

Report

Sound-proofing between flexible apartments (2018-2019)



There are regulations related to sound-proofing between apartments, and the current level for student apartments is 52dB, regulated in Boverkets Byggregler (BBR). When creating the first set of apartments in Testbed KTH, there was an interest from the involved researchers and companies to investigate the sound-proofing of flexible structures.

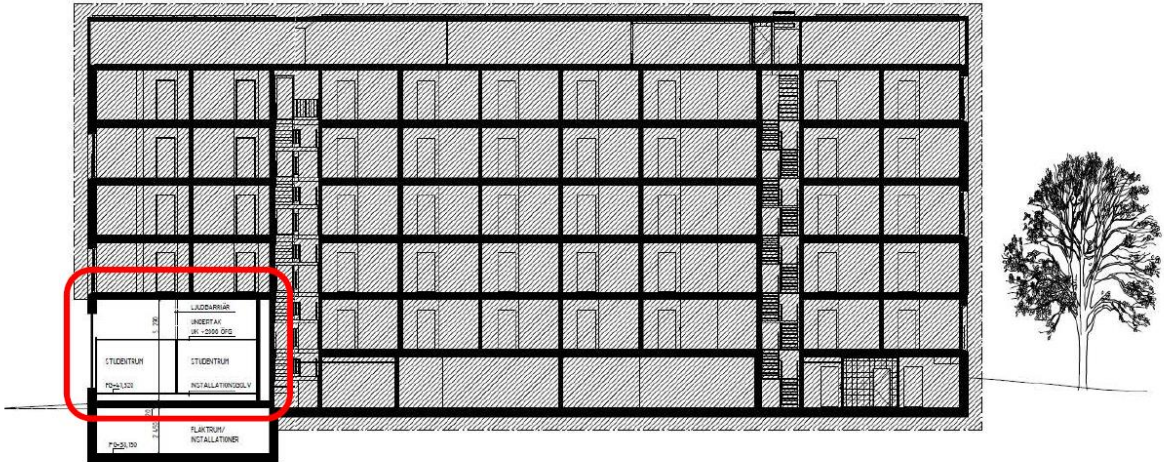
In Testbed KTH there is installation flooring from Lindner, click-walls from Oneday Wall, and ceiling from Ecophon. The walls between the four apartments were designed in two different ways, see figure 2 below. One where the wall studs are in line (Röd mätning/Red measurement), and one, more complicated/expensive where the studs are separated in order not to transfer sound (Blå mätning/blue measurement).

