

I. Device under test

Test object: Active over-the-head earmuff
Trade name / Model reference: HEA 371
State of construction: Pre-Production
Serial No./WE No.: See chapter III.
Manufacturer: Globalsys
Country: France
Arrival test sample: 2018-07-23




Issue date of test report: 2019-10-14

Amount of pages: 7

Enclosures: Manufacturer's Declaration (Page 8 - 9)



Test conducted by: Jacek Zmudzki


Reviewed by: Christian Gerdes

II. Description of the device under test

The product is an over-the-head earmuff with communication device.

III. Samples provided for testing

Model name	Sample No	PZT WE number	Serial number
HEA 371	1	2072	1201
	2	2073	1193
	3	2074	1191
	4	2075	1194

IV. Conformance test conducted on: 2019-08-27 to 2019-09-04

V. General notes

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Accredit by DAKkS Certificate No. D-PL-12127-01-01
Notified Body Number: 1974

Reference: Ge / AB

Third-party laboratory: --

VIII. Testing Standards:

EN 352-8:2008 (DIN EN 352-8:2008-07)	Hearing Protectors, Safety requirements and testing Part 8: Entertainment audio earmuffs
EN ISO 11904-1: 2002 (DIN EN ISO 11904-1: 2003)	Determination of sound immission from sound sources placed close to the ear Part 1: Technique using a microphone in a real ear (MIRE)
EN 13819-2:2002 (DIN EN 13819-2:2003)	Hearing Protectors, Tests Part 2: Acoustical test methods
IEC 60268-1:1988	Sound general equipment; General
EN 352-6:2002 (DIN EN 352-6:2003)	Hearing Protectors, Safety requirements and testing Part 6: Earmuffs with electrical audio input

IX. Testing environment

The climatic conditions in acc. were continuously controlled during the approval test. The requirements according to EN 13819-12002 were met.

Temperature: 22 ±5 °C
Humidity: < 85 %

X. Measurement equipment

The measurements were conducted at measurement station No. 3.

The measuring equipment is calibrated regularly; the measuring devices are maintained regularly.

XI. Abbreviations

In the opinion of the testing laboratory

P requirement fulfilled
F requirement not fulfilled
X no requirements defined
N/A requirement not relevant
N None

Content

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5.2.2 Sound pressure level for Communication earmuff with electrical audio input

P

Requirements:	The electrical input level (mV) is determined at which the mean plus one standard deviation of the A-weighted diffuse field related sound pressure level is equal to 82 dBA
Measurement cond.	Measurement of the A-weighted diffuse field related sound pressure level of the audio system with 4 samples and 8 subjects acc. to the MIRE procedure. The ear muff is set to maximum volume. Third octave band level in 100 Hz to 10000 Hz. Average time =32s linear for the input signal Average time = 28s Leq for the SPL
Test signal:	Female Artificial voice acc. ITU P50
Climatic conditions:	Air pressure: 1018 mbar
Result:	Criterion input voltage: 365 mV (-6,4 dBm)

Detailed Results:

		Sound pressure level [dBSPL]							Criterion level
Input Level [dBm]		-29.3	-24.3	-19.3	-14.3	-9.3	-4.3	0.7	
Input Level [mV]		26.6	47.2	84.0	149.4	265.6	472.4	840.0	
Sample WE.	R/L								dBm
2073	R	56.3	61.2	66.2	71.2	76.3	81.1	86.1	-3.4
	L	58.4	63.4	68.4	73.4	78.4	83.3	88.2	-5.6
2072	R	58.0	62.7	67.7	72.7	77.7	82.6	87.5	-4.9
	L	56.3	60.9	66.0	70.9	76.0	80.8	85.7	-3.1
2072	R	58.2	63.1	68.1	73.1	78.0	83.1	87.8	-5.4
	L	58.0	62.9	67.9	72.9	78.0	82.8	87.6	-5.1
2074	R	59.0	63.9	68.8	73.8	78.8	83.7	88.6	-6.0
	L	59.5	64.5	69.4	74.4	79.4	84.2	89.2	-6.6
2074	R	59.0	63.8	68.8	73.3	78.8	83.8	88.6	-6.1
	L	59.3	65.2	69.2	74.2	79.4	84.3	89.2	-6.6
2075	R	58.7	63.7	68.6	73.5	78.5	83.5	88.3	-5.8
	L	59.4	64.4	69.2	74.2	79.2	84.3	89.1	-6.6
2075	R	57.4	62.3	67.2	72.2	77.3	82.2	87.1	-4.5
	L	57.9	62.8	67.8	72.8	77.7	82.7	87.5	-5.0
2073	R	54.6	59.6	64.6	69.7	74.7	79.6	84.6	-1.9
	L	56.3	61.2	66.2	71.3	76.3	81.2	86.0	-3.5
Mean [dB]		57.9	62.9	67.8	72.7	77.8	82.7	87.6	-5.0
StDev [dB]		1.4	1.5	1.4	1.3	1.4	1.4	1.4	1.4
Mean + StDev		59.3	64.4	69.1	74.1	79.1	84.1	88.9	-6.4

