



华南国家计量测试中心  
广东省计量科学研究所  
SOUTH CHINA NATIONAL CENTER OF METROLOGY  
GUANGDONG INSTITUTE OF METROLOGY



中国认可  
国际互认  
校准  
CALIBRATION  
CNAS L0730

# 校准证书

## CALIBRATION CERTIFICATE

证书编号 WWD202102294  
Certificate No.

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委托方 深圳市倍测检测有限公司 Shenzhen BCTC Testing  
Client Co., Ltd.

委托方联络信息 深圳市宝安区福海街道塘尾社区福园一路158号鹏洲  
Contact Information 工业园B号厂房1层2层

计量器具名称 EMF球头(交变磁强计/工频电场测试仪)  
Description

型号/规格 SMP160/WP400-3  
Model/Type

制造厂 Wavecontrol  
Manufacturer

出厂编号 19SN0989/20WP120082 设备管理编号 BCTC-EMC-092  
Serial No. Equipment No.

接收日期 2021 年 08 月 18 日  
Date of Receipt Y M D

结果 见校准结果  
Results Shown in the results of calibration

校准日期 2021 年 08 月 30 日  
Date of Calibration Y M D

批准人 刘文刚  
Approved Signatory

核 验 刘冠君  
Reviewed by

校 准 林珂  
Calibrated by

证书专用章  
Stamp



扫一扫查真伪

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证书真伪查询: [www.scm.com.cn](http://www.scm.com.cn); [www.mtsp.com](http://www.mtsp.com) Certificate Authenticity Identify: [www.scm.com.cn](http://www.scm.com.cn); [www.mtsp.com](http://www.mtsp.com)



## 说明

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### DIRECTIONS

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1. 本中心是国家市场监督管理总局在华南地区设立的国家法定计量检定机构, 本中心的质量管理体系符合 ISO/IEC 17025:2017 标准的要求。

This laboratory is the National Legal Metrological Verification Institution in southern China set up by the State Administration for Market Regulation. The quality system is in accordance with ISO/IEC 17025:2017.

2. 本中心所出具的数据均可溯源至国家计量基准和/或国际单位制(SI)。

All data issued by this laboratory are traceable to national primary standards and/or International System of Units (SI).

3. 校准地点、环境条件:

Place and environmental conditions of the calibration:

地点 本院无线电室

温度  $(23 \pm 2) ^\circ\text{C}$

相对湿度 60 %

Place

Temperature

R.H.

4. 本次校准的技术依据:

Reference documents for the calibration:

FFW1419-2014 磁场暴露计校准方法 C.M. for Exposure Level Tester

FFW1607-2016 工频电场测试仪校准方法 C.M. for Measurement Apparatus of power-frequency electric fields

5. 本次校准所使用的主要计量标准器具:

Major standards of measurement used in the calibration:

设备名称/型号规格

编号

证书号/有效期/溯源单位

计量特性

Name of Equipment

Serial No.

Certificate No./Due Date

Metrological

/Model/Type

/Traceability to

Characteristic

磁场标准装置

83AA0525/00107

WWD202101257

$U_{\text{rel}}=1.0\%(k=2)$

Magnetic field standard device

237

/2022-05-26

/本中心

/201603/6402

电场校准装置

0607

CJC202108934

$U=5\text{ mm}, k=2$

Electric Field Calibration

/2022-05-30

Device

/本中心

/WG2011

多功能校准仪

6870016

DBB202004768

ACV:  $U_{\text{rel}}=0.005\%, k=2$

Multi-Product Calibrator

/2021-12-17

/5500A

/本中心

注: 1. 本证书校准结果只与受校准仪器有关。The results relate only to the items calibrated.

Note: 2. 未经本机构书面批准, 不得部分复制此证书。This certificate shall not be reproduced except in full, without the written approval of our laboratory.

