



<b>TEST REPORT</b> <b>IEC 60950-1</b> <b>Information technology equipment – Safety –</b> <b>Part 1: General requirements</b>	
<b>Report Number.....</b>	289936-3
<b>Date of issue.....</b>	9.11.2017
<b>Total number of pages .....</b>	35
<b>Applicant's name .....</b>	Silicon Laboratories Finland Oy
<b>Address.....</b>	Bertel Jungin aukio 3, FI-02600 Espoo, Finland
<b>Test specification:</b>	
<b>Standard .....</b>	IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
<b>Test procedure .....</b>	National
<b>Non-standard test method .....</b>	N/A
<b>Test Report Form No. ....</b>	IEC60950_1F
<b>Test Report Form(s) Originator ....</b>	SGS Fimko Ltd
<b>Master TRF .....</b>	Dated 2014-02
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<b>Test item description</b> .....	Bluetooth module	
<b>Trade Mark</b> .....	Silicon Labs	
<b>Manufacturer</b> .....	Silicon Laboratories Finland Oy	
<b>Model/Type reference</b> .....	BGM13S2A, BGM13S3A, BGM13S2N, BGM13S3N, BGM13P22A, BGM13P22E, BGM13P32A, BGM13P32E	
<b>Ratings</b> .....	Input: 1,8 - 3,8 VDC	
<b>Testing procedure and testing location:</b>		
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	<b>SGS Fimko Ltd.</b>
	<b>Testing location/ address</b> .....	<b>Särkiniementie 3 FI-00210, Helsinki Finland</b>
<input type="checkbox"/>	<b>Associated CB Testing Laboratory:</b>	
	<b>Testing location/ address</b> .....	
	<b>Tested by (name + signature)</b> .....	Mika Kangas Testing Engineer 
	<b>Approved by (name + signature)</b> .....	Kauko Kuusisalo Testing Engineer 
<input type="checkbox"/>	<b>Testing procedure: TMP/CTF Stage 1:</b>	
	<b>Testing location/ address</b> .....	
	<b>Tested by (name + signature)</b> .....	
	<b>Approved by (name + signature)</b> .....	
<input type="checkbox"/>	<b>Testing procedure: WMT/CTF Stage 2:</b>	
	<b>Testing location/ address</b> .....	
	<b>Tested by (name + signature)</b> .....	
	<b>Witnessed by (name + signature)</b> .....	
	<b>Approved by (name + signature)</b> .....	
<input type="checkbox"/>	<b>Testing procedure: SMT/CTF Stage 3 or 4:</b>	
	<b>Testing location/ address</b> .....	
	<b>Tested by (name + signature)</b> .....	
	<b>Witnessed by (name + signature)</b> .....	
	<b>Approved by (name + signature)</b> .....	
	<b>Supervised by (name + signature)</b> .....	

<p><b>List of Attachments (including a total number of pages in each attachment):</b></p> <p><input checked="" type="checkbox"/> Attachment 1: Technical documentation, 3 pages</p> <p><input checked="" type="checkbox"/> Attachment 2: Pictures, 3 pages</p> <p><input checked="" type="checkbox"/> Attachment 3: European Group Differences and National Differences, 19 pages</p>	
<p><b>Summary of testing:</b></p>	
<p><b>Tests performed (name of test and test clause):</b></p> <p>All applicable tests according to IEC/EN 60950-1</p>	<p><b>Testing location:</b></p> <p>SGS Fimko Ltd. Särkiniementie 3, FI-00210 Helsinki Finland</p>
<p><b>Summary of compliance with National Differences:</b></p> <p><b>List of countries addressed</b></p> <p>EU Group Differences and special national differences of CH, DK, ES, FI, IE, NO, SE and UK.</p> <p><input checked="" type="checkbox"/> <b>The product fulfils the requirements of EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013</b></p>	

Copy of marking plate:

BGM13Sxx:

BGM13S2A  
FCCIDQ0Q13  
IC 5123A-13  
MSIP-CRM-  
BGT-13  
● YWWTTTT

BGM13S3A  
FCCIDQ0Q13  
IC 5123A-13  
MSIP-CRM-  
BGT-13  
● YWWTTTT

Figure 1: Label of BGM13S3A and BGM13S2A

BGM13S2N  
FCCIDQ0Q13  
IC 5123A-13  
MSIP-CRM-  
BGT-13  
● YWWTTTT

BGM13S3N  
FCCIDQ0Q13  
IC 5123A-13  
MSIP-CRM-  
BGT-13  
● YWWTTTT

Figure 2: Label of BGM13S3N and BGM13S2N

**Copy of marking plate (continues):**

**BGM13P:**

BGM13P22HGAV2  
Model: BGM13P22A  
FCC ID: QOQBGM13P  
IC: 5123A-BGM13P  
MSIP-CRM-BGT-BGM13P22



R 209-J00282  
YYWWTTTTTT  
www.silabs.com

BGM13P22HGEV2  
Model: BGM13P22E  
FCC ID: QOQBGM13P  
IC: 5123A-BGM13P  
MSIP-CRM-BGT-BGM13P22



R 209-J00282  
YYWWTTTTTT  
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BGM13P32HGAV2  
Model: BGM13P32A  
FCC ID: QOQBGM13P  
IC: 5123A-BGM13P