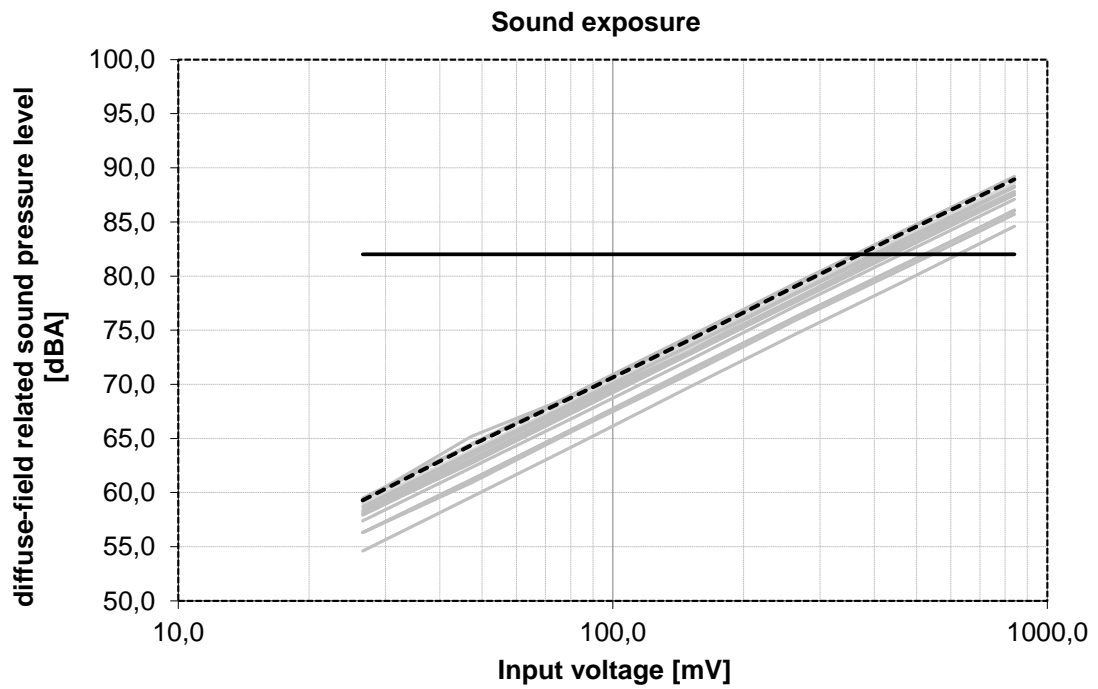


Diagram 1: Graphical representation of the single results (MIRE)
dashed line: mean + standard deviation

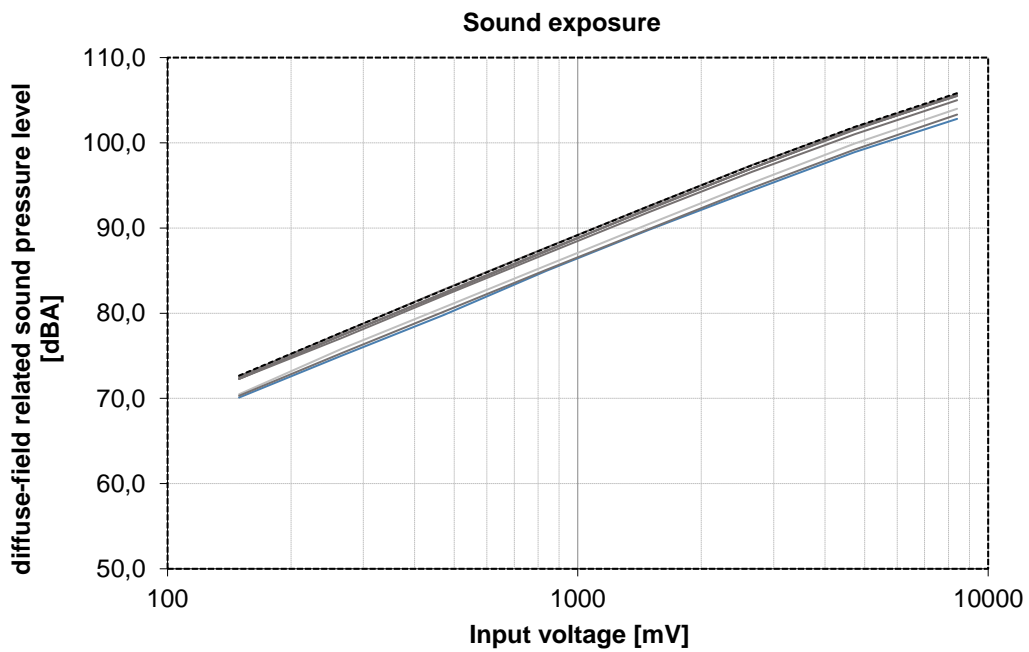


Diagram 2: Graphical representation of the single results (ATF)
dashed line: mean + standard deviation

5.2.2 Recommendation for Use (RfU) No. 04.49 “Performance of earmuffs with communication facilities for high input voltages” of the Coordination of the notified Bodies PPE-Directive 89/686/EEC + amendments (VG4)

