TEST REPORT
IEC 61010-1
Safety requirements for electrical equipment for measurement, control, and laboratory use
Part 1: General requirements

Report Number. .....:	S116340.01
Tested by .....:	Yariv Keidar
Approved by .....:	Samuel Gnatt
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Testing Laboratory.....:	I.T.L (PRODUCT TESTING) Ltd.
Address .....:	1 Bat-Sheva St., POB 87, Lod 71100, ISRAEL

Applicant's name.....:	Globisens Ltd.
Address .....:	Park Azorim Kiryat Arie 94 Em Hamoshavot Road 7th Floor Petach Tiqva 49527 ISRAEL

Test specification:	
Standard.....:	EN 61010-1 (Third Edition): 2010
Test procedure .....:	PM120
Non-standard test method……..:	N/A

Test Report Form No. .....:	IEC61010_1F
Test Report Form(s) Originator ....:	VDE Testing and Certification Institute
Master TRF.....:	2011-03

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

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

Test item description .....:	The Labdisc is an all-in-one self-contained wireless data logging unit
Trade Mark .....:	Globisens
Manufacturer .....:	Globisens Ltd
Model/Type reference .....:	Labdisc
Ratings .....:	12Vdc, 1.25A (from external AC/DC power supply adapter)

List of Attachments (including a total number of pages in each attachment - Table 1):		
Document No.	Documents included / attached to this report (description)	Page Numbers
Appendix 1	Photographs	76 – 82
Appendix 2	Drawings	83 – 84

Summary of testing:

Test Report History:
N/A

Ref. No.	Item

Tests performed (name of test and test clause):	Testing location:

Summary of compliance with National Differences

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.

Test item particulars:		
Type of item	:	Measurement / ~~Control~~ / Laboratory
Description of equipment function	:	
Connection to MAINS supply	:	~~Permanent~~ / ~~Detachable cord set~~ / ~~Non detachable cord set~~ / None
Installation category	:	II
POLLUTION DEGREE	:	II
Protection class	:	III
Environmental rating	:	~~Standard~~ / Extended (Specify): -10°C to 50°C
Equipment mobility	:	~~Portable~~ / Hand-held / ~~Floor standing~~ / ~~Fixed~~ / ~~Built in~~
Operating conditions	:	~~Continuous~~ / Short-time / Intermittent
Overall size of equipment (∅ x H)	:	132mm x 43mm
Mass of equipment (kg)	:	320g
Marked degree of protection to IEC 60529	:	IP2X
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	:	12/03/2012
Date (s) of performance of tests	:	12/03/2012 - 25/03/2012

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 Form A.xx)" refers to a table appended to the report.

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

General product information:

Table 1: List of Test equipment

ITL	Instrument	Manufacturer	Model	Serial	CalIDue
1040	DVM	Fluke	87	60370049	28/02/2013
1335	Caliper Dial 0-150mm	Mitotoyo	505-646-50	01-051	18/03/2013
1012	Jointed Finger Probe	Ergonomics	JFP10	--	28/02/2013
1013	Unjointed Finger Probe	Ergonomics	UFP20	--	28/02/2013
1014	Test Pin Probe	Ergonomics	TPP15	--	28/02/2013
1015	Ball for Impact Test	Ergonomics	ITB15	--	20/03/2013
1147	Digital Oscilloscope	Tektronix	TDS3012	B015205	26/02/2013
1217	Hipot	Hipotronics	HD-100	380301	27/02/2013
1010	Force Gauge	Chatillon	DPP 25	17706	26/04/2013
1302	Digital Thermometer	Fluke	Hydra2635A	7702039	27/02/2013
1135	Leakage Current – EN60950	Custom	Custom	1085	28/02/2013
1140	Digital timer	Count D/Up	7702039	Golf	17/03/2013

Table 3	List of Safety Critical Components				P
object/part no.	**manufacturer/ trademark**	**type/model**	**technical data**	**standard**	**mark(s) of conformity**
Enclosure	CHIMEI	WONDERLOY® PC/ABS (PC-510)	V-0, 60°C	UL746 UL94	UL
Power input jack (J7)	FUK HING Industries	DC-003	24Vdc, 3.5A, V-0, 85°C	--	CSA
Lithium-Polymer (Li-PO) Battery	Advanced Electronics Energy Limited	AE702448P8H	Rated: 3.6Vdc, 1.1Ah Discharging current 50mA (100mA max) Max. abnormal charging voltage 12Vdc Max. abnormal charging current 15mA 85°C	--	Manufacturer declared compliance.
Sonar device voltage protection device (zener diode)	ON Semiconductor	MMSZ5270BT1	91V, 1.4mA, 500mW, 150°C	--	Tested in appliance
Voltage/Current sensor voltage protection device	Littlefuse	SP724	20V, 2.2A (peak), 8kV/15kV ESD, 105°C	--	Tested in appliance
Sonar device	SensComp Inc.	Series 600 604142	200Vdc + 200Vpeak (400V max), Capacitance 500pF max, 70°C	--	Tested in appliance
Sonar device wires	Teldor	6105000xxx	24AWG, 600V, 105°C, VW-1	UL 1581	UL
Secondary connectors	Any	Any	V-2 min	UL 94	UL
PCB	Any	Any	105°C, V-1 min	UL 94	UL