YYWWTTTTTT  
www.silabs.com

BGM13P32HGEV2  
Model: BGM13P32E  
FCC ID: QOQBGM13P  
IC: 5123A-BGM13P



YYWWTTTTTT  
www.silabs.com

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

<b>Possible test case verdicts:</b>	
- 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)
<b>Testing.....:</b>	
<b>Date of receipt of test item .....</b>	6.10.2017
<b>Date (s) of performance of tests .....</b>	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.**

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**Manufacturer's Declaration per sub-clause 4.2.5 of IECCE 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 ..... :	<input type="checkbox"/> <b>Yes</b> <input checked="" type="checkbox"/> <b>Not applicable</b>
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**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<sup>2</sup>C, clocks, timers etc.)
- Supply voltage: 1,85 - 3,8 VDC
- Bluetooth 5 low energy compliant

**General product information (continues):**

- 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 “E” 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.

**Abbreviations used in the report:**

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

**Indicate used abbreviations (if any)**



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>1</b>	<b>GENERAL</b>		P
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<b>1.5</b>	<b>Components</b>		P
1.5.1	General		P
	Comply with IEC 60950-1 or relevant component standard		P
1.5.2	Evaluation and testing of components		P
1.5.3	Thermal controls		N/A
1.5.4	Transformers		N/A
1.5.5	Interconnecting cables		N/A
1.5.6	Capacitors bridging insulation	Functional insulation only	P
1.5.7	Resistors bridging insulation		N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Functional insulation only	P
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N/A
1.5.8	Components in equipment for IT power systems		N/A
1.5.9	Surge suppressors		N/A
1.5.9.1	General		N/A
1.5.9.2	Protection of VDRs		N/A
1.5.9.3	Bridging of functional insulation by a VDR		N/A
1.5.9.4	Bridging of basic insulation by a VDR		N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A

<b>1.6</b>	<b>Power interface</b>		P
1.6.1	AC power distribution systems		N/A
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment		N/A
1.6.4	Neutral conductor		N/A

<b>1.7</b>	<b>Marking and instructions</b>		P
1.7.1	Power rating and identification markings		P
1.7.1.1	Power rating marking		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Multiple mains supply connections.....:	Not connected to mains	N/A
	Rated voltage(s) or voltage range(s) (V) .....	-	N/A
	Symbol for nature of supply, for d.c. only .....	-	N/A
	Rated frequency or rated frequency range (Hz) .....	-	N/A
	Rated current (mA or A) .....	-	N/A
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark .....	Silicon Labs	P
	Model identification or type reference .....	BGM13S2A, BGM13S3A, BGM13S2N, BGM13S3N, BGM13P22A, BGM13P22E, BGM13P32A, BGM13P32E	P
	Symbol for Class II equipment only .....	Class III equipment	N/A
	Other markings and symbols .....	-	N/A
1.7.1.3	Use of graphical symbols		N/A
1.7.2	Safety instructions and marking		N/A
1.7.2.1	General		N/A
1.7.2.2	Disconnect devices		N/A
1.7.2.3	Overcurrent protective device		N/A
1.7.2.4	IT power distribution systems		N/A
1.7.2.5	Operator access with a tool		N/A
1.7.2.6	Ozone		N/A
1.7.3	Short duty cycles		N/A
1.7.4	Supply voltage adjustment .....	-	N/A
	Methods and means of adjustment; reference to installation instructions .....	-	N/A
1.7.5	Power outlets on the equipment .....	-	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....	-	N/A
1.7.7	Wiring terminals		N/A
1.7.7.1	Protective earthing and bonding terminals .....	-	N/A
1.7.7.2	Terminals for a.c. mains supply conductors		N/A
1.7.7.3	Terminals for d.c. mains supply conductors		N/A
1.7.8	Controls and indicators		N/A
1.7.8.1	Identification, location and marking .....	-	N/A
1.7.8.2	Colours .....	-	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.8.3	Symbols according to IEC 60417 .....	-	N/A
1.7.8.4	Markings using figures .....	-	N/A
1.7.9	Isolation of multiple power sources .....	-	N/A
1.7.10	Thermostats and other regulating devices .....	-	N/A
1.7.11	Durability		P
1.7.12	Removable parts		N/A
1.7.13	Replaceable batteries .....	-	N/A
	Language(s) .....	-	—
1.7.14	Equipment for restricted access locations .....	-	N/A

