

SEPRI Experiment and Test Center

TEST REPORT

Report Number.: JC-09-2021-0108

Sample Name: DIN-Rail Advanced Power Quality Analyzer

Model: iMeter D7

Manufacturer: CET Electric Technology Inc.

Applicant: CET Electric Technology Inc.

Test Type: Commission Test



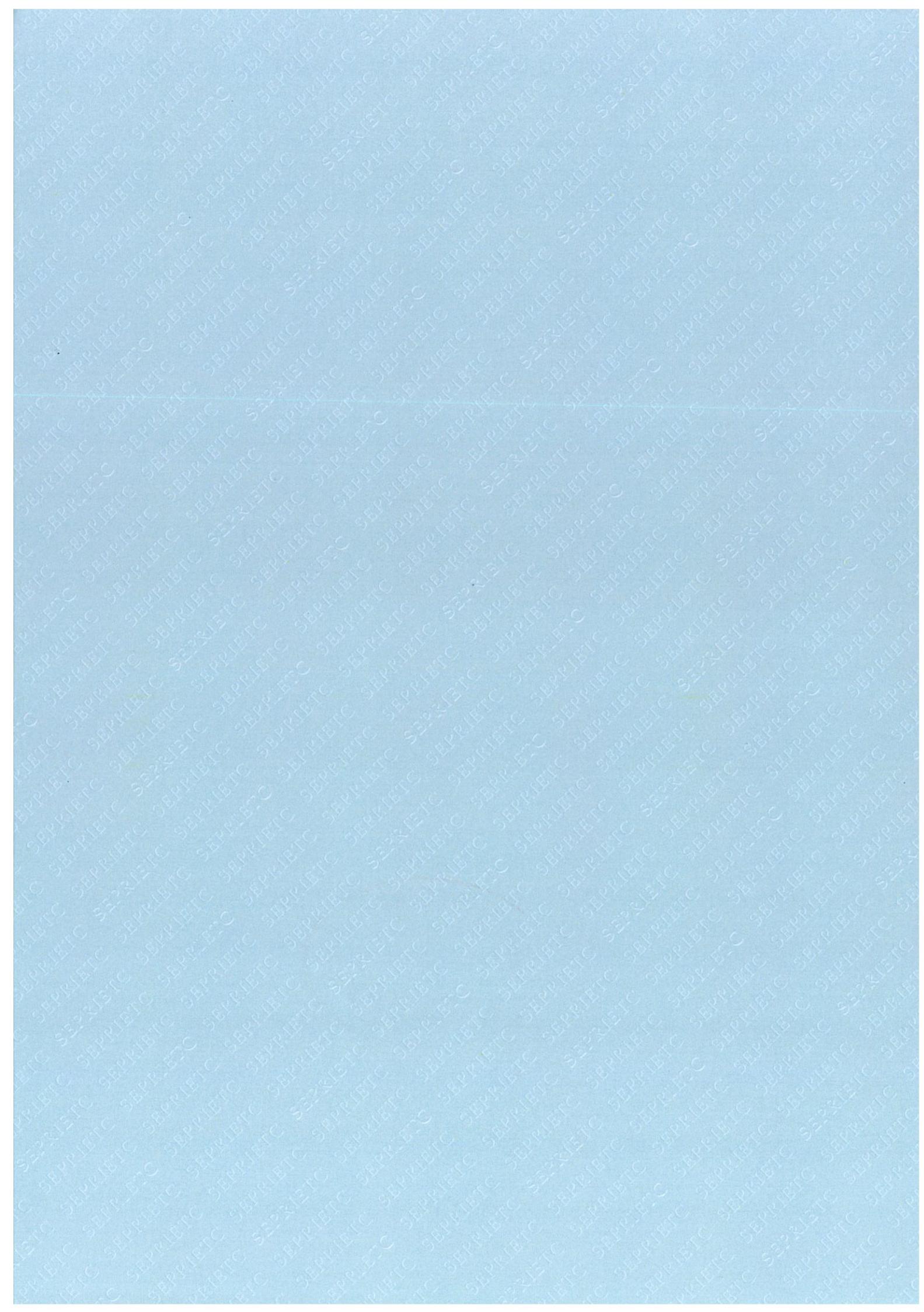
SEPRI Experiment and Test Center

Address: No.11, Kexiang Road, Huangpu District, Guangzhou,
Guangdong, China, 510663

