

校准证书

CALIBRATION CERTIFICATE



证书编号: JL2620703731
Certificate No

第 1 页, 共 6 页
Page 1 of 6 Pages

客户名称 : 信恒检测技术(深圳)有限公司
Name of Customer

客户地址 : 广东省深圳市宝安区松岗街道潭头社区潭头工业 城二区 1 栋厂房 101、201、301
Address of Customer

计量器具名称 : 调节放大器
Name of Instrument

型号/规格 : Type -2690--030
Type/Specification

出厂编号 : 2673666
Serial No

资产编号 : BTF-EM-146
Asset No

制造单位 : B&K
Manufacture

校准依据 : JJF1157-2006 测量放大器校准规范
Calibrated in Accordance to

(校准专用章)
Stamp

校准日期 : 2026 年 01 月 19 日
Operation Date Year Month Day

建议复校日期 : 2027 年 01 月 18 日
Suggested Recal.Date Year Month Day

签发日期 : 2026 年 01 月 19 日
Issue Date Year Month Day

批准人 : 胡琴
Approved by

签名 : 胡琴
Signature

核验员 : 段生许
Checked by

校准员 : 龙晓峰
Calibrated by

证书首页背面“重要声明”是证书的组成部分, 任何未包含“重要声明”内容的复制均为不完整复制。
The "Important statement" on the back of the certificate's first page is part of the document, and copies without it are incomplete.

重 要 声 明

Important statement

1. 本院(站)是由深圳市人民政府依据《中华人民共和国计量法》设立并由国家市场监督管理总局、广东省市场监督管理局依法授权的法定计量检定机构。

SMQ is a legal metrological verification institution established by the Shenzhen Municipal People's Government and authorized by the State Administration for Market Regulation and Guangdong Administration for Market Regulation according to *Metrology Law of the People's Republic of China*.

2. 本院(站)进行的检定、校准和检测均可溯源至国际单位制(SI)单位和/或社会公用计量标准。

All verifications, calibrations and tests made by SMQ are traceable to the International System of Units (SI) and/or social public measurement standards.

3. 如果要满足被校准仪器的技术指标,或者技术法规要求,在规定范围内适用,请在建议复校日期前校准。(适用于校准证书)

To ensure that the calibrated instrument is properly used under given conditions in compliance with technical specifications or regulations, please recalibrate it before the suggested date. (Applicable to calibration certificates)

4. 本证书/报告提供的结果仅对本次被检的计量器具有效。送检仪器及其信息和客户信息均由委托方提供,本院(站)不对仪器的真实性及信息的完整性和准确性负责。如果委托方在委托协议书中未注明送检仪器的信息,我院(站)将按照仪器上标明的实际信息出具证书/报告。

The results provided by the certificate/report are only valid for the measured instrument in this instance. The submitted instruments and their information, and information of the entrusting party are all provided by the entrusting party, and SMQ assumes no responsibility for authenticity of the instrument and completeness and accuracy of the information. If the entrusting party does not specify the information of the submitted instrument in the entrusting agreement, SMQ will issue the certificate/report based on the actual information marked on the instrument.

5. 除非特别说明,否则在证书/报告中作出与规程或规范的符合性声明时,本院(站)将不考虑不确定度的影响,根据测得值是否在规定限值范围内作出符合性判断。

Unless otherwise specified, when making statements of conformity to regulations or specifications in the certificate/report, SMQ will disregard the uncertainty and judge conformity basing on whether the measured values are within the specified limits.

6. 证书/报告中二维码具浏览和下载完整证书/报告功能,是应委托方选择所设,该二维码及其复制图能使任何人扫描获取完整的证书/报告电子版,本证书/报告持有人如需限制他人经该二维码获取证书/报告内容,应自行遮盖或消除证书/报告及其复制件所附二维码,我院(站)对委托方选择证书/报告二维码功能所致的信息泄露概不负责。(适用于附二维码证书/报告)

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8. 只申领电子证书/报告时,相关内容和效力以电子证书/报告为准;电子证书/报告和纸质证书/报告同时申领时,电子证书/报告仅作为纸质证书/报告的副本,相关内容和效力以同编号纸质证书/报告为准。

