CANTERBURY
ACOUSTIC TESTING SERVICES

Measurement of speech level reduction of furniture ensembles and enclosures according to ISO 23351-1:2020

Prepared for:

XFRAME
Level 1/43 Cuba Street, Te Aro, Wellington 6011

Sample trade name:

XFRAME Classic Booth

Prepared by:

Sebastian Yeoman
Mike Latimer

Date:

Test date:	04/06/2026
Issue date:	17/06/2026

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Measurement Results:

Report number: 2026-342

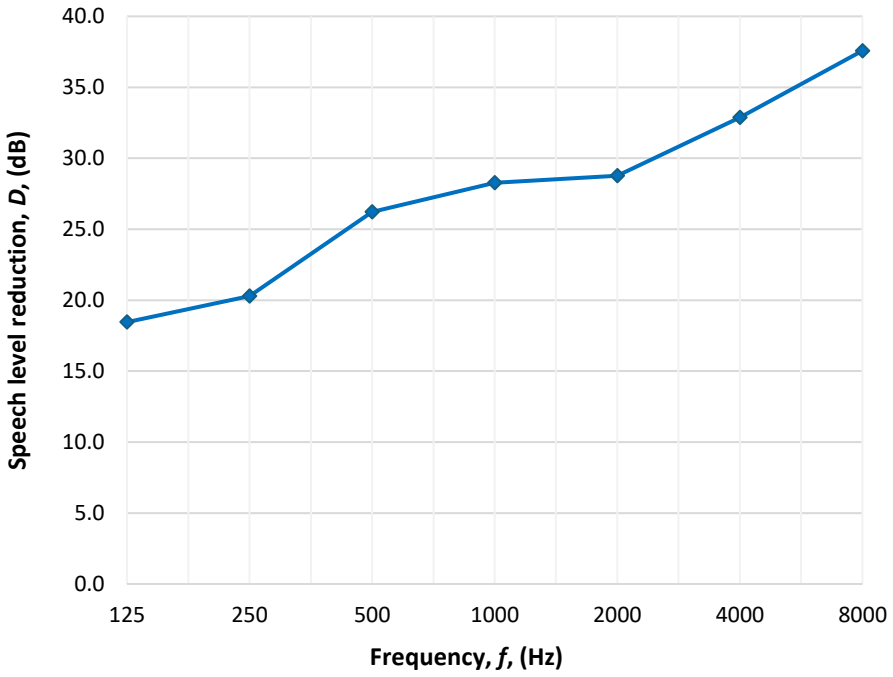
Client: XFRAME
Sample trade name: XFRAME Classic Booth
Manufacturer XFRAME
Test date: 04/06/2026

Sample Description:
The specimen is a modular acoustic booth with a glass door, designed to provide a controlled internal acoustic environment and enhanced speech privacy within open-plan spaces. **Refer to Appendix: 3 and 4 for full description and visual representation.**

Frequency (Hz)	Level reduction, D (dB)
125	18.5
250	20.3
500	26.2
1000	28.3
2000	28.8
4000	32.9
8000	37.6

$D_{S,A}$	25.9
Class	B

Air Temperature	22.1 °C
Relative Humidity (R/H)	46.8 %
Barometric Pressure	100.2 kPa



Key:
$D_{S,A}$ – Speech level reduction, in dB
D –Level reduction in 1/1 octave bands, in dB
Frequency – centre frequency of 1/1 octave bands

Comments:

- Measurements were made in accordance with ISO 23351-1:2020
- No variations were made from ISO 23351-1:2020
- The results are only valid for the tested specimen configuration. Changes in size, geometry or materials can lead to significant changed in reported result.

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Appendix 1: Methodology

Report number: 2026-342

Facility:	• Testing was conducted at Canterbury Acoustic Testing Services Ltd.
	• Facility address: 180 Hazeldean Road, Christchurch, New Zealand.
	• Test room: reverberation room (*constructed in accordance with AS ISO 354 – 2006*).
	• Room dimensions: (facility is shown in Appendix 2: Figure 1).
	  • Length: 7.7 m
	  • Width: 6.1 m
	  • Height: 4.7 m
	  • Room volume: ~220 m^3
	  • Internal surface area: ~223.66 m^2
	• Measurements were made in conformity with ISO 23351-1:2020.
	• The speech level reduction was determined using the calculation procedure of ISO 23351-1:2020, based on reverberation-room sound power level differences measured without and with the test specimen present.
	• The test method is specific to the tested specimen configuration and does not represent a general airborne sound insulation rating.

