

TEST REPORT
IEC 62368-1
Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number.: SCKT201102-10

Date of issue: July 14th, 2021

Total number of pages: 89

Applicant's name: Socket Mobile, Inc.

Address: 39700 Eureka Drive, Newark, CA 94560, USA

Test specification:

Standard: EN 62368-1:2020 + A11:2020; IEC 62368-1:2018

Test procedure.....: TCF for LVD portion of the CE Mark

Non-standard test method.....: N/A

Test Report Form No......: IEC62368_1C

Test Report Form(s) Originator....: UL(US)

Master TRF: Dated 2019-01-17

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General disclaimer:

The test results presented in this report relate only to the object tested.

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Test item description: Barcode Scanner

Trade Mark.....: 

Manufacturer: Same as applicant

Model/Type reference.....: S7xx Series, D7xx Series, D600,
Charging Cradles/docks
8530-00090xx (White), 8530-00078xx (Black)
8530-00057xx, 8530-00070xx (Black), 8530-00105xx (White)
(where x = A-Z, 0-9, "-", "-" or blank, not safety relevant)

Ratings.....: DC5V, 1.0A (Optionally Marked)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒	Testing Laboratory:	Safety Engineering Laboratory (SEL)
Testing location/ address		2370D Qume Drive, San Jose, California 95131 USA
Tested by (name, function, signature)		Paul A. Carter 
Approved by (name, function, signature) ..		Lee Ould 
☐	Testing procedure: CTF Stage 1:	
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
☐	Testing procedure: CTF Stage 2:	
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name, function, signature) .		
Approved by (name, function, signature) ..		
☐	Testing procedure: CTF Stage 3:	
☐	Testing procedure: CTF Stage 4:	
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) .		
Approved by (name, function, signature) ..		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment):

1. National Differences (23 pages)
2. Photographs (31 pages)
3. CDF (See [4.1.2](#))
4. IEC 60825-1 Test Report Form (16 pages)

Summary of testing:

All applicable tests as described in Test Case and Measurement Sections were performed. The product was tested under normal and single fault conditions and found to be compliant with the requirements of this Standard.

The test data was taken from SEL report SCKT160415-01 through SCKT160415-08, which is in accordance with IEC 60950-1. The updated report is SCKT201020-09.

Tests performed (name of test and test clause):

June 25th, 2021: Update CDF to add scan engine SE4107 as an alternate to SE2707 for models S740 and D740. Input test was performed on model S740 to show similarity. No additional testing was necessary. Remove EOL models and previous test data from report for CHS 7xx Series.

November 2nd, 2020: Update report to add alternate models D745, D755, and alternate scan engine for model D760.

The following tests were repeated on all models.

Input test - B.2.5

The following tests were performed on model D755 which represents the other D7xx models.

LPS measurements - Q.1 -

Steady Force Tests - T.2, T.5 -

Impact Test - T.6 -

Battery Tests - Annex M

Thermal Tests - B.2.6

Single Fault Condition Tests – B.4

The following tests were conducted under previous evaluations per 60950 and no additional testing was deemed necessary for 62368 evaluation.

Test	60950 Clause	62368 Clause
Input Test	1.6.2	B.2.5
Limited Power Source Measurements	2.5	Q.1
Steady Force Tests	4.2.2-4.2.4	T.2, T.5
Impact Test	4.2.5	T.6
Drop Tests	4.2.6	T.7
Battery Tests	4.3.8	Annex M
Thermal Requirements	4.5.1	5.4.1.4, 9.3, B.1.5, B.2.6

Testing location:

Safety Engineering Laboratory (SEL)
2370D Qume Drive, San Jose, California 95131 USA

Abnormal operation and Single Fault Condition Tests	5.3	B.3, B.4
Label durability	1.7.11	F.3.9
Humidity conditioning	2.9.2	5.4.8

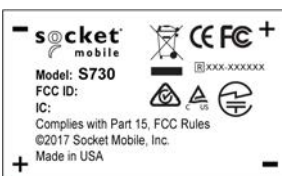
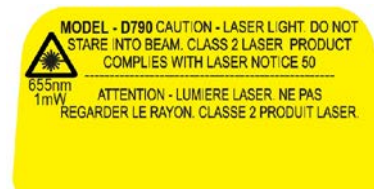
Tests were performed at 23°C and linearly calculated to the manufacturers specified Tma of 50°C

Summary of compliance with National Differences (List of countries addressed):
 EU Group Differences, EU Special National Conditions, UK, DK, FI, SE, NO, IR, FR, DE
 Explanation of used codes: DE = Germany, FI = Finland, FR = France, IR = Ireland, NO = Norway, SE = Sweden, UK = United Kingdom

☒ **The product fulfils the requirements of EN 62368-1:2020 + A11 and IEC 62368-1:2018**

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

D7xx Series Product Labels**D6xx Series Product Label****Model D730 only****S7xx Series:****S730 only: Laser Warning Label****D790 only: Laser Warning Label**

Test item particulars:			
Product group	☒ end product	☐ built-in component	
Classification of use by	☒ Ordinary person	☐ Children likely present	
	☒ Instructed person		
	☒ Skilled person		
Supply connection	☐ AC mains	☐ DC mains	
	☒ not mains connected:		
	☒ ES1	☐ ES2	☐ ES3
Supply tolerance	☐ +10%/-10%		
	☐ +20%/-15%		
	☒ +20% / -20%		
	☐ None		
Supply connection – type	☐ pluggable equipment type A –		
	☐ non-detachable supply cord		
	☐ appliance coupler		
	☐ direct plug-in		
	☐ pluggable equipment type B -		
	☐ non-detachable supply cord		
	☐ appliance coupler		
	☐ permanent connection		
	☒ mating connector ☐ other:		
Considered current rating of protective device	☐ 20 A; (16A for the EU),		
	Location:	☐ building	☐ equipment
	☒ N/A		
Equipment mobility	☐ movable	☒ hand-held	☐ transportable
	☐ direct plug-in	☐ stationary	☐ for building-in
	☐ wall/ceiling-mounted	☐ SRME/rack-mounted	
	☐ other:		
Overvoltage category (OVC)	☒ OVC I	☐ OVC II	☐ OVC III
	☐ OVC IV	☐ other:	
Class of equipment	☐ Class I	☐ Class II	☒ Class III
	☐ Not classified	☐	
Special installation location	☒ N/A	☐ restricted access area	
	☐ outdoor location	☐	
Pollution degree (PD)	☐ PD 1	☒ PD 2	☐ PD 3
Manufacturer's specified T_{ma}	50 °C	☐ Outdoor: minimum	°C
IP protection class	☒ IPX0	☐ IP__	
Power systems	☐ TN	☐ TT	☐ IT - V _{L-L}
	☒ not AC mains		
Altitude during operation (m)	☐ 2000 m or less	☒ 3000 m	
Altitude of test laboratory (m)	☒ 2000 m or less	☐ m	
Mass of equipment (kg)	0.162kg (max)		

Possible test case verdicts: - test case does not apply to the test object.....: N/A - test object does meet the requirement.....: P (Pass) - test object does not meet the requirement.....: F (Fail)	
Testing: Date of receipt of test item: June 2 nd , 2021 Date (s) of performance of tests: June 21 st - 25 th , 2021	
General remarks: "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a ☐ comma / ☒ point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC62368-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided:	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : 1) Socket Mobile, Inc. 39700 Eureka Drive, Newark, CA 94560, USA 2) AlphaEMS Corp. 44193 S. Grimmer Blvd., Fremont, CA 94538 USA	

General product information:

SCKT201102-10, June 25th, 2021: Update CDF to add scan engine SE4107 as an alternate to SE2707 for S740 and D740 scanners. Input test performed to show similarity to previous models. No additional testing was necessary. Remove EOL Models (CHS 7xx).

SCKT201102-09, November 2nd, 2020: New EN 62368-1 test report for the following:

- Update existing EN 60950-1 test report to EN 62368-1 3rd Ed.
- Add new models D745 and D755.
- Add alternate Scan engine for model D760 (SE4720)

Product is a handheld barcode scanner. Device is considered Class III, powered by internal batteries and/or recharged using external 5Vdc source (Computer host, or external adapter). All models are similar except for the type of rechargeable battery powering the device and the type of scan engine. The device interfaces wirelessly with computer host, phones, or tablets using Bluetooth.

Models S760 and S790 are new model variants which are being added without test. These models use the same circuitry as previous S7xx models and similar scan engines evaluated previously.

	Rechargeable Battery Type	Scan Engine	Type
S700	Two NIMH, AA Cell, 2000mAh	SE655	LED, Class 1, 630nm, IEC/EN 62471 (Exempt Group).
S700	Two NIMH, AA Cell, 2000mAh	Marson MT780 (alternate)	LED, 625nm Visible Red, IEC/EN 62471 (Exempt Group).
S730	Two NIMH, AA Cell, 2000mAh	SE965HP	Laser, Class 2 Laser, 650nm, IEC/EN 60825-1
S740	Two NIMH, AA Cell, 2000mAh	SE2707 or SE4107	LED, IEC/EN 62471 (Exempt Group)
S760	Two NIMH, AA Cell, 2000mAh	SE4710	LED, 660nm, IEC/EN 62471 (Exempt Group)
S760	Two NIMH, AA Cell, 2000mAh	SE4720 (Alternate)	Red LED 610nm (AIM), 660nm (illum) IEC/EN 62471 (Exempt Group).
S790	Two NIMH, AA Cell, 2000mAh	SE4750DP	Laser, Class 2, 655nm, IEC/EN 60825-1
D700	Single Li-Po Cell 3.7V	SE655 Series	LED, Class 1, 630nm, IEC/EN 62471 (Exempt Group).
D730	Single Li-Po Cell 3.7V	SE965HP	Laser, Class 2 Laser, 650nm, IEC/EN 60825-1
D740	Single Li-Po Cell 3.7V	SE2707 or SE4107	LED, IEC/EN 62471 (Exempt Group)
D745	Single Li-Po Cell 3.7V	SE2707	LED, 610nm (AIM), 660nm (illum), IEC/EN 62471 (Exempt Group).
D750	Single Li-Po Cell 3.7V	EA31 Series	LED, 617nm (Red AIM) IEC/EN 62471 (Exempt Group).
D755	Single Li-Po Cell 3.7V	SE4720	LED, 525nm, Green AIM IEC/EN 62471 (Exempt Group).
D760	Single Li-Po Cell 3.7V	SE4710	LED, 660nm, IEC/EN 62471 (Exempt Group)
D760	Single Li-Po Cell 3.7V	SE4720 (Alternate)	Red LED 610nm (AIM), 660nm (illum) IEC/EN 62471 (Exempt Group).
D790	Single Li-Po Cell 3.7V	SE4750DP	Laser, Class 2, 655nm, IEC/EN 60825-1
D600	Single Li-Po Cell 3.7V	None	NFC (non-optical) type reader

SCKT160415-08: June 2nd, 2020. Update report to add alternate Lithium-Ion battery for D7xx models.

SCKT160415-07: September 19th, 2018. Update report to add charging docks/cradles part numbers.

SCKT160415-06: August 10th, 2018. Update report to add new models D760, D790. Models are similar except for the type of rechargeable batteries, and scan engine. Adding alternate Lithium-Ion Battery. See details of all models covered in this report in the table below:

SCKT160415-05: Update report to add new S7xx Series models: S700, S730, S740

SCKT160415-04: March 23rd, 2017. Update report to add additional CHS 7Ci, 7Di, 7Mi, and 7Pi models. Models are similar except for the type of rechargeable batteries, and scan engine. See details of all models covered in this report below:

SCKT160415-03: February 22nd, 2017. Update report to add model D600, CHS 7Qi, and CHS 7Xi. Model D600 is identical to the D7xx series, except that it scans RFID tags electronically, rather than using an optical scanner. Model D600 uses the same battery as the D7xx series. Models CHS 7Qi, and CHS 7Xi are similar to previous models. They use the EA11 imager.

SCKT160415-02: August 8st, 2016. Update report to add model D730. D730 is similar to previous models, except for the use of a

class 2 laser scan engine. Scan engine has been separately certified and Socket Mobile does not modify it in any way. Additionally, adding new Cipher SM1 LED based scan engine for other models.

Class 2 Laser Module

D730, standard enclosure, Imager (Class 2 Laser)

Original report SCKT160415-01

The D7xx Series handheld barcode scanners are used to interface wirelessly with phones, tablets and computers via Bluetooth.

The handheld scanner is powered by a single internal rechargeable 1400mAh LI-ON battery (ICR18500). The battery cannot exceed 15VA output and is considered a Limited Power Source (LPS). The product is not provided with a fire enclosure in compliance with this standard.

To charge the internal battery, the product may receive DC5V from either of two ways.

1) Power is provided to the device using a USB cable where DC5V is provided from either an external certified power adapter or host computer. The USB cable is connected directly to the USB Type-C connector.

2) The external 5Vdc power is provided using an external power adapter which is connected to an external charging cradle. In this mode, power is provided to the device by placing the Handheld scanner into the charging cradle where power is connected via two charging pins which make contact with the device.

D7xx Scanner Differences: All models are the same with the exception of the scanner engine.

Class 1 LED Modules

D700, standard enclosure, Linear Imager, (Class 1 LED),

D750, standard enclosure, Omnidirectional imager, (Class 1 LED)

Battery Charging:

There are several layers of protection against charging / discharging of the internal battery.

- 1) Li-Ion battery charger IC LTC4066 located in the D7xx circuit board monitors and controls charging of the internal battery. It includes the use of an NTC which stops charging if the battery temp exceeds 50°C.
- 2) Li-Ion Battery is UL recognized to UL1642. It is additionally provided with Protection Control Module (PCM). The PCM module stops charging if the battery reaches or exceeds 4.2V. The PCM module stops output if the voltage drops below 3.0Vdc.
- 3) PTC's are located in the Input circuit, and additionally at the battery connection. The PTC is rated 0.75A hold, 1.5A (trip). Under any single fault condition, the maximum charge current into the battery would be 1.5A max.

Technical Considerations:

- The product was submitted and tested for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50°C.
- The signal interfaces comply with the limits of Limited Power Source (LPS) according to Annex Q.
- The operator is not intended to have access internal to the equipment.
- This device has been evaluated for use up to altitudes of 3000m.

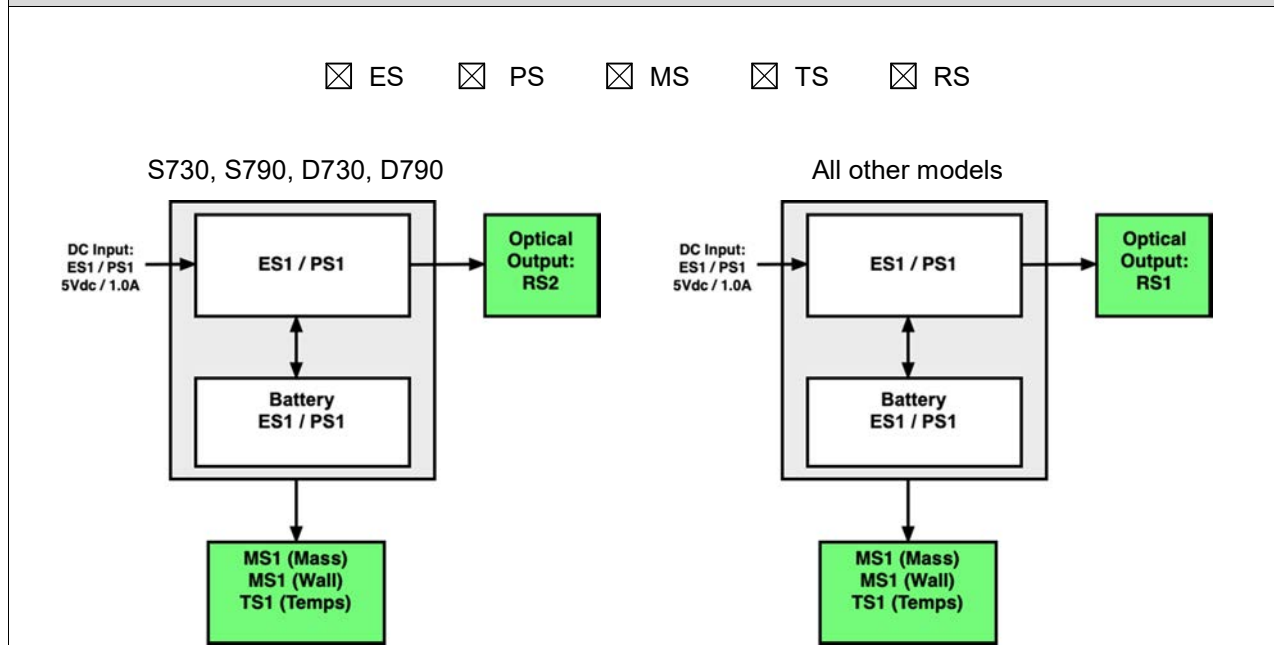
OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES1: DC Input and all circuitry	Ordinary	--	--	--
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 st S	2 nd S
PS1: DC Input (<15W)	PWB	Certified Components	--	--
PS1: Battery output	Battery / PEC	Certified Components	--	--
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
Models: S7xx series				
PS1, 2000mAh AA NIMH Battery	Ordinary	Certified Component	Limited materials due to size, and certified battery used and protected according to its certification	--
PS1, 2000mAh AA NIMH Battery	Instructed and skilled	Replacement and disposal are detailed properly in the servicing instructions	--	--
Models: All D7xx series				
PS1: 3.7V, Li-Po Battery, 1400-1500mAh	Ordinary	Enclosure prevents access Certified Component	Limited materials due to size, and certified battery used and protected according to its certification	
PS1: 3.7V, Li-Po Battery, 1400-1500mAh	Instructed and skilled	Replacement and disposal are detailed properly in the servicing instructions	--	--
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: Equipment Mass <7kg	Ordinary (Stability)	Product weighs <1kg	--	--
MS1: Sharp edges and corners	Ordinary	Designed to comply with suitable rounding	--	--
MS1: Equipment mass ≤ 1 kg mounted ≤ 2 m	Ordinary	Product and optional cradle mount weighs <1kg	--	--
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R

TS1: External accessible parts (metal enclosure)	Ordinary	--	--	--
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
RS2 Laser: Models S730, D730, D790 only	Ordinary	Warnings provided in manual and on product. Laser modules certified Class 2 under IEC60825-1	--	--
RS1 LED: All other models	Ordinary	IEC / EN 62471 Exempt Risk Group	--	--
RS1: LED indicators	Ordinary	LEDs selected are standard indicating types only	--	--
Supplementary Information: "B" – Basic Safeguard; "S" – Supplementary Safeguard; "R" – Reinforced Safeguard				

ENERGY SOURCE DIAGRAM

Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems.

Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies	Equipment incorporates certified components to IEC standards and other relevant component standards as applicable.	P
4.1.2	Use of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of the standard. Components which are not Certified are used in accordance with their ratings and they comply with applicable parts of IEC 62368-1 and applicable component standards. Components, for which no relevant IEC- standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 62368-1 and and IEC 60950-1.	P
4.1.3	Equipment design and construction	No parts of equipment which could cause injury.	P
4.1.4	Specified ambient temperature for outdoor use (°C) :		N/A
4.1.5	Constructions and components not specifically covered	None used	N/A
4.1.8	Liquids and liquid filled components (LFC)	None used (See G.15)	N/A
4.1.15	Markings and instructions	(See Annex F)	P
4.4.3	Safeguard robustness		P
4.4.3.1	General		P
4.4.3.2	Steady force tests	No internal hazards	P
4.4.3.3	Drop tests	Subjected to drop tests of 1000mm (See Annex T.7)	P
4.4.3.4	Impact tests	No internal hazards. 4.4.3.3 above used for handheld equipment.	N/A
4.4.3.5	Internal accessible safeguard tests	No internal solid safeguards	N/A
4.4.3.6	Glass impact tests	No enclosure safeguards	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
		made of glass (See Clause T.9, Annex U)	
4.4.3.7	Glass fixation tests	See above	N/A
	Glass impact test (1J)	See above	N/A
	Push/pull test (10 N)	See above	N/A
4.4.3.8	Thermoplastic material tests	(See Annex T.8)	P
4.4.3.9	Air comprising a safeguard		N/A
4.4.3.10	Accessibility, glass, safeguard effectiveness		N/A
4.4.4	Displacement of a safeguard by an insulating liquid		N/A
4.4.5	Safety interlocks	None provided nor required (See Annex K)	N/A
4.5	Explosion		P
4.5.1	General		P
4.5.2	No explosion during normal/abnormal operating condition		P
	No harm by explosion during single fault conditions		N/A
4.6	Fixing of conductors		P
	Fix conductors not to defeat a safeguard	Termination of conductors provided with a reliable fixing means	P
	Compliance is checked by test..... :		N/A
4.7	Equipment for direct insertion into mains socket-outlets		N/A
4.7.2	Mains plug part complies with relevant standard .. :	Not direct plug-in equipment.	N/A
4.7.3	Torque (Nm) :	See above	N/A
4.8	Equipment containing coin/button cell batteries		N/A
4.8.1	General	No coin / button cell type batteries	N/A
4.8.2	Instructional safeguard :	See above	N/A
4.8.3	Battery compartment door/cover construction	See above	N/A
	Open torque test	See above	N/A
4.8.4.2	Stress relief test	See above	N/A
4.8.4.3	Battery replacement test	See above	N/A
4.8.4.4	Drop test	See above	N/A
4.8.4.5	Impact test	See above	N/A
4.8.4.6	Crush test	See above	N/A
4.8.5	Compliance	See above	N/A
	30N force test with test probe	See above	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	20N force test with test hook	See above	N/A
4.9	Likelihood of fire or shock due to entry of conductive object		N/A
4.10	Component requirements		N/A
4.10.1	Disconnect Device	Class III device with no direct connection to Mains (See Annex L)	N/A
4.10.2	Switches and relays	No switches or relays are located in PS3 circuits or used as a safeguard. (See Annex G)	N/A