4.4	Testing in SINGLE FAULT CONDITIONS		P
4.4.1	Fault tests	(see Form A.1 and A.2)	P
4.4.2	Application of SINGLE FAULT CONDITIONS		P
4.4.2.1	SINGLE FAULT CONDITIONS not covered by 4.4.2.1 to 4.4.2.14	(see Form A.1 and A.2)	—
4.4.2.2	PROTECTIVE IMPEDANCE	No protective impedance required	N/A
4.4.2.3	PROTECTIVE CONDUCTOR	No protective conductor required	N/A
4.4.2.4	Equipment or parts for short-term or intermittent operation	No such parts	N/A
4.4.2.5	Motors	No motors	N/A
4.4.2.6	Capacitors	No such parts	N/A
4.4.2.7	MAINS transformers	No such parts	N/A
4.4.2.7.2	Short circuit		N/A
4.4.2.7.3	Overload		N/A
4.4.2.8	Outputs	Short-circuit were applied to all outputs. No hazard.	P
4.4.2.9	Equipment for more than one supply	One supply	N/A
4.4.2.10	Cooling	No opening, fans or other cooling means	N/A
4.4.2.11	Heating devices	No such parts	N/A
4.4.2.12	Insulation between circuits and parts	method of 9.1 a) isn't used	N/A
4.4.2.13	Interlocks	No such parts	N/A
4.4.2.14	Voltage selectors	No such parts	N/A
4.4.3	Duration of tests	(see Form A.1 and A.2)	P
4.4.4	Conformity after application of fault conditions	Permissible limits. (see Form A.1; A.2; A.8, A.14)	P

5	MARKING AND DOCUMENTATION		P
5.1.1	General		P
	Required equipment markings are:		—
	visible:		P
	From the exterior; or		P
	After removing a cover; or	No removable cover is used	N/A
	Opening a door	No doors	N/A
	After removal from a rack or panel	No rack mounted unit	N/A
	Not put on parts which can be removed by an operator	No parts which can be removed by an operator	P
	Letter symbols (IEC 60027) used	V, A	P
	Graphic symbols (IEC 61010-1: Table 1) used	Symbol 1 (IEC 60417-5031)	N/A
5.1.2	Identification		—
	Equipment is identified by:		P

	a) Manufacturer's or supplier's name or trademark	Trademark and manufacturer name marked	P
	b) Model number, name or other means	Model name marked	P
	Manufacturing location identified	Not required: unit is manufactured at one location	N/A
5.1.3	MAINS supply	Not Mains supplied, the unit powered from external AC/DC power supply adapter (not part of this investigation)	N/A
	Equipment is marked as follows:		N/A
	a) Nature of supply:		—
	1) a.c. RATED MAINS frequency or range of frequencies ..... :		N/A
	2) d.c. with symbol 1		N/A
	b) RATED supply voltage(s) or range ..... :		N/A
	c) Max. RATED power (W or VA) or input current ... :		N/A
	The marked value not less than 90 % of the maximum value	(see Form A.3)	N/A
	If more than one voltage range:		—
	Separate values marked; or		N/A
	Values differ by less than 20 %		N/A
	d) OPERATOR-set for different RATED supply voltages:		—
	Indicates the equipment set voltage		N/A
	Portable equipment indication is visible from the exterior		N/A
	Changing the setting changes the indication		N/A
	e) Accessory MAINS socket-outlets accepting standard MAINS plugs are marked:		N/A
	With the voltage if it is different from the MAINS supply voltage ..... :		N/A
	For use only with specific equipment		N/A
	If not marked for specific equipment it is marked with:		N/A
	The maximum rated current or power; or		N/A
	Symbol 14 with full details in the documentation		N/A
5.1.4	Fuses	No operator replaceable fuses	N/A
	Operator replaceable fuse marking (see also 5.4.5) ..... :	No operator replaceable fuses	N/A
5.1.5	TERMINALS, connections and operating devices	No such devices affecting safety	N/A
5.1.5.1	General		N/A
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked		N/A

	If insufficient space, symbol 14 used		N/A
	Push-buttons and actuators of emergency stop devices and indicators:		—
	used only to indicate a warning of danger or		N/A
	the need for urgent action		N/A
	coloured red		N/A
	coded as specified in IEC 60073		N/A
	Supplementary means of coding provided, if meaning of colour relates (see IEC 60073):		N/A
	to safety of persons; or		N/A
	safety of the environment		N/A
5.1.5.2	TERMINALS	No terminals	N/A
	MAINS supply TERMINAL identified		N/A
	Other TERMINAL marking:		N/A
	a) FUNCTIONAL EARTH TERMINALS (symbol 5 used)		N/A
	b) PROTECTIVE CONDUCTOR TERMINALS:		N/A
	Symbol 6 is placed close to or on the TERMINAL; or		N/A
	Part of appliance inlet		N/A
	c) TERMINALS of control circuits (symbol 7 used)		N/A
	d) HAZARDOUS LIVE TERMINALS supplied from the interior		N/A
	Standard MAINS socket outlet; or		N/A
	RATINGS marked; or		N/A
	Symbol 14 used		N/A
5.1.6	Switches and circuit breakers	No switch or circuit breaker is used	N/A
	If disconnecting device, off position clearly marked		N/A
	If push-button used as power supply switch:		N/A
	Symbol 9 and 15 used for on-position		N/A
	Symbol 10 and 16 used for off-position		N/A
	Pair of symbols 9, 15 and 10, 16 close together		N/A
5.1.7	Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION	Reinforced insulation between hazardous live parts of sonar device and accessible parts of other connectors	P
	Protected throughout (symbol 11 used)		N/A
	Only partially protected (symbol 11 not used)	Only partially protected (symbol 11 not used)	P
5.1.8	Field-wiring TERMINAL boxes	No such parts	N/A
	If TERMINAL or ENCLOSURE exceeds 60 °C:		N/A
	Cable temperature RATING marked ..... :		N/A

