Test Report issued under the responsibility of:

SGS Fimko Ltd.

TEST REPORT

IEC 60950-1
Information technology equipment – Safety – Part 1: General requirements

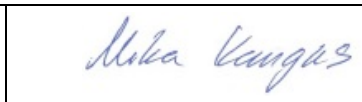
Report Number. ..... :	289936-3
Date of issue ..... :	9.11.2017, Amendment No.1: 4th September 2018
Total number of pages ..... :	9
Applicant's name ..... :	Silicon Laboratories Finland Oy
Address ..... :	Bertel Jungin aukio 3, FI-02600 Espoo, Finland
Test specification:	
Standard ..... :	IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
Test procedure ..... :	National
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC60950_1F
Test Report Form(s) Originator .... :	SGS Fimko Ltd
Master TRF ..... :	Dated 2014-02

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description .....:	Bluetooth module		
Trade Mark .....:	Silicon Labs		
Manufacturer.....:	Silicon Laboratories Finland Oy		
Model/Type reference .....:	BGM13P22A, BGM13P22E, BGM13P32A, BGM13P32E BGX13P22GA, BGX13S22A BGM13S22A, BGM13S22N, BGM13S32A, BGM13S32N		
Ratings .....:	Input: 1,8 - 3,8 VDC		
Testing procedure and testing location:			
☒ **CB Testing Laboratory:**	**SGS Fimko Ltd.**		
Testing location/ address ..... :	**Särkiniementie 3** **FI-00210, Helsinki** **Finland**		
☐ **Associated CB Testing Laboratory:**			
Testing location/ address ..... :			
Tested by (name + signature) ..... :	Mika Kangas Testing Engineer		
Approved by (name + signature) ..... :	Jari Karlsson Team Leader		
☐ **Testing procedure: TMP/CTF Stage 1:**			
Testing location/ address ..... :			
Tested by (name + signature) ..... :			
Approved by (name + signature) ..... :			
☐ **Testing procedure: WMT/CTF Stage 2:**			
Testing location/ address ..... :			
Tested by (name + signature) ..... :			
Witnessed by (name + signature) ..... :			
Approved by (name + signature) ..... :			
☐ **Testing procedure: SMT/CTF Stage 3 or 4:**			
Testing location/ address ..... :			
Tested by (name + signature) ..... :			
Witnessed by (name + signature) ..... :			
Approved by (name + signature) ..... :			
Supervised by (name + signature)..... :			

List of Attachments (including a total number of pages in each attachment):
No attachments for this Amendment 1 report.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
All applicable tests according to IEC/EN 60950-1	SGS Fimko Ltd. Särkiniementie 3, FI-00210 Helsinki Finland

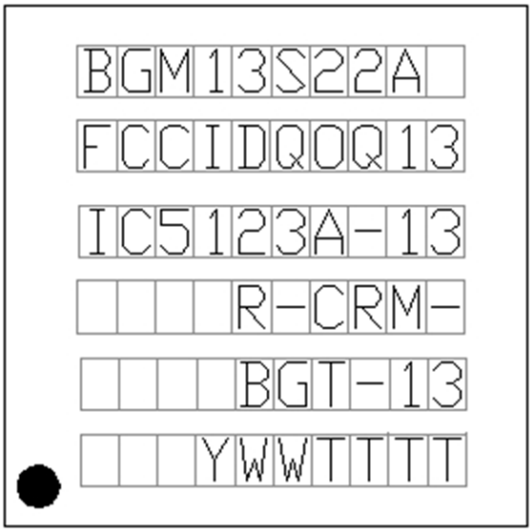
Summary of compliance with National Differences:
List of countries addressed

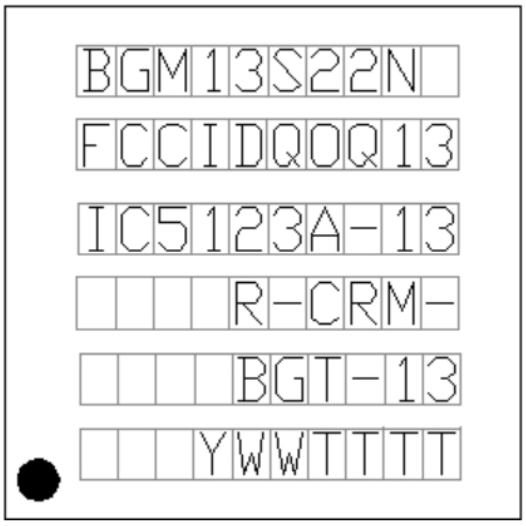
EU Group Differences and special national differences of CH, DK, ES, FI, IE, NO, SE and UK.