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9. 证书/报告更改后,发出的电子版证书/报告、证书/报告的扫描件及传真件将不被追回,委托方有义务将更改后的证书/报告提供给使用原证书/报告的相关方。

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10. 委托方不得擅自使用测量结果进行不当宣传。如果委托方滥用或者违法使用证书/报告,导致侵犯第三方权益或造成第三方损失的,本院(站)不承担任何责任。如果因委托方不合理使用证书/报告,导致本院(站)遭受损失的,委托方应当赔偿本院(站)所遭受的所有损失,包括但不限于赔偿款、诉讼费、律师费、交通费、公证费等。

The entrusting party should not use the measurement results for improper publicity. In the event that the entrusting party abuses or illegally uses the certificate/report, thereby resulting in infringement of rights and interests of a third-party or causing losses to a third party, SMQ shall not assume any responsibility. In the event that the unreasonable use of the certificate/report by the entrusting party causes losses to SMQ, the entrusting party shall compensate SMQ for all losses incurred, including but not limited to compensation fees, litigation costs, attorney fees, transportation expenses, and notarization fees.

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Complaint and Certificate/Report Authenticity Inquiry Phone Number and Email: 400-900-8999, complaint@smq.com.cn

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校准用主要计量标准装置信息 Main Standard Devices Used

名称 Equipment Name	测量范围 Measuring Range	不确定度/准确度等级/ 最大允许误差 Uncertainty/Accuracy Class/ Maximum Permissible Error	计量标准考核证书号 Certificate No	有效期至 Due Date
_____	_____	_____	_____	_____

校准用主要标准器信息 Main Standards of Measurement Used

名称 Equipment Name	测量范围 Measuring Range	不确定度/准确度等级/ 最大允许误差 Uncertainty/Accuracy Class/ Maximum Permissible Error	设备编号 Equipment No	有效期至 Due Date	溯源单位/ 证书号 Traceability to/ Certificate No
声学振动测试前端 (含软件)	0.5Hz~50kHz	MPE: $\pm 0.01\%$	SB11219	2026-06-25	
数字万用表	频率范围: 10 Hz~20 kHz, 交流电压: 直流电压: 0.5m V~1000V	交流电压 MPE: 优于 $\pm 0.5\%$, 直流电压 MPE: 优于 $\pm 0.1\%$	SB0425	2026-06-16	
函数发生器	80 MHz	平坦度优于 0.1dB	SB5260	2026-08-27	

附加说明 Appended Directions

委托日期:
Application Date

2026 年 01 月 15 日

环境条件:
Operation Environment

温度 23.1°C 相对湿度 43.2%

校准地点:
Operation Location

本院声学龙珠实验室

校准项目/参数说明:
Items/parameters Instructions

本次校准根据委托方要求实施, 校准项目/参数详见校准结果
Calibration complied with client requirements; items/parameters detailed in results.

符合性及限制使用说明:
Statement of Compliance and Limitation

参见校准结果使用(Use referring to the results of Calibration)

校准结果

RESULTS OF CALIBRATION

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1 外观检查: 符合要求
Appearance Check: Pass.

2 频率响应特性 (参考频率: 1000 Hz): 见表1
Frequency Response(Ref. 1000 Hz):See Table 1

表1 Table 1

频率 Frequency	频率响应 Frequency Response		最大允许范围 Limit
(Hz)	(dB) CH1	(dB) CH2	(dB)
20	-0.02	-0.02	±0.2
31.5	-0.01	-0.02	±0.2
63	-0.01	-0.01	±0.2
125	-0.01	-0.01	±0.2
250	-0.01	-0.01	±0.2
500	-0.01	-0.01	±0.2
1000	0.0 (ref)	0.0 (ref)	±0.2
2000	+0.01	0.01	±0.2
4000	-0.01	-0.01	±0.2
8000	-0.02	-0.02	±0.2
12500	-0.02	-0.02	±0.2
16000	+0.01	0.01	±0.2
20000	+0.05	0.04	±0.2

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3 总谐波失真: 见表2
THD: See Table 2

