NIGERIAN ELECTRICITY MANAGEMENT SERVICES AGENCY
CORPORATE HEADQUARTERS
No 4, Dar es Salaam Crescent Wuse II, Abuja
Federal Ministry of Power

CERTIFICATION NO.: NEMSA/NMTSO/TTC/2024/046.
EXPIRY DATE: 31ST MAY, 2026.

ELECTRICITY METER TEST CERTIFICATE

NAME OF APPLICANT: ENEGASLONGMEN JV LIMITED.
ADDRESS: PLOT 434, MAGNUS ABE STREET, WUYE, ABUJA, NIGERIA.

METER MANUFACTURER: HANGZHOU SUNRISE TECHNOLOGY CO., LTD.
ADDRESS: NO. 1099, CANGXING STREET, CANGQIAN YUHANG, HANGZHOU, CHINA, 31121.

METER CERTIFICATION TYPE: TYPE TEST

METER PARTICULARS

DESCRIPTION:

MAKE: Three Phase Smart Prepayment Meter.

TYPE DESIGNATION: ST34-KP01
CLASS: 1.0
RATED CURRENT: 3 × 5(100)A
METER CONSTANT: 1000 imp/KWh
APPLICATION: Indoor
MODE OF REGISTRATION: Uni-Directional

RATED VOLTAGE: 3X230/400V
FREQUENCY: 50Hz
REGISTER TYPE: LCD
PROTECTION CLASS: II

APPLICABLE STANDARD:
The Electricity Meter was tested based on the requirements of:
NIS/IEC 62052-11:2021 : Electricity Metering Equipment (a.c)-General Requirements, Tests and Conditions for Metering Equipment.
NIS/IEC 62053-21:2021 : Electricity Metering Equipment (a.c)-Particular Requirements: Static Meters for Active Energy (classes 1 and 2).
Nigeria Metering Code (NMC) Version 02
Nigerian Electricity Smart Metering Regulations (NESMR), Version 01.
TEST LOCATION: NATIONAL METER TEST STATION, OSHODI, LAGOS
AMBIENT CONDITIONS: Temperature: 28.0 ^{0}C, Relative Humidity: 53%
TEST MODE: As receive
SCOPE OF TEST: Covers evaluation of conformity to General/Constructional, Insulation, Accuracy, Electrical, Electro-magnetic, Mechanical and Climatic requirements.

EXCLUSION FROM LIABILITY CLAUSE
This certification covers the meter(s) presented to NEMSA for certification, NEMSA is not liable for any tampering, alteration or modification that may occur after certifications.

CERTIFIED BY: ENGR SHUAIBU USMAD ..... DESIGNATION ..... EDTS .....

SIGNATURE: ..... DATE: 20/6/2024 .....

Federal Ministry of Power

ELECTRICITY METER TEST CERTIFICATION RECORDS

TYPE OF METER: ST34-KP01

MAKE OF METER: THREE PHASE SMART PREPAYMENT METER.

SERIAL Nos: 0215000617369, 0215000617377 & 0215000617351.

NAME OF APPLICANT: ENEGASLONGMEN JV LIMITED.
ADDRESS: PLOT 434, MAGNUS ABE STREET, WUYE, ABUJA, NIGERIA.

METER MANUFACTURER: HANGZHOU SUNRISE TECHNOLOGY LIMITED.
ADDRESS: NO. 1099, CANGXING STREET, CANGQIAN YUHANG, HANGZHOU, CHINA, 311121.

Tested by: ENGR. NWOYE CHIDIEBERE T. *Design: MGR (TECH) Sign: Date: 31-05-2024

Checked by: ENGR. SADIKU L. UMAR *Design: AG. HEAD, NMTS-OSHODI Sign: Date: 31-05-2024

Reviewed by: ENGR GIDEON FATUNMBI *Design: GM (CMLSD) Sign: Date: 19-06-2024

Certified by: ENGR. SHUAIBU USMAN *Design: EDTS Sign: Date: 20/6/2024

This report relates ONLY to the tested meters.

NOTE: This report is composed of Twenty-six (26) pages containing details of Test Results. It should not be reproduced except in full, without prior approval of NEMSA.