<b>2</b>	<b>PROTECTION FROM HAZARDS</b>		P
<b>2.1</b>	<b>Protection from electric shock and energy hazards</b>		P
2.1.1	Protection in operator access areas		P
2.1.1.1	Access to energized parts		P
	Test by inspection .....	No hazardous parts	P
	Test with test finger (Figure 2A) .....	-	N/A
	Test with test pin (Figure 2B) .....	-	N/A
	Test with test probe (Figure 2C) .....	-	N/A
2.1.1.2	Battery compartments		N/A
2.1.1.3	Access to ELV wiring		N/A
	Working voltage (V <sub>peak</sub> or V <sub>rms</sub> ); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring		N/A
2.1.1.5	Energy hazards .....	-	N/A
2.1.1.6	Manual controls		N/A
2.1.1.7	Discharge of capacitors in equipment		N/A
	Measured voltage (V); time-constant (s) .....	-	—
2.1.1.8	Energy hazards – d.c. mains supply		N/A
	a) Capacitor connected to the d.c. mains supply . :	-	N/A
	b) Internal battery connected to the d.c. mains supply :	-	N/A
2.1.1.9	Audio amplifiers .....	-	N/A
2.1.2	Protection in service access areas		N/A
2.1.3	Protection in restricted access locations		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>2.2</b>	<b>SELV circuits</b>		P
2.2.1	General requirements	(see appended table 2.2)	P
2.2.2	Voltages under normal conditions (V) ..... :	≤ 3,8 VDC	P
2.2.3	Voltages under fault conditions (V) ..... :	≤ 3,8 VDC	P
2.2.4	Connection of SELV circuits to other circuits ..... :	SELV ⇔ SELV only	N/A

<b>2.3</b>	<b>TNV circuits</b>		N/A
2.3.1	Limits		N/A
	Type of TNV circuits ..... :	No TNV	—
2.3.2	Separation from other circuits and from accessible parts		N/A
2.3.2.1	General requirements		N/A
2.3.2.2	Protection by basic insulation		N/A
2.3.2.3	Protection by earthing		N/A
2.3.2.4	Protection by other constructions ..... :	-	N/A
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed..... :	-	—
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed..... :	-	—
2.3.5	Test for operating voltages generated externally		N/A

<b>2.4</b>	<b>Limited current circuits</b>		N/A
2.4.1	General requirements		N/A
2.4.2	Limit values		N/A
	Frequency (Hz) ..... :	-	—
	Measured current (mA)..... :	-	—
	Measured voltage (V) ..... :	-	—
	Measured circuit capacitance (nF or μF) ..... :	-	—
2.4.3	Connection of limited current circuits to other circuits		N/A

<b>2.5</b>	<b>Limited power sources</b>		N/A
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	c) Regulating network or IC current limiter, limits output under normal operating and single fault condition		N/A
	Use of integrated circuit (IC) current limiters		N/A
	d) Overcurrent protective device limited output		N/A
	Max. output voltage (V), max. output current (A), max. apparent power (VA)..... :	-	—
	Current rating of overcurrent protective device (A) .. :	-	—

<b>2.6</b>	<b>Provisions for earthing and bonding</b>		N/A
2.6.1	Protective earthing		N/A
2.6.2	Functional earthing		N/A
	Use of symbol for functional earthing ..... :	-	N/A
2.6.3	Protective earthing and protective bonding conductors		N/A
2.6.3.1	General		N/A
2.6.3.2	Size of protective earthing conductors		N/A
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG ..... :	-	—
2.6.3.3	Size of protective bonding conductors		N/A
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG ..... :	-	—
	Protective current rating (A), cross-sectional area (mm <sup>2</sup> ), AWG..... :	-	—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)..... :	-	N/A
2.6.3.5	Colour of insulation ..... :	-	N/A
2.6.4	Terminals		N/A
2.6.4.1	General		N/A
2.6.4.2	Protective earthing and bonding terminals		N/A
	Rated current (A), type, nominal thread diameter (mm)..... :	-	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N/A
2.6.5	Integrity of protective earthing		N/A
2.6.5.1	Interconnection of equipment		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N/A
2.6.5.3	Disconnection of protective earth		N/A
2.6.5.4	Parts that can be removed by an operator		N/A
2.6.5.5	Parts removed during servicing		N/A
2.6.5.6	Corrosion resistance		N/A
2.6.5.7	Screws for protective bonding		N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system		N/A

<b>2.7</b>	<b>Overcurrent and earth fault protection in primary circuits</b>		N/A
2.7.1	Basic requirements		N/A
	Instructions when protection relies on building installation		N/A
2.7.2	Faults not simulated in 5.3.7		N/A
2.7.3	Short-circuit backup protection		N/A
2.7.4	Number and location of protective devices ..... : -		N/A
2.7.5	Protection by several devices		N/A
2.7.6	Warning to service personnel ..... : -		N/A

<b>2.8</b>	<b>Safety interlocks</b>		N/A
2.8.1	General principles		N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
	Protection against extreme hazard		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches, relays and their related circuits		N/A
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) ..... : -		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>2.9</b>	<b>Electrical insulation</b>		P
2.9.1	Properties of insulating materials		P
2.9.2	Humidity conditioning		N/A
	Relative humidity (%), temperature (°C) ..... :	-	—
2.9.3	Grade of insulation	Functional insulation	P
2.9.4	Separation from hazardous voltages		N/A
	Method(s) used ..... :	No hazardous voltages	—

