

VERIFICATION OF COMPLIANCE

The following mentioned Products have been tested in typical configuration by
PSC and were found to comply with the essential requirements of
“Council Directive on the Approximation of the Laws of the Member States to
Low Voltage Directive (2014/35/EU)”

Equipment:

Type of Product : AIS800

Model Number : AIS800, M/N: A02087

Produced by:

Manufacture's Name : GARMIN Corporation

Manufacture's Address : No.68, Zhangshu 2nd Rd., Xizhi Dist., New
Taipei City 221, Taiwan

Applied Standards:

EN 62368-1:2014

Safety of Information Technology Equipment including electrical business equipment.

Manufacture or his authorized representative within EC shall affix the CE
Marking to the products if he ensures the product complies with the
relevant harmonized standards and draws up a declaration of conformity.
The technical report issued by PSC will support you Affix the CE Marking.

Date : May 11, 2018

Report No : 18CE04L031



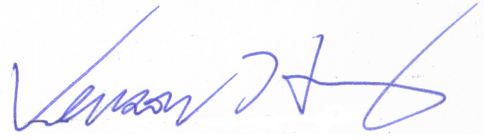
Venson Huang/Engineering Manager

TEST REPORT**Standard applied: EN 62368-1:2014****Safety of Information Technology Equipment including
electrical business equipment**

Applicant GARMIN Corporation
Address No.68, Zhangshu 2nd Rd., Xizhi Dist., New Taipei City 221,
Taiwan
Factory GARMIN Corporation
Address No.68, Zhangshu 2nd Rd., Xizhi Dist., New Taipei City 221,
Taiwan
Equipment..... AIS800
Equipment mobility..... Building-in
Trademark..... GARMIN
Model No. AIS800, M/N: A02087
Rating..... 12/24 Vdc, 2A (Optional)
Class of equipment Class III
Report No. 18CE04L031

Complied by: Eva Wu

Eva Wu

Approved by: 

Venson Huang

Date.....: May 11, 2018

Date.....: May 11, 2018

Test Site.....: 6F, No.6, Lane 609, Sec.5 Chung-Hsin Rd., San Chung Dist.,
New Taipei City, Taiwan, R.O.C.

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TEST ITEM PARTICULARS:	
Classification of use by	☒ Ordinary person ☐ Instructed person ☐ Skilled person ☐ Children likely to be present
Supply Connection	☐ AC Mains ☐ DC Mains ☒ External Circuit - not Mains connected - ☒ ES1 ☐ ES2 ☐ ES3
Supply % Tolerance	☐ +10%/-10% ☐ +20%/-15% ☐ + ____ %/ - ____ % ☒ None
Supply Connection – Type	☐ pluggable equipment type A - ☐ non-detachable supply cord ☐ appliance coupler ☐ direct plug-in ☐ mating connector ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☒ mating connector ☐ other:
Considered current rating of protective device as part of building or equipment installation	16 or 20 A; Installation location: ☐ building; ☒ equipment
Equipment mobility.....	☐ movable ☐ hand-held ☐ transportable ☐ stationary ☒ for building-in ☐ direct plug-in ☐ rack-mounting ☐ wall-mounted
Over voltage category (OVC)	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other: _____
Class of equipment	☐ Class I ☐ Class II ☒ Class III
Access location	☐ restricted access location ☒ N/A
Pollution degree (PD)	☐ PD 1 ☒ PD 2 ☐ PD 3
Manufacturer's specified maximum operating ambient	55°C
IP protection class	☐ IPX0 ☒ IPX7
Power Systems	☒ TN ☒ TT ☐ IT - ____ V _{L-L}
Altitude during operation (m)	☒ 2000 m or less ☐ ____ m

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Altitude of test laboratory (m)	☒ 2000 m or less ☐ _____ m
Mass of equipment (kg)	☒ 0.4 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)
Number of pages (Report)..... 42	
Number of pages (Attachments) See Attachments	
Attachments:	
Appendix I –	Label
Appendix II –	EuT Photographs
Appendix III –	Instrument list
Appendix IV –	IEC 60529 Report
GENERAL REMARKS:	
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 testing laboratory.	
GENERAL PRODUCT INFORMATION:	
Model Differences – Model M/N: A02087 is identical to model: AIS800 except for model name different.	
ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.) (Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e.g. PS3, ES3.)	
Electrically-caused injury (Clause 5): (Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification) Example: +5 V dc input ES1	
Source of electrical energy	Corresponding classification (ES)
Internal circuit	ES1
Electrically-caused fire (Clause 6): (Note: List sub-assembly or circuit designation and corresponding energy source classification) Example: Battery pack (maximum 85 watts):	
Source of power or PIS	Corresponding classification (PS)
Internal circuit	PS1

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Injury caused by hazardous substances (Clause 7) (Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.) Example: Liquid in filled component Glycol	
Source of hazardous substances	Corresponding chemical
N/A	N/A
Mechanically-caused injury (Clause 8) (Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.) Example: Wall mount unit MS2	
Source of kinetic/mechanical energy	Corresponding classification (MS)
Sharp edges and corners	MS1
Equipment mass	MS1
Thermal burn injury (Clause 9) (Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.) Example: Hand-held scanner – thermoplastic enclosure	
Source of thermal energy	Corresponding classification (TS)
Accessible surfaces which is touched occasionally for very short periods	TS1
Radiation (Clause 10) (Note: List the types of radiation present in the product and the corresponding energy source classification.) Example: DVD – Class 1 Laser Product	
Type of radiation	Corresponding classification (RS)
LED indicator	RS1

ENERGY SOURCE DIAGRAM				
Indicate which energy sources are included in the energy source diagram. Insert diagram below				
☐ ES ☐ PS ☐ MS ☐ TS ☐ RS				
OVERVIEW OF EMPLOYED SAFEGUARDS				
Clause	Possible Hazard			
5.1	Electrically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (ES3: Primary Filter circuit)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary	ES1: Internal circuit	N/A	N/A	N/A
--	--	--	--	--
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
Enclosure	PS1: Internal circuit	N/A	N/A	N/A
--	--	--	--	--
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
N/A	N/A	N/A	N/A	N/A
--	--	--	--	--
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3:High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary	MS1: Sharp edges and corners	N/A	N/A	N/A
Ordinary	MS1: Equipment mass	N/A	N/A	N/A
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary	TS1: Accessible surfaces which is touched occasionally for very short periods	N/A	N/A	N/A
--	--	--	--	--
10.1	Radiation			

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Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary	RS1: LED indicator	N/A	N/A	N/A
--	--	--	--	--
Supplementary Information: (1) See attached energy source diagram for additional details. (2) "N" – Normal Condition; "A" – Abnormal Condition; "S" Single Fault				

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4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies	(See appended table 4.1.2)	P
4.1.2	Use of components	(See appended table 4.1.2)	P
4.1.3	Equipment design and construction	The function of indicators and controls is clearly identified.	P
4.1.15	Markings and instructions	(See Annex F)	P
4.4.4	Safeguard robustness		P
4.4.4.2	Steady force tests	(See Annex T.4, T.5)	P
4.4.4.3	Drop tests.....	(See Annex T.7)	P
4.4.4.4	Impact tests.....		N/A
4.4.4.5	Internal accessible safeguard enclosure and barrier tests	No such parts	N/A
4.4.4.6	Glass Impact tests	No glass	N/A
4.4.4.7	Thermoplastic material tests	(See Annex T.8)	P
4.4.4.8	Air comprising a safeguard	(See Annex T)	P
4.4.4.9	Accessibility and safeguard effectiveness		N/A
4.5	Explosion		P
4.6	Fixing of conductors		P
4.6.1	Fix conductors not to defeat a safeguard		P
4.6.2	10 N force test applied to	Internal wire or components	P
4.7	Equipment for direct insertion into mains socket - outlets	The equipment is not direct plug-in type.	N/A
4.7.2	Mains plug part complies with the relevant standard		N/A
4.7.3	Torque (Nm).....		N/A
4.8	Products containing coin/button cell batteries		N/A
4.8.2	Instructional safeguard		N/A
4.8.3	Battery Compartment Construction		N/A
	Means to reduce the possibility of children removing the battery		—
4.8.4	Battery Compartment Mechanical Tests.....		N/A
4.8.5	Battery Accessibility		N/A
4.9	Likelihood of fire or shock due to entry of conductive object	No openings. Can't be entry.	N/A