*DESIGNATION
National Meter Test Station,
Oshodi, Lagos.

STATUTORY METER TEST AND CALIBRATION REQUIREMENTS

Part 3, Section 3.1.2 of Nigeria Metering Code Version 02 requires that every Meter Type intended for the purpose of billing electricity consumers to be Type-tested and certified. This Type Test/certification is to be carried out by Nigerian Electricity Management Services Agency (NEMSA) in accordance with Section 176(k) of Electricity Act 2023.

Meter Type: This is a particular design of Meter produced by one manufacturer having:

1. Similar metrological properties.
2. Same uniform construction of the parts that determine the properties.
3. Same ratio of maximum current to reference current

Type Test: A test conducted on a sample or samples of a Meter type to verify that its design and construction conform to the requirements of relevant standards.

VALIDITY: 2 years from date of approval.

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SUMMARY OF TEST

S/N	TESTS	DONE	NOT DONE	REMARK
1	**Test of Insulation Properties**			
	Impulse voltage test	✓		PASS
	A.C withstand voltage test	✓		PASS
2	**Test of Accuracy Requirements**			
	Test of Meter constant	✓		PASS
	Test of starting condition	✓		PASS
	Test of No load condition	✓		PASS
	Test of Influence Quantities			
	Test of limits of errors due to current variation	✓		PASS
	Test of influence of voltage variation	✓		PASS
	Test of influence of frequency variation	✓		PASS
	Test of influence of external magnetic field		X	
	Test of influence of reversed phase sequence	✓		PASS
	Test of influence of voltage unbalance	✓		PASS
	Test of influence of harmonic components	✓		PASS
	Test of repeatability of error	✓		PASS
3	**Test of Electrical Requirements**			
	Test of power consumption	✓		PASS
	Test of influence of supply voltage	✓		PASS
	Test of influence of short-time over current	✓		PASS
	Test of influence of self-heating	✓		PASS
	Voltage dips and short interruptions	✓		PASS
4	**Electromagnetic Compatibility Test**			
	Fast transient burst test		x	
	Test of immunity to conduct disturbance		x	
	Test of immunity to electro-static discharge	✓		PASS
	Surge immunity test		x	
	Radio interference suppression		x	
	Electromagnetic R.F field immunity test		x	
	Damp oscillatory wave immunity test		x	
5	**Test of Effect of Climatic Environment**			
	Dry heat test	✓		PASS
	Cold test	✓		PASS
	Damp heat cyclic test	✓		PASS
	Solar radiation test		X	
6	**Mechanical Test**			
	Spring hammer test	✓		PASS
	Test of resistance to heat and fire	✓		PASS
	Shock test		x	
	Vibration test		x	
	Test of protection against penetration of dust		x	
	Test of protection against penetration of water	✓		PASS

Federal Ministry of Power

Conformity to General Construction and Component Specifications/ Requirements

S/N	Clause	Specifications/Requirements	EUT Conformity Assessment (Yes/No)
1	NMC(Version 02), Appendix D, 4.4.1(1)	The Body of Meter shall be bakelite or polycarbonate	Yes
2	NMC(Version 02), Appendix D, 4.4.1(2)	Terminal Block shall be made of Polycarbonate grade and shall form integral part of the Meter base.	Yes
3	NMC(Version 02), Appendix D, 4.4.1(3)	Terminal Cover shall be transparent with external provision of sealing through sealing screws.	Yes
4	NMC(Version 02), Appendix D, 4.4.1(5)	Meter shall have clearly visible, indelible and distinct name plate.	Yes
5	NMC(Version 02), Appendix D, 4.4.1(6)	One seal shall be affixed on one side of Meter body.	Yes
6	NMC(Version 02), Appendix D, 4.4.2(4)	• Communication modules shall be compatible for two RS232/485 ports; one for optical port for communication with Meter reading instruments & the other for hardware. • Provision of back-up Battery	Yes Yes
7	NMC(Version 02), Appendix D, 4.4.4	On the Meter Name-Plate: Bar code shall be printed below the Meter serial number. Manufacturer's Name and Trade mark. Place of Manufacture. Year of manufacture. Reference Voltage, Current and Frequency. Class index. Meter Constant. Owner/Utility's Identity. The Manufacturer shall affix one seal on one side of the Meter. The internal potential links shall be in closed position or link-less. Meters will be preferred and there shall not be any external link.	 No Yes Yes Yes Yes Yes Yes Yes Yes Yes