	Marking visible before and during connection or beside TERMINAL		N/A
5.2	Warning markings	No warning markings provided or required	N/A
	Visible when ready for NORMAL USE		N/A
	Are near or on applicable parts		N/A
	Symbols and text correct dimensions and colour:		—
	a) symbols min 2,75 mm and text 1,5 mm high and contrasting in colour with background		N/A
	b) symbols and text moulded, stamped or engraved in material min. 2,0 mm high and		N/A
	0.5 mm depth or raised if not contrasting in colour		N/A
	If necessary marked with symbol 14		N/A
	Statement to isolate or disconnect if access by using a tool to HAZARDOUS LIVE parts is permitted		N/A
5.3	Durability of markings	Markings are durable and legible	P
	The required markings remain clear and legible in NORMAL USE	(see Form A.4)	P
5.4	Documentation		P
5.4.1	General		P
	Equipment is accompanied by documentation for safety purposes for OPERATOR or RESPONSIBLE BODY		P
	Safety documentation for service personnel authorized by the manufacturer	Not intended for special servicing	N/A
	Documentation necessary for safe operation is provided in printed media or		P
	in electronic media if available at any time	Per request	P
	Documentation includes:		—
	a) intended use		P
	b) technical specification		P
	c) name and address of manufacturer or supplier		P
	d) Information specified in 5.4.2 to 5.4.6		P
	e) information to mitigate residual RISK (see also subclause 17)	No residual risks	P
	f) accessories for safe operation of the equipment specified	12Vdc AC/DC power supply adapter	P
	g) guidance provided to check correct function of the equipment, if incorrect reading may cause a HAZARD from harmful or corrosive substances of HAZARDOUS live parts	No such hazard	N/A
	h) instructions for lifting and carrying	Not required	N/A
	Warning statements and a clear explanation of warning symbols:	No warning symbols	—
	Provided in the documentation; or		N/A

	Information is marked on the equipment		N/A
5.4.2	Equipment ratings		P
	Documentation includes:		—
	a) Supply voltage or voltage range.....:	Provided	P
	Frequency or frequency range ..... :	DC powered unit	N/A
	Power or current rating..... :	Provided	P
	b) Description of all input and output connections in accordance to 6.6.1 a)	Provided	P
	c) RATING of insulation of external circuits in accordance to 6.6.1 b)	Connection of each input/output is define in the manual	N/A
	a) Statement of the range of environmental conditions (see 1.4)	Unit is intended for indoor use, maximum recommended operating ambient 50°C	P
	d) Degree of protection (IEC 60529)	IP2X	N/A
	e) if impact rating less than 5 J:	No impact rating less than 5 J	N/A
	IK code in accordance to IEC 62262 marked or		N/A
	symbol 14 of table 1 marked, with		N/A
	RATED energy level and test method stated		N/A
5.4.3	Equipment installation	No special safety installation instructions deemed required	N/A
	Documentation includes instructions for:		N/A
	a) assembly, location and mounting requirements		N/A
	b) protective earthing		N/A
	c) connections to supply		N/A
	d) permanently connected equipment:		N/A
	1) Supply wiring requirements		N/A
	2) If external switch or circuit-breaker, requirements and location recommendation		N/A
	e) ventilation requirements	No special requirements	N/A
	f) special services (e. g. air, cooling liquid)	No special requirements	N/A
	g) Instructions relating to sound level	Unit does not produce sound	N/A
5.4.4	Equipment operation		P
	Instructions for use include:		P
	a) identification and description of operating controls	In the user manual	P
	b) positioning for disconnection		N/A
	c) instructions for interconnection	In the user manual	P
	d) specification of intermittent operation limits	In the user manual	P
	e) explanation of symbols used	No symbols	N/A
	f) replacement of consumable materials	Not required	N/A
	g) cleaning and decontamination	No special instructions provided or required	N/A

	h) Listing of any poisonous or injurious gases and quantities	No such gases	N/A
	i) RISK reduction procedures relating to flammable liquids (see 9.5)	No flammable liquids	N/A
	j) RISK reduction procedures relating burn from surfaces permitted to exceed limits of 10.1	No heated surfaces	N/A
	Additional precautions for IEC 60950 conforming equipment in regard to moistures and liquids	No hazard related to moistures and liquids	N/A
	A statement about protection impairment if used in a manner not specified by the manufacturer	No flammable liquids	N/A
5.4.5	Equipment maintenance	No maintenance required	N/A
	Instructions for RESPONSIBLE BODY include:		—
	Instructions sufficient in detail permitting safe maintenance and inspection and continued safety:		P
	Instruction against the use of detachable MAINS supply cord with inadequate rating		N/A
	Specific battery type of user replaceable batteries	No such components	N/A
	Any manufacturer specified parts		N/A
	Rating and characteristics of fuses	No such fuses	N/A
	Instructions include following subjects permitting safe servicing and continued safety:	No such risks	N/A
	a) product specific RISKS may affect service personnel		N/A
	b) protective measures for these RISKS		N/A
	c) verification of the safe state after repair		N/A
5.4.6	Integration into systems or effects resulting from special conditions	No such hazards	N/A
	Aspects described in documentation		N/A

6	PROTECTION AGAINST ELECTRIC SHOCK		P
6.1	General	(see Form A.5)	P
6.1.1	Requirements		—
	Protection against electric shock maintained in NORMAL CONDITION and SINGLE FAULT CONDITION		P
	ACCESSIBLE parts not HAZARDOUS LIVE		P
	Voltage, current, charge or energy below the limits in NORMAL CONDITION and in SINGLE FAULT CONDITION between:		—
	ACCESSIBLE parts and earth		P
	two ACCESSIBLE parts on same piece of the equipment within a distance of 1,8 m		P
	Conformity is checked by the determination of 6.2 and 6.3 followed by the tests of 6.4 to 6.11		P
6.1.2	Exceptions	No exceptions	N/A
	Following HAZARDOUS LIVE parts may be accessible to an OPERATOR:	No exceptions	N/A

