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Hearing Protective Device Test Report Number Q4421A Revision 0

BDS PPE Group Company Ltd.  
Guangzhou J&Y Safety Products Manufacturer Co., Ltd.  
No.5, Yongle Road, Huashan Town  
Huadu District, Guangzhou China

Date of Report: 9/19/19  
Date of testing: 2/27/17-3/28/17  
Date of Sample Receipt: 2/27/17



Attenuation measurements have been performed according to the European Standards EN352-1 on the BDS PPE Group Company Ltd. EM-5005 muff-type hearing protector (test ID Q4421A). The specified threshold measurement data were obtained using sixteen normally-hearing listeners. These listeners were selected as specified in EN352-1.

The measurements were made in a room designed for this purpose. All acoustic characteristics of the room meet the requirements outlined in EN352-1. The ambient noise levels in this room are below the limits specified in EN352-1, 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 S12.6-2008, ANSI S12.42-2010 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.*

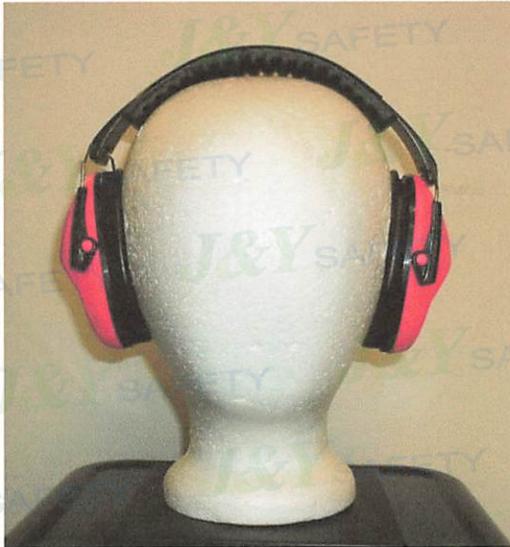
  
Kevin Michael, Ph.D., President

  
Date  
Originally issued 3/28/17

Product information

Manufacturer BDS PPE Group Co. Ltd.  
 Model EM-5005  
 Test ID number Q4421A  
 Date of receipt 2/27/2017  
 Dates of testing 02/27/2017-03/28/2017  
 Type of product Earmuff  
 Wearing position Over the head

Photograph



4.1 Sizing

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	215
sample 2	214.5
sample 3	214
sample 4	215
sample 5	214.5
sample 6	215
sample 7	215.5
sample 8	215
sample 9	215.5
sample 10	214.5
Mean	214.9

4.3.2 Adjustability:

The "X" marks the spot where the ear-muff fulfills the requirement.

	H 115	H 115	H 130	H 130	H 130	H 140	H 140
	W 125	W 145	W 125	W 145	W 155	W 145	W 155
	S	S/M	S/M	S/M/L	M/L	M/L	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	H 130	H 135
	W 135	W 145	W 150
	S	M	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	Med	Large
	Pass/Fail	Pass/Fail	Pass/Fail
sample 1	11.7 P	12.4 P	11.7 P
sample 2	11.3 P	11.8 P	11.4 P
sample 3	12.0 P	11.9 P	12.0 P
sample 4	12.3 P	13.0 P	12.0 P
sample 5	12.2 P	12.5 P	12.4 P
sample 6	12.2 P	12.3 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	2330.1	P	1986.6	P	2068.8
sample 2	2443.4	P	2046.6	P	2150.7	P
sample 3	2679.4	P	2125.1	P	2167.8	P
sample 4	2422.6	P	2353.1	P	2389.7	P
sample 5	2161.1	P	2316.9	P	2266.9	P
sample 6	2369.0	P	2326.0	P	2670.2	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	Pass/Fail
	Initial	Post Conditioning	
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	Change
sample 1	12.4	12.1	1.8
sample 2	11.8	11.7	0.4
sample 1	11.9	11.6	2.6
sample 4	13.0	12.9	0.7
sample 5	12.5	12.4	0.4
sample 6	12.3	12.3	0.0

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:

Pass. See Appendix A for data.

	125	250	500	1000	2000	40000	8000
Limit	5	8	10	12	12	12	12

Appendix A. Attenuation Data

Individual and Summary Attenuation Data for  
Hearing Protective Devices

Test Method: EN 352-1:2002

Position: Over-the-head

Manufacturer: BDS PPE Group Co. Ltd.

