

Hearing Protective Device Test Report Number Q7793A Revision 0

Nicholas Zhang

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Zh [REDACTED] vn

[REDACTED], P.R. China

Date of Report: 11/15/22

Date of testing: 10/10/22-11/15/22

Date of Sample Receipt: 10/1/22



Technician: Eileen Kline


Attenuation measurements have been performed according to the European Standards EN352-1:2020 on the [REDACTED] -1 muff-type hearing protector (test ID Q7793A). The specified threshold measurement data were obtained using sixteen normally-hearing listeners. These listeners were selected as specified in EN352-1:2020.

The measurements were made in a room designed for this purpose. All acoustic characteristics of the room meet the requirements outlined in EN352-1:2020. The ambient noise levels in this room are below the limits specified in EN352-1:2020, and open ear thresholds are used on a continuing basis to monitor the background noise levels. An automatic recording attenuator was used to record both open and occluded ear thresholds.

Each of the sixteen subjects was tested at each of eight test frequencies. The attached Tables show mean and standard deviation attenuation values in decibels (dB) for each test signal. The results presented in this report pertain to the samples tested only.

Michael & Associates is accredited by the National Institute of Standards and Technology (NIST) National Laboratory Accreditation Program (NVLAP) for tests performed according to AS/NZ S1270:2020, ANSI S3.19-1974, ANSI S12.6-2016, ANSI S12.42-2010 and EN352 parts 1-10. These accreditation criteria encompass the requirements of international standard ISO 17025. This report may only be reproduced or transmitted electronically in its entirety. This report shall not be used to claim product certification, approval or endorsement by NVLAP or by any agency of the U.S. Government. Accreditation documentation can be viewed at www.michaelassociates.com/data/documents/NVLAP-2022.pdf.

Use these laboratory-derived attenuation data for comparison purposes only. The amount of protection afforded in field use is often significantly lower depending on how the protectors are fitted and worn.


Kevin Michael, Ph.D., President

11/15/22
Date

Product information

Manufacturer [REDACTED]
 Model SA-8-1
 Test ID number Q7793A
 Date of receipt 10/1/2022
 Dates of testing 10/10/2022-11/15/2022
 Type of product Earmuff
 Wearing position Over the head

Photograph



- 4.1 Sizing
The earmuff passes small, medium and large size ranges. Labeling according to 6.2g is not required.
- 4.2 Materials Pass
- 4.2.2 Construction
 - Cushion replacement? Yes
 - Earmuff liner replacement? Yes
 - Cleaning Pass

Unpack, Weigh, Condition all samples (grams)

sample 1	189.0
sample 2	189.0
sample 3	188.0
sample 4	189.0
sample 5	189.0
sample 6	188.0
sample 7	189.0
sample 8	189.0
sample 9	189.0
sample 10	189.0
Mean	188.8

4.3.2 Adjustability: The "X" indicates where the ear-muff fulfills the requirement.

	H 115 W 125 S	H 115 W 145 S/M	H 130 W 125 S/M	H 130 W 145 S/M/L	H 130 W 155 M/L	H 140 W 145 M/L	H 140 W 155 L
sample 1	X	X	X	X	X	X	X
sample 2	X	X	X	X	X	X	X
sample 3	X	X	X	X	X	X	X
sample 4	X	X	X	X	X	X	X
sample 5	X	X	X	X	X	X	X
sample 6	X	X	X	X	X	X	X

4.3.3 Cup Rotation: The "X" indicates where the ear-muff fulfills the requirement.

	H 122 W 135 S	H 130 W 145 M	H 135 W 150 L
sample 1	X	X	X
sample 2	X	X	X
sample 3	X	X	X
sample 4	X	X	X
sample 5	X	X	X
sample 6	X	X	X

4.3.4 Headband Force (Newton)

	Small	Pass/Fail	Med	Pass/Fail	Large	Pass/Fail
sample 1	11.2		11.1		11.1	
sample 2	10.9		11.1		11.1	
sample 3	10.5		10.7		10.7	
sample 4	10.1		10.2		10.7	
sample 5	10.1		10.2		10.2	
sample 6	10.6		10.7		10.7	
Mean	10.6	P	10.7	P	10.8	P
Limit: 14.0 N						

