

Hearing Protective Device Test Report Number Q6302A Revision 0

[Redacted]
[Redacted]
[Redacted]
[Redacted]



Date of Rev 1: 9/20/22
Date of Report: 7/3/20
Date of testing: 6/1/20-6/29/20
Date of Sample Receipt: 5/26/20

Technician: Eileen Kline


Attenuation measurements have been performed according to the European Standards EN352-1:2020 on the [Redacted] children's muff-type hearing protector (test ID Q6302A). 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.

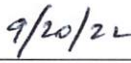
Each of the sixteen subjects was tested at each of seven test frequencies. The attached Tables show mean and standard deviation attenuation values in decibels (dB) for each test signal. The results presented in this report pertain to the samples tested only.

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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



Date
Rev 1: update to 2020 std.

Product information

Manufacturer [Redacted],Ltd
Model SA-8-12
Test ID number Q6302A
Date of receipt 5/26/2020
Dates of testing 5/26/2020-7/2/2020
Type of product Earmuff
Wearing position Elastic Headband

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	111.5
sample 2	112.0
sample 3	112.0
sample 4	112.0
sample 5	112.0
sample 6	112.0
sample 7	112.0
sample 8	112.0
sample 9	112.0
sample 10	111.5
Mean	111.9

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	9.6		11.1		11.8	
sample 2	9.4		11.0		11.6	
sample 3	9.6		11.1		11.7	
sample 4	9.8		11.6		12.0	
sample 5	9.8		11.5		11.9	
sample 6	9.5		10.8		11.4	
Mean	9.6	P	11.2	P	11.7	P
Limit: 14.0 N						

4.3.5 Cushion Pressure (Pascal)

	Small	Pass/Fail	Med	Pass/Fail	Large	Pass/Fail
sample 1	4195.9		4466.3		4604.8	
sample 2	4064.9		4326.3		4381.0	
sample 3	3954.1		4327.2		4300.7	
sample 4	4012.6		4381.0		4498.4	
sample 5	3883.5		4299.0		4448.4	
sample 6	4101.8		4063.8		4414.0	
Mean	4035.5	P	4310.6	P	4441.2	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)		%	Pass/Fail
	Initial	Post Conditioning	Change	
sample 1	11.8	11.0	6.8	P
sample 2	11.6	10.8	6.9	P
sample 3	11.7	10.7	8.4	P
sample 4	12.0	11.2	7.0	P
sample 5	11.9	11.3	5.2	P
sample 6	11.4	10.5	7.8	P
		Mean	7.0	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

	H	M	L
Limit	12	11	9

Pass See Appendix A for data.

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: Elastic band

Manufacturer: XXXXXXXXXXXXXXXXXXXX

Date: 7/3/20

Model: SA-8-12

Test ID # Q6302A

SUBJECT	Attenuation in dB						
	125	250	500	1000	2000	4000	8000
1	12.9	18.1	27.9	34.8	32.2	45.3	42.2
2	8.7	11.1	18.4	24.5	35.3	41.0	30.8
3	19.7	18.2	21.2	24.7	36.5	48.1	45.3
4	16.3	15.6	24.5	32.5	31.9	42.6	29.8
5	11.2	13.2	20.0	34.9	32.3	33.3	33.2
6	18.7	16.0	23.9	31.7	30.1	34.0	41.2
7	11.6	12.4	21.4	28.3	34.2	44.0	43.1
8	19.2	17.3	29.4	36.7	36.2	46.1	42.3
9	15.5	13.6	20.5	27.5	31.5	38.4	32.4
10	9.9	13.1	17.7	25.8	33.4	46.3	34.5
11	18.8	13.5	23.7	33.7	29.5	41.0	41.2
12	12.8	11.9	19.4	31.0	34.1	45.3	35.8
13	19.1	22.6	29.9	35.4	30.0	42.5	40.2
14	16.1	12.8	18.0	29.8	29.9	41.5	40.0
15	12.4	12.2	24.3	29.9	30.9	38.1	33.6
16	12.3	15.6	22.5	32.9	33.1	36.3	36.9
MEANS	14.7	14.8	22.7	30.9	32.6	41.5	37.7
STD. DEV.	3.7	3.0	3.9	3.9	2.2	4.5	4.9
MEAN - SD	11.0	11.8	18.8	27.0	30.3	37.0	32.8

