

DreamScreen ProSilence: Field Performance Whitepaper – Lillevannsveien, Oslo

Project: Lillevannsveien ● – Holmenkollen, Oslo

Client: Vilhelm ●
Contractor: Ringerikshus AS represented by Anders Hval
Measurements: DreamScreen ProSilence / Central Approval for Acoustics
Date: 14. October 2025
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1. Executive Summary, Conclusions and Discussion of Results

The project at Lillevannsveien, Oslo, has been profiled by Teknisk Ukeblad as “Norway’s most soundproof home”.

The sound-isolation design was engineered by Civil Engineer **Eivind Lygren** and constructed by **Ringerikshus**. The building utilizes the **DreamScreen ProSilence system** in both walls and ceilings, combined with a first layer of **Fermacell fiber gypsum** and **GreenGlue** damping compound between boards for optimal vibration decay. All doors are high-performance acoustic doors from **Daloc**, and the ventilation system is designed with particular emphasis on acoustic isolation and minimal cross-talk.

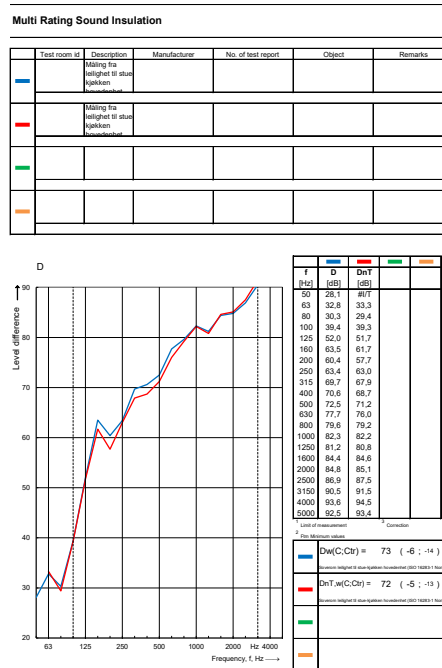
In the main floor, the floor assembly uses resilient underlayment, while the ceiling below is fully decoupled using ProSilence clips. The floor additionally comprises subfloor panels combined with a layer of fiber gypsum with GreenGlue between, increasing stiffness and adding further damping.

The aim was to achieve maximal sound isolation in a residential building without unnecessary increase in overall build height.

Parameter	Measured value	Comment
Theoretical System Performance	$R_w \approx 76$ dB	Derived from laboratory data and modeled assembly
Field-measured airborne insulation	$D_{nT,w} = 72$ dB	Airborne sound insulation between bedroom and living/kitchen
Field-measured impact sound	$L'_{n,w} = 47$ dB (CI = 0)	Floor/ceiling between main unit and rental unit

The measured values are well within **Sound Class A** according to **NS 8175:2023** (criteria ≥ 55 dB for $D_{nT,w}$ / ≤ 48 dB for $L'_{n,w}$), documenting a **performance level typically reserved for professional studio and cinema installations**. For comparison and classification for US criteria (STC / IIC), please refer to section 7 below.

2. Airborne sound – measurement from bedroom (6 m²) to living-room / kitchen (55 m²)



Airborne Noise – NS 8175:2023 (Field-Measured DnT,w)

Class DnT,w (field-measured airborne sound insulation, NS 8175:2023)

- A ≥ 55 dB
- B ≥ 52 dB
- C ≥ 48 dB
- D < 48 dB

Parameter	Value	Comment
DnT,w	72 dB	Normalized field value
Background noise	Outdoor construction work and music	May have reduced measured value by 1–2 dB
Frequency range	50 – 5000 Hz	Uniform attenuation across the spectrum
Source & receiver	Bedroom 6 m ² / Living room 55 m ²	Large volume difference without negative effect

Even under challenging measurement conditions with external noise, large window surfaces, and an acoustically untreated or unfurnished receiving room, a **DnT,w of 72 dB** was achieved — **17 dB above the threshold for Class A**. The slightly lower reduction below 125 Hz is expected, as these are difficult frequencies to attenuate, partly due to **low-frequency leakage through the**

windows. The system's **silica gel-based decoupling** demonstrates high efficiency even with a significant **volume difference between the rooms.**



