华南国家计量测试中心
广东省计量科学研究院
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 Certificate No. GDAA202460011

委托方 Client 优利德科技(中国)股份有限公司

委托方联络信息 Contact Information 广东省东莞市松山湖园区工业北一路6号

计量器具名称 Description 电能质量分析仪

型号规格 Model/Type UT285C

制造厂 Manufacturer UNI-T

出厂编号 Serial No. C21400298

设备编号 / Equipment No.

接收日期 Date of Receipt 2024 年 Y 01 月 M 22 日 D

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

校准日期 Date of calibration 2024 年 Y 01 月 M 23 日 D

批 准 人 Approved Signatory 黎星云

核 验 Reviewed by 谢坚戈

校 准 Calibrated by 赵靖

证书专用章
Stamp

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说　明

证书编号 GDAA202460011　　第 2 页，共 8 页
Certificate No.　　**DIRECTIONS**　　Page of

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 General Administration of Quality Supervision. 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 Place	本院A4栋4楼EMC参数实验室	温度 Temperature	21 ℃	相对湿度 RH	39 %

4. 本次校准的技术依据：
Reference documents for the calibration:
DL/T 1028-2006 电能质量测试分析仪检定规程　Verification Code for Power Quality Analyzer

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/测量范围 Name of Equipment /Model/Type/Range	编号 Serial No.	证书号/有效期/溯源单位 Certificate No./Due Date /Traceability to	计量特性 Metrological Characteristic
谐波功率标准/6105A/电压:(0～1008)V电流:(0～80)A频率:(16～850)Hz	419673596	DCjd2023-02132/2024-10-08/中国计量科学研究院	ACV/ACA:±0.005% DCV/DCA:±0.010% ACP:±0.008%;DCP:±0.010%

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。
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.
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

证书编号 GDAA202460011
Certificate No.

原始记录号 202460011
Record No.

一、电压:见表1
Voltage:Shown in table 1

表1 table 1

回路 Channle	标准源电压值 Reference Value (V)	分析仪示值 Indication Value (V)	误差 Error (V)	允许误差 MPE (V)	结论 Conclusion Pass/Fail
A	30.0	30.0	0.0	±0.65	Pass
	100.0	100	0	±5.5	Pass
	200.0	200	0	±6	Pass
	300.0	301	1	±6.5	Pass
	400.0	402	2	±7	Pass
	500.0	503	3	±7.5	Pass
B	30.0	29.9	-0.1	±0.65	Pass
	100.0	100	0	±5.5	Pass
	200.0	200	0	±6	Pass
	300.0	301	1	±6.5	Pass
	400.0	402	2	±7	Pass
	500.0	503	3	±7.5	Pass
C	30.0	29.9	-0.1	±0.65	Pass
	100.0	100	0	±5.5	Pass
	200.0	200	0	±6	Pass
	300.0	301	1	±6.5	Pass
	400.0	402	2	±7	Pass
	500.0	503	3	±7.5	Pass

二、频率:见表2
Frequency:Shown in table 2

表2 table 2

标准源频率 Reference Value (Hz)	分析仪示值 Indication Value (Hz)	误差 Error (Hz)	允许误差 MPE (Hz)	结论 Conclusion Pass/Fail
45.00	44.98	-0.02	±0.03	Pass
50.00	49.99	-0.01	±0.03	Pass
55.00	54.98	-0.02	±0.03	Pass
60.00	59.98	-0.02	±0.03	Pass

校准结果
RESULTS OF CALIBRATION

证书编号 GDAA202460011 Certificate No.　　原始记录号 202460011 Record No.　　第 4 页,共 8 页 Page of