5	ELECTRICALLY CAUSED INJURY		P
5.2	Classification and limits of electrical energy sources		P
5.2.2	ES1, ES2 and ES3 limits	Battery operation (2.75 to 4.3Vdc) at ES1/SELV limits. DC input when charging is (5Vdc) at ES1/SELV limits.	P
5.2.2.2	Steady-state voltage and current limits	(See appended table 5.2)	P
5.2.2.3	Capacitance limits	Class III, DC input. No charged capacitor electrical energy source. (See appended table 5.2)	N/A
5.2.2.4	Single pulse limits	No such single pulses (See appended table 5.2)	N/A
5.2.2.5	Limits for repetitive pulses	No such repetitive pulses (See appended table 5.2)	N/A
5.2.2.6	Ringling signals	No ringing signals generated (See Annex H)	N/A
5.2.2.7	Audio signals	No audio signals generated (See Clause E.1)	N/A
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	ES1 circuits only	N/A
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits	Separated by REINFORCED INSULATION as part of external DC power source, where ES1 limits are maintained under SINGLE FAULT. Not part of this evaluation.	N/A
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors	No ES3 circuits	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.2.1	Accessibility to electrical energy sources and safeguards	No parts at ES2 or ES3 levels.	N/A
	Accessibility to outdoor equipment bare parts		N/A
5.3.2.2	Contact requirements	ES1 circuits only	N/A
	Test with test probe from Annex V		-
5.3.2.2 a)	Air gap – electric strength test potential (V)	See above	N/A
5.3.2.2 b)	Air gap – distance (mm)	See above	N/A
5.3.2.3	Compliance	See above	N/A
5.3.2.4	Terminals for connecting stripped wire	No terminals	N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material	Functional insulation only	N/A
5.4.1.3	Material is non-hygroscopic	No non-hygroscopic material used.	N/A
5.4.1.4	Maximum operating temperature for insulating materials	See above	N/A
5.4.1.5	Pollution degrees	2	P
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound	Pollution degree 2 applied	N/A
5.4.1.5.3	Thermal cycling test	See above	N/A
5.4.1.6	Insulation in transformers with varying dimensions	Considered	N/A
5.4.1.7	Insulation in circuits generating starting pulses	No such circuits	N/A
5.4.1.8	Determination of working voltage	DC 5V max (See appended table 5.4.1.8)	P
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 test.....	(See appended table 5.4.1.10.2)	N/A
5.4.1.10.3	Ball pressure test	(See appended table 5.4.1.10.3)	N/A
5.4.2	Clearances	Functional insulation only	P
5.4.2.1	General requirements	Unit is powered by internal 3.7Vdc battery and recharged using 5Vdc from external host or adapter. Class III input only with no direct connection to AC Mains.	P
	Clearances in circuits connected to AC Mains, Alternative method	(See Annex X)	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.2.2	Procedure 1 for determining clearance		N/A
	Temporary overvoltage		—
5.4.2.3	Procedure 2 for determining clearance		N/A
5.4.2.3.2.2	a.c. mains transient voltage	Class III with no direct connection to AC Mains.	—
5.4.2.3.2.3	d.c. mains transient voltage	No DC Mains	—
5.4.2.3.2.4	External circuit transient voltage.....	N/A	—
5.4.2.3.2.5	Transient voltage determined by measurement		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test	(See appended table 5.4.2)	N/A
5.4.2.5	Multiplication factors for clearances and test voltages	1.14 for up to 3000m	N/A
5.4.2.6	Clearance measurement	(See appended table 5.4.2)	N/A
5.4.3	Creepage distances	Functional insulation only	P
5.4.3.1	General	Battery powered or Class III device powered by ES1 with no direct connection to mains.	P
5.4.3.3	Material group	Material group III assumed as worst case	—
5.4.3.4	Creepage distances measurement	(See appended table 5.4.3)	N/A
5.4.4	Solid insulation		N/A
5.4.4.1	General requirements		N/A
5.4.4.2	Minimum distance through insulation	(See appended table 5.4.4.2)	N/A
5.4.4.3	Insulating compound forming solid insulation	None used	N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Insulating compound forming cemented joints	No such construction	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
	Number of layers (pcs)		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material	(See appended table 5.4.9)	N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.9	Solid insulation at frequencies >30 kHz, E_P , K_R , d , V_{PW} (V)..... :	(See appended Table 5.4.4.9)	N/A
	Alternative by electric strength test, tested voltage (V), K_R :	(See appended Tables 5.4.4.9 and 5.4.9)	N/A
5.4.5	Antenna terminal insulation	No such terminal	N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance (M Ω)..... :		N/A
	Electric strength test :	(See appended table 5.4.9)	N/A
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	None	N/A
5.4.8	Humidity conditioning		N/A
	Relative humidity (%), temperature (°C), duration (h) :		—
5.4.9	Electric strength test		N/A
5.4.9.1	Test procedure for type test of solid insulation..... :	(See appended table 5.4.9)	N/A
5.4.9.2	Test procedure for routine test		N/A
5.4.10	Safeguards against transient voltages from external circuits	No external circuits	N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods	See above	N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test :	(See appended table 5.4.9)	N/A
5.4.10.2.3	Steady-state test..... :	(See appended table 5.4.9)	N/A
5.4.10.3	Verification for insulation breakdown for impulse test :		N/A
5.4.11	Separation between external circuits and earth		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	SPDs bridge separation between external circuit and earth		N/A
	Rated operating voltage U_{op} (V)..... :		—
	Nominal voltage U_{peak} (V)..... :		—
	Max increase due to variation ΔU_{sp} :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Max increase due to ageing ΔU_{sa}		—
5.4.11.3	Test method and compliance	(See appended table 5.4.9)	N/A
5.4.12	Insulating liquid	None	N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid	(See appended table 5.4.9)	N/A
5.4.12.3	Compatibility of an insulating liquid	(See appended table 5.4.9)	N/A
5.4.12.4	Container for insulating liquid		N/A
5.5	Components as safeguards		N/A
5.5.1	General		N/A
5.5.2	Capacitors and RC units		N/A
5.5.2.1	General requirement		N/A
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector	(See appended table 5.5.2.2)	N/A
5.5.3	Transformers	No safety related transformers	N/A
5.5.4	Optocouplers	No safety related optocouplers. (See sub-clause 5.4 or Clause G.12)	N/A
5.5.5	Relays	(See sub-clause 5.4)	N/A
5.5.6	Resistors	No safety related resistors (See Clause G.10)	N/A
5.5.7	SPDs	No SPDs provided. (See Clause G.8)	N/A
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable	No such cable connections	N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment	No socket-outlets, nor outdoor equipment	N/A
	RCD rated residual operating current (mA)		—
5.6	Protective conductor		N/A
5.6.2	Requirement for protective conductors		N/A
5.6	Protective conductor	Low voltage battery powered or Class III where protective conductor not required.	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	Battery and/or Class III device powered by ES1/SELV where no protective earthing conductor is required.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Protective earthing conductor size (mm ²) :		—
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm ²). :		—
5.6.4.2	Protective current rating (A)..... :		N/A
5.6.5	Terminals for protective conductors		N/A
5.6.5.1	Terminal size for connecting protective earthing conductors (mm)..... :		N/A
	Terminal size for connecting protective bonding conductors (mm) :		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective bonding system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method..... :		N/A
5.6.6.3	Resistance (Ω) or voltage drop..... :	(See appended table 5.6.6)	N/A
5.6.7	Reliable connection of a protective earthing conductor		N/A
5.6.8	Functional earthing	None provided	N/A
	Conductor size (mm ²). :		N/A
	Class II with functional earthing marking :		N/A
	Appliance inlet cl & cr (mm)..... :		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	Battery operated and/or Class III low voltage device, powered by ES1/SELV where touch current measurement not required.	N/A
5.7.2.2	Measurement of voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections		N/A
5.7.4	Unearthed accessible parts :	(See appended table 5.7.4)	N/A
5.7.5	Earthed accessible conductive parts :	(See appended table 5.7.5)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.7.6	Requirements when touch current exceeds ES2 limits		N/A
	Protective conductor current (mA)..... :		N/A
	Instructional Safeguard..... :		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits		N/A
5.7.7.1	Touch current from coaxial cables	No coaxial cable connections.	N/A
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N/A
5.7.8	Summation of touch currents from external circuits		N/A
	a) Equipment connected to earthed external circuits, current (mA) :		N/A
	b) Equipment connected to unearthed external circuits, current (mA) :		N/A
5.8	Backfeed safeguard in battery backed up supplies		N/A
	Mains terminal ES :	No such supply (See appended table 5.8)	N/A
	Air gap (mm) :		N/A

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Clause	Requirement + Test		Verdict
6	ELECTRICALLY- CAUSED FIRE		P
6.2	Classification of PS and PIS		P
6.2.2	Power source circuit classifications	Input is considered as PS1. Additionally, Input PTC on PWB assures all circuits are at PS1 levels. No further test consideration necessary. (See appended table 6.2.2)	P
6.2.3	Classification of potential ignition sources		P
6.2.3.1	Arcing PIS	All internal voltages are less than 10Vdc. (See appended table 6.2.3.1)	N/A
6.2.3.2	Resistive PIS	PS1 circuits only (See appended table 6.2.3.2)	N/A
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials	No ignition occurred and all temperatures were well below 300C (See appended table B.1.5 and B.3)	P
	Combustible materials outside fire enclosure		P
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard method	Both methods employed, reduce the likelihood of ignition and control fire spread	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits	No supplementary safeguards are provided nor required	P
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits	PS1 circuits only	P
6.4.3.1	Supplementary safeguards	Less than 4000W available power. Power source is defined as PS1. Additional overcurrent protection (PTC) is provided as first component on PWB. Components comply with relevant Standards as shown on critical parts list.	P
6.4.3.2	Single Fault Conditions	(See appended table B.4)	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Special conditions for temperature limited by fuse	Not applied	N/A
6.4.4	Control of fire spread in PS1 circuits	No safeguard required	P
6.4.5	Control of fire spread in PS2 circuits	PS1 circuits only	N/A
6.4.5.2	Supplementary safeguards	Printed boards are minimum V-1 or better. Components are certified or rated V-2 or better mounted on V-1 class material.	P
6.4.6	Control of fire spread in PS3 circuits	No PS3 Circuits	N/A
6.4.7	Separation of combustible materials from a PIS	Separation not required to reduce likelihood of sustained flaming or spread of fire	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		N/A
6.4.8.2	Fire enclosure and fire barrier material properties	Fire enclosure is provided, but not required.	N/A
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		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		N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties		N/A
	Openings dimensions (mm)..... :	--	N/A
6.4.8.3.4	Bottom openings and properties		N/A
	Openings dimensions (mm)..... :	--	N/A
	Flammability tests for the bottom of a fire enclosure	(See Clause S.3)	N/A
	Instructional Safeguard..... :		N/A
6.4.8.3.5	Side openings and properties	No openings in the enclosure, no hazardous voltages inside the device.	N/A
	Openings dimensions (mm)..... :		N/A
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c)..... :	No door or cover provided that can be opened by an ORDINARY PERSON	N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating..... :		N/A
6.4.9	Flammability of insulating liquid..... :	No insulating liquid	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.5	Internal and external wiring		P
6.5.1	General requirements	Wires where provided are UL Recognized and /or certified to IEC60332 standards	P
6.5.2	Requirements for interconnection to building wiring :		P
6.5.3	Internal wiring size (mm ²) for socket-outlets..... :	No socket-outlets	N/A
6.6	Safeguards against fire due to the connection to additional equipment		N/A

7	INJURY CAUSED BY HAZARDOUS SUBSTANCES		N/A
7.2	Reduction of exposure to hazardous substances		N/A
7.3	Ozone exposure		N/A
7.4	Use of personal safeguards or personal protective equipment (PPE)		N/A
	Personal safeguards and instructions :		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010) :		—
7.6	Batteries and their protection circuits		P

8	MECHANICALLY-CAUSED INJURY		P
8.2	Mechanical energy source classifications		P
8.3	Safeguards against mechanical energy sources		P
8.4	Safeguards against parts with sharp edges and corners		P
8.4.1	Safeguards	Classifications per Table 35: All edges and corners are judged to be sufficiently well rounded so as not to constitute a hazard (classified as MS1).	P
	Instructional Safeguard..... :	None required	N/A
8.4.2	Sharp edges or corners	No sharp edges accessible	P
8.5	Safeguards against moving parts		N/A
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts	No moving parts	N/A
	MS2 or MS3 part required to be accessible for the function of the equipment	None	N/A
	Moving MS3 parts only accessible to skilled person	None	N/A
8.5.2	Instructional safeguard :	No moving parts	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.5.4	Special categories of equipment containing moving parts		N/A
8.5.4.1	General		N/A
8.5.4.2	Equipment containing work cells with MS3 parts	Equipment does not contain work cells and is of a size that is not entered by a person.	N/A
8.5.4.2.1	Protection of persons in the work cell	See above	N/A
8.5.4.2.2	Access protection override	See above	N/A
8.5.4.2.2.1	Override system	See above	N/A
8.5.4.2.2.2	Visual indicator	See above	N/A
8.5.4.2.3	Emergency stop system	See above	N/A
	Maximum stopping distance from the point of activation (m).....:	See above	N/A
	Space between end point and nearest fixed mechanical part (mm)	See above	N/A
8.5.4.2.4	Endurance requirements	See above	N/A
	Mechanical system subjected to 100 000 cycles of operation	See above	N/A
	- Mechanical function check and visual inspection	See above	N/A
	- Cable assembly	See above	N/A
8.5.4.3	Equipment having electromechanical device for destruction of media	See above	N/A
8.5.4.3.1	Equipment safeguards	See above	N/A
8.5.4.3.2	Instructional safeguards against moving parts	See above	N/A
8.5.4.3.3	Disconnection from the supply	See above	N/A
8.5.4.3.4	Cut type and test force (N).....:	See above	N/A
8.5.4.3.5	Compliance	See above	N/A
8.5.5	High pressure lamps	No such lamps	N/A
	Explosion test.....:	See above	N/A
8.5.5.3	Glass particles dimensions (mm)	See above	N/A
8.6	Stability of equipment		P
8.6.1	General	Equipment class is MS1 based on mass of all models being <7kg in Table 36. No stability requirements based on MS1 classification.	P
	Instructional safeguard	Not a television set	N/A
8.6.2	Static stability		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.6.2.2	Static stability test		N/A
8.6.2.3	Downward force test	Only required for floor standing equipment per Table 36	N/A
8.6.3	Relocation stability	Only required for floor standing equipment per Table 36	N/A
	Wheels diameter (mm)	No wheels	—
	Tilt test	See above	N/A
8.6.4	Glass slide test	No front mounted control or display per Table 36	N/A
8.6.5	Horizontal force test	No front mounted control or display per Table 36	N/A
8.7	Equipment mounted to wall, ceiling or other structure		P
8.7.1	Mount means type	Optional Wall mount charging cradle is classified as MS1 (Based on equipment mass <1kg and mounted <2m).	P
8.7.2	Test methods	No testing required based on mass <1kg (MS1)	N/A
	Test 1, additional downwards force (N).....		N/A
	Test 2, number of attachment points and test force (N).....		N/A
	Test 3 Nominal diameter (mm) and applied torque (Nm).....		N/A
8.8	Handles strength		N/A
8.8.1	General	No handles	N/A
8.8.2	Handle strength test		N/A
	Number of handles.....		—
	Force applied (N)		—
8.9	Wheels or casters attachment requirements		N/A
8.9.2	Pull test	No wheels or casters	N/A
8.10	Carts, stands and similar carriers		N/A
8.10.1	General	Not a cart or stand	N/A
8.10.2	Marking and instructions.....		N/A
8.10.3	Cart, stand or carrier loading test		N/A
	Loading force applied (N)		N/A
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N)		—

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Clause	Requirement + Test	Result - Remark	Verdict
8.10.6	Thermoplastic temperature stability		N/A
8.11	Mounting means for slide-rail mounted equipment (SRME)		N/A
8.11.1	General		N/A
8.11.2	Requirements for slide rails		N/A
	Instructional Safeguard		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force (N) applied		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A
8.12	Telescoping or rod antennas		N/A
	Button/ball diameter (mm)	None	—

9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications		P
9.3	Touch temperature limits		P
9.3.1	Touch temperatures of accessible parts	Accessible external parts and surfaces do not exceed TS1 limits in normal or abnormal operating conditions in Table 38. (See appended table)	P
9.3.2	Test method and compliance	System run at max normal load and steady state temperatures measured on accessible surfaces in specified lab ambient with considerations for max ambient.	P
9.4	Safeguards against thermal energy sources		P
9.5	Requirements for safeguards		P
9.5.1	Equipment safeguard	Limited temperature of enclosure under normal and single fault conditions provides safeguard against thermal transfer	P
9.5.2	Instructional safeguard	Instructional safeguard not required (no TS2 or TS3)	N/A
9.6	Requirements for wireless power transmitters		N/A
9.6.1	General	Not this type of equipment	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance	(See appended table 9.6)	N/A

10	RADIATION		P
10.2	Radiation energy source classification		P
10.2.1	General classification	Model(s): S730, S790, D730, D790 only: RS2 (Class 2 under IEC60825-1). Laser radiation only present vis certified laser scan engine. Model D600: No LED/Lasers All other models: RS1 (Class 1 Laser/LED under IEC60825-1/IEC62471) or classified as IEC 62471 Exempt Risk Group. No other potential radiation.	P
	Lasers	LED/Laser scan engines are approved to CDRH and/or IEC 60825-1 or IEC 62471. LEDs are clearly non-hazardous types by inspection.	—
	Lamps and lamp systems	Not such system	—
	Image projectors	Not such projector	—
	X-Ray	No such X-ray	—
	Personal music player	Not such player	—
10.3	Safeguards against laser radiation		P
	The standard(s) equipment containing laser(s) comply	Certified scan engines components selected which are compliant in their own right without additional enclosure or interlocking	P
10.4	Safeguards against optical radiation from lamps and lamp systems (including LED types)		P
10.4.1	General requirements	LED's outside of approved scan engines are standard low power indicating type which need not comply with IEC 62471 and are within Class I limits. Considered RS1	P
	Instructional safeguard provided for accessible		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	radiation level needs to exceed		
	Risk group marking and location		N/A
	Information for safe operation and installation		N/A
10.4.2	Requirements for enclosures		N/A
	UV radiation exposure	No UV generated by equipment. (See Annex C)	N/A
10.4.3	Instructional safeguard		N/A
10.5	Safeguards against X-radiation		N/A
10.5.1	Requirements	No X-radiation generated	N/A
	Instructional safeguard for skilled persons		—
10.5.3	Maximum radiation (pA/kg).....	(See appended tables B.3 & B.4)	—
10.6	Safeguards against acoustic energy sources		N/A
10.6.1	General	Not personal music player	N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$, dB(A).....		N/A
	Unweighted RMS output voltage (mV).....		N/A
	Digital output signal (dBFS)		N/A
10.6.3	Requirements for dose-based systems	No dose-based systems	N/A
10.6.3.1	General requirements	Not a personal music player	N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30)		N/A
	Warning for MEL ≥ 100 dB(A)		N/A
10.6.4	Measurement methods		N/A
10.6.5	Protection of persons		N/A
	Instructional safeguards		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV)		N/A
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A)		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		P
B.1	General		P
B.1.5	Temperature measurement conditions	(See appended table B.1.5)	P
B.2	Normal operating conditions		P
B.2.1	General requirements	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers	No amplifiers (See Annex E)	N/A
B.2.3	Supply voltage and tolerances	Tested at +/- 20%	P
B.2.5	Input test	Operated in worst case operating mode with draw not exceeding rating by more than 10% (See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General		P
B.3.2	Covering of ventilation openings	No openings	N/A
	Instructional safeguard	Equipment not likely to be used on a soft support	N/A
B.3.3	DC mains polarity test	No DC Mains	N/A
B.3.4	Setting of voltage selector	No such selector provided or required.	N/A
B.3.5	Maximum load at output terminals	No output terminals	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B.3.6	Reverse battery polarity	Model S7xx Series. Model is provided with polarity indication +/- stamped into plastic housing. No hazard if batteries are placed in reverse position. Q2 blocking diode protects against charging if batteries are installed in reverse position. All other models: Battery is installed at the factory and not user accessible. Battery is provided with keyed connector which does not allow reversal of the battery. Battery pack is additionally electrically protected from reverse charging.	P
B.3.7	Audio amplifier abnormal operating conditions	No amplifiers	N/A
B.3.8	Safeguards functional during and after abnormal operating conditions	All safeguards remained in place and effective. (See appended table B.3)	P
B.4	Simulated single fault conditions		P
B.4.1	General	SINGLE FAULT CONDITONS considered upon review of the equipment	P
B.4.2	Temperature controlling device		N/A
B.4.3	Blocked motor test		N/A
B.4.4	Functional insulation		P
B.4.4.1	Short circuit of clearances for functional insulation	Short-circuit of circuits considered where overcurrent devices and other protection means would safeguard against a failure of FUNCTIONAL INSULATION Shorting of FUNCTIONAL INSULATION not necessary, due to: • All components are mounted on PCBs of flammability V-1. • No significant flammable fuel loads internal, to conduct shorts nearby;	P