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5	ELECTRICALLY-CAUSED INJURY		P
5.2.1	Electrical energy source classifications	(See appended table 5.2)	N/A
5.2.2	ES1, ES2 and ES3 limits	ES1	P
5.2.2.2	Steady-state voltage and current	(See appended table 5.2)	N/A
5.2.2.3	Capacitance limits	(See appended table 5.2)	N/A
5.2.2.4	Single pulse limits.....	(See appended table 5.2)	N/A
5.2.2.5	Limits for repetitive pulses.....	(See appended table 5.2)	N/A
5.2.2.6	Ringing signals		N/A
5.2.2.7	Audio signals		N/A
5.3	Protection against electrical energy sources		N/A
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards	All hazard component cover on plastic enclosure.	P
5.3.2.2	Contact requirements		N/A
	a) Test with test probe from Annex V		N/A
	b) Electric strength test potential (V)		N/A
	c) Air gap (mm)		N/A
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material	Class III equipment, Functional insulation.	P
5.4.1.3	Humidity conditioning		P
5.4.1.4	Maximum operating temperature for insulating materials	(See appended table 5.4.1.4)	P
5.4.1.5	Pollution degree	Pollution degree 2	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage		N/A
5.4.1.9	Insulating surfaces		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N/A
5.4.1.10.2	Vicat softening temperature		N/A
5.4.1.10.3	Ball pressure		N/A

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5.4.2	Clearances		N/A
5.4.2.2	Determining clearance using peak working voltage		N/A
5.4.2.3	Determining clearance using required withstand voltage	Class III equipment.	N/A
	a) a.c. mains transient voltage		—
	b) d.c. mains transient voltage		—
	c) external circuit transient voltage		—
	d) transient voltage determined by measurement		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test		N/A
5.4.2.5	Multiplication factors for clearances and test voltages		N/A
5.4.3	Creepage distances		N/A
5.4.3.1	General		N/A
5.4.3.3	Material Group		—
5.4.4	Solid insulation		N/A
5.4.4.2	Minimum distance through insulation		N/A
5.4.4.3	Insulation compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Cemented joints		N/A
5.4.4.6	Thin sheet material		N/A
5.4.4.6.1	General requirements		N/A
5.4.4.6.2	Separable thin sheet material		N/A
	Number of layers (pcs)		N/A
5.4.4.6.3	Non-separable thin sheet material		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		N/A
5.4.4.9	Solid insulation at frequencies >30 kHz		N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
	Insulation resistance (MΩ)		—
5.4.6	Insulation of internal wire as part of supplementary safeguard		N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		N/A

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	Relative humidity (%)		–
	Temperature (°C)		–
	Duration (h)		–
5.4.9	Electric strength test	Class III equipment	N/A
5.4.9.1	Test procedure for a solid insulation type test		N/A
5.4.9.2	Test procedure for routine tests		N/A
5.4.10	Protection against transient voltages between external circuit		N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test.....		N/A
5.4.10.2.3	Steady-state test		N/A
5.4.11	Insulation between external circuits and earthed circuitry.....		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	Rated operating voltage U_{op} (V)		–
	Nominal voltage U_{peak} (V)		–
	Max increase due to variation U_{sp}		–
	Max increase due to ageing ΔU_{sa}		–
	$U_{op} = U_{peak} + \Delta U_{sp} + \Delta U_{sa}$		–
5.5	Components as safeguards		
5.5.1	General		N/A
5.5.2	Capacitors and RC units	Class III equipment.	N/A
5.5.2.1	General requirement		N/A
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector	Class III equipemnt.	N/A
5.5.3	Transformers		N/A
5.5.4	Optocouplers		N/A
5.5.5	Relays		N/A
5.5.6	Resistors		N/A
5.5.7	SPD's		N/A
5.5.7.1	Use of an SPD connected to reliable earthing		N/A
5.5.7.2	Use of an SPD between mains and protective earth		N/A

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5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable	(See Annex G.10.3)	N/A
5.6	Protective conductor		N/A
5.6.2	Requirement for protective conductors		N/A
5.6.2.1	General requirements		N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirement for protective earthing conductors		N/A
	Protective earthing conductor size (mm ²)		—
5.6.4	Requirement for protective bonding conductors		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm ²).....		—
	Protective current rating (A)		—
5.6.4.3	Current limiting and overcurrent protective devices		N/A
5.6.5	Terminals for protective conductors		N/A
5.6.5.1	Requirement		N/A
	Conductor size (mm ²), nominal thread diameter (mm).		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method Resistance (Ω)		N/A
5.6.7	Reliable earthing		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		N/A
5.7.2	Measuring devices and networks		N/A
5.7.2.1	Measurement of touch current.....		N/A
5.7.2.2	Measurement of prospective touch voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections		N/A
	System of interconnected equipment (separate connections/single connection).....		—
	Multiple connections to mains (one connection at a time/simultaneous connections)		—
5.7.4	Earthed conductive accessible parts	(See appended Table 5.7.4)	N/A
5.7.5	Protective conductor current		N/A
	Supply Voltage (V)		—
	Measured current (mA)		—
	Instructional Safeguard	(See F.4 and F.5)	N/A
5.7.6	Prospective touch voltage and touch current due to external circuits		N/A

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5.7.6.1	Touch current from coaxial cables		N/A
5.7.6.2	Prospective touch voltage and touch current from external circuits		N/A
5.7.7	Summation of touch currents from external circuits		N/A
	a) Equipment with earthed external circuits Measured current (mA) :		N/A
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA) :		N/A

6	ELECTRICALLY- CAUSED FIRE		P
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		P
6.2.2	Power source circuit classifications	No parts at hazardous energy level in operator access area.	P
6.2.2.1	General		P
6.2.2.2	Power measurement for worst-case load fault.... :		P
6.2.2.3	Power measurement for worst-case power source fault..... :		P
6.2.2.4	PS1 :	Internal circuit	P
6.2.2.5	PS2 :	No such circuit	N/A
6.2.2.6	PS3 :	No such circuit	N/A
6.2.3	Classification of potential ignition sources		N/A
6.2.3.1	Arcing PIS :		N/A
6.2.3.2	Resistive PIS :		N/A
6.3	Safeguards against fire under normal operating and abnormal operating conditions		N/A
6.3.1 (a)	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials :		N/A
6.3.1 (b)	Combustible materials outside fire enclosure		N/A
6.4	Safeguards against fire under single fault conditions		N/A
6.4.1	Safeguard Method	Materials with suitable flammability classes are used.	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		P
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	General		N/A
6.4.3.2	Supplementary Safeguards		N/A
	Special conditions if conductors on printed boards are opened or peeled		N/A
6.4.3.3	Single Fault Conditions :		N/A

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	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		P
6.4.5	Control of fire spread in PS2 circuits		N/A
6.4.5.2	Supplementary safeguards	(See appended tables 4.1.2 and Annex G)	N/A
6.4.6	Control of fire spread in PS3 circuit		N/A
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.1	General		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers	Build-in component, to be evaluated in the end product.	N/A
6.4.8.1	Fire enclosure and fire barrier material properties	Build-in component, to be evaluated in the end product.	N/A
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure	Build-in component, to be evaluated in the end product.	N/A
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N/A
6.4.8.3.1	Fire enclosure and fire barrier openings	Build-in component, to be evaluated in the end product.	N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm)	Build-in component, to be evaluated in the end product.	N/A
	Needle Flame test		N/A
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm)	Build-in component, to be evaluated in the end product.	N/A
	Flammability tests for the bottom of a fire enclosure		N/A
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c).....		N/A
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating	Build-in component, to be evaluated in the end product.	N/A
6.5	Internal and external wiring		P
6.5.1	Requirements	Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltage involved.	P
6.5.2	Cross-sectional area (mm ²)		—
6.5.3	Requirements for interconnection to building wiring		N/A
6.6	Safeguards against fire due to connection to additional equipment		N/A

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	External port limited to PS2 or complies with Clause Q.1		N/A
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7	INJURY CAUSED BY HAZARDOUS SUBSTANCES		N/A
7.2	Reduction of exposure to hazardous substances	Equipment intended use not considered to be exposed to these.	N/A
7.3	Ozone exposure		N/A
7.4	Use of personal safeguards (PPE)		N/A
	Personal safeguards and instructions..... :		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010) :		—
7.6	Batteries.....:		N/A

8	MECHANICALLY-CAUSED INJURY		N/A
8.1	General	No moving parts.	N/A
8.2	Mechanical energy source classifications		N/A
8.3	Safeguards against mechanical energy sources		N/A
8.4	Safeguards against parts with sharp edges and corners	Build-in component, to be evaluated in the end product.	N/A
8.4.1	Safeguards	MS1	N/A
8.5	Safeguards against moving parts	No moving parts	N/A
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
8.5.2	Instructional Safeguard :		—
8.5.4	Special categories of equipment comprising moving parts		N/A
8.5.4.1	Large data storage equipment		N/A
8.5.4.2	Equipment having electromechanical device for destruction of media		N/A
8.5.4.2.1	Safeguards and Safety Interlocks.....:		N/A
8.5.4.2.2	Instructional safeguards against moving parts		N/A
	Instructional Safeguard :		—
8.5.4.2.3	Disconnection from the supply		N/A
8.5.4.2.4	Probe type and force (N).....:		N/A
8.5.5	High Pressure Lamps		N/A
8.5.5.1	Energy Source Classification		N/A
8.5.5.2	High Pressure Lamp Explosion Test.....:	No lamps.	N/A
8.6	Stability	No stability requirements	N/A

