

# HDA 300

## Reference of measurements

Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany  
 Test Report Audiometric Headphones HDA 300  
 Reference no: 1.61 – 4064893/13

## Measurement conditions

Temperature: 22 °C  
 Relative humidity: 50 %

## Sensitivity level

on ear simulator with adapter (plate) and conical ring according to IEC 60318-1:2010\*

Frequency in Hz	Mean value on B&K 4153 in dB re 1 Pa/V	Standard deviation in dB
63	34.9	0.58
80	35.6	0.75
100	36.1	0.58
125	36.1	0.88
160	37.2	0.40
200	38.0	0.31
250	38.0	0.67
315	38.6	0.77
400	38.2	1.03
500	37.2	1.05
630	35.4	0.75
750	33.5	0.61
800	32.7	0.53
1,000	30.1	0.28
1,250	27.5	0.37
1,500	25.2	0.26
1,600	24.3	0.33
2,000	21.1	0.52
2,500	20.3	0.54
3,000	20.0	0.55
3,150	19.8	0.55
4,000	16.3	0.46
5,000	26.1	0.20
6,000	26.4	0.25
6,300	26.7	0.36
8,000	28.1	1.56
10,000	19.4	0.43
12,000	24.1	0.81
12,500	20.2	0.68
14,000	17.5	1.04
16,000	16.1	0.85

on 6 ccm coupler according to IEC 60318-3:2010

Frequency in Hz	Mean value on B&K 4152 in dB re 1 Pa/V	Standard deviation
63	24.5	1.08
80	27.2	0.90
100	29.1	0.68
125	30.5	0.52
160	31.7	0.41
200	32.5	0.29
250	33.1	0.44
315	34.2	0.27
400	35.3	0.22
500	36.3	0.22
630	37.5	0.28
750	38.2	0.41
800	38.4	0.34
1,000	38.8	0.61
1,250	37.4	0.62
1,500	36.0	0.29
1,600	35.3	0.20
2,000	33.2	0.58
2,500	32.0	0.42
3,000	29.7	0.36
3,150	29.0	0.29
4,000	26.7	0.14
5,000	27.0	0.36
6,000	28.9	0.54
6,300	28.3	0.54
8,000	18.4	0.74

## Reference equivalent threshold sound pressure level (re 20 µPa)

on ear simulator with adapter (plate) and conical ring according to IEC 60318-1:2010

Frequency in Hz	Mean value on B&K 4153 in dB re 1 Pa/V	Standard deviation in dB	Median value *** on B&K 4153 in dB	Interquartile range in dB
125	26.2	3.9	27.0	5.5
250	20.1	3.1	20.0	4.0
500	8.6	4.0	8.0	3.5
750*	5.1		4.5	
1,000	2.7	4.6	2.0	4.5
1,500	3.2	7.1	3.0	6.5
2,000	0.5	4.5	0.0	7.0
3,000	-1.6	6.0	-3.0	7.5
4,000	0.1	5.4	-0.5	5.5
5,000	11.3	4.4	10.5	6.0
6,000	20.9	7.2	21.0	7.5
8,000	23.1	6.1	23.0	6.0
9,000	27.1	5.4	27.5	7.0
10,000	18.5	5.7	18.0	6.0
11,200	22.9	5.6	22.0	8.5
12,500	27.0	5.5	27.0	10.0
14,000	32.8	6.9	33.5	7.5
16,000	47.7	14.4	45.5	12.5

## Reference equivalent threshold sound pressure level (re 20 µPa)

on 6 ccm coupler according to IEC 60318-3:2010

Frequency in Hz	Mean value on B&K 4152 in dB re 1 Pa/V	Standard deviation in dB	Median value *** on B&K 4152 in dB	Interquartile range in dB
125	22.3	3.9	23.0	5.4
250	14.7	3.1	14.5	4.0
500	7.4	4.0	6.5	3.5
750*	9.5		9.0	
1,000	11.0	4.6	10.5	4.0
1,500	14.8	7.1	14.5	7.0
2,000	12.3	4.5	12.0	7.0
3,000	8.0	6.0	6.5	7.5
4,000	10.0	5.4	9.5	5.5
5,000	12.3	4.4	11.5	6.0
6,000	23.0	7.2	23.0	7.5
8,000	15.9	6.1	16.0	6.0

\* interpolated values  
 \*\*\* rounded to nearest 0.5 dB

\* Measured with additional adapter ring for a quicker and more accurate positioning on coupler plate of the ear simulator. This is optionally available from Sennheiser.

**Difference between free-field sensitivity level  $G_f$  and ear simulator sensitivity level  $G_c$**   
on ear simulator with adapter (plate) and conical ring according to IEC 60318-1:2010

Frequency in Hz	Mean value on B&K 4153 in dB re 1 Pa/V	Standard deviation in dB	Median value*** on B&K 4153 in dB	Interquartile range in dB
100**	-12.6		-12.0	
125	-12.2	4.4	-12.0	5.5
160*	-11.7		-11.5	
200*	-11.3		-11.5	
250	-10.9	3.9	-11.5	4.5
315*	-10.9		-11.0	
400	-11.0	4.3	-10.0	7.0
500	-7.8	3.5	-7.5	3.5
630*	-5.4		-5.0	
800*	-3.0		-3.0	
1,000	-0.8	3.4	-1.0	3.5
1,250	0.3	4.7	0.0	6.0
1,600	-0.7	3.2	-0.5	5.5
2,000	-2.1	4.0	-2.0	7.0
2,500	-3.0	3.0	-3.0	3.0
3,150	-5.2	3.1	-6.0	4.0
4,000	-5.4	3.3	-4.5	6.0
5,000	-11.7	3.3	-10.5	2.5
6,300	-7.5	3.9	-7.0	6.0
8,000	-10.1	4.5	-10.0	7.0

**Difference between free-field sensitivity level  $G_f$  and coupler sensitivity level  $G_c$**   
on 6 ccm coupler according to IEC 60318-3:2010

Frequency in Hz	Mean value on B&K 4152 in dB re 1 Pa/V	Standard deviation in dB	Median value*** on B&K 4152 in dB	Interquartile range in dB
100**	-5.8		-5.0	
125	-5.8	4.4	-5.5	5.5
160*	-5.7		-5.5	
200*	-5.6		-6.0	
250	-5.6	3.9	-6.0	5.0
315*	-6.3		-6.0	
400	-7.1	4.3	-6.0	7.0
500	-5.7	3.5	-5.0	3.5
630*	-7.2		-7.0	
800*	-8.7		-8.5	
1,000	-10.2	3.4	-10.5	4.0
1,250	-11.3	4.7	-11.5	6.0
1,600	-13.4	3.2	-13.5	5.0
2,000	-14.8	4.0	-15.0	5.5
2,500	-15.2	3.0	-15.0	3.0
3,150	-14.6	3.1	-15.5	4.0
4,000	-14.0	3.3	-13.0	6.0
5,000	-13.5	3.3	-12.0	2.0
6,300	-9.2	3.9	-8.5	6.0
8,000	-3.3	4.5	-3.0	7.0

\* interpolated values  
\*\* extrapolated value  
\*\*\* rounded to nearest 0.5 dB

**Passive attenuation**

The attenuation was measured according to ISO 4869-1:1994

Frequency in Hz	Mean value in dB
63	12.5
125	12.4
250	12.7
500	9.4
1,000	12.8
2,000	15.1
4,000	28.8
8,000	26.2

**Standards**

Headphones comply with:  
- IEC 60645-1  
- IEC 60645-2  
- ANSI S3.6-2010



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