

BUSYPOD

Design of Silence

ACOUSTIC MEASUREMENTS REPORT



September, 2020

MEA
Akustik Danışmanlık

Client : BUSYPOD Brand

Product : BUSYPOD Large Meeting Pod

Scope : Acoustic Measurements Report

Report No : MEA-BSP-AMR-200922003EN

Date of Issue : 22.09.2020

Prepared By : Arda YAVUZ
MSc.Arch / Acoustic Consultant

Onur ÜNLÜ
MSc.Arch

TABLE OF CONTENTS

1. GENERAL INFORMATION.....	4
1.1. Summary.....	4
1.2. Measurement Equipment	4
1.3. Room Conditions.....	4
2. ACOUSTIC MEASUREMENTS	5
2.1. Airborne Sound Transmission Loss Measurements	5
2.2. Reverberation Time Measurements	7
3. TECHNICAL EVALUATION	8
APPENDIX A: CALIBRATION CERTIFICATE OF SOUND LEVEL METER	9

1. GENERAL INFORMATION

1.1. Summary

This report is prepared to present the results of acoustic measurements of the BUSYPOD Large cabinet. The measurements were carried out on September 5, 2020.

1.2. Measurement Equipment

- RION Sound Level Meter Model NL-52, IEC 61672-1 :2013 Class 1, ANSI S1.4-2014 Class 1, Serial No: 00654066
- CA111 Sound Calibrator, Comply with IEC 60942:2003 Class 1, ANSI S1.40-1984(R1997), GB/T 15173-1994 Class 1, Serial No: 490102
- NH-25 type preamplifier, Serial No: 54111
- UC-59 type microphone, Serial No: 08324
- NTEK OMNI 5" dodecahedron sound source + power amplifier

No windshield was used during the measurements.

RION NL-52 equipment was calibrated before and after the measurements and no variation was observed.

Sound level meter's calibration certificate is presented in **APENDIX A**.

1.3. Room Conditions

Unoccupied, ventilation fans switched off. The doors were closed. Ventilation fans switched on only in background noise measurements.

2. ACOUSTIC MEASUREMENTS

In BUSYPOD Large, 4 sound transmission loss (STL) measurements, 1 reverberation time (RT) measurement and 2 background noise measurements were performed for two separate situations where 2 or 4 fans were operating.

2.1. Airborne Sound Transmission Loss Measurements

Airborne sound transmission loss (STL) measurements were carried out in accordance with ISO 16283-1. A single figure rating of airborne sound insulation performance (R'_w) was calculated from the measurements.

In each test, sound pressure level measurements were made in randomly chosen positions in both the source and the receiver rooms for each speaker position. The sound level meter was always positioned at least 0.5 m away from any room boundary or diffuser and at least 1 m from the source. Sound pressure levels were measured in one third octave bands from 100Hz - 3150Hz. Each measurement took approximately 30 seconds. To be able to minimize sound transmission from flanking paths, doors were always kept closed.

Regarding BUSYPOD Large, airborne sound transmission loss measurement results are given in Table 1. The detailed measurement reports are also included in the following pages.

Apparent sound reduction index according to ISO 16283-1 Field measurements of airborne sound insulation between rooms

Client: BUSYPOD Company

Date of test:

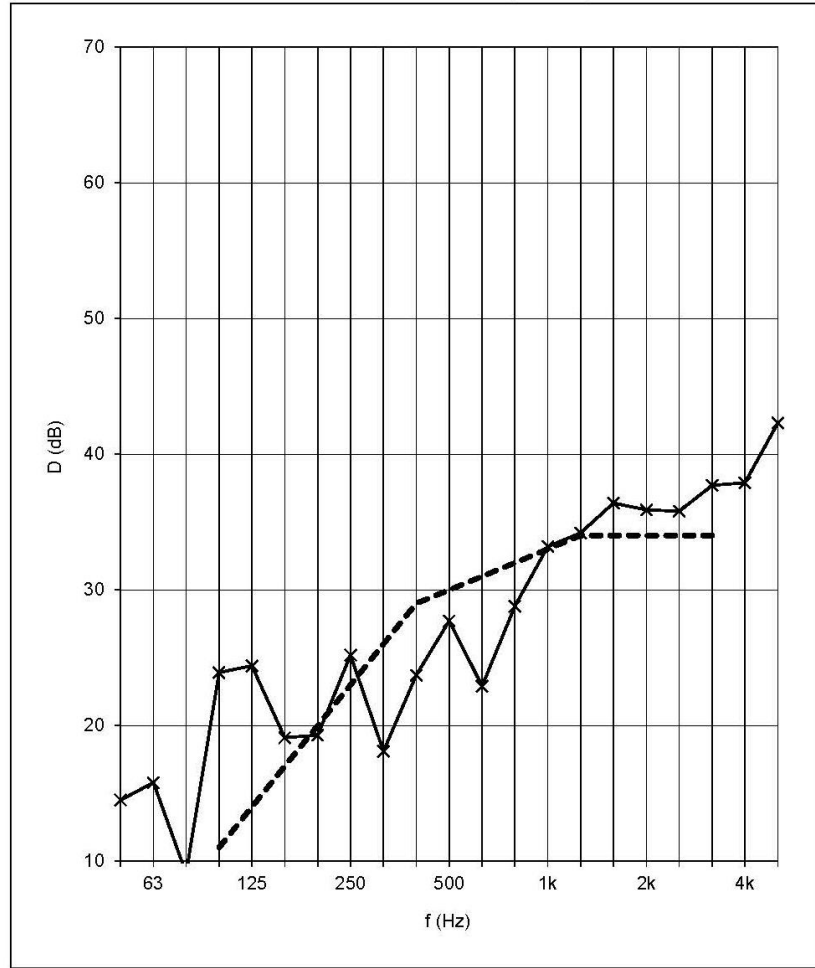
Project:

Description and identification of the building construction and test arrangement, direction of measurement:
BUSYPOD LARGE - STL-4

Common partition area (m²): 2,8
Source room volume (m³): 150,0
Receiving room volume (m³): 4,5

----- Shifted reference curve.
---X---X--- Measurement results (D values).

Frequency f Hz	R' (1/3 octave) dB
50	14,5
63	15,8
80	9,1
100	23,9
125	24,4
160	19,1
200	19,3
250	25,2
315	18,1
400	23,7
500	27,7
630	22,9
800	28,8
1000	33,2
1250	34,2
1600	36,4
2000	35,9
2500	35,8
3150	37,7
4000	37,9
5000	42,3



Rating according to ISO 717-1

R'_w (C; C_{tr}) = 30 (-1; -4) dB

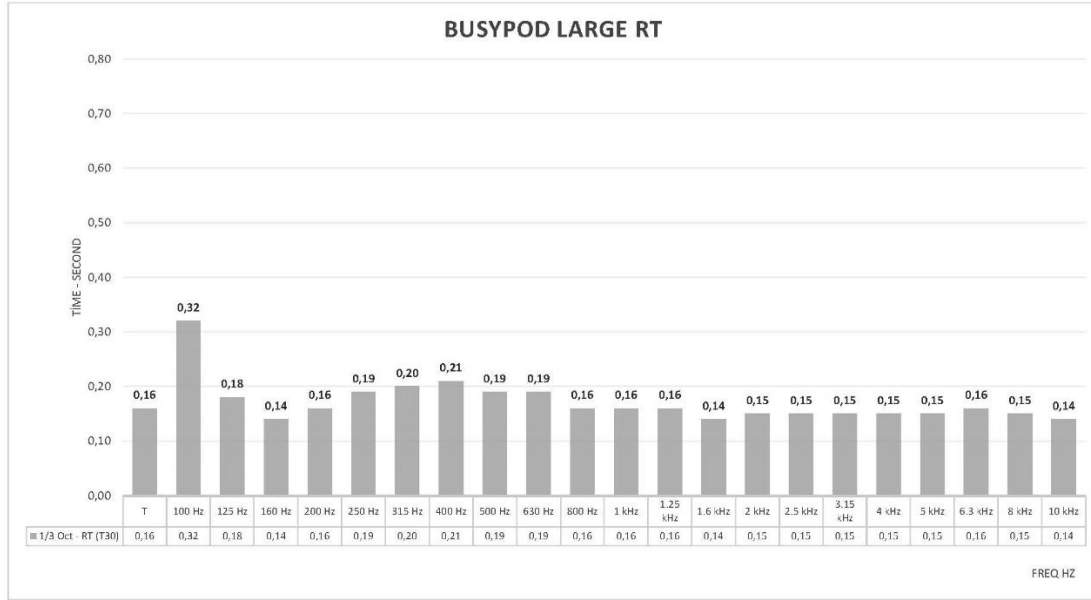
No background noise influence on R'_w

No background noise influence on C and C_{tr}

Evaluation based on field measurement using
results obtained by an engineering method

2.2. Reverberation Time Measurements

Regarding BUSYPOD Large, reverberation time (RT) measurement result is below.
Average reverberation time was measured as 0.16 seconds.