Conformity to Key Requirements

S/N	Clause	Key Requirements	EUT Conformity Assessment (Yes/No)
1	NMC(Version 02), Appendix D, 4.4.6(15)	Flashing L.E.D. visible from the front window.	Yes
2	NMC(Version 02), Appendix D, 4.4.6 (16)	IR port to transfer locally through Common Meter Reading Instrument (CMRI) or laptop.	Yes
3	NMC(Version 02), Appendix D, 4.5.1	The Meter shall have the following functions and features: Encryption Algorithm: Standard Transfer Specification (STS). Three level credit LED display on Front Panel indications. Terminal: Extended cover type with external connection diagram on the inside. Terminal Hole Diameter: Not less than 9.0 mm. Casing material: Fire retardant - Polycarbonate. Adequate sealing provision to prevent tampering.	 Yes Yes Yes Yes Yes Yes
4	NMC(Version 02), Appendix D, 4.5.1	The Meter shall conform to 20 digits encryption credit transfer number.	Yes
5	NMC(Version 02), Appendix D, 4.5.1	Casing/Cover Material: Fire resistant-bakelite or polycarbonate	Yes
6	NMC(Version 02), Appendix D, 4.6.1(xiv)	The Meter shall have a Display of: • 6 digit display • 9.0 mm× 4.5 mm	 Yes Yes
7	NMC(Version 02), Appendix D, 4.7	The Display Unit shall be capable of displaying the following parameters for electricity/prepayment information: Total units used to date (in KWh) Available credit (in KWh) Present Consumption rate Last billing date Last billed amount Credit level Warning on credit level	 Yes Yes Yes Yes Yes Yes Yes

Load Survey Capability

S/N	Clause	Requirements	Conformity Assessment (Yes/No)
1	NMC(Version 02), Appendix D, 4.4.3	The Meter shall log minimum of 225 tamper events, compartment-wise division of each event and their persistence time shall be indicated.	Yes
2	NMC(Version 02), Appendix D, 4.5.1	The Meter shall be capable of recording and displaying: • Total KWh used in the past 24hrs • Total KWh used in the past 30 days.	 Yes Yes

Tamper/Fraud Detection Capability

S/N	Clause	Requirements	Conformity Assessment (Yes/No)
1	NMC(Version 02), Appendix D, 4.4.3	• Phase sequence reversal: The Meter shall work accurately irrespective of the phase sequence of supply. • Missing Potential: The date and time of such occurrence and restoration shall be recorded by the Meter. • Reversal of current coil polarity: The Meter shall record the date and time of occurrence and restoration. Meter shall however, register the energy consumed correctly with any one, two or all three phase current coil reversal. • Current coil shorting: The Meter shall record the date and time of occurrence and restoration. The threshold of the current shall be programmable. • Meter shall log all three phase voltage, current, power factor etc. at the time of tamper attempt for all such occurrences.	Yes Yes Yes Yes Yes

Conformity to Basic Requirements

S/N	Clause	Properties	Standard	Conformity Assessment (Yes/No)
1	NESMR (Version 01), Clause 7.1.6 (i)	• Voltage Rating • Operating Range	• $3 \times 230/400V$ • -15% to $+15\%$ V_{ref}.	Yes Yes
2	NESMR (Version 01), Clause 7.1.6 (ii)	Current Rating	$3 \times 5(100)A$	Yes
3	NESMR (Version 01), Clause 7.1.6 (iii)	Frequency	$50Hz \pm 5\%$	Yes
4	NMC (Version 02), Appendix D, 4.5.1	Power Factor Range	-1 to $+1$	Yes
5	NESMR (Version 01), Clause 7.1.6 (iv)	Operating Temperature	$-40°C$ to $+70°C$	Yes Yes
6	NESMR (Version 01), Clause 7.1.6 (v)	Average Relative Humidity	Up to 95% non-condensing	Yes
7	NMC (Version 02), Appendix D, 4.5.1	Life Span	Minimum of 10 years	Yes

1.0 TEST OF INSULATION REQUIREMENTS

1.1 A.C Voltage Test

Requirement: NIS/IEC 62052-11:2003, Clause 7.3.3

Test Equipment: CHAUVIN ARNOUX C.A 6165
This test was performed with the three samples.