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8.6.1	Product classification		N/A
	Instructional Safeguard		—
8.6.2	Static stability		N/A
8.6.2.2	Static stability test		N/A
	Applied Force		—
8.6.2.3	Downward Force Test		N/A
8.6.3	Relocation stability test		N/A
	Unit configuration during 10° tilt		—
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test (Applied Force)		N/A
	Position of feet or movable parts		—
8.7	Equipment mounted to wall or ceiling		N/A
8.7.1	Mounting Means (Length of screws (mm) and mounting surface)		N/A
8.7.2	Direction and applied force		N/A
8.8	Handles strength	No knobs, grips, handles, lever etc.	N/A
8.8.1	Classification		N/A
8.8.2	Applied Force		N/A
8.9	Wheels or casters attachment requirements		N/A
8.9.1	Classification		N/A
8.9.2	Applied force		—
8.10	Carts, stands and similar carriers		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A
	Instructional Safeguard		—
8.10.3	Cart, stand or carrier loading test and compliance		N/A
	Applied force		—
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Applied horizontal force (N)		—
8.10.6	Thermoplastic temperature stability (°C)		N/A
8.11	Mounting means for rack mounted equipment		N/A
8.11.1	General		N/A
8.11.2	Product Classification		N/A
8.11.3	Mechanical strength test, variable <i>N</i>		N/A
8.11.4	Mechanical strength test 250N, including end stops		N/A
8.12	Telescoping or rod antennas	(See Annex T)	N/A

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	Button/Ball diameter (mm)		—
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9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications	TS1 for Accessible surfaces.	P
9.3	Safeguard against thermal energy sources		N/A
9.4	Requirements for safeguards		P
9.4.1	Equipment safeguard		P
9.4.2	Instructional safeguard		P

10	RADIATION		P
10.2	Radiation energy source classification	RS1: LED indicator	P
10.2.1	General classification		N/A
10.3	Protection against laser radiation		N/A
	Laser radiation that exists equipment:		—
	Normal, abnormal, single-fault		N/A
	Instructional safeguard		—
	Tool		—
10.4	Protection against visible, infrared, and UV radiation		N/A
10.4.1	General		N/A
10.4.1. a)	RS3 for Ordinary and instructed persons		N/A
10.4.1. b)	RS3 accessible to a skilled person		N/A
	Personal safeguard (PPE) instructional safeguard		—
10.4.1. c)	Equipment visible, IR, UV does not exceed RS1		N/A
10.4.1. d)	Normal, abnormal, single-fault conditions		N/A
10.4.1. e)	Enclosure material employed as safeguard is opaque		N/A
10.4.1. f)	UV attenuation		N/A
10.4.1. g)	Materials resistant to degradation UV		N/A
10.4.1. h)	Enclosure containment of optical radiation		N/A
10.4.1. i)	Exempt Group under normal operating conditions		N/A
10.4.2	Instructional safeguard		N/A

10.5	Protection against x-radiation		N/A
10.5.1	X- radiation energy source that exists equipment :		N/A
	Normal, abnormal, single fault conditions		N/A
	Equipment safeguards..... :		N/A
	Instructional safeguard for skilled person :		N/A
10.5.3	Most unfavourable supply voltage to give maximum radiation :		—
	Abnormal and single-fault condition..... :		N/A
	Maximum radiation (pA/kg)..... :		N/A
10.6	Protection against acoustic energy sources		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output, dB(A) :		N/A
	Output voltage, unweighted r.m.s. :		N/A
10.6.4	Protection of persons		N/A
	Instructional safeguards..... :		N/A
	Equipment safeguard prevent ordinary person to RS2 :		—
	Means to actively inform user of increase sound pressure :		—
	Equipment safeguard prevent ordinary person to RS2..... :		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 dB(A) L_{Aeq} acoustic pressure output :		—
10.6.5.2	Corded listening devices with digital input		N/A
	Maximum dB(A) :		—
10.6.5.3	Cordless listening device		N/A
	Maximum dB(A) :		—

B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		P
B.2	Normal Operating Conditions		P
B.2.1	General requirements :	(See Test Item Particulars and appended test tables)	P

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	Audio Amplifiers and equipment with audio amplifiers.....:		N/A
B.2.3	Supply voltage and tolerances		P
B.2.5	Input test	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General requirements		N/A
B.3.2	Covering of ventilation openings		N/A
B.3.3	D.C. mains polarity test		N/A
B.3.4	Setting of voltage selector	No such parts	N/A
B.3.5	Maximum load at output terminals		N/A
B.3.6	Reverse battery polarity		N/A
B.3.7	Abnormal operating conditions as specified in Clause E.2.		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions		N/A
B.4	Simulated single fault conditions		N/A
B.4.2	Temperature controlling device open or short-circuited.....:		N/A
B.4.3	Motor tests		N/A
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature		N/A
B.4.4	Short circuit of functional insulation		N/A
B.4.4.1	Short circuit of clearances for functional insulation		N/A
B.4.4.2	Short circuit of creepage distances for functional insulation		N/A
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors		N/A
B.4.6	Short circuit or disconnect of passive components		N/A
B.4.7	Continuous operation of components		N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions		N/A
B.4.9	Battery charging under single fault conditions.....:		N/A
C	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus		N/A

C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure apparatus		N/A
C.2.4	Xenon-arc light exposure apparatus		N/A
D	TEST GENERATORS		N/A
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A
E	TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS		N/A
E.1	Audio amplifier normal operating conditions		N/A
	Audio signal voltage (V)		—
	Rated load impedance (Ω)		
E.2	Audio amplifier abnormal operating conditions		N/A
F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		P
F.1	General requirements		P
	Instructions – Language	English	—
F.2	Letter symbols and graphical symbols	See General product information - Markings and Instructions.	P
F.2.1	Letter symbols according to IEC60027-1		P
F.2.2	Graphic symbols IEC, ISO or manufacturer specific		P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	The required marking is not placed on removable parts.	P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification	See marking plate	—
F.3.2.2	Model identification	See marking plate	—
F.3.3	Equipment rating markings		P
F.3.3.1	Equipment with direct connection to mains		P
F.3.3.2	Equipment without direct connection to mains		N/A
F.3.3.3	Nature of supply voltage.....	See marking plate	—
F.3.3.4	Rated voltage	See marking plate	—
F.3.3.4	Rated frequency.....	See marking plate	—
F.3.3.6	Rated current or rated power	See marking plate	—
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Terminals and operating devices		N/A
F.3.5.1	Mains appliance outlet and socket-outlet markings		N/A

F.3.5.2	Switch position identification marking		N/A
F.3.5.3	Replacement fuse identification and rating markings.....		N/A
F.3.5.4	Replacement battery identification marking		N/A
F.3.5.5	Terminal marking location		N/A
F.3.6	Equipment markings related to equipment classification		N/A
F.3.6.1	Class I Equipment		N/A
F.3.6.1.1	Protective earthing conductor terminal		N/A
F.3.6.1.2	Neutral conductor terminal		N/A
F.3.6.1.3	Protective bonding conductor terminals		N/A
F.3.6.2	Class II equipment (IEC60417-5172)		N/A
F.3.6.2.1	Class II equipment with or without functional earth		N/A
F.3.6.2.2	Class II equipment with functional earth terminal marking		N/A
F.3.7	Equipment IP rating marking		—
F.3.8	External power supply output marking		N/A
F.3.9	Durability, legibility and permanence of marking	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 sec. and then rubbed with cloth soaked with HEXANE for 15 sec. After test, the marking is readable.	P
F.3.10	Test for permanence of markings		P
F.4	Instructions		N/A
	a) Equipment for use in locations where children not likely to be present - marking		N/A
	b) Instructions given for installation or initial use		P
	c) Equipment intended to be fastened in place		N/A
	d) Equipment intended for use only in restricted access area		N/A
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1		N/A
	f) Protective earthing employed as safeguard		N/A
	g) Protective earthing conductor current exceeding ES 2 limits		N/A
	h) Symbols used on equipment		P
	i) Permanently connected equipment not provided with all-pole mains switch		N/A
j)	j) Replaceable components or modules providing safeguard function		N/A

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F.5	Instructional safeguards		N/A
	Where "instructional safeguard" is referenced in the test report it specifies the required elements, location of marking and/or instruction		N/A
G	COMPONENTS		P
G.1	Switches		N/A
G.1.1	General requirements		N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.2	Relays		N/A
G.2.1	General requirements		N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supply power		N/A
G.2.4	Mains relay, modified as stated in G.2		N/A
G.3	Protection Devices		P
G.3.1	Thermal cut-offs		N/A
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Thermal cut-off connections maintained and secure		N/A
G.3.2	Thermal links		N/A
G.3.2.1a)	Thermal links separately tested with IEC 60691		N/A
G.3.2.1b)	Thermal links tested as part of the equipment		N/A
	Aging hours (H)		—
	Single Fault Condition		—
	Test Voltage (V) and Insulation Resistance (Ω)..		—
G.3.3	PTC Thermistors		N/A
G.3.4	Overcurrent protection devices		N/A
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions	(See appended Table B.4)	N/A
G.4	Connectors		N/A
G.4.1	Spacings		N/A
G.4.2	Mains connector configuration		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N/A
G.5	Wound Components		N/A
G.5.1	Wire insulation in wound components		N/A

