G3-Hybrid CERTIFIED FCC

C E R T I F I C A T E

Certificate registration number: G3.2406.613.1.C7

Certificate holder: STMicroelectronics S.r.l

Platform designation: ST8500 + S2-LP,
Hardware version EVALMODSTST8500-1,
Firmware version 7.3.0 - v1830C44E - r2_rc2_BA_key0

Certification date: June 27th 2024

This certificate indicates the above-mentioned platform 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. This 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 Laboratoire des Applications Numériques (LAN) in Tauxigny, France in May 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	Laboratoire des Applications Numériques (LAN)	LAN24AF016

The device tested is a G3-Hybrid PLC+RF platform: a solution providing an implementation of the G3 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 June 27th 2024.

The certificate is only applicable to the platform 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, June 27th 2024

For the G3-Alliance:

Marc Delandre
Chairman

Madeleine Francillard
Chair Certification Program

G3-Alliance

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-a_Mode#1 915-b_Mode#1 915-c_Mode#1 919_Mode#1 920_Mode#1 920-b_Mode#1	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_D8PSK_ MODULATION	TRUE	Indicates whether D8PSK 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_ROUTING	TRUE	Indicates whether the 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_HOP PING	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

The device tested is a G3-Hybrid PLC+RF 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 manufacturer only.			

Annex 3: Protocol Implementation Conformance Statement (PICS)

PICS related to RF performance

The device tested is a G3-Hybrid PLC+RF FCC platform.
Operating voltage applied for certification testing was 230V/50Hz.

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

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

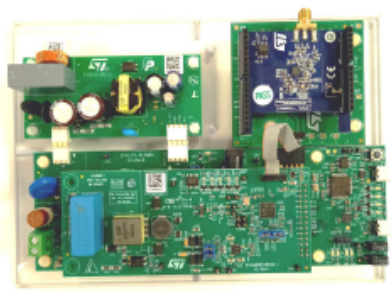
Annex 4:
Copy of test report cover sheet

G3-Alliance

G3 Hybrid Platform Certification Test Report

Vendor Name	STMicroelectronics S.r.l
Model Name	ST8500 + S2-LP
Serial N°	CL517-1.3
HW version	EVALMODSTST8500-1
FW version	7.3.0 - v1830C44E - r2_rc2_BA_key0
Test Report #	TR_LAN24AF016 Ed.00
Date	June 27, 2024

CONF G3-PLC Tests Specification	version 0.39.	06/06/2023
CONF G3-PLC Tests Suite	version 2.15p2.	10/2023
CONF HYBRID Tests Specification	version 0.13.	29/09/2023
CONF HYBRID Tests Suite	version 1.5p5.	05/2024
IOT G3-PLC Tests Specification	version 0.15.	06/06/202
IOT G3-PLC Tests Suite	version 2.8p1.	10/2023
IOT HYBRID Tests Specification	version 0.8.	06/06/2023
IOT RF Tests Suite	version 1.5.	10/2023
PERF G3-PLC Tests Specification	version 0.28.	06/09/20
PERF G3-PLC Tests Suite	version 2.15p2.	10/2023
PERF HYBRID Tests Specification	version 0.4.	29/09/2023
PERF HYBRID Tests Suite	version 1.5p5.	05/2024



Test Tool PLC+RF	version 3.3.1	
Tester Modem PLC	version 2.0.1	
Tester Modem RF	version 16_20231024_update.bin	
Certification Test Procedures	version 7.2	20/12/2023

Certification Profile	HYBRID : FCC - RF
Role	PAN Coordinator
Overall Verdict	PASS

Initiation	Date	Description of modification	Ed.
Omar DIOUF	June 27, 2024	Creation	00

	Realised by	Checked by	Approved by
Name	Omar DIOUF	Vincent BUCHOUX	Thierry DOLIGEZ
Date	June 27, 2024	June 27, 2024	June 27, 2024
Sign			

Annex 5: Additional details of the certified platform

Platform model name:	ST8500 + S2-LP	
Platform hardware version:	EVALMODSTST8500-1	
Platform firmware version:	7.3.0 - v1830C44E - r2_rc2_BA_key0	
Exact part number of all the chips running G3 stack in the certified platform:	Chip #1: ST8500	Chip #1: S2LP
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:	RevBB	2.1
Software version running on this chip:	7.3.0 - v1830C44E - r2_rc2_BA_key0	n/a
Internal CPU frequency:	Cortex @ 100 MHz, RTE @ 400 MHz	n/a