Test Method: A test voltage of 4KVrms was applied between all voltages, current and auxiliary circuits whose reference voltage is over 40V connected together and earthed at frequency of 50Hz, while 2KVrms was applied between circuits not intended to be connected together in service.

Test Result: No sign of flash over, disruptive discharge or puncture was observed.

1.2 Impulse Voltage Test

Requirement: NIS/IEC 62052-11:2003, Clause 7.3.2

Test Equipment: HV HIPOT GDCY-12B
This test was performed with the three samples.

Test Method: An impulse voltage was applied ten times with one polarity and then repeated with other polarity. The minimum time between the impulses was 3 seconds.

Test Result: No sign of flash over or puncture was observed on the meter. The change in percentage error at reference condition did not exceed the limit of variation in percentage error.

2.0 TEST OF ACCURACY REQUIREMENTS

2.1 Test of Meter Constant

Requirement: NIS/IEC 62052-11:2021, Clause 7.4

Test Equipment: ZERA MT786
This test was performed with meter no. 0215000617369

Test Method: The reference frequency: 50Hz, reference voltage: 230V, and basic current: 5A were applied.

Test Result: The relationship between the test output and the indication on display was confirmed to correspond with the marking on the name plate.

2.2 Test of Starting Condition

Requirement: NIS/IEC 62053-21:2021, Clause 4.2.2

Test Equipment: ZERA MT786
This test was performed with meter no. 0215000617369

Test Method: The reference frequency: 50Hz, reference Voltage: 230V, and current: 0.4% I_b were applied at unity power factor.

Test Result: The meter started and continued to register.

The Meter meets the requirement.

2.3 Test of No-Load Condition

Requirement: NIS/IEC 62052-11:2021, Clause 7.6

Test Equipment: ZERA MT786
This test was performed with meter no. 0215000617369

Test Method: The Current Circuit of the meter was open-circuited and a voltage of 110% V_{ref} was applied.

Test Result: The Meter did not produce any pulse output and was fully operational within five seconds after rated voltage was applied.
The Meter meets the requirement.

2.4 Test of Influence Quantities

2.4.1 Test of Limits of Errors due to Current Variation

Requirement: NIS/IEC 62053-21:2021, Clause 7.9

Test Equipment: ZERA MT786
This test was performed with meter no. 0215000617369

Test Method: The variation in percentage error was checked at reference frequency: 50Hz, reference voltage: 230V and the current values listed below:

Current	Power factor	Permissible error limits (%)	Test Results
5% I_b	1	± 1.5%	−0.48%
10% I_b	1	± 1.0%	−0.24%
I_b	1	± 1.0%	−0.05%
I_{max}	1	± 1.0%	−0.07%
10% I_b	0.5	± 1.5%	−0.41%
20% I_b	0.5	± 1.0%	−0.17%
I_b	0.5	± 1.0%	−0.08%
I_{max}	0.5	± 1.0%	−0.20%
10% I_b	0.8	± 1.5%	−0.27%
20% I_b	0.8	± 1.0%	−0.13%
I_b	0.8	± 1.0%	−0.06%
I_{max}	0.8	± 1.0%	−0.10%
Test Conclusion			**Pass**

2.4.2 Test of Influence of Voltage Variation

Requirement: NIS/IEC 62052-11:2021, Clause 9.4.3; NIS/IEC 62053-21, Clause 7.10 & NESMR (Version 01), Clause 7.1.6(i)

Test Equipment: ZERA MT786
This test was performed with meter no. 0215000617369

Test Method: The variation in percentage error was checked at −15% to +15% V_{ref}, F_{ref} and I_b at Unity and 0.5 Power Factor.