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Clause	Requirement + Test	Result - Remark	Verdict
B.4.4.2	Short circuit of creepage distances for functional insulation	See above	P
B.4.4.3	Short circuit of functional insulation on coated printed boards	No coated printed boards employed	N/A
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors		N/A
B.4.6	Short circuit or disconnection of passive components		N/A
B.4.7	Continuous operation of components	Not intended for SHORT-TIME or INTERMITTENT OPERATION	N/A
B.4.8	Compliance during and after single fault conditions :	Compliant with no external fire, nor internal fire of longer than 10 s (See appended table B.4)	P
B.4.9	Battery charging and discharging under single fault conditions	(See Annex M)	P
C	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements	No UV radiation	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 test		N/A
C.2.4	Xenon-arc light-exposure test		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	Electrical energy source classification for audio signals		N/A
	Maximum non-clipped output power (W)..... :	No audio amplifiers	—
	Rated load impedance (Ω)		—
	Open-circuit output voltage (V)..... :		—
	Instructional safeguard	See Clause F.5	—
E.2	Audio amplifier normal operating conditions		N/A
	Audio signal source type		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Audio output power (W)..... :		—
	Audio output voltage (V) :		—
	Rated load impedance (Ω) :		—
	Requirements for temperature measurement	(See Table B.1.5)	N/A
E.3	Audio amplifier abnormal operating conditions	(See Table B.3, B.4)	N/A
F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		P
F.1	General		P
	Language :	English	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1		P
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific	Symbols where used are in accordance with IEC 60417 or ISO 3864-2 or ISO 7000	P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Markings located on the exterior of the product and easily visible.	P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification :	Provided	P
F.3.2.2	Model identification :	Provided	P
F.3.3	Equipment rating markings	Equipment is not provided with a means for direct connection to a Main Supply. Therefore, the Rated Voltage, and Rated Current markings are optional.	P
F.3.3.1	Equipment with direct connection to mains	Class III device with no direct connection to AC or DC Mains	N/A
F.3.3.2	Equipment without direct connection to mains	Rated markings comply with B.2.5 (when marked).	P
F.3.3.3	Nature of the supply voltage..... :	Provided with IEC 60417-5032 symbol when marking is provided.	P
F.3.3.4	Rated voltage..... :	Optionally marked	P
F.3.3.5	Rated frequency :	DC input only	N/A
F.3.3.6	Rated current or rated power..... :	Optionally marked	P
F.3.3.7	Equipment with multiple supply connections	Single input only	N/A
F.3.4	Voltage setting device	No voltage setting device	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.5	Terminals and operating devices	No terminals	N/A
F.3.5.1	Mains appliance outlet and socket-outlet markings :	No mains outlets	N/A
F.3.5.2	Switch position identification marking..... :	No such switch	N/A
F.3.5.3	Replacement fuse identification and rating markings :	No replaceable fuses.	P
	Instructional safeguards for neutral fuse :	None	N/A
F.3.5.4	Replacement battery identification marking :	S7xx series with replaceable batteries have Instructional safeguard in manual per M.10	P
F.3.5.5	Neutral conductor terminal	No connection to mains.	N/A
F.3.5.6	Terminal marking location	See above	N/A
F.3.6	Equipment markings related to equipment classification		P
F.3.6.1	Class I equipment	Not Class I	N/A
F.3.6.1.1	Protective earthing conductor terminal..... :		N/A
F.3.6.1.2	Protective bonding conductor terminals :	Not required to be marked, per clause.	N/A
F.3.6.2	Equipment class marking :	Not Class II	N/A
F.3.6.3	Functional earthing terminal marking :	No functional earthing	N/A
F.3.7	Equipment IP rating marking :	IPX0 only where marking is not required	N/A
F.3.8	External power supply output marking :	No external power supply outputs	N/A
F.3.9	Durability, legibility and permanence of marking	Markings are either permanently silkscreened or use labels that are tested and shown on the critical parts list, or a UL Recognized marking and labelling system as shown there.	P
F.3.10	Test for permanence of markings	See above	P
F.4	Instructions		P
	a) Information prior to installation and initial use	Sufficient information is provided to the user.	P
	b) Equipment for use in locations where children not likely to be present	Not applied	N/A
	c) Instructions for installation and interconnection	Provided	P
	d) Equipment intended for use only in restricted access area		N/A
	e) Equipment intended to be fastened in place		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	f) Instructions for audio equipment terminals	No audio terminals	N/A
	g) Protective earthing used as a safeguard		P
	h) Protective conductor current exceeding ES2 limits	Not exceeded	N/A
	i) Graphic symbols used on equipment	Graphical symbols are not used as an INSTRUCTIONAL SAFEGUARD, where need to be explained in the instructions	N/A
	j) Permanently connected equipment not provided with all-pole mains switch	Not permanently connected	N/A
	k) Replaceable components or modules providing safeguard function	None	N/A
	l) Equipment containing insulating liquid	No insulating liquid	N/A
	m) Installation instructions for outdoor equipment	Although device can be used outdoors, it is not specifically considered outdoor equipment	N/A
F.5	Instructional safeguards		P
G	COMPONENTS		P
G.1	Switches		N/A
G.1.1	General	No switches or relays in PS3 are located outside of certified power supply. (no PS3 circuits)	N/A
G.1.2	Ratings, endurance, spacing, maximum load	See above	N/A
G.1.3	Test method and compliance	See above	N/A
G.2	Relays		N/A
G.2.1	Requirements	See above	N/A
G.2.2	Overload test	See above	N/A
G.2.3	Relay controlling connectors supplying power to other equipment	See above	N/A
G.2.4	Test method and compliance	See above	N/A
G.3	Protective devices		P
G.3.1	Thermal cut-offs	No thermal cut-outs provided	N/A
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance		N/A
G.3.2	Thermal links	No thermal links	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors	PTC thermistors where provided comply with IEC 60730- 1	P
G.3.4	Overcurrent protection devices		P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4	None as SAFEGUARDS	N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided	Not used	N/A
G.3.5.2	Single faults conditions..... :	Method not used. (See appended table B.4)	N/A
G.4	Connectors		P
G.4.1	Spacings		N/A
G.4.2	Mains connector configuration..... :	Class III device with no direct connection to Mains	N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely	No such plug for non-mains power	N/A
G.5	Wound components		N/A
G.5.1	Wire insulation in wound components		N/A
G.5.1.2	Protection against mechanical stress		N/A
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle) :		—
	Test temperature (°C)..... :		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	No insulation breakdown		N/A
G.5.3	Transformers	No transformers serving as insulation safeguard	N/A
G.5.3.1	Compliance method..... :		N/A
	Position :		N/A
	Method of protection :		N/A
G.5.3.2	Insulation		N/A
	Protection from displacement of windings :		—
G.5.3.3	Transformer overload tests		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.3.1	Test conditions		N/A
G.5.3.3.2	Winding temperatures		N/A
G.5.3.3.3	Winding temperatures – alternative test method		N/A
G.5.3.4	Transformers using FIW		N/A
G.5.3.4.1	General		N/A
	FIW wire nominal diameter :		—
G.5.3.4.2	Transformers with basic insulation only		N/A
G.5.3.4.3	Transformers with double insulation or reinforced insulation..... :		N/A
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N/A
G.5.3.4.5	Thermal cycling test and compliance		N/A
G.5.3.4.6	Partial discharge test		N/A
G.5.3.4.7	Routine test		N/A
G.5.4	Motors	None	N/A
G.5.4.1	General requirements		N/A
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4.2	Locked-rotor overload test		N/A
	Test duration (days) :		—
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature :		N/A
G.5.4.6.3	Alternative method		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		P
G.6.1	General	Wiring is certified and suitably rated, serving FUNCTIONAL insulation only	P
G.6.2	Enamelled winding wire insulation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.7	Mains supply cords		N/A
G.7.1	General requirements	No power cord.	N/A
	Type..... :		—
G.7.2	Cross sectional area (mm ² or AWG)..... :		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	See above	N/A
G.7.3.2.1	Requirements	See above	N/A
	Strain relief test force (N)..... :	See above	N/A
G.7.3.2.2	Strain relief mechanism failure	See above	N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm)..... :	See above	N/A
G.7.3.2.4	Strain relief and cord anchorage material	See above	N/A
G.7.4	Cord Entry	See above	N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance		N/A
	Overall diameter or minor overall dimension, <i>D</i> (mm)..... :		—
	Radius of curvature after test (mm)..... :		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	Varistors		N/A
G.8.1	General requirements		N/A
G.8.2	Safeguards against fire		N/A
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
G.9	Integrated circuit (IC) current limiters		N/A
G.9.1	Requirements		N/A
	IC limiter output current (max. 5A)..... :		—
	Manufacturers' defined drift..... :	--	—
G.9.2	Test Program		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.9.3	Compliance		N/A
G.10	Resistors		N/A
G.10.1	General	No resistors used as safeguards	N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A
G.11	Capacitors and RC units		N/A
G.11.1	General requirements	No safety related capacitors	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 with specifics	No safety related optocouplers	N/A
	Type test voltage $V_{ini,a}$:		—
	Routine test voltage, $V_{ini,b}$:		—
G.13	Printed boards		N/A
G.13.1	General requirements		N/A
G.13.2	Uncoated printed boards	(See appended table 5.4.2, 5.4.3)	N/A
G.13.3	Coated printed boards	No coated printed boards	N/A
G.13.4	Insulation between conductors on the same inner surface	No primary circuits	N/A
G.13.5	Insulation between conductors on different surfaces		N/A
	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	Test method and compliance		N/A
G.14	Coating on components terminals		N/A
G.14.1	Requirements :	No coatings on component terminals used. (See Clause G.13)	N/A
G.15	Pressurized liquid filled components		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.15.1	Requirements	No pressurized components	N/A
G.15.2	Test methods and compliance		N/A
G.15.2.1	Hydrostatic pressure test		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test		N/A
G.15.2.6	Force test		N/A
G.15.3	Compliance		N/A
G.16	IC including capacitor discharge function (ICX)		N/A
G.16.1	Condition for fault tested is not required	Not used	N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test..... :		—
	Mains voltage that impulses to be superimposed on :		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test :		—
G.16.3	Capacitor discharge test..... :		N/A
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
H.3.1	Ringling signal	No ringing signals	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		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V) :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		N/A
J.1	General		N/A
	Winding wire insulation..... :		—
	Solid round winding wire, diameter (mm)..... :		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm ²)..... :		N/A
J.2/J.3	Tests and Manufacturing	(See separate test report)	—
K	SAFETY INTERLOCKS		N/A
K.1	General requirements		N/A
	Instructional safeguard..... :	No interlock provided nor required	N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
K.5.1	Under single fault condition		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance..... :		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm)..... :		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm)..... :		N/A
	Electric strength test before and after the test of K.7.2..... :	(See appended table 5.4.9)	N/A
K.7.2	Overload test, Current (A)..... :		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
L	DISCONNECT DEVICES		N/A
L.1	General requirements	Device is battery powered, or Class III device powered by ES1/SELV input (when charging). No direct connection to Mains. No disconnect device is required.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
L.2	Permanently connected equipment	Not permanently connected.	N/A
L.3	Parts that remain energized	No parts which remain energized	N/A
L.4	Single-phase equipment		N/A
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices	None	N/A
L.7	Plugs as disconnect devices		N/A
L.8	Multiple power sources	Single low voltage DC input only	N/A
	Instructional safeguard :	See above	N/A
M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		P
M.1	General requirements		P
M.2	Safety of batteries and their cells		P
M.2.1	Batteries and their cells comply with relevant IEC standards :	S7xx series uses 2x rechargeable AA (LR6) size NiMH type batteries in series. Battery has UL 2054 certification. D7xx series handheld scanner employs a single non-user replaceable Li-on rechargeable battery. Battery has UL1642 approval and has been tested to show it is safe under short-circuit/rapid discharge conditions.	P
M.3	Protection circuits for batteries provided within the equipment		P
M.3.1	Requirements		P
M.3.2	Test method		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Overcharging of a rechargeable battery	Under a single fault, charging into the battery would be limited to 0.75A to 1.5A max (due to multiple PTC's used which are rated 0.75A (hold), 1.5A trip) located on USB and Cradle inputs as well as battery connection. The overcharge test was performed using single battery tested outside of the handheld scanner. D755: U3 shorted from pin 9 (IN) to 2,4,5 (BAT). Left in place for 1 hour. Only 1.6 deg rise on battery case. D755: U3 Shorted from pins 1,3,8 (Out) to pins 2,4,5 (BAT). Battery is fully charged after 2.55 hrs where charging is removed. Fault was left in place for 16 hours. See table M.3 for details.	P
	Excessive discharging	Maximum sustainable load (5A) applied directly to battery output. No hazards. No damage to the battery pack. In the actual circuit, any discharge current would be limited to 0.75A (1.5A trip) by a certified PTC which is provided in battery circuit in addition to the protective electronic circuit (PEC) provided by the battery.	P
	Unintentional charging of a non-rechargeable battery	Battery is intended to be recharged.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Reverse charging of a rechargeable battery	S7xx Series: Model is provided with polarity indication +/- stamped into plastic housing. No hazard if batteries are placed in reverse position. Q2 blocking diode protects against reverse battery protection. Even if a single fault of Q2 occurs, PTC3 prevents damage. All other models: Battery is provided with keyed connector which does not allow reversal of the battery. Battery pack is additionally protected from reverse charging. Battery is installed at the factory and not user accessible.	P
M.3.3	Compliance	(See appended table M.3)	P
M.4	Additional safeguards for equipment containing a portable secondary lithium battery		P
M.4.1	General		P
M.4.2	Charging safeguards		P
M.4.2.1	Requirements	Under Normal, Abnormal, and Single Fault conditions, the charging voltage and charging current do not exceed the maximum specified charging voltage and charging current specifications. Maximum charging current is assured by use of PTC. Under Abnormal operating conditions, the battery charging circuits stops charging when the temperature of the battery exceeds the highest specified charging temperature AND limits the charging current to specified values when battery temperature drops below the lowest specified charging temperature.	P
M.4.2.2	Compliance..... :	(See appended table M.4.2)	P
M.4.3	Fire enclosure :	Cell complies with PS1 limits.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.4.4	Drop test of equipment containing a secondary lithium battery	Performed on model D755 which represents other models. Product is considered hand-held equipment which contains a secondary lithium battery	P
M.4.4.2	Preparation and procedure for the drop test	Two samples fully charged at same time under same charging conditions.	P
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%): :	Bref = 4.199131 Vdc Bdrop = 4.145486 Vdc <5% 1.28% difference at beginning 1.13% difference at end of 24hr period.	P
M.4.4.4	Check of the charge/discharge function	Charge / discharge circuit continues to function after test.	P
M.4.4.5	Charge / discharge cycle test	3 complete charge/discharge cycles completed.	P
M.4.4.6	Compliance	No fire, no explosion, and no venting of the battery occurs. Safeguards remain in place.	P
M.5	Risk of burn due to short-circuit during carrying		N/A
M.5.1	Requirement	No exposed battery terminals.	N/A
M.5.2	Test method and compliance		N/A
M.6	Safeguards against short-circuits		N/A
M.6.1	External and internal faults		N/A
M.6.2	Compliance		N/A
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration	No batteries of this type	N/A
	Calculated hydrogen generation rate :		N/A
M.7.2	Test method and compliance		N/A
	Minimum air flow rate, Q (m ³ /h) :		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Hydrogen gas concentration (%)..... :		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate..... :		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%)..... :		N/A
M.7.4	Marking		N/A
M.8	Protection against internal ignition from external spark sources of batteries with aqueous electrolyte		N/A
M.8.1	General	No batteries of this type	N/A
M.8.2	Test method		N/A
M.8.2.1	General		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		N/A
	Instructional safeguard		N/A
N	ELECTROCHEMICAL POTENTIALS		P
	Material(s) used	Considered	—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		P
	Value of X (mm)..... :	1.0mm for Pollution Degree 2	—
P	SAFEGUARDS AGAINST CONDUCTIVE OBJECTS		P
P.1	General	No openings	P
P.2	Safeguards against entry or consequences of entry of a foreign object		P
P.2.1	General		P
P.2.2	Safeguards against entry of a foreign object		P
	Location and Dimensions (mm)	No openings	—
P.2.3	Safeguards against the consequences of entry of a foreign object	No openings	N/A
P.2.3.1	Safeguard requirements		N/A
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Transportable equipment with metalized plastic parts..... :	See above	N/A
P.2.3.2	Consequence of entry test..... :	No ES3 or PS3	N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General	No liquids	N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance		N/A
P.4	Metallized coatings and adhesives securing parts		N/A
P.4.1	General	No metalized coatings or parts	N/A
P.4.2	Tests		N/A
	Conditioning, T _c (°C)..... :		—
	Duration (weeks)..... :		—
Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		P
Q.1	Limited power sources	Input to device is considered PS1.	P
Q.1.1	Requirements		P
	a) Inherently limited output	Optional External Power adapter is considered LPS output. Adapter is certified as shown on the critical parts list. Internal Lithium Ion battery is inherently limited according to table Q.1.	P
	b) Impedance limited output	Additionally, certified 0.75A (1.5A trip) PTC's provided at battery output, and on USB and Cradle inputs. S7xx Series, and D7xx models have PTC's provided on USB and Cradle inputs.	P
	c) Regulating network limited output		N/A
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9		N/A
Q.1.2	Test method and compliance..... :	Conducted by test and inspection as clause allows (See appended table Q.1)	P
	Current rating of overcurrent protective device (A)..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Q.2	Test for external circuits – paired conductor cable	None	N/A
	Maximum output current (A)		N/A
	Current limiting method		—
R	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General		N/A
R.2	Test setup		N/A
	Overcurrent protective device for test		—
R.3	Test method		N/A
	Cord/cable used for test		—
R.4	Compliance		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		N/A
	Samples, material		—
	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)		—
S.3	Flammability test for the bottom of a fire enclosure		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A
	Mounting of samples		—
	Wall thickness (mm)		—
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 exceeding 4 000 W		N/A
	Samples, material		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Wall thickness (mm)		—
	Conditioning (°C)		—
T	MECHANICAL STRENGTH TESTS		P
T.1	General		P
T.2	Steady force test, 10 N	10N applied to internal components does not compromise required creepages and clearances. (See appended table T.2)	P
T.3	Steady force test, 30 N	No such internal accessible safeguard (See appended table T.3)	N/A
T.4	Steady force test, 100 N	Applied for Hand-Held equipment. Enclosure withstands 100N applied. (See appended table T.4)	P
T.5	Steady force test, 250 N	Hand-Held equipment is subject to T.4 only. (See appended table T.5)	N/A
T.6	Enclosure impact test	Hand-Held equipment is subject to T.4 only. ES1 present only, no hazards. (See appended table T.6)	N/A
	Fall test	ES1 present only, no hazards	N/A
	Swing test	--	N/A
T.7	Drop test	Applied as part of Hand-Held equipment. 1000mm (See appended table T.7)	P
T.8	Stress relief test.....	Not required. All internal circuits are ES1/PS1. (See appended table T.8)	N/A
T.9	Glass Impact Test	Glass not depended upon as safeguard (See appended table T.9)	N/A
T.10	Glass fragmentation test		N/A
	Number of particles counted.....	See above	N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm)	No antennas	N/A

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Clause	Requirement + Test		Verdict
U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N/A
U.1	General		N/A
	Instructional safeguard:	No CRTs	N/A
U.2	Test method and compliance for non-intrinsically protected CRTs		N/A
U.3	Protective screen		N/A
V	DETERMINATION OF ACCESSIBLE PARTS		P
V.1	Accessible parts of equipment		P
V.1.1	General	No hazardous parts or circuits within the product.	P
V.1.2	Surfaces and openings tested with jointed test probes	See above	N/A
V.1.3	Openings tested with straight unjointed test probes	See above	N/A
V.1.4	Plugs, jacks, connectors tested with blunt probe	See above	N/A
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire		N/A
V.2	Accessible part criterion		P
X	ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)		N/A
	Clearance	(See appended table X)	N/A
Y	CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES		N/A
Y.1	General	Product may be used outdoors (short-term) but is not considered outdoor equipment. No internal hazards (ES1/PS1 only)	N/A
Y.2	Resistance to UV radiation		N/A
Y.3	Resistance to corrosion		N/A
Y.3	Resistance to corrosion		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure		N/A
Y.3.5	Compliance		N/A
Y.4	Gaskets		N/A
Y.4.1	General		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests		N/A
	Alternative test methods :		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means	(See Annex P.4)	N/A
Y.5	Protection of equipment within an outdoor enclosure		N/A
Y.5.1	General		N/A
Y.5.2	Protection from moisture		N/A
	Relevant tests of IEC 60529 or Y.5.3 :		N/A
Y.5.3	Water spray test		N/A
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
Y.6	Mechanical strength of enclosures	Not considered outdoor equipment	N/A
Y.6.1	General		N/A
Y.6.2	Impact test :	(See Table T.6)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

5.2	TABLE: Classification of electrical energy sources						P
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type ¹⁾	Additional Info ²⁾	
3.7Vdc (4.25 max) Battery Voltage	DC Input / All circuits	--	4.25Vdc	1500mA #	SS	--	1
5Vdc Charging Voltage	DC Input / All circuits	--	5Vdc	1500mA #	SS	--	1
Supplementary information: 1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc. 2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc. # limited by PTC, 0.75A hold, 1.5A trip.							

5.4.1.8	TABLE: Working voltage measurement				N/A
Location		RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments
Supplementary information: Class III device powered by DC input (ES1).					

5.4.1.10.2	TABLE: Vicat softening temperature of thermoplastics				N/A
Method.....:			ISO 306 / B50		—
Object/ Part No./Material		Manufacturer/trademark	Thickness (mm)	T softening (°C)	
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics					N/A
Allowed impression diameter (mm).....:						—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)		
Supplementary information:						

5.4.2, 5.4.3	TABLE: Minimum Clearances/Creepage distance							N/A
Clearance (cl) and creepage distance (cr) at/of/between:	U_p (V)	U_{rms} (V)	Freq ¹⁾ (Hz)	Required cl (mm)	cl (mm)	E.S. ²⁾ (V)	Required cr (mm)	cr (mm)
Supplementary information: Functional insulation only.								
1) Only for frequency above 30 kHz								
2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied)								
Functional insulation only. (Secondary circuit mounted on V-1 rated material)								

5.4.4.2	TABLE: Minimum distance through insulation				N/A
Distance through insulation (DTI) at/of	Peak voltage (V)	Insulation	Required DTI (mm)	Measured DTI (mm)	
Supplementary information:					

5.4.4.9	TABLE: Solid insulation at frequencies >30 kHz					N/A
Insulation material	E_P	Frequency (kHz)	K_R	Thickness d (mm)	Insulation	V_{PW} (Vpk)
Supplementary information:						

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.9	TABLE: Electric strength tests			N/A
Test voltage applied between:		Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes / No
Supplementary information: Class III device with no direct connection to AC Mains. Electric strength test not required.				

5.5.2.2	TABLE: Stored discharge on capacitors					N/A
Location	Supply voltage (V)	Operating and fault condition ¹⁾	Switch position	Measured voltage (Vpk)	ES Class	
Supplementary information:						
X-capacitors installed for testing:						
☐ bleeding resistor rating:						
☐ ICX:						
1) Normal operating condition (e.g., normal operation, or open fuse), SC= short circuit, OC= open circuit						

5.6.6	TABLE: Resistance of protective conductors and terminations				N/A
Location		Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict

5.7.4	TABLE: Unearthed accessible parts					N/A
Location	Operating and fault conditions	Supply Voltage (V)	Parameters			ES class
			Voltage (V_{rms} or V_{pk})	Current (A_{rms} or A_{pk})	Freq. (Hz)	
Supplementary information: Abbreviation: SC= short circuit; OC= open circuit						

5.7.5	TABLE: Earthed accessible conductive part			N/A
Supply voltage (V)				—
Phase(s)		[] Single Phase; [] Three Phase: [] Delta [] Wye		
Power Distribution System		☐ TN ☐ TT ☐ IT		
Location		Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment
Supplementary Information:				

5.8	TABLE: Backfeed safeguard in battery backed up supplies					N/A
Location	Supply voltage (V)	Operating and fault condition	Time (s)	Open-circuit voltage (V)	Touch current (A)	ES Class
Supplementary information: Abbreviation: SC= short circuit, OC= open circuit						

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Clause	Requirement + Test	Result - Remark	Verdict

6.2.2	TABLE: Power source circuit classifications					P
Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power ¹⁾ (W)	Time (S)	PS class
Input (All other models)	Normal / SFC / ABN	DC5V Max	0.75A Max	7.5W	3	1
Battery Power	Normal / SFC / ABN	DC 4.25V Max	0.75A Max	7.5W	3	1
Supplementary information: Abbreviation: SC= short circuit; OC= open circuit 1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3.						

6.2.3.1	TABLE: Determination of Arcing PIS				P
Location		Open circuit voltage after 3 s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No
Charging: DC Input / All circuits		5.0 Vdc	1.5A	<15W	No
Battery Powered: DC Input / All circuits		4.25 Vdc Max	1.5A	<15W	No
Supplementary information:					

6.2.3.2	TABLE: Determination of resistive PIS			P
Location		Operating and fault condition	Dissipate power (W)	Resistive PIS? Yes / No
Charging: DC Input / All circuits		5.0 Vdc	1.5A	No
Battery Powered: DC Input / All circuits		4.3 Vdc Max	1.5A	No
Supplementary information: Abbreviation: SC= short circuit; OC= open circuit				

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Clause	Requirement + Test	Result - Remark	Verdict

8.5.5	TABLE: High pressure lamp				N/A
Lamp manufacturer	Lamp type	Explosion method	Longest axis of glass particle (mm)	Particle found beyond 1 m Yes / No	
Supplementary information: No high-pressure lamps.					

9.6	TABLE: Temperature measurements for wireless power transmitters							N/A
Supply voltage (V)..... :								—
Max. transmit power of transmitter (W)..... :								—
Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm	
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)
Supplementary information: No wireless power transmitters								

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Thermal requirements						(01)	P
	Supply voltage (V)	5Vdc	5Vdc					—
	Ambient T _{min} (°C)	23	T _{ma} = 50					—
	Ambient T _{max} (°C)	--	--					—
Maximum measured temperature T of part/at.....:		T (°C)						Allowed T _{max} (°C)
Battery Case (near Protection Circuit)		28.5	55.5					
U3 (USB Power Controller and Li-Ion Battery Charger (Warmest IC) (LTC4066)		50.7	77.7					
U7 – (FAN3989) Case		43.9	70.9					
U9 Battery Monitor (DS2745) Case		37.2	64.2					
U11 (16-bit microcontroller) Case		35.9	62.9					
Scan Engine () Metal Case		25.5	52.5					
External Plastic		25.0	52.0					
Supplementary information: Model D750: Temps measured at 23°C and calculated for T_{ma} = 50°C								

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Thermal requirements						(01)	P
	Supply voltage (V)	5Vdc	5Vdc				—	
	Ambient T _{min} (°C)	23	Tma = 50				—	
	Ambient T _{max} (°C)	--	--				—	
Maximum measured temperature T of part/at.....:		T (°C)					Allowed T _{max} (°C)	
Abnormal Charging (5V/1.5A applied directly to freshly drained battery)								
Battery Case		28.5	55.5					
Battery Protection Circuit PWB		50.7	77.7					
Test Duration:		17 hrs	Calc					
Supplementary information: Model D750: Temps measured at 23°C and calculated for Tma = 50°C								
Battery charging is limited under single fault by two PTC's rated 0.75A hold, 1.5A trip.								

