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**SOUND INSULATION LEVEL MEASUREMENTS ON SITE (in situ)**

**STANDARD LVS EN ISO 140-4:2000:**

*Acoustics. Building and building element sound insulation measurements.  
Household noise insulation measurements in buildings.*

**Measured parameters :**

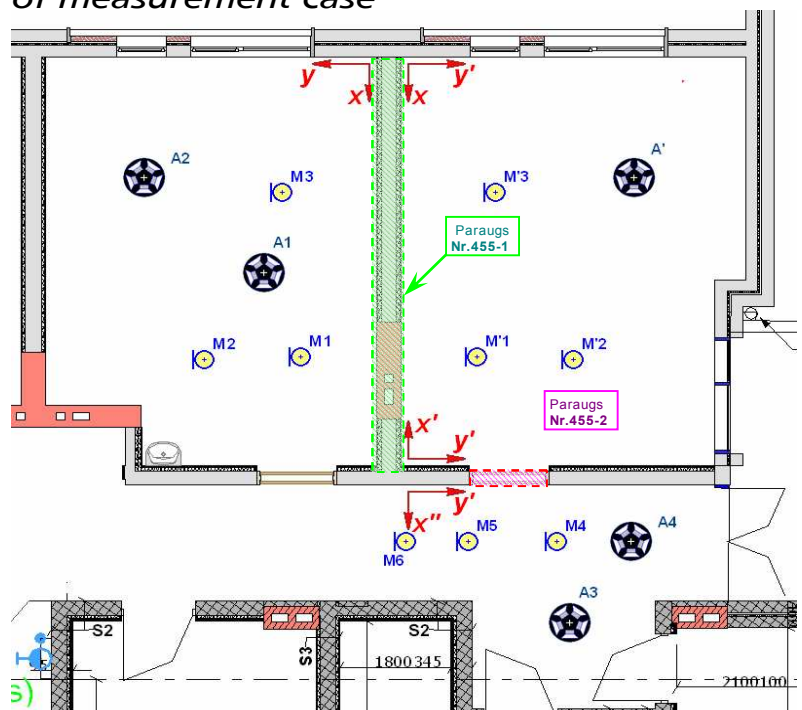
- $R'$  – the actual sound attenuation index in 1/3 octave bands (including bypaths)
- $D_n$  – the actual sound level difference in 1/3 octave bands
- $D_{nT}$  – standardised sound level difference in 1/3 octave bands

**Calculable parameters** ( in accordance with standard LVS EN ISO 717-1 ) :

- $R'_w$  – the actual sound attenuation index (including bypaths)
- $C, C_{tr}$  – conditional household and transportation noise insulation index spectral correction
- $C_{50-3150}, C_{tr 50-3150}$  –  $C, C_{tr}$  with expanded frequency range under 100Hz (up to 50Hz)
- $C_{100-5000}, C_{tr 100-5000}$  –  $C, C_{tr}$  with expanded frequency range over 3150Hz (up to 5000Hz)

Construction standard LBN 016-11 „Building acoustics” limits parameter threshold values for internal enclosing structures (partition walls, coverings, doors) for different building classes (A, B, C and D). It is possible to evaluate construction conformity with specific building class requirements using  $R'_w$  and  $R'_w + C_{50-3150}$  values.

*Example of measurement case*



**Apparent Sound Reduction Index according to ISO 140-4**

**Field measurements of airborne sound insulation between rooms**

Client: SIA "RE & RE"

Date of test: 02/03/2010

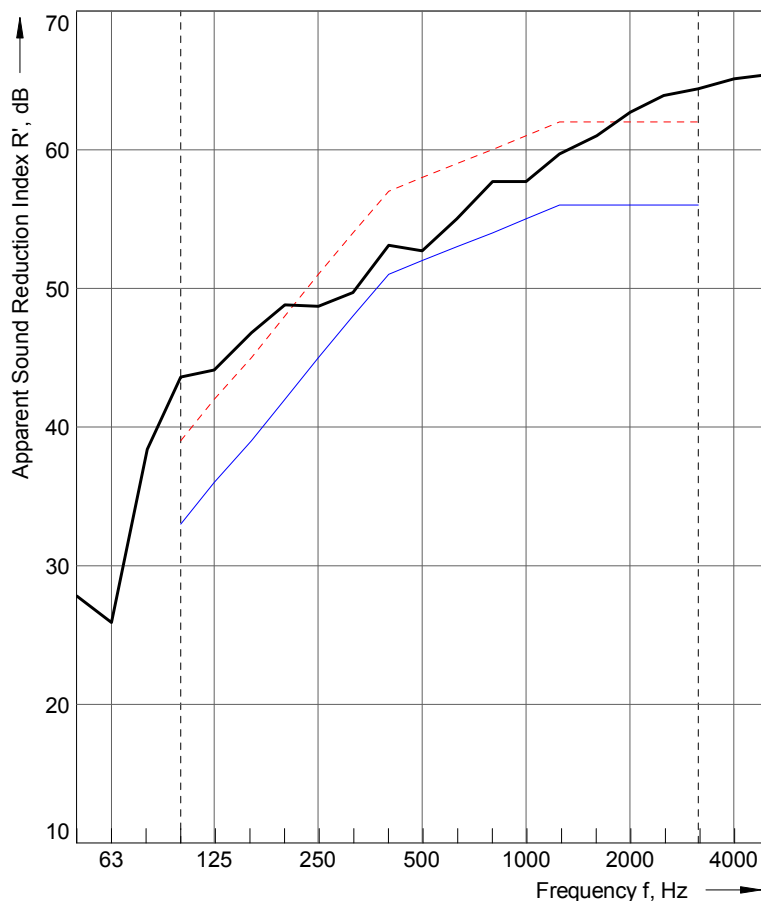
Description and identification of the building construction and test arrangement, direction of measurement:

- Partition wall sample Nr. 445-1 composition (by layers)  
 1) Cement lime plastering (with putty and painted) 15 mm  
 2)Claydite blocks ([density]=920kg/m<sup>3</sup>) 350mm  
 3)Cement lime plastering (with putty and painted) 15 mm

Area S of separating element: 23.30 m<sup>2</sup>  
 Source room volume: 120.10 m<sup>3</sup>  
 Receiving room volume V: 124.40 m<sup>3</sup>

----- Frequency range according to the  
 ———— curve of reference values (ISO 717-1)

Frequency f Hz	R' 1/3 Octave dB
50	27.8
63	25.9
80	38.4
100	43.6
125	44.1
160	46.8
200	48.8
250	48.7
315	49.7
400	53.1
500	52.7
630	55.0
800	57.7
1000	57.7
1250	59.7
1600	61.0
2000	62.7
2500	63.9
3150	64.4
4000	65.1
5000	65.4



Rating according to ISO 717-1

$R'_w (C; C_{tr}) = 58 (-1; -4) \text{ dB}$

$C_{50-3150} = -3 \text{ dB}; C_{50-5000} = -2 \text{ dB}; C_{100-5000} = 0 \text{ dB};$

Evaluation based on field measurement results obtained in one-third-octave bands by an engineering method

$C_{tr,50-3150} = -12 \text{ dB}; C_{tr,50-5000} = -12 \text{ dB}; C_{tr,100-5000} = -4 \text{ dB};$

No. of test report: Nr.490/2010-AL8.4

Name of test institute: Acoustics laboratory T-282

Date: 02/05/2010

Signature: /U.Kipens/