



# C E R T I F I C A T E

**Certificate registration number:** G3.1711.174.2.A2

**Certificate holder:** LUNA ELEKTRIK ELEKTRONIK SANAYI VE TICARET A.S.

**Product designation:** LSM50,  
Hardware version rev 1, Firmware version 7.8.7.6

**Certification date:** November 3<sup>rd</sup>, 2017

This certificate indicates the above mentioned product successfully completed certification testing with regards to the reference specification ITU G.9903 (02-2014) plus the changes listed in the annex to this certificate. The optional feature coherent mode of the G3-PLC protocol is also covered by this certification.

The certificate applies to certification profile CENELEC A and the device was configured as a PAN-Device.

Test cases have been performed as described in the test report referred to below. This certificate is granted on account of tests conducted by Laboratoire des Applications Numériques (LAN) in Tauxigny, France in September - October 2017. The results and remarks can be found in the complete test report.

Applied tests	Performed by	Document evidence
Conformance, interoperability and performance testing according to the test specification referenced by the test report	Laboratoire des Applications Numériques (LAN)	LAN17AF030

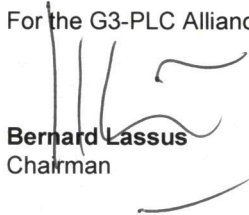
The device tested is a G3-PLC CENELEC A 3-phase electricity meter. The meter is equipped with the G3-PLC certified platform TMDSPCKITV4-CEN with certificate no. G3.1610.099.1.A2. The Protocol Implementation Conformance Statement in the Annex includes the PICS related to performance and is an integral part of this certificate. This certificate is valid from November 3<sup>rd</sup>, 2017.

The certificate is only applicable to the product described above and permits the use of the G3-PLC™ logo as laid down in the G3-PLC logo license agreement.

This certificate does not imply assessment of the production. This certificate shall not be defined, or used as a guarantee covering quality of a product which includes G3-PLC. The liability of the Alliance and the test laboratory or any of her representatives is excluded for any damages or losses of the certified company.

Paris, November 3<sup>rd</sup>, 2017

For the G3-PLC Alliance:

  
**Bernard Lassus**  
Chairman



**Madeleine Francillard**  
Chair Certification Program





## Annex 1: Reference Version for Certification

The reference version for this certificate is published in 'Narrowband OFDM PLC specifications for G3-PLC network, April 2015'.

The reference version for this certification is:

ITU-T G.9903 (02-2014)

- + CCTT #24-25-30: Implementation of MAC security (anti-replay) solution F1
- + CCTT #61: ADPM-Buffer behavior clarification
- + CCTT #143: AC Phase Detection v2
- + CCTT #144: Hop Limit usage during route repair v3
- + CCTT #145: Value of RCCoord when the node is at adpMaxHops hops from the coordinator
- + CCTT #146: Pilot tone generation
- + CCTT #147: Link-cost computation for Path discovery v2
- + CCTT #148: Path discovery frame routing v3
- + CCTT #152: Scrambler reset
- + CCTT #154: Clarification of PANCount and PANDescriptor
- + CCTT #156: Clarification of ADPM-NETWORK-STATUS.indication
- + CCTT #157: Interleaver Equation v2
- + CCTT #158: Unicast Routing Process
- + CCTT #159: Correct the windowing function description
- + CCTT #160: Clarify 16QAM quantisation and optionality
- + CCTT #161: Correct aMaxFrameSize and aMinFrameSize for FCC/ARIB bandplans
- + CCTT #162: Interleaver co-prime number clarification v2
- + CCTT #163: CRC5 and CRC8 packing order
- + CCTT #164: Route Repair v2
- + CCTT #165: Clarification Neighbour Table v2
- + CCTT #167: HOP COUNT metric identifier v2
- + CCTT #169: Clarification on PLME\_GET v4
- + CCTT #170: Clarification to Frame Counter Handling Mechanism v2
- + CCTT #172: Windowing in coherent mode
- + CCTT #173: Clarification of LOADng mechanism used to detect bidirectional links
- + CCTT #174: Avoiding duplicated MAC packets
- + CCTT #175: LOADng - subsequent RREP generation
- + CCTT #176: Link cost function of LQI v3
- + CCTT #177: Broadcast routing - filtering frames on the source
- + CCTT #178: Coexistence of G3-PLC with other PLC technologies v3
- + CCTT #179: RREP Filtering v3
- + CCTT #181: Route Repair v2





