G3-PLC CERTIFIED CEN A

C E R T I F I C A T E

Certificate registration number: G3.1710.171.2.A2

Certificate holder: Shenzhen Clou Electronics Co., LTD.

Product designation: CL730S22,
Hardware version S11-V3R2C3MB0.PCB, Firmware version v6.1.0.64

Certification date: October 31st, 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 TÜVRheinland in Yokohama, Japan in 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	TÜVRheinland	50098832 001

The device tested is a G3-PLC CENELEC A 3-phase electricity meter. The meter is equipped with the G3-PLC certified platform Vango PLC V630x+V600x with certificate no. G3.1609.098.1.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 October 31st, 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, October 31st, 2017

For the G3-PLC Alliance:

Bernard Lassus
Chairman

Madeleine Francillard
Chair Certification Program

G3-PLC Alliance

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.

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 one phase. Testing was performed on phase 3.

Operating voltage applied for certification testing was 230V L-N (400V L-L)/50Hz.

Name	Value	Unit	Description
PICS related to performance are available through vendor only.			

Annex 2: Protocol Implementation Conformance Statement (PICS)

PICS related to performance (2/2)

Name	Value	Unit	Description
PICS related to performance are available through vendor only.			

Annex 3:
Copy of test report cover sheet

Produkte
Products

TÜVRheinland®

Prüfbericht - Nr.: *Test Report No.*	**50098832 001**	Seite *Page* 1 von *of* 42	
Auftraggeber: *Client:*	**Shenzhen Clou Electronics Co., LTD.** **14/F, Clou Building, Baoshen Road South, Hi-tech Industrial Park North, Nanshan District, Shenzhen, China**		
Gegenstand der Prüfung: *Test item:*	**3-phase meter (PAN Device)**		
Bezeichnung: *Identification:*	**CL730S22**	**Serien-Nr.:** *Serial No.*	**001 (internal)**
Wareneingangs-Nr.: *Receipt No.:*	**A000639604**	**Eingangsdatum:** *Date of receipt:*	**2017-09-19**
Zustand des Prüfgegenstandes bei Anlieferung: *Condition of test item at delivery:*	**Test item complete and undamaged**		
Prüfort: *Testing location:*	**TÜV Rheinland Japan Ltd.** Global Technology Assessment Center 4-25-2 Kita-Yamata, Tsuzuki-ku Yokohama 224-0021, Japan		
Prüfgrundlage: *Test specification:*	**G3-PLC Conformance L1-L2 Tests Suite Specification v0.19** **G3-PLC 1-to-1 Interoperability Tests Suite Specification v0.7** **G3-PLC Performance Test Suite Specification v0.15** **G3-PLC Certification Test Procedures v1.8**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland Japan Ltd.** Global Technology Assessment Center 4-25-2 Kita-Yamata, Tsuzuki-ku Yokohama 224-0021, Japan		

geprüft/ *tested by:*			**kontrolliert**/ *reviewed by:*		
2017-10-25 ,	**Tam Tran Thanh**		**2017-10-27** ,	**Shuji Saito**	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges / *Other Aspects:*

Abkürzungen:			Abbreviations:		
	OK, Pass	= entspricht Prüfgrundlage		OK, Pass	= passed
	Fail	= entspricht nicht Prüfgrundlage		Fail	= failed
	N/A	= nicht anwendbar		N/A	= not applicable