Test Result:

Power factor	Voltage	Limits	Test Results
1	85% V_{ref}	0.5%	0.01%
1	115% V_{ref}	0.5%	0.02%
0.5	85% V_{ref}	1.0%	0.02%
0.5	115% V_{ref}	1.0%	0.03%
Test Conclusion			**Pass**

2.4.3 Test of Influence of Frequency Variation

Requirement: NIS/IEC 62052-11:2021, Clause 9.4.6; NIS/IEC 62053-21:2021, Clause 7.10 & NESMR (Version 01), Clause 7.1.6(iii)

Test Equipment: ZERA MT786
This test was performed with meter no. 0215000617369

Test Method: The variation in percentage error was checked at $F_{ref} \pm 5\%$ F_{ref}, V_{ref}, and I_b at Unity and 0.5 Power Factor.

Test Result:

Power factor	Frequency (Hz)	Limits	Test Results
1	95% F_{ref}	0.5%	0.10%
1	105% F_{ref}	0.5%	0.06%
0.5	95% F_{ref}	0.7%	0.08%
0.5	105% F_{ref}	0.7%	0.04%
Test Conclusion			**Pass**

2.4.4 Test of Influence of Reverse Phase Sequence

Requirement: NIS/IEC 62052-11:2021, Clause 9.4.7 & NIS/IEC 62053-21:2021, Clause 7.10

Test Equipment: ZERA MT786
This test was performed with meter no. 0215000617369

Test Method: The percentage error obtained when phase sequence was reversed at V_{ref}, F_{ref}, 10% I_b and Unity Power Factor was compared with percentage error at normal phase sequence. The variation in percentage error was recorded.

Test Result: The variation in percentage error was 0.12%.
The permissible variation in percentage error is 1.5%.

The meter meets the requirement.

2.4.5 Test of Interruption of Phase Voltage

Requirement: NIS/IEC 62052-11:2021, Clause 9.4.5 & NIS/IEC 62053-21:2021, Clause 7.10

Test Equipment: ZERA MT786
This test was performed with meter no. 0215000617369

Test Method: The influence of interruption of one phase of the three-phase network and interruption of two phases were checked at V_{ref}, F_{ref}, I_b at Unity Power Factor.

Test Result: The variation of percentage error obtained under the influence of interruptions of one of the three phases and two of the three phases were 0.06% and 0.15% respectively.

The permissible variation in percentage error is 2.0%.

The meter meets the requirement.

2.4.6 Test of Influence of Harmonic Components in the Current and Voltage Circuits

Requirement: NIS/IEC 62052-11:2021, Clause 9.4.2.2 & NIS/IEC 62053-21:2021, Clause 7.10

Test Equipment: PPS 3.3C and ZERA MT310
This test was performed with meter no. 0215000617369

Test Method: 10% of fifth harmonics was added to the voltage and 40% of fifth harmonics was added to the current at 0.5 I_{max}, V_{ref} and Unity Power Factor. The variation in percentage error was measured under the fifth harmonics and fundamental frequency.

Test Result: The variation in percentage error was 0.04%

The permissible variation in percentage error is 0.8%.

The meter meets the requirement.

2.4.7 Repeatability of Error Test

Requirement: NIS/IEC 62052-11:2021, Clause 7.8

Test Equipment: ZERA MT786
This test was performed with meter no. 0215000617369
Test Method: The meter was subjected to V_{ref} and various current values at Unity Power Factor. Five (5) error samples were taken, and the difference between the maximum measured percentage error value and minimum measured percentage error value was obtained and recorded at each test point.

Test Result:

Current	Permissible Repeatability	Test Results
5%I_b	0.3%	0.05
10%I_b	0.2%	0.06
I_b	0.2%	0.02
I_{max}	0.2%	0.03
Test Conclusion		**Pass**

3.0 TEST OF ELECTRICAL REQUIREMENTS

3.1 Test of Power Consumption

Requirement: NIS/IEC 62052-11:2021, Clause 4.4

Test Equipment: PPS 3.3C and ZERA MT310
This test was performed with meter no. 0215000617377

Test Method:
In Voltage Circuit: Voltage circuit was connected to rated voltage and the current circuit kept open. The power consumption was recorded.

In Current Circuit: Current equal to I_b was injected into the current circuit while voltage circuit was kept open. The power consumption was recorded.