Diffuser treatment:	• The chamber has eight stationary hanging diffusers, made from 12 mm painted plywood and MDF, in the following sizes, 3 at 1.2 x 1.4 m, 3 at 1.2 x 1 m, 2 at 1.2 x 1.2 m. • The diffusers are suspended in a random orientation to create a diffuse sound field in accordance with *AS ISO 354 - 2006*. • Two adjacent corners of the chamber have melamine covered MDF volume diffusers, in the form of an acute Isosceles triangle, 0.75 m at the base and 1.1 m high.
Sample mounting:	• The specimen was tested in two positions in the reverberation room, refer to Appendix: 4 Sample mounting. • The specimen was moved approximately 2 m between positions. • The specimen was unoccupied during the test. • No dummy torso was installed. • Operable components were in normal operating condition during the test.

Procedure:	• The speech level reduction was determined using the calculation procedure of ISO 23351-1:2020.
	• Measurements were carried out in two steps:
	  • Sound source measured without the test specimen present
	  • Sound source measured inside the test specimen in the representative occupant position.
	• The level reduction, D, was determined in 1/1 octave bands from 125 Hz to 8000 Hz,
	• The speech level reduction, $D_{S,A}$, was calculated from the octave band level reduction values using the standardised speech spectrum defined in ISO 23351-1:2020.

Generation of sound field:	• The test signal used was random pink noise, generated by a SINUS multi-channel analyser system, using PC based acquisition software. • The signal was fed through an amplifier to the sound source. • Sound source was an omnidirectional speaker, positioned at representative mouth position. • Occupant condition represented: standing. • Sound source height above pod floor: ~ 1.6 m. • The same source position and orientation were used for the reference and with-specimen measurements.
Receipt of signal:	• The sound field was measured using six microphone positions connected to the SINUS multi-channel analyser. • Measurements were taken with the sound source operating. • Background measurements were taken with the sound source off. • The measured sound pressure levels were used to determines reverberation-room sound power levels for the reference and with-specimen conditions. • One third octave band sound power levels were energetically combined to obtain 1//1 octave band sound power levels. • The final reported values were determined for the 1/1 octave bands from 125 Hz to 8000 Hz.

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Instrumentation:

Description	Manufacture	Model	Calibration	Serial number
Analyser	Sinus	Apollo Box 2 and 4 channel	26/03/2025	7591, 7569
Calibrator	Larson Davis	CAL200	26/03/2025	9063
Noise source	Norsonic Bruel& Kjaer	NOR276 OmniPower 4296		2766177 2071500
Amplifier	BETA 3	UA330		
Microphones	Microtech Gefell	MK255	26/03/2025	10007, 10014
	G.R.A.S	46AE	26/03/2025	196169, 184222, 183512, 183079

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Appendix 2: Facilities

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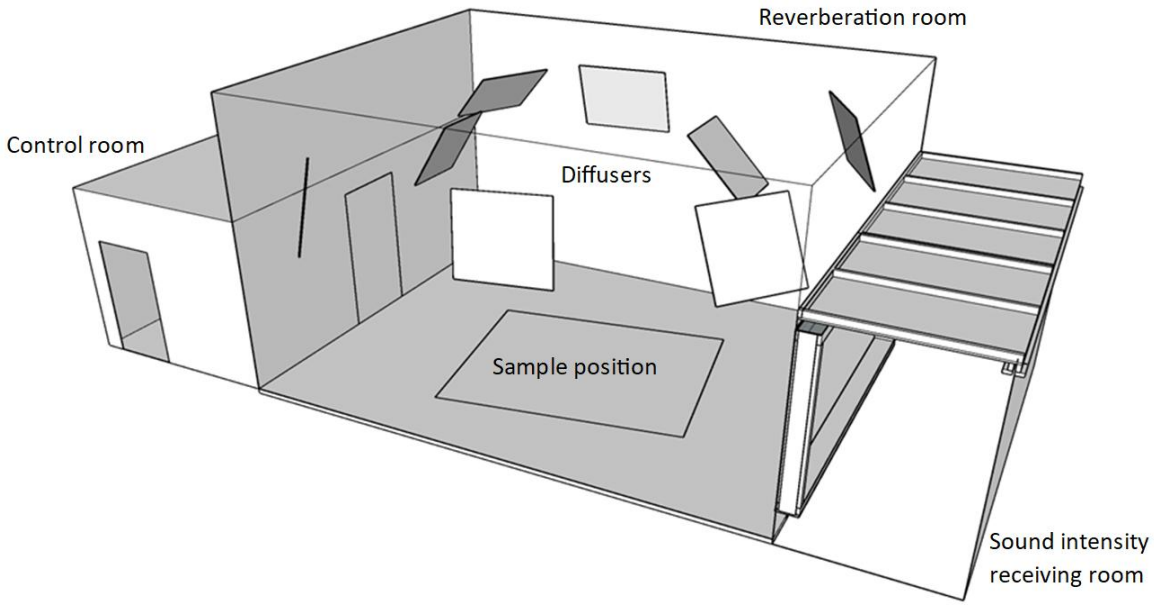

