



C E R T I F I C A T E

Certificate registration number: G3.1709.162.1.C3

Certificate holder: Renesas Electronics Corporation

Platform designation: REL-G3PLC-CPX2-RX6,
Hardware version uPD809508K8, Firmware version FCC 0.02.00

Certification date: September 13th, 2017

This certificate indicates the above mentioned platform successfully completed certification testing with regards to the reference specification ITU G.9903 (02-2014) plus the changes listed in an 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 Metering FCC 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 TÜVRheinland in Yokohama, Japan in August 2017. The results and remarks can be found in the complete test report.

Table with 3 columns: Applied tests, Performed by, Document evidence. Row 1: Conformance and interoperability testing according to the test specification referenced by the test report, TÜVRheinland, Test report #50096099 002

The device tested is a G3-PLC platform: a solution providing an implementation of the G3-PLC specification. This certificate is valid from September 13th, 2017.

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, September 13th, 2017

For the G3-PLC Alliance:

Signature of Bernard Lassus
Bernard Lassus
Chairman

Signature of Madeleine Francillard

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, March 2017'.

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 #178: Coexistence of G3-PLC with other PLC technologies v3
CCTT #61: ADPM-Buffer behavior clarification	CCTT #179: RREP Filtering v3
CCTT #143: AC Phase Detection v2	CCTT #181: Route Repair v2
CCTT #144: Hop Limit usage during route repair v3	CCTT #182: Lowering the modulation order for transmission v3
CCTT #145: Value of RCCoord when the node is at adpMaxHops hops from the coordinator	CCTT #183: Destination Address Set v5
CCTT #146: Pilot tone generation	CCTT #186: TXGAIN / TXCOEF Definition
CCTT #147: Link-cost computation for Path discovery v2	CCTT #187: Route Advertisement after Association v3
CCTT #148: Path discovery frame routing v3	CCTT #188: Maximum CSMA Window for normal priority broadcast packets v2
CCTT #152: Scrambler reset	CCTT #189: Updated default values of MAC and ADP attributes v2
CCTT #154: Clarification of PANCount and PANDescriptor	CCTT #191: Phase detection and MAC repetitions v3
CCTT #156: Clarification of ADPM-NETWORK-STATUS.indication	CCTT #192: Device network leave behaviour in case of LBP KICK failure v2
CCTT #157: Interleaver Equation v2	CCTT #193: Frame Counter Preservation after kick leave v2
CCTT #158: Unicast Routing Process	CCTT #194: Limiting the output level v3
CCTT #159: Correct the windowing function description	CCTT #195: Removing the S-FSK notching mechanism
CCTT #160: Clarify 16QAM quantisation and optionality	CCTT #196: Destination Address Set (addendum)
CCTT #161: Correct aMaxFrameSize and aMinFrameSize for FCC/ARIB bandplans	CCTT #198: Convolutional Encoder clarification
CCTT #162: Interleaver co-prime number clarification v2	CCTT #199: Route Repair mechanism clarification
CCTT #163: CRC5 and CRC8 packing order	CCTT #200: Neighbour table storing only device information issued from unicast communications v2
CCTT #164: Route Repair v2	CCTT #201: Annex D title
CCTT #165: Clarification Neighbour Table v2	CCTT #203/203R: Transferring the spectral flatness section from G.9901 to G.9903
CCTT #167: HOP COUNT metric identifier v2	CCTT #204/204R: Detecting and removing loops v3
CCTT #169: Clarification on PLME_GET v4	CCTT #205: Remove Limit on RERR generation v2
CCTT #170: Clarification to Frame Counter Handling Mechanism v2	CCTT #206: Reset of TMRValidTime after macMaxFrameRetries attempts v3
CCTT #172: Windowing in coherent mode	CCTT #207: Rounding definition for Link Cost v2
CCTT #173: Clarification of LOADng mechanism used to detect bidirectional links	CCTT #208: Creation of a POS table v3
CCTT #174: Avoiding duplicated MAC packets	CCTT #209: Clarification of PN sequence for 2 RS Blocks
CCTT #175: LOADng - subsequent RREP generation	
CCTT #176: Link cost function of LQI v3	
CCTT #177: Broadcast routing - filtering frames on the source	



Annex 2: Protocol Implementation Conformance Statement (PICS)

Feature implementation statement

Name	Value	Description
BAND_PLAN	FCC	Indicate the band-plan supported by the device.
FEATURE_PAN_COORDINATOR	TRUE	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	TRUE	Indicate if an EAP-PASK server is implemented by the DUT. Apply only if FEATURE_PAN_COORDINATOR = true.
FEATURE_D8PSK_MODULATION	TRUE	True / False
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.

6

Annex 3: Copy of test report cover sheet

Produkte
Products



Prüfbericht - Nr.: Test Report No.	50096099 002	Seite Page	1	von of	24
Auftraggeber: Client:	Renesas Electronics Corporation 5-20-1, Josuimon-cho, Kodaira-shi, Tokyo, 187-8588, Japan				
Gegenstand der Prüfung: Test Item:	G3-PLC FCC Platform (PAN Coordinator)				
Bezeichnung: Identification:	REL-G3PLC-CPX2-RX6	Serien-Nr.: Serial No.	0100107		
Wareneingangs-Nr.: Receipt No.:	A000611739	Eingangsdatum: Date of receipt:	2017-08-28		
Zustand des Prüfgegenstandes bei Anlieferung: Condition of test item at delivery:	Test item complete and undamaged				
Prüfört: 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 v0.24 G3-PLC 1-to-1 Interoperability Tests Suite Specification v0.9 G3-PLC Certification Test Procedures v1.10				
Prüfresultat: 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:	2017-09-01 , Tam Tran Thanh Date Name/Position Date Name/Position		kontrolliert/ reviewed by:		
		Unterschrift Signature	2017-09-05 , Shuji Saito Date Name/Position		Unterschrift Signature
Sonstiges / Other Aspects:					
Abkürzungen: OK Pass = entspricht Prüfgrundlage Fail = entspricht nicht Prüfgrundlage NA = nicht anwendbar			Abkürzungen: OK, Pass = passed Fail = failed NA = not applicable		
Dieser Prüfbericht bezieht sich nur auf den o.g. Prüfgegenstand und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report relates to the o. m. test item. 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 on this or similar products.					

6



Annex 4: Additional details of the certified platform

Platform model name:	REL-G3PLC-CPX2-RX6	
Platform hardware version:	uPD809508K8	
Platform firmware version:	FCC 0.02.00	
Exact part number of all the chips running G3-PLC stack in the certified platform:	Chip #1: uPD809508K8-711-BAA-A	Chip #2: R5F5631EDDFP
What each part number runs: lower MAC (incl. CSMA/CA) or PHY or other parts of the stack:	Lower MAC & PHY	6LOWPAN
Hardware version of this chip:	uPD809508K8	RX631E
Software version running on this chip:	FCC 0.02.01	FCC 0.02.01
Internal CPU frequency:	80 MHz	96 MHz

Handwritten initials/signature