3. “委托方”、“委托方联络信息”由委托方提供, “制造厂”、“型号规格”、“出厂编号”以及“设备编号”为仪器上标注, 委托方对上面内容如有异议, 须在收到证书后二十个工作日内提出。

The information Client and Contact Information are provided by client, and the Manufacturer, Model/Type, Serial No. and Equipment No. are marked on the items. Client shall submit any objection within 20 working days after receiving the certificate for the information above.

4. 本次校准日期视为发布日期。The calibration date is the date of issue of the certificate.



## 校准结果 RESULTS OF CALIBRATION

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原始记录号 020212294  
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### 1 磁场强度

H-Field Strength

测量准确度

Measuring Accuracy

| 频率<br>Frequency | 标准值<br>Reference Value | 被检表示值<br>Indication Value | 误差(dB)<br>Error |
|-----------------|------------------------|---------------------------|-----------------|
| 10 Hz           | 20.00 $\mu$ T          | 21.05 $\mu$ T             | +0.44           |
| 20 Hz           | 20.00 $\mu$ T          | 21.12 $\mu$ T             | +0.47           |
| 50 Hz           | 20.00 $\mu$ T          | 20.33 $\mu$ T             | +0.14           |
| 100 Hz          | 20.00 $\mu$ T          | 20.98 $\mu$ T             | +0.42           |
| 200 Hz          | 20.00 $\mu$ T          | 20.41 $\mu$ T             | +0.18           |
| 500 Hz          | 20.00 $\mu$ T          | 20.43 $\mu$ T             | +0.18           |
| 1 kHz           | 20.00 $\mu$ T          | 20.35 $\mu$ T             | +0.15           |
| 2 kHz           | 2.000 $\mu$ T          | 2.03 $\mu$ T              | +0.13           |
| 5 kHz           | 2.000 $\mu$ T          | 2.02 $\mu$ T              | +0.09           |
| 10 kHz          | 2.000 $\mu$ T          | 2.00 $\mu$ T              | 0.00            |
| 20 kHz          | 2.000 $\mu$ T          | 1.97 $\mu$ T              | -0.13           |
| 50 kHz          | 2.000 $\mu$ T          | 1.96 $\mu$ T              | -0.18           |
| 100 kHz         | 2.000 $\mu$ T          | 1.95 $\mu$ T              | -0.22           |
| 200 kHz         | 2.000 $\mu$ T          | 1.94 $\mu$ T              | -0.26           |
| 400 kHz         | 2.000 $\mu$ T          | 1.92 $\mu$ T              | -0.35           |



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### 示值线性

#### Indication Linearity

| 频率<br>Frequency | 标准值<br>Reference Value | 被检表示值<br>Indication Value | 误差(dB)<br>Error |
|-----------------|------------------------|---------------------------|-----------------|
| 50 Hz           | 100 $\mu$ T            | 101.6 $\mu$ T             | +0.14           |
| 50 Hz           | 50 $\mu$ T             | 50.71 $\mu$ T             | +0.12           |
| 50 Hz           | 20 $\mu$ T             | 20.33 $\mu$ T             | +0.14           |
| 50 Hz           | 10 $\mu$ T             | 10.19 $\mu$ T             | +0.16           |
| 50 Hz           | 5 $\mu$ T              | 5.10 $\mu$ T              | +0.17           |
| 50 Hz           | 2 $\mu$ T              | 2.05 $\mu$ T              | +0.21           |

### 各向同性

#### Isotropy

| 轴向<br>Axis | 标准值<br>Reference Value | 被检表示值<br>Indication Value | 误差(dB)<br>Error |
|------------|------------------------|---------------------------|-----------------|
| X          | 10.00 $\mu$ T          | 10.19 $\mu$ T             | +0.16           |
| Y          | 10.00 $\mu$ T          | 10.26 $\mu$ T             | +0.22           |
| Z          | 10.00 $\mu$ T          | 10.09 $\mu$ T             | +0.08           |



