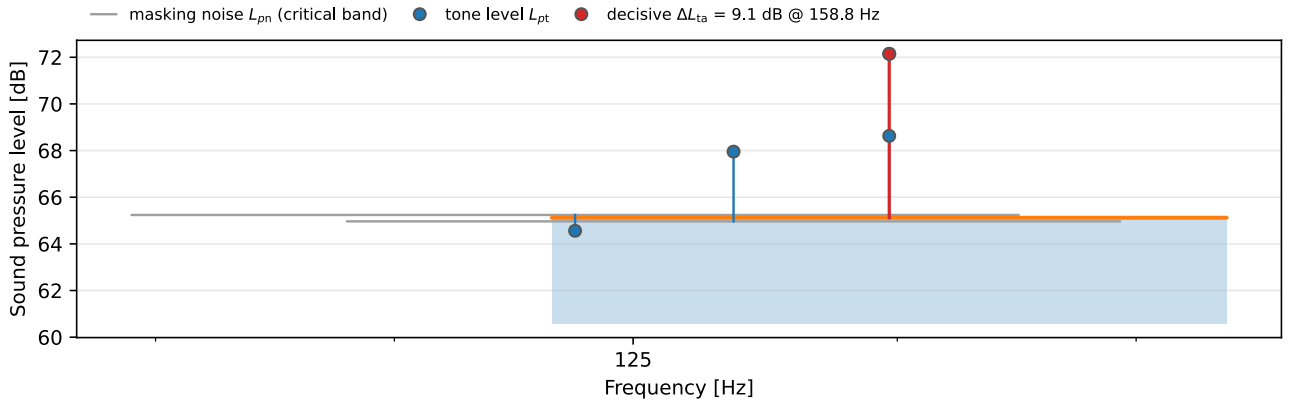
Tonal audibility assessment

ISO 1996-2 tonal audibility by the ISO 1996-2:2017 Annex J engineering method (ISO/PAS 20065:2016); tonal adjustment K per Table J.1.

Source / situation:	Combustion engine, steady operation	Client:	Example client
Measurement position:	Free field, 3 m from source (example)	Instrumentation:	Class 1 analyser, FFT with 2.7 Hz lines (Hann window)
Date of test:	2026-07-21	Analysis line spacing Δf [Hz]:	2.7

Detected tones

Tone f_T [Hz]	Type	L_{pt} [dB]	L_{pn} [dB]	Δf_c [Hz]	ΔL_{ta} [dB]	Present
118.4	Single	64.6	65.2	101	1.3	● Present
137.3	Single	68.0	65.0	101	5.0	● Present
158.8	Single	68.6	65.1	102	5.5	● Present
158.8	FG (3)	72.1	65.1	102	**9.1**	● Present



Tonal audibility ΔL_{ta} = **9.1 dB** tonal adjustment K = **5 dB**

Decisive tone f_T = 158.8 Hz
Analysis line spacing Δf = 2.7 Hz
Extended uncertainty U = 3.3 dB (90 % coverage)

Result vs requirement: ΔL_{ta} = 9.1 dB, required ≤ 6.0 dB → **FAIL**

A prominent tone is present (decisive ΔL_{ta} = 9.1 dB > 0); the tonal adjustment K = 5 dB (ISO 1996-2:2017 Table J.1) applies.

The tonal audibility $\Delta L_{ta} = L_{pt} - L_{pn} - a_v$ is the amount by which the tone level rises above the masking threshold of the surrounding noise (ISO/PAS 20065:2016, Formula (14)); the decisive value is the largest over the detected tones (Clause 5.3.8).

L_{pn} is the critical-band masking-noise level (Formula (12)), Δf_c the critical bandwidth about the tone (Formula (2)); an FG entry combines tones sharing a critical band (Formula (17)).

Table J.1 assigns K from the mean audibility ΔL, the energy mean of the decisive audibilities of the J assessed spectra (ISO/PAS 20065:2016, Clause 5.3.9, Formula (20)). This fiche assesses a single spectrum, so the K shown follows from its decisive audibility; where several staggered spectra are assessed, rate their mean audibility instead.

Laboratory: Phonometry reference example
Report no.: EXAMPLE-1996-TONE
Date: 2026-07-21
Operator: phonometry Signature: _____

■ The results relate only to the tested specimen.

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