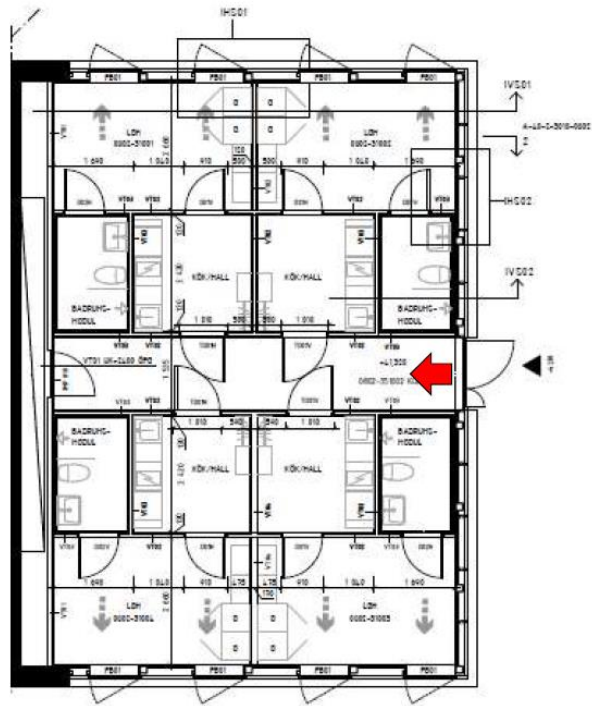
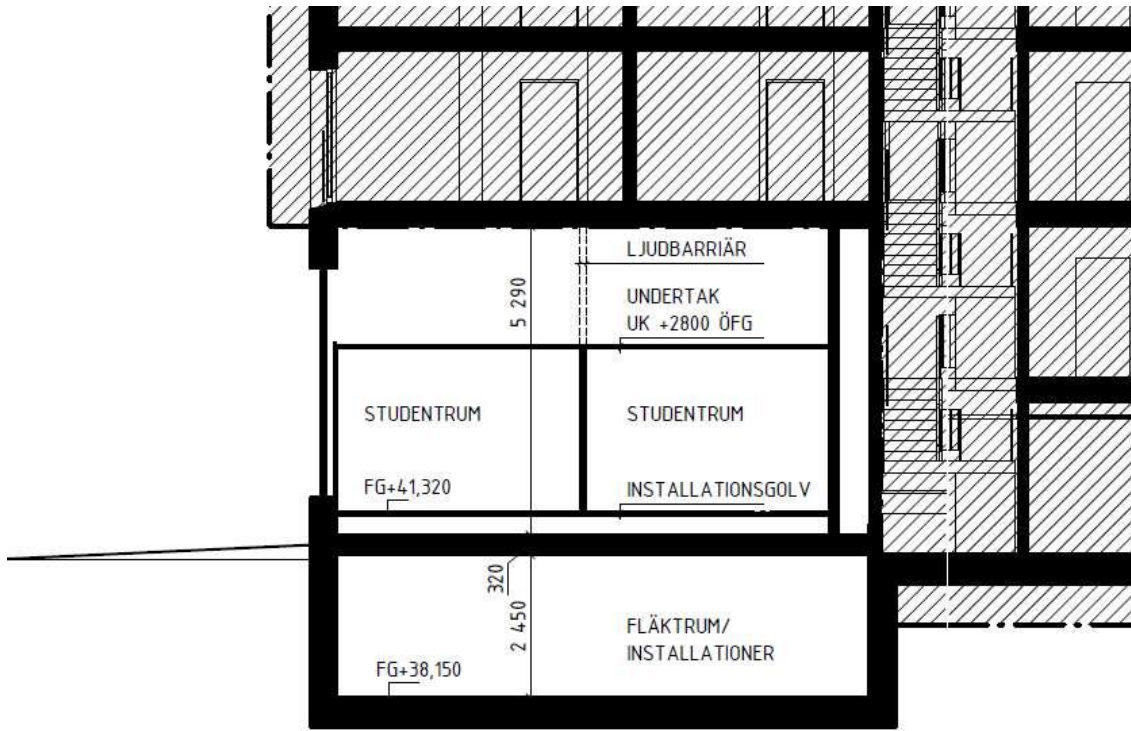
The measured value were 41dB for red, and 44dB for blue. None of the walls reached the prescribed levels in BBR. However, the installation floor and ceiling construction have a great impact on the sound-proofing, and that has yet to be investigated. At 52dB sound-proofing, it is not possible to hear loud speech between apartments, but at levels below it is possible.

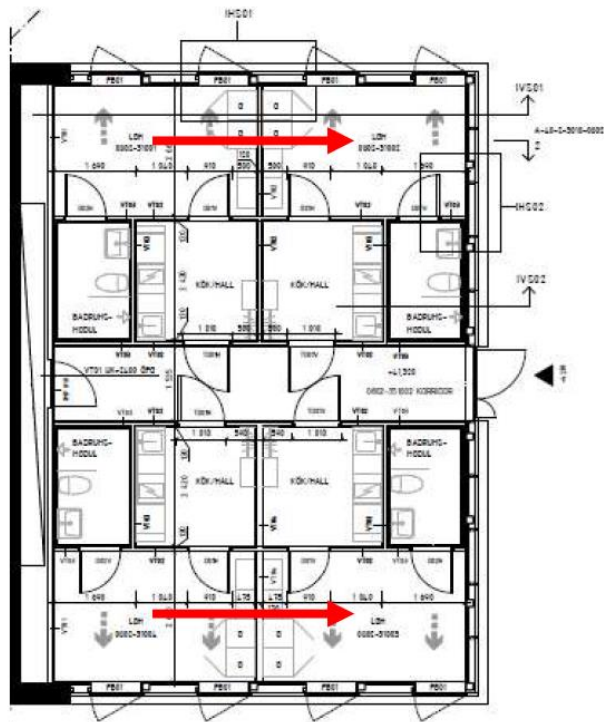
The idea of this study was that the students should stay 6 months in an apartment separated with a “red” wall, and 6 months with a “blue” wall. However, due to that loud speech anyway was possible to hear, the students did not want to move. Interestingly not even those who had the wall only reaching 41dB (red) wanted to move. All students have described that they were unhappy with the sound-proofing between the apartments. The interesting part here is the trend of producing co-living apartments, where there is no regulation of sound-proofing