STORE NAME	CODE	DATE
509	1	5.09.2020
Hz	T20	T30
Average	0,16	0,16
100 Hz	0,25	0,32
125 Hz	0,19	0,18
160 Hz	0,14	0,14
200 Hz	0,17	0,16
250 Hz	0,21	0,19
315 Hz	0,19	0,20
400 Hz	0,20	0,21
500 Hz	0,18	0,19
630 Hz	0,18	0,19
800 Hz	0,17	0,16
1 kHz	0,17	0,16
1.25 kHz	0,16	0,16
1.6 kHz	0,15	0,14
2 kHz	0,15	0,15
2.5 kHz	0,15	0,15
3.15 kHz	0,16	0,15
4 kHz	0,15	0,15
5 kHz	0,15	0,15
6.3 kHz	0,15	0,16
8 kHz	0,16	0,15
10 kHz	0,15	0,14

3. TECHNICAL EVALUATION

Sound frequency values to be heard by the human ear:

- a) Male speech sound frequency value: 100-8500 Hz,
- b) Female speech sound frequency value: 150-10000 Hz.

Men can get more bass, women can get higher-pitched sounds. The area where the human ear is most sensitive. (Also called Trigger Zone) are frequency values between 1000 and 5000 Hz. Human beings can perceive the sounds formed in this frequency region without seeing the person speaking in front of him. In this frequency range, BUSYPOD Large Meeting Pod provide sound insulation up to 36,6 dB.

-----END OF REPORT-----

APPENDIX A: CALIBRATION CERTIFICATE OF SOUND LEVEL METER



Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)



NVLAP Lab Code: 200625-0

Calibration Certificate No.32586

Instrument: Sound Level Meter Model: NL52 Manufacturer: Rion Serial number: 00410018 Tested with: Microphone UC-59 s/n 04609 Preamplifier NH25 s/n 10011 Type (class): 1 Customer: Scantek, Inc. Tel/Fax: 410-290-7726 / 410-290-9167	Date Calibrated: 10/28/2014 Cal Due: 10/28/2015 <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Status:</td> <td style="width: 50%;">Received</td> <td style="width: 50%;">Sent</td> </tr> <tr> <td></td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>In tolerance:</td> <td></td> <td></td> </tr> <tr> <td>Out of tolerance:</td> <td></td> <td></td> </tr> </table> See comments: Contains non-accredited tests: ☐ Yes ☒ No Calibration service: ☐ Basic ☒ Standard Address: 6430 Dobbin Road, Suite C, Columbia, MD 21045	Status:	Received	Sent		X	X	In tolerance:			Out of tolerance:		
Status:	Received	Sent											
	X	X											
In tolerance:													
Out of tolerance:													

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/22/2012
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

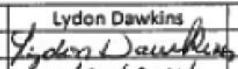
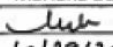
Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 7, 2014	Scantek, Inc. / NVLAP	Oct 7, 2015
DS-360-SRS	Function Generator	33584	Sep 30, 2013	ACR Env. / A2LA	Sep 30, 2015
34401A-Agilent Technologies	Digital Voltmeter	US36120781	Oct 1, 2014	ACR Env. / A2LA	Oct 1, 2015
HM30-Thommen	Meteo Station	1040170/39633	Oct 3, 2014	ACR Env. / A2LA	Oct 3, 2015
PC Program 1019 Norsonic	Calibration software	v.5.2	Validated Mar 2011	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 8, 2013	Scantek, Inc. / NVLAP	Nov 8, 2014

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.9 °C	99.910 kPa	41.3 %RH

Calibrated by:	Lydon Dawkins	Authorized signatory:	Mariana Buzduga
Signature		Signature	
Date	10/28/2014	Date	10/29/2014

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.
Document stored Z:\Calibration Lab\SLM 2014\RION\NL52_00410018_M2.doc Page 1 of 2