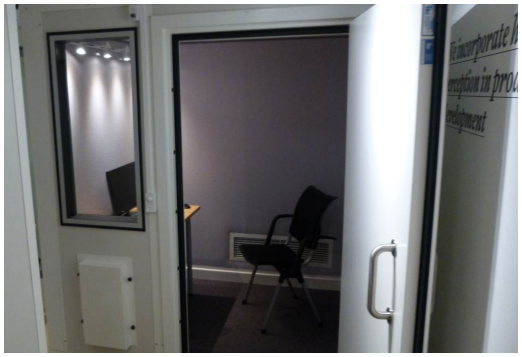
Listener position	SPL
	dB(A) fast
Position 1	50
Position 2	48.9
Position 3	50.9
Position 4	50.2

The SPL at the listening positions is within 50±1.5 dBA (fast).

1.2 Listening booths (#2)

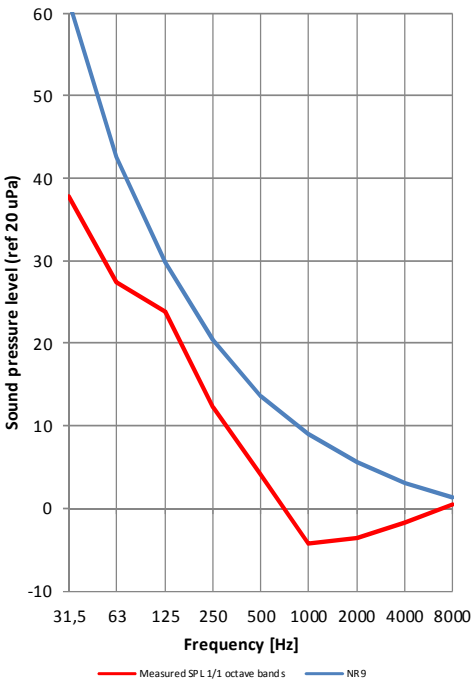
The DELTA SenseLab listening booths have been designed to provide a critical listening environment for listening tests. However due to the compact dimensions they cannot fulfil all of the requirements of a standard listening room.

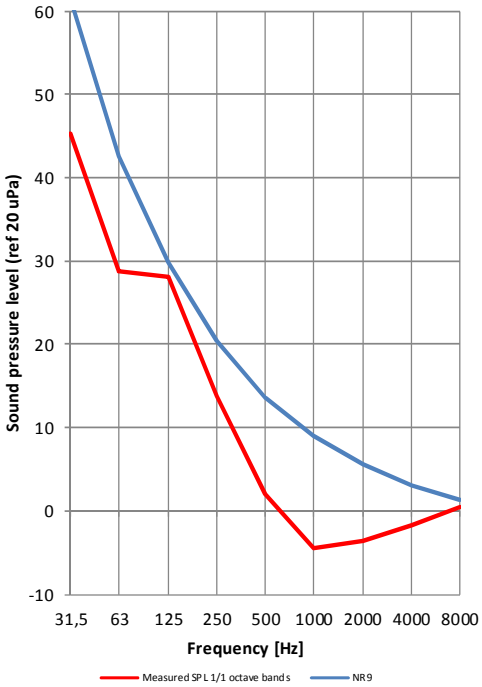
The booths of for single occupancy and are of dimensions:



1.2.1 Background noise

Background noise level within the room has been measured in a number of different manners. In order to summarise the performance of the room, the following measurement condition is employed: Ventilation on (50%), light on





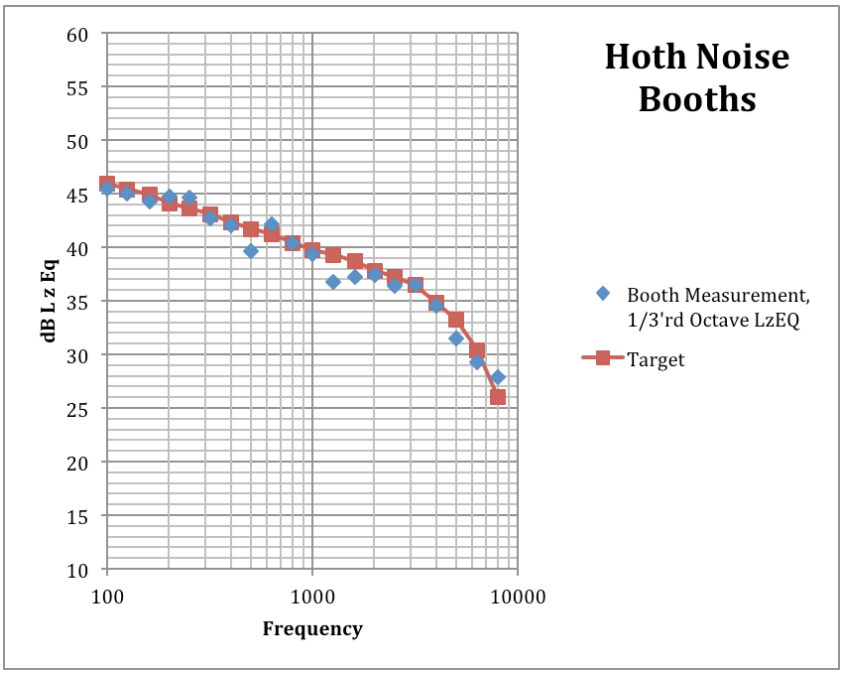
Booth A Booth B

The performance of both booths falls well below the NR9 characteristic. This is well below the ITU-T P.800 NC25/NR25 requirement.

