

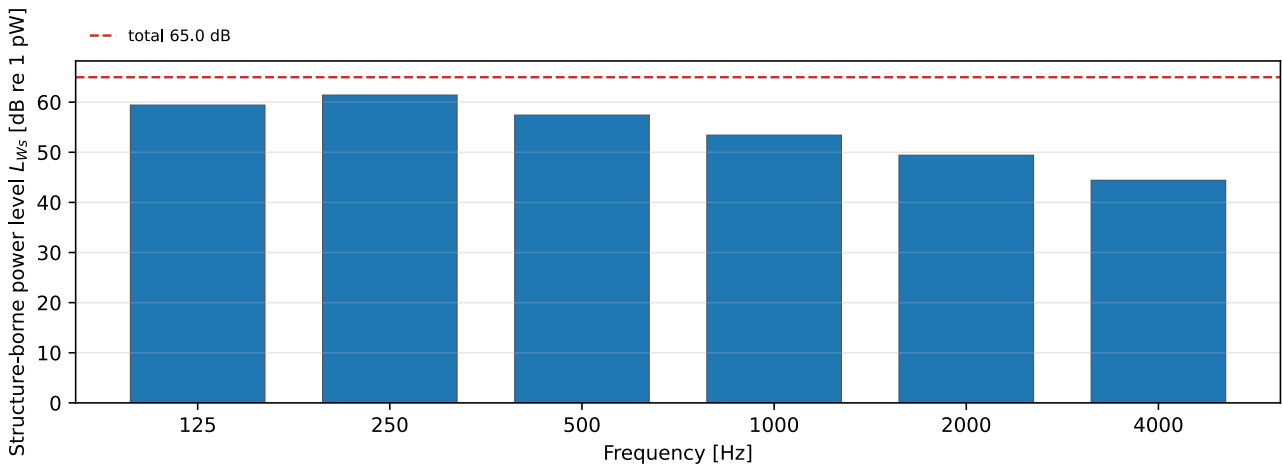
Structure-borne sound power determination

Determination of the structure-borne sound power injected into the reception plate by building service equipment (EN 15657:2018 reception-plate method, Formula 14).

Client:	Example building services contractor	Noise source:	Circulation pump (wall-mounted)
Test environment:	Reception-plate test rig (heavy concrete plate)	Instrumentation:	Piezoelectric accelerometer array (ISO 16063-21), s/n 0042
Temperature [°C]:	21	Relative humidity [%]:	45
Ambient pressure [kPa]:	101.1	Date of test:	2026-07-21

Octave-band structure-borne sound power levels

f [Hz]	L _v [dB]	L _{WS} [dB]
125	88.0	59.4
250	90.0	61.4
500	86.0	57.4
1000	82.0	53.4
2000	78.0	49.4
4000	73.0	44.4



Structure-borne sound power level $L_{WS} = 65.0$ dB re 1 pW

Plate mass per area $m = 25.0 \text{ kg/m}^2$
Reception-plate area $S = 1.20 \text{ m}^2$
Plate-specific level (Formula 14); convert to the source quantity before EN 12354-5.

$L_{WS} = 10 \lg(2\pi f \eta m S / (f_0 m_0 S_0)) + L_v - 60 \text{ dB re 1 pW}$ (EN 15657:2018 Formula 14), with the references $f_0 = 1 \text{ Hz}$, $m_0 = 1 \text{ kg}$, $S_0 = 1 \text{ m}^2$, the plate loss factor $\eta = 2,2/(f T_s)$ (Formula 13) and the spatial mean velocity level $L_v = 10 \lg((1/N) \sum 10^{L_{v_i}/10})$ re $v_0 = 10^{-9} \text{ m/s}$ (Formula 12).

Formula 14 gives the power injected into this particular reception plate, not a plate-independent source descriptor: convert it to the equivalent blocked force level (Formula 15) and the characteristic reception-plate power level $L_{WS,n}$ (Formula 17), then apply the EN 12354-5:2009 Annex I mobility correction, before predicting an installed level.

Laboratory: Phonometry reference example

Report no.: EXAMPLE-15657

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Notes: Structure-borne sound power injected into the reception plate (EN 15657:2018 reception-plate method, Formula 14).

Operator: phonometry Signature: _____

■ The results relate only to the tested specimen.

Generated by phonometry.