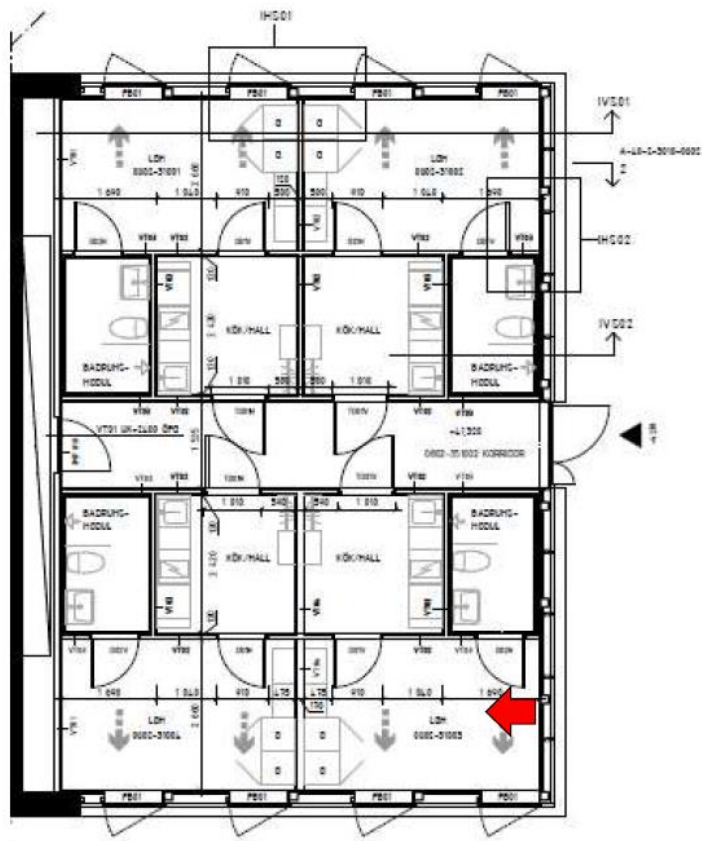
between single rooms in shared apartments, except for 35dB for sleeping rooms. This very limited study suggests that it is important to also take sound-proofing between rooms in shared apartments into account when designing co-living concepts.