	a) parts of lamps and lamp sockets after lamp removal	No exceptions	N/A
	b) parts to be replaced by operator only by the use of tool and warning marking	No exceptions	N/A
	Those parts not HAZARDOUS LIVE 10 s after interruption of supply	No exceptions	N/A
	Capacitance test if charge is received from internal capacitor		N/A
6.2	Determination of accessible parts	(see Form A.6)	P
6.2.1	General	Accessible parts are either non-hazardous live or	P
	Unless obviously determination of accessible parts as specified in 6.2.2 to 6.2.4	jointed test finger and pin 4 mm diameter are used	P
6.2.2	Examination		P
	- with jointed test finger (as specified B.2)		P
	- with rigid test finger (as specified B.1) and a force of 10 N		N/A
6.2.3	Openings above parts that are HAZARDOUS LIVE	Sonar device assume as HAZARDOUS LIVE, pin 4 mm diameter is used	P
	- test pin with length of 100 mm and 4 mm in diameter applied		P
6.2.4	Openings for pre-set controls	No such openings	N/A
	- test pin with length of 100 mm and 3 mm in diameter applied		N/A
6.3	Limit values for ACCESSIBLE parts		P
6.3.1	Levels in NORMAL CONDITION	(see Form A.7)	P
	a) Voltage limits less than 33 V r.m.s. and 46,7 V peak or 70 V d.c.	Accessible enclosure voltage limits less than 46,7 V peak or 70 V d.c.	P
	for wet locations voltage limits less than 16 V r.m.s. and 22,6 V peak or 35 V d.c.		N/A
	Voltages are not HAZARDOUS LIVE the levels of:	Sonar device voltage is more than as in 6.3.1.a	—
	b) Current less than 0,5 mA r.m.s. for sinusoidal, 0,7 mA peak non sinusoidal or mixed frequencies or 2 mA d.c. when measured with measuring circuit A.1 or A.2 if less than 100 Hz	Sonar device current is less than as in 6.3.1.b (see Form A.7)	P
	for wet locations measuring circuit A.4 used		N/A
	or		N/A
	c) Levels of capacitive charge or energy less:		N/A
	1) 45 µC for voltages up to 15 kV peak or d.c. or line A of Figure 3		N/A
	2) 350 mJ stored energy for voltages above 15 kV peak or d.c.		N/A
6.3.2	Levels in SINGLE FAULT CONDITION	(see Form A.7)	P

	a) Voltage limits less than 33 V r.m.s. and 46,7 V peak or 70 V d.c.	Sonar device voltage is more than as in 6.3.2.a	P
	for wet locations voltage limits less than 16 V r.m.s. and 22,6 V peak or 35 V d.c.		N/A
	Voltages are not HAZARDOUS LIVE the levels of:		—
	b) Current less than 0,5 mA r.m.s. for sinusoidal, 0,7 mA peak non sinusoidal or mixed frequencies or 2 mA d.c. when measured with measuring circuit A.1 or A.2 if less than 100 Hz	Sonar device current is less than as in 6.3.2.b (see Form A.7)	P
	for wet locations measuring circuit A.4 used		N/A
	or		N/A
	c) Levels of capacitive charge or energy less:	No stored capacitance	N/A
	1) 45 µC for voltages up to 15 kV peak or d.c. or line A of Figure 3		N/A
	2) 350 mJ stored energy for voltages above 15 kV peak or d.c.		N/A
6.4	Primary means of protection	All parts of the EUT are non-hazardous live (after measurements according 6.3 above – see forms A.7 and A.8)	N/A
6.4.1	ACCESSIBLE parts prevented from being HAZARDOUS LIVE by one or more of following means:		N/A
	a) ENCLOSURES or PROTECTIVE BARRIERS (see 6.4.2)		N/A
	b) BASIC INSULATION (see 6.4.3)		N/A
	c) Impedance (see 6.4.4)		N/A
6.4.2	ENCLOSURES or PROTECTIVE BARRIERS		N/A
	- meet rigidity requirements of 8.1		N/A
	- meet requirements for BASIC INSULATION, if protection is provided by insulation		N/A
	- meet requirements of 6.7 for CREEPAGE and CLEARANCES between ACCESSIBLE parts and HAZARDOUS live parts, if protection is provided by limited access		N/A
6.4.3	BASIC INSULATION		N/A
	- meet CLEARANCE, CREEPAGE DISTANCE and solid insulation requirements of 6.7		N/A
6.4.4	Impedance		N/A
	Impedance used as primary means of protection meets all of following requirements:		—
	a) limits current or voltage to level of 6.3.2		N/A
	b) RATED for maximum WORKING VOLTAGE and the amount of power it will dissipate		N/A
	c) CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of BASIC INSULATION of 6.7		N/A
6.5	Additional means of protection in case of SINGLE FAULT CONDITION		N/A

6.5.1	ACCESSIBLE parts are prevented from becoming HAZARDOUS live by the primary means of protection and supplemented by one of:	NO HAZARDOUS live parts	N/A
	a) PROTECTIVE BONDING (see 6.5.2)	Not used	N/A
	b) SUPPLEMENTARY INSULATION (see 6.5.3)	Not used	N/A
	c) automatic disconnection of the supply (see 6.5.5)	Not used	N/A
	d) current- or voltage-limiting device (see 6.5.6)	Not used	N/A
	Alternatively one of the single means of protection is used:	Not used	N/A
	e) REINFORCED INSULATION (see 6.5.3)	Not used	N/A
	f) PROTECTIVE IMPEDANCE (see 6.5.4)	Not used	N/A
6.5.2	PROTECTIVE BONDING	(see Form A.9, A.10 and A.11)	N/A
6.5.2.1	ACCESSIBLE conductive parts, may become HARZARDOUS LIVE in SINGLE FAULT CONDITION:		N/A
	Bonded to the PROTECTIVE CONDUCTOR TERMINAL; or		N/A
	Separated by conductive screen or barrier bonded to PROTECTIVE CONDUCTOR TERMINAL		N/A
6.5.2.2	Integrity of PROTECTIVE BONDING		N/A
	a) PROTECTIVE BONDING consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses		N/A
	b) Soldered connections:		N/A
	Independently secured against loosening		N/A
	Not used for other purposes		N/A
	c) Screw connections are secured		N/A
	d) PROTECTIVE BONDING not interrupted; or		N/A
	exempted as removable part carries MAINS SUPPLY INPUT connection		N/A
	e) Any moveable PROTECTIVE BONDING connection specifically designed, and meets 6.5.2.4		N/A
	f) No external metal braid of cables used (not regarded as PROTECTIVE BONDING)		N/A
	g) IF MAINS SUPPLY PASSES THROUGH:		N/A
	Means provided for passing protective conductor;		N/A
	Impedance meets 6.5.2.4		N/A
	h) Protective conductors bare or insulated, if insulated, green/yellow		N/A
	Exceptions:		N/A
	1) earthing braids;		N/A
	2) internal protective conductors etc.;		N/A
	Green/yellow not used for other purposes		N/A