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Thermal requirements						(01)	P
	Supply voltage (V)	5Vdc	5Vdc				—	
	Ambient T _{min} (°C)	23	T _{ma} = 50				—	
	Ambient T _{max} (°C)	--	--				—	
Maximum measured temperature T of part/at.....:		T (°C)					Allowed T _{max} (°C)	
Rapid Discharge – 1.5A load applied directly to battery +/- output								
Battery Case		35.1	62.1					
Battery Protection Circuit PWB		41.3	68.3					
Test Duration:		>3 hrs	Calc					
Supplementary information: Model D750: Temps measured at 23°C and calculated for T _{ma} = 50°C								
Battery discharge is limited under single fault by two PTC's rated 0.75A hold, 1.5A trip.								

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Thermal requirements – D730 (02)						P
	Supply voltage (V)	3.7 Vdc	3.7 Vdc				—
	Ambient T _{min} (°C)	23	Tma = 50				—
	Ambient T _{max} (°C)	--	--				—
Maximum measured temperature T of part/at.....:		T (°C)					Allowed T _{max} (°C)
Scan Engine – Internal Plastic Case		33.7	60.7				105
Microcontroller Case		34.3	61.3				105
Battery Case		28.6	55.6				105
External Plastic		29.3	56.3				85
Supplementary information: Model D730: Temps measured at 23°C and calculated for Tma = 50°C Device is set to repeatedly scan a barcode. 3.7Vdc is the internal battery voltage during test.							

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Thermal requirements – D600 (03)						P
	Supply voltage (V)	3.7 Vdc	3.7 Vdc		5V	5V	—
	Ambient T _{min} (°C)	25	Tma = 50		25	Tma = 50	—
	Ambient T _{max} (°C)	--	--		--	--	—
Maximum measured temperature T of part/at.....:		T (°C)					Allowed T _{max} (°C)
		Scanning Continuously			Charging		
Battery		37.0	62.0		33.7	58.7	105
Battery Lead		37.2	62.2		34.4	59.4	105
Inductor Bat Circuit		36.4	61.4		44.6	69.6	105
Main IC Case		36.9	61.9		39.2	64.2	105
Diode Case		36.4	61.4		37.6	62.6	105
IC Case Top PWB		36.4	61.4		35.5	60.5	105
Enclosure Plastic		33.9	58.9		30.9	55.9	85
Supplementary information: Model D600: Temps measured at 25°C and calculated for Tma = 50°C Device is set to repeatedly scan. 3.7Vdc is the internal battery voltage during test.							

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Thermal requirements – D600					(03)	P
	Supply voltage (V)	3.7 Vdc	3.7 Vdc		5V	5V	—
	Ambient T_{min} (°C)	25	Tma = 50		25	Tma = 50	—
	Ambient T_{max} (°C)	--	--		--	--	—
Maximum measured temperature T of part/at.....:		T (°C)				Allowed T_{max} (°C)	
		Short + / -			Overcharge 5V@2A Applied		
Battery		27.9	52.9		38.1	63.1	--
Battery Wire		26.9	51.9		34.1	59.1	--
Supplementary information: Model D600 Battery Howell 18500: Temps measured at 25°C and calculated for Tma = 50°C							

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Thermal requirements – S7xx series					(05)	P
	Supply voltage (V)	2.75 Vdc	2.75 Vdc	--	5.0 Vdc	5.0 Vdc	—
	Ambient T_{min} (°C)	21	Tma = 50		21	Tma = 50	—
	Ambient T_{max} (°C)	--	--		--	--	—
Maximum measured temperature T of part/at.....:		T (°C)				Allowed T_{max} (°C)	
Test Condition:		Scanning Continuously		--	Charging		--
S730 - Warmest IC Case		29.3	58.3	--	36.7	65.7	105
S730 – uController IC Case		34.6	63.6	--	28.4	57.4	105
S730 – Q1 Voltage Regulator		30.5	59.5	--	33.4	62.4	105
S730 – Scanner Engine		34.8	63.8	--	24.2	53.2	105
S730 - Internal Plastic		28.1	57.1	--	31.2	60.2	105
S730 - Battery		28.7	57.7	--	27.4	56.4	105
Supplementary information:							
Temps measured at 21°C and calculated for Tma = 50°C							
Model S730 represents other models in series.							
5V is provided by external power source. 2.75V is the battery voltage at the beginning of the test.							

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Thermal requirements – D750 w/ felloTech P/N 18500 Battery:					(08)	P
	Supply voltage (V)	5Vdc	5Vdc		Batt (4.2V)	Batt (4.2V)	—
	Ambient T _{min} (°C)	23	Tma = 50		23	Tma = 50	—
	Ambient T _{max} (°C)	--	--		--	--	—
Maximum measured temperature T of part/at.....:		T (°C)					Allowed T _{max} (°C)
		Charging		--	Operating		--
Battery Case (felloTech 18500)		25.8	52.8		33.1	60.1	90
U3 (USB Power Controller and Li-Ion Battery Charger (Warmest IC) (LTC4066)		34.1	61.1		33.0	60.0	105
U7 – (FAN3989) Case		29.2	56.2		34.9	61.9	105
U9 Battery Monitor (DS2745) Case		30.5	57.5		33.9	60.9	105
U11 (16-bit microcontroller) Case		28.6	55.6		35.2	62.2	105
Scan Engine - Metal Case		24.6	51.6		34.1	61.1	105
External Plastic		27.9	54.9		30.2	57.2	95
Supplementary information: Model D750 w/ felloTech P/N 18500 Battery: Temps measured at 23°C and calculated for Tma = 50°C							

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Thermal requirements - D750 w/ felloTech P/N 18500 Battery:						(08)	P
	Supply voltage (V)	Batt (4.2V)	Batt (4.2V)		5V @ 3A	5V @ 3A	—	
	Ambient T _{min} (°C)	23	Tma = 50		23	Tma = 50	—	
	Ambient T _{max} (°C)	--	--		--	--	—	
Maximum measured temperature T of part/at.....:		T (°C)					Allowed T _{max} (°C)	
		1) Short Battery		--	2) Overcharge		--	
Battery Case (felloTech 18500)		24.6	51.6		46.6	73.6	150	
Duration:		>7 hrs			>7 hrs		--	
Supplementary information: Model D750 w/ felloTech P/N 18500 Battery: Temps measured at 23°C and calculated for Tma = 50°C								
1) Battery short resulted in removal of output. No current / no temp increase. Removing short results in normal battery operation. 2) 5Vdc @ 3A applied directly to battery input terminals. Left in place for >7hrs. No significant temperature increase.								

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Thermal requirements D755 (D7xx Series) (09)						P
	Supply voltage (V)	5Vdc	5Vdc	--	4.14V (battery)	4.14V (battery)	—
	Ambient T _{min} (°C)	23	Tma = 50	--	23	Tma = 50	—
	Ambient T _{max} (°C)	--	--	--	--	--	—
Maximum measured temperature T of part/at.....:		T (°C)					Allowed T _{max} (°C)
Test Conditions:		1) Charging		--	2) Operational		--
Battery Case		29.9	56.9	--	33.9	60.9	105
U3 Case (Li-Ion Linear Charger)		66.5	93.5	--	39.0	66.0	105
U31 uController Case		35.5	62.5	--	44.5	71.5	105
U30 HW Decoder Case		31.5	58.5	--	55.3	82.3	105
Scan Engine		25.9	52.9	--	45.8	72.8	105
Touch temperature Limit:		@25C	--	--	@25C	--	--
Ext Plastic Held		27.4	--	--	30.7	--	48
Supplementary information: Model D755: Represents other models in series. Temps measured at 23°C and calculated for Tma = 50°C 1) Charging drained battery using external source set to 5.00Vdc 2) Worst case operation. Connected to laptop using bluetooth. Repeatedly scanning barcodes as fast as possible over extended period.							

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Thermal requirements - D755 (D7xx Series)						(09)	P
	Supply voltage (V)	5Vdc	5Vdc	--	5Vdc	5Vdc	—	
	Ambient T _{min} (°C)	23	T _{ma} = 50	--	23	T _{ma} = 50	—	
	Ambient T _{max} (°C)	--	--	--	--	--	—	
Maximum measured temperature T of part/at.....:		T (°C)					Allowed T _{max} (°C)	
Test Conditions:		1) Short U3 (IN to BAT)		--	2 Short U3 (Out to BAT)		--	
Battery Case		24.6	51.6	--	25.7	52.7	105	
Test Duration:		1 hr			16 hrs			
Supplementary information: Model D755: Represents other models in series. Temps measured at 23°C and calculated for T _{ma} = 50°C								
1) Charging w/ SC applied to U3 IN (pin 9) to BAT (2,4,5). 5V applied and charging begins at 0.58A (Input). Affect is that during charge time portion of the cycle, it charges at 342mA rather than 453mA. Left in place for 1 hr.								
2) Charging w/ SC applied to U3 OUT (1,3,8) to BAT (2,4,5). 0.453 charge current, then 900mA charge current for first 5 seconds when short is applied. After that, the charge current reduces to 475mA. Input current to device is around 0.7 to 0.8A. (PTC is limiting charge current into battery).								

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:							

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Clause	Requirement + Test	Result - Remark	Verdict

B.3, B.4		TABLE: Abnormal operating and fault condition tests					P
Ambient temperature T_{amb} (°C)		See table B.2.6					—
Power source for EUT: Manufacturer, model/type, output rating....		See heating table B.2.6 for details					—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation	
(01)							
Battery	Short	4.0V (Battery)	<10mS	--	--	Short applied to battery terminals. PCM module removes the short immediately. Left in place for 1 hr.	
Battery	Apply 15VA	4.05V (Uoc)	<10mS	--	--	Apply 15VA load to battery output +/- . Output goes to 0V in <10mS. Circuit must be removed before resumption of output.	
Battery	MAX VA	4.05 Uoc	--	--	--	Load applied directly to battery output terminals. Load started at 0 and rapidly increased to find max VA. Max 3.32A, 9.6W before shutdown. Circuit must be removed before resumption of output.	
Battery	Simulate single Fault to Charging Circuit in model D7xx	5Vdc	>17hr	-	-	5V@1.5A applied directly to battery +/- terminals. PCM module removes power when battery voltage reached 4.407Vdc. Left in place overnight for >17hrs. NB, NC, NT Model D7xx has two 0.75A hold (1.5A trip) certified PTC's which limit the charge current to the battery. 1.5A was selected to simulate worst case charging current.	
Battery	Simulate fault to PCM Module. Short U2 (both CO and DO)	5Vdc				Input current is the same as under normal charge (0.34A). Left in place for >7 hrs. NB, NC, NT	
(03)							
Battery (D600)	Short	3.7V (Battery)	<10mS	--	--	Short applied to battery terminals. PCM module removes the short immediately. Left in place for 1 hr.	
Battery (D600)	Apply 15VA	4.03V (Uoc)	<10mS	--	--	Apply 15VA load to battery output +/- . Output goes to 0V in <10mS. Circuit must be removed before resumption of output.	
Battery (D600)	MAX VA	4.03 Uoc	--	--	--	Load applied directly to battery output terminals. Load started at 0 and rapidly increased to find max VA. Max 3.1A, 8.4W before shutdown. Circuit must be removed before resumption of output.	
Battery (D600)	Overcharge	5Vdc	15Hrs			5V@2A applied directly to battery +/- terminals. PCM module removes power when battery voltage reached 4Vdc.	

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
(05)						
S700	Batteries reversed	-2.75V		--	--	Batteries Reversed. Q2 blocks reverse voltage. No battery current when placed in reverse. Left in place for 1 hour. No damage to unit. NC, NT
S700	Batteries reversed / Charging	5Vdc input -2.75V (rev battery voltage)		--	--	Batteries reversed, and charging applied to barrel jack. Scanner works (operating from input voltage, but no battery current. Q2 blocks reversed battery voltage. No damage, NC, NT
S700	Batteries reversed / Q2 shorted	-2.75V		--	--	Batteries Reversed and Q2 shorted. Current flows, but PTC3 limits reverse discharge current to approx. 700mA. Left in place for 1 hour. No damage to unit. NC, NT
S700	Batteries reversed / Q2 shorted: Charging	5Vdc input -2.75V (rev battery voltage)		--	--	Batteries reversed, Q2 shorted and charging applied to barrel jack. PTC3 limits the reverse current from batteries to approx. 700mA. Charging is not implemented when the input voltage is applied. Battery voltage is cut off from rest of circuitry. No damage, NC, NT
(06)						
D7xx Alternate Battery Novacell P/N 201806	MAX VA	4.09Uoc	--	--	--	Load applied directly to battery output terminals. Load started at 0 and rapidly increased to find max VA. Max 3.59A, 10.8W before shutdown. Circuit must be removed before resumption of output. (D
D7xx Alternate Battery Novacell P/N 201806	Overcharge	5Vdc	15Hrs	--	--	5V@2A applied directly to battery +/- terminals. (2A is well above the PTC trip current of 1.5A). The PCM module removes power when the battery voltage exceeds 4.75Vdc.
(08)						
D700 Alternate Battery felloTech P/N 18500	Short	4.2 Vdc Uoc	>7 hrs	--	--	Short output directly at battery output terminals. Output is immediately removed. Left in place for 7 hrs with no temperature increase on battery case. Battery functions normally after short is removed. See table 4.5 for temps. NC, NT
D700 Alternate Battery felloTech P/N 18500	Overcharge	5Vdc	>7 hrs			5V@3A applied directly to battery +/- terminals. (3A is well above the PTC trip current of 1.5A). Charging current reduced to 0A, once battery is fully charged. See table 4.5 for temps. NC, NT
(09)						

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Clause	Requirement + Test	Result - Remark	Verdict

D755 Battery	Overcharge (Short U3 IN to BAT)	5Vdc	>1hr	--	--	Short applied to U3 IN (pin 9) to BAT (pins 2,4,5). 5V applied and charging begins at 0.58A (Input). Charging is 0.453A CC. With short in place charge time portion of the cycle is reduced to 342mA. Input current to the device remains the same 0.58A. Left in place for >1 hour. Only 1.6 deg rise on battery case. NL, NS, NE, NF, NT, NC
D755 Battery	Overcharge (Short U3 OUT to BAT)	5Vdc	>16 hrs	--	--	Short U3 Out (pins 1,3,8) to BAT (pins 2,4,5). 0.453A normal charge current, then 984mA charge current for first 5 seconds when short is applied. After that, the charge current reduces to 475mA shortly after. Input current to device is around 0.7 to 0.8A. Battery is fully charged after 2.55 hrs where charging is removed. Left in place for >16 hours. NL, NS, NE, NF, NT, NC

Supplementary information:

NB - No indication of dielectric breakdown; YB - Dielectric breakdown (indicate time and location)

NC - Cheesecloth remained intact; YC - Cheesecloth charred or flamed

NT - Tissue paper remained intact; YT - Tissue paper charred or flamed

M.3	TABLE: Protection circuits for batteries provided within the equipment (01)						P
Is it possible to install the battery in a reverse polarity position? :					No		—
Equipment Specification	Charging						
	Voltage (V)			Current (A)			
	5Vdc			Rated 1.0A (limited by PTC rated 0.75A hold, 1.5A trip)			
Manufacturer/type	Battery specification						
	Non-rechargeable batteries		Rechargeable batteries				
	Discharging current (A)	Unintentional charging current (A)	Charging		Discharging current (A)	Reverse charging current (A)	
			Voltage (V)	Current (A)			
Howell Energy Co Ltd ICR18500 3.7V 1400mAH	--	--	3.7V (4.6V max)	0.2C ₅ A Std (520mA) 1C ₅ A Fast Charge	0.2C ₅ A Std (520mA) 1.5C ₅ A Max	--	
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Specified battery temperature (°C)				0-45C (Charging)			
Component No.	Fault condition	Charge/ discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
--	Normal	Charge	--	--	0.292A	--	Normal charging

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Clause	Requirement + Test				Result - Remark		Verdict
Battery	5V@1.5A Applied to Battery	Charging	17 hrs	28.5	1.5A	3.6 to 4.407 Vdc	Simulate faults in Model D7xx battery charging circuit. Applied 5V@1.5A directly to the battery +/- terminals. (this would be the highest charge current due to use of two PTC's both of which would limit the current). Left fault in place for >17hrs. Battery charges and then stops when PCM module senses voltage is above the max charge voltage. See table 4.5 for battery and PCM temps measured during test. NL, NS, NE, NF, NT, NC
U2	Short	Charging	7 hrs	25.7	0.34	4.149 Vdc	Short U2 in PCM on battery. Battery is installed inside model D7xx and then charged. 5V@10A applied to USB input from external power source. Resulting input current is 0.34A (same as normal charge). Left in place for >7 hrs. After approx 4 hrs, the input current was reduced to zero. The voltage across the battery was 4.149Vdc. NL, NS, NE, NF, NT, NC
--	Short	Discharge	17 hrs	35.1	1.5A	4.3V to depletion	1.5A load applied directly to battery. Simulating component fault after PTC. NL, NS, NE, NF, NT, NC
Supplementary information: Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.							

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

M.3	TABLE: Protection circuits for batteries provided within the equipment (05)						P
Is it possible to install the battery in a reverse polarity position?:				Yes, but blocking diode Q2 protects against damage if this occurs.			—
Equipment Specification		Charging					
		Voltage (V)			Current (A)		
		5Vdc			Rated 1.0A (limited by PTC rated 0.75A hold, 1.5A trip)		
Manufacturer/type		Battery specification					
		Non-rechargeable batteries		Rechargeable batteries			
		Discharging current (A)	Unintentional charging current (A)	Charging		Discharging current (A)	Reverse charging current (A)
				Voltage (V)	Current (A)		
S7xx Series AA NI-MH NI-MH Battery, Rated 1.2V (x2), 2000mAh UL 2054			--	1.2V (x2)	Std Charge 200mA (0.1C) Fast Charge 1000mA (0.5C)	1C to 1.0V Max 4000mAH (2C)	--
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Specified battery temperature (°C)				0-45C (Charging)			
Component No.	Fault condition	Charge/discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
--	Normal	Charge	--	--	0.362A	--	Normal charging
Supplementary information:							
Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.							

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

M.3	TABLE: Protection circuits for batteries provided within the equipment (06)						P
Is it possible to install the battery in a reverse polarity position? :				No – connector is keyed.		—	
Equipment Specification	Charging						
	Voltage (V)			Current (A)			
	5Vdc			Rated 1.0A (limited by PTC rated 0.75A hold, 1.5A trip)			
Manufacturer/type	Battery specification						
	Non-rechargeable batteries		Rechargeable batteries				
	Discharging current (A)	Unintentional charging current (A)	Charging		Discharging current (A)	Reverse charging current (A)	
			Voltage (V)	Current (A)			
D7xx Series – Novacell P/N 201806 (D760/D790) Li-Ion Battery, 3.7V, 1500mAh	--	--	3.7V (2.75 to 4.2Vdc)	Std Charge 300mA (0.2CA) Fast Charge 1500mA (1.0CA)	0.2CA (300mA) Max 1.0 CA (1500mA)	--	
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Specified battery temperature (°C) :				0-40C (Charging)			
Component No.	Fault condition	Charge/discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
--	Normal	Charge	--	--	0.275A	--	Normal charging
Supplementary information:							
Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.							

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

M.3	TABLE: Protection circuits for batteries provided within the equipment (08)						P
Is it possible to install the battery in a reverse polarity position? :				No – connector is keyed.		—	
Equipment Specification		Charging					
		Voltage (V)		Current (A)			
		5Vdc		Rated 1.0A (limited by PTC rated 0.75A hold, 1.5A trip)			
Manufacturer/type		Battery specification					
		Non-rechargeable batteries		Rechargeable batteries			
		Discharging current (A)	Unintentional charging current (A)	Charging		Discharging current (A)	Reverse charging current (A)
				Voltage (V)	Current (A)		
D7xx Series – Alt Battery - felloTech P/N 18500 Li-Ion Battery, 3.7V, 1400mAh		--	--	3.7V (2.75 to 4.2Vdc)	Std Charge 280mA (0.2CA) Fast Charge 1400mA (1.0CA)	0.2CA (280mA) Max 1.0 CA (1400mA)	--
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Specified battery temperature (°C) :				0-40C (Charging)			
Component No.	Fault condition	Charge/ discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
--	Normal	Charge	--	--	0.275A	--	Normal charging
Battery	5V @ 3A applied directly to battery	Charge	>7 hrs	46.6	1400mA (PEC OC protection = 1.3-2.5A)	--	5Vdc @ 3A applied directly to battery input terminals. Left in place for >7hrs. No significant temperature increase. NL, NS, NE, NF, NT, NC
Battery	Short	Discharge	>7 hrs	24.6	--	--	Battery short resulted in removal of output. No current / no temp increase. Removing short results in normal battery operation. NL, NS, NE, NF, NT, NC
Supplementary information:							
Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.							

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

M.3	TABLE: Protection circuits for batteries provided within the equipment (09)						P
Is it possible to install the battery in a reverse polarity position?:						No	—
Equipment Specification		Charging					
		Voltage (V)			Current (A)		
		5Vdc			Rated 1.0A (limited by PTC rated 0.75A hold, 1.5A trip)		
Manufacturer/type		Battery specification					
		Non-rechargeable batteries		Rechargeable batteries			
		Discharging current (A)	Unintentional charging current (A)	Charging		Discharging current (A)	Reverse charging current (A)
				Voltage (V)	Current (A)		
felloTech P/N 18500 (5Vdc (input) D755		--	--	3.5-4.3Vdc (varies)	0.453 CC (into battery)	Max 0.316A Avg 0.183A	--
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Specified battery temperature (°C)					0-45C (Charging)		
Component No.	Fault condition	Charge/discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
U3	Short Pin 9 (in) to Pins 2,4,5 (BAT)	Overcharging	1 hr	24.6	0.342A	4.14	5V applied and charging begins at 0.58A (Input). Charging is 0.453A CC. With short in place charge time portion of the cycle is reduced to 342mA. Input current to the device remains the same 0.58A. Left in place for 1 hour. Only 1.6 deg rise on battery case. NL, NS, NE, NF, NT, NC
U3	Short pins 1,3,8 (OUT) to Pins 2,4,5 (BAT)	A. Overcharging	16 hrs	25.7	0.984A Pk for <5 seconds. Avg 0.457A	3.590 to 4.278	0.453A normal charge current, then 984mA charge current for first 5 seconds when short is applied. After that, the charge current reduces to 475mA shortly after. Input current to device is around 0.7 to 0.8A. Left in place for 16 hours. Battery is fully charged after 2.55 hrs where charging is removed. NL, NS, NE, NF, NT, NC
Supplementary information:							
Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.							