$$SNR_m = 27.6$$

$$SNR_s = 2.5$$

$$SNR (dB) = 25$$

$$H_{84} (dB) = 32 \text{ dB} \quad H_m = 33.4 \quad H_s = 1.8$$

$$M_{84} (dB) = 22 \text{ dB} \quad M_m = 24.9 \quad M_s = 2.8$$

$$L_{84} (dB) = 15 \text{ dB} \quad L_m = 18.2 \quad L_s = 2.9$$

Sample	1/3 OB Center Frequency in Hz															
	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000
1 L	5.8	9.8	14.5	17.5	21.8	23.5	26.2	28.5	29.4	31.8	31.6	31.3	33.7	36.9	40.1	39.3
1 R	6.9	12.7	17.2	20.7	24.2	26.2	27.9	30.9	30.2	33.6	31.5	31.4	36.7	38.4	41.4	39.2
2 L	10.9	17.1	24.1	27.0	32.0	30.0	33.7	31.6	31.1	34.2	34.8	36.4	36.8	36.6	44.7	42.9
2 R	10.9	16.5	23.9	29.1	33.0	31.7	35.4	34.8	32.0	36.2	34.7	36.1	39.9	40.0	44.5	41.7
3 L	7.3	11.3	17.8	21.2	24.9	27.8	27.3	30.3	29.8	31.0	30.9	31.5	34.0	34.0	39.5	40.4
3 R	6.1	11.5	15.3	19.2	22.3	24.6	27.1	30.3	29.8	31.6	30.3	31.4	35.2	37.1	41.0	41.1
4 L	9.7	15.6	22.6	24.2	25.2	30.8	31.2	30.0	28.9	34.3	34.0	33.1	37.0	40.7	43.0	40.2
4 R	8.3	15.5	21.6	26.2	27.4	28.9	30.5	30.9	30.7	32.3	34.1	34.1	38.0	39.6	45.1	43.0
5 L	5.7	10.2	15.1	17.6	21.8	24.2	27.0	29.1	28.5	30.3	30.9	31.1	33.6	34.0	41.1	41.6
5 R	6.3	10.8	15.2	18.8	22.2	25.0	26.7	28.5	29.0	32.1	31.2	30.1	35.1	38.0	41.3	40.3
6 L	11.1	17.1	24.0	26.6	28.0	31.2	32.7	33.8	32.1	33.3	35.5	36.9	39.2	40.2	44.9	40.5
6 R	10.1	16.4	22.9	27.4	31.4	31.6	31.3	32.4	29.3	33.6	35.9	35.6	39.6	41.9	41.2	40.6
7 L	10.9	17.0	23.7	27.0	28.6	31.6	33.9	34.4	30.9	33.4	36.7	36.4	37.6	38.0	44.1	41.2
7 R	8.8	15.0	19.8	23.6	26.7	28.4	30.0	30.0	32.6	34.3	33.9	32.2	35.8	37.2	44.9	44.0
8 L	6.9	11.6	16.7	20.2	23.6	25.5	28.0	30.7	28.6	29.7	32.2	32.8	35.7	35.8	43.2	41.2
8 R	5.6	10.9	14.7	18.7	22.1	23.4	26.7	29.2	29.8	30.0	30.4	30.2	34.2	37.1	42.1	42.1
9 L	8.6	13.3	18.4	20.7	24.8	28.0	27.8	30.3	30.4	32.4	32.7	34.8	36.6	39.4	41.8	39.0
9 R	6.1	11.4	15.8	19.2	22.4	24.3	25.8	28.5	30.1	31.2	31.4	31.7	35.6	39.7	43.1	42.3
10 L	9.7	13.7	20.9	24.2	28.0	28.1	29.1	29.8	30.4	34.2	33.9	34.8	37.9	41.8	40.8	38.1
10 R	7.6	13.7	18.6	22.5	26.2	26.8	29.4	30.3	30.8	33.6	33.1	32.2	37.1	39.5	41.7	40.4
Mean	8.2	13.5	19.1	22.5	25.8	27.6	29.4	30.7	30.2	32.6	33.0	33.2	36.4	38.3	42.5	41.0
SD	2.0	2.5	3.5	3.7	3.5	2.9	2.8	1.9	1.2	1.7	1.9	2.2	1.9	2.2	1.8	1.5