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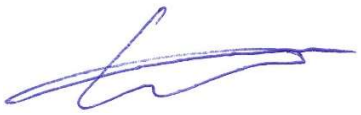
Orangebox

Air 25 Reverberation/Attenuation & STI

Report Title:	
DOCUMENT NO: OB0319-03 **PREPARED FOR:** Orangebox **CONTACT: Ron Corbett** **Tel:** **Email:**	**REPORT CODE:** RT/ATT/STI **PREPARED BY:** Acoustics by Design 140 Warren Road Worthing West Sussex BN14 9RB **CONTACT:** Colin Rawlings **Tel:** **Email:**
PREPARED BY: Author: Colin Rawlings MIoA	Date: 12th April 2019
RELEASED BY:  Colin Rawlings **MIOA**	Date:

REVISION HISTORY

Revision No.	Date Issued	Reason/Comments
0		Initial Release

Executive Summary

In order to establish the attenuation (DnTw), reverberation(RT) and speech transmission index(STI) figures for the Air25 Pod a typical pod was located in a warehouse clear of all reflective surfaces with exception of the floor. The pod had the new aluminium opening blade roof. Carpet tiles were loosely laid inside the pod.

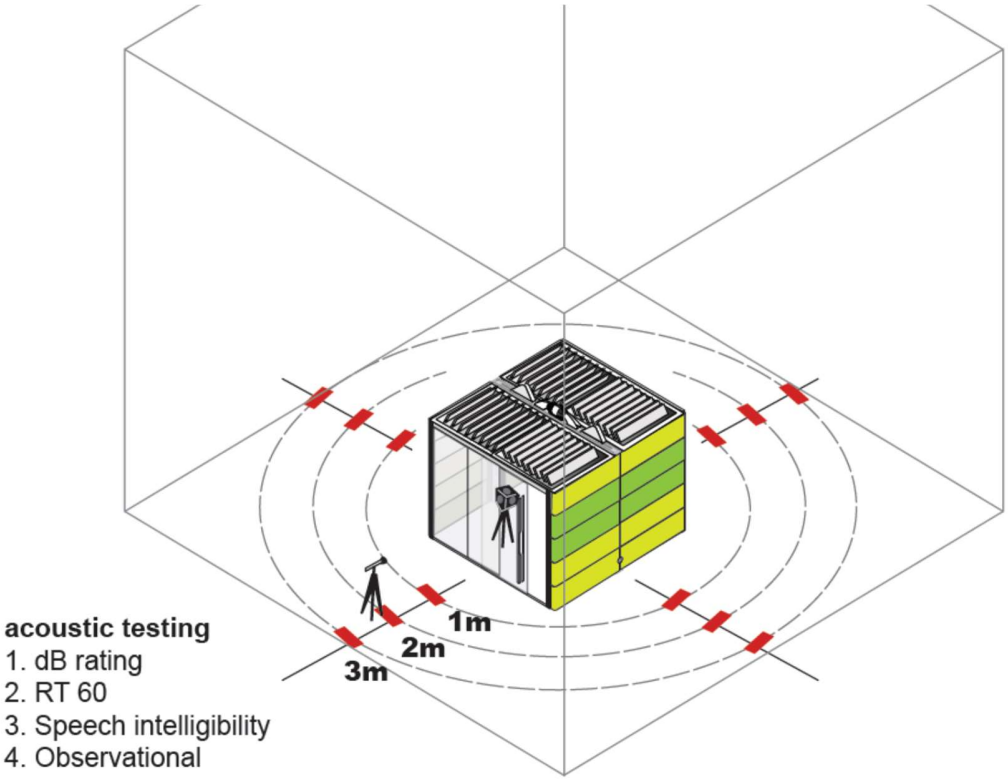


Figure 1 representation of test area

Figure 2 images of test area

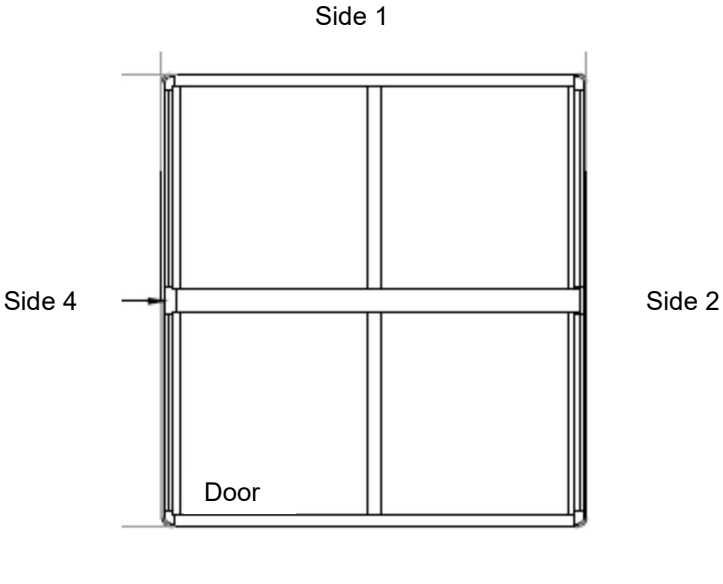


Figure 3 Orientation

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1 Introduction

Across the industry there is no standard method for testing pods. A number of manufacturers employ different techniques to improve the attenuation results.