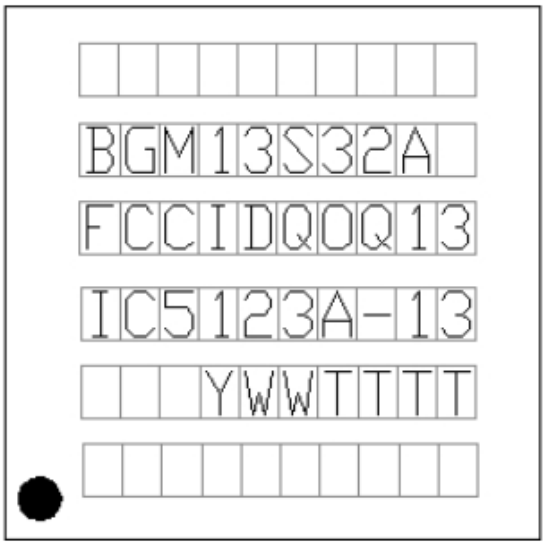
☒ **The product fulfils the requirements of EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013**

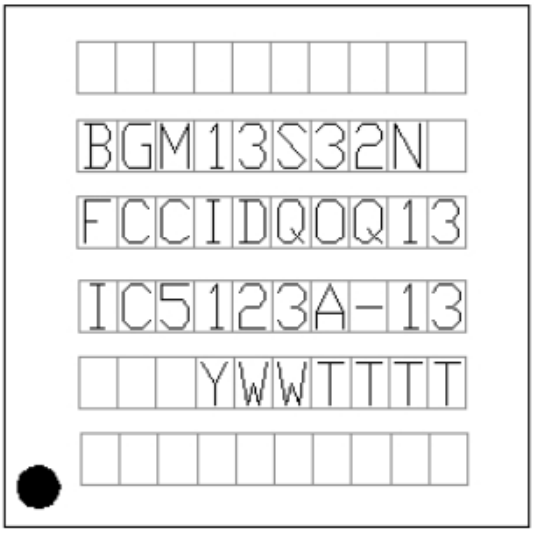
Copy of marking plates:

BGM13S – series:









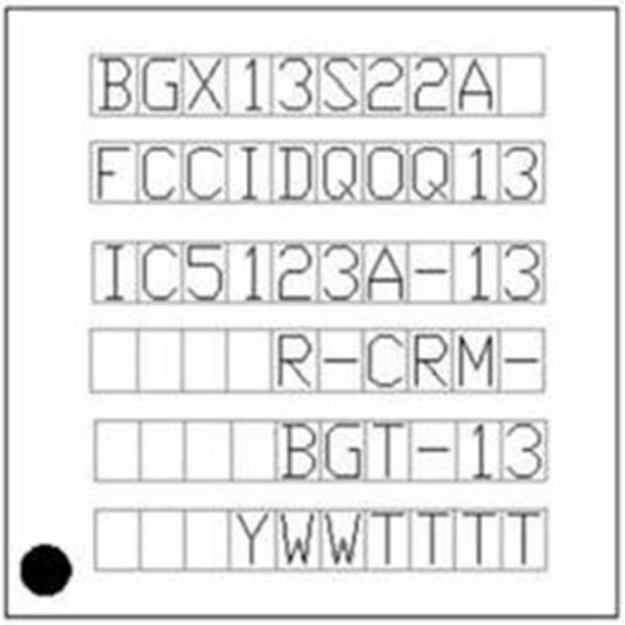
Copy of marking plate (continues):

BGM13P - series

1. BGM series e.g. BGM13xy2z in where
   x can be P (=PCB module) or S (=SIP module)
   y can be 2 (=low power or 3 (= high power)
   z can be A (=integrated antenna) or E (=FL connector) or N (=external antenna)
   M = regular module

Copy of marking plate (continues):