Date: 9/19/19

Model: EM-5005

Test ID # Q4421A

SUBJECT	Attenuation in dB						
	FREQUENCY IN HERTZ						
	125	250	500	1000	2000	4000	8000
1	8.2	15.7	22.4	30.8	32.7	40.5	38.3
2	18.0	16.5	18.6	27.7	33.9	45.0	47.0
3	11.4	15.5	20.8	33.6	42.2	45.6	45.7
4	14.9	16.2	21.3	26.9	33.3	45.4	46.3
5	20.9	19.7	24.6	29.5	31.7	45.0	42.0
6	12.8	16.6	18.7	24.5	33.0	46.9	46.7
7	14.1	14.0	18.6	27.1	28.7	42.4	40.3
8	14.9	15.0	20.2	28.9	32.1	47.1	42.1
9	14.0	13.7	18.2	24.3	31.2	42.8	38.4
10	10.3	16.8	22.9	27.7	32.3	38.7	43.2
11	17.2	14.2	19.6	29.6	33.5	35.5	45.8
12	9.8	12.3	21.0	29.0	35.6	41.3	44.6
13	10.9	18.0	22.3	26.6	32.8	39.1	41.3
14	13.3	17.2	21.8	31.1	33.4	45.0	47.2
15	13.4	12.2	22.0	28.6	31.9	40.3	32.0
16	14.1	17.7	23.2	28.9	33.6	41.1	43.3
MEANS	13.6	15.7	21.0	28.4	33.2	42.6	42.8
STD. DEV.	3.2	2.1	1.9	2.4	2.8	3.3	4.1
MEAN - SD	10.4	13.6	19.1	26.1	30.4	39.3	38.7

SNR = 26 dB  
H = 31 dB  
M = 23 dB  
L = 16 dB

1/3 OB Center Frequency in Hz

Sample	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000
1 L	17.4	22.3	22.4	24.7	24.0	25.1	29.1	34.7	38.5	36.5	38.4	40.6	44.5	46.4	47.7	44.3
1 R	16.2	20.4	22.1	23.0	22.8	25.2	29.5	32.2	37.1	35.9	38.7	41.3	43.2	41.5	44.0	43.2
2 L	17.9	22.9	23.1	23.9	24.4	25.1	28.8	35.5	40.9	37.8	41.5	44.0	45.6	47.4	45.7	45.1
2 R	18.2	20.1	20.6	22.0	21.9	24.4	30.1	32.4	40.1	37.3	40.4	43.4	45.7	45.4	47.4	44.3
3 L	17.2	21.7	21.7	23.4	23.5	23.4	26.3	31.2	38.3	36.8	41.5	42.1	43.9	44.8	44.2	44.4
3 R	20.2	21.1	21.0	23.5	23.8	25.6	31.5	34.4	41.7	37.5	39.6	43.3	45.1	44.0	45.6	42.2
4 L	18.2	22.1	22.6	24.2	24.5	25.0	28.8	35.4	38.1	36.6	38.3	42.0	42.8	44.9	45.3	44.5
4 R	18.6	19.9	19.6	21.4	21.9	23.3	28.4	32.5	39.1	35.0	38.5	42.4	44.4	44.9	46.8	42.8
5 L	19.3	23.1	22.6	22.8	23.4	23.1	25.8	32.1	38.2	38.9	40.8	43.9	45.4	46.9	44.2	45.0
5 R	19.3	20.4	20.6	22.8	21.9	24.0	30.1	32.0	38.3	37.6	40.4	42.8	43.2	43.5	46.2	43.3
6 L	18.9	22.2	22.0	22.8	23.4	23.3	26.1	31.9	39.1	38.9	40.2	42.9	44.3	42.7	45.9	46.1
6 R	17.6	20.8	21.6	21.9	21.2	23.5	28.1	31.1	38.8	35.2	39.3	42.2	44.2	44.2	44.1	40.8
7 L	18.2	22.7	22.5	24.1	24.7	25.4	29.0	35.9	41.1	39.7	40.0	43.2	44.7	45.2	44.2	47.0
7 R	18.9	20.4	20.8	23.0	23.0	25.2	30.4	32.6	40.0	39.3	41.6	43.5	44.4	45.3	46.5	43.6
8 L	18.1	22.3	22.6	23.3	23.8	24.2	27.4	32.3	37.2	37.1	40.3	42.3	44.9	49.2	48.5	45.4
8 R	16.9	20.6	22.2	23.4	22.1	24.7	30.1	33.1	38.8	37.3	39.7	42.2	45.1	43.9	45.1	42.9
9 L	18.8	22.9	22.5	23.2	23.3	23.6	26.9	33.0	39.0	39.1	42.9	44.2	46.2	48.0	46.9	44.5
9 R	20.2	22.1	21.0	23.9	25.0	27.6	32.8	34.4	39.5	34.9	40.9	41.0	44.8	44.0	46.7	43.4
10 L	18.6	22.4	22.4	22.6	23.5	23.2	25.7	30.7	36.6	37.0	38.5	40.4	45.5	47.4	45.2	44.7
10 R	19.1	20.7	20.3	22.1	22.0	23.8	29.4	31.6	39.3	36.3	40.0	43.1	45.1	44.1	44.7	42.7
Mean	18.4	21.6	21.7	23.1	23.2	24.4	28.7	33.0	39.0	37.2	40.1	42.5	44.7	45.2	45.7	44.0
SD	1.0	1.1	1.0	0.8	1.1	1.1	1.9	1.6	1.3	1.4	1.2	1.1	0.9	1.9	1.3	1.4