



60645-1—
2017

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(IEC 60645-1:2017,)



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60645

6064S-1

125

16

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(60268-7).

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2*

8253-1.

1* / 98-4 « 4. » (ISO/IEC Guide 98-4 «Uncertainty of measurement — Part 4: Role of measurement uncertainty in conformity assessment»).

IEC 60318-3. Electroacoustics — Simulators of human head and ear — Part 3: Acoustic coupler for the calibration of supra-aural earphones used in audiometry [(supra-aural).]

IEC 60318-4. Electroacoustics — Simulators of human head and ear — Part 4: Occluded-ear simulator for the measurement of earphones coupled to the ear by means of ear inserts ()

IEC 60318-5. Electroacoustics — Simulators of human head and ear — Part 5: 2 cm³ coupler for the measurement of hearing aids and earphones coupled to the ear by means of ear inserts ()

IEC 60318-6. Electroacoustics — Simulators of human head and ear — Part 6: Mechanical coupler for the measurement of bone vibrators ()

IEC 60601-1. Medical electrical equipment — Part 1: General requirements for basic safety and essential performance ()

IEC 60601-1-2, Medical electrical equipment — Part 1-2: General requirements for basic safety and essential performance — Collateral standard: Electromagnetic compatibility — Requirements and tests ()

IEC 61260-1. Electroacoustics — Octave-band and fractional-octave-band filters — Part 1: Specifications ()

IEC 61672-1. Electroacoustics — Sound level meters — Part 1: Specifications ()

ISO 266. Acoustics — Preferred frequencies ()

ISO 389-1. Acoustics — Reference zero for the calibration of audiometric equipment — Part 1: Reference equivalent threshold sound pressure levels for pure tones and supra-aural earphones ()

ISO 389-2. Acoustics — Reference zero for the calibration of audiometric equipment — Part 2: Reference equivalent threshold sound pressure levels for pure tones and insert earphones ()

ISO 389-3. Acoustics — Reference zero for the calibration of audiometric equipment — Part 3: Reference equivalent threshold force levels for pure tones and bone vibrators ()

ISO 389-4:1994. Acoustics — Reference zero for the calibration of audiometric equipment — Part 4: Reference levels for narrow-band masking noise ()

ISO 389-5. Acoustics — Reference zero for the calibration of audiometric equipment — Part 5: Reference equivalent threshold sound pressure levels for pure tones in the frequency range 8 kHz to 16 kHz ()

ISO 389-7. Acoustics — Reference zero for the calibration of audiometric equipment — Part 7: Reference threshold of hearing under free-field and diffuse-field listening conditions ()

ISO 389-8. Acoustics — Reference zero for the calibration of audiometric equipment — Part 8: Reference equivalent threshold sound pressure levels for pure tones and circumaural earphones ()

ISO 4869-1. Acoustics — Hearing protectors — Part 1: Subjective method for the measurement of sound attenuation () 1.

ISO 8253-1:2010. Acoustics — Audiometric test methods — Part 1: Pure-tone air and bone conduction audiometry () 1.

ISO 8253-2. Acoustics — Audiometric test methods — Part 2: Sound field audiometry with pure-tone and narrow-band test signals () 2.

ISO 8253-3. Acoustics — Audiometric test methods — Part 3: Speech audiometry () 3.

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- IEC Electropedia: <http://www.electropedia.org/>;
- ISO Online browsing platform: no <http://www.iso.org/obp>.

3.1 (equipment for pure-tone audiometry, pure-tone audiometer):

3.2 (manual audiometer):

3.3 (automatic-recording audiometer):

3.4 (equipment for speech audiometry, speech audiometer):

3.5 (air conduction):

3.6 (bone conduction):

3.7 ; (extended high frequency; EHF):
8 16

3.8 (ontologically normal person):

3.9 ()
[equivalent threshold sound pressure level (monaural earphone listening)]:

3.10 ()
) [equivalent threshold force level (monaural listening)]:

369-4.

3.11 [reference equivalent threshold sound pressure level (RETSPL):

18 25

1 — RETSPL 389-1. 389-2. 369-5 389-8.

2 — 389

18 30

3.12 (reference equivalent threshold force level; RETFL):

18 25

1 — RETFL 389-3.

2 — 389 RETFL 18

30

3.13 (close-coupled sensitivity):

3.14 (close-coupled sensitivity level);

1 / .

3.15 (free-field sensitivity):

() (0")

— 60286-7.

