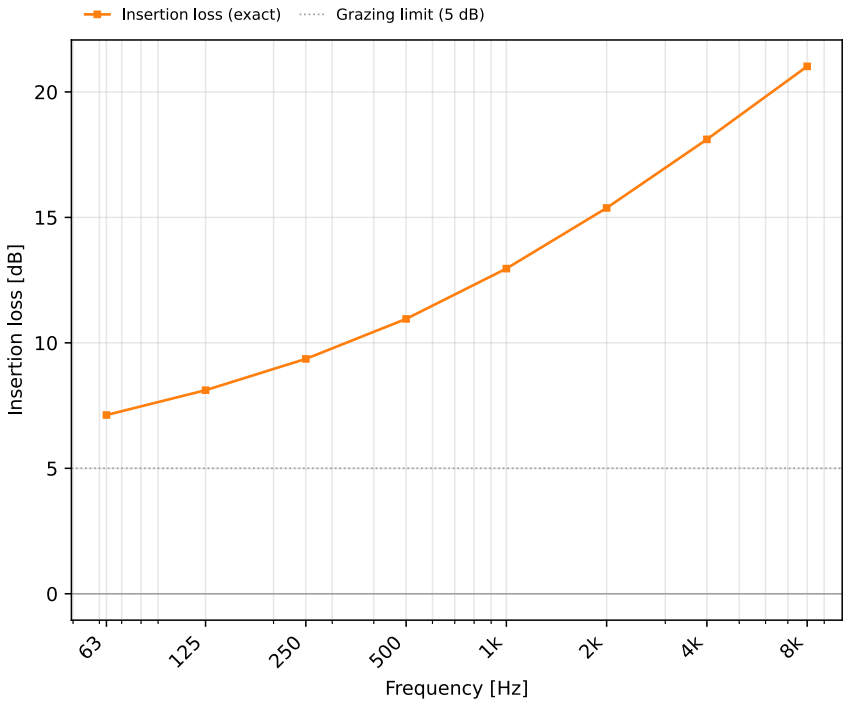
Predicted barrier insertion loss

Barrier insertion loss IL predicted with the wave-theoretic rigid-screen diffraction model (the flat-wedge MacDonald / Hadden-Pierce solution), a wave-acoustics complement to the tabulated ISO 9613-2:1996 screening term. This is a prediction, not a measurement.

Source / situation:	Roadside noise barrier, 4 m high	Client:	Example client
Receiver position:	Dwelling at 100 m	Ground model:	free field (no ground)
Date of prediction:	2026-07-22		

Insertion loss per band

f [Hz]	IL [dB]
63	7.1
125	8.1
250	9.4
500	11.0
1000	13.0
2000	15.4
4000	18.1
8000	21.0



Mean insertion loss (63 Hz to 8 kHz) IL = **12.9 dB**

Result vs requirement: IL = 12.9 dB, required ≥ 8.0 dB → **PASS**

The insertion loss IL = 20 lg|p_{free} / $p_{barrier}$| is the level reduction the screen adds over the direct path; the Fresnel number N is positive for a receiver in the geometric shadow. The boxed value is the arithmetic mean over the octave bands; the A-weighted screening of a given source spectrum follows by summing the band levels.

Laboratory: Phonometry reference example
Report no.: EXAMPLE-9613-BARRIER
Date: 2026-07-22
Notes: Thin-screen diffraction, wave-theoretic model.
Operator: phonometry Signature: _____

■ The results relate only to the tested specimen.

Generated by phonometry.