G3-PLC CERTIFIED FCC HYB

C E R T I F I C A T E

Certificate registration number: G3.2204.507.1.C6

Certificate holder: Renesas Electronics Corporation

Platform designation: REL-G3PLC-CPX3+TRG,
Hardware version R9A06G037GNP+RAA604S002GNP,
Firmware version 3.05.04

Certification date: April 27th, 2022

This certificate indicates the above mentioned platform successfully completed certification testing with regards to the G3-PLC Alliance reference specification 06/2021. The optional features Hybrid PLC&RF and coherent mode of the G3-PLC protocol are 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 March - April 2022. 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	JP22KNEC 002

The device tested is a G3-PLC Hybrid PLC&RF platform: a solution providing an implementation of the G3-PLC specification. 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 27th, 2022.

The certificate is only applicable to the platform 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, April 27th 2022

For the G3-PLC Alliance:

Marc Delandre
Chairman

Madeleine Francillard
Chair Certification Program

G3-PLC Alliance

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

The device tested is a G3-PLC FCC platform. Testing was performed on phase 1.
Operating voltage applied for certification testing was 230V/50Hz .

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.:*	**JP22KNEC 002**	**Auftrags-Nr.:** *Order no.:*	150258953 20	Seite 1 von 57 *Page 1 of 57*
Kunden-Referenz-Nr.: *Client reference no.:*	IACS-AF-22-0003	**Auftragsdatum:** *Order date:*	2022-03-25	
Auftraggeber: *Client:*	Renesas Electronics Corporation 5-20-1 Josuihon-cho, 1878-588 Kodaira-shi, Tokyo, Japan			
Prüfgegenstand: *Test item:*	G3-PLC Platform FCC PAN Device			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	REL-G3PLC-CPX3+TRG			
Auftrags-Inhalt: *Order content:*	G3PLC			
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:*	2022-03-31			
Prüfmuster-Nr.: *Test sample no:*	A003236611			
Prüfzeitraum: *Testing period:*	2022-03-31 – 2022-04-14			
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:* 2022-04-26	Martin Zietz	**Ausstellungsdatum:** *Issue date:* 2022-04-26	Shuji Saito
Stellung / Position:	Tester	**Stellung** / Position:	Reviewer

Sonstiges / *Other:* Corrigendum of test report JP22KNEC 001. In that report in section 4.2.1 the test "IOT_PHY_RF_SC_873MHzM2_002__Large Frame" was not listed for device #4. The correct result has been added in this corrigendum report on page 34.

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.

V05 TÜV Rheinland Japan Ltd., Global Technology Assessment Center 4-25-2 Kita-Yamata, Tsuzuki-ku Yokohama 224-0021, Japan
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Annex 4: Additional details of the certified platform

Platform model name:	REL-G3PLC-CPX3+TRG	
Platform hardware version:	R9A06G037GNP+RAA604S002GNP	
Platform firmware version:	3.05.04	
Exact part number of all the chips running G3-PLC stack in the certified platform:	Chip #1: R9A06G037GNP#AA0	Chip #2: RAA604S002GNP
What each part number runs: lower MAC (incl. CSMA/CA) or PHY or other parts of the stack:	PLC PHY, PLC MAC, RF MAC, 6LowPAN	RF PHY
Hardware version of this chip:	R9A06G037GNP	RAA604S002GNP
Software version running on this chip:	v5.04	n/a
Internal CPU frequency:	138 MHz	n/a