The testing here is based on the room to room attenuation measurement standards BS EN ISO 16283-1:2014 & BS EN ISO 3382-3:2014. The constraint is the interior size, interior measurements are made with the microphone in the near field. To reduce the effect the microphone was pointed directly away from the source and any hard reflective surfaces.

Attenuation measurements were taken at 1m, 2m & 3m distances, the 2m figures have been used to provide the single figure rating for the pod but all measurements are listed with a single figure for 1m & 3m.

Reverberation measurements were made inside the Pod according to the BS EN ISO 3382 – 2.

STI measurements were taken as a matter of interest in a typical scenario of a single person talking in the Pod.

2 Attenuation

Attenuation is a measurement of the efficiency of a structure to block or reduce sound travel. Typically

The dodecahedron was placed on a tripod at 1.2m above the floor off the centre lines of the pod. Measurements were made inside the pod and at 12 locations outside the pod.

The DnTw is;

@1 34dB

@2m **36dB**

@3m 37dB

The results below are indicative DnTw figures for each side at each distance

Side	**1m (dB)**	**2m (dB)**	**3m (dB)**
Glass Side	37	38	38
Side 2	34	36	37
Door Side	32	34	35
Side 4	34	36	38

3 Reverberation

The reverberation time (RT) was measured using the dodecahedron, 3 measurements were made with 3 locations of source and microphone

The RT60 @ 500Hz is 0.27s

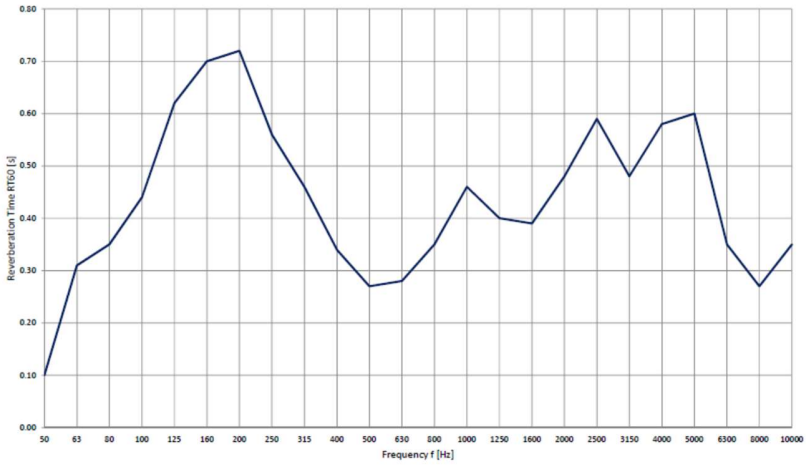
However, there is a significant low frequency RT of 0.72s @ 200Hz

Reverberation Time in accordance with ISO 3382-2
Measurement of reverberation time in ordinary rooms

Client: Orangebox
Object: Air 25 Aluminium Blade
Description:
Date of test: 29th March 2019

ACOUSTICS by design

Frequency f [Hz]	RT60 Third-Octave Band [s]
50	0.10
63	0.31
80	0.35
100	0.44
125	0.62
160	0.70
200	0.72
250	0.56
315	0.46
400	0.34
500	0.27
630	0.28
800	0.35
1000	0.46
1250	0.40
1600	0.39
2000	0.48
2500	0.59
3150	0.48
4000	0.58
5000	0.60
6300	0.35
8000	0.27
10000	0.35



No. of test report: 1
Name: Colin Rawlings
Date: 29/03/2019
Signature:

4 Speech Transmission Index

Whilst a speech transmission index (STI) measurement is not a recognised test for speech intelligibility of a Pod an STI measurement was carried out with a calibrated STI speaker sited in the Pod at a typical position for a seated occupant. The STI measurements were taken at four points outside the Pod at 2m distance from the main surfaces and microphone at 1.2m above the floor.

The results are below.

Position	STI
Glass Side	0.17
Side 2	0.22
Door Side	0.20
Side 4	0.20

5 Conclusion

The DnTw has shown an increase from previous tests, this is likely in part to the new aluminium opening roof blades that have an improved attenuation and In part due to the lack of reflecting ceiling above the pod.

The reverberation time within the Pod is still acceptable although there is a discernible echo flutter between the two glass sides.

The STI results show that on three sides of the Pod speech privacy at 2m distance is achievable when the source is no more than 60dB(A) even with a background sound level not exceeding 27.9dB(A).

6 Equipment

Sound Level Meter	NTI XL2 Class1 SN A2A-07731-E0
Microphone	NTI MA220 Class 1 SN 2795
Calibrator	NTI CAL200 SN 10035
Calibration Result	94.3dB
STI Sound Source	NTI Talkbox SN TNE005-D1
Omni Directional Sound Source	NTI Dodecahedron SN 1044
Amplifier	NTI SN 1065