I. Device under test

Test object:	Headband earmuff
Trade name / Model reference:	EC5
State of construction:	Production
Serial No.:	-- We.: 1320 - 1329
Manufacturer:	Jinhua Jinglan Industry & Trade Co., Ltd.
Country:	China
Arrival test sample:	11-08-2015

Issue date of test report: (21-10-2015) Revision 1: **20-11-2015**

Amount of pages: 16 Enclosures: Manufacturer Declaration (Page 17 to 18)

Christian Gerdes (Head of test laboratory)

Anja Biedermann (Testing person)

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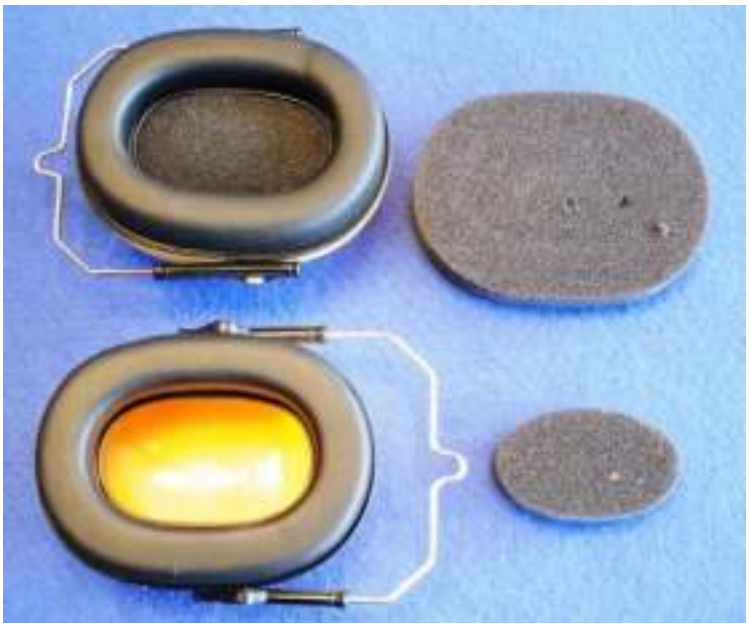
Germany

Accredit Test Laboratory of the
Federal Republic of Germany by
Akkreditiertes Prüflabor der
Bundesrepublik Deutschland durch die
DAkkS
DAkkS Deutsche Akkreditierungsstelle D-PL-12127-01-01

Additional pictures of the DUT:



II. Client:

Jinhua Jinglan Industry & Trade Co., Ltd.
Xiaoshun Town, Jindong District
Jinhua City
Zhejiang Province
P. R. China

Contact person: Fang Wei
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III. Accredited Laboratory

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

Reference: Ge / AB

Third-party laboratory: --

IV. Testing Standards:

EN 352-1:2002 (DIN EN 352-1 2003)	Hearing Protectors, General requirements Part 1 Ear-Muffs
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

V. Conformance test conducted on: 29-09-2015 to 14-10-2015

VI. Measurement equipment

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

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

VII. 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 %

VIII. General notes

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IX. Abbreviations

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

X. Revision

Revision No.	Date:	Reason of revision:
9161503-1 Rev.1	20-11-2015	Revision of the Original Test Report 9161503-1 (21-10-2015) Additional pictures of the DUT

Only the test-report with the latest revision status is valid.

Content

Results

Ear-muffs EN 352-1

4.2 Materials and Construction

4.2.1 Materials **P**

Result: See Manufacturer's Declaration, Appendix 1

4.2.2 Construction

4.2.2.1 Construction **P**

Requirements: All parts of the ear-muffs shall be rounded, finished smooth and be free from sharp edges.

Result: See Manufacturer's Declaration

4.2.2.2 Construction **P**

Requirements: Ear-muffs 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 ear-muffs that have a mass in excess of 150 g shall be provided with a headstrap.

Result of universal ear-muff:

Sample	1	2	3	4	5	6	7	8	9	10
We.-No.	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329
Weight [g]	153	153	153	154	153	153	154	153	153	154
Headband	no	no	no	no	no	no	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.

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

Sample	1	2	3	4	5	6
Test height/width						
115 / 125 (S)	yes	yes	yes	yes	yes	yes
115 / 145 (S/M)	yes	yes	yes	yes	yes	yes
130 / 125 (S/M)	yes	yes	yes	yes	yes	yes
130 / 145 (S/M/L)	yes	yes	yes	yes	yes	yes
130 / 155 (M/L)	yes	yes	yes	yes	yes	yes
140 / 145 (M/L)	yes	yes	yes	yes	yes	yes
140 / 155 (L)	yes	yes	yes	yes	yes	yes

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

Sample	1	2	3	4	5	6
Test height/width						
75 / 125 (S)	no	no	no	no	no	no
75 / 145 (S/M)	no	no	no	no	no	no
90 / 125 (S/M)	no	no	no	no	no	no
90 / 145 (S/M/L)	no	no	no	no	no	no
90 / 155 (M/L)	no	no	no	no	no	no
105 / 145 (M/L)	no	no	no	no	no	no
105 / 155 (L)	no	no	no	no	no	no