三、谐波电压：见表3

Harmonic voltage:Shown in table 3

表3 table 3

回路 Channle	谐波次数 Harmonic number	谐波电压含有率标准值 Reference Value (%)	谐波电压含有率示值 Indication Value (%)	误差 Error (%)	允许误差 MPE (%)	结论 Conclusion Pass/Fail
A	2	1.0	1.0	0.0	±0.51	Pass
	3	1.0	0.8	-0.2	±0.51	Pass
	5	1.0	0.8	-0.2	±0.51	Pass
	7	1.0	1.0	0.0	±0.51	Pass
	9	1.0	1.0	0.0	±0.51	Pass
	15	1.0	1.0	0.0	±0.51	Pass
	17	1.0	1.0	0.0	±0.51	Pass
	19	1.0	0.8	-0.2	±0.51	Pass
	25	1.0	0.8	-0.2	±1.01	Pass
	29	1.0	1.0	0.0	±1.01	Pass
	35	1.0	1.0	0.0	±1.51	Pass
	39	1.0	1.0	0.0	±1.51	Pass
	45	1.0	1.0	0.0	±1.51	Pass
	49	1.0	0.8	-0.2	±1.51	Pass
B	2	1.0	1.0	0.0	±0.51	Pass
	3	1.0	0.9	-0.1	±0.51	Pass
	5	1.0	0.8	-0.2	±0.51	Pass
	7	1.0	0.9	-0.1	±0.51	Pass
	9	1.0	1.0	0.0	±0.51	Pass
	15	1.0	0.9	-0.1	±0.51	Pass
	17	1.0	1.0	0.0	±0.51	Pass
	19	1.0	0.9	-0.1	±0.51	Pass
	25	1.0	0.9	-0.1	±1.01	Pass
	29	1.0	0.9	-0.1	±1.01	Pass
	35	1.0	0.9	-0.1	±1.51	Pass
	39	1.0	0.9	-0.1	±1.51	Pass
	45	1.0	0.9	-0.1	±1.51	Pass
	49	1.0	0.9	-0.1	±1.51	Pass

校准结果
RESULTS OF CALIBRATION

证书编号 GDAA202460011 Certificate No.　　原始记录号 202460011 Record No.　　第 5 页,共 8 页 Page of

续表3 table 3

回路	谐波次数	谐波电压含有率标准值	谐波电压含有率示值	误差	允许误差	结论
Channle	Harmonic number	Reference Value	Indication Value	Error	MPE	Conclusion
C	2	1.0	0.8	-0.2	±0.51	Pass
	3	1.0	0.8	-0.2	±0.51	Pass
	5	1.0	1.0	0.0	±0.51	Pass
	7	1.0	1.0	0.0	±0.51	Pass
	9	1.0	1.0	0.0	±0.51	Pass
	15	1.0	0.8	-0.2	±0.51	Pass
	17	1.0	0.8	-0.2	±0.51	Pass
	19	1.0	1.0	0.0	±0.51	Pass
	25	1.0	0.8	-0.2	±1.01	Pass
	29	1.0	1.0	0.0	±1.01	Pass
	35	1.0	0.8	-0.2	±1.51	Pass
	39	1.0	1.0	0.0	±1.51	Pass
	45	1.0	1.0	0.0	±1.51	Pass
	49	1.0	0.8	-0.2	±1.51	Pass

四、谐波电流：见表4

Harmonic current:Shown in table 4

表4 table 4

回路	谐波次数	谐波电流含有率标准值	谐波电流含有率示值	误差	允许误差	结论
Channle	Harmonic number	Reference Value	Indication Value	Error	MPE	Conclusion
		(%)	(%)	(%)	(%)	Pass/Fail
A	2	3.0	3.0	0.0	±0.53	Pass
	3	3.0	2.9	-0.1	±0.53	Pass
	5	3.0	3.0	0.0	±0.53	Pass
	7	3.0	3.0	0.0	±0.53	Pass
	9	3.0	3.1	0.1	±0.53	Pass
	15	3.0	3.0	0.0	±0.53	Pass
	17	3.0	3.0	0.0	±0.53	Pass
	19	3.0	3.0	0.0	±0.53	Pass
	25	3.0	3.0	0.0	±1.03	Pass
	29	3.0	2.9	-0.1	±1.03	Pass
	35	3.0	2.8	-0.2	±1.53	Pass

校准结果
RESULTS OF CALIBRATION

证书编号 GDAA202460011
Certificate No.

原始记录号 202460011
Record No.

