



C E R T I F I C A T E

Certificate registration number: G3.1709.160.1.C3

Certificate holder: Renesas Electronics Corporation

Platform designation: REL-G3PLC-CPX2,
Hardware version uPD809508K8, Firmware version FCC 2.02.01

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-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 August 2017. The results and remarks can be found in the complete test report.

| Applied tests | Performed by | Document evidence |
|--|--------------|---------------------------|
| Conformance and interoperability testing according to the test specification referenced by the test report | TÜVRheinland | Test report #50096097 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:


Bernard Lassus
 Chairman



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 RCoord 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 | 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 | 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. |

Handwritten initials/signature.

Annex 3: Copy of test report cover sheet

Produkte
Products



| | | | | | | | | | | | | | | | | | |
|---|---|--|-------------------|-------------------------|------------------|--------------|-----------------------------------|--------------|-------------------|-------------------------------------|--|---------------|--|----------------------|--|---------------------|--|
| Prüfbericht - Nr.: <i>Test Report No.</i> | 50096097 002 | Seite <i>Page</i> | 1 | von <i>of</i> | 24 | | | | | | | | | | | | |
| Auftraggeber: <i>Client:</i> | Renesas Electronics Corporation 5-26-1, Josuihan-cho, Kodaira-shi, Tokyo, 187-8588, Japan | | | | | | | | | | | | | | | | |
| Gegenstand der Prüfung: <i>Test item:</i> | G3-PLC FCC Platform (PAN Device) | | | | | | | | | | | | | | | | |
| Bezeichnung: <i>Identification:</i> | REL-G3PLC-CPX2 | Serien-Nr.: <i>Serial No.</i> | 0100108 | | | | | | | | | | | | | | |
| Wareneingangs-Nr.: <i>Receipt No.:</i> | A000611739 | Eingangsdatum: <i>Date of receipt:</i> | 2017-06-28 | | | | | | | | | | | | | | |
| Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i> | Test item complete and undamaged | | | | | | | | | | | | | | | | |
| Prüfort: <i>Testing location:</i> | TÜV Rheinland Japan Ltd. Global Technology Assessment Center 4-25-2 Kita-Yamata, Tsuzuki-ku Yokohama 224-0021, Japan | | | | | | | | | | | | | | | | |
| Prüfgrundlage: <i>Test specification:</i> | 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 | | | | | | | | | | | | | | | | |
| Prüfergebnis: <i>Test Result:</i> | Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test item passed the test specification(s).</i> | | | | | | | | | | | | | | | | |
| Prüflaboratorium: <i>Testing Laboratory:</i> | 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: | | | | | | | | | | | | | | | | |
| 2017-09-01 , Tam Tran Thanh | 2017-09-06 , Shuji Saito | | | | | | | | | | | | | | | | |
| <i>Date</i> | <i>Name/Position</i> | <i>Signature</i> | <i>Date</i> | <i>Name/Position</i> | <i>Signature</i> | | | | | | | | | | | | |
| Sonstiges / Other Aspects: | | | | | | | | | | | | | | | | | |
| <table border="0"> <tr> <td>Abkürzungen:</td> <td>OK, Pass = erbetene Prüfgrundlage</td> <td>Abkürzungen:</td> <td>OK, Pass = passed</td> </tr> <tr> <td>Fail = erbetene nicht Prüfgrundlage</td> <td></td> <td>Fail = failed</td> <td></td> </tr> <tr> <td>NA = nicht anwendbar</td> <td></td> <td>NA = not applicable</td> <td></td> </tr> </table> | | | | | | Abkürzungen: | OK, Pass = erbetene Prüfgrundlage | Abkürzungen: | OK, Pass = passed | Fail = erbetene nicht Prüfgrundlage | | Fail = failed | | NA = nicht anwendbar | | NA = not applicable | |
| Abkürzungen: | OK, Pass = erbetene Prüfgrundlage | Abkürzungen: | OK, Pass = passed | | | | | | | | | | | | | | |
| Fail = erbetene nicht Prüfgrundlage | | Fail = failed | | | | | | | | | | | | | | | |
| NA = nicht anwendbar | | NA = not applicable | | | | | | | | | | | | | | | |
| <p>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 a. 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.</p> | | | | | | | | | | | | | | | | | |



Annex 4: Additional details of the certified platform

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|--|--------------------------|
| Platform model name: | REL-G3PLC-CPX2 |
| Platform hardware version: | uPD809508K8 |
| Platform firmware version: | FCC 2.02.01 |
| Exact part number of all the chips running G3-PLC stack in the certified platform: | uPD809508K8-711-BAA-A |
| What each part number runs: lower MAC (incl. CSMA/CA) or PHY or other parts of the stack: | 6LOWPAN, Lower MAC & PHY |
| Hardware version of this chip: | uPD809508K8 |
| Software version running on this chip: | FCC 2.02.01 |
| Internal CPU frequency: | 80 MHz |

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