3.16 (free-field sensitivity level):

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3.17 (free-field equivalent earphone output level):

3.18 () (hearing level of a pure tone; HL):

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RETSPL RETFL

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	i	Ng	S	T	A		
-	x	x	x	x	x	x _d	X?
•	x						
• 0	x	x				x	
•	x	x	x			x	
(. 2) -	x	x	x	x	x	x	x
-	x	x	x	x	x	x	x
-	x	x	x		x	x	x
• / -	x	x	x	x ^b	x	x	x
•	x	x			x		
- ()	x	x					
6							
•	x	x					
•	x						
•	x	x				x	x

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•	-					X	X
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-	-						
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•	X	X	X		X	X	X
-	X					X	
-	X	X				X	
-	X					X	
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5.1

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5.2

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5.3

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- 30 90%;
- 98 104 .

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5.5

5.5.1

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5.5.2

$\pm 10\%$

$\pm 5\%$

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5.5.3

5.5.4

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ISO 60601-1-2

80 . 13.3

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5.7.1

(. 13.4)

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250

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8253-1:2010 (.)

8253-1:2010,

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5.7.2

5.7

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5.7.3

13.4.1.

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« .».

13.4.1.

8.6.

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5.7.5

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13.4.2.

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13.4.3.

6.1.6 (. 6.1.4) (. 13.6) ,

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250 4 ;

• 6

4 6.3 .

6.3.2

6.1.7

8

6.5.3 8253-3.

6.1.8 6.1.6.

— 6.3.2 (,)

6.1.9 20 . -

0 .

-10 80 . — -10 100 .

— 20

6.1.10

6.1.10.1

6.2.3. , 9

6.1.10.2

3 %.

80 . 6.1.10.1. 100 -

10%.

6.1.10.3

6.2.3.

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125	70	—	60	—	—	—	—
250	90	45	80	45	70	35	70

	*						
	1		2		3		4
500	120	60	110	60	100	50	70
750	120	60	—	—	—	—	—
1000	120	70	110	70	100	60	70
1500	120	70	110	70	—	—	—
2000	120	70	110	70	100	60	70
3000	120	70	110	70	100	60	70
4000	120	60	110	60	100	50	70
6000	110	50	100	—	90	—	70
8000	100	—	90	—	60	—	—
8000'	100						
9000	90						
10 000'	90						
11 200	80						
12 500'	70						
14 000	70						
16 000'	60						
1*							
			-				
	100	60		100			
$\frac{8}{20} \{ \dots \} \frac{250}{6000} -$							

6.2

6.2.1

6.2.1.1

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8

389.

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 1/6 (. 266).
 3. 8.10.12.5 16
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6.2.1.2

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6.2.2

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: ±2 %.

±5 %.

6.2.3

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*	125—200	250—400	500—8000	250—400	500—800	1000—4000
	75	90	110	20	50	60
. %	2.5	2.5	2.5	5.5	5.5	5.5
6.1.10.						
10						

6.2.4

8

±20 %.

30 .

6.2.5

a)

2

±3 %.

b)

6.4.2

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6.4.3

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6.4.4

6.1.6
6.4.5

6.3.2

(. 8253-3).

6.1.6.

6.3.2.

6.5

6.5.1

6.5.2

36

8

4.
12

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31.5
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3.15

125	105	111	140	149
160	136	143	180	190
200	168	178	224	238
250	210	223	281	297
315	265	281	354	375
400	336	356	449	476
500	420	445	561	595
630	530	561	707	749
750	631	668	842	892
800	673	713	898	951
1000	841	891	1120	1190
1250	1050	1110	1400	1490
1500	1260	1340	1680	1780
1600	1350	1430	1800	1900
2000	1680	1780	2240	2380
2500	2100	2230	2810	2970
3000	2520	2670	3370	3570
3150	2650	2810	3540	3750
4000	3360	3560	4490	4760
5000	4200	4450	5610	5950
6000	5050	5350	6730	7140
6300	5300	5610	7070	7490
8000	6730	7130	8980	9510
9000	7570	8020	10100	10 700
10000	8410	8910	11 220	11 890
11 200	9420	9980	12 570	13320
12 500	10 510	11 140	14 030	14 870
14 000	770	12470	15 710	16650
16000	13450	14 250	17 960	19030

1/2

1 —

1/3
400

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{ . 389-4).

$$f_u(\min), f_u(\max) = 2^{*} \ll J(\max) = \dots$$

$$U^{TM}) = \dots$$

$$f_m \dots$$

6.5.3

(. 6.1.4)

1 6 . 125 1 12 / 6.1.6.

