



C E R T I F I C A T E

Certificate registration number: G3.2604.794.2.C7

Certificate holder: SHENZHEN STAR INSTRUMENT CO.,LTD.

Product designation: TJ12

Hardware version MF524, Firmware version V7.00

Certification date: April 24th 2026

This certificate indicates the above-mentioned product successfully completed certification testing with regards to the G3-Alliance reference specification ITU G.9903 (08-2017) including Amendment 1 (05/21), Amendment 2 (03/23) and Corrigendum 1 (03/23), as published on <https://www.itu.int/rec/T-REC-G.9903> plus the three changes listed in Annex 1.

The device is certified for both G3-PLC and G3-Hybrid. The optional features of the G3 protocol coherent mode, frequency hopping and support of 12 SYNCP symbols are also covered by this certification. The certificate applies to certification profile FCC Multipurpose Worldwide and the device was configured as a PAN-Coordinator.

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 April 2026. 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	JP2529Q3 001

The device tested is a G3-Hybrid PLC+RF FCC 3-phase Data Concentrator. The product is equipped with the G3-Alliance certified platform ST8500 + S2-LP with certificate no. G3.2406.613.1.C7. 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 April 24th 2026.

The certificate is only applicable to the product described above and permits the use of the G3-Hybrid logo as laid down in the G3-Alliance 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, April 24th 2026

For the G3-Alliance:

Marc Delandre
Chairman

Madeleine Francillard
Chair Certification Program



Annex 1: Reference Version for Certification

The reference version for this certificate is ITU G.9903 (08-2017) including Amendment 1 (05/21), Amendment 2 (03/23) and Corrigendum 1 (03/23), as published on <https://www.itu.int/rec/T-REC-G.9903>, plus the following three changes:

- HYB_C_067: Clarification on Media Probing for PLC with valid tone-map
- HYB_C_068: Guard time for broadcast and slot alignment
- HYB_C_069: 802.15.4 Cor1 Reference

Annex 2: Protocol Implementation Conformance Statement (PICS)

Feature implementation statement

Name	Value	Description
BAND_PLAN	FCC	Indicates the band-plan supported by the device
BAND_PLAN_RF	863_Mode#1 / 863_Mode#2 866_Mode#1 / 866_Mode#2 870_Mode#1 / 870_Mode#2 915_Mode#1 / 915_Mode#3 915-a_Mode#1 / 915-a_Mode#4 915-b_Mode#1 / 915-b_Mode#4 915-c_Mode#1 / 915-c_Mode#4 919_Mode#1 / 919_Mode#4 920_Mode#1 / 920_Mode#6 920-b_Mode#1 / 920-b_Mode#4	Indicates the RF band plan(s) supported by the device
FEATURE_PAN_COORDINATOR	TRUE	Indicates whether the device is a PAN-Coordinator (true) or a normal device (false)
FEATURE_COHERENT_MODULATION	TRUE	Indicates whether coherent modulation is supported
FEATURE_EAP_SERVER	TRUE	Indicates whether an EAP-PASK server is implemented by the DUT Applies only if FEATURE_PAN_COORDINATOR = true
FEATURE_D8PSK_MODULATION	TRUE	Indicates whether D8PSK modulation is supported
FEATURE_ROUTING	TRUE	Indicates whether routing is implemented by the IUT
FEATURE_SECURITY	F1	Indicates the security implemented by the device. Possible values are: F1, F2
FEATURE_ACTIVE_SCAN	TRUE	Indicates whether the active scan process is done by the IUT after power-up
FEATURE_PREAMBLE_COEXISTENCE_MECHANISM	FALSE	Indicates whether the preamble-based coexistence mechanism is used by the IUT
FEATURE_HYBRID_RF	TRUE	Indicates whether Hybrid PLC+RF feature is supported
FEATURE_FREQUENCY_HOPPING	TRUE	Indicates whether the Frequency Hopping mechanism is supported
FEATURE_PREAMBLE_12_SY_NCP	TRUE	Indicates whether the device supports the transmission and reception of frames with preamble of 12 SYNCP symbols



Annex 3: Protocol Implementation Conformance Statement (PICS)

PICS related to PLC performance (1/2)

The device tested is a G3-Hybrid FCC 3-phase Data Concentrator, communicating on 3 phases. Testing was performed on phase 1.
Operating voltage applied for certification testing was 3NAC400V (3x230V L-N) / 50 Hz.

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

[Handwritten initials]



Annex 3: Protocol Implementation Conformance Statement (PICS)

PICS related to PLC performance (2/2)

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



Annex 3: Protocol Implementation Conformance Statement (PICS)





PICS related to RF performance

The device tested is a G3-Hybrid FCC 3-phase Data Concentrator.
Operating voltage applied for certification testing was 3NAC400V (3x230V L-N) / 50 Hz.

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

* Note: The values for [HYB_MESH_XXX] have been determined on a fixed RF channel. With Frequency Hopping enabled, these values may be different.

Annex 4: Copy of test report cover sheet

Test Report – Products Prüfbericht - Produkte				
Test report no.: Prüfbericht-Nr.:	JP2529Q3 001	Order No.: Auftragsnr.:	150314735 10	Page 1 of 78 Seite 1 von 78
Client reference no.: Kunden-Referenz-Nr.:	TJ12	Order date: Auftragsdatum:	2025-07-09	
Client: Auftraggeber:	SHENZHEN STAR INSTRUMENT CO.,LTD. 23/F. Coastal Building (West Block), Haide 3rd Road Nanshan District, Shenzhen, China			
Test item: Prüfgegenstand:	Data Concentrator Unit			
Identification / Type no.: Bezeichnung / Typ-Nr.:	TJ12			
Order content: Auftrags-Inhalt:	G3 Certification Test			
Test specification Prüfgrundlage:	Certification Test Procedures for G3-Alliance Certification - v7.2 G3 Conformance Tests Suite Specification - v0.39 G3 PLC 1-to-1 Interoperability Tests Suite Specification - v0.15 Performance test suite for G3 device certification - v0.28 Hybrid PLC+RF - Conformance Tests Suite Specification - v0.13 G3-Hybrid RF 1-to-1 Interoperability Tests Suite Specification version - v0.8 Performance test suite for G3-Hybrid PLC&RF device certification - v0.5			
Date of sample receipt: Wareneingangsdatum:	2026-03-28			
Test sample no.: Prüfmuster-Nr.:	A004235845-002			
Testing period: Prüfzeitraum:	2026-04-10 - 2026-04-17			
Place of testing: Ort der Prüfung:	4-25-2 Kita-Yamata, Tsuzuki-ku Yokohama 224-0021, Japan			
Testing laboratory: Prüflaboratorium:	TÜV Rheinland Japan Ltd.			
Test result*: Prüfergebnis*:	Pass			
tested by: geprüft von:	 Rajib Tamang	authorized by: genehmigt von:	 Martin Zietz	
Date: 2026-04-20 Datum:		Issue date: 2026-04-21 Ausstellungsdatum:		
Position / Stellung:	Tester	Position / Stellung:	Authorizer	
Other: Sonstiges:				
Condition of the test item at delivery: Zustand des Prüfgegenstandes bei Anlieferung:	Test item complete and undamaged Prüfmuster vollständig und unbeschädigt			
* Legend: * Legende:	P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable NT = not tested P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar NT = nicht getestet			
This test report only relates to the above mentioned 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. 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.				
TÜV Rheinland Japan Ltd., Global Technology Assessment Center 4-25-2 Kita-Yamata, Tsuzuki-ku Yokohama 224-0021, Japan Mail: g3plc@tuv.com - Web: www.tuv.com/				