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Clause	Requirement + Test	Result - Remark	Verdict

M.4.2	TABLE: Charging safeguards for equipment containing a secondary lithium battery (D7xx Series)				P
Maximum specified charging voltage (V)			4.3V max		—
Maximum specified charging current (A)			1400mA		—
Highest specified charging temperature (°C)			45C		
Lowest specified charging temperature (°C)			0C		
Battery manufacturer/type	Operating and fault condition	Measurement			Observation
		Charging voltage (V)	Charging current (A)	Temp. (°C)	
felloTech P/N 18500	Norm	3.516	0.453	23C	Charging
felloTech P/N 18500	LCST	3.401*	--	0C	* Battery voltage. No charge
felloTech P/N 18500	Norm	3.614	0.453	10C	Charging
felloTech P/N 18500	Norm	3.523	0.453	40C	Charging
felloTech P/N 18500	HCST	3.422*	--	45C	* Battery voltage. No charge
felloTech P/N 18500	Norm	3.422*	--	50C	* Battery voltage. No charge
Supplementary information: Model D755					
Abbreviation: SC= short circuit; OC= open circuit; MSCV= maximum specified charging voltage; MSCC= maximum specified charging current; HSCT= highest specified charging temperature; LSCT= lowest specified charging temperature					

Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)						N/A
Output Circuit	Condition	U _{oc} (V)	Time (s)	I _{sc} (A)		S (VA)	
				Meas.	Limit	Meas.	Limit
Supplementary Information: No outputs.							

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Clause	Requirement + Test	Result - Remark	Verdict

T.2, T.3, T.4, T.5	TABLE: Steady force test					P
Part/Location	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation
Top	Thermoplastic	>1mm	30mm	100N	5 Sec	No hazards
Bottom	Thermoplastic	>1mm	30mm	100N	5 Sec	No hazards
Right / Left Sides	Thermoplastic	>1mm	30mm	100N	5 Sec	No hazards
Supplementary information: 100N required (Actual = 111N)						

T.6, T.9	TABLE: Impact test				N/A
Location/part	Material	Thickness (mm)	Height (mm)	Observation	
Supplementary information: Class III device powered by ES1. No hazardous circuits.					

T.7	TABLE: Drop test				P
Location/part		Material	Thickness (mm)	Height (mm)	Observation
Bottom		Thermoplastic	>1mm	1000 mm	No damage, No access.
Top		Thermoplastic	>1mm	1000 mm	No damage, No access.
Front / Side		Thermoplastic	>1mm	1000 mm	No damage, No access.
Supplementary information: Passes tests of M.4.4 following drop test.					

T.8	TABLE: Stress relief test				N/A
Location/Part	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict

X	TABLE: Alternative method for determining minimum clearances distances			N/A
Clearance distanced between:	Peak of working voltage (V)	Required cl (mm)	Measured cl (mm)	
Supplementary information:				

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Clause	Requirement + Test	Result - Remark	Verdict

4.1.2		TABLE: Critical components information				P
Item No.	Object/part no.	Manufacturer/ Trademark	Type/Model	Technical Data	Standard	Mark(s) of Conformity
1) Models D7xx, D600 only						
1.1a	Thermoplastic, Housing (top, bottom)	GE (Sabic)	Cycoloy C6200	Rated minimum 94V-0 at 2.5mm thick.	UL94	UL (E121562)
1.1b	Alternate	Interchangeable	Interchangeable	Rated minimum 94-HB	UL94	UL
1.2	Printed wiring board (SELV)	Interchangeable	Interchangeable	Min V-1, 105 °C	UL796	UL
1.3	PTC (PTC1, PTC2)	Bel Fuse	0ZCC0075FF2C	Rated 16V, Hold current 0.75A, Trip current 1.5A. (Limits input current from USB port, or Cradle connector to the device).	EN 60738-1-1 UL 1434	TUV UL (E305051)
1.4a	Scan Engine – Model D700	Zebra (Symbol Technologies Inc., Motorola)	SE655 Series (SE-655-E100R)	Scan Engine, CMOS linear imager Class 1 LED (630nm)	EN/IEC62471 (Exempt Group) UL 60950-1	CB (US-30133-UL) cURus (E143267)
1.4b	Alternate Scan Engine – D700	Cipherlab co LTD.	SM1	Scan Engine, CMOS linear imager Class 1 LED	EN/IEC62471 (Exempt Group) IEC 60950-1	CB (Tested with product)
1.5	Scan Engine – Model D730	Zebra (Symbol Technologies Inc., Motorola)	SE-965HP-xxxxx (where x represents Interchangeable alphanumeric suffixes which do not affect safety).	Scan Engine, with Class 2 internal Laser Radiation (650nm)	IEC/EN 60825-1 UL 60950-1	CB (US-26231-UL) cURus (E143267)
1.6a	Scan Engine - Model D740	Zebra (Symbol Technologies Inc., Motorola)	SE2707 (may be followed by additional alphanumeric characters)	LED, 610nm (AIM), 660nm (Illum)	EN/IEC62471 (Exempt Group) UL 60950-1	CB (US-29768-UL) cURus (E143267)
1.6b	Alternate	Zebra, (Symbol, Motorola)	SE4107-xxxxxx (where X may be any alphanumeric character or blank representing configuration options not impacting product safety)	Scan Engine, linear imager, LED	EN/IEC62471 (Exempt Group) UL 62368-1	CB (US-35970-UL) cURus (E143267)
1.7	Scan Engine - Model D745	Zebra, (Symbol, Motorola)	SE2707 (may be followed by additional alphanumeric characters)	LED, 610nm (AIM), 660nm (Illum)	EN/IEC62471 (Exempt Group) UL 60950-1	CB (US-29768-UL) cURus (E143267)
1.8	Scan Engine – Model D750	Intermec	EA31 Series (P/N 3-14301102)	CMOS 2D imager w/ LED Aimer, Class 1 LED (617nm)	UL 60950-1	UL (E142821)
1.9	Scan Engine – Model D755	Zebra, (Symbol, Motorola)	SE4720	LED, 525nm, Green AIM	EN/IEC62471 (Exempt Group) UL 62368-1	CB (US-34315-UL) cURus (E143267)
1.10a	Scan Engine - Model D760	Symbol Technologies (Motorola, Zebra)	SE4710 (SE4710-xxxxxx) (where each "X" may be any alphanumeric character or blank representing configuration options not affecting product safety)	CCD imager, Class I LED 610nm Aiming LED. Hyper Red 660nm Illumination LED.	EN/IEC62471 (Exempt Group) UL 60950-1	CB (US-29768-UL) cURus (E143267)

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
1.10b	Alternate Scan Engine – Model D760	Zebra, (Symbol, Motorola)	SE4720	Red LED 610nm (AIM), 660nm (illum)	EN/IEC62471 (Exempt Group) UL 62368-1	C'B (US-34315-UL) cURus (E143267)
1.11	Scan Engine - Model D790	Symbol Technologies (Motorola, Zebra)	SE4750DP	Scan Engine, with Class 2 internal Laser Radiation (655nm)	EN/IEC62471 (Exempt Group) UL 60950-1	CB UL (E143267)
1.12a	RFID Scan Engine – Model D600	NXP	CLRC663	NFC (non-optical) type reader	--	Evaluated with product
1.12b	Alternate	Interchangeable	Interchangeable	NFC (non-optical) type reader	--	Evaluated with product
1.13	Li-Ion Battery Charger IC	Linear Technology	LTC4066	Single Cell charger from USB Port. Rated 500mA	--	Evaluated with product.
1.14	NTC Thermistor (R68)	Interchangeable	Interchangeable	Rated 10k (Thermistor temporarily disables charging if battery temp exceeds 50C)	--	Evaluated with product.
1.15	(PTC3, Battery)	Bel Fuse	0ZCC0075FF2C	Rated 16V, Hold current 0.75A, Trip current 1.5A. (First component after battery connector. Limits both charge current into the battery and discharge current from battery).	UL 1434 EN 60738-1-1	UL (E305051) TUV
1.16	Battery:	Consists of the following		Single Cell Battery w/ protection circuit module. PVC Jacket and 28 AWG wiring and connector.	--	Tested as part of evaluation.
1.16.1a	Battery Cell	Howell Energy Co. Ltd.	ICR18500 (18500)	Lithium Ion Polymer Battery, Rated 3.7V (4.6V max), 1400mAh	UL1642	UL (MH49053)
1.16.1b	Alternate Battery Cell	Novacell (HUIZHOU WES NEW ENERGY CO LTD)	P/N 201806 ICR18500 (18500)	Lithium Ion Polymer Battery, Rated 3.7V, 1500mAh	UL1642	UL (MH61023)
1.16.1c	Alternate Battery Cell	felloTech (Fello Tech Co Ltd)	P/N 18500	Lithium Ion Polymer Battery, Rated 3.7V, 1400mAh	UL1642	UL (MH61728)
1.16.2	Protection Circuit Module	Interchangeable	Interchangeable	Protection Circuit Limits battery charge and Discharge.	--	--
2) Models S7xx Series only						
2.1a	Thermoplastic, Housing (top, bottom)	Chi Mei Corporation	PC-540A	"Wonderloy" PC/ABS, Rated minimum 94V-0 at 1.5mm thick.	UL94	UL (E56070)
2.1b	Alternate	Interchangeable	Interchangeable	Rated minimum 94-HB	UL94	UL
2.2a	Printed wiring board (SELV)	Cheng-Mao, Electronics Co Ltd	Type 2M	Rated V-0, 130°C	UL796	UL
2.2b	Alternate	Interchangeable	Interchangeable	Min V-1, 105 °C	UL796	UL

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
2.3	PTC (PTC1, PTC2)	Bel Fuse	0ZCC0075FF2C	Rated 16V, Hold current 0.75A, Trip current 1.5A. (Limits input current to the device from either the charging cradle connector (PTC1) or charging barrel Jack (PTC2)).	UL 1434 EN 60738-1-1	UL (E305051) TUV
2.4a	Scan Engine - Model S700 only	Marson	MT-780	Scan Engine, CMOS linear imager Class 1 LED (630nm)	EN/IEC62471 (Exempt Group)	Tested with application
2.4b	Alternate	Zebra, (Symbol, Motorola)	SE655 Series (SE-655-E100R)	Scan Engine, CMOS linear imager Class 1 LED (630nm)	EN/IEC62471 (Exempt Group) UL 60950-1	CB (US-30133-UL) cURus (E143267)
2.5	Scan Engine – Model S730 only	Symbol Technologies Inc. (Zebra, Motorola)	SE-965HP-xxxxx (where X may be any alphanumeric character or blank representing configuration options not impacting product safety) (SE-965HP-100R)	Scan Engine, with Class 2 internal Laser Radiation (650nm)	IEC/EN 60825-1 UL 60950-1	CB (US-26231-UL) cURus (E143267)
2.6	Scan Engine Model S740	Zebra, (Symbol, Motorola)	SE2707-xxxxxx (where X may be any alphanumeric character or blank representing configuration options not impacting product safety) (SE2707-LS000R)	Scan Engine, linear imager Class 1 LED (660 nm)	EN/IEC62471 (Exempt Group) UL 60950-1	CB (US-29768-UL) cURus (E143267)
2.6b	Alternate	Zebra, (Symbol, Motorola)	SE4107-xxxxxx (where X may be any alphanumeric character or blank representing configuration options not impacting product safety)	Scan Engine, linear imager, LED	EN/IEC62471 (Exempt Group) UL 60950-1	CB (US-35970-UL) cURus (E143267)
2.7a	Scan Engine – Model S760	Zebra	SE4710	LED imager engine LED, 660nm	EN/IEC62471 (Exempt Group) UL 60950-1	CB (US-29768-UL) cURus (E143267)
2.7b	Alternate Scan Engine – Model S760	Zebra, (Symbol, Motorola)	SE4720	Red LED 610nm (AIM), 660nm (illum)	EN/IEC62471 (Exempt Group) UL 62368-1	CB (US-34315-UL) cURus (E143267)
2.8	Scan Engine – Model S790	Zebra	SE4750DP	Scan Engine, with Class 2 internal Laser Radiation (655nm)	EN/IEC62471 (Exempt Group) UL 60950-1	CB cURus (E143267)
2.9	NIMH Battery Monitor (U5)	Dallas Semiconductor (Maxim)	DS2745	--	--	Evaluated with product.
2.10	NIMH Charge Controller (U2)	Dallas Semiconductor (Maxim)	BQ2002E	--	--	Evaluated with product.
2.11	NTC Thermistor (RT1)	Interchangeable	Interchangeable	Rated 10k (Thermistor disables charging if temp exceeds 65C)	--	Evaluated with product.
2.12a	Battery – (two provided).	MANLY (Shenzhen FBtech Co Ltd)	AA2000 (May additionally have prefix RTU)	AA Size (LR6) Rechargeable NI-MH Battery, Rated 1.2V, 2000mAh	UL 2054	UL (MH46375)
2.12b	Alternate	Novacell (Jiangsu Cel Battery Co. Ltd)	AA2000	AA Size (LR6) Rechargeable NI-MH Battery, Rated 1.2V, 2000mAh	UL 2054	UL (MH46026)

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict

2.12c	Alternate	BPI (Shenzhen Betterpower Battery Co, Ltd)	AA2000	AA Size (LR6) Rechargeable NI-MH Battery, Rated 1.2V, 2000mAh	UL 2054	UL (MH10329)
2.12d	Alternate	Tenergy (Shenzhen Highpower Technology Co. Ltd)	Centura (HFR-AA2000)	AA Size (LR6) Rechargeable NI-MH Battery, Rated 1.2V, 2000mAh	UL 2054	UL (MH21283)
2.12e	Alternate	Interchangeable	Interchangeable	AA Size (LR6) Rechargeable NI-MH Battery, Rated 1.2V, 1000-2000mAh	UL 2054	UL

3) Charging Cradle P/N 8530-00078xx (Black) or 8530-00090xx (White) (optional) (where x = A-Z, 0-9, “/”, “-“or blank, not safety related)

3.1a	Thermoplastic, Housing (top, bottom)	Chi Mei Corporation	PC-540A	“Wonderloy” PC/ABS, Rated minimum 94V-0 at 1.5mm thick.	UL94	UL (E56070)
3.1b	Alternate	Interchangeable	Interchangeable	Rated minimum 94- HB	UL94	UL
3.2	Printed wiring board (SELV)	Interchangeable	Interchangeable	Min V-1, 105 °C	UL796	UL
3.3	Fuse (F1)	Interchangeable	Interchangeable	Rated min 5Vdc, 1.5A	UL 248	UL

4) Charging Stand P/N 8530-00057xx (optional) (where x = A-Z, 0-9, “/”, “-“or blank, not safety related)

4.1a	Thermoplastic, Housing (top, bottom)	Chi Mei Corporation	PC-540A	“Wonderloy” PC/ABS, Rated minimum 94V-0 at 1.5mm thick.	UL94	UL (E56070)
4.1b	Alternate	Interchangeable	Interchangeable	Rated minimum 94- HB	UL94	UL
4.2	Printed wiring board (SELV)	Interchangeable	Interchangeable	Min V-1, 105 °C	UL796	UL
4.3	Fuse (F1)	Interchangeable	Interchangeable	Rated min 5Vdc, 1.5A	UL 248	UL

5) Optional Power Adapter

5.1a	AC Adapter	Phihong	PSAA05A-050xxx (where x = any alphanumeric character or blank) (PSAA05A-050QL6)	Rated 100-240V~, 0.2A, 50/60Hz, 0.2A, (11-15VA) Output: DC 5V, 1.0A	EN 62368-1	TUV GS
5.1b	Alternate	Interchangeable	Interchangeable	Rated 100-240Vac, 50/60Hz. Output Rated 5V, 1A max. Marked LPS or “Class 2”	EN 62368-1	TUV, VDE, Nemko or equivalent.

Supplementary information:

1) Provided evidence ensures the agreed level of compliance. See OD-2039.

2) Description line content is optional. Main line description needs to clearly detail the component used for testing.

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Customer's Testing Facility according to CTF stage 1 or CTF stage 2 procedure has been used.

Note: This page may be removed when CTF stage 1 or CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Original report (D7xx Series, D750, D730)

(01)

Instr. Code	Instrument I.D.	Instrument Type	Range Used Or Reference	Make and Model	Calibration Date	
					Last	Due
1e	US37027751 (SAF-06)	Digital Multimeter	0-300VAC/DC, 0 – 1200 deg C, 10mA-1A, 3-300kHz	HP, 34970A	12/10/15	12/10/16
1e.11	MY41216676 (SAF-92)	Multiplex. Channel	0-300V 1A -150 to 1200 °C	Keysight/HP, 34901A	11/30/15	11/30/16
1g	89570037 (SAF-27)	Digital Multimeter	1000V, 10A Temp:-200 deg C +1090 deg C Capacitance: 9,999uF	Fluke 87 V/E	02/02/16	02/02/17
1k	MY44006564 (SAF-71)	Digital Multimeter	0-300VAC/DC, 0 – 1200 deg C, 10mA-1A, 3-300kHz	Agilent, 34970A	02/09/16	02/09/17
4e	13080482 (SAF-87)	True RMS Power Analyzer	See Data Sheet	Extech 380803	07/02/15	07/02/16
11a	E00084528 (SAF-007)	DC Power Supply	0-80V dc, 0-75A	Xantrex, XDC 80-75	07/06/15	07/06/16
19a	A06BM02108 (SAF-81)	DC Load	0-360Vdc 0-30A, 300W	Array, 3711A	09/03/15	09/03/16

D730: 2016-08-02 to 2016-08-08

(02)

Instr. Code	Instrument I.D.	Instrument Type	Range Used Or Reference	Make and Model	Calibration Date	
					Last	Due
1n	30930173 (SAF-91)	Digital Multimeter	0-1000V AC/DC 0-400mA DC/AC 0-10A DC/AC Temp:-200 deg C +1090 deg C Capacitance: 9,999uF	Fluke 87 V	05/31/16	05/31/17
1o	34370113 (SAF-96)	Digital Multimeter	0-1000V AC/DC 0-400mA DC/AC 0-10A DC/AC Temp:-200 deg C +1090 deg C Capacitance: 9,999uF	Fluke 87 V	04/06/2016	04/06/2017
1e.9	MY41201777 (SAF-89)	Multiplex. Channel	0-300V 1A -150 to 1200 °C	HP/Agilent, 34901A	03/28/16	03/28/17
1m	US37036788 (SAF-84)	Digital Multimeter	0-300VAC/DC, 0 – 1200 deg C, 10mA-1A, 3-300kHz	Agilent, 34970A	12/23/15	12/23/16
11a	E00084528 (SAF-007)	DC Power Supply	0-80V dc, 0-75A	Xantrex, XDC 80-75	07/11/16	07/11/17
19a	A06BM02108 (SAF-81)	DC Load	0-360Vdc 0-30A, 300W	Array, 3711A	09/03/15	09/03/16

S7xx Series (January 8-11th, 2018)

(05)

Instr. Code	Instrument I.D.	Instrument Type	Range Used Or Reference	Make and Model	Calibration Date	
					Last	Due
1e.3	MY41035468 (SAF-55)	Multiplex. Channel	0-300V 1A -150 to 1200 °C	Agilent, 34901A	05/16/17	05/16/18
1j	11820060 (SAF-61)	Digital Multimeter	0-1000 V AC/DC 0-400 mA DC/AC 0-10 A DC/AC Temp:-200 deg C +1090 deg C Capacitance: 9,999uF	Fluke, 87V	11/16/17	11/16/18
1m	US37036788 (SAF-84)	Digital Multimeter	0-300VAC/DC, 0 – 1200 deg C, 10mA-1A, 3-300kHz	Agilent, 34970A	12/28/17	12/28/18
1p	34860335 (SAF-97)	Digital Multimeter	0-1000 V AC/DC 0-400 mA DC/AC 0-10 A DC/AC Temp:-200 deg C +1090 deg C Capacitance: 9,999uF	Fluke, 87V	06/09/17	06/09/18
1q	38060145 (SAF-105)	Digital Multimeter	0-1000 V AC/DC 0-400 mA DC/AC 0-10 A DC/AC Temp:-200 deg C +1090 deg C Capacitance: 9,999uF	Fluke, 87V	04/05/17	04/05/18
5	0393/9114 (SAF-36)	AC Power Source	0-150/0-300V, 10/5 A 20-5000Hz	Pacific Power Source, 112AMX-with UPC12 Controller	03/07/17	03/07/18
7c	B040493 (SAF-12)	Oscilloscope	DC-200MHz	Tektronix TDS3024B	08/22/17	08/22/18
7c.1	B016369 (To be used with Item 7c) (SAF-63)	Differential Probe	100/1MΩ	Tektronix P5210	08/22/17	08/22/18
8	1704 (SAF-14)	Force Gauge	1-100lbs	Chatillon, DPPH-100	03/22/17	03/22/18
11a	E00084528 (SAF-07)	DC Power Supply	0-80V dc, 0-75A	Xantrex, XDC 80-75	07/19/17	07/19/18

11d	72879520120603 (SAF-74)	DC Programmable Power Supply	0-32Vx2, 0-6V, 0-3Ax3	Tenma 72-8795	04/11/17	04/11/18
19	A06BK03093 (SAF-67)	DC Load	0-360Vdc 0-30A, 300W	Array, 3711A	08/23/17	08/23/18
21	05246 (SAF-37)	Wall Mount Barometer/ Thermometer	945-1045 mbar/ .1 deg.	Oakton 03316-80	01/31/17	01/31/19
22q	160634632	Digital Timer	1/100 s	Control Company, 5004	07/29/16	07/29/18
23c	SELP001 (SAF-46)	Finger Probe	N/A	UL	05/25/17	05/25/20
23d	SELP002 (SAF-47)	Finger Probe	N/A	UL	05/25/17	05/25/20
24	SELIB001 (SAF-43)	Impact Ball	N/A	ED&D ITB-01	05/10/17	05/10/20
27	34602 08/00 (SAF-42)	Scale	0-160 lbs (73 kg)	Sunbeam, Freightmaster 400	05/17/17	05/17/18
27b	1107000294 (SAF-79)	Scale	kg, g, oz, lbs 1500g max (3.3 lbs max)	Zieis Z1500-TS	06/22/17	06/22/18
30b	1840-0026 (SAF-104)	Tape Measure	mm/inches	Johnson 1840-0026	03/16/17	03/16/20
32	23840088 (SAF-83)	Infrared Thermometer	See Data Sheet	Fluke, 62 MAX	12/06/17	12/06/18

Add Models D760 / D790, (August 1st -10th, 2018)

(06)