4.3.5 Cushion Pressure (Pascal)

	Small	Pass/Fail	Med	Pass/Fail	Large	Pass/Fail
sample 1	3511.2		3329.6		3132.7	
sample 2	3332.9		3022.0		3464.5	
sample 3	3064.7		3421.8		3455.1	
sample 4	3303.7		3248.0		3094.5	
sample 5	2996.4		3167.6		3268.8	
sample 6	3298.2		3206.1		3336.3	
Mean	3251.2	P	3232.5	P	3292.0	P
Limit: 4500 Pascal						

4.3.6 Resistance to damage when dropped:

	Cracked	Detached
sample 1	no	no
sample 2	no	no
sample 3	no	no
sample 4	no	no
sample 5	no	no
sample 6	no	no

4.3.7 Resistance to damage when dropped at low temperature
Optional: not performed.

4.3.8 Headband Flexing

	Changes	Damage		
sample 1	no	no		
sample 2	no	no		
sample 3	no	no		
sample 4	no	no		
sample 5	no	no		
sample 6	no	no		
Change in Headband Force	(Newton)			
	Initial	Post	%	Pass/Fail
		Conditioning	Change	
sample 1	11.1	10.2	8.0	P
sample 2	11.1	10.7	4.0	P
sample 3	10.7	10.7	0.0	P
sample 4	10.7	10.2	4.2	P
sample 5	10.2	10.2	0.0	P
sample 6	10.7	10.7	0.0	P
		Mean	2.7	P

Limit: Max = 14N, Max change = 15%

4.3.9 Insertion Loss

Pass. See Appendix B for data.

Limit: SD < 7.0 dB in any 1/3 OB or < 4 dB in four or more adjacent 1/3 OB

4.3.10 Resistance to leakage:

This test was not performed since the cushions are not liquid filled.

4.3.11 Ignitability:

Pass: Samples 4 & 5 were tested for ignitability. None of their parts ignites when touched to the metal rod. The earmuffs and their parts only smoked slightly.

4.3.12 Minimum Attenuation: See Appendix A for data.

Pass Pass See Appendix A for data.

	H	M	L
Limit	12	11	9

Mean-2* SD>0 for all test frequencies

Sections 5 and 6, Marking and Info Provided by Manufacturer

Not assessed.

Products were provided without packaging.

It is the manufacturer's responsibility to adhere to the requirements of these sections.

Estimates of uncertainty

Weight	+-	.3 g	
Headband force	+-	.1 lb	.45 N
Cushion Pressure	+-	250 P	
Insertion Loss	+-	2 dB	
REAT attenuation	+-	3 dB	

Appendix A. Attenuation Data
 Individual and Summary Attenuation Data for
 Hearing Protective Devices

Test Method: EN352-1:2020

Position: Over-the-head

Manufacturer: Jiangyin Sian Plastic Protech

Date: 11/15/22

Model: SA-8-1

Test ID # Q7793A

SUBJECT	Attenuation in dB							
	63	125	250	500	1000	2000	4000	8000
1	22.7	18.7	22.4	27.9	40.8	34.2	38.9	38.2
2	19.7	19.1	18.0	34.8	32.8	33.6	35.3	39.9
3	19.4	18.3	21.0	24.4	31.9	34.5	41.7	32.0
4	22.7	20.0	19.1	23.6	38.4	39.6	33.0	41.4
5	14.6	12.1	14.1	25.7	34.5	37.7	40.4	33.3
6	15.2	17.6	17.9	27.3	36.5	34.6	43.6	38.9
7	22.7	13.9	16.4	20.2	33.0	35.5	34.4	34.6
8	12.7	12.0	16.9	25.3	33.1	34.4	38.0	35.7
9	17.1	19.5	18.4	29.6	33.1	33.2	39.4	38.0
10	11.5	9.4	13.4	20.5	32.4	34.0	38.2	32.9
11	19.6	21.0	17.0	24.4	29.1	31.3	33.7	25.2
12	12.3	14.4	16.1	19.7	35.7	41.2	35.9	35.8
13	14.5	12.8	17.9	21.1	33.6	36.6	38.4	25.4
14	15.3	11.9	18.4	25.3	36.9	34.1	38.0	39.3
15	17.8	15.4	17.2	24.8	33.7	36.8	38.4	33.5
16	17.3	19.1	21.4	32.0	35.5	37.1	44.7	37.0
MEANS	17.2	16.0	17.9	25.4	34.4	35.5	38.3	35.1
STD. DEV.	3.7	3.6	2.4	4.2	2.8	2.5	3.3	4.7
MEAN - SD	13.5	12.3	15.4	21.2	31.6	33.0	34.9	30.4