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:

Size S Test height: 122 / 82 Test width: 135

Sample	**1**	**2**	**3**	**4**	**5**	**6**
Starting position						
+5° horizontal / 0° vertical	P	P	P	P	P	P
-5° horizontal / 0° vertical	P	P	P	P	P	P
+5° horizontal / +5° vertical	P	P	P	P	P	P
-5° horizontal / -5° vertical	P	P	P	P	P	P
0° horizontal / +5° vertical	P	P	P	P	P	P
0° horizontal / -5° vertical	P	P	P	P	P	P

Size M Test height: 130 / 90 Test width: 145

Sample	**1**	**2**	**3**	**4**	**5**	**6**
Starting position						
+5° horizontal / 0° vertical	P	P	P	P	P	P
-5° horizontal / 0° vertical	P	P	P	P	P	P
+5° horizontal / +5° vertical	P	P	P	P	P	P
-5° horizontal / -5° vertical	P	P	P	P	P	P
0° horizontal / +5° vertical	P	P	P	P	P	P
0° horizontal / -5° vertical	P	P	P	P	P	P

Size L Test height: 135 / 98 Test width: 150

Sample	1	2	3	4	5	6
Starting position						
+5° horizontal / 0° vertical	P	P	P	P	P	P
-5° horizontal / 0° vertical	P	P	P	P	P	P
+5° horizontal / +5° vertical	P	P	P	P	P	P
-5° horizontal / -5° vertical	P	P	P	P	P	P
0° horizontal / +5° vertical	P	P	P	P	P	P
0° horizontal / -5° vertical	P	P	P	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 ear-muffs

Sample	1	2	3	4	5	6
Test height/width	Force [N]					
122 / 135 (S)	10,2	10,7	10,3	10,1	10,1	9,6
130 / 145 (S/M/L)	9,8	10,2	10,0	9,9	9,9	9,4
135 / 150 (L)	8,7	9,2	9,0	9,0	9,0	8,7

Results: Behind-the-head ear-muffs

Sample	1	2	3	4	5	6
Test height/width	Force [N]					
122 / 82 (S)	-	-	-	-	-	-
130 / 90 (M)	-	-	-	-	-	-
135 / 98 (L)	-	-	-	-	-	-

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.

Results: Over-the-head ear-muffs

Sample	1	2	3	4	5	6
Test height/width	Force [N]					
122 / 135 (S)	3790	3980	3830	3760	3760	3570
130 / 145 (S/M/L)	3640	3790	3720	3680	3680	3500
135 / 150 (L)	3240	3420	3350	3350	3350	3240

Results: Behind-the-head ear-muffs

Sample	1	2	3	4	5	6
Test height/width	Force [N]					
122 / 82 (S)	-	-	-	-	-	-
130 / 90 (M)	-	-	-	-	-	-
135 / 98 (L)	-	-	-	-	-	-

4.3.6 Resistance to damage when dropped

P

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

Sample	Damages
1	no
2	no
3	no
4	no
5	no
6	no

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

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

Sample	Damages
1	-
2	-
3	-
4	-
5	-
6	-

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 are measured after the ear-muffs have been subjected to the appropriate conditioning and tests: drop test, bending test, water immersion and the 24 h conditioning test.

Result: headband force

Sample	**1**	**2**	**3**	**4**	**5**	**6**
measured [N]	9,5	9,8	9,6	9,5	9,7	9,4
max. headband force from 4.3.4 [N]	10,2	10,7	10,3	10,1	10,1	9,6
Change [N]	0,7	0,9	0,7	0,6	0,4	0,2
Result [%]	**6,9**	**8,4**	**6,8**	**5,9**	**4,0**	**2,1**

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	Changes, Damages
1	no
2	no
3	no
4	no
5	no
6	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.

Result:

Frequency Hz	Mean	Standard deviation
250	10.0	3.2
315	15.6	4.2
400	19.0	4.1
500	21.1	3.6
630	26.2	3.5
800	31.5	5.7
1000	31.6	5.7
1250	31.2	3.8
1600	28.7	1.6
2000	28.3	1.7
2500	31.8	2.0
3150	34.8	1.7
4000	39.2	2.5
5000	38.2	3.9
6300	40.6	4.1
8000	40.8	5.0