1.2.2 Hoth noise reproduction

Hoth noise is reproduced into the room, so that the level at each of the listening positions is 50 dBA (fast), as defined in ITU-T P.800.

The 1/3rd Octave band characteristics for each listening positions is presented in the figure below.



The SPL at the listening positions is 50 dBA (fast).

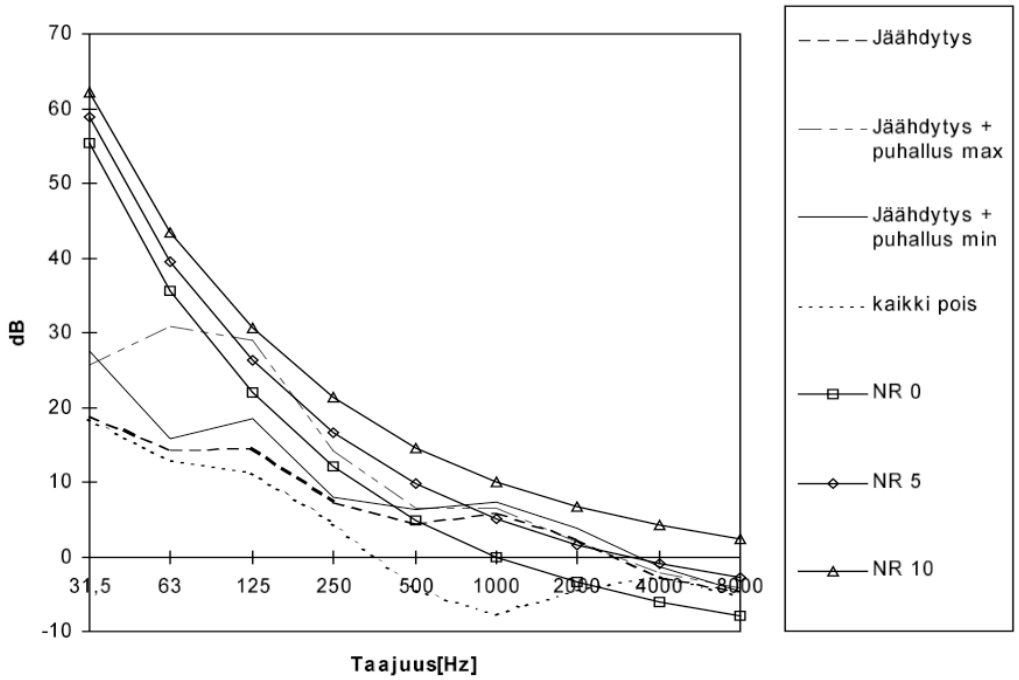
2. Aalto University, Department of Signal Processing and Acoustics

2.1 ITU-R BS.1116-1 listening room

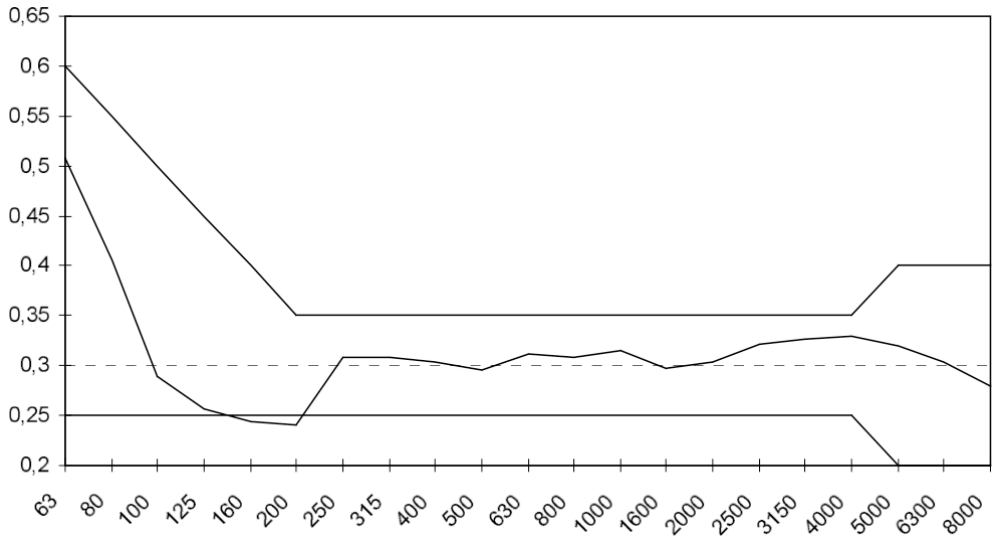
The Aalto University, Department of Signal Processing and Acoustics, listening room, located in Espoo, west of Helsinki was designed and tested in accordance to ITU-R BS.1116-1 specification. The room is a double wall full floating construction with lower noise background noise and ventilation as defined in ITU-R BS.1116-1.

2.1.1 Background noise

Background noise level within the room has been measured in a number of different manners. The figure below shows a number of different conditions with and without ventilation.



The performance of the room falls well below the NR10 characteristic. This is well below the ITU-T P.800 NC25/NR25 requirement.

2.1.2 Reverberation

The reverberation time of the room is 0.21s and is characterised in the figure below with the tolerances defined in ITU-R BS.1116-1