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#### 2 电场强度

##### E-Field Strength

##### 测量准确度

##### Measuring Accuracy

| 频率<br>Frequency | 标准值<br>Reference Value | 被检表示值<br>Indication Value | 误差(dB)<br>Error |
|-----------------|------------------------|---------------------------|-----------------|
| 50 Hz           | 10.00 kV/m             | 10.200 kV/m               | +0.17           |
| 50 Hz           | 5.00 kV/m              | 5.090 kV/m                | +0.15           |
| 50 Hz           | 4.00 kV/m              | 4.086 kV/m                | +0.18           |
| 50 Hz           | 2.00 kV/m              | 2.037 kV/m                | +0.16           |
| 50 Hz           | 1.00 kV/m              | 1.016 kV/m                | +0.14           |
| 50 Hz           | 500 V/m                | 507.6 V/m                 | +0.13           |
| 50 Hz           | 200 V/m                | 202.3 V/m                 | +0.10           |
| 50 Hz           | 100 V/m                | 102.8 V/m                 | +0.24           |

##### 频率响应

##### Frequency Response

| 频率<br>Frequency | 标准值<br>Reference Value | 被检表示值<br>Indication Value | 误差(dB)<br>Error |
|-----------------|------------------------|---------------------------|-----------------|
| 50 Hz           | 100 V/m                | 102.8 V/m                 | +0.24           |
| 100 Hz          | 100 V/m                | 103.6 V/m                 | +0.31           |
| 200 Hz          | 100 V/m                | 103.7 V/m                 | +0.32           |
| 500 Hz          | 100 V/m                | 103.9 V/m                 | +0.33           |
| 1 kHz           | 100 V/m                | 103.9 V/m                 | +0.33           |
| 2 kHz           | 100 V/m                | 103.5 V/m                 | +0.30           |
| 5 kHz           | 100 V/m                | 103.6 V/m                 | +0.31           |
| 10 kHz          | 100 V/m                | 103.8 V/m                 | +0.32           |



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说明:  
Note:

1 测量结果的扩展不确定度:  
Expanded uncertainty of measurement:

|                |                          |                                                                         |                 |
|----------------|--------------------------|-------------------------------------------------------------------------|-----------------|
| 磁感应强度:         | $U = 0.3 \mu\text{T}$    | ( $1\mu\text{T} \sim 20\mu\text{T}, 5\text{Hz} \sim 12\text{Hz}$ )      | 包含因子: $k=2$     |
| Magnetic Field | $U_{\text{rel}} = 2.0\%$ | ( $1\mu\text{T} \sim 20\mu\text{T}, 12\text{Hz} \sim 400\text{kHz}$ )   | Coverage factor |
|                | $U_{\text{rel}} = 1.5\%$ | ( $20\mu\text{T} \sim 100\mu\text{T}, 50\text{Hz}$ )                    |                 |
| 电场:            | $U = 0.3 \text{ dB}$     | ( $0.1\text{kV/m} \sim 0.5\text{kV/m}, 50\text{Hz} \sim 10\text{kHz}$ ) | 包含因子: $k=2$     |
| Electric Field | $U = 0.4 \text{ dB}$     | ( $0.5\text{kV/m} \sim 4\text{kV/m}, 50\text{Hz}$ )                     | Coverage factor |
|                | $U = 0.6 \text{ dB}$     | ( $4\text{kV/m} \sim 10\text{kV/m}, 50\text{Hz}$ )                      |                 |

本证书中给出的扩展不确定度依据JJF1059.1-2012《测量不确定度评定与表示》评定,由合成标准不确定度乘以包含概率约为95%时对应的包含因子 $k$ 得到。

The expanded uncertainty given in this certificate is evaluated according to JJF 1059.1-2012 "Evaluation and Expression of Uncertainty in Measurement", which is obtained by multiplying the combined standard uncertainty by the coverage factor  $k$  corresponding to the coverage probability of about 95%.

2 为使被校准仪器计量特性处在技术指标范围内,建议复校时间间隔不超过1年。

For assuring the metrological characteristic within the technical demand range,  
next calibration for this instrument is proposed within 1 year.