6 .

6.5.4

7

7.1

7.2

389

7.3

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8 8253-2

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8.1

« » (HL)

389.

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-10

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-10

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8.2

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60268-17.

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8.3

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4

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±2.0 ; 8 16 — ±3,0
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6.4

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1.25 /e /

8.4.3

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8.5.1

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a)

389-4.

1 389-4:1994.

1 2

1 389-4:1994.

5 :

b)

(20)

c)

8.5.3

8.4.3.

8.5.4

500 80 1 4 60 250 . 75
 0 0 5

8.6

8.6.1

(. 5.7.4)

8.6.2

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60

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8.6.3

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200 :
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G

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8.6.4

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20 50 :

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• G ;
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 « .»/» .». (225 ± 40) ;
 • G I (« .») — (.»).

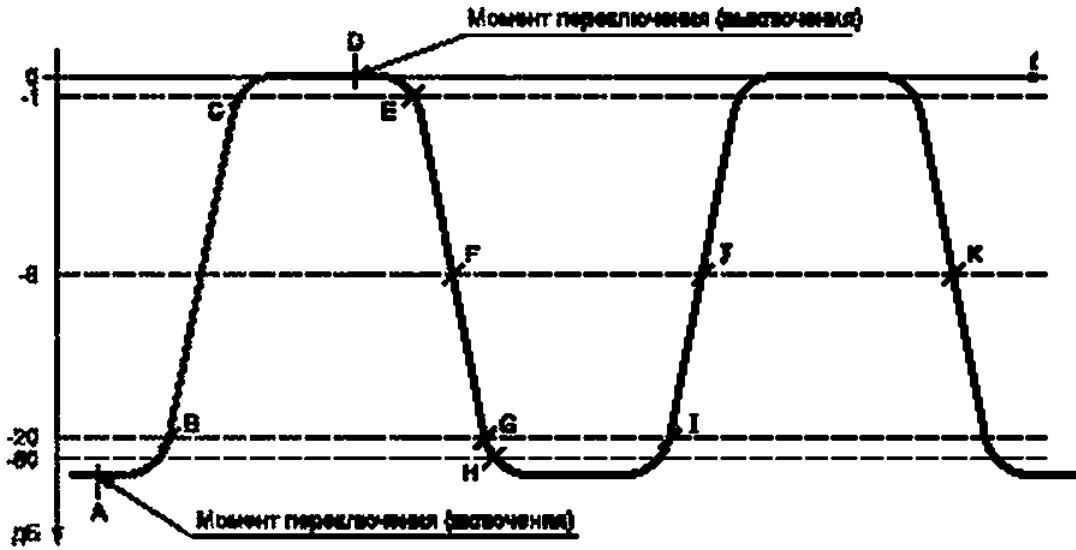


Рисунок 1 — График изменения огибающей испытательного сигнала

8.6.5

8.6.6

9

9.1

9.2

250

4

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9.3

9.3.1

0 80

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100

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9.3.2

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9.3.3—9.3.5.

9.3.3

(.6.4).

9.3.4

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8253-1.

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8253-3).

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389.

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389-9

389-1.

8.

8253-1.

2 —

RETSPL

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	389-2. 389-5	60318-4. 60318-5
	389-5. 389-8	60318-1
	389-1	60318-6
	389-7	8253-2

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125 16 , 8253-1:2010 (10).

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13.1

13.2

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6.2.3.

1 100

6.2.3.

15 (± 0.5) * . 30 (± 5) %;

23 (± 0.5) * . 50 (± 5) %;

35 (± 0.5) * . 90 (± 5) %;

5.3.

5.3.

98 (± 1) 104 (± 1).

5.4 5.5

1 100

6.2.3.

13.3

a) ()

b) 0.

90.180 270

c) 1

55

d) — 1 — « . »

e) 80 (2,5) 1 %

60601-1-2. 5.6

13.4

13.4.1

F (. 61672-1).

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b)

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13.4.2

a)

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8253-1

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4869-1:

b)

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c)

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16

5.7.1.

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13.4.3

1 , 5.7.1. 5.7.4 . 1 .

