

# 校准证书

## CALIBRATION CERTIFICATE



证书编号: JL2514326481  
Certificate No

第 1 页, 共 5 页  
Page 1 of 5 Pages

客户名称 : \_\_\_\_\_  
Name of Customer

客户地址 : \_\_\_\_\_  
Address of Customer

计量器具名称 : 高频电刀分析仪  
Name of Instrument

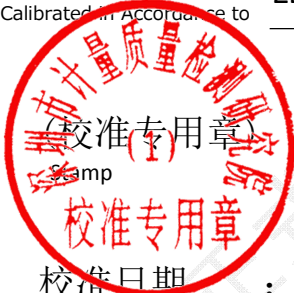
型号/规格 : KP2021  
Type/Specification

出厂编号 : 2025081201  
Serial No

资产编号 : \_\_\_\_\_  
Asset No

制造单位 : 东莞市精邦机械科技有限公司  
Manufacture

校准依据 : ZDS JS2436-2024 高频电刀分析仪校准方法  
Calibrated in accordance to



批准人 : \_\_\_\_\_  
Approved by

签名 : \_\_\_\_\_  
Signature

核验员 : \_\_\_\_\_  
Checked by

校准员 : \_\_\_\_\_  
Calibrated by

校准日期 : 2025 年 08 月 13 日  
Operation Date Year Month Day

建议复校日期 : 2026 年 08 月 12 日  
Suggested Recal.Date Year Month Day

签发日期 : 2025 年 08 月 15 日  
Issue Date Year Month Day

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)

The QR code in the certificate/report has the function of browsing and downloading the complete certificate/report, which is set according to the choice of the entrusting party. The QR code and its copy enable anyone who scan it to obtain the complete electronic version of the certificate/report. If the owner of this certificate/report needs to restrict others from obtaining the content of the certificate/report through the QR code, he should cover or remove the QR code attached to the certificate/report and its copies by himself. SMQ assumes no responsibility for the information leakage caused by the entrusting party's choice of the certificate/report QR code function. (This clause applies to certificate/report with QR code)

7. 证书/报告无检定员/校准员、核验员、批准人签字,或涂改,或未盖本院证书/报告专用章及骑缝章无效。未经本院(站)许可,不得部分复印、摘用或篡改本证书/报告的内容;复印证书/报告未重新加盖本院(站)证书/报告专用章无效。

Certificate/reports without the signature of verifier/calibrator, reviewer or authorized approver, or with alterations without authorization, or without the dedicated certificate/report seal or across-page seal are invalid. Copying or excerpting portion of, or altering the content of the certificate/report is not permitted without the written authorization of SMQ. Copies being not re-stamped with the dedicated certificate/report seal are invalid.

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。

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.

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。

When the certificate/report is revised, SMQ is not responsible for recalling the issued electronic version, scanned copies, and faxed copies of the certificate/report. The entrusting party has the obligation to provide the revised certificate/report to the relevant parties using the original certificate/report.

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.

投诉和证书/报告真伪查询电话及邮箱: 400-900-8999, complaint@smq.com.cn

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: JL2514326481  
Certificate No

第 2 页, 共 5 页  
Page 2 of 5 Pages

## 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
高频电刀分析仪 校准装置	功率:(10~400W)/(100kHz~1MHz);电流:(0~100)mA/(100kHz~1MHz);电压:200V/(300kHz~500KHz)	功率 MPE: $\pm 1\%$ ; 电流 MPE: $\pm 1\%$ ; 电压: $\pm 0.5\%$	SB15452	2026-01-15	
数字万用表	ACU:(0.1 V~750V);DCU:(0.1 V~1000V);ACI:(0.1nA~3A);DCI:(0.1nA~3A);R:(0.1m~1000M )	ACU: $\pm 0.06\%R$ ;DCU: $\pm 0.003\%R$ ;ACU: $\pm 0.1\%R$ ;DCI: $\pm 0.05\%R$ ;R: $\pm 0.01\%R$	SB9937	2025-10-24	

### 附加说明

#### Appended Directions

委托日期:  
Application Date

2025 年 08 月 13 日

环境条件:  
Operation Environment

温度 20.6°C 相对湿度 62%

校准地点:  
Operation Location

本院电磁实验室

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

证书编号: JL2514326481  
Certificate No

第 3 页, 共 5 页  
Page 3 of 5 Pages

1 仪器外观及工作正常性检查: 正常。  
Appearance check: Normal.