Receiver room – living room / kitchen

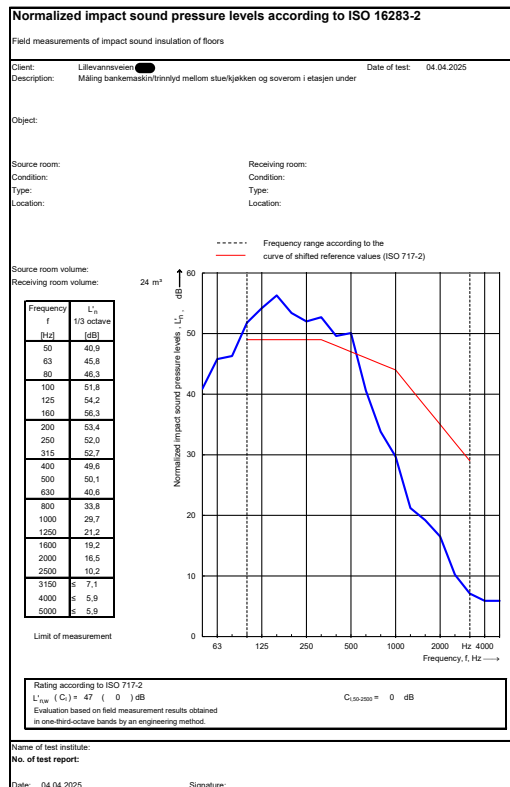


Receiver room – living room / kitchen



Source room – bedroom in adjacent unit

3. Impact sound – measurement from living-room / kitchen (source) and bedroom below (receiver)



Impact Sound – NS 8175:2023 (Field-Measured L'n,w)

Class L'n,w (field-measured impact sound, NS 8175:2023)

- A** ≤ 48 dB
- B** ≤ 53 dB
- C** ≤ 58 dB
- D** > 58 dB

Parameter	Value	Comment
L'n,w (C; 50-2500)	47 (0)	Field-measurement ISO 16283-2
Class A requirement (NS 8175)	≤ 48 dB	Met
ProSilence utilisation	Ceiling only (lower floor)	Floor above = standard impact sound underlayment
Expected with ProSilence U-boats	43–45 dB	Estimated improvement 2–4 dB

Despite using the ProSilence decouplers only in the ceiling below while the top floor uses standard impact sound underlayment, **Class A performance is achieved**. This clearly demonstrates the **strong effectiveness** of this soundproofing solution also for impact and low frequencies. The **low impact noise levels between 50–500 Hz** show a **distinct reduction in vibration transmission**.



Receiver room – bedroom, lower floor



Source room – living room / kitchen

4. Overall Assessment

Discipline	Measured value	Class (NS 8175)	Comment
Airborne sound	$DnT,w = 72 \text{ dB}$	A (> 55)	Exceptional isolation between units
Impact sound	$L'n,w = 47 \text{ dB}$	A (≤ 48)	Top-tier performance

The results show that the **Proviolence system provides at least 17 dB higher performance than the top Class A rating**, where traditional sound-insulation solutions — particularly in residential buildings — often struggle to even reach Class B. The house is **virtually soundproof internally**; windows and ventilation represent the only potential leakage points. However, **sound transmission through the ventilation system is minimal**, as it was also designed and constructed with a strong emphasis on acoustic isolation.

5. Comments and Recommendations

- The installation and workmanship meet a **very high construction standard**.
- Using **ProSilence U-boats** in the floor for full **dual symmetric decoupling** would theoretically provide an additional improvement on impact noise.
- The **living room windows** are the weakest link; consider glazing with **$R_w > 45 \text{ dB}$** .
- **Measurement equipment:** Norsonic instrumentation, **calibrated in accordance with ISO 16283-1 / -2**.

6. Conclusions

Lillevannsveien – Holmenkollen demonstrates that the **DreamScreen ProSilence** system delivers a **field-measured DnT,w of 72 dB** and an **$L'n,w$ of 47 dB**, both well within **Class A** performance. The results confirm the system's **ability to effectively decouple building structures** and establish a **new benchmark for sound insulation in residential construction**.