Instr. Code	Instrument I.D.	Instrument Type	Range Used Or Reference	Make and Model	Calibration Date	
					Last	Due
1n	30930173 (SAF-91)	Digital Multimeter	0-1000V AC/DC 0-400mA DC/AC 0-10A DC/AC Temp:-200 deg C +1090 deg C Capacitance: 9,999uF	Fluke 87 V	06/18/18	06/18/19
1p	34860335 (SAF-97)	Digital Multimeter	0-1000 V AC/DC 0-400 mA DC/AC 0-10 A DC/AC Temp:-200 deg C +1090 deg C Capacitance: 9,999uF	Fluke, 87V	06/11/18	06/11/19
11c	SELBPS001 (SAF-69)	DC Power Supply	0-30Vdc 0-10A	Circuit Specialists, Inc. CSI3010X	02/21/18	02/21/19
19	A06BK03093 (SAF-67)	DC Load	0-360Vdc 0-30A, 300W	Array, 3711A	08/23/17	08/23/18
21	05246 (SAF-37)	Wall Mount Barometer/ Thermometer	945-1045 mbar/ .1 deg.	Oakton 03316-80	01/31/17	01/31/19
22u	181396991	Digital Timer	1/100 s	Control Company, 5004	06/27/18	06/27/20
27	34602 08/00 (SAF-42)	Scale	0-160 lbs (73 kg)	Sunbeam, Freightmaster 400	05/17/18	05/17/19
27b	1107000294 (SAF-79)	Scale	kg, g, oz, lbs 1500g max (3.3 lbs max)	Zleis Z1500-TS	06/21/18	06/21/19
30b	1840-0026 (SAF-104)	Tape Measure	mm/inches	Johnson 1840-0026	03/16/17	03/16/20
32	23840088 (SAF-83)	Infrared Thermometer	See Data Sheet	Fluke, 62 MAX	12/06/17	12/06/18

SCKT160415-07: D7xx Alternate battery (felloTech)

(08)

Instr. Code	Instrument I.D.	Instrument Type	Range Used Or Reference	Make and Model	Cal Date - Last	Cal Date - Due
1e.11	MY41216676 (SAF-92)	Multiplex. Channel	0-300V 1A -150 to 1200 °C	Keysight/HP, 34901A	12/02/19	12/02/20
1h	US37046116 (SAF-54)	Digital Multimeter	0-300VAC/DC, 0 – 1200 deg C, 10mA-1A, 3-300kHz	Agilent, 34970A	03/04/20	03/04/21
1q	38060145 (SAF-105)	Digital Multimeter	0-1000 V AC/DC 0-400 mA DC/AC 0-10 A DC/AC Temp:-200 deg C +1090 deg C Capacitance: 9,999uF	Fluke, 87V	03/31/20	03/31/21
11c	SELBPS001 (SAF-69)	DC Power Supply	0-30Vdc 0-10A	Circuit Specialists, Inc. CSI3010X	03/04/20	03/04/21
19b	A06 BN 03 030 (SAF-109)	DC Load	0-360Vdc 0-30A, 300W	Array, 3711A	10/03/19	10/03/20

SCKT201102-09

(09)

Instr. Code	Instrument I.D.	Instrument Type	Range Used Or Reference	Make and Model	Cal Date - Last	Cal Date - Due
1e	US37027751 (SAF-06)	Digital Multimeter	0-300VAC/DC, 0 – 1200 deg C, 10mA-1A, 3-300kHz	HP, 34970A	12/18/19	12/18/20
1e.11	MY41216676 (SAF-92)	Multiplex. Channel	0-300V 1A -150 to 1200 °C	Keysight/HP, 34901A	12/02/19	12/02/20
1g	89570037 (SAF-27)	Digital Multimeter	1000V, 10A Temp:-200 deg C +1090 deg C Capacitance: 9,999uF	Fluke 87 V/E	02/19/20	02/19/21
1n	30930173 (SAF-91)	Digital Multimeter	0-1000V AC/DC 0-400mA DC/AC 0-10A DC/AC Temp:-200 deg C +1090 deg C Capacitance:	Fluke 87 V	06/15/20	06/15/21

			9,999uF			
1q	38060145 (SAF-105)	Digital Multimeter	0-1000 V AC/DC 0-400 mA DC/AC 0-10 A DC/AC Temp:-200 deg C +1090 deg C Capacitance: 9,999uF	Fluke, 87V	03/31/20	03/31/21
2c	3985257 (SAF-24)	Temperature Indicator	-190-1200 deg C	Fluke, 52	12/09/19	12/09/20
8	1704 (SAF-14)	Force Gauge	1-100lbs	Chatillon, DPPH-100	04/21/20	04/21/21
11c	SELBPS001 (SAF-69)	DC Power Supply	0-30Vdc 0-10A	Circuit Specialists, Inc. CSI3010X	03/04/20	03/04/21
15a	ZP1645372 (SAF-103)	Environmental Chamber	40 – 93%RH -45-175 deg C	CSZ ZPH-32-3.5- SCT/AC	02/21/20	02/21/21
16a	CH18656 (SAF-68)	Humidity/ Temp Chart Recorder	See Data Sheet	Extech RH520	07/12/19	07/12/21
17	0214248 (SAF-08)	Digital Caliper CD6"CS	1/100mm	Mitutoyo 500-196	03/26/20	03/26/21
19	A06BK03093 (SAF-67)	DC Load	0-360Vdc 0-30A, 300W	Array, 3711A	09/25/20	09/25/21
20c	2129 (SAF-76)	Current Shunt	20A, 50mV	Crompton TM-20.50	04/01/20	04/01/23
21	05246 (SAF-37)	Wall Mount Barometer/ Thermometer	945-1045 mbar/ 0.1 deg	Oakton 03316-80	02/14/19	02/14/21
22x	192548901	Digital Timer	1/100 s	Control Company, 5004	10/09/19	10/09/21
23a	1483024 (SAF-44)	Finger Probe	N/A	Zenith, BS 3042-I	05/20/20	05/20/23
23e	L12491766 (SAF-112)	Finger Probe	N/A	ED&D, ULP-01	06/04/20	06/04/21
24	SELIB001 (SAF-43)	Impact Ball	N/A	ED&D ITB-01	05/06/20	05/06/23
25	SELPP001 (SAF-48)	Pin Probe	N/A	UL	05/20/20	05/20/23

26	SELPROT001 (SAF-39)	Protractor	N/A	Empire 36	05/20/20	05/20/23
27	34602 08/00 (SAF-42)	Scale	0-160 lbs (73 kg)	Sunbeam, Freightmaster 400	05/06/20	05/06/21
27b	1107000294 (SAF-79)	Scale	kg, g, oz, lbs 1500g max (3.3 lbs max)	Zieis Z1500-TS	07/01/20	07/01/21
30b	1840-0026 (SAF-104)	Tape Measure	mm/inches	Johnson 1840-0026	04/01/20	04/01/23
32	23840088 (SAF-83)	Infrared Thermometer	See Data Sheet	Fluke, 62 MAX	11/20/19	11/20/20

SCKT201102-10**(10)**

Instr. Code	Instrument I.D.	Instrument Type	Range Used Or Reference	Make and Model	Cal Date - Last	Cal Date - Due
1o	34370113 (SAF-96)	Digital Multimeter	0-1000V AC/DC 0-400mA DC/AC 0-10A DC/AC Temp:-200 deg C +1090 deg C Capacitance: 9,999uF	Fluke 87 V	03/25/21	03/25/22
11c	SELBPS001 (SAF-69)	DC Power Supply	0-30Vdc 0-10A	Circuit Specialists, Inc. CSI3010X	03/19/21	03/19/22
16a	CH18656 (SAF-68)	Humidity/ Temp Chart Recorder	See Data Sheet	Extech RH520	07/07/21	07/07/23
17	0214248 (SAF-08)	Digital Caliper CD6"CS	1/100mm	Mitutoyo 500-196	03/23/21	03/23/22
21	05246 (SAF-37)	Wall Mount Barometer/ Thermometer	945-1045 mbar/ 0.1 deg	Oakton 03316-80	02/17/21	02/17/23
22z	200733592	Digital Timer	1/100 s	Control Company, 5004	11/18/20	11/18/22
25	SELPP001 (SAF-48)	Pin Probe	N/A	UL	05/20/20	05/20/23
26	SELPROT001 (SAF-39)	Protractor	N/A	Empire 36	05/20/20	05/20/23
27	34602 08/00 (SAF-42)	Scale	0-160 lbs (73 kg)	Sunbeam, Freightmaster 400	05/05/21	05/05/22

27b	1107000294 (SAF-79)	Scale	kg, g, oz, lbs 1500g max (3.3 lbs max)	Zieis Z1500-TS	07/01/20	07/01/21
30b	1840-0026 (SAF-104)	Tape Measure	mm/inches	Johnson 1840-0026	04/01/20	04/01/23
32	23840088 (SAF-83)	Infrared Thermometer	See Data Sheet	Fluke, 62 MAX	12/01/20	12/01/21

IEC62368_1C- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 62368-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment - Part 1: Safety requirements)			
Differences according to : EN IEC 62368-1:2020+A11:2020			
Attachment Form No. : EU_GD_IEC62368_1C			
Attachment Originator : UL(Demko)			
Master Attachment : 2020-03-10			
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	CENELEC COMMON MODIFICATIONS (EN)		P
	Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2020+A11:2020. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2018. Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2018 are prefixed "Z".		P
	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords		P
1	Modification to Clause 3 .		P
3.3.19	Sound exposure <i>Replace 3.3.19 of IEC 62368-1 with the following definitions:</i>		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.19.1	momentary exposure level, MEL metric for estimating 1 s sound exposure level from the HD 483-1 S2 test signal applied to both channels, based on EN 50332-1:2013, 4.2. Note 1 to entry: MEL is measured as A-weighted levels in dB. Note 2 to entry: See B.3 of EN 50332-3:2017 for additional information.	Added. No such headphone or earphone feature that requires additional evaluation	N/A
3.3.19.3	sound exposure, E A-weighted sound pressure (p) squared and integrated over a stated period of time, T Note 1 to entry: The SI unit is $\text{Pa}^2 \text{s}$. $E = \int_0^T p(t)^2 dt$	See above	N/A
3.3.19.4	sound exposure level, SEL logarithmic measure of sound exposure relative to a reference value, E_0 , typically the 1 kHz threshold of hearing in humans. Note 1 to entry: SEL is measured as A-weighted levels in dB. $SEL = 10 \lg \left(\frac{E}{E_0} \right) \text{ dB}$ Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.	See above	N/A
3.3.19.5	digital signal level relative to full scale, dBFS levels reported in dBFS are always r.m.s. Full scale level, 0 dBFS, is the level of a dc-free 997-Hz sine wave whose undithered positive peak value is positive digital full scale, leaving the code corresponding to negative digital full scale unused Note 1 to entry: It is invalid to use dBFS for non-r.m.s. levels. Because the definition of full scale is based on a sine wave, the level of signals with a crest factor lower than that of a sine wave may exceed 0 dBFS. In particular, square wave signals may reach +3,01 dBFS.	See above	N/A
2	Modification to Clause 10		P
10.6	Safeguards against acoustic energy sources Replace 10.6 of IEC 62368-1 with the following:		N/A
10.6.1.1	Introduction Safeguard requirements for protection against	No acoustic sources. All of 10.6 does not apply	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	long-term exposure to excessive sound pressure levels from personal music players closely coupled to the ear are specified below. Requirements for earphones and headphones intended for use with personal music players are also covered. A personal music player is a portable equipment intended for use by an ordinary person, that: – is designed to allow the user to listen to audio or audiovisual content / material; and – uses a listening device, such as headphones or earphones that can be worn in or on or around the ears; and – has a player that can be body worn (of a size suitable to be carried in a clothing pocket) and is intended for the user to walk around with while in continuous use (for example, on a street, in a subway, at an airport, etc.). EXAMPLES Portable CD players, MP3 audio players, mobile phones with MP3 type features, PDAs or similar equipment. Personal music players shall comply with the requirements of either 10.6.2 or 10.6.3. NOTE 1 Protection against acoustic energy sources from telecom applications is referenced to ITU-T P.360. NOTE 2 It is the intention of the Committee to allow the alternative methods for now, but to only use the dose measurement method as given in 10.6.5 in future. Therefore, manufacturers are encouraged to implement 10.6.5 as soon as possible. Listening devices sold separately shall comply with the requirements of 10.6.6. These requirements are valid for music or video mode only. The requirements do not apply to: – professional equipment; NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment. – hearing aid equipment and other devices for assistive listening; – the following type of analogue personal music players: • long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and • cassette player/recorder; NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that		

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Clause	Requirement + Test	Result - Remark	Verdict
	within a few years it will no longer exist. This exemption will not be extended to other technologies. – a player while connected to an external amplifier that does not allow the user to walk around while in use. For equipment that is clearly designed or intended primarily for use by children, the limits of the relevant toy standards may apply. The relevant requirements are given in EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.		
10.6.1.2	Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). For intentional radiators, ICNIRP guidelines should be taken into account for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body mounted devices, attention is drawn to EN 50360 and EN 50566.	Product does not generate non-ionizing radiation.	N/A
10.6.2	Classification of devices without the capacity to estimate sound dose		N/A
10.6.2.1	General This standard is transitioning from short-term based (30 s) requirements to long-term based (40 hour) requirements. These clauses remain in effect only for devices that do not comply with sound dose estimation as stipulated in EN 50332-3. For classifying the acoustic output $L_{Aeq,T}$, measurements are based on the A-weighted equivalent sound pressure level over a 30 s period. For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, measurements may be done over the duration of the complete song. In this case, T becomes the duration of the song. NOTE Classical music, acoustic music and broadcast typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the content and compare it with the programme simulation noise, the warning	No acoustic energy sources	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	does not need to be given as long as the average sound pressure of the song does not exceed the required limit. For example, if the player is set with the programme simulation noise to 85 dB, but the average music level of the song is only 65 dB, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dB.		
10.6.2.2	RS1 limits (to be superseded, see 10.6.3.2) RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 85 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 27 mV (analogue interface) or -25 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1. – The RS1 limits will be updated for all devices as per 10.6.3.2.		N/A
10.6.2.3	RS2 limits (to be superseded, see 10.6.3.3) RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or when the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 100 dB(A) when playing the fixed “programme simulation noise” as described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 150 mV (analogue interface) or -10 dBFS (digital interface) when playing the fixed “programme simulation noise” as described in EN 50332-1.		N/A
10.6.2.4	RS3 limits RS3 is a class 3 acoustic energy source that exceeds RS2 limits.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.3	Classification of devices (new)		N/A
10.6.3.1	General Previous limits (10.6.2) created abundant false negative and false positive PMP sound level warnings. New limits, compliant with The Commission Decision of 23 June 2009, are given below.	Not a dosed based system All of 10.6.3 does not apply	N/A
10.6.3.2	RS1 limits (new) RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 80 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.		N/A
10.6.3.3	RS2 limits (new) RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the weekly sound exposure level, as described in EN 50332-3, shall be ≤ 80 dB when playing the fixed "programme simulation noise" described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output level, integrated over one week, as described in EN50332-3, shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.		N/A
10.6.4	Requirements for maximum sound exposure		N/A
10.6.4.1	Measurement methods	No audio outputs	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	All volume controls shall be turned to maximum during tests. Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.		
10.6.4.2	Protection of persons Except as given below, protection requirements for parts accessible to ordinary persons, instructed persons and skilled persons are given in 4.3. NOTE 1 Volume control is not considered a safeguard. Between RS2 and an ordinary person, the basic safeguard may be replaced by an instructional safeguard in accordance with Clause F.5, except that the instructional safeguard shall be placed on the equipment, or on the packaging, or in the instruction manual. Alternatively, the instructional safeguard may be given through the equipment display during use. The elements of the instructional safeguard shall be as follows: – element 1a: the symbol , IEC 60417-6044 (2011-01) – element 2: “High sound pressure” or equivalent wording – element 3: “Hearing damage risk” or equivalent wording – element 4: “Do not listen at high volume levels for long periods.” or equivalent wording An equipment safeguard shall prevent exposure of an ordinary person to an RS2 source without intentional physical action from the ordinary person and shall automatically return to an output level not exceeding what is specified for an RS1 source when the power is switched off. The equipment shall provide a means to actively inform the user of the increased sound level when the equipment is operated with an output exceeding RS1. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an output exceeding RS1. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time. NOTE 2 Examples of means include visual or audible signals. Action from the user is always needed.	EUT does not produce sound pressure. No audio outputs.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	NOTE 3 The 20 h listening time is the accumulative listening time, independent of how often and how long the personal music player has been switched off. A skilled person shall not be unintentionally exposed to RS3.		
10.6.5	Requirements for dose-based systems		N/A
10.6.5.1	General requirements Personal music players shall give the warnings as provided below when tested according to EN 50332-3, using the limits from this clause. The manufacturer may offer optional settings to allow the users to modify when and how they wish to receive the notifications and warnings to promote a better user experience without defeating the safeguards. This allows the users to be informed in a method that best meets their physical capabilities and device usage needs. If such optional settings are offered, an administrator (for example, parental restrictions, business/educational administrators, etc.) shall be able to lock any optional settings into a specific configuration. The personal music player shall be supplied with easy to understand explanation to the user of the dose management system, the risks involved, and how to use the system safely. The user shall be made aware that other sources may significantly contribute to their sound exposure, for example work, transportation, concerts, clubs, cinema, car races, etc.	Not this type of equipment	N/A
10.6.5.2	Dose-based warning and requirements When a dose of 100 % <i>CSD</i> is reached, and at least at every 100 % further increase of <i>CSD</i>, the device shall warn the user and require an acknowledgement. In case the user does not acknowledge, the output level shall automatically decrease to compliance with class RS1. The warning shall at least clearly indicate that listening above 100 % <i>CSD</i> leads to the risk of hearing damage or loss.		N/A
10.6.5.3	Exposure-based requirements With only dose-based requirements, cause and effect could be far separated in time, defying the purpose of educating users about safe listening practice. In addition to dose-based requirements, a PMP shall therefore also put a limit to the short-		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	term sound level a user can listen at. The exposure-based limiter (EL) shall automatically reduce the sound level not to exceed 100 dB(A) or 150 mV integrated over the past 180 s, based on methodology defined in EN 50332-3. The EL settling time (time from starting level reduction to reaching target output) shall be 10 s or faster. Test of EL functionality is conducted according to EN 50332-3, using the limits from this clause. For equipment provided as a package (player with its listening device), the level integrated over 180 s shall be 100 dB or lower. For equipment provided with a standardized connector, the unweighted level integrated over 180 s shall be no more than 150 mV for an analogue interface and no more than -10 dBFS for a digital interface. NOTE In case the source is known not to be music (or test signal), the EL may be disabled.		

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input With 94 dB L_{Aeq} acoustic pressure output of the listening device, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the input voltage of the listening device when playing the fixed “programme simulation noise” as described in EN 50332-1 shall be ≥ 75 mV. NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV or 100 dB and 150 mV.	Not a listening device	N/A
10.6.6.2	Corded listening devices with digital input With any playing device playing the fixed “programme simulation noise” described in EN 50332-1, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.	Not a listening device	N/A
10.6.6.3	Cordless listening devices In cordless mode, – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the cordless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the receiving device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the above mentioned programme simulation noise, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.	Not a listening device	N/A
10.6.6.4	Measurement method <i>Measurements shall be made in accordance with EN 50332-2 as applicable.</i>		
3	Modification to the whole document		P

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
	Delete all the “country” notes in the reference document according to the following list:					P
	0.2.1	Note 1 and 2	1	Note 4 and 5	3.3.8.1	Note 2
	3.3.8.3	Note 1	4.1.15	Note	4.7.3	Note 1 and 2
	5.2.2.2	Note	5.4.2.3.2.2 Table 12	Note c	5.4.2.3.2.4	Note 1 and 3
	5.4.2.3.2.4 Table 13	Note 2	5.4.2.5	Note 2	5.4.5.1	Note
	5.4.10.2.1	Note	5.4.10.2.2	Note	5.4.10.2.3	Note
	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3 and 4
	5.6.8	Note 2	5.7.6	Note	5.7.7.1	Note 1 and Note 2
	8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and 4 and 5	10.5.3	Note 2
	10.6.1	Note 3	F.3.3.6	Note 3	Y.4.1	Note
	Y.4.5	Note				
4	Modification to Clause 1					P
1	Add the following note: <i>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.</i>			Added. Compliance is documented separately for CE Marking		P

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Clause	Requirement + Test	Result - Remark	Verdict
5	Modification to 4.Z1		
4.Z1	Add the following new subclause after 4.9: To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. mains, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of B.3.1 and B.4 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for pluggable equipment type B or permanently connected equipment, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for pluggable equipment type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.	Unit is powered by internal 3.7Vdc battery or recharged by 5Vdc via external host or adapter. Class III input only with no direct connection to AC Mains.	N/A
6	Modification to 5.4.2.3.2.4		N.A
5.4.2.3.2.4	Add the following to the end of this subclause: The requirement for interconnection with external circuit is in addition given in EN 50491-3:2009.	Added. No such connection with external transients potentially brought into a building.	N/A
7	Modification to 10.2.1		N/A
10.2.1	Add the following to ^{c)} and ^{d)} in table 39: For additional requirements, see 10.5.1.	Added. Such emissions are not present in equipment under evaluation.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8	Modification to 10.5.1		N/A
10.5.1	Add the following after the first paragraph: For RS 1 compliance is checked by measurement under the following conditions: In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or pre-sets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made. NOTE Z1 Soldered joints and paint lockings are examples of adequate locking. The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm², at any point 10 cm from the outer surface of the apparatus. Moreover, the measurement shall be made under fault conditions causing an increase of the high voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made. For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level. NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.	Added. No X-radiation	N/A
9	Modification to G.7.1		N/A
G.7.1	Add the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.	Unit is powered by internal 3.7Vdc battery or recharged by 5Vdc via external host or adapter. Class III input only with no direct connection to AC Mains. No Mains supply cord.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10	Modification to Bibliography		P
	Add the following notes for the standards indicated: IEC 60130-9 NOTE Harmonized as EN 60130-9. IEC 60269-2 NOTE Harmonized as HD 60269-2. IEC 60309-1 NOTE Harmonized as EN 60309-1. IEC 60364 NOTE some parts harmonized in HD 384/HD 60364 series. IEC 60601-2-4 NOTE Harmonized as EN 60601-2-4. IEC 60664-5 NOTE Harmonized as EN 60664-5. IEC 61032:1997 NOTE Harmonized as EN 61032:1998 (not modified). IEC 61508-1 NOTE Harmonized as EN 61508-1. IEC 61558-2-1 NOTE Harmonized as EN 61558-2-1. IEC 61558-2-4 NOTE Harmonized as EN 61558-2-4. IEC 61558-2-6 NOTE Harmonized as EN 61558-2-6. IEC 61643-1 NOTE Harmonized as EN 61643-1. IEC 61643-21 NOTE Harmonized as EN 61643-21. IEC 61643-311 NOTE Harmonized as EN 61643-311. IEC 61643-321 NOTE Harmonized as EN 61643-321. IEC 61643-331 NOTE Harmonized as EN 61643-331.		P
11	ADDITION OF ANNEXES		P
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		P
4.1.15	Denmark, Finland, Norway and Sweden To the end of the subclause the following is added: Class I pluggable equipment type A intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment shall be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Denmark: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord." In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway: "Apparatet må tilkoples jordet stikkontakt" In Sweden: "Apparaten skall anslutas till jordat uttag"	Added. Equipment is considered Class III without need for reliable earthing.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.3	United Kingdom To the end of the subclause the following is added: The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex	Added. No such socket-outlet provided.	N/A
5.2.2.2	Denmark After the 2nd paragraph add the following: A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.	Added. No such high touch concern for Class III or low voltage battery powered equipment.	N/A
5.4.11.1 and Annex G	Finland and Sweden To the end of the subclause the following is added: For separation of the telecommunication network from earth the following is applicable: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either • two layers of thin sheet material, each of which shall pass the electric strength test below, or • one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition • passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and • is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV. It is permitted to bridge this insulation with a	Added. No such connection to the telecommunication network provided.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11; - the additional testing shall be performed on all the test specimens as described in EN 60384-14; the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.		
5.5.2.1	Norway After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).	Added. No such connection to the mains nor IT power system.	N/A
5.5.6	Finland, Norway and Sweden To the end of the subclause the following is added: Resistors used as basic safeguard or bridging basic insulation in class I pluggable equipment type A shall comply with G.10.1 and the test of G.10.2.	Added. No resistors used as basic safeguard	N/A
5.6.1	Denmark Add to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. <i>Justification:</i> In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.	Added. No socket outlets	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.4.2.1	Ireland and United Kingdom After the indent for pluggable equipment type A , the following is added: – the protective current rating is taken to be 13 A, this being the largest rating of fuse used in the mains plug.	Added. Unit is powered by internal 3.7Vdc battery and recharged using 5Vdc from external host or adapter. Class III input only with no direct connection to AC Mains. No Mains supply cord.	N/A
5.6.4.2.1	France After the indent for pluggable equipment type A , the following is added: – in certain cases, the protective current rating of the circuit supplied from the mains is taken as 20 A instead of 16 A.	Added. No connection to the mains for Class III equipment.	N/A
5.6.5.1	To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm ² to 1,5 mm ² in cross-sectional area.	Added. No connection to the mains for Class III equipment.	N/A
5.6.8	Norway To the end of the subclause the following is added: Equipment connected with an earthed mains plug is classified as class I equipment . See the Norway marking requirement in 4.1.15. The symbol IEC 60417-6092, as specified in F.3.6.2, is accepted.	Added. No such plug connection for Class III equipment.	N/A
5.7.6	Denmark To the end of the subclause the following is added: The installation instruction shall be affixed to the equipment if the protective conductor current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.	Added. No such connection to the mains for high touch current concerns.	N.A