	TERMINAL suitable for connection of a PROTECTIVE CONDUCTOR, and meets 6.5.2.3		N/A
6.5.2.3	PROTECTIVE CONDUCTOR TERMINAL		N/A
	a) Contact surfaces are metal		N/A
	b) Appliance inlet used		N/A
	c) For rewirable cords and PERMANENTLY CONNECTED EQUIPMENT, PROTECTIVE CONDUCTOR TERMINAL is close to MAINS supply TERMINALS		N/A
	d) If no MAINS supply is required, any PROTECTIVE CONDUCTOR TERMINAL:		N/A
	Is near terminals of circuit for which protective earthing is necessary		N/A
	External if other terminals external		N/A
	e) Equivalent current-carrying capacity to MAINS supply TERMINALS		N/A
	f) If plug-in, makes first and breaks last		N/A
	g) If also used for other bonding purposes, protective conductor:		N/A
	Applied first;		N/A
	Secured independently;		N/A
	Unlikely to be removed by servicing		N/A
	h) PROTECTIVE CONDUCTOR of measuring circuit:		N/A
	1) Current RATING equivalent to measuring circuit TERMINAL;		N/A
	2) PROTECTIVE BONDING:		N/A
	Not interrupted; or		N/A
	i) FUNCTIONAL EARTH TERMINALS allow independent connection		N/A
	j) If a binding screw used for PROTECTIVE CONDUCTOR TERMINAL:		N/A
	Suitable size for bond wire		N/A
	Not smaller than M 4 (No. 6)		N/A
	At least 3 turns of screw engaged		N/A
	Passes tightening torque test		N/A
	k) Contact pressure not capable being reduced by deformation of materials		N/A
6.5.2.4	Impedance of PROTECTIVE BONDING of plug-connected equipment		N/A
	Impedance between PROTECTIVE CONDUCTOR TERMINAL and each ACCESSIBLE part where PROTECTIVE BONDING is specified, is:		—
	less than 0,1 Ohm; or		N/A
	less than 0,2 Ohm if equipment is provided with non detachable cord		N/A

6.5.2.5	Bonding impedance of PERMANENTLY CONNECTED EQUIPMENT		N/A
6.5.2.6	Transformer PROTECTIVE BONDING screen		N/A
	Transformer provided with screen for protective bonding:		N/A
	screen bonding consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses (see 6.5.2.2 a)		N/A
	screen bonding with soldered connection (see 6.5.2.2 b) is:		N/A
	- Independently secured against loosening		N/A
	- Not used for other purposes		N/A
6.5.3	SUPPLEMENTARY and REINFORCED INSULATION		N/A
	- meet CLEARANCE, CREEPAGE DISTANCE and solid insulation requirements of 6.7		N/A
6.5.4	PROTECTIVE IMPEDANCE		N/A
	Limits current or voltage to level of 6.3.1 in NORMAL and to level of 6.3.2 in SINGLE FAULT CONDITION		N/A
	CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of DOUBLE or REINFORCED INSULATION of 6.7		N/A
	The protective impedance consists of one or more of the following:		—
	a) appropriate single component suitable for safety and reliability for protection, it is:		N/A
	1) RATED twice the maximum WORKING VOLTAGE		N/A
	2) resistor RATED for twice the power dissipation for maximum WORKING VOLTAGE		N/A
	b) combination of components		N/A
	Single electronic device not used as PROTECTIVE IMPEDANCE		N/A
6.5.5	Automatic disconnection of the supply		N/A
	a) RATED to disconnect the load within time specified in Figure 2		N/A
	b) RATED for the maximum load conditions of the equipment		N/A
6.5.6	Current- or voltage limiting devices		N/A
	Device complies with all of:		N/A
	a) RATED to limit the current or voltage to the level of 6.3.2		N/A
	b) RATED for the maximum working voltage; and		N/A
	RATED for the maximum operational current if applicable		N/A
	c) CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of SUPPLEMENTARY INSULATION of 6.7		N/A

6.6	Connections to external circuits	Levels of all connections to external circuits are below the levels in 6.3.1 and 6.3.2	P
6.6.1	Connections do not cause ACCESSIBLE parts of the following to become HAZARDOUS LIVE in NORMAL CONDITION or SINGLE FAULT CONDITION:	As above	P
	- the external circuits	As above	P
	- the equipment	As above	P
	Protection achieved by separation of circuits; or	As above	P
	short circuit of separation does not cause a HAZARD	As above	P
	Instructions or markings for each terminal include:		P
	a) RATED conditions for TERMINAL	Voltage measurements terminal are rated 30V max.	P
	b) Required RATING of external circuit INSULATION		N/A
6.6.2	TERMINALS for external circuits	No terminals	N/A
	TERMINALS which receive a charge from an internal capacitor are not HAZARDOUS LIVE after 10 s of interrupting supply connection	No such terminals	N/A
6.6.3	Circuits with terminals which are HAZARDOUS LIVE	No such external circuits	N/A
	These circuits are:		N/A
	Not connected to ACCESSIBLE conductive parts; or		N/A
	Connected to ACCESSIBLE conductive parts, but are not MAINS circuits and have one TERMINAL contact at earth potential		N/A
	No ACCESSIBLE conductive parts are HAZARDOUS LIVE		N/A
6.6.4	ACCESSIBLE terminals for stranded conductors	No such terminals	N/A
	No RISK of accidental contact because:		N/A
	Located or shielded		N/A
	Self-evident or marked whether or not connected to ACCESSIBLE conductive parts		N/A
	ACCESSIBLE TERMINALS will not work loose		N/A
6.7	Insulation requirements	CLEARANCE and CREEPAGE are less than required, see Form A.2 fault #2. (see Form A.5)	N/A
6.7.1	The nature of insulation		N/A
6.7.1.1	Insulation between ACCESSIBLE parts or between separate circuits consist of CLEARANCES, CREEPAGE DISTANCES and solid insulation if provided as protection against a HAZARD		N/A
6.7.1.2	CLEARANCES		N/A
	Required CLEARANCES reflecting factors of 6.7.1.1		N/A
	Equipment rated for operating altitude greater than 2000 m correction factor of Table 3 of 61010-1 applied		N/A
6.7.1.3	CREEPAGE DISTANCES		N/A
	Required CLEARANCES reflecting factors of 6.7.1.1		N/A