Figure 1 - Reverberation room general layout

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Appendix 3: Sample general layout and construction details

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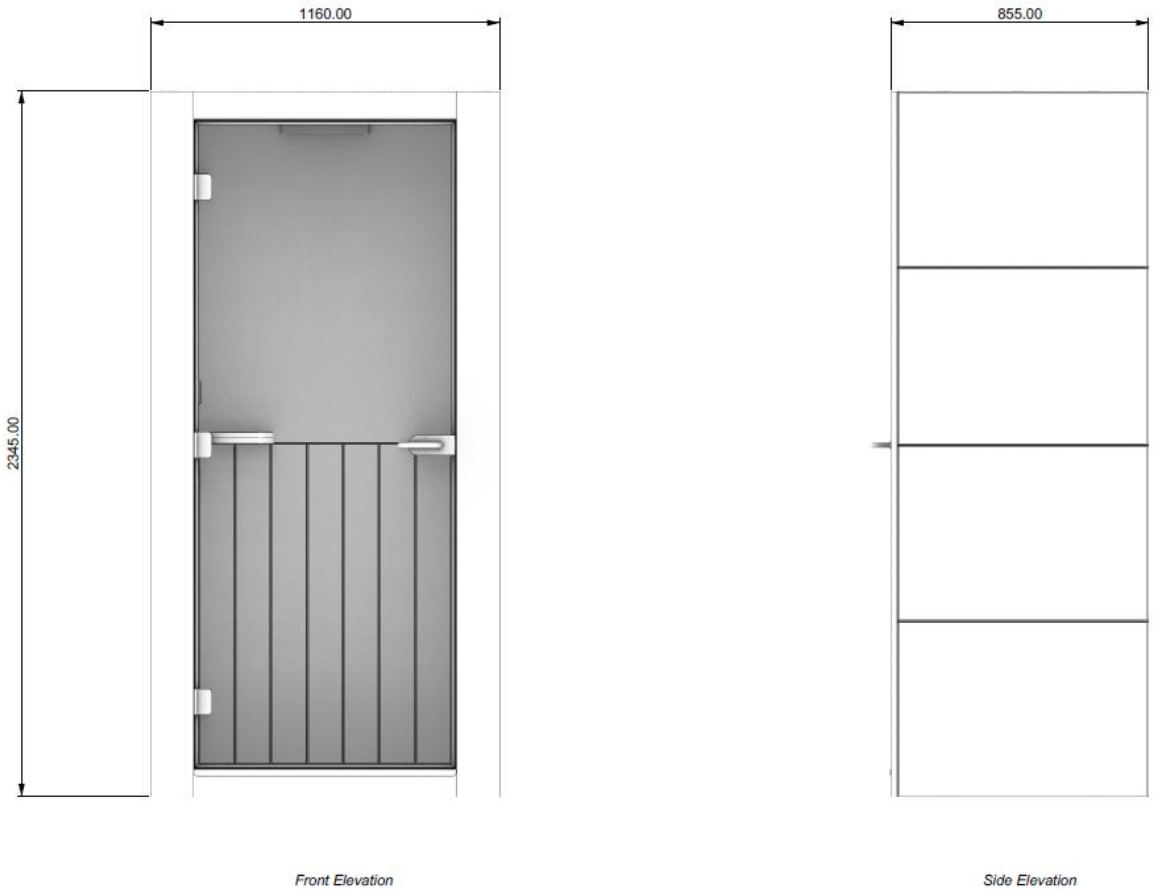

Figure 2 – XF Classic Booth overall dimensions

Booth Construction

Wall Construction:

12mm PET, on 18mm MDF, on 98mm Pine Plywood XFRAME system, with 50mm polyester cavity insulation blanket, with 18mm MDF internal substrate and 12mm PET internal wall lining finish.

Roof Construction:

18mm Plywood, on 98mm Pine Plywood XFRAME system, with 50mm polyester cavity insulation blanket, with 18mm Pine Plywood internal substrate and 12mm PET internal wall lining finish.

Floor Construction:

18mm Pine Plywood, on 98mm Pine Plywood XFRAME system, with 50mm polyester insulation blanket, with 18mm Pine Plywood internal substrate with a floor covering of nylon carpet tiles.

Door Construction:

Abodo Vulcan door jamb, with a 10 mm Safety Glass door leaf. The door leaf is sealed against a perimeter D-Shape Seal.

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Appendix 4: Sample mounting

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Figure 3 – XF Classic Booth in reverberation room (first position)

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Appendix 4: Sample mounting

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Figure 4 – XF Classic Booth in reverberation room (second position)