Aearo Technologies
7911 Zionsville Road
Indianapolis, IN 46268
317-692-6666

Test by: Michael and Associates
Test ID: Q184A
Test Date: March 2, 2001
Test Method: ANSI S3.19-1974
NRR: 25

At the time this product was tested by Michael and Associates it was referred to as "Aearo 2014-I-insert type hearing protector" and this is the product designation shown on Report Q184A,

The identical product is being sold in various markets under the following brand names and Test ID Q184A is valid for each:

E•A•R® UltraFit®
E•A•R® UltraFit® Metal Detectable

Elliott Berger
Senior Scientist, Auditory Research

Michael & Associates, Inc.

Penn State Research Park
200 Innovation Blvd., Suite 229
State College, PA 16801

814-234-7042 phone
814-235-1381 fax
Email: michaelassoc@home.com
URL: www.michaelassociates.com

March 2, 2001

Hearing Protective Device Test Report Number Q184A Revision 1

AEARO Corp.
Attn: Dick Knauer
7911 Zionsville Road
Indianapolis, IN 46268-1657

Date of Sample Receipt: 2/7/01
Date of Sample Test: 2/9/01-2/28/01

Attenuation measurements have been performed according to the American National Standards Institute (ANSI) Specifications, ANSI S3.19-1974, using the experimenter-fit protocol, on the Aearo 2014-I insert-type hearing protector worn (test ID Q184A). The specified threshold measurement data were obtained using ten normal-hearing listeners, five male and five female, with ages ranging from 19 to 45 years. These listeners were selected from a standby group of about 35 volunteers, mostly graduate students, who regularly serve as listeners for measurements of this kind.

The measurements were made in a room designed for this purpose. All acoustic characteristics of the room meet the requirements outlined in ANSI S3.19-1974. The ambient noise levels in this room are below the limits specified in ANSI S3.19-1974, 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 ten subjects was tested three times at each of nine test frequencies. The attached Tables show grand mean attenuation values in decibels (dB) for each test signal along with group attenuation values. Standard deviations (S.D.) for the 30 different 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 ANSI S3.19-1974 and ANSI S12.6-1984. These accreditation criteria encompass the requirements of international standards ISO 9002:1994 (ANSI / ASQC Q92-1987), IS0 / IEC Guide 25:1990, and ISO / IEC Guide 58:1993 as suppliers of test results. This report may only be reproduced or transmitted electronically in it's entirety. This report shall not be used to claim product endorsement by NVLAP or by any agency of the U.S. Government. All measurement equipment are calibrated with instrumentation traceable to the NIST.