	CTI material group reflected by requirements		N/A
	CTI test performed		N/A
6.7.1.4	Solid insulation		N/A
	Required CLEARANCES reflecting factors of 6.7.1.1		N/A
6.7.1.5	Requirements for insulation according to type of circuit	(see Form A.5)	N/A
	a) 6.7.2 MAINS circuits of OVERVOLTAGE CATEGORY II up to nominal supply voltage of 300 V		N/A
	b) 6.7.3 Secondary circuits separated from circuits defined in a) by transformer		N/A
	c) K.1 MAINS circuits of OVERVOLTAGE CATEGORY III and IV or OVERVOLTAGE CATEGORY II over 300 V		N/A
	d) K.2 Secondary circuits separated from circuits defined in a) by transformer		N/A
	e) K.3 Circuits having one or more of:		N/A
	1) maximum TRANSIENT OVERVOLTAGE is limited to known level below the level of MAINS CIRCUIT		N/A
	2) maximum TRANSIENT OVERVOLTAGE above the level of MAINS CIRCUIT		N/A
	3) WORKING VOLTAGE is the sum of more than one circuit or a mixed voltage		N/A
	4) WORKING VOLTAGE includes recurring peak voltage, may include non-sinusoidal or non-periodic waveform		N/A
	5) WORKING VOLTAGE with a frequency above 30 kHz		N/A
6.7.2	Insulation for MAINS CIRCUITS of OVERVOLTAGE CATEGORY II with a nominal supply voltage up to 300 V		N/A
6.7.2.1	CLEARANCES and CREEPAGE DISTANCES		N/A
	Values for MAINS CIRCUITS of table 4 are met		N/A
	Coatings to achieve reduction to POLLUTION DEGREE I comply with requirements of Annex H		N/A
6.7.2.2	Solid insulation		N/A
6.7.2.2.1	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		N/A
	Equipment passed voltage tests of 6.8.3 with values of Table 5	(see Form A.14)	N/A
	Complies as applicable:		N/A
	a) ENCLOSURE or PROTECTIVE BARRIER Clause 8		N/A
	b) moulded and potted parts requirements of 6.7.2.2.2		N/A
	c) inner layers of printed wiring boards requirements of 6.7.2.2.3		N/A
	d) thin-film insulation requirements of 6.7.2.2.4		N/A

6.7.2.2.2	Moulded and potted parts		N/A
	Conductors between same two layers are separated by at least 0,4 mm after moulding is completed		N/A
6.7.2.2.3	Inner insulation layers of printed wiring boards		N/A
	Separated by at least 0,4 mm between same two layers		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		N/A
	a) thickness at least 0,4 mm		N/A
	b) insulation is assembled of minimum two separate layers, each RATED for test voltage of Table 5 for BASIC INSULATION		N/A
	c) insulation is assembled of minimum two separate layers, where the combination is rated for test voltage of Table 5 for REINFORCED INSULATION		N/A
6.7.2.2.4	Thin-film insulation		N/A
	Conductors between same two layers are separated by applicable CLEARANCES and CREEPAGE DISTANCES		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		N/A
	a) thickness at least 0,4 mm		N/A
	b) insulation is assembled of min two separate layers, each RATED for test voltage of Table 5 for BASIC INSULATION		N/A
	c) insulation is assembled of min three separate layers, where the combination of two layers passed voltage tests of 6.8.3 with values of Table 5 for REINFORCED INSULATION		N/A
6.7.3	Insulation for secondary circuits derived from MAINS of OVERVOLTAGE CATEGORY II up to 300 V		N/A
6.7.3.1	Secondary circuits where separation from MAINS CIRCUITS is achieved by a transformer providing:		—
	- REINFORCED INSULATION		N/A
	- DOUBLE INSULATION		N/A
	- screen connected to the PROTECTIVE CONDUCTOR TERMINAL		N/A
6.7.3.2	CLEARANCES		N/A
	a) meet the values of Table 6 for BASIC INSULATION and SUPPLEMENTARY INSULATION; or		N/A
	twice the values of Table 6 for REINFORCED INSULATION		N/A
	or		N/A
	b) pass the voltage tests of 6.8 with values of Table 6; with following adjustments:		N/A
	1) values for REINFORCED INSULATION are 1,6 times the values for BASIC INSULATION		N/A

	2) if operating altitude is greater than 2000 m values of CLEARANCES multiplied with factor of Table 3		N/A
	3) minimum CLEARANCE is 0,2 mm for POLLUTION DEGREE 2 and 0,8 mm for POLLUTION DEGREE 3		N/A
6.7.3.3	CREEPAGE DISTANCES		N/A
	Based on WORKING VOLTAGE meets the values of Table 7 for BASIC and SUPPLEMENTARY INSULATION		N/A
	Values for REINFORCED INSULATION are twice the values of BASIC INSULATION		N/A
	Coatings to achieve reduction to POLLUTION DEGREE I comply with requirements of Annex H		N/A
6.7.3.4	Solid insulation		N/A
6.7.3.4.1	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		N/A
	a) Equipment passed voltage test of 6.8.3.1 for 5 s with VALUES of Table 6 for BASIC and SUPPLEMENTARY INSULATION		N/A
	values for REINFORCED INSULATION are 1,6 times the values of BASIC INSULATION		N/A
	b) if WORKING VOLTAGE exceeds 300 V, equipment passed voltage test of 6.8.3.1 for 1 min with a test voltage of 1,5 times working voltage for BASIC or SUPPLEMENTARY INSULATION		N/A
	value for REINFORCED INSULATION are twice the WORKING VOLTAGE		N/A
	Complies as applicable:		N/A
	1) ENCLOSURE or protective barrier Clause 8		N/A
	2) moulded and potted parts requirements of 6.7.3.4.2		N/A
	3) inner layers of printed wiring boards requirements of 6.7.3.4.3		N/A
	4) thin-film insulation requirements of 6.7.3.4.4		N/A
6.7.3.4.2	Moulded and potted parts		N/A
	Conductors between same two layers are separated by applicable distances of Table 8		N/A
6.7.3.4.3	Inner insulation layers of printed wiring boards		N/A
	Separated by at least by applicable distances of Table 8 between same two layers		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		N/A
	a) thickness at least applicable distance of Table 8		N/A
	b) insulation is assembled of minimum two separate layers, each RATED for test voltage of Table 6 for BASIC INSULATION		N/A