Test Result:

Test Circuit	Limit	Test Result
Voltage	2W, 10VA	< 2W & 10VA
Current	1VA	0.02VA
Test Conclusion		**Pass**

3.2 Voltage Dips and Interruptions

Requirement: NIS/IEC 62052-11:2003, Clause 7.1.2

Test Equipment: PPS 3.3C
This test was performed with meter no. 0215000617351

Test Method: The meter was in operating condition with auxiliary circuits energized with reference voltage while the current circuit was left open.

Test Result:

Test Parameters	Requirements		Test Result
Voltage interruption of V_{ref}: 100% Interruption time: 1 second No. of interruptions: 3 Restoration time between interruptions: 50 milliseconds	(i) (ii)	The change produced in register shall not be more than 0.069KWh. There shall be no loss of data in memory.	Pass Pass
Voltage interruption of V_{ref}: 50% Interruption time: 20 milliseconds No. of interruptions: 1	(i) (ii)	The change produced in register shall not be more than 0.069KWh. There shall be no loss of data in memory.	Pass Pass
Voltage interruption of V_{ref}: 50% Dip time: 1 minute No. of dip: 1	(i) (ii)	The change produced in register shall not be more than 0.069KWh. There shall be no loss of data in memory.	Pass Pass
Test Conclusion			**Pass**

3.3 Short Time Over-Current Test

Requirement: NIS/IEC 62052-11:2021, Clause 9.4.10 & NIS/IEC 62053-21:2021, Clause 7.10

Test Equipment: STOC-1
This test was performed with meter no. 0215000617369

Test Method: The current of 30 times I_{max} was passed for one half cycle at rated voltage. The difference in percentage error before and after test was recorded.

Test Result:

Current	Power Factor	Limits of Variation	Test Results
$30I_{max}$	1	1.5%	0.01%
Test Conclusion			**Pass**

The meter performed correctly when compared to its initial working condition.

3.4 Test of Influence of Self -Heating

Requirement: NIS/IEC 62052-11:2021, Clause 9.4.11 & NIS/IEC 62053-21:2021, Clause 7.10

Test Equipment: ZERA MT786
This test was performed with meter no. 0215000617369

Test Method: The voltage circuit was energized at V_{ref} for 2 hours without any current in the current circuit. I_{max} was then applied at Unity Power Factor and 0.5 Power Factor. The percentage error variation was read and recorded in each case.

Test Result:

Power Factor	Limits of Variation	Test Results
1	0.7%	0.03%
0.5	1.0%	0.03%
Test Conclusion		**Pass**

4.0 ELECTROMAGNETIC COMPATIBILITY TEST

4.1 Electrostatic Discharge Test

Requirement: NIS/IEC 62052-11:2021, Clause 9.3.3 (e)

Test Equipment: EMTEST P30N
This test was performed with meter no. 0215000617377

Test Method: The voltage and auxiliary circuits energized with reference voltage and current circuit left open. Air discharge was applied with test voltage of 15KV and 10 pulses for positive and negative polarity.

Test Result: The electrostatic discharge did not cause any disturbance to the meter functions.

The meter meets the requirement.

5.0 TEST OF EFFECT OF CLIMATIC ENVIRONMENT

5.1 Dry Heat Test

Requirement: NIS/IEC 62052-11:2021, Clause 8.3.3

Test Equipment: GTH-100
This test was performed with meter no. 0215000617351

Test Method: The Meter was mounted in a non-operating condition at a temperature of $70^0C \pm 2^0C$ for duration of 72hrs.

Test Result: No sign of damage or change of information was observed. The Meter performed correctly.

The meter meets the requirement.

5.2 Cold Test

Requirement: NIS/IEC 62052-11:2021, Clause 8.3.4

Test Equipment: GTH-100
This test was performed with meter no. 0215000617351

Test Method: The Meter was energized with reference voltage while the current circuit was open circuited. It was then subjected to $-25^0C \pm 3^0C$ for duration of 72hrs.

Test Result: After the test, no sign of damage was observed. The Meter performed correctly.

The meter meets the requirement.