P

Requirements:	In order to assess the performance of the product for high input voltages, measurements shall performed on an ATF or on a suitably mounted occluded ear-simulator resulting in A-weighted diffuse-field related SPL.
Measurement cond.	Measurement of the A-weighted diffuse field related sound pressure level of the audio system with 4 samples and with an ATF. The earmuff is set to maximum volume. Third octave band level in 100 Hz to 10000 Hz Average time =32s linear for the input signal Average time = 28s Leq for the SPL
Test signal:	Female Artificial voice acc. ITU P50

Result:

ATF A-weighted diffuse field related sound pressure level

		Sound pressure level [dBSPL]								
Input Level [dBm]		-14.3	-9.3	-4.3	0.7	5.7	10.7	15.7	20.7	25.7
Input Level [mV]		149	266	472	840	1494	2656	4724	8400	14938
Sample No.	ear									
2072	R	70.5	75.8	80.7	85.6	90.5	95.3	99.9	104.0	105.5
	L	70.1	75.0	79.8	85.0	89.8	94.4	98.9	102.8	105.5
2073	R	70.3	75.3	80.2	85.1	89.9	94.7	99.2	103.3	106.1
	L	72.3	77.4	82.3	87.3	92.3	97.0	101.6	105.5	108.3
2074	R	72.4	77.4	82.4	87.4	92.2	97.0	101.5	105.6	108.3
	L	72.6	77.7	82.8	87.7	92.6	97.4	101.8	105.7	108.7
2075	R	72.3	77.1	82.1	87.0	91.9	96.6	101.0	105.0	107.8
	L	72.3	77.4	82.3	87.3	92.3	97.0	101.6	105.5	108.3
Mean [dB]		71.6	76.6	81.6	86.6	91.4	96.2	100.7	104.7	107.3
StDev [dB]		1.1	1.1	1.2	1.1	1.2	1.2	1.2	1.1	1.4
Mean + StDev		72.7	77.7	82.7	87.7	92.6	97.4	101.9	105.8	108.7

The table below document the A-weighted diffuse field related sound pressure level and Usage time for the maximum input voltage that corresponds to an A-weighted diffuse-field related equivalent SPL of 82 dB(A) over 8 h.

Item	Sound pressure level [dBSPL]							
Input Level [dBm]	-9.3	-4.3	0.7	5.7	10.7	15.7	20.7	25.7
Input Level [mV]	266	472	840	1494	2656	4724	8400	14938
Corrected SPL	79.1	84.1	89.1	94.0	98.7	103.2	107.2	110.1
usage time (h) over 8-hour day	8.0	4.9	1.6	0.51	0.17	0.06	0.02	0.01

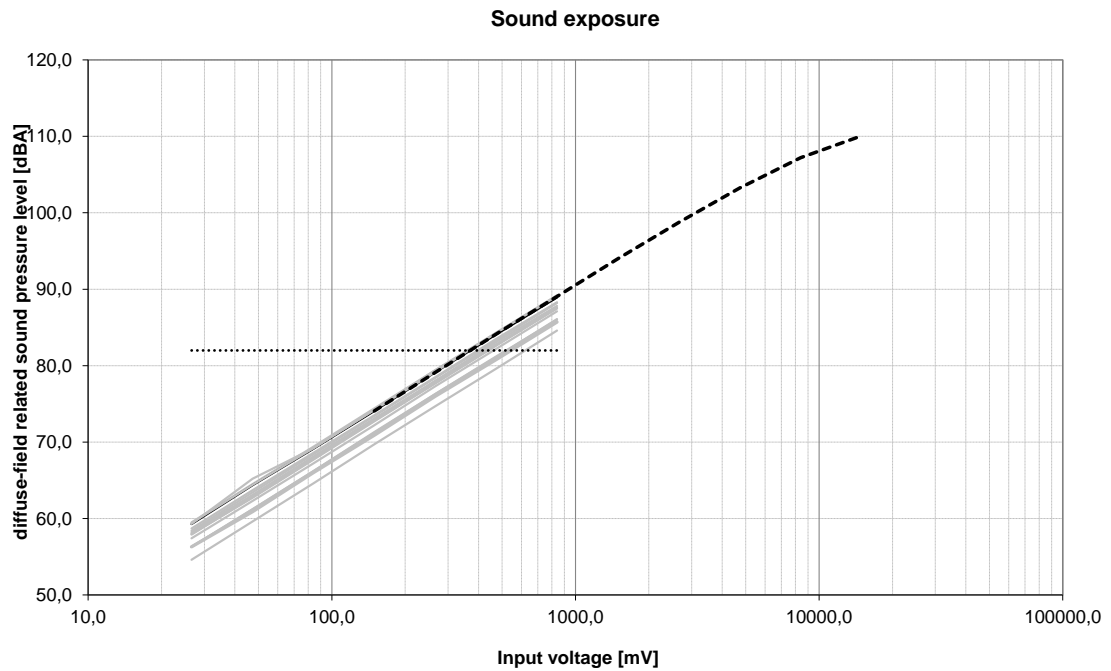


Diagram 3: Graphical representation of the single results (MIRE)
dashed line: the interpolated mean + standard deviation of the ATF measurement.