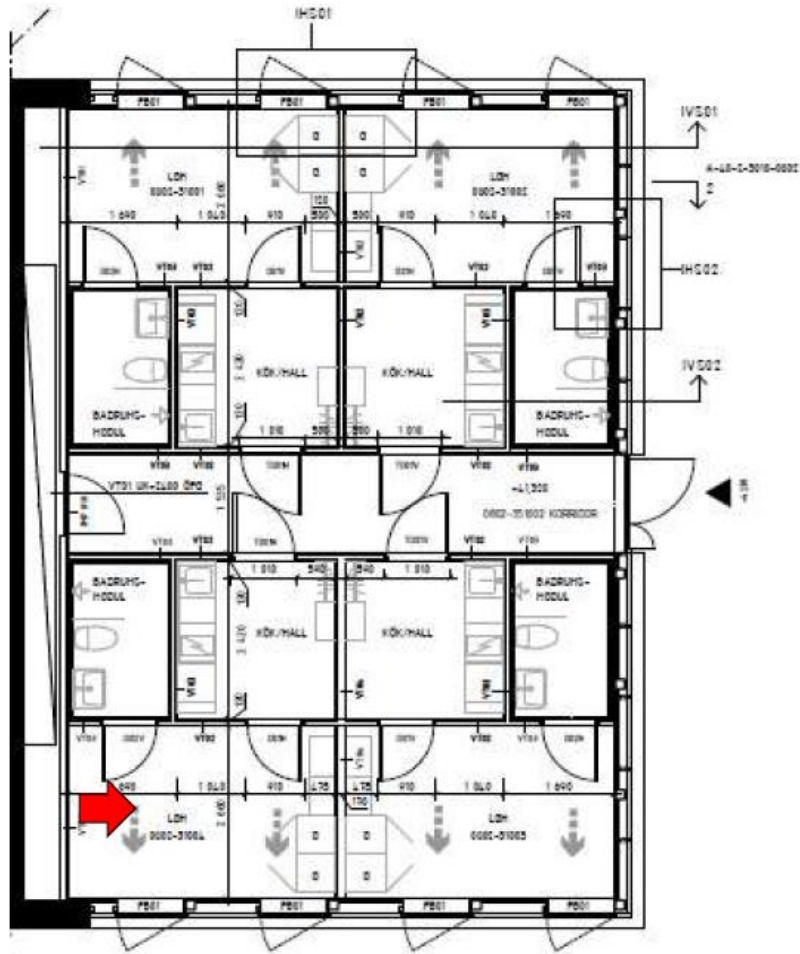
Results

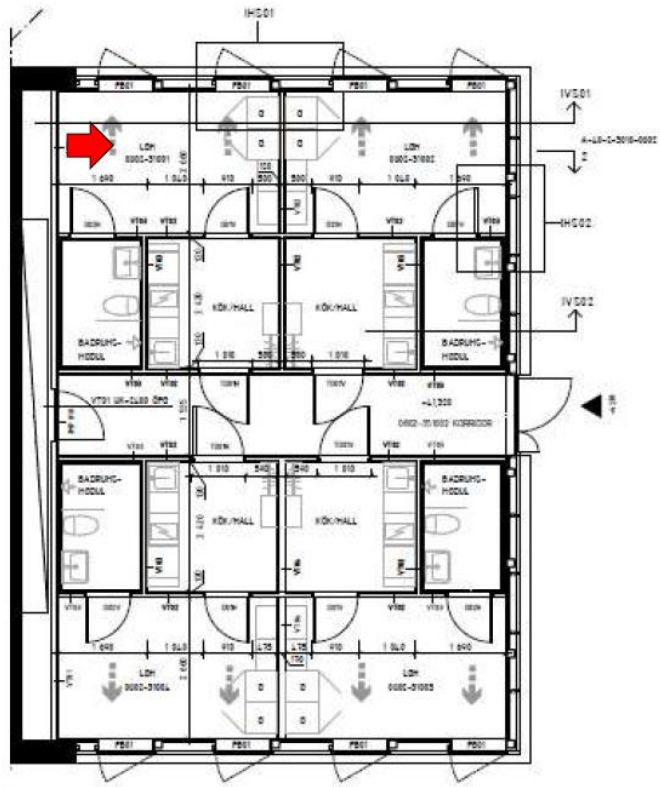