<b>2.10</b>	<b>Clearances, creepage distances and distances through insulation</b>		P
2.10.1	General		P
2.10.1.1	Frequency ..... :	DC	P
2.10.1.2	Pollution degrees ..... :	PD2	P
2.10.1.3	Reduced values for functional insulation	5.3.4 c)	P
2.10.1.4	Intervening unconnected conductive parts		N/A
2.10.1.5	Insulation with varying dimensions		N/A
2.10.1.6	Special separation requirements		N/A
2.10.1.7	Insulation in circuits generating starting pulses		N/A
2.10.2	Determination of working voltage		P
2.10.2.1	General		P
2.10.2.2	RMS working voltage		P
2.10.2.3	Peak working voltage		P
2.10.3	Clearances		P
2.10.3.1	General		P
2.10.3.2	Mains transient voltages		N/A
	a) AC mains supply ..... :	Not connected to mains	N/A
	b) Earthed d.c. mains supplies ..... :	-	N/A
	c) Unearthed d.c. mains supplies ..... :	-	N/A
	d) Battery operation ..... :	-	N/A
2.10.3.3	Clearances in primary circuits		N/A
2.10.3.4	Clearances in secondary circuits		P
2.10.3.5	Clearances in circuits having starting pulses		N/A
2.10.3.6	Transients from a.c. mains supply ..... :	-	N/A
2.10.3.7	Transients from d.c. mains supply ..... :	-	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.3.8	Transients from telecommunication networks and cable distribution systems .....	-	N/A
2.10.3.9	Measurement of transient voltage levels		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply .....	-	N/A
	For a d.c. mains supply .....	-	N/A
	b) Transients from a telecommunication network :	-	N/A
2.10.4	Creepage distances		P
2.10.4.1	General		P
2.10.4.2	Material group and comparative tracking index		P
	CTI tests.....	Material group IIIb is assumed to be used	—
2.10.4.3	Minimum creepage distances		P
2.10.5	Solid insulation		N/A
2.10.5.1	General		N/A
2.10.5.2	Distances through insulation		N/A
2.10.5.3	Insulating compound as solid insulation		N/A
2.10.5.4	Semiconductor devices		N/A
2.10.5.5.	Cemented joints		N/A
2.10.5.6	Thin sheet material – General		N/A
2.10.5.7	Separable thin sheet material		N/A
	Number of layers (pcs) .....	-	—
2.10.5.8	Non-separable thin sheet material		N/A
2.10.5.9	Thin sheet material – standard test procedure		N/A
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure		N/A
	Electric strength test		—
2.10.5.11	Insulation in wound components		N/A
2.10.5.12	Wire in wound components		N/A
	Working voltage .....	-	N/A
	a) Basic insulation not under stress .....	-	N/A
	b) Basic, supplementary, reinforced insulation .....	-	N/A
	c) Compliance with Annex U .....	-	N/A
	Two wires in contact inside wound component; angle between 45° and 90° .....	-	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
	Electric strength test		—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components		N/A
	Working voltage ..... : -		N/A
	- Basic insulation not under stress ..... : -		N/A
	- Supplementary, reinforced insulation ..... : -		N/A
2.10.6	Construction of printed boards		P
2.10.6.1	Uncoated printed boards		P
2.10.6.2	Coated printed boards		N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N/A
2.10.6.4	Insulation between conductors on different layers of a printed board	Functional insulation only	P
	Distance through insulation		N/A
	Number of insulation layers (pcs) ..... : -		N/A
2.10.7	Component external terminations		N/A
2.10.8	Tests on coated printed boards and coated components		N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling		N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N/A
2.10.11	Tests for semiconductor devices and cemented joints		N/A
2.10.12	Enclosed and sealed parts		N/A
<b>3</b>	<b>WIRING, CONNECTIONS AND SUPPLY</b>		P
<b>3.1</b>	<b>General</b>		P
3.1.1	Current rating and overcurrent protection		P
3.1.2	Protection against mechanical damage		N/A
3.1.3	Securing of internal wiring		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.1.4	Insulation of conductors		N/A
3.1.5	Beads and ceramic insulators		N/A
3.1.6	Screws for electrical contact pressure		N/A
3.1.7	Insulating materials in electrical connections		N/A
3.1.8	Self-tapping and spaced thread screws		N/A
3.1.9	Termination of conductors		N/A
	10 N pull test		N/A
3.1.10	Sleeving on wiring		N/A