2 交流电流测量示值误差 ( f = 500 kHz ): 见表 1  
Indication Error of AC Current: see Table 1

表 1 ( Table 1 ) 交流电流测量示值误差

负载 Load	被校示值 Cal. Indication	实测值 Meas. Value	误差 Error	最大允许误差 MPE	结论 Conclusion
	( mA )	( mA )	( mA )	( mA )	( Pass/Fail )
50 Ω	50.0	49.9	0.1	± 2.3	P
	346.4	351.8	-5.4	± 9.7	P
	999.2	996.7	2.5	± 26.0	P
100 Ω	50.0	49.9	0.1	± 2.3	P
	346.6	351.5	-4.9	± 9.7	P
	999.3	995.9	3.4	± 26.0	P
200 Ω	49.5	49.8	-0.3	± 2.2	P
	346.2	350.9	-4.7	± 9.7	P
	995.7	994.0	1.7	± 25.9	P

3 交流功率测量示值误差 ( f = 500 kHz ): 见表 2  
Indication Error of AC Power: see Table 2

表 2 ( Table 2 ) 交流功率测量示值误差

负载 Load	被校示值 Cal. Indication	实测值 Meas. Value	误差 Error	最大允许误差 MPE	结论 Conclusion
	( W )	( W )	( W )	( W )	( Pass/Fail )
50 Ω	10.2	10.73	-0.53	± 0.6	P
	19.2	20.20	-1.00	± 1.1	P
	40.4	42.23	-1.83	± 2.1	P
	49.2	51.33	-2.13	± 2.6	P
	97.7	101.82	-4.12	± 5.0	P
100 Ω	10.0	10.37	-0.37	± 0.6	P
	20.6	20.65	-0.05	± 1.1	P
	39.5	39.77	-0.27	± 2.1	P
	50.0	50.29	-0.29	± 2.6	P

量  
L)  
专用

# 校准结果

RESULTS OF CALIBRATION

证书编号: JL2514326481  
Certificate No

第 4 页, 共 5 页  
Page 4 of 5 Pages

	98.6	98.58	0.02	± 5.0	P
200 Ω	10.2	10.29	-0.09	± 0.6	P
	20.4	19.95	0.45	± 1.1	P
	40.1	40.39	-0.29	± 2.1	P
	50.4	50.75	-0.35	± 2.6	P
500 Ω	99.6	100.18	-0.58	± 5.1	P
	10.5	10.72	-0.22	± 0.6	P
	19.9	20.37	-0.47	± 1.1	P
	39.6	40.10	-0.50	± 2.1	P
1000 Ω	50.7	49.60	1.10	± 2.6	P
	97.9	99.42	-1.52	± 5.0	P
	10.0	10.59	-0.59	± 0.6	P
	18.8	19.64	-0.84	± 1.0	P
2000 Ω	37.3	39.19	-1.89	± 2.0	P
	47.0	49.01	-2.01	± 2.5	P
	100.1	99.09	1.01	± 5.1	P
	10.0	10.53	-0.53	± 0.6	P
2000 Ω	19.5	20.57	-1.07	± 1.1	P
	38.8	40.56	-1.76	± 2.0	P
	48.5	50.65	-2.15	± 2.5	P
	95.1	99.08	-3.98	± 4.9	P

#### 4 可变负载电阻示值误差: 见表 3

Indication Error of Variable Resistance: see Table 3

表 3 (Table 3) 可变负载电阻示值误差

标称值 Nominal Value	实测值 Meas. Value	误差 Error	最大允许误差 MPE	结论 Conclusion
( Ω )	( Ω )	( % )	( % )	(Pass/Fail)
50	50.4	-0.8	± 2.5	P
100	100.0	0.0	± 2.5	P
200	199.0	0.5	± 2.5	P
500	501.0	-0.2	± 2.5	P
1000	1001	-0.1	± 2.5	P
2000	2000	0.0	± 2.5	P



## 校准结果

RESULTS OF CALIBRATION

证书编号: JL2514326481  
Certificate No

第 5 页, 共 5 页  
Page 5 of 5 Pages

5 固定负载电阻示值误差: 见表 4

Indication Error of Fixed Resistance: see Table 4

表 4 ( Table 4 ) 固定负载电阻示值误差

标称值 Nominal Value	实测值 Meas. Value	误差 Error	最大允许误差 MPE	结论 Conclusion
( $\Omega$ )	( $\Omega$ )	( % )	( % )	(Pass/Fail)
200	200.5	-0.2	$\pm 1$	P

附注:

Notes:

1. 交流电流测量结果的相对扩展不确定度:  $U_{rel} = 1.0\%$ ,  $k = 2$ ;

Relative Expanded Uncertainty of AC Current Measurement Results

2. 交流功率测量结果的相对扩展不确定度:  $U_{rel} = 1.5\%$ ,  $k = 2$ ;

Relative Expanded Uncertainty of AC Power Measurement Results

3. 直流电阻测量结果的相对扩展不确定度:  $U_{rel} = 0.8\%$ ,  $k = 2$ ;

Relative Expanded Uncertainty of DC Resistance Measurement Results

4. 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.

5. 结论判断依据: JJF 1217-2025 高频电刀校准规范技术要求。

Basis for the Conclusion: Technical Specification of JJF 1217-2025.