## Annex 2: Protocol Implementation Conformance Statement (PICS)

### Feature implementation statement

Name	Value	Description
BAND_PLAN	CENELEC A	Indicate the band-plan supported by the device.
FEATURE_PAN_COORDINATOR	FALSE	Indicate if the device is a PAN-Coordinator (true) or a normal device (false)
FEATURE_COHERENT_MODULATION	TRUE	Indicate if coherent modulation is supported
FEATURE_EAP_SERVER	FALSE	Indicate if an EAP-PASK server is implemented by the DUT. Apply only if FEATURE_PAN_COORDINATOR = true
FEATURE_D8PSK_MODULATION	TRUE	Indicate if D8PSK modulation is supported
FEATURE_ROUTING	TRUE	Indicate if the routing is implemented by the IUT
FEATURE_SECURITY	F1	Indicate the security implemented by the device. Possible values are: F1, F2.
FEATURE_ACTIVE_SCAN	TRUE	Indicate if the active scan process is done by the IUT after power-up
FEATURE_PREAMBLE_COEXISTENCE_MECHANISM	FALSE	Indicate if the preamble-based coexistence mechanism is used by the IUT.

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# Annex 2: Protocol Implementation Conformance Statement (PICS)

## PICS related to performance (1/2)

The device tested is a G3-PLC CENELEC A 3-phase electricity meter communicating on 3 phases. Testing was performed on phase 1.

Operating voltage applied for certification testing was 230V X 3/50Hz.

The PICS PHY\_001\_SIGNAL\_LEVEL and PHY\_002\_SIGNAL\_LEVEL have been validated using a test script that has been modified to allow the loss of frames.

Name	Value	Unit	Description
<i>PICS related to performance are available through vendor only.</i>			





# Annex 2: Protocol Implementation Conformance Statement (PICS)

PICS related to performance (2/2)

Name	Value	Unit	Description
<p>PICS related to performance are available through vendor only.</p>			

# Annex 3: Copy of test report cover sheet



G3-PLC Certification Test Report			
LUNA	LSM50 HW:rev 1 FW: 7.8.7.6		
LAN17AF030	Ed.00	October 31, 2017	Page 1/46

**G3-PLC Alliance**  
**G3-PLC Product Certification Test Report**

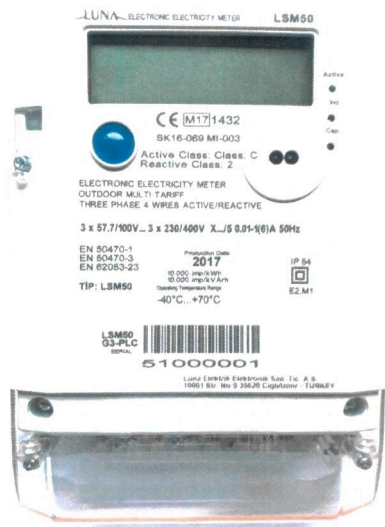
Vendor Name **LUNA**  
 Model Name **LSM50**  
 Serial N° **51000001**  
 HW version **rev 1**  
 FW version **7.8.7.6**

Test Report # **TR\_LAN17AF030 Ed.00**  
 Date **October 31, 2017**

CONF Tests Specification **version 0.19.** **01/09/2015**  
 CONF Tests Suite **version 2.1.** **10/2015**  
 IOT Tests Specification **version 0.7.** **21/04/2015**  
 IOT Tests Suite **version 2.1.** **10/2015**  
 PERF Tests Specification **version 0.15.** **25/11/2015**  
 PERF Tests Suite **version 2.1.** **10/2015**

Test Tool **version 1.7**  
 Tester Modem **version 1.09**  
 Certification Test Procedures **version 1.11** **11/09/2017**

Certification Profile **A (CENELEC A)**  
 Role **Meter**  
 Overall Verdict **PASS**



Initiation	Date	Description of modification	Ed.
Omar DIOUF	October 31, 2017	Creation	00

Name	Realised by	Checked by	Approved by
	Omar DIOUF	Vincent BUCHOUX	Thierry DOLIGEZ
Date	October 31, 2017	October 31, 2017	October 31, 2017

Sign			

The current report and the test results produced in this current are given for information only and must not be relied on by any third person for any reason.  
 This report contains an assessment of the apparatus carried out on samples submitted to the laboratory. The results in this report relate only to the items tested and were obtained in the period between the initial receipt of samples and the issue of the report. It should be noted that technical hardware or software modifications on the apparatus may impact the results reported in this document.