表2 Table 2

频率标称值 Freq. Nominal Value	总谐波失真 THD		最大允许范围 M.P.R.
(Hz)	(%) CH1	(%) CH2	(%)
20	0.005	0.005	≤0.3
31.5	0.036	0.002	≤0.3
63	0.008	0.002	≤0.3
125	0.003	0.002	≤0.3
250	0.002	0.003	≤0.3
500	0.002	0.004	≤0.3
1000	0.003	0.003	≤0.1
2000	0.003	0.003	≤0.3
4000	0.003	0.005	≤0.3
8000	0.002	0.008	≤0.3
12500	0.002	0.009	≤0.3
16000	0.003	0.006	≤0.3
20000	0.004	0.002	≤0.3

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4 增益控制偏差 (1 kHz): 见表3、表4
Gain Indication Error: See Table 3 and Table 4

CH1 表3 Table 3

增益档 Gain	增益标称值 Gain Indi.Value	增益实测值 Gain Meas. Value	误差 Error	最大允许误差 M.P.E.
(mV/Pa)	dB	dB	dB	dB
10	-20	-19.99	0.01	±0.1
31.6	-10	-10.00	0.00	±0.1
100	0	0.00	0.00	±0.1
316	10	10.00	0.00	±0.1
(V/Pa)	dB	dB	dB	dB
1	20	20.00	0.00	±0.1
3.16	30	30.00	0.00	±0.1
10	40	40.00	0.00	±0.1
31.6	50	49.99	-0.01	±0.1

CH2 表4 Table 4

增益档 Gain	增益标称值 Gain Indi.Value	增益实测值 Gain Meas. Value	误差 Error	最大允许误差 M.P.E.
(mV/Pa)	dB	dB	dB	dB
10	-20	-20.00	0.00	±0.1
31.6	-10	-10.01	-0.01	±0.1
100	0	0.00	0.00	±0.1
316	10	10.00	0.00	±0.1
(V/Pa)	dB	dB	dB	dB
1	20	20.00	0.00	±0.1
3.16	30	29.99	-0.01	±0.1
10	40	40.00	0.00	±0.1
31.6	50	49.99	-0.01	±0.1

校准结果

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附注:

Notes:

1. 电压测量结果相对扩展不确定度: $U_{\text{rel}} = 0.1\%, k = 2$

Relative Expanded Uncertainty of Voltage: $U_{\text{rel}} = 0.1\%, k = 2$

2. 失真测量结果相对扩展不确定度: $U_{\text{rel}} = 1.8\%, k = 2$

Relative Expanded Uncertainty of Distortion: $U_{\text{rel}} = 1.8\%, k = 2$

3. 本证书中给出的测量不确定度依据 JJF 1059.1-2012 《测量不确定度评与表示》评定

The uncertainty given in this certificate is evaluated according to JJF 1059.1-2012 *Evaluation and Expression of Uncertainty in Measurement*.

校准证书

CALIBRATION CERTIFICATE



证书编号: JL2620703741
Certificate No

第 1 页, 共 11 页
Page 1 of 11 Pages

客户名称 : 信恒检测技术(深圳)有限公司
Name of Customer

客户地址 : 广东省深圳市宝安区松岗街道潭头社区潭头工业 城二区 1 栋厂房 101、201、301
Address of Customer

计量器具名称 : 头部躯干模拟器
Name of Instrument

型号/规格 : Type 4128C
Type/Specification

出厂编号 : 3107080
Serial No

资产编号 : BTF-EM-148
Asset No

制造单位 : B&K
Manufacture

校准依据 : JJF1520-2015 声学用头和躯干模拟器校准规范
Calibrated in Accordance to

(校准专用章)
Stamp

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Complaint and Certificate/Report Authenticity Inquiry Phone Number and Email: 400-900-8999, complaint@smq.com.cn

校准证书

CALIBRATION CERTIFICATE

证书编号: JL2620703741
Certificate No

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校准用主要计量标准装置信息 Main Standard Devices Used

名称 Equipment Name	测量范围 Measuring Range	不确定度/准确度等级/ 最大允许误差 Uncertainty/Accuracy Class/ Maximum Permissible Error	计量标准考核证书号 Certificate No	有效期至 Due Date
_____	_____	_____	_____	_____