6 Information supplied by the Manufacturer

Remark:

The information according to paragraphs 6.1 and 6.2 of EN 352-6:2002 shall be supplied with the earmuff. This review is not part of this test report.

7 Marking

The requirements for marking mentioned in the EN 352-1 are valid.
The general marking "EN 352" has to be used.

Attachment to Test Report No.:

Manufacturer Declaration

according to
EN 352-6:2002 paragraph 4.2 Materials and Construction
EN 352-8:2008 paragraph 4.2 Materials and Construction

Kind of Ear Protection

- Earmuff Earplug Custom moulded earplug

Communication Equipment with

- single sided communication equipment (left or right)
 dual sided communication equipment (left and right)
 with microphone without microphone

Use

- Military Police / Security Industry
 Entertainment Others (please describe)

For the connection at

- Radio equipment
 Type unknown Type known

Manufacturer of Communication Equipment:

Model / Type: (please attach data sheet)

- Mobile phones
 Speech Music
 Audio player

- other equipment (please describe) Aircraft flight interphone (plug located outside the aircraft near the nose gear)

Line Interface

- AUX input 2-wires 4-wires
Wireless Radio Bluetooth DECT PMR
other system (description attached)

the interface is a 2 wires (Mic and speaker) + shield

Broadcast Receiver

AM FM DAB DAB+

Head phone speaker

changeable fixed

Sensitivity at dB SPL mV, Impedance Ohm (acc. to manufacturer specification)

Test report and measuring results according to EN 50332 attached

Microphone

built-in Boom microphone Ear microphone Microphone in cord

Microphone sensitivity:

Output voltage n μ V at dB SPL (acc. to manufacturer specification)

4.2 Materials and Construction

The electronic circuitry of the ear muffs fulfils the requirements applicable for this kind of equipment class with regard to electrical safety and electromagnetic compatibility.

The information as requested in paragraphs 6.1 and 6.2 of EN 352-6:2002 and paragraphs 6.2 and 6.3 of EN 352-8:2008 will be supplied with the earmuffs.

For the hearing protectors

Model name:

and

Versions:

we, as manufacturer / distributor, confirm the above mentioned information.


Company:

Address:

Name:

11/06/2018

Place, Date


Stamp / Signature **GLOBALSYS Sarl**
12, avenue des Coquelicots
94380 Bonneuil Sur Marne
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I. Device under test

Test object: Active over-the-head earmuff
Trade name / Model reference: HEA 371
AirLink 2085 WI407
State of construction: Pre-Production
Serial No./WE No.: See chapter III.
Manufacturer: Globalsys
Country: France
Arrival test sample: 2018-07-23




AirLink 2085 WI407

Issue date of test report: 2019-10-14

Amount of pages: 16

Enclosures: Manufacturer's Declaration (Page 17 - 20)



Test conducted by: Anja Biedermann



Reviewed by: Christian Gerdes



HEA 371

II. Description of the device under test

The product is an over-the-head earmuff with communication device available as wireless version (WI 407) and wired version (HEA 371). Both variants are mechanically identical and were mixed during the sound attenuation measurements.

III. Samples provided for testing

Model name	Sample No	PZT WE number	Serial number
HEA 371	1	2072	1201
	2	2073	1193
	3	2074	1191
	4	2075	1194
	5	2076	1195
	6	2077	1196
	7	2078	1198
	8	2079	1192
	9	2080	1200
	10	2081	1202

Model name	Sample No	PZT WE number	Serial number
WI407	1	2084	X0573
	2	2085	X0574
	3	2086	X0575
	4	2087	X0576

IV. Conformance test conducted on: 2019-03-11 to 2019-08-29**V. General notes**

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Accredit by DAKKS Certificate No. D-PL-12127-01-01
 Notified Body Number: 1974

Reference: Ge / AB

Third-party laboratory: --

VIII. Testing Standards:

EN 352-1:2002 (DIN EN 352-1 2003)	Hearing Protectors, General requirements Part 1 Earmuffs
EN 13819-1:2002 (DIN EN 13819-1:2003)	Hearing Protectors, Tests Part 1: Physical test methods
EN 13819-2:2002 (DIN EN 13819-2:2003)	Hearing Protectors, Tests Part 2: Acoustical test methods
ISO 4869-1: 1990 (DIN EN ISO 4869-1:1991)	Hearing Protectors Part 1: Subjective method for measurement of sound attenuation
ISO 4869-2: 1994 (DIN EN ISO 4869-2 1995)	Acoustics- Hearing protectors- Part 2: Estimation of effective A-weighted sound pressure levels when hearing protectors are worn
DIN EN ISO 4869-2 Corrigenda: 2007	Acoustics- Hearing protectors- Part 2: Estimation of effective A-weighted sound pressure levels when hearing protectors are worn
IEC 60268-1:1988	Sound general equipment; General
ISO 8253-2:2009 (DIN ISO 8253-2:2009)	Audiometric test methods Part 2: Sound field audiometry with pure tone and narrow band test signals

IX. Testing environment

The climatic conditions in acc. were continuously controlled during the approval test. The requirements according to EN 13819-12002 were met.

Temperature: 22 ±5 °C
 Humidity: < 85 %

X. Measurement equipment

The measurements were conducted at measurement station No. 1 / 2.