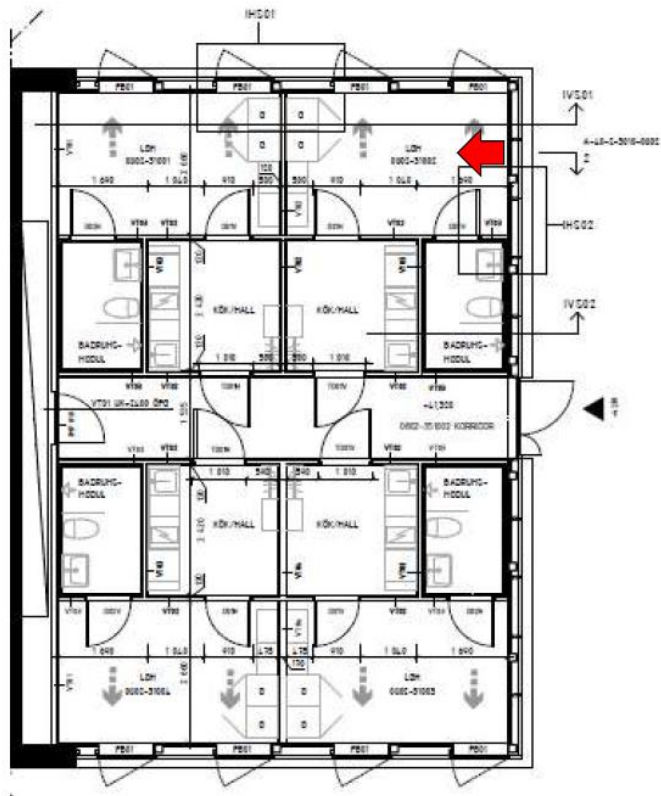


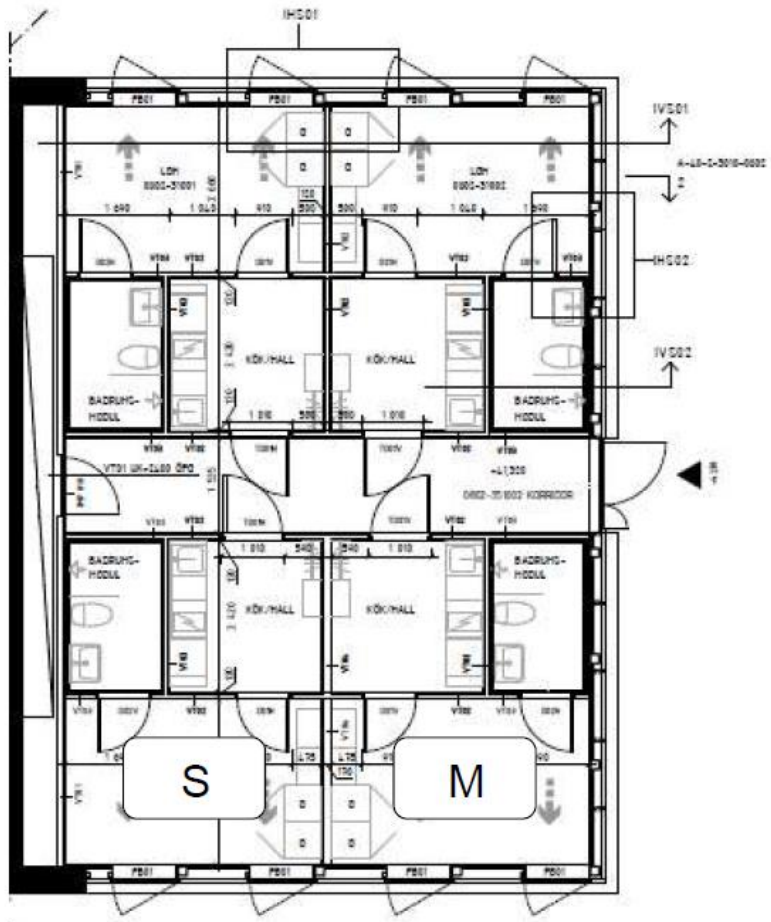