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G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°		N/A
G.5.1.2 b)	Construction subject to routine testing		N/A
G.5.2	Endurance test on wound components		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Time (s)..... :		—
	Temperature (°C)..... :		—
G.5.2.3	Wound Components supplied by mains		N/A
G.5.3	Transformers		N/A
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1)..... :		N/A
	Position..... :		—
	Method of protection :		—
G.5.3.2	Insulation		N/A
	Protection from displacement of windings :		—
G.5.3.3	Overload test..... :		N/A
G.5.3.3.1	Test conditions		N/A
G.5.3.3.2	Winding Temperatures testing in the unit		N/A
G.5.3.3.3	Winding Temperatures - Alternative test method		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements		N/A
	Position :		—
G.5.4.2	Test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days) :		—
G.5.4.5	Running overload test for d.c. motors in secondary circuits		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test (V)..... :		—
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h) :		N/A
	Electric strength test (V)..... :		—
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature :		N/A

	Electric strength test (V)		N/A
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h)		N/A
	Electric strength test (V)		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage		—
G.6	Wire Insulation		N/A
G.6.1	General		N/A
G.6.2	Solvent-based enamel wiring insulation		N/A
G.7	Mains supply cords		N/A
G.7.1	General requirements		N/A
	Type		—
	Rated current (A)		—
	Cross-sectional area (mm ²), (AWG)		—
G.7.2	Compliance and test method		N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N)		—
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm) ...		—
G.7.3.2.4	Strain relief comprised of polymeric material		N/A
G.7.4	Cord Entry	(See appended table 5.4.11.1)	N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Mass (g)		—
	Diameter (m)		—
	Temperature (°C)		—
G.7.6	Supply wiring space		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Test with 8 mm strand		N/A
G.8	Varistors		N/A
G.8.1	General requirements		N/A
G.8.2	Safeguard against shock		N/A
G.8.3	Safeguard against fire		N/A

G.8.3.2	Varistor overload test	(See appended table B.3)	N/A
G.8.3.3	Temporary overvoltage	(See appended table B.3)	N/A
G.9	Integrated Circuit (IC) Current Limiters		N/A
G.9.1 a)	Manufacturer defines limit at max. 5A.		N/A
G.9.1 b)	Limiters do not have manual operator or reset		N/A
G.9.1 c)	Supply source does not exceed 250 VA		—
G.9.1 d)	IC limiter output current (max. 5A)		—
G.9.1 e)	Manufacturers' defined drift		—
G.9.2	Test Program 1		N/A
G.9.3	Test Program 2		N/A
G.9.4	Test Program 3		N/A
G.10	Resistors		N/A
G.10.1	General requirements		N/A
G.10.2	Resistor test		N/A
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable		N/A
G.10.3.1	General requirements		N/A
G.10.3.2	Voltage surge test		N/A
G.10.3.3	Impulse test		N/A
G.11	Capacitor and RC units		N/A
G.11.1	General requirements		N/A
G.11.2	Conditioning of capacitors and RC units		N/A
G.11.3	Rules for selecting capacitors		N/A
G.12	Optocouplers		N/A
	Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results).....		N/A
	Type test voltage Vini		—
	Routine test voltage, Vini,b		—
G.13	Printed boards		P
G.13.1	General requirements		P
G.13.2	Uncoated printed boards		P
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
	Compliance with cemented joint requirements (Specify construction).....		—
G.13.5	Insulation between conductors on different surfaces		N/A

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	Distance through insulation.....:		N/A
	Number of insulation layers (pcs)		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2 a)	Thermal conditioning		N/A
G.13.6.2 b)	Electric strength test		N/A
G.13.6.2 c)	Abrasion resistance test		N/A
G.14	Coating on components terminals		N/A
G.14.1	Requirements	(See G.13)	N/A
G.15	Liquid filled components		N/A
G.15.1	General requirements		N/A
G.15.2	Requirements		N/A
G.15.3	Compliance and test methods		N/A
G.15.3.1	Hydrostatic pressure test		N/A
G.15.3.2	Creep resistance test		N/A
G.15.3.3	Tubing and fittings compatibility test		N/A
G.15.3.4	Vibration test		N/A
G.15.3.5	Thermal cycling test		N/A
G.15.3.6	Force test		N/A
G.15.4	Compliance		N/A
G.16	IC including capacitor discharge function (ICX)		N/A
a)	Humidity treatment in accordance with sc5.4.8 – 120 hours		N/A
b)	Impulse test using circuit 2 with $U_c =$ to transient voltage		N/A
C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes		N/A
C2)	Test voltage		—
D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer		N/A
D2)	Capacitance		—
D3)	Resistance		—
H	CRITERIA FOR TELEPHONE RINGING SIGNALS		N/A
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A

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H.3.1	Ringin signal		N/A
H.3.1.1	Frequency (Hz)		—
H.3.1.2	Voltage (V)		—
H.3.1.3	Cadence; time (s) and voltage (V)		—
H.3.1.4	Single fault current (mA):		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)		—
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		N/A
	General requirements	(See separate test report)	N/A
K	SAFETY INTERLOCKS		N/A
K.1	General requirements		N/A
K.2	Components of safety interlock safeguard mechanism	(See Annex G)	N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
	Compliance	(See appended table B.4)	N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Compliance and Test method		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location)		N/A
K.7.2	Overload test, Current (A)		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test	(See appended table 5.4.11)	N/A
L	DISCONNECT DEVICES		
L.1	General requirements		N/A
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized		N/A
L.4	Single phase equipment		N/A
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices		N/A
L.7	Plugs as disconnect devices		N/A
L.8	Multiple power sources		N/A

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M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		N/A
M.1	General requirements		N/A
M.2	Safety of batteries and their cells		N/A
M.2.1	Requirements		N/A
M.2.2	Compliance and test method (identify method) .. :		N/A
M.3	Protection circuits		N/A
M.3.1	Requirements		N/A
M.3.2	Tests		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
	- Excessive discharging rate for any battery		N/A
M.3.3	Compliance	(See appended Tables and Annex M and M.4)	N/A
M.4	Additional safeguards for equipment containing secondary lithium battery		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Charging operating limits		N/A
M.4.2.2a)	Charging voltage, current and temperature	(See Table M.4)	—
M.4.2.2 b)	Single faults in charging circuitry.....	(See Annex B.4)	—
M.4.3	Fire Enclosure		N/A
M.4.4	Endurance of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation		N/A
M.4.4.3	Drop and charge/discharge function tests		N/A
	Drop		N/A
	Charge		N/A
	Discharge		N/A
M.4.4.4	Charge-discharge cycle test		N/A
M.4.4.5	Result of charge-discharge cycle test		N/A
M.5	Risk of burn due to short circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Compliance and Test Method (Test of P.2.3)		N/A
M.6	Prevention of short circuits and protection from other effects of electric current		N/A
M.6.1	Short circuits		N/A

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M.6.1.1	General requirements		N/A
M.6.1.2	Test method to simulate an internal fault		N/A
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method)		N/A
M.6.2	Leakage current (mA)		N/A
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
M.7.2	Compliance and test method		N/A
M.8	Protection against internal ignition from external spark sources of lead acid batteries		N/A
M.8.1	General requirements		N/A
M.8.2	Test method		N/A
M.8.2.1	General requirements		N/A
M.8.2.2	Estimation of hypothetical volume V_z (m ³ /s).....		—
M.8.2.3	Correction factors.....		—
M.8.2.4	Calculation of distance d (mm)		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing)		N/A
N	ELECTROCHEMICAL POTENTIALS		N/A
	Metal(s) used	Pollution degree considered	—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		N/A
	Figures O.1 to O.20 of this Annex applied		—
P	SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS		P
P.1	General requirements	No openings.	P
P.2.2	Safeguards against entry of foreign object		P
	Location and Dimensions (mm)	No openings	—
P.2.3	Safeguard against the consequences of entry of foreign object		N/A
P.2.3.1	Safeguards against the entry of a foreign object		N/A
	Openings in transportable equipment		N/A
	Transportable equipment with metalized plastic parts		N/A