The measuring equipment is calibrated regularly; the measuring devices are maintained regularly.

XI. Abbreviations

In the opinion of the testing laboratory

- P requirement fulfilled
- F requirement not fulfilled
- X no requirements defined
- N/A requirement not relevant
- # requirement not specified
- U for result see test report from third-party laboratory
- M Mandatory
- N None

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Summary of results

Clause	Requirement	Assessment
4.1	Sizing	Pass
4.2.1	Materials	Pass
4.2.2	Construction	Pass
4.3.2	Sizing and adjustability	Pass
4.3.3	Cup Rotation	Pass
4.3.4	Headband force	Pass
4.3.5	Cushion pressure	Pass
4.3.6	Resistance to damage when dropped	Pass
4.3.7	Resistance to damage when dropped at low temperature (optional)	Not applicable
4.3.8	Change in headband force	Pass
4.3.9	Insertion loss	Pass
4.3.10	Resistance to leakage	Not applicable
4.3.11	Ignitability	Pass
4.3.12	Minimum attenuation	Pass
4.3.12	SNR and HML values according to the forthcoming ISO 4869-2	
5	Marking	
6	Information supplied by the manufacturer	

Results

Earmuffs EN 352-1

4.2 Materials and Construction

4.2.1 Materials P

Result: See Manufacturer's Declaration

4.2.2 Construction

4.2.2.1 Construction P

Requirements:

All parts of the earmuffs shall be rounded, finished smooth and be free from sharp edges.

Result: See Manufacturer's Declaration

4.2.2.2 Construction P

Requirements:

Earmuffs whose cushions and/or liners are intended by the manufacturer to be replaced by the wearer shall not require the use of tools for this purpose.

Result: See Manufacturer's Declaration

4.2.2.3 Weight P

Requirements:

All universal earmuffs that have a mass in excess of 150 g shall be provided with a headstrap.

Result: HEA 371

Sample	1	2	3	4	5	6	7	8	9	10
We.-No.	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081
Weight [g]	472	472	474	472	471	471	474	471	472	472
Headstrap present	no	no	no	no	no	no	no	no	no	no

Result: WI 407

Sample	1	2	3	4
We.-No.	2084	2085	2086	2087
Weight [g]	472	473	472	473
Headstrap present	no	no	no	no

4.3 Performance

4.3.1 General

The requirements of 4.3.2 to 4.3.12 shall be satisfied.

4.3.2 Sizing and Adjustability

P

Requirements:

In item 4.2 of standard EN 13819-1 it is checked for which ranges of adjustment the adjustability is fulfilled, with reference to the three different fixtures with defined test dimensions (if adjustable marked with 'yes', otherwise marked with 'no').

Results:

Results of the dimension test for headbands or under-the-chin earmuffs (if adjustable marked with 'yes', otherwise marked with 'no')

Test height [mm]	Test width [mm]					
	125		145		155	
115	S	No	S/M	Yes	---	
130	S/M	Yes	S/M/L	Yes	M/L	Yes
140	---		M/L	Yes	L	Yes

Results of the dimension test for behind-the-head earmuffs (if adjustable marked with 'yes', otherwise marked with 'no')

Test height [mm]	Test width [mm]					
	125		145		155	
75	S	N/A	S/M	N/A	---	
90	S/M	N/A	S/M/L	N/A	M/L	N/A
105	---		M/L	N/A	L	N/A

4.3.3 Cup Rotation

P

Requirements:

When tested in accordance with EN 13819-2:2002, 4.3, the contact between the cushions and the plates of the fixture shall be continuous insofar as it provides an unbroken barrier between the inside and outside perimeter of the cushions.

Results:

Position	Test size					
	Over-the-head earmuffs			Behind-the-head		
	S 135/122	M 145/130	L 150/135	S 135/82	M 145/90	L 150/98
+5° horizontal / 0° vertikal	P	P	P	-	-	-
-5° horizontal / 0° vertikal	P	P	P	-	-	-
+5° horizontal / +5° vertikal	P	P	P	-	-	-
-5° horizontal / -5° vertikal	P	P	P	-	-	-
0° horizontal / +5° vertikal	P	P	P	-	-	-
0° horizontal / -5° vertikal	P	P	P	-	-	-

4.3.4 Headband Force

P

Requirements:

When tested in accordance with EN 13819-1:2002, 4.4, the headband force of each specimen shall not be greater than 14 N.

Results: Over-the-head earmuffs

Sample	1	2	3	4	5	6
Test height/width	Force [N]					
122 / 135 (S)	-	-	-	-	-	-
130 / 145 (S/M/L)	12.6	12.7	12.7	13.4	13.1	13.2
135 / 150 (L)	12.7	12.6	12.5	13.6	13.1	13.1

Results: Behind-the-head earmuffs

Sample	1	2	3	4	5	6
Test height/width	Force [N]					
82 / 135 (S)	N/A	N/A	N/A	N/A	N/A	N/A
90 / 145 (M)	N/A	N/A	N/A	N/A	N/A	N/A
98 / 150 (L)	N/A	N/A	N/A	N/A	N/A	N/A

4.3.5 Cushion Pressure

P

Requirements:

When tested in accordance with EN 13819-1:2002, 4.5, the cushion pressure of each specimen shall not be greater than 4500 Pa. For earmuffs incorporating means to adjust the headband force, this requirement shall apply to the maximum force setting or 14 N, whichever is lower.