5.3 Damp Heat Cyclic Test

Requirement: NIS/IEC 62052-11:2021, Clause 8.3.5

Test Equipment: GTH-100
This test was performed with meter no. 0215000617351

Test Method: The voltage and auxiliary circuits of the meter were energized with reference voltage without any current. The test was conducted at upper temperature of $40^0C \pm 2^0C$ for duration of 6 cycles. 24hrs after the test, the meter was subjected to the following tests:

- Impulse test using 0.8 of normal test voltage.
- Functional test requiring examination of the meter for damage, change of information or impairment to operation.

Test Result: No sign of damage was observed. The Meter performed correctly.

The meter meets the requirement.

6.0 TEST OF MECHANICAL REQUIREMENTS

6.1 Spring Hammer Test

Requirement: NIS/IEC 62052-11:2003, Clause 5.2.2.1

Test Equipment: GMBH F22.50
This test was performed with meter no. 0215000617377

Test Method: The meter was mounted in its normal working condition and the spring hammer was made to act on the outer surface of the meter cover including windows and on the terminal cover with a kinetic energy of 0.2J± 0.02J.

Test Result: There was no crack on the meter case. This showed that the mechanical strength of the meter case is adequate.
The meter meets the requirement.

6.2 Test of Resistance to Heat and Fire (Glow Wire Test)

Requirement: NIS/IEC 62052-11:2003, Clause 5.8

Test Equipment: GWT-5
This test was performed with meter no. 0215000617377

Test Method: The terminal block, Terminal cover and Meter Case were brought separately into contact with the glow wire. The temperature of the glow wire for terminal block was 960^{0}C and 650^{0}C for terminal cover and base.

Test Result:

Test Part	Temperature Requirement	Test Result
Terminal Block	960^{0}C	Pass
Terminal Cover	650^{0}C	Pass
Meter Case	650^{0}C	Pass
Test Conclusion		**Pass**

The meter meets the requirement.

6.3 Test of Protection against Penetration of Water

Requirement: IEC60529:2013, Clause 14.2.4(a)

Test Equipment: Waterproof Test Chamber
This test was performed with meter no. 0215000617377

Test Method: The test was carried out on the meter inside the waterproof test chamber for 10 minutes in accordance with the requirements of IEC60529.

Test Result: On completion of the test, the meter operates correctly with no damage or degradation to its insulation properties.

The meter meets the requirement.

7.0 STARTING CURRENTS AND PERMISSIBLE LIMITS OF ERRORS

7.1 Permissible Limits of Errors due to Current Variation for Meter of Class 1.0

Unity Power Factor

S/N	Test Current	Permissible Error Limit
1	$5\%I_b$	$\pm$ 1.5%
2	$10\%I_b$	$\pm$ 1.0%
3	I_b	$\pm$ 1.0%
4	I_{max}	$\pm$ 1.0%

0.5 Lagging Power Factor

S/N	Test Current	Permissible Error Limit
1	$10\%I_b$	$\pm$ 1.5%
2	$20\%I_b$	$\pm$ 1.0%
3	I_b	$\pm$ 1.0%
4	I_{max}	$\pm$ 1.0%

0.8 Leading Power Factor

S/N	Test Current	Permissible Error Limit
1	$10\%I_b$	$\pm$ 1.5%
2	$20\%I_b$	$\pm$ 1.0%
3	I_b	$\pm$ 1.0%
4	I_{max}	$\pm$ 1.0%

Repeatability of Error Test

S/N	Test Current	Error Variation Limit
1	$5\%I_b$	0.3%
2	$10\%I_b$	0.2%
3	I_b	0.2%
4	I_{max}	0.2%

Starting Current

	Class 1
Direct Connection	0.4% I_b

Photograph of HANGZHOU SUNRISE TECHNOLOGY CO., LTD & ENEGASLONGMEN JV LTD Three Phase Smart Prepayment Meter with terminal cover open

Photograph of HANGZHOU SUNRISE TECHNOLOGY CO., LTD & ENEGASLONGMEN JV LTD Three Phase Smart Prepayment Meter with extended terminal cover

Photograph of HANGZHOU SUNRISE TECHNOLOGY CO., LTD & ENEGASLONGMEN JV LTD Three Phase Smart Prepayment Meter Customer Interface Unit (CIU)