$$SNR_m = 30.1$$

$$SNR_s = 2.3$$

$$SNR (dB) = 28$$

$$H_{84} (dB) = 33 \text{ dB} \quad H_m = 35.3 \quad H_s = 2.0$$

$$M_{84} (dB) = 25 \text{ dB} \quad M_m = 27.7 \quad M_s = 2.3$$

$$L_{84} (dB) = 18 \text{ dB} \quad L_m = 20.7 \quad L_s = 2.6$$

Table. 1/3 octave band insertion loss analysis of test ID Q7793A

Sample	Frequency (Hertz) (dB)															
	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000
1L	10.9	16.1	23.0	29.8	33.5	41.9	48.2	42.4	40.3	45.1	43.8	34.5	37.5	39.5	38.9	38.1
1R	12.2	15.9	23.7	29.6	35.0	43.9	46.1	37.3	37.4	45.5	44.1	38.2	38.5	42.0	38.5	39.3
2L	11.9	16.9	23.5	29.1	34.5	41.7	49.3	46.0	38.1	44.5	43.1	36.0	37.7	41.0	39.4	36.7
2R	11.7	17.4	23.7	28.5	34.9	43.3	47.6	43.8	37.6	44.9	44.0	37.8	39.3	41.2	37.8	38.6
3L	12.5	15.6	22.0	28.0	33.7	40.8	47.1	44.0	36.8	42.5	42.0	35.6	36.3	37.1	37.3	36.3
3R	11.5	17.1	23.9	28.6	34.9	42.9	46.6	39.7	37.6	45.6	44.6	38.0	39.1	41.1	37.7	41.4
4L	12.4	15.5	22.1	26.7	33.2	41.0	46.7	43.5	38.4	42.0	41.3	35.4	37.8	40.0	40.7	36.0
4R	11.3	16.9	23.0	28.4	33.7	41.2	46.9	44.5	37.9	45.5	44.3	37.0	36.6	39.4	38.0	40.5
5L	13.0	16.8	23.4	27.0	34.4	42.3	48.4	44.3	39.7	41.4	42.6	36.2	39.1	40.3	40.3	35.4
5R	10.3	16.8	22.1	27.0	32.3	40.2	45.7	46.5	38.5	45.0	42.2	34.7	34.0	39.8	38.2	37.3
6L	13.2	15.6	23.2	26.4	33.2	40.7	47.6	44.5	38.2	44.9	44.4	35.6	36.5	41.3	39.5	38.2
6R	11.4	17.0	23.0	28.8	34.1	43.1	47.3	45.6	37.7	44.7	44.0	36.5	35.3	41.3	38.4	39.8
7L	12.4	16.9	23.4	28.7	34.4	41.9	48.7	44.6	38.2	45.9	44.5	36.9	38.7	41.0	39.0	37.0
7R	12.2	17.1	23.5	28.3	35.1	43.7	47.7	46.3	37.9	44.0	42.9	36.2	36.4	39.6	39.8	40.1
8L	12.2	16.5	22.8	29.1	34.4	41.9	48.8	42.1	38.4	45.6	44.9	35.1	38.1	39.5	37.5	37.5
8R	11.8	17.2	23.1	28.7	34.1	43.0	46.7	39.4	37.2	44.2	45.4	37.5	38.7	39.9	38.2	39.4
9L	13.1	15.8	22.3	26.0	33.1	41.2	47.9	44.5	39.0	42.5	41.6	37.0	36.9	38.0	39.9	36.3
9R	12.2	16.1	23.2	28.6	34.2	43.1	47.6	44.9	37.7	44.3	45.4	37.4	36.3	41.1	38.4	37.0
10L	12.3	16.3	23.7	29.0	33.9	41.2	44.6	37.2	40.1	45.8	44.6	36.3	39.2	39.8	38.8	39.1
10R	10.9	17.3	23.5	28.0	34.2	41.5	46.1	41.9	37.9	44.4	44.2	37.5	37.6	39.4	36.5	36.2
Mean	12.0	16.5	23.1	28.2	34.0	42.0	47.2	43.2	38.2	44.4	43.7	36.4	37.5	40.1	38.6	38.0
SD	0.8	0.6	0.6	1.1	0.7	1.1	1.2	2.8	0.9	1.3	1.2	1.1	1.4	1.2	1.1	1.7