Website: www.sepri.csg.cn

E-mail: seprietc@csg.cn





iMeter D7 Test Report

Sample Name	DIN-Rail Advanced Power Quality Analyzer	Model	iMeter D7		
Applicant	CET Electric Technology Inc. 8/F, Westside, Building 201, Terra Industrial & Tradepark, Che Gong Miao, Shenzhen, Guangdong 518040, China	Manufacturer	CET Electric Technology Inc.		
Sample Number	SEPRIETC-09-2021-0005	Quantity	2		
Sample Type	Production Samples from Manufacturer	Received Date	2021.04.21		
Test Date	2021.04.23	Test Type	Commission Test		
Characteristics	$U_{\text{din}}: 230V \text{ L-N (}400V \text{ L-L)}$ $I_{\text{nomi}}: 5A$ $f_{\text{nomi}}: 50 \text{ Hz/60 Hz}$ Power Supply: 95-250VAC/VDC $\pm 10\%$, 47-440 Hz				
Test Environment	Temperature: $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Humidity: 45% to 75%				
Testing Site	No.53, Xinyaobei Road, Huangpu District, Guangzhou, Guangdong, China				
Test Standards	1. IEC 61000-4-30 Ed. 3.0 (2015) “Electromagnetic Compatibility (EMC) – Part 4-30: Testing and measurement techniques – Power quality measurement methods” 2. IEC 62586-2 Ed. 2.0 (2017) “Power Quality Measurement in power supply system – Part 2: Functional tests and uncertainty requirements” 3. IEC 61000-4-15 Ed. 2.0 (2010) “Electromagnetic compatibility (EMC) – Part 4-15: Testing and measurement techniques – Flickermeter – Functional and design specifications” 4. IEC 61000-4-7 Ed. 2.1 (2009) “Electromagnetic compatibility (EMC) – Part 4-7: Testing and measurement techniques – General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto” 5. IEC 61000-2-4 Ed. 2.0 (2002) “Electromagnetic compatibility (EMC) – Part 2-4: Environment – Compatibility levels in industrial plants for low-frequency conducted disturbances”				
Conclusion	According to the test standards above, all the tested items meet the standard requirements, this sample pass the test. (Details are shown in the test results summary)				
Remarks	/				

Approved by: Yuan Zhiyong

Reviewed by: Xu Quan

Edited by: Lin Xinhao, Lin Yuehuan

Tested by: Lin Xinhao, Lin Yuehuan

Lin Xinhao Lin Yuehuan

Xu Quan

Lin Xinhao Lin Yuehuan

校准检测专用章



Table of Contents

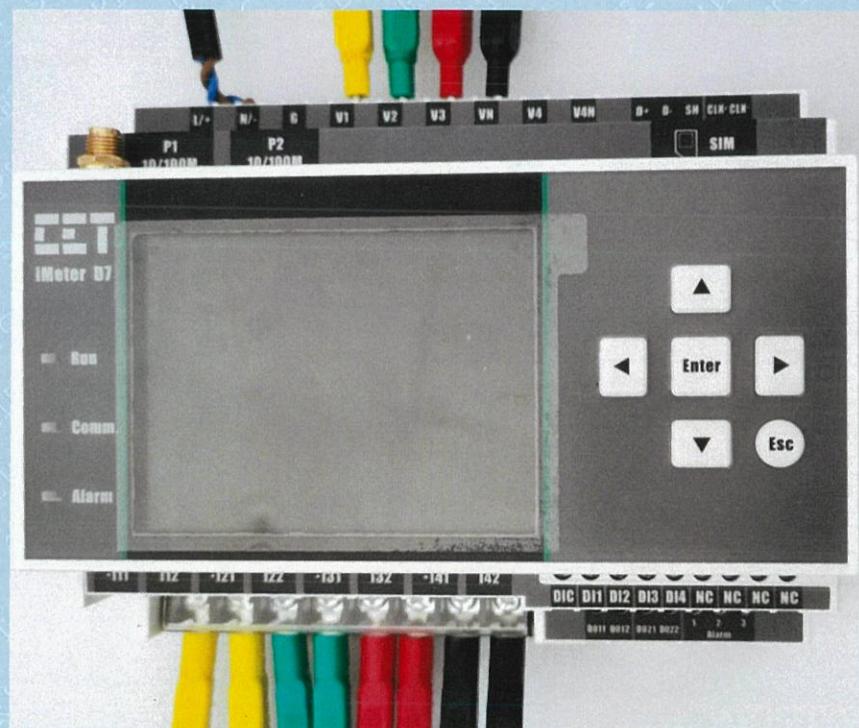
1 Main Lab Instruments and Facilities used for the Tests.....	2
2 Test Results Summary.....	3
3 Test Items Results.....	4
3.1 Power Frequency.....	4
3.1.1 Measurement Method.....	5
3.1.2 Measurement uncertainty and measuring range.....	5
3.1.3 Measurement evaluation.....	7
3.2 Magnitude of Supply Voltage / Magnitude of Current.....	8
3.2.1 Measurement method.....	10
3.2.2 Measurement uncertainty of measuring range.....	10
3.2.3 Measurement aggregation.....	13
3.3 Flicker.....	16
3.3.1 Sinusoidal / rectangular voltage changes.....	16
3.3.2 Rectangular voltage changes and performance testing.....	18
3.3.3 Combined frequency and voltage changes.....	19
3.3.4 Distorted voltage with multiple zero crossings.....	19
3.3.5 Bandwidth test using harmonic and inter-harmonic side band modulation.....	19
3.3.6 Phase jumps.....	20
3.3.7 Rectangular voltage changes with 20% duty cycle.....	20
3.3.8 Verify flicker Plt aggregation.....	21
3.4 Supply Voltage Interruptions, Dips and Swells.....	22
3.4.1 General.....	24
3.4.2 Check dips / interruptions in polyphase system.....	28
3.4.3 Check swells in polyphase system.....	29
3.5 Supply Voltage Unbalance / Current Unbalance.....	30
3.5.1 General for Voltage Unbalance.....	32
3.5.2 Measurement method, measurement uncertainty and measuring range for Voltage Unbalance.....	32
3.5.3 Aggregation.....	32