	c) insulation is assembled of min two separate layers, where the combination is rated for 1,6 times the test voltage of Table 6		N/A
6.7.3.4.4	Thin-film insulation		N/A
	Conductors between same two layers are separated by applicable CLEARANCES and CREEPAGE DISTANCES		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		N/A
	a) thickness at least applicable distance of Table 8		N/A
	b) insulation is assembled of min two separate layers, each RATED for test voltage of Table 6 for BASIC INSULATION		N/A
	c) insulation is assembled of min three separate layers, where the combination of two layers passed voltage tests with 1,6 time values of Table 6:		N/A
	a.c. test of 6.8.3.1; or		N/A
	d.c. test of 6.8.3.2 for circuits stressed only by d.c. voltages		N/A
6.8	Procedure for dielectric strength tests	(see Form A.5 and A.14)	N/A
6.9	Constructional requirements for protection against electric shock		N/A
6.9.1	If a failure could cause a HAZARD:		N/A
	a) Security of wiring connections		N/A
	b) Screws securing removable covers		N/A
	c) Accidental loosening		N/A
	d) CREEPAGE and CLEARANCES not reduced below the values of basic insulation by loosening		N/A
6.9.2	Material not to be used for safety relevant insulation:		N/A
	Easily damaged materials not used		N/A
	Non-impregnated hydroscopic materials not used		N/A
6.9.3	Colour coding		N/A
	Green-and-yellow insulation shall not be used except:		N/A
	a) protective earth conductors;		N/A
	b) protective bonding conductors;		N/A
	c) potential equilization conductors;		N/A
	d) functional earth conductors		N/A
6.10	Connection to MAINS supply source and connections between parts of equipment		N/A
6.10.1	MAINS supply cords		N/A
	RATED for maximum equipment current (see 5.1.3c)		N/A
	Cable complies with IEC 60227 or IEC 60245		N/A
	Heat-resistant if likely to contact hot parts		N/A

	Temperature RATING (cord and inlet)..... :		N/A
	Green/yellow used only for connection to PROTECTIVE CONDUCTOR TERMINALS		N/A
	Detachable cords with IEC 60320 MAINS connectors:		—
	Conform to IEC 60799; or		N/A
	Have the current RATING of the MAINS connector		N/A
6.10.2	Fitting of non-detachable MAINS supply cords		N/A
6.10.2.1	Cord entry		N/A
	Inlet or bushing smoothly rounded; or		N/A
	Insulated cord guard protruding >5D		N/A
6.10.2.2	Cord anchorage		N/A
	Protective earth conductor is the last to take the strain		N/A
	a) Cord is not clamped by direct pressure from a screw		N/A
	b) Knots are not used		N/A
	c) Cannot push the cord into the equipment to cause a HAZARD		N/A
	d) No failure of cord insulation in anchorage with metal parts		N/A
	e) Not to be loosened without a tool		N/A
	f) Cord replacement does not cause a HAZARD and method of strain relief is clear		N/A
	Push-pull and or torque test	(see Form A.15)	N/A
6.10.3	Plugs and connectors		N/A
	MAINS supply plugs, connectors etc., conform with relevant specifications		N/A
	If equipment supplied at voltages below 6.3.2.a) or from a sole source:		—
	Plugs of supply cords do not fit MAINS sockets above rated SUPPLY voltage		N/A
	MAINS type plugs used only for connection to MAINS supply		N/A
	Plug pins which receive a charge from an internal capacitor		N/A
	Accessory MAINS socket outlets:		—
	a) Marking if accepts a standard MAINS plug (see 5.1.3e)		N/A
	b) Input has a protective earth conductor if outlet has EARTH TERMINAL CONTACT		N/A
6.11	Disconnection from supply source		N/A
6.11.1	Disconnects all current carrying conductors		N/A
6.11.2	Exceptions		N/A
6.11.3	Requirements according to type of equipment		N/A
6.11.3.1	PERMANENTLY CONNECTED EQUIPMENT and multi-phase equipment:		N/A

	Employs switch or circuit-breaker		N/A
	If switch or circuit-breaker is not part of the equipment, documentation requires:		—
	a) Switch or circuit-breaker to be included in building installation		N/A
	b) Suitable location easily reached		N/A
	c) Marking as disconnecting for the equipment		N/A
6.11.3.2	Single-phase cord-connected equipment		N/A
	Equipment is provided with one of the following:		N/A
	a) Switch or circuit-breaker		N/A
	b) Appliance coupler (disconnectable without tool)		N/A
	c) Separable plug (without locking device)		N/A
6.11.4	Disconnecting devices		N/A
	Electrically close to the SUPPLY		N/A
6.11.4.1	Switches and circuit-breakers		N/A
	When used as disconnection device:		—
	Meets IEC 60947-1 and IEC 60947-3		N/A
	Marked to indicate function..... :		N/A
	Not incorporated in MAINS cord		N/A
	Does not interrupt PROTECTIVE EARTH CONDUCTOR		N/A
6.11.4.2	Appliance couplers and plugs		N/A
	Where an appliance coupler or separable plug is used as the disconnecting device (see 6.11.3.2):		N/A
	Readily identifiable and easily reached by the operator		N/A
	Single-phase portable equipment cord length not more than 3 m		N/A
	PROTECTIVE EARTH CONDUCTOR connected first and disconnected last		N/A
7	**PROTECTION AGAINST MECHANICAL HAZARDS**		P
7.1	Equipment does not cause a mechanical HAZARD in NORMAL nor in SINGLE FAULT CONDITION		P
	Conformity is checked by 7.2 to 7.7		P
7.2	Sharp edges	No sharp edges	P
	Easily touched parts are smooth and rounded		P
	Do not cause injury during NORMAL USE and		P
	Do not cause injury during SINGLE FAULT CONDITION		P
7.3	Moving parts	No such hazards	N/A
7.3.1	HAZARDS from moving parts limited to a tolerable level with the conditions specified in 7.3.2 and 7.3.5		N/A
	RISK assessment in accordance with 7.3.3 carried out		N/A