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Clause	Requirement + Test	Result - Remark	Verdict
5.7.6.2	Denmark To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .	Added. No such connection to the mains for high touch current concerns.	N/A
5.7.7.1	Norway and Sweden To the end of the subclause the following is added: The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)” NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min. Translation to Norwegian (the Swedish text will also be accepted in Norway): “Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplede utstyr – og er tilkoplede et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av	Added. Not a television distribution system	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet." Translation to Swedish: "Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet."		
8.5.4.2.3	United Kingdom Add the following after the 2nd dash bullet in 3rd paragraph: An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.	Added. EUT does not include work cell. No such need for emergency stop for the equipment under evaluation.	N/A
B.3.1 and B.4	Ireland and United Kingdom The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of direct plug-in equipment, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the direct plug-in equipment, until the requirements of Annexes B.3.1 and B.4 are met	Added. Not direct plug-in equipment	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	Denmark To the end of the subclause the following is added: Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a polyphase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2. Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c. Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a <i>Justification:</i> Heavy Current Regulations, Section 6c	Added. No such power cord for Class III equipment, nor socket-outlets.	N/A
G.4.2	United Kingdom To the end of the subclause the following is added: The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.	Added. Not direct plug-in equipment.	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.7.1	United Kingdom To the first paragraph the following is added: Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc. (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations. NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.	Unit is powered by internal 3.7Vdc battery and recharged using 5Vdc from external host or adapter. Class III input only with no direct connection to AC Mains. No mains sockets	N/A
G.7.1	Ireland To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard	No adapter plugs	N/A
G.7.2	Ireland and United Kingdom To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm² is allowed for equipment which is rated over 10 A and up to and including 13 A.	Unit is powered by internal 3.7Vdc battery and recharged using 5Vdc from external host or adapter. Class III input only with no direct connection to AC Mains. No Mains supply cord.	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N/A
10.5.2	Germany The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. <i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de	Applied. No such cathode ray tube used in the product under evaluation.	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

ZD	IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)		N/A																																																					
	<table><tr><th rowspan="2">Type of flexible cord</th><th colspan="2">Code designations</th></tr><tr><th>IEC</th><th>CENELEC</th></tr><tr><td colspan="3">PVC insulated cords</td></tr><tr><td>Flat twin tinsel cord</td><td>60227 IEC 41</td><td>H03VH-Y</td></tr><tr><td>Light polyvinyl chloride sheathed flexible cord</td><td>60227 IEC 52</td><td>H03VV-F H03VVH2-F</td></tr><tr><td>Ordinary polyvinyl chloride sheathed flexible cord</td><td>60227 IEC 53</td><td>H05VV-F H05VVH2-F</td></tr><tr><td colspan="3">Rubber insulated cords</td></tr><tr><td>Braided cord</td><td>60245 IEC 51</td><td>H03RT-F</td></tr><tr><td>Ordinary tough rubber sheathed flexible cord</td><td>60245 IEC 53</td><td>H05RR-F</td></tr><tr><td>Ordinary polychloroprene sheathed flexible cord</td><td>60245 IEC 57</td><td>H05RN-F</td></tr><tr><td>Heavy polychloroprene sheathed flexible cord</td><td>60245 IEC 66</td><td>H07RN-F</td></tr><tr><td colspan="3">Cords having high flexibility</td></tr><tr><td>Rubber insulated and sheathed cord</td><td>60245 IEC 86</td><td>H03RR-H</td></tr><tr><td>Rubber insulated, crosslinked PVC sheathed cord</td><td>60245 IEC 87</td><td>H03RV4-H</td></tr><tr><td>Crosslinked PVC insulated and sheathed cord</td><td>60245 IEC 88</td><td>H03V4V4-H</td></tr><tr><td colspan="3">Cords insulated and sheathed with halogen-free thermoplastic compounds</td></tr><tr><td>Light halogen-free thermoplastic insulated and sheathed flexible cords</td><td></td><td>H03Z1Z1-F H03Z1Z1H2-F</td></tr><tr><td>Ordinary halogen-free thermoplastic insulated and sheathed flexible cords</td><td></td><td>H05Z1Z1-F H05Z1Z1H2-F</td></tr></table>		Type of flexible cord	Code designations		IEC	CENELEC	PVC insulated cords			Flat twin tinsel cord	60227 IEC 41	H03VH-Y	Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F	Ordinary polyvinyl chloride sheathed flexible cord	60227 IEC 53	H05VV-F H05VVH2-F	Rubber insulated cords			Braided cord	60245 IEC 51	H03RT-F	Ordinary tough rubber sheathed flexible cord	60245 IEC 53	H05RR-F	Ordinary polychloroprene sheathed flexible cord	60245 IEC 57	H05RN-F	Heavy polychloroprene sheathed flexible cord	60245 IEC 66	H07RN-F	Cords having high flexibility			Rubber insulated and sheathed cord	60245 IEC 86	H03RR-H	Rubber insulated, crosslinked PVC sheathed cord	60245 IEC 87	H03RV4-H	Crosslinked PVC insulated and sheathed cord	60245 IEC 88	H03V4V4-H	Cords insulated and sheathed with halogen-free thermoplastic compounds			Light halogen-free thermoplastic insulated and sheathed flexible cords		H03Z1Z1-F H03Z1Z1H2-F	Ordinary halogen-free thermoplastic insulated and sheathed flexible cords		H05Z1Z1-F H05Z1Z1H2-F	N/A
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Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "I", "-" or blank)

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Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 1 – S7xx Series - Overall Top View



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 2 – S7xx Series - Overall Side View



S700

S730

S740

Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 3 – S7xx Series – Overall Bottom View



S700

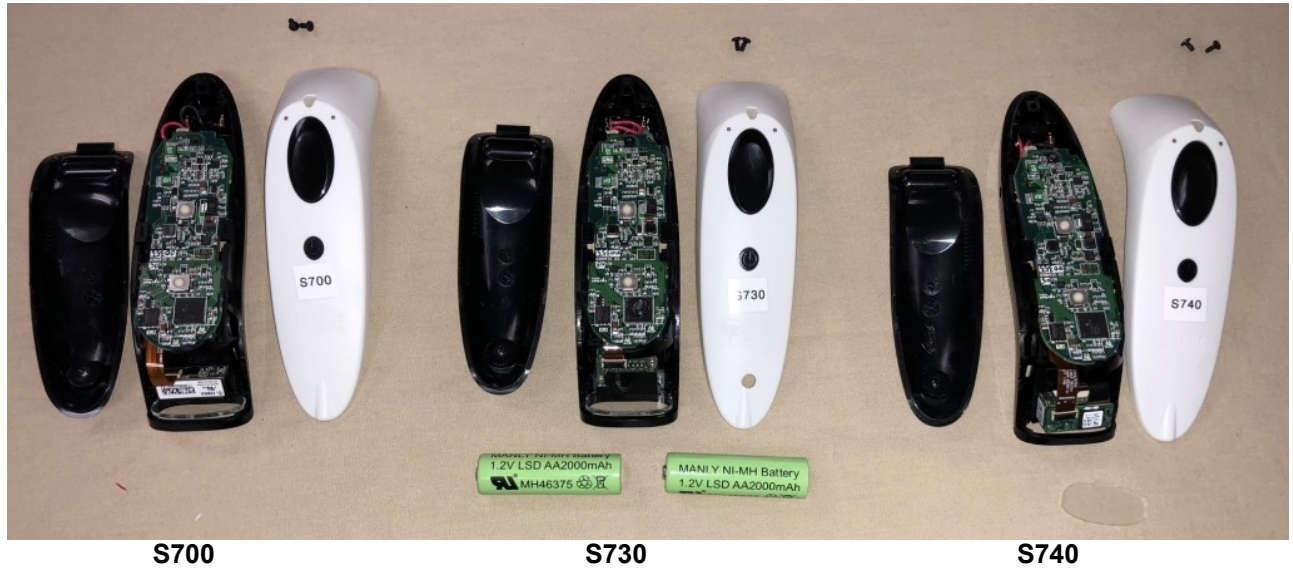
S730

S740

Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 4 – S7xx Series – Internal View



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 5 – S7xx Series – Rear Internal Showing Batteries



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "-", "/" or blank)

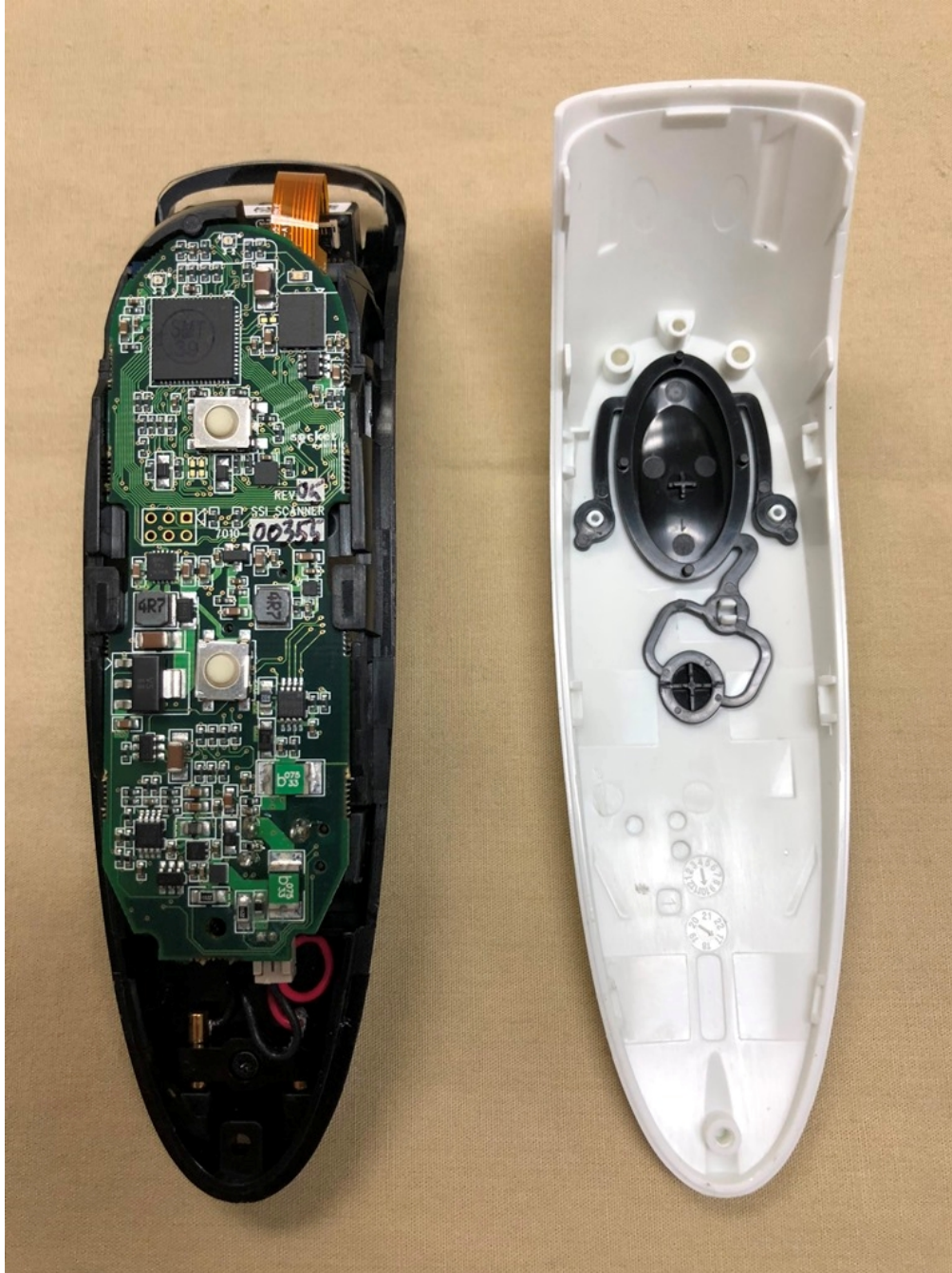
Figure 6 – S7xx Series – Rear Internal w/ Batteries Removed



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

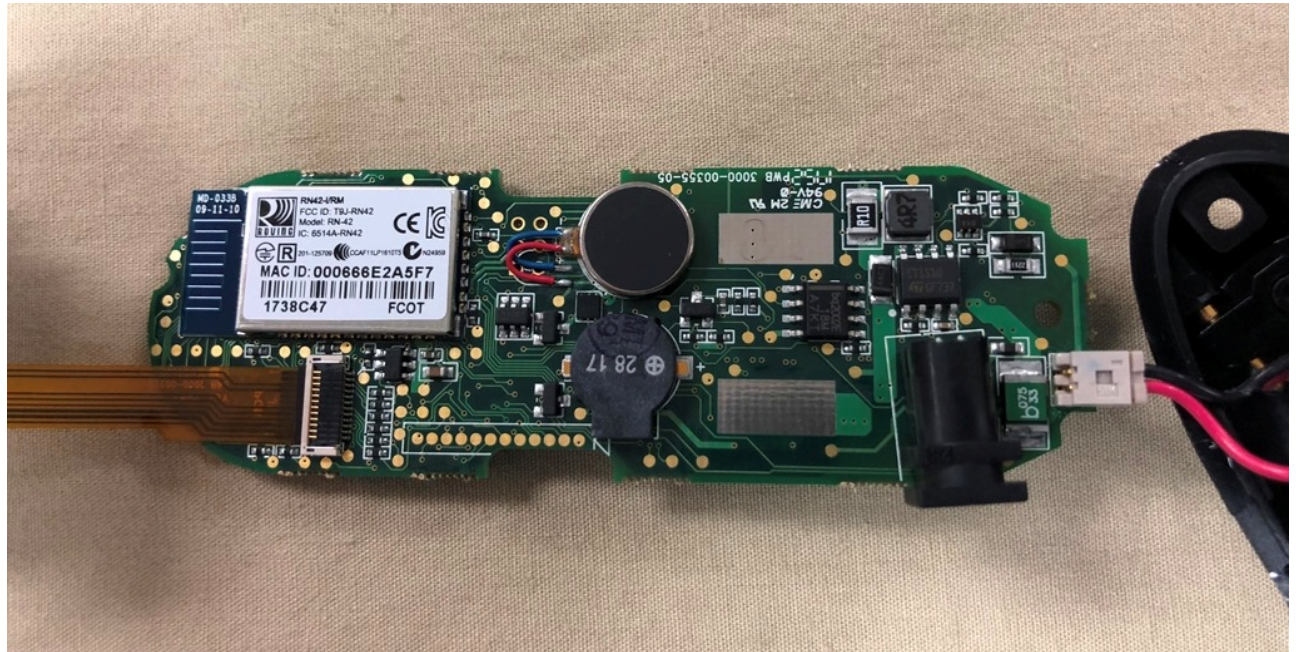
Figure 7 – S7xx Series – PWB Top View



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 8 – S7xx Series – PWB Bottom View



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 9 – Optional Charging Cradle P/N 8530-00078xx (Black), 8530-00090xx (White)



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 10 – Optional Charging Cradle P/N 8530-00057xx



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 11 – Optional Charging Dock P/N 8530-0070xx (Black), 8530-00105xx (White)



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 12 – S7xx Series – Optional USB Adapter



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 13 – D7xx Series - Overall Top/Side View



Figure 14 – D7xx Series - Overall Bottom View



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 15 – D7xx Series - Overall View showing Battery, Optional Adapter and Cable



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

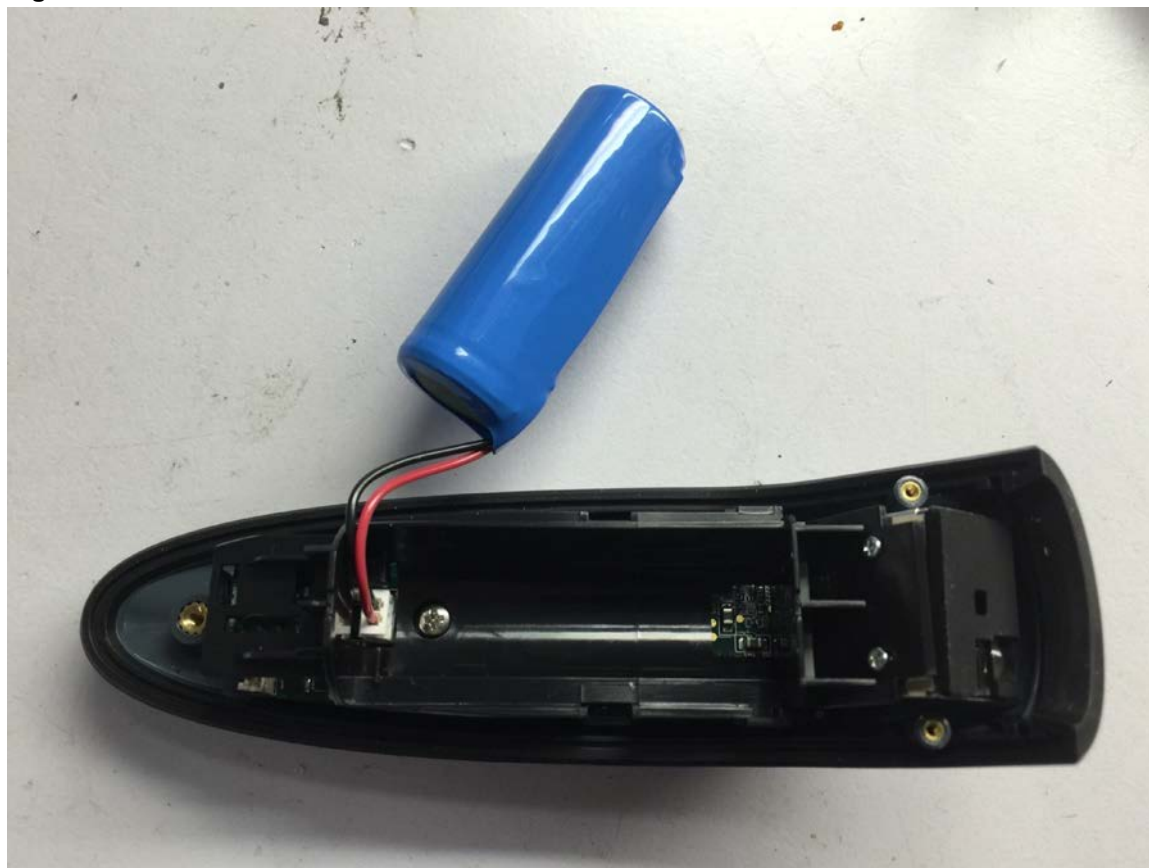
Figure 16 – D7xx Series - Overall Internal View



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 17 – D7xx Series - Overall Internal View



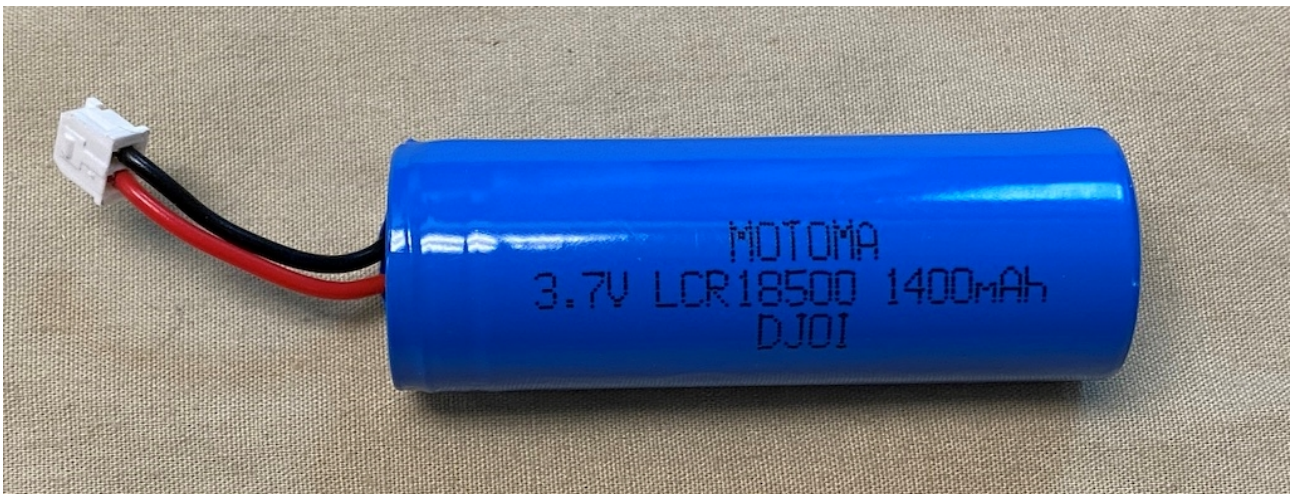
Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 18 – D7xx Series – Alternate Battery, felloTech P/N 18500



Figure 19 – D7xx Series – Alternate Battery, MOTOMA P/N LCR18500



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", " " or blank)

Figure 20 – Optional Adapter



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 21 – Model D730 - Overall Top View



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 22 – Model D730 - Overall Bottom View



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "-", "+" or blank)

Figure 23 – Model D730 - Overall Internal View



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 24 – Model D600 - Overall Top View



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 25 – Model D600 - Overall Bottom View



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 26 – Model D600 - Overall Internal View



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "I", "-" or blank)

Figure 27 – Model D600 – Optional Charger



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 28 – D7xx Series – Overall Top View (Models D745, D755 and D760 shown)



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 29 – D7xx Series - Overall Bottom View (Model D745, D755 and D760 shown)