7. Performance Classification – Europe (NS 8175:2023) vs United States (STC/IIC)

To align European and U.S. acoustic classification systems, the following section explains how the field-measured European parameters (**DnT,w** and **L'n,w**) relate to the laboratory-based American metrics (**STC** and **IIC**).

In **Europe**, airborne sound insulation between rooms is classified by **DnT,w**, measured in accordance with *ISO 16283-1* and normalized to a reference reverberation time of 0.5 s. For **DnT,w**, **higher numbers indicate better isolation**.

Impact sound insulation is expressed as **L'n,w**, measured per *ISO 16283-2*. For **L'n,w**, **lower transmitted sound levels indicate better isolation**.

In the **United States**, the corresponding ratings are **STC** (*Sound Transmission Class*, ASTM E413 / E336*) for airborne sound and **IIC** (*Impact Insulation Class*, ASTM E989 / E492 / E1007*) for impact sound, where for both ratings, **higher numbers indicate better isolation**.

Empirical relationships

While there is no official mathematical conversion between European and American rating systems, empirical correlations derived from hundreds of comparative tests provide reliable first-order estimates:

STC \approx **DnT,w** \pm **0–2 dB** (for typical wall/ceiling assemblies)

IIC \approx **110 – Ln,w** (laboratory correlation)

FIIC \approx **110 – L'n,w** (field correlation, approximate)

These relationships assume similar flanking and boundary conditions and serve as practical cross-market references.

Application to measured results

Airborne sound:

The measured **DnT,w** = 72 dB corresponds approximately to a laboratory **STC/Rw** value in the range of 77–80 dB, representing a level of performance normally achieved only in professional recording-studio or broadcast-wall assemblies.

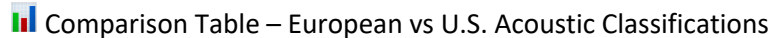
This is well above the highest U.S. residential reference levels, where **STC** \geq 65 is typically required for luxury or high-performance dwellings, and **STC** 50–55 represents standard code compliance under the International Building Code (IBC).

Consequently, the measured performance exceeds even the most stringent American sound-isolation standards by a substantial margin.

Impact sound:

The measured $L'_{n,w} = 47 \text{ dB}$ ($C_i = 0$) converts to a **Field IIC (FIIC) ≈ 63 ($\pm 2\text{--}3 \text{ dB}$)**, comfortably surpassing high-performance residential targets ($IIC \geq 60$).

Together, these results confirm that the **ProSilence system** delivers isolation levels well beyond current building-code requirements in both Europe and North America.



Classification	EU: DnT,w (airborne) / $L'_{n,w}$ (impact)	US: STC (airborne) / IIC (impact)	Typical Use / Interpretation
A / Excellent	$DnT,w \geq 55 \text{ dB}$ $L'_{n,w} \leq 48 \text{ dB}$	$STC \geq 65$ $IIC \geq 60$ (<i>FIIC ≈ 63 for this project</i>)	Studios, luxury residential; virtually no inter-unit transmission
B / Very Good	$DnT,w \geq 52 \text{ dB}$ $L'_{n,w} \leq 53 \text{ dB}$	$STC \geq 60$ $IIC \geq 55$	Premium apartments, condominiums
C / Good	$DnT,w \geq 48 \text{ dB}$ $L'_{n,w} \leq 58 \text{ dB}$	$STC \geq 50$ $IIC \geq 50$	Standard residential construction
D / Basic	$DnT,w < 48 \text{ dB}$ $L'_{n,w} > 58 \text{ dB}$	$STC < 50$ $IIC < 50$	Below recommended; noticeable inter-unit transmission

Note:

European field metrics (DnT,w , $L'_{n,w}$) account for room acoustics and reverberation time ($T = 0.5 \text{ s}$ reference), giving a realistic indication of perceived acoustic comfort.

American **STC/IIC** ratings are laboratory-based and omit frequencies below 125 Hz; consequently, European field results often provide a more accurate representation of real-world performance in furnished rooms.

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