校准用主要标准器信息 Main Standards of Measurement Used

名称 Equipment Name	测量范围 Measuring Range	不确定度/准确度等级/ 最大允许误差 Uncertainty/Accuracy Class/ Maximum Permissible Error	设备编号 Equipment No	有效期至 Due Date	溯源单位/ 证书号 Traceability to/ Certificate No
标准传声器	(20~20k)Hz	声压级 U=0.2dB,k=2	SB3979/01	2026-11-12	
噪声、振动测试系统	DC~51.2kHz	电平±0.01dB	SB5196	2026-12-29	
自由场传声器	(6.3~20k)Hz	±0.2dB	SB9611/01	2026-11-10	

附加说明 Appended Directions

委托日期:
Application Date

2026 年 01 月 15 日

环境条件:
Operation Environment

温度 24.3℃ 相对湿度 47.7%

校准地点:
Operation Location

本院声学龙珠实验室

校准项目/参数说明:
Items/parameters Instructions

本次校准根据委托方要求实施, 校准项目/参数详见校准结果
Calibration complied with client requirements; items/parameters detailed in results.

符合性及限制使用说明:
Statement of Compliance and Limitation

参见校准结果使用(Use referring to the results of Calibration)

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1 外观检查: 符合要求

Appearance Check: Pass.

2 灵敏度 (参考频率: 1000 Hz): 见表1

Sensitivity of Ear Simulator(Ref. Freq:1000 Hz): See Table 1

表 1 Table 1

通道 Channel	传声器型号 Type	传声器编号 No.	灵敏度 (mV/Pa) Sensitivity
L通道	/	/	11.3
R通道	/	/	11.3

3 耳自由场频率响应(声源位于正前方1.0 m处):

Frequency Response of Ear Simulator (The distance is 1m) : See Table 2

表 2 Table 2

频率 Frequency	左耳频响 F.R.of Left	右耳频响 F.R.of Right	允许范围 M.P.E.
(Hz)	(dB)	(dB)	(dB)
100	-0.1	0.7	+1.0 ~ -1.0
125	0.0	0.0	+1.0 ~ -1.0
160	-0.4	0.1	+1.0 ~ -1.5
200	-0.9	-0.1	+1.0 ~ -1.5
250	-0.3	-0.4	+1.5 ~ -1.0
315	0.0	0.7	+2.0 ~ -0.5
400	0.2	0.5	+2.5 ~ 0.0
500	1.4	1.7	+3.5 ~ +1.0
630	2.5	3.0	+4.0 ~ +1.5
800	2.9	3.0	+6.0 ~ +2.5
1000	4.1	4.5	+5.5 ~ +2.0
1250	3.0	3.2	+6.0 ~ +0.5

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1600	4.3	3.9	+7.0 ~ +2.0
2000	9.9	9.1	+13.5 ~ +9.0
2500	15.8	15.6	+19.5 ~ +14.5
3150	16.5	17.4	+20.5 ~ +13.5
4000	12.8	12.7	+18.0 ~ +12.0
5000	8.7	8.7	+15.5 ~ +8.5
6300	5.5	6.1	+9.0 ~ +2.5
8000	4.2	3.1	+11.0 ~ -1.0
10000	5.9	6.9	+10.0 ~ +0.5

4 耳指向性:
Ear directivity

4.1耳指向性0°:
Ear directivity of 0 ° : See Table 3

表 3 Table 3

频率 Frequency	左耳频响 F.R.of Left	右耳频响 F.R.of Right
(Hz)	(dB)	(dB)
100	64.1	64.8
125	60.5	60.5
160	60.5	60.9
200	59.9	60.7
250	59.9	59.8
315	60.6	61.4
400	60.9	61.1
500	61.9	62.2
630	64.5	65.0
800	65.1	65.1
1000	65.9	66.4
1250	65.8	66.0
1600	68.0	67.6
2000	73.3	72.2

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2500	78.7	78.4
3150	78.7	79.5
4000	71.5	71.3
5000	71.8	71.8
6300	67.4	68.0
8000	66.3	65.2
10000	66.5	67.5