<b>3.2</b>	<b>Connection to a mains supply</b>		N/A
3.2.1	Means of connection		N/A
3.2.1.1	Connection to an a.c. mains supply		N/A
3.2.1.2	Connection to a d.c. mains supply		N/A
3.2.2	Multiple supply connections		N/A
3.2.3	Permanently connected equipment		N/A
	Number of conductors, diameter of cable and conduits (mm) .....	-	—
3.2.4	Appliance inlets		N/A
3.2.5	Power supply cords		N/A
3.2.5.1	AC power supply cords		N/A
	Type .....	-	—
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....	-	—
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N) .....	-	—
	Longitudinal displacement (mm) .....	-	—
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards		N/A
	Diameter or minor dimension D (mm); test mass (g) .....	-	—
	Radius of curvature of cord (mm) .....	-	—
3.2.9	Supply wiring space		N/A

<b>3.3</b>	<b>Wiring terminals for connection of external conductors</b>		N/A
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Clause	Requirement + Test	Result - Remark	Verdict
3.3.1	Wiring terminals		N/A
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals		N/A
3.3.4	Conductor sizes to be connected		N/A
	Rated current (A), cord/cable type, cross-sectional area (mm <sup>2</sup> ) .....	-	—
3.3.5	Wiring terminal sizes		N/A
	Rated current (A), type, nominal thread diameter (mm) .....	-	—
3.3.6	Wiring terminal design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A

<b>3.4</b>	<b>Disconnection from the mains supply</b>		N/A
3.4.1	General requirement		N/A
3.4.2	Disconnect devices		N/A
3.4.3	Permanently connected equipment		N/A
3.4.4	Parts which remain energized		N/A
3.4.5	Switches in flexible cords		N/A
3.4.6	Number of poles - single-phase and d.c. equipment		N/A
3.4.7	Number of poles - three-phase equipment		N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices		N/A
3.4.10	Interconnected equipment		N/A
3.4.11	Multiple power sources		N/A

<b>3.5</b>	<b>Interconnection of equipment</b>		P
3.5.1	General requirements		P
3.5.2	Types of interconnection circuits .....	SELV ⇔ SELV only	P
3.5.3	ELV circuits as interconnection circuits		N/A
3.5.4	Data ports for additional equipment		N/A

<b>4</b>	<b>PHYSICAL REQUIREMENTS</b>		P
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Clause	Requirement + Test	Result - Remark	Verdict
<b>4.1</b>	<b>Stability</b>		N/A
	Angle of 10°		N/A
	Test force (N) .....		N/A
<b>4.2</b>	<b>Mechanical strength</b>		N/A
4.2.1	General	Equipment is for building in	N/A
	Rack-mounted equipment.		N/A
4.2.2	Steady force test, 10 N		N/A
4.2.3	Steady force test, 30 N		N/A
4.2.4	Steady force test, 250 N		N/A
4.2.5	Impact test		N/A
	Fall test		N/A
	Swing test		N/A
4.2.6	Drop test; height (mm) .....	-	N/A
4.2.7	Stress relief test		N/A
4.2.8	Cathode ray tubes		N/A
	Picture tube separately certified .....	-	N/A
4.2.9	High pressure lamps		N/A
4.2.10	Wall or ceiling mounted equipment; force (N) .....	-	N/A
<b>4.3</b>	<b>Design and construction</b>		P
4.3.1	Edges and corners		P
4.3.2	Handles and manual controls; force (N) .....	-	N/A
4.3.3	Adjustable controls		N/A
4.3.4	Securing of parts		N/A
4.3.5	Connection by plugs and sockets		N/A
4.3.6	Direct plug-in equipment		N/A
	Torque .....	-	—
	Compliance with the relevant mains plug standard :	-	N/A
4.3.7	Heating elements in earthed equipment		N/A
4.3.8	Batteries		N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- Excessive discharging rate for any battery		N/A
4.3.9	Oil and grease		N/A
4.3.10	Dust, powders, liquids and gases		N/A
4.3.11	Containers for liquids or gases		N/A
4.3.12	Flammable liquids .....	-	N/A
	Quantity of liquid (l) .....	-	N/A
	Flash point (°C) .....	-	N/A
4.3.13	Radiation		N/A
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg) .....	-	—
	Measured high-voltage (kV) .....	-	—
	Measured focus voltage (kV) .....	-	—
	CRT markings .....	-	—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification .....	-	N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....	-	N/A
4.3.13.5	Lasers (including laser diodes) and LEDs		N/A
4.3.13.5.1	Lasers (including laser diodes)		N/A
	Laser class .....	-	—
4.3.13.5.2	Light emitting diodes (LEDs)		N/A
4.3.13.6	Other types .....	-	N/A

<b>4.4</b>	<b>Protection against hazardous moving parts</b>		N/A
4.4.1	General		N/A
4.4.2	Protection in operator access areas .....	-	N/A
	Household and home/office document/media shredders		N/A
4.4.3	Protection in restricted access locations .....	-	N/A
4.4.4	Protection in service access areas		N/A
4.4.5	Protection against moving fan blades		N/A
4.4.5.1	General		N/A
	Not considered to cause pain or injury. a) .....	-	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Is considered to cause pain, not injury. b) .....	-	N/A
	Considered to cause injury. c) .....	-	N/A
4.4.5.2	Protection for users		N/A
	Use of symbol or warning .....	-	N/A
4.4.5.3	Protection for service persons		N/A
	Use of symbol or warning .....	-	N/A