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P.2.3.2	Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard)		N/A
P.3	Safeguards against spillage of internal liquids	Equipment intended use not considered to be exposed to these.	N/A
P.3.1	General requirements	No container for liquid or gas.	N/A
P.3.2	Determination of spillage consequences	No flammable liquid.	N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Safeguards effectiveness		N/A
P.4	Metallized coatings and adhesive securing parts		N/A
P.4.2 a)	Conditioning testing		N/A
	Tc (°C).....		—
	Tr (°C)		—
	Ta (°C)		—
P.4.2 b)	Abrasion testing	(See G.13.6.2)	N/A
P.4.2 c)	Mechanical strength testing	(See Annex T)	N/A
Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		N/A
Q.1	Limited power sources		N/A
Q.1.1 a)	Inherently limited output		N/A
Q.1.1 b)	Impedance limited output		N/A
	- Regulating network limited output under normal operating and simulated single fault condition		N/A
Q.1.1 c)	Overcurrent protective device limited output		N/A
Q.1.1 d)	IC current limiter complying with G.9		N/A
Q.1.2	Compliance and test method		N/A
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A)		—
	Current limiting method.....		—
R	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General requirements		N/A
R.2	Determination of the overcurrent protective device and circuit		N/A
R.3	Test method Supply voltage (V) and short-circuit current (A).		N/A
S	TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W	Approved materials used	N/A
	Samples, material		—

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	Wall thickness (mm)		—
	Conditioning (°C).....		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (°C).....		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	Test specimen does not show any additional hole		N/A
S.3	Flammability test for the bottom of a fire enclosure		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Cheesecloth did not ignite		N/A
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (test condition), (°C)		—
	Test flame according to IEC 60695-11-20 with conditions as set out		N/A
	After every test specimen was not consumed completely		N/A
	After fifth flame application, flame extinguished within 1 min		N/A
T	MECHANICAL STRENGTH TESTS		P
T.1	General requirements	As there are no hazardous voltages present in the unit or other hazards foreseeable, the tests of these clauses were not performed but replaced by a construction review only.	P
T.2	Steady force test, 10 N		N/A
T.3	Steady force test, 30 N		N/A

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T.4	Steady force test, 100 N		N/A
T.5	Steady force test, 250 N		N/A
T.6	Enclosure impact test		N/A
	Fall test		N/A
	Swing test		N/A
T.7	Drop test		N/A
T.8	Stress relief test	78 °C / 7 hours without softening and dangerous	P
T.9	Impact Test (glass)		N/A
T.9.1	General requirements		N/A
T.9.2	Impact test and compliance		N/A
	Impact energy (J)		–
	Height (m).....		–
T.10	Glass fragmentation test.....	(See sub-clause 4.4.4.9)	N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm)		–
U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N/A
U.1	General requirements		N/A
U.2	Compliance and test method for non-intrinsically protected CRTs		N/A
U.3	Protective Screen	(See Annex T)	N/A
V	DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)		N/A
V.1	Accessible parts of equipment		N/A
V.2	Accessible part criterion		N/A

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4.1.2	TABLE: List of critical components					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹	
External power source (Optional)	Interchangeable	Interchangeable	O/P: DC 12/24V, 2.0A maximum	IEC/EN60950- 1	CE or TUV or Nemko or Semko	
Enclosure	Interchangeable	Interchangeable	V-1 minimum, 70 °C minimum, 1.0mm thickness minimum.	UL 94	UL	
PCB	Interchangeable	Interchangeable	V-1 minimum, 105 °C.	UL 94, UL796	UL	
Note(s):						

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5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements						P	
	Supply voltage (V):		DC 12V		DC 24V		—	
	Ambient T _{min} (°C):		--				—	
	Ambient T _{max} (°C):		--				—	
	Tma (°C):		--				—	
Maximum measured temperature T of part/at:			T (°C)			Allowed T _{max} (°C)		
PCB NEAR U703			95.7		102.1		105	
PCB NEAR U101			75.6		81.5		105	
PCB NEAR U500			87.4		93.4		105	
XT1201 COIL			85.6		91.8		130	
ENCLOSURE INSIDE			65.3		68.0		--	
ENCLOSURE OUTSIDE			64.5		66.9		107 (TS1)	
Max. ambient temperature Tma (°C): Note: ambient air during test were Tamb =22.9°C and 22.3°C			55.0		55.0		--	
Supplementary information:								
Temperature T of winding:		t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class
--		--	--	--	--	--	--	--
Supplementary information:								
Unit specified with maximum of 55°C ambient temperature and above test data was calculated by original test result of ambient temperature above.								
Note 1: Tma should be considered as directed by applicable requirement								
Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)								

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B.2.5		TABLE: Input test						P
U (V)	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status	
12.0	0.309	2.0	3.70	--	--	--	Maximum normal load.	
24.0	0.182	2.0	4.36	--	--	--	Maximum normal load.	
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured								

B.3		TABLE: Abnormal operating condition tests						N/A
Ambient temperature (°C)					--			—
Power source for EUT: Manufacturer, model/type, output rating ..					--			—
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
--	--	--	--	--	--	--	--	--
Supplementary information:								
Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column "Abnormal/Fault." Specify if test condition by indicating "Abnormal" then the condition for a Clause B.3 test or "Single Fault" then the condition for Clause B.4.								

Annex M	TABLE: Batteries								N/A	
The tests of Annex M 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.	
--	--	--	--	--	--	--	--	--	--	
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:										

Annex Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)					P
Note: Measured UOC (V) with all load circuits disconnected:						
Output Circuit	Components	U _{oc} (V)	I _{sc} (A)		S (VA)	
			Meas.	Limit	Meas.	Limit
Date USB connector	Normal	0.0	0.0	8.0	0.0	100
GPS ANT connector	Normal	4.47	0.04	8.0	0.102	100
VHF RADIO connector	Normal	0.0	0.0	8.0	0.0	100
VHF ANT connector	Normal	0.0	0.0	8.0	0.0	100
GPS ANT connector	Normal	0.0	0.0	8.0	0.0	100
- Sc=Short circuit, Oc=Open circuit						