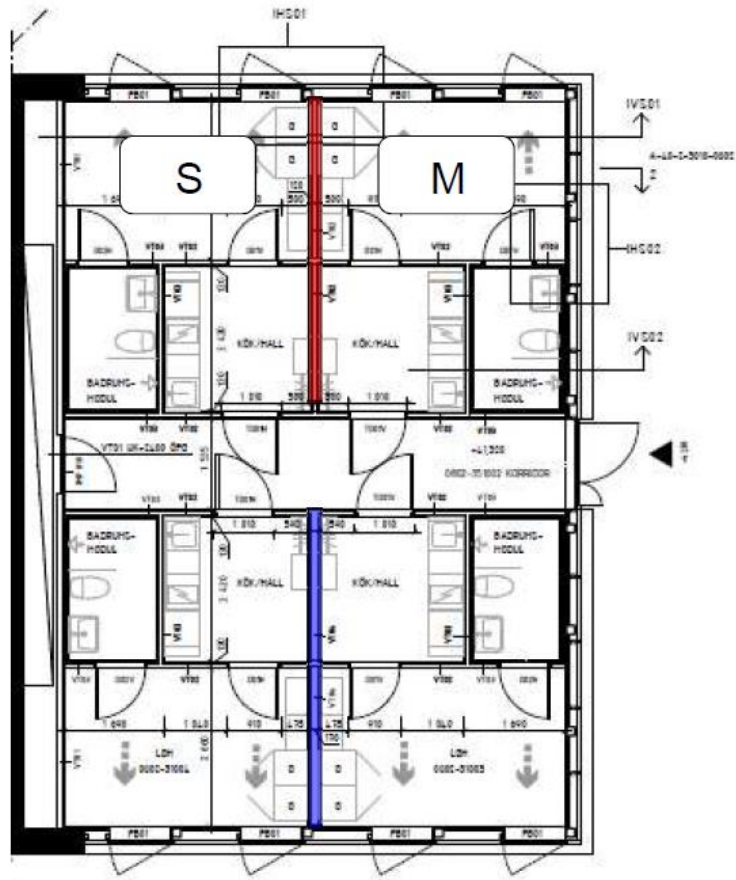
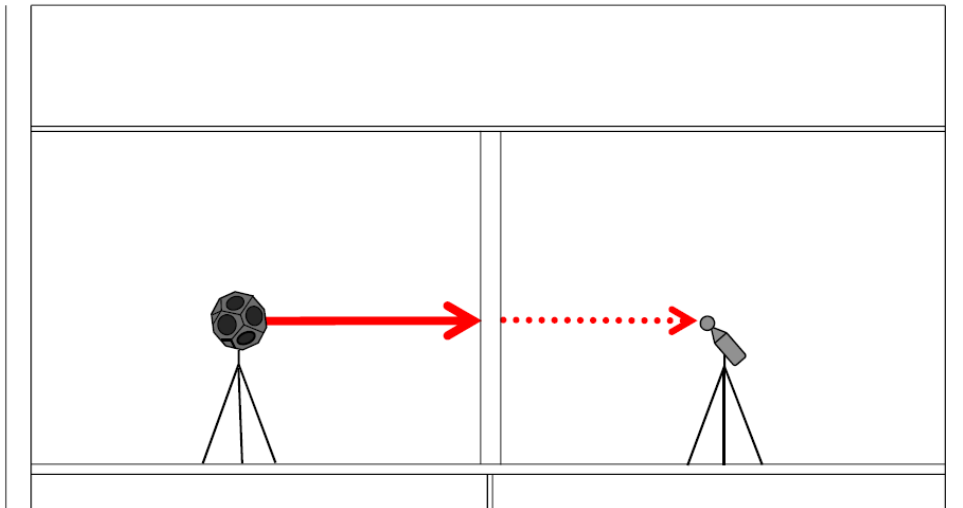