<b>4.5</b>	<b>Thermal requirements</b>		P
4.5.1	General		P
4.5.2	Temperature tests		P
	Normal load condition per Annex L .....	L.7	—
4.5.3	Temperature limits for materials	(see appended table 4.5)	P
4.5.4	Touch temperature limits	Equipment is for building in	N/A
4.5.5	Resistance to abnormal heat .....	-	N/A

<b>4.6</b>	<b>Openings in enclosures</b>		N/A
4.6.1	Top and side openings	Equipment is designed for building in and evaluated without enclosure	N/A
	Dimensions (mm) .....	-	—
4.6.2	Bottoms of fire enclosures		N/A
	Construction of the bottom, dimensions (mm) .....	-	—
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment		N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm) .....	-	—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature (°C), time (weeks) .....	-	—

<b>4.7</b>	<b>Resistance to fire</b>		P
4.7.1	Reducing the risk of ignition and spread of flame		P
	Method 1, selection and application of components wiring and materials		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Method 2, application of all of simulated fault condition tests		N/A
4.7.2	Conditions for a fire enclosure	The equipment is designed for building in and is evaluated without enclosure	N/A
4.7.2.1	Parts requiring a fire enclosure		N/A
4.7.2.2	Parts not requiring a fire enclosure		P
4.7.3	Materials		P
4.7.3.1	General		P
4.7.3.2	Materials for fire enclosures		N/A
4.7.3.3	Materials for components and other parts outside fire enclosures		N/A
4.7.3.4	Materials for components and other parts inside fire enclosures		N/A
4.7.3.5	Materials for air filter assemblies		N/A
4.7.3.6	Materials used in high-voltage components		N/A

<b>5</b>	<b>ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS</b>		P
<b>5.1</b>	<b>Touch current and protective conductor current</b>		N/A
5.1.1	General		N/A
5.1.2	Configuration of equipment under test (EUT)		N/A
5.1.2.1	Single connection to an a.c. mains supply		N/A
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N/A
5.1.3	Test circuit		N/A
5.1.4	Application of measuring instrument		N/A
5.1.5	Test procedure		N/A
5.1.6	Test measurements		N/A
	Supply voltage (V) ..... :	-	—
	Measured touch current (mA) ..... :	-	—
	Max. allowed touch current (mA) ..... :	-	—
	Measured protective conductor current (mA) ..... :	-	—
	Max. allowed protective conductor current (mA).... :	-	—
5.1.7	Equipment with touch current exceeding 3,5 mA		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.1.7.1	General .....	-	N/A
5.1.7.2	Simultaneous multiple connections to the supply		N/A
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks		N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V) .....	-	—
	Measured touch current (mA) .....	-	—
	Max. allowed touch current (mA) .....	-	—
5.1.8.2	Summation of touch currents from telecommunication networks		N/A
	a) EUT with earthed telecommunication ports .....	-	N/A
	b) EUT whose telecommunication ports have no reference to protective earth		N/A

<b>5.2</b>	<b>Electric strength</b>		N/A
5.2.1	General		N/A
5.2.2	Test procedure		N/A

<b>5.3</b>	<b>Abnormal operating and fault conditions</b>		P
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	P
5.3.2	Motors		N/A
5.3.3	Transformers		N/A
5.3.4	Functional insulation.....	c)	P
5.3.5	Electromechanical components		N/A
5.3.6	Audio amplifiers in ITE .....	-	N/A
5.3.7	Simulation of faults		P
5.3.8	Unattended equipment		N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions		P
5.3.9.1	During the tests		P
5.3.9.2	After the tests		P



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Clause	Requirement + Test	Result - Remark	Verdict
<b>6</b>	<b>CONNECTION TO TELECOMMUNICATION NETWORKS</b>		N/A
	Not applicable, subclauses removed		—
<b>7</b>	<b>CONNECTION TO CABLE DISTRIBUTION SYSTEMS</b>		N/A
	Not applicable, subclauses removed		—
<b>A</b>	<b>ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE</b>		N/A
	Not applicable, subclauses removed		—
<b>B</b>	<b>ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)</b>		N/A
	Not applicable, subclauses removed.		—
<b>C</b>	<b>ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)</b>		N/A
	Not applicable, subclauses removed.		—
<b>D</b>	<b>ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)</b>		N/A
	Not applicable, subclauses removed.		—
<b>E</b>	<b>ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)</b>		N/A
<b>F</b>	<b>ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)</b>		N/A
<b>G</b>	<b>ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES</b>		N/A
	Not applicable, subclauses removed.		—
<b>H</b>	<b>ANNEX H, IONIZING RADIATION (see 4.3.13)</b>		N/A
<b>J</b>	<b>ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)</b>		N/A
	Metal(s) used .....: -		—
<b>K</b>	<b>ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)</b>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Not applicable, subclauses removed.		—
<b>L</b>	<b>ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)</b>		P
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment		P
<b>M</b>	<b>ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)</b>		N/A
	Not applicable, subclauses removed.		—
<b>N</b>	<b>ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)</b>		N/A
	Not applicable, subclauses removed.		—
<b>P</b>	<b>ANNEX P, NORMATIVE REFERENCES</b>		—
<b>Q</b>	<b>ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)</b>		N/A
	Not applicable, subclauses removed.		—
<b>R</b>	<b>ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES</b>		N/A
	Not applicable, subclauses removed.		—
<b>S</b>	<b>ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)</b>		N/A
	Not applicable, subclauses removed.		—
<b>T</b>	<b>ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)</b>		N/A
		See separate test report	—
<b>U</b>	<b>ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)</b>		N/A