4.2耳指向性90°:

Ear directivity of 90 ° : See Table 4

表 4 Table 4

频率 Frequency	左耳频响 F.R.of Left	右耳频响 F.R.of Right
(Hz)	(dB)	(dB)
100	65.5	63.5
125	62.2	60.1
160	62.8	58.7
200	62.7	59.6
250	62.7	58.4
315	63.9	58.6
400	64.8	59.6
500	66.6	59.8
630	68.6	63.2
800	70.3	63.3
1000	69.9	62.3
1250	70.7	64.0
1600	73.0	65.6
2000	74.1	68.1
2500	78.2	69.7
3150	78.6	66.7
4000	73.0	57.7
5000	79.4	59.2
6300	79.4	53.0

校准结果

RESULTS OF CALIBRATION

8000	80.2	54.0
10000	74.2	53.8

4.3耳指向性180°:
Ear directivity of 180 ° : See Table 5

表 5 Table 5

频率 Frequency	左耳频响 F.R.of Left	右耳频响 F.R.of Right
(Hz)	(dB)	(dB)
100	65.6	64.8
125	60.9	60.8
160	60.9	60.5
200	60.6	59.8
250	59.7	59.9
315	61.2	60.6
400	60.5	60.4
500	61.7	61.9
630	64.1	64.2
800	65.0	65.2
1000	66.4	66.2
1250	67.4	66.9
1600	69.0	68.2
2000	71.0	70.8
2500	75.8	75.9
3150	75.6	77.0
4000	67.7	68.8
5000	68.8	67.8
6300	63.5	62.7
8000	67.5	67.5
10000	64.2	63.9

校准结果

RESULTS OF CALIBRATION

4.4耳指向性270°:
Ear directivity of 270 ° : See Table 6

表 6 Table 6

频率 Frequency	左耳频响 F.R.of Left	右耳频响 F.R.of Right
(Hz)	(dB)	(dB)
100	64.5	65.3
125	61.0	61.8
160	59.2	62.1
200	59.9	61.6
250	58.9	61.9
315	58.8	63.0
400	59.9	64.0
500	60.3	66.0
630	63.8	68.2
800	64.1	69.7
1000	63.3	69.3
1250	65.0	69.9
1600	67.0	72.0
2000	69.9	72.9
2500	71.2	78.1
3150	68.0	79.9
4000	60.6	74.0
5000	62.7	79.3
6300	58.2	78.5
8000	54.8	78.3
10000	50.6	72.5

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5 嘴参考点处的幅频特性:
Frequency Response of MPR: See Table 7

表 7 Table 7

频率 Frequency	声压级 SPL
(Hz)	(dB)
100	52.4
125	57.4
160	62.9
200	67.8
250	69.3
315	67.7
400	65.9
500	64.6
630	63.8
800	63.8
1000	64.3
1250	65.5
1600	68.1
2000	67.1
2500	61.6
3150	60.2
4000	60.2
5000	58.5
6300	61.7
8000	59.0
10000	58.5

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6 嘴参考点处的失真:
THD of MPR: See Table 8

表 8 Table 8

频率 Frequency	失真 THD
(Hz)	(%)
100	6.32
125	2.97
160	0.71
200	0.59
250	0.32
315	0.24
400	0.25
500	0.17
630	0.16
800	0.21
1000	0.17
1250	0.15
1600	0.09
2000	0.12
2500	0.11
3150	0.06
4000	0.07
5000	0.05
6300	0.05
8000	0.05
10000	0.02

校准结果

RESULTS OF CALIBRATION

7 嘴自由场幅频特性（传声器位于嘴前0.5 m）：
Amplitude-frequency characteristics: See Table 9

表 9 Table 9

频率 Frequency	声压级 SPL
(Hz)	(dB)
100	37.8
125	38.9
160	45.0
200	49.8
250	52.3
315	51.3
400	49.4
500	48.8
630	47.9
800	45.6
1000	45.5
1250	49.5
1600	53.4
2000	53.1
2500	47.4
3150	45.4
4000	44.8
5000	45.5
6300	49.3
8000	47.0
10000	45.9