Appendix I - Label

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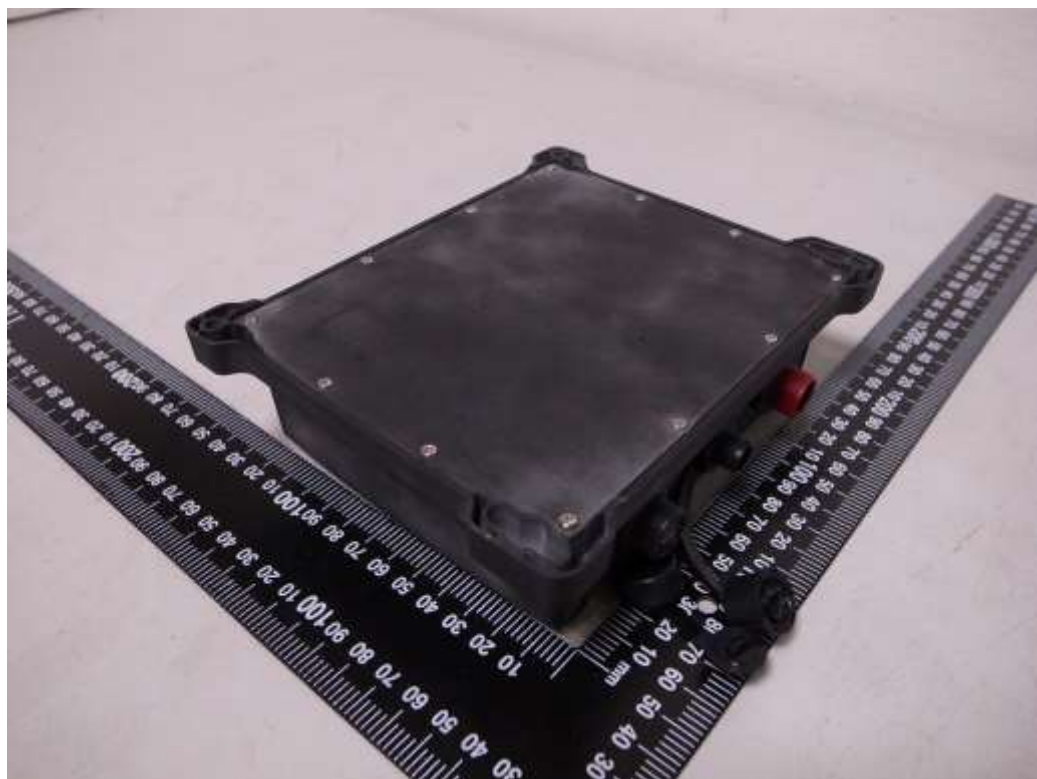
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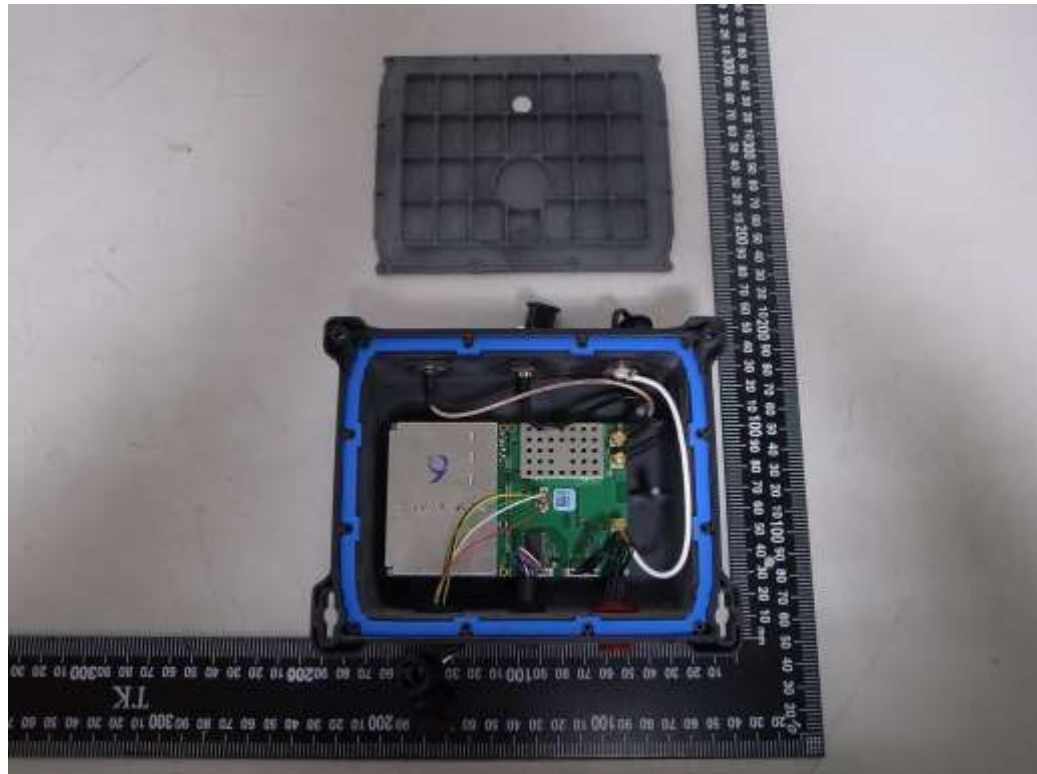
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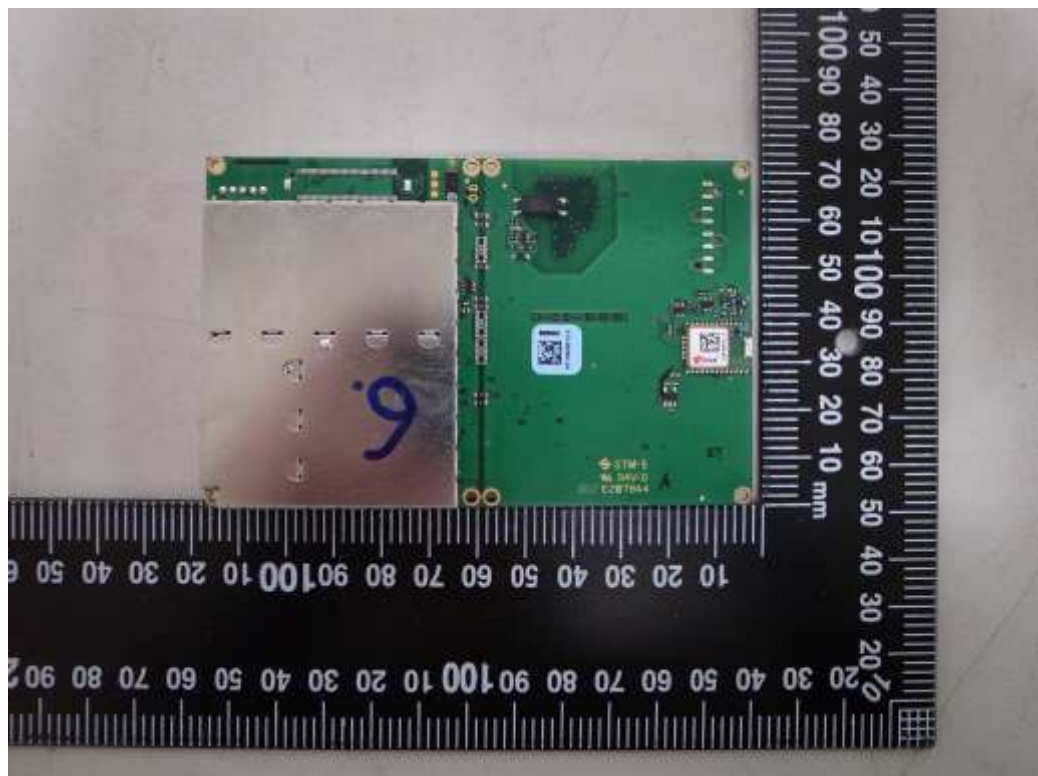
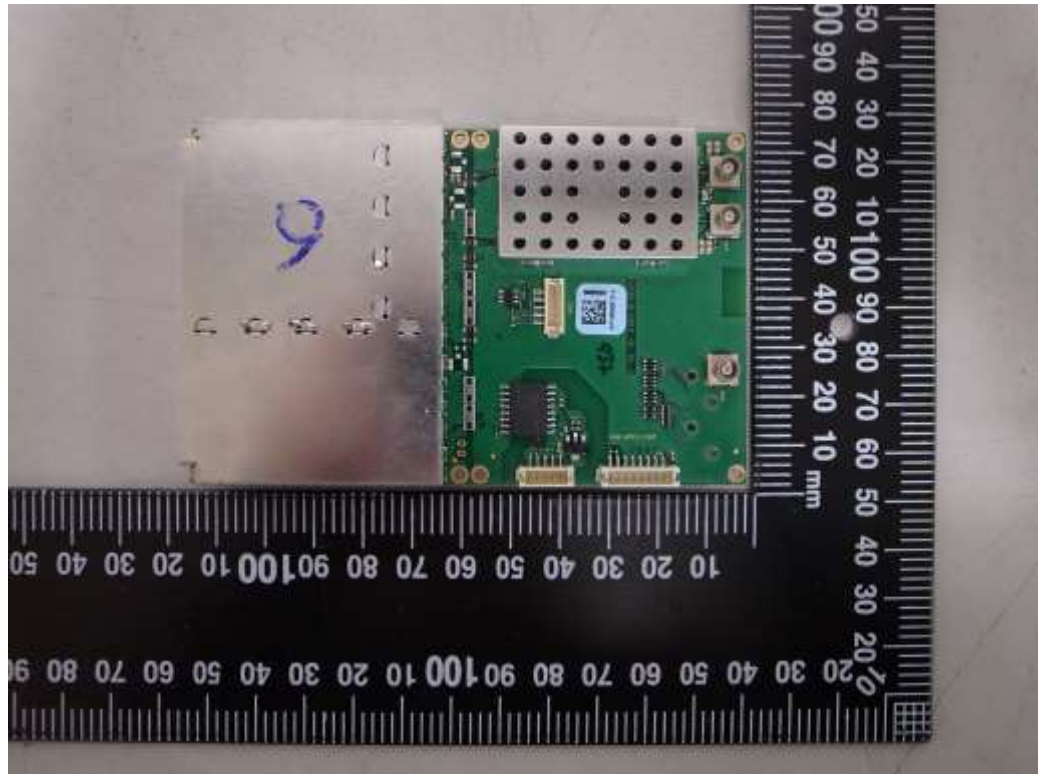
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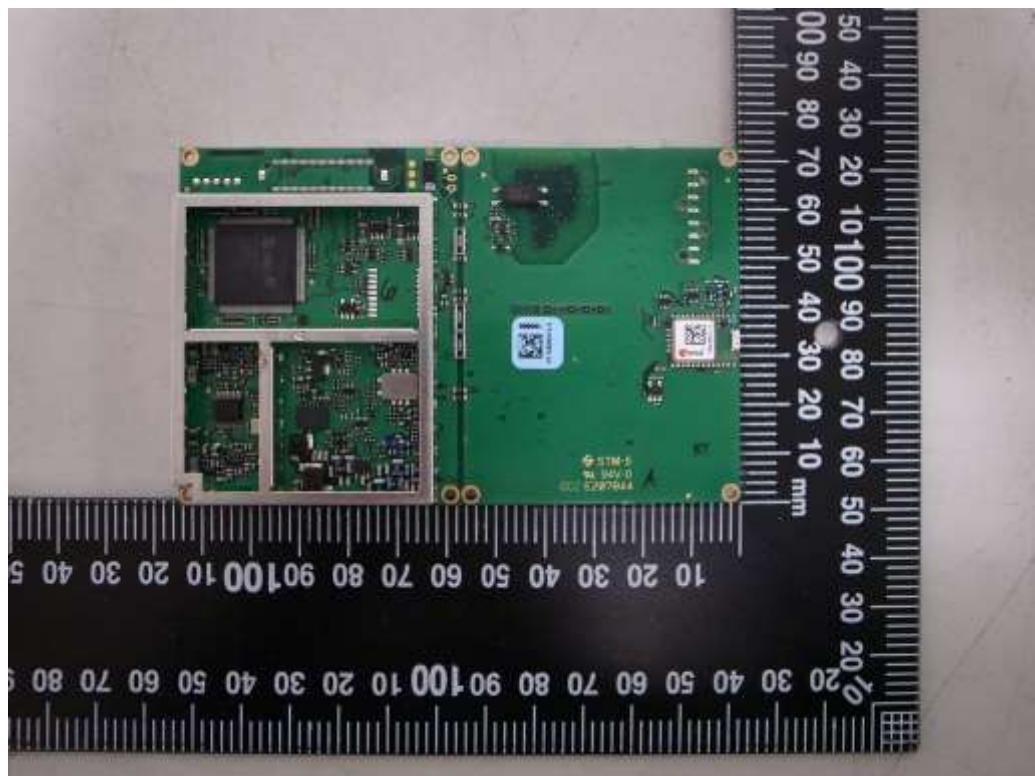
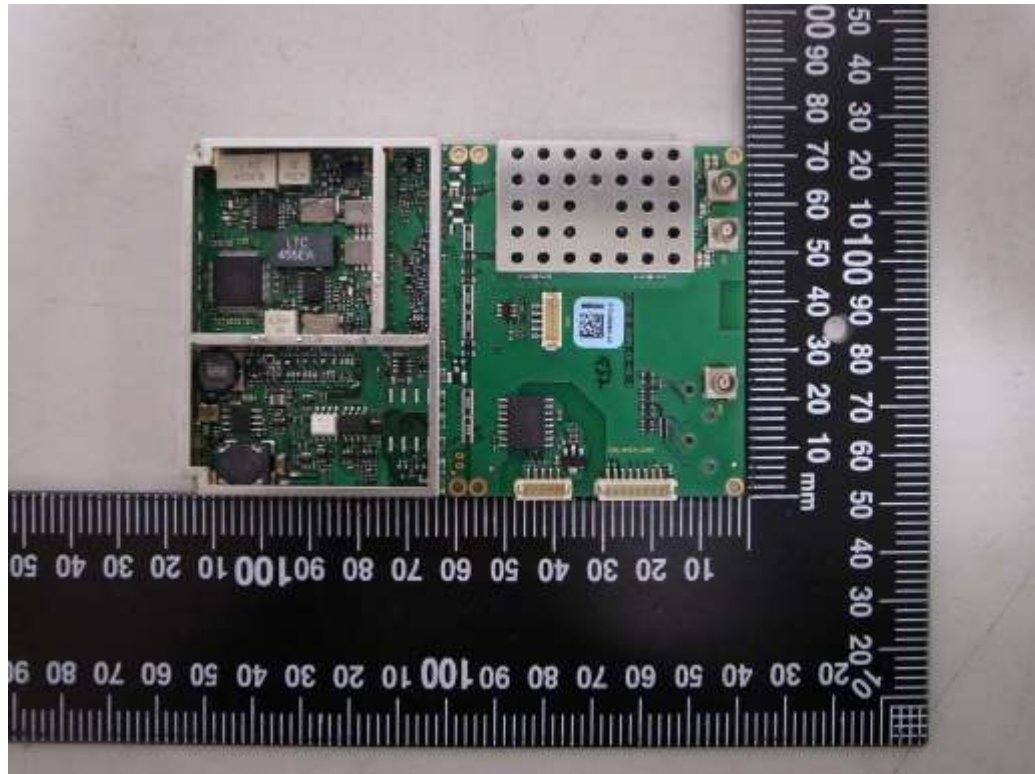
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Appendix III - Instrument list

