C E R T I F I C A T E

Certificate registration number: G3.2303.568.2.C6v2

Certificate holder: Qingdao iTechene Technologies Co., Ltd.

Product designation: TC25
Hardware version V1.0, Firmware version ESG3SD-V003012

Certification date: March 13rd 2023

This certificate indicates the above-mentioned product successfully completed certification testing with regards to the G3-PLC Alliance reference specification 06/2021.

The device is certified for both G3-PLC and G3-Hybrid. The optional feature coherent mode of the G3 protocol is also covered by this certification. The certificate applies to certification profile FCC Multipurpose Worldwide 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 TÜV Rheinland in Yokohama, Japan in February 2023. 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	TÜV Rheinland Japan	JP23AQFH 002

The device tested is a G3-Hybrid FCC PLC+RF 3-phase meter. The meter is equipped with the G3-Hybrid certified platform ESPLC-FCC-HYB with certificate no. G3.2204.505.1.C6. 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 March 13rd 2023.

The certificate is only applicable to the product described above and permits the use of the G3-Hybrid™ logo as laid down in the 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-Hybrid. 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, March 13rd 2023

For the G3-PLC Alliance:

Marc Delandre
Chairman

Madeleine Francillard
Chair Certification Program

Annex 1: Protocol Implementation Conformance Statement (PICS)

Feature implementation statement

Name	Value	Description
BAND_PLAN	FCC	Indicate the band-plan supported by the device
BAND_PLAN_RF	863-870_SingleCarrier_Mode#1 863-870_SingleCarrier_Mode#2 865-868_SingleCarrier_Mode#1 865-868_SingleCarrier_Mode#2 870-876_SingleCarrier_Mode#1 870-876_SingleCarrier_Mode#2	Indicate the RF band plan(s) supported by the device
FEATURE_HYBRID_RF	TRUE	Indicate if Hybrid PLC&RF feature is supported
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-Hybrid FCC PLC+RF 3-phase meter communicating on 3 phases. Testing was performed on phase 1.

Operating voltage applied for certification testing was 3AC400V (3x230V L-N) / 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)

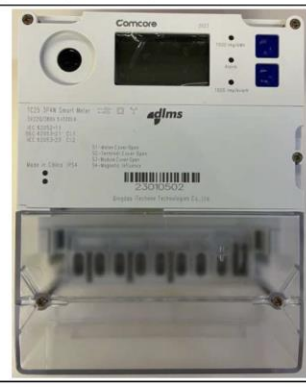
Name	Value	Unit	Description
PICS related to performance are available through vendor only.			

Annex 3:
Copy of test report cover sheet

Prüfbericht - Produkte
Test Report - Products

TÜVRheinland®

Prüfbericht-Nr.: *Test report no.:*	**JP23AQFH 002**	**Auftrags-Nr.:** *Order no.:*	150268948 20	Seite 1 von 63 *Page 1 of 63*
Kunden-Referenz-Nr.: *Client reference no.:*	TC25	**Auftragsdatum:** *Order date:*	2023-01-13	
Auftraggeber: *Client:*	Qingdao iTechene Technologies Co., Ltd. 8 Floor, Block A, International Innovation Park, No.1 Keyuanweiyi Rd, Laoshan District, Qingdao, 266061, P.R.China			
Prüfgegenstand: *Test item:*	Smart Meter (FCC Hybrid)			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	TC25			
Auftrags-Inhalt: *Order content:*	G3-PLC Certification Test			
Prüfgrundlage: *Test specification:*	G3-PLC Alliance - Conformance Tests Suite Specification - v0.37 G3-PLC Alliance - 1to1-PHY-Interoperability-Tests-Specification-v0.14 G3-PLC Alliance - Performance Test Suite Specification - v0.27 G3-PLC Certification Test Procedures version 6.02 G3-PLC Alliance - Hybrid PLC&RF - Conformance Tests Suite Specification - v0.10 G3-PLC Alliance - 1to1-PHY-RF-Interoperability-Tests-Specification-v0.7			
Wareneingangsdatum: *Date of sample receipt:*	2023-02-14 (original model)			
Prüfmuster-Nr.: *Test sample no:*	A003415230-002 (original model)			
Prüfzeitraum: *Testing period:*	2023-02-17 – 2023-02-21 (original model)			
Ort der Prüfung: *Place of testing:*	4-25-2 Kita-Yamata, Tsuzuki-ku Yokohama 224-0021, Japan			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland Japan Ltd.			
Prüfergebnis*: *Test result*:*	Pass			



geprüft von: *tested by:*		**genehmigt von:** *authorized by:*	
Datum: *Date:* 2023-03-10	Martin Zietz	**Ausstellungsdatum:** *Issue date:* 2023-03-10	Shuji Saito
Stellung / Position:	Tester	**Stellung** / Position:	Reviewer

Sonstiges / *Other*: The product which this report covers is, according to the declaration of the client, identical to the product in report JP23AQFH 001. The company name changed to the above mentioned. All administrative and test data in this report are taken from report JP23AQFH 001 without additional testing. In addition the serial number on page 6 was corrected.

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:* Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*

* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* *Legend:*	*P(ass) = passed a.m. test specification(s)*	*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.