Results: Over-the-head earmuffs

Sample	1	2	3	4	5	6
Test height / width	Pressure [Pa]					
122 / 135 (S)	-	-	-	-	-	-
130 / 145 (S/M/L)	3560	3590	3590	3790	3700	3730
135 / 150 (L)	3590	3560	3530	3840	3700	3700

Results: Behind-the-head earmuffs

Sample	1	2	3	4	5	6
Test height / width	Pressure [Pa]					
82 / 135 (S)	N/A	N/A	N/A	N/A	N/A	N/A
90 / 145 (M)	N/A	N/A	N/A	N/A	N/A	N/A
98 / 150 (L)	N/A	N/A	N/A	N/A	N/A	N/A

4.3.6 Resistance to damage when dropped

P

Requirements:

The earmuffs shall not crack when tested in accordance with EN 13819-1 clause 4.6. Neither shall any part of the earmuffs become detached, such that correct reassembly requires the use of either a tool or a replacement part.

Damages (sample 1 – 6)
No

4.3.7 Resistance to damage when dropped at low temperature (optional)

N/A

Requirements:

The earmuffs shall not crack when tested in accordance with EN 13819-1 clause 4.7. Neither shall any part of the earmuffs become detached, such that correct re-assembly requires the use of either a tool or a replacement part.

Sample	1 - 6
Damages	N/A

4.3.8 Change of headband force (including optional water immersion – headband under stress)

P

Requirements:

1. The headband force shall not change by more than +/- 15 %
2. The final headband force shall not exceed 14 N

Measurement conditions:

The change of the headband force is measured after the earmuffs have been subjected to the appropriate conditioning and tests: drop test, bending test, optional water immersion and the 24 h conditioning test if applicable.

Result headband force (with water immersion):

Sample	1	2	3	4	5	6
measured [N]	12.1	11.8	11.4	11.6	11.5	11.6
max. headband force from 4.3.4 [N]	12.6	12.7	12.7	13.4	13.1	13.2
Change [N]	0.5	0.9	1.3	1.8	1.6	1.6
Result [%]	4.0	7.1	10.2	13.4	12.2	12.1

Result headband bending:

Requirement: 1000 test cycles (10 – 12 times per minute)

Minimum distance of the panels: at least 25 mm, max. 200 mm

Sample	1 - 6
Changes	No
Damages	No

4.3.9 Insertion loss

P

Measurement conditions: Measurement conducted at ten samples (samples No. 1 to 10).
 Sound field: Diffuse sound field, 85 dB(A)
 Requirement: The standard deviations shall be not greater than 4.0 dB in four or more adjacent one-third octave bands and not greater than 7.0 dB in any individual one-third octave band.

Cups with odd numbers: Right side (with antenna)
 Cups with even numbers: Left side (without antenna)

Result:

Frequency [Hz]	Mean [dB]	Standard deviation [dB]
250	28.4	1.7
315	36.1	2.3
400	39.8	2.5
500	42.8	1.8
630	44.5	2.0
800	44.3	1.7
1000	42.2	1.7
1250	42.9	2.2
1600	41.0	2.6
2000	39.4	2.1
2500	40.9	1.4
3150	44.0	2.5
4000	42.4	2.8
5000	40.5	1.6
6300	39.1	1.9
8000	39.9	1.9

