



APLMF Survey of the test procedure for the verification and pattern approval of electricity meters

Please complete this survey to indicate which tests your economy carries out when verifying or approving an electricity meter. ✓ to indicate the test is required, ✗ to indicate test not required.

Send your completed survey back to the APLMF Secretariat by:

Economy Name: _____

Name of person completing the survey: _____

Organisation responsible for verification within your economy: _____

Organisation responsible for pattern approval within your economy: _____

This table contains a list of the tests that were listed as required during the electricity meter training carried out by APLMF in January 2021. The tests were not described in detail. More information regarding the tests can be found in the references noted in column 1. The purpose of the survey is to determine the extent of agreement amongst APLMF members. Only complete the relevant sections carried out by your economy.

Please return your completed survey to the Secretariat by 9 April 2021

| Test Name | Procedure Name | Essential Test | Desirable Test |
|--|-------------------------|----------------|----------------|
| Verification: | | | |
| JJG 596-2012 Electrical Meters for Measuring Alternating-current Electrical Energy | Visual inspection | | |
| | AC voltage test | | |
| | No-load test | | |
| | Starting | | |
| | Basic error | | |
| | Meter constant | | |
| | Clock accuracy | | |
| JJG 307-2006 Electromechanical Meters for Measuring Alternating-current Electrical Energy | Visual inspection | | |
| | AC voltage test | | |
| | No-load test | | |
| | Starting | | |
| | Basic error | | |
| Meter constant | | | |
| Pattern Approval: | | | |
| JJF1245.1-2019 Program of Pattern Evaluation of Fixed AC Electricity Meters – Active Electrical Energy Meters | Visual inspection | | |
| | Initial intrinsic error | | |
| | Self-heating | | |
| | Starting | | |
| | No-load test | | |
| | Meter constant | | |



Legal Metrology

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| | | | |
|--|--|--|--|
| | Temperature dependence | | |
| | Load unbalance | | |
| | Voltage variation | | |
| | Frequency variation | | |
| | Harmonics in voltage and current | | |
| | Tilt | | |
| | Severe voltage variation | | |
| | Voltage unbalance | | |
| | Inter-harmonics | | |
| | Reversed-phase sequence | | |
| | DC magnetic influence | | |
| | AC magnetic influence | | |
| | RF immunity with current | | |
| | CS immunity | | |
| | DC and even harmonics | | |
| | AC magnetic disturbance | | |
| | ESD | | |
| | EFT | | |
| | Voltage dips and interruptions | | |
| | RF immunity without current | | |
| | Surge | | |
| | Damped oscillatory wave | | |
| | Short-time over current | | |
| | Impulse voltage | | |
| | Earth fault | | |
| | Operation of ancillary devices | | |
| | Vibration | | |
| | Shock | | |
| | Solar radiation | | |
| | Protection against ingress of dust | | |
| | Dry heat | | |
| | Cold | | |
| | Damp Heat | | |
| | Protection against ingress of water | | |
| | Durability test | | |
| | Combination error for multi-tariff meter | | |
| | Clock error with power supply | | |



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|--|---|--|--|
| | Clock error with battery | | |
| | Temperature dependence of clock error | | |
| JJF1245.2-2019 Program of Pattern Evaluation of Fixed AC Electricity Meters – Software requirements | Software identification | | |
| | Software protection | | |
| | Parameter protection | | |
| | Separation of electronic devices and sub-assemblies | | |
| | Separation of software | | |
| | Storage of data, transmission via communication systems | | |
| | Maintenance and re-configuration | | |
| | Checking facility event record | | |
| | Software backup and comparison | | |
| JJF1245.3-2019 Program of Pattern Evaluation of Fixed AC Electricity Meters – Reactive Electrical Energy Meters | Visual inspection | | |
| | Initial intrinsic error | | |
| | Self-heating | | |
| | Starting | | |
| | No-load test | | |
| | Meter constant | | |
| | Temperature dependence | | |
| | Load unbalance | | |
| | Voltage variation | | |
| | Frequency variation | | |
| | Harmonics in voltage and current | | |
| | Tilt | | |
| | Severe voltage variation | | |
| | Voltage unbalance | | |
| | DC magnetic influence | | |
| | AC magnetic influence | | |
| | RF immunity with current | | |
| | CS immunity | | |
| | DC and even harmonics | | |
| | ESD | | |
| | EFT | | |
| Voltage dips and interruptions | | | |
| RF immunity without current | | | |
| Surge | | | |



| | | | |
|---|--|--|--|
| | Damped oscillatory wave | | |
| | Short-time over current | | |
| | Impulse voltage | | |
| | Earth fault | | |
| | Operation of ancillary devices | | |
| | Vibration | | |
| | Shock | | |
| | Solar radiation | | |
| | Protection against ingress of dust | | |
| | Dry heat | | |
| | Cold | | |
| | Damp Heat | | |
| | Protection against ingress of water | | |
| | Durability test | | |
| JJF1245.4-2019 Program of Pattern Evaluation of Fixed AC Electricity Meters – Special Requirements and Safety Requirements | Repeatability | | |
| | Short-time stability | | |
| | Variation caused by load fluctuation | | |
| | Differential mode current disturbance of 2k~150k | | |
| | Auxiliary power voltage variation | | |
| | Fast load current variations | | |
| | No-load test in AC magnetic field | | |
| | Ring wave | | |
| | Voltage dips and interruptions for DC power supply | | |
| | Power consumption | | |
| | Radio emission | | |
| | Conduct emission | | |
| | Protection against mechanical hazards | | |
| | Spring hammer test | | |
| | Productive terminal | | |
| | Protection against the spread of fire | | |
| | Heating | | |
| | Clearance and creepage | | |



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|--|--------------------------------|--|--|
| | distance | | |
| | Overvoltage | | |
| | AC voltage test | | |
| JJF1245.5-2019 Program of Pattern Evaluation of Fixed AC Electricity Meters – Functional Requirements | Energy measurement and storage | | |
| | Maximum demand | | |
| | Multi-tariff | | |
| | Time | | |
| | Cost control | | |
| | Communication | | |
| | Event log | | |
| | Data clearing | | |
| | Data freezing | | |
| | Load record | | |
| | Harmonics energy measurement | | |