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附注:

Notes:

1. 参考频率声压级测量结果扩展不确定度:

Related Expanded Uncertainty of Sound Pressure Level at Reference Frequency:

$U=1.0\text{ dB}$, $k=2$ (20 Hz ~ 200 Hz) ;

$U=0.8\text{ dB}$, $k=2$ (250 Hz ~ 400 Hz) ;

$U=0.6\text{ dB}$, $k=2$ (500 Hz ~ 1.25 kHz) ;

$U=1.0\text{ dB}$, $k=2$ (1.6 kHz ~ 10 kHz) 。

$U=1.2\text{ dB}$, $k=2$ (12.5 kHz ~ 20 kHz) 。

2. 失真测量结果扩展不确定度:

Related Expanded Uncertainty of Distortion:

$U_{\text{rel}}=0.5\%$, $k=2$ (0.05%~30%, 20 Hz ~ 20 kHz) 。

3. 本证书中给出的测量不确定度依据 JJF 1059.1-2012 《测量不确定度评与表示》评定

The uncertainty given in this certificate is evaluated according to JJF 1059.1-2012 *Evaluation and Expression of Uncertainty in Measurement*.

校准证书

CALIBRATION CERTIFICATE



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客户名称 : 信恒检测技术(深圳)有限公司
Name of Customer

客户地址 : 广东省深圳市宝安区松岗街道潭头社区潭头工业 城二区 1 栋厂房 101、201、301
Address of Customer

计量器具名称 : 声校准器
Name of Instrument

型号/规格 : Type 4231
Type/Specification

出厂编号 : 3010778
Serial No

资产编号 : BTF-EM-149
Asset No

制造单位 : B&K
Manufacture

校准依据 : JJG176-2022 声校准器
Calibrated in Accordance to

(校准专用章)
Stamp

校准日期 : 2026 年 01 月 19 日
Operation Date Year Month Day

建议复校日期 : 2027 年 01 月 18 日
Suggested Recal.Date Year Month Day

签发日期 : 2026 年 01 月 19 日
Issue Date Year Month Day

批准人 : 黄志凡
Approved by

签名 : 黄志凡
Signature

核验员 : 龙晓峰
Checked by

校准员 : 胡琴
Calibrated by

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The "Important statement" on the back of the certificate's first page is part of the document, and copies without it are incomplete.

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重 要 声 明

Important statement

1. 本院(站)是由深圳市人民政府依据《中华人民共和国计量法》设立并由国家市场监督管理总局、广东省市场监督管理局依法授权的法定计量检定机构。

SMQ is a legal metrological verification institution established by the Shenzhen Municipal People's Government and authorized by the State Administration for Market Regulation and Guangdong Administration for Market Regulation according to *Metrology Law of the People's Republic of China*.

2. 本院(站)进行的检定、校准和检测均可溯源至国际单位制(SI)单位和/或社会公用计量标准。

All verifications, calibrations and tests made by SMQ are traceable to the International System of Units (SI) and/or social public measurement standards.

3. 如果要满足被校准仪器的技术指标,或者技术法规要求,在规定范围内适用,请在建议复校日期前校准。(适用于校准证书)

To ensure that the calibrated instrument is properly used under given conditions in compliance with technical specifications or regulations, please recalibrate it before the suggested date. (Applicable to calibration certificates)

4. 本证书/报告提供的结果仅对本次被检的计量器具有效。送检仪器及其信息和客户信息均由委托方提供,本院(站)不对仪器的真实性及信息的完整性和准确性负责。如果委托方在委托协议书中未注明送检仪器的信息,我院(站)将按照仪器上标明的实际信息出具证书/报告。

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When electronic certificate/report is only applied for, the content and validity shall be based on the electronic certificate/report. When both electronic and paper certificate/report are simultaneously applied for, the electronic certificate/report shall serve solely as copy of the paper certificate/report, and the content and validity shall be based on the paper certificate/report with the same number.