13.5

60268-3 6.1.3 , 2. , -

a) 16 . , -

b) , , -

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13.7.1

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8.4.3 8 1 . 8 . -

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6.4.2 3.15 -

3.15 ,

13.8.2

61672-1 8.5.3 1- -

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13.9
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 13.9.2 7.2 129
 145 ±5
 13.9.3
 13.8.2. 190 ±5
 14 U_{max}
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5	8	-	. . 9.3.4 1,2
9	16	-	8.3. 9.3.4 1.5
			6.2.2 0.5%
		-	6.2.3 0.5%
			5.3, 13.2 0.5 *
			5.3. 13.2 5%
			5.3, 13.2 0.1
			6.2.4 5%
			6.2.5 5%
			6.2.5 5%

	6.3.2	1.0
-	6.5.2	1%
-36	6.5.2	1.0
	6.5.3	1%
-	6.5.3	1.5
	6.1.6	1.5
	6.1.8	1.5
125 4	8.5.3	1.0
250 4 -	8.3	1.5
4 -	8.3	2.0
%	8.4.2	5%
	8.4.3	0.5
	8.6.3. 8.6.4	5
	7.2	0.3

15

15.1

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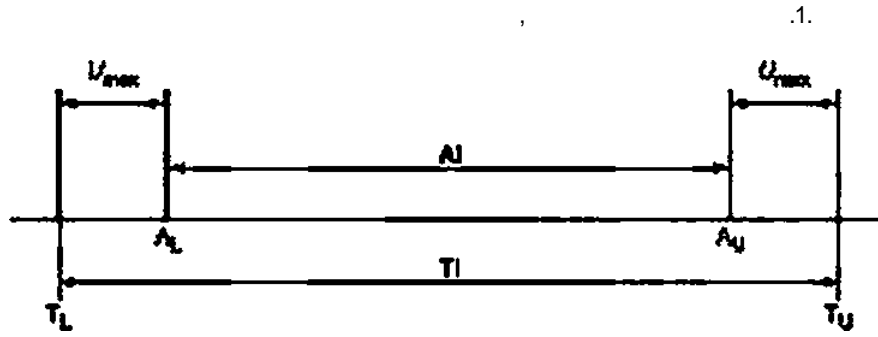
15.2

- a) :
- b) 5.3 5.5;
- c) (.5.7);
- d)

- e) 6.4 8.5).
 - f) (5.4);
 - h)
 - i)
 - ()
 -
 -
 - j) 4869-1;
 - k)
 - l) 125 6.3
 -)
 -)
 -) 8.6.5:
 -)
 - q) 8253-1. ISO 8253-2. 8253-2);
 -)

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JCGM 106) 4. / 96-4 « -
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IEC 60268-3	—		
1 60268-7	—		
1 60268-17	—		
1 60318-1		IEC 60268-1—2014 « 1. »	
1 60318-3	—		
IEC 60318-4	—		
1 60318-5		60318-5—2010 « 5. »	2
IEC 60318-6	—		
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1 60601-1-2		60601-1-2—2014 « 1-2. »	- - -
1 61260-1	—		•1)
IEC 61672-1	—		•2)
ISO 266	NEQ	12090—80 « »	
ISO 389-1		389-1—2011 « 1. »	- -
ISO 389-2		389-2—2011 « 2. »	- -

- 1> 8.714—2010 (61260:1995) « -
», -
IEC 61260-1:1995 1-2001-09. IEC 61260-1:2014.
- 2> 17187—2010 (IEC 61672-1:2002) « 1. », -
IEC 61672-1 (2002). 1 61672-1:2013.

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ISO 389-3	1DT	389-3—2011 « 3.	- -
ISO 389-4:1994		389-4—2011 « 4.	- -
ISO 389-5		389-5—2011 « 5. 8 16 »	- -
ISO 389-7		389-7—2011 « 7. »	- - -
ISO 389-8		389-8—2011 « 8. »	- -
ISO 4869-1		12.4.211—99 (4869-1—89) « »	- -
ISO 8253-1:2010		8253-1—2012 « 1. »	-
ISO 8253-2		8253-2—2012 « 2. »	- -
ISO 8253-3		8253-3—2014 « 3. »	-
<p>* — : — NEQ —</p>			

- (1) ISO/IEC Guide 98-3. Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)
- (2) ISO 389-9. Acoustics — Reference zero for the calibration of audiometric equipment — Part 9: Preferred test conditions for the determination of reference hearing threshold levels

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и метрологии

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