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Clause	Requirement + Test			Result - Remark	Verdict
				See separate test report	—
<b>V</b>	<b>ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)</b>				N/A
	Not applicable, subclauses removed.				—
<b>W</b>	<b>ANNEX W, SUMMATION OF TOUCH CURRENTS</b>				N/A
	Not applicable, subclauses removed.				—
<b>X</b>	<b>ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)</b>				N/A
	Not applicable, subclauses removed.				—
<b>Y</b>	<b>ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)</b>				N/A
	Not applicable, subclauses removed.				—
<b>Z</b>	<b>ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)</b>				N/A
<b>AA</b>	<b>ANNEX AA, MANDREL TEST (see 2.10.5.8)</b>				N/A
<b>BB</b>	<b>ANNEX BB, CHANGES IN THE SECOND EDITION</b>				—
<b>CC</b>	<b>ANNEX CC, Evaluation of integrated circuit (IC) current limiters</b>				N/A
	Not applicable, subclauses removed.				—
<b>DD</b>	<b>ANNEX DD, Requirements for the mounting means of rack-mounted equipment</b>				N/A
	Not applicable, subclauses removed.				—
<b>EE</b>	<b>ANNEX EE, Household and home/office document/media shredders</b>				N/A
	Not applicable, subclauses removed.				—
<b>1.5.1</b>	<b>TABLE: List of critical components</b>				N/A
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity <sup>1)</sup>

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Clause	Requirement + Test	Result - Remark	Verdict

**Supplementary information:**  
 No safety critical components.  
 1) **Provided evidence ensures the agreed level of compliance. See OD-CB2039.**

1.5.1	TABLE: Opto Electronic Devices	N/A
Manufacturer ..... : Type..... : Separately tested ..... : Bridging insulation ..... : External creepage distance..... : Internal creepage distance ..... : Distance through insulation ..... : Tested under the following conditions..... : Input..... : Output..... : Supplementary information 		

1.6.2	TABLE: Electrical data (in normal conditions)	P				
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
5,0	0,27	-	1,35	-	-	Idle mode *
5,0	0,37	-	1,84	-	-	TX at full power
<b>Supplementary information:</b> * The equipment was tested on an evaluation card supplied by the manufacturer (there is a DC-DC converter on the evaluation card which provides the correct supply voltage to the EUT). Therefore the measured power consumption values include the power required by the evaluation card which is actually higher than the power required by BGM13S.						

2.1.1.5 c) 1)	TABLE: max. V, A, VA test	N/A		
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)
<b>Supplementary information:</b> 				

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Clause	Requirement + Test	Result - Remark	Verdict

<b>2.1.1.5 c) 2)</b>	<b>TABLE: stored energy</b>	N/A	
Capacitance C (μF)	Voltage U (V)	Energy E (J)	
Supplementary information:			

<b>2.2</b>	<b>TABLE: evaluation of voltage limiting components in SELV circuits</b>	N/A	
Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components
	V peak	V d.c.	
Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)		
Supplementary information:			
The supply voltage of the equipment is 1,8 - 3,8 VDC which limits the voltages in the equipment including the I/O ports.			

<b>2.5</b>	<b>TABLE: Limited power sources</b>	N/A				
Circuit output tested:						
Note: Measured Uoc (V) with all load circuits disconnected:						
Components	Test condition (Single fault)	Uoc (V)	Isc (A)		VA	
			Meas.	Limit	Meas.	Limit
Supplementary information:						
Sc=Short circuit, Oc=Open circuit						

<b>2.10.2</b>	<b>Table: working voltage measurement</b>	N/A		
Location	RMS voltage (V)	Peak voltage (V)	Comments	

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Clause	Requirement + Test	Result - Remark	Verdict
Supplementary information:			

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements						N/A
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)	
Functional:							
Basic/supplementary:							
Reinforced:							
Supplementary information:							

2.10.5	TABLE: Distance through insulation measurements					N/A
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)	
Supplementary information:						