3.5.4 General for Current Unbalance	33
3.5.5 Measurement method, measurement uncertainty and measuring range for Current Unbalance.....	33
3.6 Voltage Harmonics / Current Harmonics	34
3.6.1 Measurement method	40
3.6.2 Measurement uncertainty and measuring range.....	43
3.6.3 Measurement aggregation	46
3.7 Voltage Interharmonics / Interharmonic Currents	48
3.7.1 Measurement method	50
3.7.2 Measurement uncertainty and measuring range.....	51
3.7.3 Measurement aggregation	54
3.8 Mains signaling voltages on the supply voltage.....	56
3.8.1 Measurement method	57
3.8.2 Measurement uncertainty and measuring range.....	61
3.9 Measurement of Underdeviation and Overdeviation Parameters	66
3.9.1 Measurement method	67
3.9.2 Measurement uncertainty and measuring range.....	70
3.9.3 Measurement aggregation	70
3.10 Flagging.....	74
3.10.1 Check flagging is not set when flagging conditions are not met	75
3.10.2 Flagging in polyphase system caused by voltage dip For Plt flicker	75
3.10.3 Flagging in polyphase system caused by voltage dip	76
3.10.4 Flagging in polyphase system caused by voltage swell	76
3.10.5 Flagging in polyphase system caused by voltage interruption.....	77
3.11 Clock Uncertainty Testing	77
3.11.1 Check Clock Uncertainty	78
3.12 Rapid Voltage Changes (RVC)	79
3.12.1 RVC parameters and evaluation	79
3.12.2 General	80
3.12.3 “No RVC” tests	81
3.12.4 “RVC threshold and setup” test.....	82
3.12.5 “RVC parameters” test	82

3.12.6 “RVC polyphase” tests	83
3.12.7 “Voltage is in steady-state condition” tests	84
3.13 Conducted emissions in the 2 kHz to 150 kHz range	85
3.13.1 General	85
3.13.2 Measurement method – 2 kHz to 9 kHz.....	85
3.13.3 Measurement method – 9 kHz to 150 kHz.....	86
3.13.4 Measurement range and measurement uncertainty	86
3.13.5 Aggregation	87



Sample Photos



Front side



Reverse side

1 Main Lab Instruments and Facilities used for the Tests

No	Device Name	Model Number	Serial Number	Expiration Date
1	Time & Frequency Tester	TimeAcc-007	150Q Z B CQ12 0000129	2022.05.11
2	Oscilloscope	MSO4104B	150Q Z B CY10 0001140	2022.05.12
3	Digital Multi-function Meter	Fluke-289C	150Q Z B CE48 0001310	2022.05.10
4	Hygrothermograph	DSR-TH	0801 Z A FP00 FP13 0000053	2022.05.26
5	Micro-processor Relay Protection Test System	ONLYY-AD661-40	SEPRIETC-09-006-A	2022.05.10
6	DC Stabilized Power Supply	CL-2000-300	SEPRIETC-09-009-A	2022.05.06
7	Relay Protection Tester	CMC 256 plus	150Q Z B CQ12 0000127	2022.05.23
8	Power standard power source	FLUKE6105A+6106A	L1: 276568188 L2: 276567665 L3: 276568163	2021.07.04



2 Test Results Summary

No	Test Items	Technical Requirements	Conclusion
1	Power Frequency	Meet the requirement of test standards	Pass
2	Magnitude of Supply Voltage / Magnitude of Current	Meet the requirement of test standards	Pass
3	Flicker	Meet the requirement of test standards	Pass
4	Supply Voltage Interruptions, Dips and Swells	Meet the requirement of test standards	Pass
5	Supply Voltage Unbalance / Current Unbalance	Meet the requirement of test standards	Pass
6	Voltage Harmonics / Current Harmonics	Meet the requirement of test standards	Pass
7	Voltage Interharmonics / Interharmonic Currents	Meet the requirement of test standards	Pass
8	Mains signaling voltages on the supply voltage	Meet the requirement of test standards	Pass
9	Measurement of Underdeviation and Overdeviation Parameters	Meet the requirement of test standards	Pass
10	Flagging	Meet the requirement of test standards	Pass
11	Clock Uncertainty Testing	Meet the requirement of test standards	Pass
12	Rapid Voltage Changes (RVC)	Meet the requirement of test standards	Pass
13	Conducted emissions in the 2 kHz to 150 kHz range	Meet the requirement of test standards	Pass

Note: "N/A" indicates Not Applicable.