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TEST INSTRUMENT LIST

Item	No	Serial No.	Instrument	Manufacture	Model	Last Calibration Date	Calibration Due Date		Range	
1	SPSC001	931102	DCA METER	SEW	ST-2000	03/30/2018	03/30/2019	OCL-2411803F30A2L	30A	0.1-0.2
2	SPSC002	931112	DCA METER	SEW	ST-2000	09/01/2017	09/01/2018	OCL-2411709F01W1L	50A	0.1-0.2
3	SPSC003	931105	DCA METER	SEW	ST-2000	09/13/2017	09/13/2018	OCL-2411709T12E1L	50A	0.1-0.2
4	SPSC004	940825	DCA METER	SEW	ST-2000	09/01/2017	09/01/2018	OCL-2411709F01W2L	30A	0.1-0.2
5	SPSC005	940826	DCA METER	SEW	ST-2000	09/01/2017	09/01/2018	OCL-2411709F01W3L	50A	0.1-0.2
6	SPSC006	931107	DCA METER	SEW	ST-2000	09/01/2017	09/01/2018	OCL-2411709F01W4L	30A	0.1-0.2
7	SPSC007	931114	DCA METER	SEW	ST-2000	09/01/2017	09/01/2018	OCL-2411709F01W5L	50A	0.1-0.2
8	SPSC008	368059	Digital Power Meter	Idrc	CP-310	03/30/2018	03/30/2019	OCL-2411803F30A5L	ACV 500V, AC 20A, 2.4kW	----
9	SPSC009	5865141/25	MULTIMETER	FLUKE	45	09/01/2017	09/01/2018	OCL-2411709F01W6L	DCV 1000V, ACV 750V, DC 10A, AC 10A	5 1/2
10	SPSC010	75470787	MULTIMETER	FLUKE	77 III	03/30/2018	03/30/2019	OCL-2411803F30A1L	DCV 1000V, ACV 1000V	3 1/2
11	SPSC011	12WB02879	TEMP. RECORDER" 1"	Yokogawa	DR-240	03/30/2018	03/30/2019	OCL-2411803F30A4L	30ch	2s/all channels
12	SPSC012	MY41019121	TEMP. RECORDER" 2"	Agilent	34970A	07/14/2017	07/14/2018	OCL-2411707M10R1L	0-200°C	6 1/2
13	SPSC013	MY44050079	TEMP. RECORDER" 3"	Agilent	34970A	05/19/2017	05/19/2018	OCL-2411705F19Q3L	0-200°C	6 1/2
14	SPSC014	1557	HI-POT	ASSOCIATED TESTE-A-B-C-7	4045A1	05/09/2018	05/09/2019	OCL-2411805T08E1L	ACV/DCV 5kV	100V AC/DC
15	SPSC015	20562	LEAKAGE CURRENT	SIMPSON	228	05/09/2018	05/09/2019	OCL-2411805T08E2L	AC 10A, DC 10mA	----
16	SPSC016	18020	Watt/Harmonic	Elcontrol Nanovip Plus	----	08/04/2017	08/04/2018	OCL-2411708F04H1L	ACV 520V, AC 100A, 6kW, 1kHz	----
17	SPSC017	04810L.T	Milliohm Meter	Twintex	TM-8088	09/13/2017	09/13/2018	OCL-2411709T12E2L	20mΩ / 200mΩ / 2Ω / 20Ω / 200Ω / 2KΩ / 20KΩ	0.01mΩ / 0.1mΩ / 1mΩ / 0.01Ω / 0.1Ω / 0.001KΩ / 0.01KΩ
18	SPSC018	EK03100101	Champer	HOLINK	H-TH-2SP-CH	01/22/2018	01/22/2019	OCL-2411801M22A1L	-40~150°C /20~98%Rh	0.1°C/0.1% RH.
19	SPSC019	16348	PULL-PUCH	CHATILLON	DPP-25kg	07/14/2017	07/14/2018	OTT-2411707M10B1L	25kg	----
20	SPSC020	SPSC020	Timer	Trn Horses	TH-010	07/10/2017	07/10/2018	T2707070501	60sec-24hrs	1sec
21	SPSC021	20805	Ball Pressure Test	ED&D	BPT-01	02/06/2018	02/05/2021	OCL-2411802M05G2L	20N, R 2.5mm	---
22	SPSC022	20806	Test Finger Probe	ED&D	TFP-01	05/19/2017	05/19/2018	OCL-2411705F19C1L	---	---
23	SPSC023	----	Test pin	辰輝	----	02/06/2018	02/05/2021	OTT-2411802M05H3L	---	---
24	SPSC024	3054768	Caliper	Mitutoyo	500-196	05/19/2017	05/19/2018	OCL-2411705F19Q4L	150mm	0.01mm
25	SPSC025	----	Angle Finder	Level	----	12/07/2016	12/07/2019	OCL-2411612T06G1	90°	1°
26	SPSC026	MY04139	Weight Meter	Jen Lung	MTW-150	12/05/2017	12/05/2018	OCL-2411712T05C1L	150kg	0.01kg
27	SPSC027	---	STEEL BALL	---	----	02/06/2018	02/05/2021	OCL-2411802M05G3L	0.5kg	---
29	SPSC029	80802557	Thmometer & ygrometer	TES	1366	03/30/2018	03/30/2019	OCL-2411803F30A3L	1-99%RH, -20~+60°C	0.1% • 0.1°
30	SPSC030	931117	ACA METER	SEW	ST-2000	12/14/2017	12/14/2018	OCL-2411712W13F1	50A	0.1-0.2
31	SPSC031	BT30048	FREQUENCY CONVERTER	BOARD-TECH	BFA-100-10	12/05/2017	12/05/2018	OCL-2411712T05C2L	AC 110/220V, 50/60Hz	0.1
32	SPSC032	46XE0282	TEMP. RECORDER" 4"	YOKOGAWA	uR -1000	01/11/2018	01/11/2019	OCL-2411801W10A1L	6CH, -50°C ~ +1000°C	0.1°
33	SPSC033	80720339	Electronic Load	Prodigit	3312	01/11/2018	01/11/2019	OCL-2411801W10A2L	250V/10A,300W	---
34	SPSC034	2597	Vibration	Vibration Source	VS-5060L	06/05/2017	06/05/2018	OCL-2411706M05F1L	10Hz ~ 100 Hz; 振幅 0.35mm	0.05mm
35	SPSC035	100217927	Humidity Temp. Meter	TES	TES-1361C	09/13/2017	09/13/2018	OCL-2411709T12E3L	10-95%RH, -20~+60°C	0.1% • 0.1°
36	SPSC036	122	Comparator	Finescale	---	09/02/2016	09/02/2019	OCL-2411609F02E7	1.0mm, 1.5mm, 2.0mm, 2.5mm	0.1mm
37	SPSC037	46168928	Micrometer	MITUTOYO	103-137	02/06/2018	02/05/2021	OCL-2411802M05G1L	0-25mm	0.001mm
38	SPSC038	2005010512	Glow-wire	---	ZRS-2	06/05/2017	06/05/2018	OCL-2411706M05F2L	0°C ~ 960°C	1°
39	SPSC039	NPSC003	Digital Oscilloscope	LECROY/ MAVIN	9354C/ CP-3308R	07/28/2017	07/28/2018	OCL-2411707F2801	垂直 2m-S(V/DIV), 水平10m-S(s/DIV)	水準±0.01%
40	SPSC040	MY44012593	TEMP. RECORDER" 6"	Agilent	34970A	03/09/2018	03/09/2019	OCL-2411803F09A1L	40ch • 0-200°C	6 1/2
41	SPSC041	SPSC041	Equipment	Tajima	3.5M	06/20/2017	06/19/2020	OCL-2411706M19K1	10-350CM	---
42	SPSC042	1420129	Megohm Meter	Exttech	8205	05/19/2017	05/19/2018	OCL-2411705F19Q2L	1000Vdc; 4 G Ohm	---
43	SPSC043	1320101	Hi-Pot	Exttech	7462	05/19/2017	05/19/2018	OCL-2411705F19Q1L	12K Vdc, 5000uA	---
44	SPSC044	---	Test Hook	---	---	05/26/2017	05/25/2020	OCL-2411705F26E1L	---	---
46	SPSC046	---	Test probe	---	---	05/26/2017	05/25/2020	OCL-2411705F26E3L	---	---
47	SPSC047	---	Needle Flam Tester	---	---	05/30/2014	05/29/2017	OCL-2411405F30C5L	---	---
56	SPSC056	---	Thermocouple	Omega	TT-J-36	01/11/2018	01/10/2021	OCL-2411801W10A3L	---	---
57	SPSC057	A06BK04051	Electronic Load	Array	3711A	08/04/2017	08/04/2018	OCL-2411708F04H2L	CH.A +60V/50A, 250W CH.B +60V/5A, 50W	---
58	SPSC058	C2PG01016V	Power Meter	YOKOGAWA	WT-310	07/28/2017	07/28/2018	OCL-2411707F2802L	ACV 230V, AC 10A, 1500W, 50-60Hz	----
59	SPSC059	100300756	Luxmeter	TES	1330A	04/15/2014	04/14/2017	14A044060	1, 150, 300 lx	----
60	SPSC060	2907007	Signal producer	ASTRO	VG-859	05/19/2017	05/19/2018	OCL-2411705F19Q6	30Hz~148MHz	----
61	SPSC061	LO642857	TV Signal producer	PHILIPS	PM5418	05/19/2017	05/19/2018	OCL-2411705F19Q7	5Vp-p, 49Hz~900MHz	----
62	SPSC062	201	Pink Noise Generator	Friborg	NG8280	05/19/2017	05/19/2018	OCL-2411705F19Q5	Flat Frequency Response -20dBV	----
63	SPSC063	100403235	Air meter	TES	1340	06/05/2015	06/04/2018	OCL-2411506F05A2	0.5m/s; 1.0m/s; 3.0m/s	----
68	SPSC068	NPSC073	Devices forming a part of the 1mm in diameter, length up to 12 mm	CENTURY TOWN	---	10/20/2017	10/19/2020	OCL-2411710F20W1L	1N, 300mm	----
69	SPSC069	---	---	PSC	SPSC069	04/13/2017	04/12/2020	OTT-2411704W12B1L	---	---
70	SPSC070	HT20170062	Paper shredder	HongCe	NAF 2 UL	03/27/2017	03/26/2020	Q2017150-01	---	---
71	SPSC071	6.02173E+17	Power Meter	ITECH	IT9121	11/03/2017	11/03/2018	OCL-2411711F03P1L	ACV 230V, AC 10A, 1500W, 50-60Hz	----