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Clause	Requirement + Test								Result - Remark	Verdict	
<b>4.3.8</b>	<b>TABLE: Batteries</b>									N/A	
	The tests of 4.3.8 are applicable only when appropriate battery data is not available									N/A	
	Is it possible to install the battery in a reverse polarity position?									N/A	
	Non-rechargeable batteries			Rechargeable batteries							
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging			
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.		
	Max. current during normal condition										
	Max. current during fault condition										
	Test results:									Verdict	
	- Chemical leaks									N/A	
	- Explosion of the battery									N/A	
	- Emission of flame or expulsion of molten metal									N/A	
	- Electric strength tests of equipment after completion of tests									N/A	
	Supplementary information:										

<b>4.3.8</b>	<b>TABLE: Batteries</b>									N/A
	Battery category ..... : - Manufacturer ..... : - Type / model..... : - Voltage ..... : - Capacity..... : - Tested and Certified by (incl. Ref. No.) ..... : - Circuit protection diagram:									

MARKINGS AND INSTRUCTIONS (1.7.13)	
Location of replaceable battery	No batteries
Language(s) .....	-
Close to the battery .....	-
In the servicing instructions .....	-
In the operating instructions .....	-

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Thermal requirements			
	Supply voltage (V) .....	5 VDC*	5 VDC*	—
	Ambient T <sub>min</sub> (°C) .....	23,4	23,5	—
	Ambient T <sub>max</sub> (°C) .....	23,7	23,6	—
	Maximum measured temperature T of part/at.....:	T <sub>1</sub> (°C)	T <sub>2</sub> (°C)	Allowed T <sub>max</sub> (°C)
	BGM13S, top	45,3	30,9	85**
	PCB	33,8	28,5	-

Supplementary information:

\* Temperature measurements were performed with EUT installed on evaluation card supplied by the manufacturer. The evaluation card is powered from USB where the voltage is 5 VDC. There is a DC-DC converter on the evaluation card which provides the correct supply voltage for the EUT.

\*\* The maximum temperature of BGM13S and BGM13P according to manufacturer. Thermal limit needs to be evaluated in the final product where the Bluetooth module is used so that the total heating caused by the final product and BGM13S and BGM13P does not exceed 85 °C

NOTE : T<sub>1</sub> = measured with full TX power

T<sub>2</sub> = measured in normal operation mode with minimum transmission intervals

T<sub>max</sub> = maximum temperature according to manufacturer

Temperature T of winding:	t <sub>1</sub> (°C)	R <sub>1</sub> (Ω)	t <sub>2</sub> (°C)	R <sub>2</sub> (Ω)	T (°C)	Allowed T <sub>max</sub> (°C)	Insulation class

Supplementary information:

4.5.5	TABLE: Ball pressure test of thermoplastic parts			N/A
	Allowed impression diameter (mm) .....	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	

Supplementary information:



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Clause	Requirement + Test	Result - Remark	Verdict

4.7	TABLE: Resistance to fire					N/A
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence	
Supplementary information:						

5.1	TABLE: touch current measurement				N/A
Measured between:	Measured (mA)	Limit (mA)	Comments/conditions		
Supplementary information:					

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests				N/A
Test voltage applied between:	Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No		
Functional:					
Basic/supplementary:					
Reinforced:					
Supplementary information:					

5.3	TABLE: Fault condition tests						P
	Ambient temperature (°C) .....					23,6	—
	Power source for EUT: Manufacturer, model/type, output rating .....					GW Instek PSP-405, 0 - 40 V, 0 - 5 A	—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation	
I/O port *	S.c.	5 VDC	20 s	-	-	No hazards.	
Supplementary information:							
* I/O ports of the EUT were short circuited to ground, one at time. No excessive heating or other hazards observed.							

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Clause	Requirement + Test	Result - Remark	Verdict

C.2	TABLE: transformers							N/A
Loc.	Tested insulation	Working voltage peak / V	Working voltage rms / V	Required electric strength	Required clearance / mm	Required creepage distance / mm	Required distance thr. insul.	
		(2.10.2)	(2.10.2)	(5.2)	(2.10.3)	(2.10.4)	(2.10.5)	
Loc.	Tested insulation			Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers	
Supplementary information:								

C.2	TABLE: transformers							N/A

**List of test equipment used:**

<b>Clause</b>	<b>Measurement / testing</b>	<b>Testing / measuring equipment / material used</b>	<b>Range used</b>	<b>Calibration date</b>
1.6.2	Input current	Digital multimeter, Fluke 289, Inv. No. 9328	400 mA	21.4.2017 - 21.4.2018
1.6.2	Input current	Digital multimeter, Fluke 289, Inv. No. 8921	5 VDC	27.6.2017 - 27.6.2018
4.5	Thermal requirements	Data logger, HP 34970A, Inv. no.9301	-	3.2.2017 - 3.2.2018
4.5	Thermal requirements	Thermocouple, K-type x 3	-	-
5.3	Fault condition tests	Digital multimeter, Fluke 289, Inv. No. 9328	5 A	21.4.2017 - 21.4.2018
5.3	Fault condition tests	Digital multimeter, Fluke 289, Inv. No. 8921	5 VDC	23.2.2017 - 23.2.2018