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

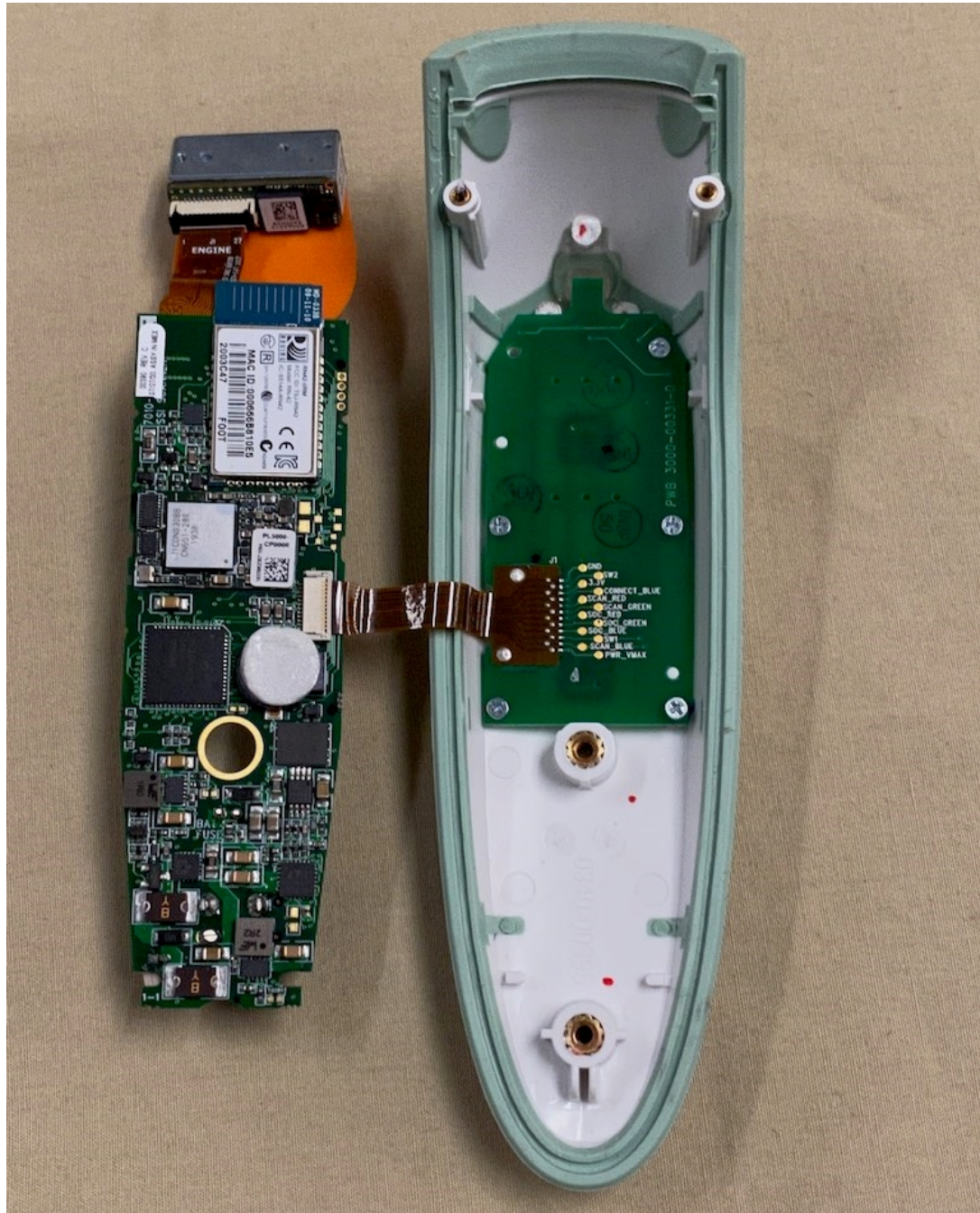
Figure 30 – D7xx Series - Overall Internal View (Model D745 Shown)



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "-", "+" or blank)

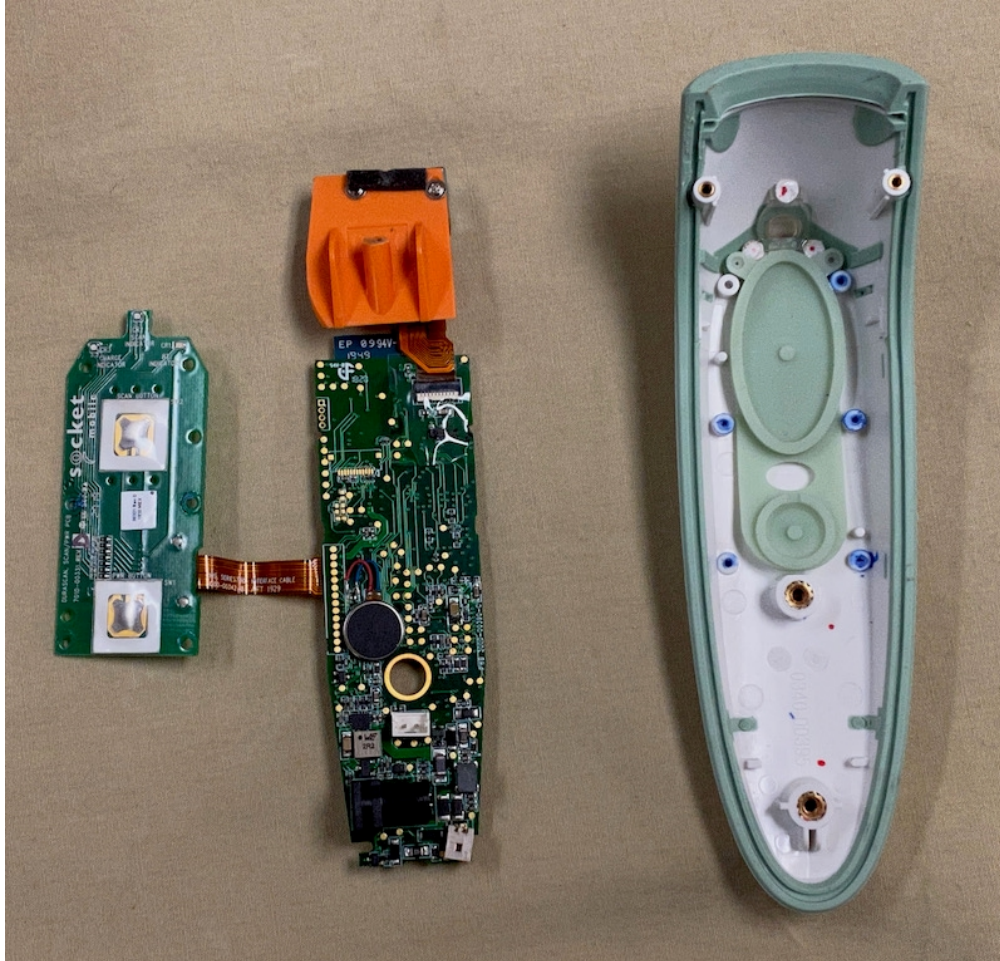
Figure 31 – D7xx Series - Overall Internal View (Showing PWB Top)



Product: Barcode Scanner

Type Designation: S7xx Series, D7xx Series, D600;
Charging Cradles/docks P/N(s) 8530-00078xx; 8530-0090xx; 8530-00057xx;
8530-00070xx; 8530-00105xx (where x = A-Z, 0-9, "/", "-", or blank)

Figure 32 – D7xx Series - Overall Internal View (Showing PWB Bottom)



TEST REPORT
IEC 60825-1, 2nd Edition
Part 1: Equipment classification and requirements

Report Reference No.: SEL-SCKT201102-10 Att 3

Date of issue: November 2nd, 2020

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Testing Laboratory: Safety Engineering Laboratory (SEL)

Address: 2370-D Qume Dr., San Jose, CA 95131 USA.

Applicant's name: Socket Mobile, Inc.

Address: 39700 Eureka Drive, Newark, CA 94560, USA

Test specification:

Standard: IEC 60825-1 : 2007 (2nd Edition)

Test procedure: CDRH Compliance under Laser Notice 50

Non-standard test method: N/A

Test Report Form No.: IEC60825_1D

Test Report Form(s) Originator: Intertek Semko AB

Master TRF: Dated 2007-06

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

Test item description: Barcode Scanner

Trade Mark: 

Manufacturer: Same as Applicant

Model/Type reference: S730, S790 (S7xx Series), D730, D790 (D7xx Series),
(where x = A-Z, 0-9, "/", "-", or blank, not safety related)

Ratings: Class 2 (laser), DC5V, 1.0A (electrical, optionally marked)

Testing procedure and testing location:	
☒ Testing Laboratory: Testing location/ address : Tested by (name + signature)..... : Approved by (+ signature)..... :	Safety Engineering Laboratory (SEL) 2370-D Qume Dr., San Jose, CA 95131, USA Paul A. Carter Lee Ould  
☐ Testing procedure: TMP Tested by (name + signature)..... : Approved by (+ signature)..... : Testing location/ address :	
☐ Testing procedure: WMT Tested by (name + signature)..... : Witnessed by (+ signature) : Approved by (+ signature)..... : Testing location/ address :	
☐ Testing procedure: SMT Tested by (name + signature)..... : Approved by (+ signature)..... : Supervised by (+ signature)..... : Testing location/ address :	
☐ Testing procedure: RMT Tested by (name + signature)..... : Approved by (+ signature)..... : Supervised by (+ signature)..... : Testing location/ address :	

Copy of marking plate

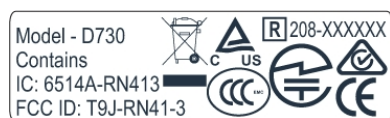


Explanatory box was not provided due to space constraints, as its inclusion would reduce the size of the text. The yellow was considered to be suitably set off against the product's dark background color, without the border.

Due to limited marking space, additional information is provided in the user manual:

Manufacturer Address: 39700 Eureka Drive, Newark, CA 94560, USA

"IEC 60825-1:2007"



Socket Mobile name/logo is molded into the housing and additionally silkscreened on the unit, not on the labels, as shown below.

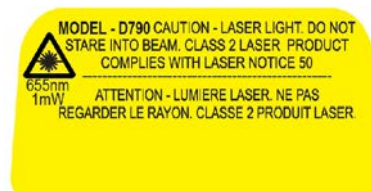


S730:

S730 only: Laser Warning Label



D790 only: Laser Warning Label



Explanatory box was not provided due to space constraints, as its inclusion would reduce the size of the text. The yellow was considered to be suitably set off against the product's dark background color, without the border.

Due to limited marking space, additional information is provided in the user manual:

Manufacturer Address: 39700 Eureka Drive, Newark, CA 94560, USA

"IEC 60825-1:2007"

Summary of testing:**Tests performed (name of test and test clause):**

See main test report for electrical safety tests done under EN 60950-1. Scan engine's test report (CB Scheme) shown in Attachment 1 was reviewed to confirm Class 2 emission, with test data and results considered suitable. Inclusion of engine in this product is such that it does not affect the emitted radiation above Class 2 limits.

Testing location:

N/A

Summary of compliance with National Differences:

List of countries addressed: N/A

Test item particulars:

Classification of installation and use..... : Class III

Supply Connection	Battery-powered (2.4-3.7Vdc).
.....	(Not directly connected to AC Mains)
.....	

Possible test case verdicts:

- test case does not apply to the test object.....	N/A
- test object does meet the requirement.....	P (Pass)
- test object does not meet the requirement.....	F (Fail)

Testing

Date of receipt of test item	2018-01-08
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Date (s) of performance of tests	N/A
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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 Issuing testing laboratory.

"(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.

General product information:

The product employs a Zebra/Symbol/Motorola scan engine, Model SE-965HP without modification.

See Main Test Report for additional details.

Attachment 1 – Scan Engine (CB) Test Report for SE-965HP

4	ENGINEERING SPECIFICATIONS		P
4.1	General remarks		P
	Modification		N/A
4.2	Protective housing		P
4.2.1	General	No access to laser radiation in excess of Class 2 limits. Human access to Class 2 radiation is necessary for the intended function of the product.	P
4.2.2	Service	Removal of housing with tool by service personnel does not allow exposure in excess of Class 2 limits	P
4.2.3	Removable laser system		N/A
4.3	Access panels and safety interlocks		N/A
4.3.1	Access panels of protective housing	No radiation over Class 2, and no need for warning nor interlocking. Enclosure is not designed to be removed during operation or maintenance.	N/A
	Product Class	2	—
	Accessible emission during removal of access panel	2	P
	The removal of the panel gives access to laser radiation levels designated by "X" in the table	No	P
	Accessible emissions after removal	2	—
4.3.2	Deliberate override mechanism	None provided	N/A
4.4	Remote interlock connector	None provided nor required	N/A
4.5	Manual reset	None provided nor required	N/A
4.6	Key control	None provided nor required	N/A
4.7	Laser radiation emission warning		N/A
4.7.1	Class 3R ($\lambda < 400$ nm; $\lambda > 700$ nm), 3B and 4	Class 2 product	N/A
4.7.2	Audible or visible warning	None provided nor required	N/A
4.7.3	Operational control and laser aperture	None provided nor required	N/A
4.7.4	Laser emission distributed through more than one output	Not such construction	N/A
4.8	Beam stop or attenuation	None provided nor required	N/A
4.9	Controls	Considered. No laser radiation in excess of Class 2	P
4.10	Viewing optics	None provided	N/A

	a) Human access to laser radiation in excess of Class 1M prevented when the shutter is opened or attenuation varied		N/A
	b) Opening of the shutter or variation of the attenuation prevented when exposure to laser radiation in excess of Class 1M is possible		N/A
4.11	Scanning safeguard	Scanning safeguard is employed such that the laser discontinues operation during the normal operation of the product when motor operation is stalled or reduced below the equipment parameters. Radiation was classified accordingly. See below for additional details	P
4.12	Walk-in access		N/A
	a) Means provided so that any person inside the housing can prevent activation of a Class 3B or 4 laser hazard		N/A
	b) A warning device provides adequate warning of emission to any person within the housing		N/A
	c) Where "walk-in" access during operation is intended or reasonably foreseeable, emission of laser radiation that is equivalent to Class 3B or Class 4 while someone is present inside the enclosure of Class 1, Class 2 or Class 3R product shall be prevented by engineering means		N/A
4.13	Environmental conditions		P
	- climatic conditions	Considered during evaluation and found suitable	P
	- vibration and shock	Not tested for such as faults were assumed to happen (mirror stops moving) with the output measured during the scan engine fault testing	N/A
4.14	Protection against other hazards		P
4.14.1	Non-optical hazards (product safety standard)		P
	- electrical hazards;	See main EN60950-1 test report	P
	- excessive temperature;	See main EN60950-1 test report	P
	- spread of fire from the equipment;	See main EN60950-1 test report	P
	- sound and ultrasonic;	See main EN60950-1 test report	N/A
	- harmful substances;	No harmful substances	N/A
	- explosion;		N/A
4.14.2	Collateral radiation	No collateral radiation	N/A

5	LABELLING		P
5.1	General	Labels are in accordance with regard to permanency, legibility, and location. Required text is black on yellow background, as shown on page 4 above. Due to size of product and limited space, the warnings were prioritized of non-warning type information which was put into the manual	P
	LASER PRODUCT CLASS	2	
	Labelling location (Product / User instruction / Package)	Label located on the product, with additional information in the user instructions.	P
	Warning label – Hazard symbol (Figure 1)	Laser symbol is provided on the product, as shown	P
	Explanatory label (Figure 2)	Provided. Black text on yellow background, as shown on page 4 above. Translated into English, French. Black border is not present due to the small size of the available label space, and yellow label was considered to sufficiently stand out due to the color of the product.	P
5.2-5.6	Text on explanatory label	"CAUTION - LASER LIGHT. DO NOT STARE INTO BEAM CLASS 2 LASER PRODUCT"	P
5.7	Aperture label	Not required for Class 2 laser product	N/A
5.8	Radiation output and standards information	Provided	P
	Max output of laser radiation	1.0mW marked on label	—
	Pulse duration	N/A	—
	Emitted wavelength(s)	650nm marked on label	—
	The name and publication date of the standard.....	"IEC 60825-1:2007" Provided in the user manual due to small size restraints of the product and label space	P
5.9	Labels for access panels		N/A
5.9.1 a) – f)	Warning wording used		N/A
5.9.2	Labels for safety interlocked panels		N/A
	Warning wording used	No interlocked panel depended upon	N/A

5.10	Warning for invisible laser radiation	650nm nominal wavelength is visible	N/A
5.11	Warning for visible laser radiation	Term "LASER LIGHT" used since output of the laser product is in the visible range	P

6	OTHER INFORMATIONAL REQUIREMENTS		P
6.1	Information for the user		P
	a) adequate instructions for proper assembly, maintenance and safe use and description of the classification limitations, if appropriate	Provided	P
	b) warning for Class 1M and 2M	Class 2	N/A
	c) laser beam parameters for radiation above the AEL of Class 1	Provided where applicable	P
	Wavelength	Provided (650nm)	P
	Beam divergence	Manual contains details of beam particularly for proper scanning distances/range/angles/use	P
	Pulse duration	N/A	N/A
	Maximum power or energy output	Provided (1.0mW)	P
	d) embedded laser products and other incorporated laser products	Not considered embedded	N/A
	e) MPE and NOHD for Class 3B and Class 4 laser products For collimated beam Class 1M and 2M lasers the extended NOHD (ENOH)D	Class 2 only	N/A
	f) information for the selection of eye protection		N/A
	g) reproduction of labels	Provided	P
	h) location of laser apertures	Provided	P
	i) listing of controls, adjustment of procedures and warning statement	Provided - "Caution: Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous laser beam exposure"	P
	j) information about laser energy source if not incorporated in the manual		N/A
6.2	Purchasing and service information		P
	a) safety classification of each laser product stated in descriptive material	Provided	P
	b) adequate instructions for servicing available	Non-serviceable	N/A

7	ADDITIONAL REQUIREMENTS FOR SPECIFIC LASER PRODUCTS		N/A
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7.1	Applicable other parts of the standard series IEC/EN 60825		N/A
	IEC 60825-2 (Safety of optical communication systems)		N/A
	IEC 60825-4 (Laser guards)		N/A
	IEC 60825-12 (Safety of free space optical communication systems used for transmission of information)		N/A
	Further information may be found in:		N/A
	IEC/TR 60825-3 (Guidance for laser displays and shows)		—
	IEC/TR 60825-5 (Manufacturer's checklist for IEC 60825-1)		—
	IEC/TR 60825-8 (Guidelines for the safe use of laser beams on humans)		—
	IEC/TR 60825-9 (Compilation of maximum permissible exposure to incoherent optical radiation)		—
	IEC/TR 60825-10 (Application guidelines and explanatory notes to IEC 60825-1)		—
	IEC/TR 60825-13 (Measurements for classification of laser products)		—
	IEC/TR 60825-14 (A user's guide)		—
	IEC 62471 (CIE S 009) (Photobiological safety of lamps and lamp system)		—
7.2	Medical laser products		N/A
	Class 3B and Class 4 medical laser products comply with IEC 60601-2-22		N/A
7.3	Laser processing machines		N/A
	Comply with IEC/ISO 11553-1		N/A
7.4	Electric toys		N/A
	Comply with IEC 62115		N/A
7.5	Consumer electronic products		P
	Complying with IEC 60950 or IEC 60065	Complies with IEC 60950-1 / IEC 62368-1 (See main report)	P

8	CLASSIFICATION		P
8.2	Classification responsibilities	Module is certified, with the information below from the laser product testing and evaluation (Attachment 1)	P
8.3	Classification rules		P
8.3a	Radiation of a single wavelength		P
8.3b	Radiation of multiple wavelengths		N/A

	1) Laser product emission two or more wavelengths in spectral regions shown as additive in Table 5 ...:		N/A
	2) Laser product emission two or more wavelengths in spectral regions not shown as additive in Table 5:		N/A
8.3c	Radiation from extended sources.....:	Simplified method used	P
	Value of angular subtense α (mrad):	1.5mrad assumed	P
8.3d	Non-uniform retinal image radiance profile, non-circular and multiple sources	See c above	N/A
8.3e	Time basis		P
	1) 0.25s	Considered	P
	2) 100s		N/A
	3) 30000s		N/A
8.3f	Repetitively pulsed or modulated lasers	Considered for three conditions below, with additional detail in Attachment 1	P
	1) Exposure from any single pulse not exceeding the AEL for a single pulse		P
	2) Average power for a pulse train		P
	3a) Constant pulse energy and pulse duration		P
	3b) Varying pulse widths or varying pulse durations		N/A

9	DETERMINATION OF ACCESSIBLE EMISSION LEVELS		P
9.1	Tests	Testing under normal and single fault conditions	P
	Single fault eliminated	Tested	N/A
	Housing material withstanding degradation	No embedding nor attenuation by the end product	N/A
	Fault detection		N/A
9.2	Measurement conditions:		P
	Measured laser radiation:	1. 1.588mW peak power (<4.077mW limit) 2. 0.582mW ave power (<1.0mW limit) 3. 1.588mW peak power (<1.781mW limit)	P
9.3	Measurement geometry		P
9.3.1	General, evaluation scheme	Simplified method used	—
	a) Simplified (default) method	$C_6=1$	P
	b) Increased AEL by parameter C_6	$C_6=1$	N/A
9.3.2	Default (simplified) evaluation	Considered	P

	Condition applied	Scanning Mode – Condition 3 Aiming Mode – Conditions 1, 2 and 3	P
	Aperture stop diameter (mm)	3.5, 7, 50	P
	Measurement distance (mm)	0, 70, 100, 2000	P
9.3.3	Extended sources	Simplified method used	N/A
	C ₆		N/A
9.3.3a	Aperture diameters		N/A
	Condition applied		N/A
	Aperture stop diameter (mm).		N/A
	Angular subtense of the apparent source α		N/A
9.3.3b	Angle of acceptance		N/A
	Condition applied		N/A
	1) Photochemical retinal limits.....		N/A
	Angle of acceptance.....		N/A
	2) All other retinal limits		N/A
	Angle of acceptance.....		N/A

Measured laser radiation, calculations and comparison with AEL limits:

See Attachment 1 for additional details.

National Differences for (country name)			

Appended table	EQUIPMENT MANUFACTURE INFORMATION (DATA SHEET) ABOUT THE CONTAINING LASER COMPONENT/S		P
--	Manufacturer	Zebra/Motorola/Symbol	—
--	Type designation	SE-965HP	—
--	Structure	Scan engine with InGaAlP laser diode	—
--	Wavelength	655nm	—
--	Output power (min. and max.)	1mW	—
--	Radiation is		—
--	Continuous	N/A	—
--	Pulsed	N/A	—
--	Pulse time	N/A	—
--	Pulse repetition frequency	N/A	—
--	Others	N/A	—

Appended table	EQUIPMENT MANUFACTURE INFORMATION (DATA SHEET) ABOUT THE CONTAINING LASER COMPONENT/S		P
--	Manufacturer	Zebra/Motorola/Symbol	—
--	Type designation	SE4750DP	—
--	Structure	Scan engine with InGaAlP laser diode	—
--	Wavelength	655nm	—
--	Output power (min. and max.)	1mW	—
--	Radiation is		—
--	Continuous	N/A	—
--	Pulsed	N/A	—
--	Pulse time	N/A	—
--	Pulse repetition frequency	N/A	—
--	Others	N/A	—

--	PIC UP UNIT		N/A
--	Manufacturer	N/A	—
--	Type designation	N/A	—
--	Others	N/A	—
--	--	--	--

--	TRANSMITTER/TRANSCIEVER UNIT		N/A
--	Manufacturer	N/A	—
--	Type designation	N/A	—

--	Others	N/A	—
--	--	--	--