1320 - 1329

	Insertion loss																			
WE	1321		1322		1320		1323		1324		1325		1326		1327		1328		1329	
Frequency	Cup No.																			
Hz	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
250	12.0	13.5	11.2	4.5	5.8	10.2	14.5	7.9	4.7	8.6	11.3	8.8	11.1	7.1	14.6	9.6	5.5	14.1	11.7	12.4
315	18.8	19.5	17.5	8.7	9.8	14.2	20.6	14.2	8.9	14.6	19.3	15.0	16.4	11.2	19.3	13.9	10.1	21.9	18.4	19.8
400	23.0	23.1	20.6	12.7	13.5	17.3	22.4	17.3	12.9	17.2	24.2	18.4	19.3	15.1	21.9	17.3	13.5	25.2	22.0	23.6
500	24.4	24.3	22.2	15.4	16.0	18.6	23.7	21.1	16.0	19.9	26.0	20.9	21.9	17.2	23.1	19.8	16.4	26.1	23.9	25.6
630	29.7	29.3	28.0	20.4	22.8	24.8	27.8	26.1	21.1	23.5	30.4	24.2	27.6	23.0	29.4	25.7	20.2	31.0	28.2	30.6
800	37.9	36.8	34.1	24.4	25.1	28.6	26.7	29.5	23.6	30.4	39.8	31.3	33.6	26.8	31.6	26.6	25.4	40.5	37.7	40.3
1000	38.0	36.1	33.3	24.7	25.3	27.7	26.7	32.8	23.1	31.8	41.4	34.2	33.7	27.1	28.9	25.0	27.6	36.3	38.6	40.6
1250	33.9	32.9	32.3	25.6	27.4	28.9	29.0	34.9	24.9	33.2	37.7	35.1	34.6	28.1	29.0	26.1	27.6	34.3	34.3	34.4
1600	29.3	26.6	27.6	26.6	26.5	26.8	29.8	30.5	27.4	30.6	30.9	29.5	31.0	27.8	29.7	26.9	28.0	30.2	28.6	28.8
2000	28.3	25.4	26.5	27.6	25.9	25.3	28.2	28.4	30.5	30.7	30.0	29.2	29.5	26.9	30.0	27.0	28.3	30.0	28.4	28.9
2500	31.9	28.9	30.1	31.9	28.5	28.1	30.7	30.6	33.4	34.0	33.4	33.6	32.1	29.4	33.7	31.8	32.2	35.8	32.5	32.4
3150	35.1	33.1	34.0	35.0	31.9	32.4	34.8	33.4	34.1	35.6	36.3	36.6	34.5	33.0	35.9	35.6	35.1	39.3	35.8	35.1
4000	40.1	38.8	42.1	38.2	33.7	38.0	39.4	39.2	34.0	41.7	41.4	42.1	41.0	36.3	38.4	37.0	38.0	42.3	39.7	41.6
5000	41.3	43.1	39.0	33.0	30.1	32.9	41.4	41.8	33.3	39.7	40.4	40.7	38.2	33.8	39.5	35.0	35.9	41.9	39.7	43.1
6300	42.3	41.3	37.7	34.3	31.1	36.2	41.7	43.4	33.8	44.2	42.7	44.9	43.8	37.1	42.8	40.5	42.1	44.0	42.9	44.3
8000	47.4	42.7	40.0	35.5	32.9	36.1	44.9	45.5	30.5	45.2	45.3	44.4	42.9	33.4	40.6	36.6	38.9	45.4	43.2	44.8

4.3.10 Resistance to leakage

N/A

Requirement: In the case of fluid filled cushions, they shall not leak when the ear-muffs 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 ear-muffs shall ignite upon application of the heated rod nor continue to glow after removal of the heated rod.

Result:

Materials	**Sample 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 % (α = 1) for the Calculation of the HML value

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

Result				Limit
Frequency [Hz]	**Sound attenuation** M_f [dB]	**Standard deviation** s_f [dB]	**APV** $M_f - s_f$ [dB]	[dB]
63	10,5	5,1	5,4	
125	11,5	5,4	6,1	5
250	13,7	4,2	9,5	8
500	19,0	3,3	15,7	10
1000	23,4	2,7	20,7	12
2000	19,0	3,4	15,6	12
4000	35,1	5,0	30,1	12
8000	35,8	7,4	28,4	12

H = 19 dB
M = 17 dB
L = 12 dB

SNR = 19 dB

5. Marking

The ear-muffs or the minimum standard package shall be durably marked with the following information:	Result:	
	ear-muff	package
The name, trade mark or other identification of the manufacturer or his authorized representative.	No	See remark
The model designation	No	See remark
The number of this EN standard, EN 352-1 and further standards, if applicable	No	See remark
In the case of ear-muffs 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.	Not relevant	Not relevant

Remark

Original-package respectively the artwork of the package was not available during testing.

The information according to paragraphs 5 of EN 352-1:2002 shall be supplied with the ear-muff respectively package

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 ear-muffs. 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

4.2.11 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.

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

4.2.2 Construction

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

4.2.22 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.

4.2.23 / 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

The information as requested in paragraphs 6.2 and 6.3 of EN 352-1:2002 will be supplied with the ear-muffs.

For the ear-muffs

Model: EC5

and versions:

we confirm as manufacturer / distributor the before mentioned specifications.

Company: Jinhua Jinglan Industry & Trade Co.,Ltd.

Address: Xiaoshun Town, Jindong District
Jinhua City
Zhejiang Province
P.R.China

Name:

JINHUA, July 03, 2015

Place, Date

Signature