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Hearing Protective Device Test Report Number Q3259A Revision 0

Date of Report: 4/30/14
Date of Sample Receipt: 4/17/14
Date of Sample Test: 4/21/14-4/29/14

Elvex Corp.
Attn: Fred Ravetto
13 Trowbridge Dr.
Bethel, CT 06801

NVLAP
Lab Code 100427-0

Attenuation measurements have been performed according to the European Standards EN352-2 on the Elvex Quattro EP-411 insert-type hearing protector (test ID Q3259A). The specified threshold measurement data were obtained using sixteen normally-hearing listeners. These listeners were selected as specified in EN352-2.

The measurements were made in a room designed for this purpose. All acoustic characteristics of the room meet the requirements outlined in EN352-2. The ambient noise levels in this room are below the limits specified in EN352-2, 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 grand mean attenuation values in decibels (dB) for each test signal. Standard deviations (S.D.) for the attenuation determinations for each test signal are also given. 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 S1270:2002, ANSI S3.19-1974, ANSI S12.6-1008, ANSI S12.42-1010 and EN352 parts 1-8. 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 endorsement by NVLAP or by any agency of the U.S. Government.

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

4/30/14
Date

Product Information

Manufacturer:	Elvex
Model:	Quattro EP-411
Test ID Number:	Q3259A
Date of receipt	4/17/2014
Dates of testing	04/21/14-04/29/2014
Type of product	Reusable earplug
Wearing position	Insert

4.1 Sizing and Adjustability

	Smallest diameter (mm)	Largest diameter (mm)
sample 1	7	13
sample 2	7	13
sample 3	7	13
sample 4	7	13
sample 5	7	13
sample 6	7	13
sample 7	7	13
sample 8	7	13
sample 9	7	13
sample 10	7	13

4.2.1	Materials	Pass
4.2.2	Construction	Pass
4.3.1	Conditioning	Completed

4.3.2 Resistance to damage when dropped
The earplugs did not crack, nor did any parts of the earplugs detach when dropped.

4.3.3 Resistance to damage when dropped at low temperature
This test was not performed as it is optional.

4.3.4 Cleaning and disinfection Pass

4.3.5 Ignitiability
Upon application of the heated rod, no part of the earplugs ignited nor continued to glow after removal of the heated rod.

Sections 5 and 6, Marking and Info Provided by Manufacturer

Products were provided individually packaged.
It is the manufacturer's responsibility to adhere to the requirements of these sections.

4.3.6 Minimum Attenuation

Pass See Appendix A for data.

	125	250	500	1000	2000	40000	8000
Limit	5	8	10	12	12	12	12
Mean	34.0	30.8	35.1	36.9	36.7	36.5	42.5
SD	4.8	3.6	4.6	4.9	4.5	4.1	4.3
Mean - SD	29.2	27.3	30.5	32.0	32.3	32.4	38.2

Test Item

Appendix A. Attenuation Data

Individual and Summary Attenuation Data for Hearing Protective Devices

Test Method: EN 352-2:2002 Position: Insert
Manufacturer: Elvex Date: 4/30/14
Model: Quattro EP-411 Test ID # Q3259A

Attenuation in dB
FREQUENCY IN HERTZ

SUBJECT	125	250	500	1000	2000	4000	8000
1	34.1	27.5	31.7	37.9	44.3	38.3	41.4
2	34.5	29.8	35.1	42.1	45.4	39.1	39.8
3	25.6	25.7	27.5	30.6	32.6	31.9	44.1
4	38.9	32.6	38.1	41.2	39.6	42.0	51.6
5	33.9	33.2	40.4	40.9	34.8	46.3	50.8
6	35.7	30.1	29.3	39.1	33.5	35.1	43.7
7	31.6	30.3	36.0	33.4	30.6	31.1	43.0
8	40.2	38.5	40.6	39.8	37.2	33.0	42.0
9	25.0	26.4	30.6	31.1	33.0	37.4	36.5
10	34.6	27.9	40.7	31.0	35.4	37.7	42.2
11	37.8	31.8	33.9	44.6	39.2	37.3	38.0
12	27.1	26.2	28.9	30.1	32.2	33.8	44.4
13	35.3	32.2	38.8	37.6	41.1	38.6	38.2
14	36.2	33.0	33.6	38.2	35.4	37.6	42.2
15	32.4	32.8	35.4	31.0	33.1	31.2	37.2
16	41.1	35.5	41.6	41.3	40.3	33.6	45.8
MEANS	34.0	30.8	35.1	36.9	36.7	36.5	42.5
STD. DEV.	4.8	3.6	4.6	4.9	4.5	4.1	4.3
MEAN - SD	29.2	27.3	30.5	32.0	32.3	32.4	38.2

SNR = 34 dB
H = 33 dB
M = 32 dB
L = 30 dB