WE Frequency Hz		Insertion loss [dB]																			
		2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	Cup No.									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
250	28.3	30.3	30.6	28.4	24.0	29.9	27.7	27.8	26.6	28.0	29.4	29.3	28.2	26.2	29.5	29.3	27.3	26.7	30.6	30.7	
315	35.6	35.6	37.0	33.8	37.7	35.6	34.3	34.8	41.6	34.5	35.3	35.1	35.2	34.8	35.9	35.7	34.1	35.0	42.9	36.9	
400	35.9	39.3	40.0	37.3	44.7	39.2	38.4	42.3	39.4	37.4	38.4	39.0	38.4	44.6	39.4	38.9	37.4	44.0	42.8	38.6	
500	39.8	43.7	43.5	41.4	42.9	43.0	42.2	47.1	40.9	42.1	40.9	43.0	42.5	46.4	42.0	43.5	41.2	45.1	42.5	42.8	
630	42.9	47.1	45.0	43.5	43.2	46.5	44.6	47.8	43.2	42.6	40.6	45.7	44.6	45.0	44.8	46.0	43.8	46.3	40.7	46.3	
800	43.7	46.2	46.2	44.5	43.5	45.0	45.3	46.5	41.6	40.9	41.6	44.6	43.4	45.1	44.4	45.5	45.3	45.3	41.3	45.1	
1000	42.3	42.5	44.2	41.3	42.1	41.5	43.3	42.5	41.3	42.1	46.9	43.1	41.8	41.1	42.2	41.6	42.0	43.8	38.3	40.3	
1250	46.0	44.6	44.8	39.2	44.6	40.2	44.4	43.4	42.1	43.9	43.5	42.7	41.6	41.9	45.8	42.9	40.5	45.0	37.9	42.6	
1600	39.2	44.0	43.0	40.0	42.0	44.6	42.5	35.7	37.7	42.9	45.2	38.2	38.8	41.3	40.0	38.7	42.1	40.4	39.3	43.9	
2000	37.4	39.8	39.3	39.0	43.8	40.4	39.3	36.6	38.7	41.5	42.3	40.5	39.7	38.0	36.6	37.1	42.6	37.5	41.2	37.4	
2500	39.5	38.8	41.8	40.6	40.5	40.6	41.6	40.5	41.1	39.9	41.0	39.4	42.7	41.4	40.2	42.4	41.1	39.8	45.1	40.9	
3150	44.7	42.1	42.7	44.0	43.9	38.2	43.1	42.0	45.6	42.9	47.4	38.9	45.3	46.2	45.6	45.5	46.5	44.1	47.9	43.9	
4000	42.8	42.9	38.9	40.6	39.9	35.5	44.0	42.2	45.3	42.4	44.5	37.9	41.7	45.0	44.7	44.7	44.4	46.3	44.7	40.2	
5000	40.7	37.7	40.8	40.3	40.3	37.6	43.3	40.4	40.7	41.5	40.7	38.2	41.0	42.4	40.3	41.4	41.2	40.8	43.0	38.2	
6300	39.6	37.9	40.2	36.5	40.1	38.7	36.7	38.3	38.9	37.9	42.0	42.6	39.6	38.1	37.0	39.7	42.5	38.3	41.1	37.1	
8000	40.4	38.7	41.0	37.3	40.9	39.5	37.5	39.1	39.7	38.7	42.8	43.4	40.4	38.9	37.8	40.5	43.3	39.1	41.9	37.9	

4.3.10 Resistance to leakage

N/A

Requirement:

In the case of fluid filled cushions they shall not leak when the earmuffs are tested in accordance with EN 13819-1 clause 4.12.

Result: not applicable

4.3.11 Ignitability

P

Requirement:

When tested in accordance with EN 13819-1 clause 4.13 no part of the earmuffs shall ignite upon application of the heated rod nor continue to glow after removal of the heated rod.

Result:

Materials	Sample 5 - 6
Cup	Requirement fulfilled
Headband	Requirement fulfilled

4.3.12 Minimum Attenuation

P

Measurement conditions: Measurement conducted with four samples (samples No. 1 to 4) and 16 subjects and each sample was worn by 4 subjects.
 Range of the protective effect = 84 % ($\alpha = 1$) for the calculation of the SNR and HML value.

Requirement: The values ($M_f - s_f$) of the earmuffs according to the test of 4.2 of EN 13819-2 shall not be smaller than the values of table 1 of EN 352-1.

Result				Limit
Frequency [Hz]	Sound attenuation M_f [dB]	Standard deviation s_f [dB]	APV $M_f - s_f$ [dB]	[dB]
63	19.2	4.3	14.9	
125	18.4	2.6	15.8	5
250	23.1	2.3	20.8	8
500	32.4	2.8	29.6	10
1000	37.3	2.9	34.4	12
2000	34.1	2.6	31.5	12
4000	41.5	3.0	38.5	12
8000	38.2	2.8	35.4	12

SNR	32 dB
------------	--------------

H	34 dB
M	30 dB
L	23 dB

Minimum attenuation in accordance to the forthcoming EN 352-1

Below the result according to the forthcoming revised version of the standard EN352-1 (The values are applicable only after the revised standard is published in the EU-Official Journey (OJ)).

Item	Result [dB]	Minimum attenuation requirement [dB]
H	34	12
M	30	11
L	23	9

APV requirement:

The APV_{f98} octave band values (calculated according to EN ISO 4869-2 for $\alpha=2$) shall be equal to or greater than 0, rounded to the nearest integer value for all test frequencies from 125 Hz to 8000 Hz.

Frequency [Hz]	125	250	500	1000	2000	4000	8000
APV_{f98} [dB]	13	19	27	32	29	36	33

SNR and HML values in accordance to the forthcoming ISO 4869-2

Calculation of the SNR value and the H, M, and L-values of the sound attenuation in accordance to the forthcoming ISO 4869-2

(The values are applicable only after the revised standard is published in the EU-Official Journey (OJ)).