续表4 table 4

回路 Channle	谐波次数 Harmonic number	谐波电流含有率标准值 Reference Value (%)	谐波电流含有率示值 Indication Value (%)	误差 Error (%)	允许误差 MPE (%)	结论 Conclusion Pass/Fail
A	39	3.0	2.8	-0.2	±1.53	Pass
	45	3.0	2.8	-0.2	±1.53	Pass
	49	3.0	3.0	0.0	±1.53	Pass
B	2	3.0	3.0	0.0	±0.53	Pass
	3	3.0	2.8	-0.2	±0.53	Pass
	5	3.0	3.0	0.0	±0.53	Pass
	7	3.0	2.8	-0.2	±0.53	Pass
	9	3.0	2.8	-0.2	±0.53	Pass
	15	3.0	3.0	0.0	±0.53	Pass
	17	3.0	3.1	0.1	±0.53	Pass
	19	3.0	3.0	0.0	±0.53	Pass
	25	3.0	3.0	0.0	±1.03	Pass
	29	3.0	3.0	0.0	±1.03	Pass
	35	3.0	3.0	0.0	±1.53	Pass
	39	3.0	3.0	0.0	±1.53	Pass
	45	3.0	2.8	-0.2	±1.53	Pass
	49	3.0	2.8	-0.2	±1.53	Pass
C	2	3.0	3.0	0.0	±0.53	Pass
	3	3.0	3.0	0.0	±0.53	Pass
	5	3.0	3.0	0.0	±0.53	Pass
	7	3.0	3.0	0.0	±0.53	Pass
	9	3.0	3.0	0.0	±0.53	Pass
	15	3.0	3.0	0.0	±0.53	Pass
	17	3.0	2.8	-0.2	±0.53	Pass
	19	3.0	2.8	-0.2	±0.53	Pass
	25	3.0	3.0	0.0	±1.03	Pass
	29	3.0	2.8	-0.2	±1.03	Pass
	35	3.0	3.0	0.0	±1.53	Pass
	39	3.0	2.8	-0.2	±1.53	Pass
	45	3.0	2.9	-0.1	±1.53	Pass
	49	3.0	3.0	0.0	±1.53	Pass

校准结果
RESULTS OF CALIBRATION

证书编号 GDAA202460011 Certificate No.
原始记录号 202460011 Record No.

五、谐波有功功率:见表5

Harmonic active power:Shown in table 5

表5 table 5

谐波次数 Harmonic number	谐波电压含有率 Harmonic voltage ratio	谐波电流含有率 Harmonic current ratio	谐波功率含有率标准值 Reference Value	谐波功率含有率示值 Indication Value	误差 Error
	(%)	(%)	(%)	(%)	(%)
2	10	40	4.0	4.0	0.0
3	10	40	4.0	3.8	-0.2
5	10	40	4.0	3.9	-0.1
7	10	40	4.0	4.0	0.0
9	10	40	4.0	3.9	-0.1
11	10	40	4.0	3.9	-0.1
13	10	40	4.0	4.0	0.0
15	10	40	4.0	3.9	-0.1
19	10	40	4.0	4.0	0.0
25	10	40	4.0	0.0	-4.0

说明:

Note:

1.本次测量结果的扩展不确定度:

The Expanded Uncertainty of Measurement:

电压:U_{rel}=0.03% Voltage

频率:U_{rel}=0.006% Frequency

谐波电流:U_{rel}=0.10% Harmonic current

谐波电压:U_{rel}=0.06% Harmonic voltage

谐波功率:U_{rel}=0.15% Harmonic power

包含因子:$k=2$ Coverage factor

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.校准结果符合性判定依据JJF1094-2002《测量仪器特性评定》之5.3.1和仪器说明书技术要求。

Decision rules of conformity are JJF1094-2002 Evaluation of the Characteristics of Measuring Instruments(5.3.1) and technical requirements in the manual.

校准结果
RESULTS OF CALIBRATION

证书编号 GDAA202460011
Certificate No.

原始记录号 202460011
Record No.

3.按照所依据技术文件的规定，建议复校时间间隔不超过1年。 更换重要部件、维修或对仪器性能有怀疑时，应及时校准。

According to the demand of reference document , next calibration is proposed within 1 year . In case of replacement of important parts , maintenance or doubt on the performance of the instrument , it shall be calibrated in time .