*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

3/2/01
Date

# INDIVIDUAL AND SUMMARY ATTENUATION DATA FOR HEARING PROTECTIVE DEVICES

TEST METHOD: ANSI S3.19-1974
MANUFACTURER: AEARO
MODEL: 2014-I

POSITION: INSERT
DATE: 3/01/01
TEST ID #: Q184A

FREQUENCY IN HERTZ

| SUBJECT | 125 | 250 | 500 | 1000 | 2000 | 3150 | 4000 | 6300 | 8000 |
|---|---|---|---|---|---|---|---|---|---|
| | 28 | 28 | 35 | 31 | 32 | 37 | 40 | 46 | 40 |
| 1 | 26 | 23 | 31 | 29 | 29 | 38 | 40 | 40 | 41 |
| | 23 | 25 | 33 | 30 | 31 | 39 | 45 | 45 | 45 |
| | 32 | 35 | 35 | 35 | 38 | 45 | 49 | 47 | 48 |
| 2 | 35 | 35 | 38 | 41 | 47 | 47 | 52 | 44 | 50 |
| | 24 | 30 | 36 | 37 | 41 | 45 | 44 | 40 | 45 |
| | 26 | 27 | 27 | 29 | 32 | 37 | 35 | 42 | 51 |
| 3 | 22 | 25 | 26 | 30 | 35 | 32 | 32 | 38 | 42 |
| | 26 | 29 | 28 | 29 | 32 | 35 | 31 | 43 | 50 |
| | 29 | 27 | 32 | 26 | 31 | 37 | 38 | 41 | 44 |
| 4 | 26 | 24 | 27 | 26 | 30 | 33 | 37 | 37 | 40 |
| | 22 | 23 | 25 | 29 | 33 | 39 | 37 | 35 | 39 |
| | 31 | 34 | 34 | 35 | 36 | 48 | 47 | 44 | 44 |
| 5 | 27 | 29 | 28 | 33 | 37 | 48 | 46 | 45 | 48 |
| | 30 | 35 | 35 | 35 | 37 | 49 | 46 | 44 | 48 |
| | 26 | 28 | 36 | 37 | 39 | 38 | 45 | 47 | 49 |
| 6 | 25 | 27 | 38 | 34 | 37 | 41 | 46 | 43 | 47 |
| | 24 | 32 | 36 | 40 | 37 | 35 | 43 | 39 | 48 |
| | 22 | 27 | 28 | 33 | 35 | 47 | 38 | 45 | 42 |
| 7 | 26 | 30 | 28 | 32 | 33 | 46 | 37 | 42 | 40 |
| | 21 | 25 | 29 | 31 | 32 | 44 | 40 | 37 | 37 |
| | 32 | 31 | 33 | 34 | 34 | 35 | 43 | 41 | 45 |
| 8 | 35 | 35 | 39 | 35 | 32 | 36 | 44 | 46 | 44 |
| | 36 | 39 | 44 | 41 | 34 | 42 | 44 | 44 | 47 |
| | 33 | 37 | 39 | 33 | 35 | 39 | 41 | 47 | 44 |
| 9 | 35 | 38 | 38 | 35 | 35 | 49 | 49 | 45 | 51 |
| | 33 | 36 | 35 | 36 | 34 | 45 | 47 | 45 | 45 |
| | 34 | 32 | 34 | 36 | 34 | 35 | 36 | 44 | 38 |
| 10 | 35 | 28 | 30 | 37 | 36 | 34 | 42 | 46 | 48 |
| | 31 | 28 | 32 | 38 | 37 | 35 | 44 | 40 | 39 |
| MEANS | 28.5 | 30.0 | 32.9 | 33.5 | 34.9 | 40.4 | 41.9 | 42.7 | 44.6 |
| STD. DEV. | 4.7 | 4.6 | 4.6 | 4.0 | 3.6 | 5.4 | 5.1 | 3.3 | 4.1 |

NRR = 25 dB

*Use these laboratory-derived 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.*

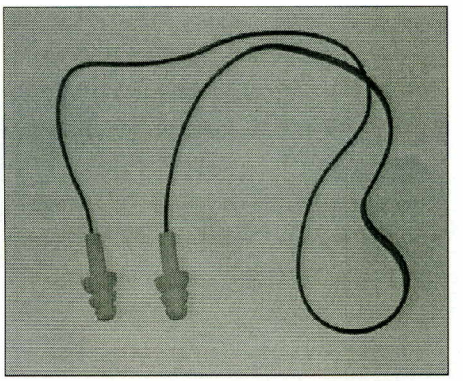
MANUFACTURER: AEARO
MODEL: 2014-I
POSITION: INSERT

DATE: 3/01/01
TEST ID#: Q184A

Measurements were made according to American National Standards Institute Specifications ANSI S3.19-1974.

| Center Frequency in Hz | Mean Attenuation in dB | Group Attenuation in dB | Standard Deviation in dB |
|---|---|---|---|
| 125 | 28.5 | 58.5 | 4.7 |
| 250 | 30.0 | | 4.6 |
| 500 | 32.9 | | 4.6 |
| 1000 | 33.5 | | 4.0 |
| 2000 | 34.9 | 183.5 | 3.6 |
| 3150 | 40.4 | | 5.4 |
| 4000 | 41.9 | | 5.1 |
| 6300 | 42.7 | 87.3 | 3.3 |
| 8000 | 44.6 | | 4.1 |

Test Item: Q184A



These data were obtained through measurements made at the laboratories of Michael & Associates, Inc., State College, PA , USA. Michael & Associates, Inc., is accredited to test to ANSI S3.19-1974 and ANSI S12.6-1984 by the National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP).

Kevin L. Michael, Ph.D.
President

3/2/01
Date