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The entrusting party should not use the measurement results for improper publicity. In the event that the entrusting party abuses or illegally uses the certificate/report, thereby resulting in infringement of rights and interests of a third-party or causing losses to a third party, SMQ shall not assume any responsibility. In the event that the unreasonable use of the certificate/report by the entrusting party causes losses to SMQ, the entrusting party shall compensate SMQ for all losses incurred, including but not limited to compensation fees, litigation costs, attorney fees, transportation expenses, and notarization fees.

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Complaint and Certificate/Report Authenticity Inquiry Phone Number and Email: 400-900-8999, complaint@smq.com.cn

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校准用主要计量标准装置信息

Main Standard Devices Used

名称 Equipment Name	测量范围 Measuring Range	不确定度/准确度等级/ 最大允许误差 Uncertainty/Accuracy Class/ Maximum Permissible Error	计量标准考核证书号 Certificate No	有效期至 Due Date
_____	_____	_____	_____	_____

校准用主要标准器信息

Main Standards of Measurement Used

名称 Equipment Name	测量范围 Measuring Range	不确定度/准确度等级/ 最大允许误差 Uncertainty/Accuracy Class/ Maximum Permissible Error	设备编号 Equipment No	有效期至 Due Date	溯源单位/ 证书号 Traceability to/ Certificate No
多通道声分析仪	10Hz~20kHz	声压级 $U= (0.3\sim1.0)$ dB, $k=2$	SB3979	2026-04-29	
活塞发声器	250Hz, 124dB	LS 级	SB5198	2026-12-16	
自由场麦克风	20Hz~20kHz	$U= (0.2\sim0.5)$ dB, $k=2$	SB7422	2026-12-18	

附加说明

Appended Directions

委托日期:
Application Date

2026 年 01 月 15 日

环境条件:

Operation Environment

温度 23.2°C 相对湿度 53.4%

校准地点:

Operation Location

本院声学龙珠实验室

校准项目/参数说明:

Items/parameters Instructions

本次校准根据委托方要求实施, 校准项目/参数详见校准结果

Calibration complied with client requirements; items/parameters detailed in results.

符合性及限制使用说明:

Statement of Compliance and Limitation

参见校准结果使用(Use referring to the results of Calibration)

校准结果

RESULTS OF CALIBRATION

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1 外观检查: 正常
Appearance Inspection : Pass.

2 声压级: 见表1
Sound Pressure Level: See Table 1

表1 Table 1

频率标称值 Nominal Freq	声压级标称值 Nominal SPL	声压级实测值 Measured SPL	误差 Error	最大允许误差 MPE
(Hz)	(dB)	(dB)	(dB)	(dB)
1000.0	94.00	94.08	+0.08	±0.25 (1级)
1000.0	114.00	114.07	+0.07	±0.25 (1级)

3 频率: 见表2
Frequency: see Table 2

表2 Table 2

频率标称值 Nominal Freq.	频率实测值 Measured Freq.	误差 Error	最大允许误差 MPE
(Hz)	(Hz)	(%)	(%)
1000.0	1000.0	0.0	±0.7 (1级)

4 总失真+噪声: 见表3
THD+N: See Table 3

表3 Table 3

标称频率 Nominal Freq.	标称声压级 Nominal SPL	总失真+噪声 THD+N	允许范围 Limit
(Hz)	(dB)	(%)	(%)
1000.0	94.00	0.4	≤2.5 (1级)
1000.0	114.00	0.1	≤2.5 (1级)

校准结果

RESULTS OF CALIBRATION

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附注:

Notes:

1. 声压级测量结果扩展不确定度: 160 Hz ~ 1250 Hz, $U = 0.25$ dB, $k = 2$;

Expanded Uncertainty of sound pressure level Measurement Results:

160 Hz ~ 1250 Hz, $U = 0.25$ dB, $k = 2$;

2. 频率测量结果扩展不确定度: $U = 0.1\%$, $k = 2$;

Expanded Uncertainty of frequency Measurement Results: $U = 0.1\%$, $k = 2$;

3. 本证书中给出的测量不确定度依据 JJF 1059.1-2012《测量不确定度评定与表示》评定。

The uncertainty given in this certificate is evaluated according to JJF 1059.1-2012
Evaluation and Expression of Uncertainty in Measurement.