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Appendix IV – IEC 60529 Report

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Reliability Laboratory

TEST REPORT



Report No.: HC50064/2018

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Date: May 15, 2018

GARMIN CORPORATION
NO. 68, ZHANGSHU 2ND ROAD,
XIZHI DIST., NEW TAIPEI CITY, TAIWAN

The following merchandise was submitted and identified by the vendor as:

Product Description: Automatic Identification System

Style/ Item No.: AIS 800/ No.1

Manufacturer/ Vendor: Garmin Corporation

Country of Origin: Taiwan

Quantity: Total 1 piece

Testing Period: May 14, 2018

We have tested the submitted sample(s) as requested and the following results were obtained:

Test Required:

Test for Degrees of Protection Provided by Enclosures (IEC 60529 Edition 2.2: 2013)

IP Code	IPX7
First characteristic numeral	Omitted
Second characteristic numeral	Degrees of protection against ingress of water

Test Results:

Conclusion
Submittals sample(s) comply with the requirement and acceptance conditions of IEC 60529 Edition 2.2: 2013 Degrees of Protection Provided by Enclosures -- IPX7 The detailed description of test result, please see attached sheet(s).

Signed for and on behalf of
SGS TAIWAN Ltd.

Allen Wang
Asst. Supervisor

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Test for Degrees of Protection Provided by Enclosures:Test Equipment:

Name	Brand	Model	Serial No.
IPX7/IPX8 Immersion Tank	Self-made	SGS-ETR-030201	ETR000001

Lab Environmental Conditions:Ambient temperature: (15 ~ 35)°CAmbient humidity: (25 ~ 75) % RHTest Method/ Specification:Test method: IEC 60529 Edition 2.2: 2013 --IPX7**<BK CHAPTER T>Test for protection against water:**Sample condition: Non-OperatingTest means: Completely immerse the specimen in water in its service position as specified by client.Test condition: See below items marked “●”,

●	The lowest point of enclosures with a height less than 850 mm is located 1000 mm below the surface of the water
	The highest point of enclosures with a height equal to or greater than 850 mm is located 150 mm below the surface of the water

Test duration: 30 minutesTest Device: As shown in photo 3, 4

- Examine the protection against ingress water of specimen after this test.

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Specimen:

Style/ Item No.: AIS 800/ No.1

Quantity: Total 1 piece

Test Result:

Degree of protection against ingress of water (IPX7)

Test Result		
Check Item		Style/ Item No.
		AIS 800/ No.1
1	Does any water enter the enclosure?	No
2	(followed check item 1) If any water has entered, does the water accumulate near the cable end or live parts?	N/A
2.1	(followed check item 2) Does the water be sufficient to interfere with the correct operation of the equipment or impair safety?	N/A
2.2	(followed check item 2.1) Does the water deposit on insulation parts where it could lead to tracking along the creepage distances?	N/A
2.3	(followed check item 2.2) Does the water reach live parts or windings not designed to operate when wet?	N/A
Note 1: N/A means "Not Applicable".		
Note 2: The check items in this test report for inspecting the degree of protection provided by enclosures are reference to the requirements specified in IEC 60529 Edition 2.2: 2013 and in accordance with the acceptance conditions specified by client.		

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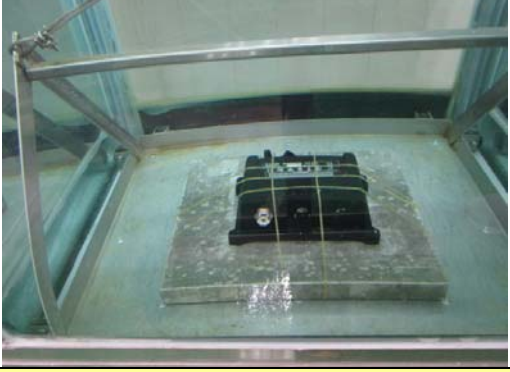
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Test Photos:

	
1. Appearance of specimen	2. Appearance of specimen
	
3. Test for protection against water	4. Test for protection against water

— — — The End of Test Report — — —

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