Subject No.	Individual subject data [dB]			
	SNR	H	M	L
1	34.0	35.0	33.0	24.8
2	34.1	34.7	32.5	26.1
3	34.6	36.3	32.9	25.7
4	33.3	33.8	31.7	26.5
5	32.1	32.3	30.8	24.2
6	36.3	39.6	34.3	26.5
7	33.9	35.2	32.5	24.2
8	30.9	33.3	29.1	21.7
9	36.6	37.7	35.1	28.9
10	33.6	36.5	31.8	23.5
11	37.2	39.8	35.3	27.7
12	36.5	37.1	35.2	28.3
13	34.7	38.0	32.8	24.8
14	33.1	37.2	30.5	23.7
15	34.6	39.5	32.4	24.1
16	31.4	36.2	28.9	21.7
Mean	34.2	36.4	32.4	25.2
Standard deviation	1.8	2.3	2.0	2.1
Result	32	34	30	23
Limit	-	12	11	9

5 Marking

The earmuffs shall be durably marked with the following information:	Marking present on the test samples:
The name, trade mark or other identification of the manufacturer or his authorized representative	No
The model designation	No
The number of this EN standard. EN 352-1 and further standards. if applicable	Yes
In the case of earmuffs intended by the manufacturer to be worn in a particular orientation, an indication of the FRONT and/or TOP of the cups, and/or an indication of LEFT and RIGHT cup	Yes

Remark:

The marking of mass production must fulfil the requirement of paragraph 5 of EN 352-1:2002.

6 Information supplied by the Manufacturer

Remark:

The information according to paragraphs 6.2 and 6.3 of EN 352-1:2002 shall be supplied with the earmuffs. This review is not part of this test report.

Enclosures:

Declaration of the manufacturer according to EN 352-1 Paragraph 4.2.1 - Materials

Manufacturer's Declaration according to EN 352-1:2002 Paragraph 4.2 Material and Construction

4.2.1 Materials

4.2.1.1 Those parts of the ear-muffs that may come into contact with the skin are non-staining, soft, pliable and not known to be likely to cause skin irritation, allergic reaction or any other adverse effect on health.

4.2.1.2 All materials are visibly unimpaired after cleaning and disinfection by the methods specified by the manufacturer.

4.2.2 Construction

4.2.2.1 All parts of the ear-muffs are rounded, finished smooth and are free from sharp edges.

4.2.2.2 The following parts are intended to be replaced by the wearer

cushions: yes no

liners: yes no

The use of tools is not necessary for the replacement.

4.2.2.3 / 4.2.2.4 As the mass is in excess of 150 g the ear-muffs are provided with a headstrap.

Mode of Wearing

Over-the-head ear-muffs: yes no

Behind-the-head and under-the-chin ear-muffs: yes no

Universal ear-muff: yes no

Wearer Information

Marking: front / back right / left no specifications

Size

Medium size range yes no

Large size range yes no

Small size range yes no

Marking S M L no marking of the size

Headband force

fixed, not adjustable

adjustable, range from to N

Information on the impairment of PPE performance due to ageing (in accordance with Annex II, section 2.4 in conjunction with section 1.4 of the PPE Regulation):

The product is exposed to ageing. yes no

If not, reason:

a check is recommended before use in order to identify any trouble with the headset protection

The product is marked with:

Production date Expiration date recommended usage period

On delivery, the earmuffs are labelled according to EN 352-1, section 5 and provided with the information required in sections 6.2 and 6.3 of EN 352-1:2002.

For the earmuffs

Model:

WI407

and

versions:

Integrated headset

we confirm as manufacturer / distributor the before mentioned specifications.

Company:

Globalsys

Address:

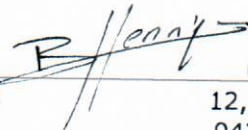
12 avenue des coquelicots
94380 Bonneuil sur Marne
France

Name: Bruno Henriques

Bonneuil sur Marne, 04/07/2018

Place, Date

Stamp / Signature



GLOBALSYS Sarl
12, avenue des Coquelicots
94380 Bonneuil Sur Marne
RCS CRFTEII 413 058 918

**Manufacturer's Declaration according to
EN 352-1:2002 Paragraph 4.2 Material and Construction**

4.2.1 Materials

4.2.1.1 Those parts of the ear-muffs that may come into contact with the skin are non-staining, soft, pliable and not known to be likely to cause skin irritation, allergic reaction or any other adverse effect on health.

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Mode of Wearing

Over-the-head ear-muffs: yes no

Behind-the-head and under-the-chin ear-muffs: yes no

Universal ear-muff: yes no

Wearer Information

Marking: front / back right / left no specifications

Size

Medium size range yes no

Large size range yes no

Small size range yes no

Marking S M L no marking of the size

Headband force

fixed, not adjustable

adjustable, range from to N

Information on the impairment of PPE performance due to ageing (in accordance with Annex II, section 2.4 in conjunction with section 1.4 of the PPE Regulation):

The product is exposed to ageing. yes no

If not, reason:

a check is recommended before use in order to identify any trouble with the headset protection

The product is marked with:

Production date Expiration date recommended usage period

On delivery, the earmuffs are labelled according to EN 352-1, section 5 and provided with the information required in sections 6.2 and 6.3 of EN 352-1:2002.

For the earmuffs

Model:

HEA371

and

versions:

wired

we confirm as manufacturer / distributor the before mentioned specifications.

Company:

GLOBALSYS

Address:

12 avenue des coquelicots
94380 bonneuil sur marne

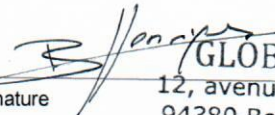
Name:

Bruno Henriques

Bonneuil sur marne 04/07/2018

Place, Date

Stamp / Signature


GLOBALSYS Sarl
12, avenue des Coquelicot
94380 Bonneuil Sur Marne
RCS CRETEIL 413 053