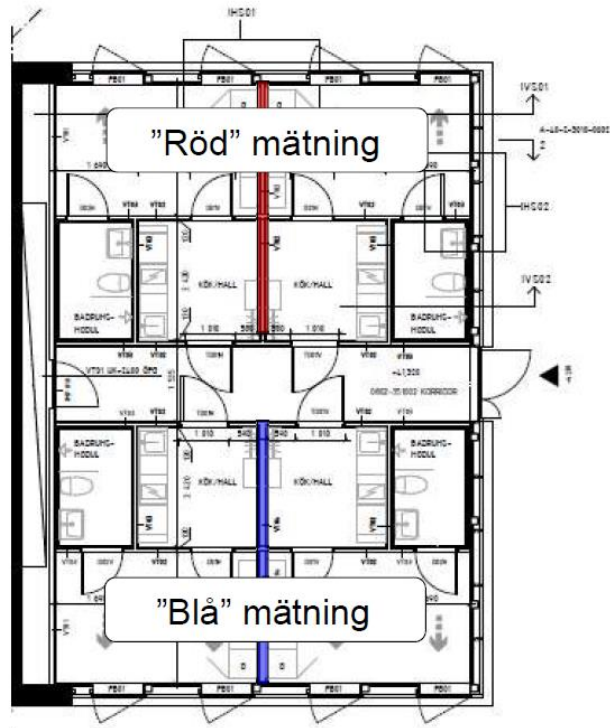












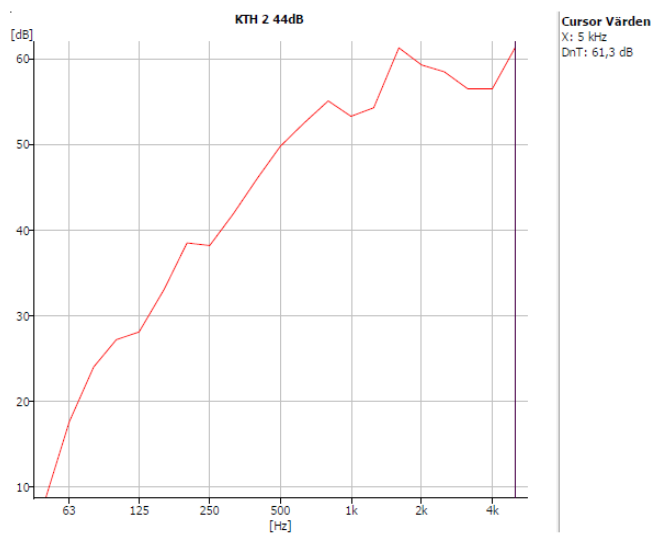
Resultat

Röd mätning	R'_w	49 dB
Röd mätning	$D_{nT,w} + C_{50-3150}$	44 dB
Blå mätning	R'_w	43 dB
Blå mätning	$D_{nT,w} + C_{50-3150}$	41 dB

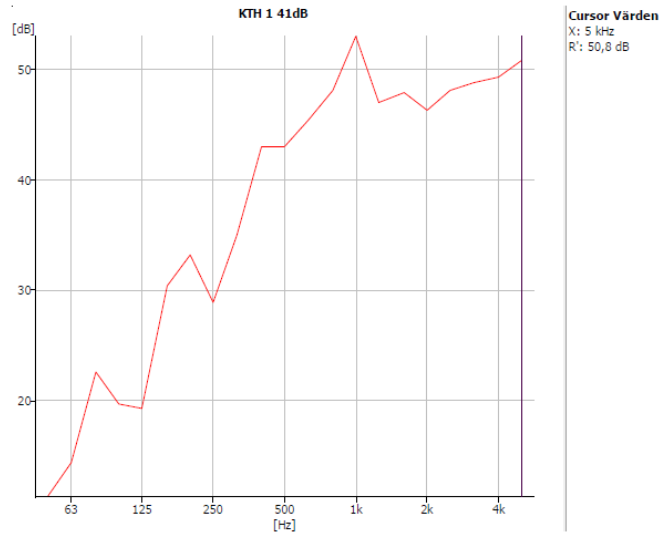
Resultat

Röd mätning	$D_{nT,w} + C_{50-3150}$	44 dB
Krav i BBR	$D_{nT,w} + C_{50-3150}$	52 dB
Blå mätning	$D_{nT,w} + C_{50-3150}$	41 dB

Röd mätning



Blå mätning



Jämförelse av kurvorna