BGX13 -series



2. BGX series: BGX13P22GA, BGX13S22A
   X = fixed function module with pre-installed application.

Test item particulars.....:	
Equipment mobility.....:	[] movable [] hand-held [] transportable [] stationary [x] for building-in [] direct plug-in
Connection to the mains.....:	[] pluggable equipment [] type A [] type B [] permanent connection [] detachable power supply cord [] non-detachable power supply cord [x] not directly connected to the mains
Operating condition.....:	[x] continuous [] rated operating / resting time:
Access location .....:	[x] operator accessible [] restricted access location
Over voltage category (OVC) .....:	[] OVC I [] OVC II [] OVC III [] OVC IV [x] other: Not directly connected to mains
Mains supply tolerance (%) or absolute mains supply values .....:	Not connected to mains
Tested for IT power systems .....:	[] Yes [x] No
IT testing, phase-phase voltage (V) .....:	
Class of equipment .....:	[] Class I [] Class II [x] Class III [] Not classified
Considered current rating of protective device as part of the building installation (A) .....:	
Pollution degree (PD) .....:	[] PD 1 [x] PD 2 [] PD 3
IP protection class .....:	IP class not verified in this project
Altitude during operation (m) .....:	2000 m (max.)
Altitude of test laboratory (m) .....:	10 m (approx.)
Mass of equipment (kg) .....:	-

Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item .....:	Original test report: 6.10.2017
Date (s) of performance of tests.....:	Original test report: 10.10.2017 – 11.10.2017

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... :	Silicon Laboratories Finland Oy Bertel Jungin aukio 3 FI-02600 Espoo Finland

General product information:

Models: BGM13S2A, BGM13S3A, BGM13S2N, BGM13S3N, BGM13P22A, BGM13P22E, BGM13P32A, BGM13P32E

The tested products are Bluetooth modules targeted for application with small size and low power consumption.

Model BGM13S32GA was selected for testing as a representative sample of the product series.

Technical specification:

- 32-bit ARM CPU
- Hardware interfaces (UART, SPI, ADC, I^2C, clocks, timers etc.)
- Supply voltage: 1,85 - 3,8 VDC

General product information (continues):

- Bluetooth 5 low energy compliant
- Maximum TX power: 8 dBm except 18 dBm BGM13S32
- Operating temperature: -40 to +85 °C
- Dimensions (W x L x H): 6,5 mm x 6,5 mm x 1,4 mm (BGM13S)
  12,9 mm x 15,0mm x 2,2 mm (BGM13P)

BGM13S can be equipped with built-in antenna (marked by “A” after the model name) or RF pin (marked by “N” after the model name) for external antenna connection. The module was tested on the evaluation card supplied by the manufacturer. BGM13P can be equipped with built-in antenna (marked by “A” after the model name) or U.FL connector (marked by “N” after the model name) for external antenna connection. Other differences between BGM13S and BGM13P are that the BGM13P has 25 GPIO pins and the BGM13S has 32 GPIO pins and is smaller size. The BGM13P can be used in a standalone SoC configuration with no external host processor. Safety wise all models are identical.

Modules and their interfaces are considered as SELV circuits and powered by LPS circuit with available power less than 15 W. Temperature and supply voltage limits need to be evaluated in the final product so that the requirements of the module are met. Heating caused by BGM13S and BGM13P and other features need to be considered when the temperature limits for the final product are set.

Amendment 1 report:
The original test report Ref. No. 289936-3, dated 9th November 2017, was modified on 4th of September 2018 to include the following changes:

Model type corrected to following line:
Model BGM13S was selected for testing as a representative sample of the product series.

The following new models have been added to the test report:
- BGX13P22GA, BGX13S22A

And following product model names changed:
- BGM13S2A -> BGM13S22A
- BGM13S2N -> BGM13S22N
- BGM13S3A -> BGM13S32A
- BGM13S3N -> BGM13S32N

The new models are identical to the previous models, except BGX13P22GA, BGX13S22A which have manufacturer’s application pre-installed. See more about model identification on p. 5. No changes made that affect safety.

No additional tests were considered necessary. This Amendment 1 Report is not valid without original Test Report Ref No. 289936-3, dated 9th November 2017.

Abbreviations used in the report:

- normal conditions	**N.C.**	- single fault conditions	**S.F.C**
- functional insulation	**OP**	- basic insulation	**BI**
- double insulation	**DI**	- supplementary insulation	**SI**
- between parts of opposite polarity	**BOP**	- reinforced insulation	**RI**

Indicate used abbreviations (if any)