7.3.2	Exceptions	No such hazards	N/A
	Access to HAZARDOUS moving parts permitted under following circumstances:		N/A
	a) obviously intended to operate on parts or materials outside of the equipment		N/A
	inadvertent touching of moving parts minimized by equipment design (e .g. guards or handles)		N/A
	b) If operator access is unavoidable outside normal use following precautions have been taken:		N/A
	1) Access requires TOOL		N/A
	2) Statement about training in the instructions		N/A
	3) Warning markings on covers prohibiting access by untrained operators		N/A
	or symbol 14 with full details in documentation		N/A
7.3.3	RISK assessment for mechanical HAZARDS to body parts	No such hazards	N/A
	RISK is reduced to a tolerable level by protective measures as specified in Table 12		N/A
	Minimum protective measures:		—
	A. Low level measures		N/A
	B. Moderate measures		N/A
	C. Stringent measures		N/A
7.3.4	Limitation of force and pressure	No such hazards	N/A
	Following levels are met in normal and single fault condition:		N/A
	Continuous contact pressure below 50 N / cm² with force below 150 N		N/A
	Temporary force below 250 N for an area at least of 3 cm² for a maximum duration of 0,75 s		N/A
7.3.5	Gap limitations between moving parts	No such hazards	N/A
7.3.5.1	Access normally allowed		N/A
	If levels of 7.3.4 exceeded and body part may be inserted minimum gap as specified in Table 13 assured in NORMAL and in SINGLE FAULT CONDITION		N/A
7.3.5.2	Access normally prevented		N/A
	Maximum gap as specified in Table 14 assured in NORMAL and in SINGLE FAULT CONDITION		N/A
7.4	Stability		P
	Equipment not secured to building structure is physical stable	Equipment is stable by design	P
	Stability maintained after opening of drawers etc. by automatic means, or	No such parts	N/A
	warning marking requires the application of means		N/A
	Compliance checked by following tests as applicable:		—

	a) 10° tilt test for other than handheld equipment	The EUT is Hand-held	N/A
	b) multi-directional force test for equipment exceeds height of 1 m and mass of 25 kg	The equipment not exceeds height of 1 m and mass of 25 kg	N/A
	c) downward force test for floor-standing equipment	The EUT is Hand-held	N/A
	d) overload test with 4 times maximum load for castor or support that supports greatest load	No such case	N/A
	e) castor or support that supports greatest load removed from equipment	No such case	N/A
7.5	Provisions for lifting and carrying		P
7.5.1	Equipment more than 18 kg :	Equipment mass is way less than 18 kg	—
	Has means for lifting or carrying; or		N/A
	Directions in documentation		N/A
7.5.2	Handles or grips	No such parts	N/A
	Handles or grips withstand four times weight		N/A
7.5.3	Lifting devices and supporting parts	EUT was loaded	P
	Rated for maximum load; or		N/A
	tested with four times maximum static load	EUT was loaded four times of its mass (1.3kg load) on its top when support on the rear leg.	P
7.6	Wall mounting	No wall mounting equipment	N/A
	Mounting brackets withstand four times weight		N/A
7.7	Expelled parts	No such parts	N/A
	Equipment contains or limits the energy		N/A
	Protection not removable without the aid of a tool		N/A

8	RESISTANCE TO MECHANICAL STRESSES		P
8.1	Equipment does not cause a HAZARD when subjected to mechanical stresses in NORMAL USE		P
	Normal protection level is 5 J	Considered 5J	P
	Levels below 5 J but not less than 1 J are acceptable if all of following criteria are met:	Not for levels below 5J	N/A
	a) lower level justified by RISK assessment of manufacturer		N/A
	b) equipment installed in its intended application is not easily touched		N/A
	c) only occasional access during NORMAL USE		N/A
	d) IK code in accordance to IEC 62262 marked or symbol 14 used with full information in the documentation		N/A
	For non-metallic ENCLOSURES rated below 2 °C ambient temperature value chosen for minimum rated temperature		N/A

	Impact energies between IK values, the IK code marked for nearest lower value		N/A
	Conformity is checked by performing following tests:		—
	1) static test of 8.2.1	Performed, no hazard	P
	2) impact test of 8.2.2 with 5 J except for HAND-HELD EQUIPMENT	Performed, no hazard	P
	if impact energy not selected to 5 J alternate method of IEC 62262 used		N/A
	3) drop test of 8.3.1 or 8.3.2 except for FIXED and EQUIPMENT with mass over 100 kg	Performed, no hazard	P
	Equipment rated with an impact rating of IK 08 that obviously meets the criteria		N/A
	After the tests inspection with following results:		—
	- HAZARDOUS LIVE parts above the limits of 6.3.2 not ACCESSIBLE	There are no HAZARDOUS LIVE parts	N/A
	- insulation pass the voltage tests of 6.8		N/A
	i) no leaks of corrosive and harmful substances		P
	ii) ENCLOSURE shows no cracks resulting in a HAZARD		P
	iii) CLEARANCES not less than their permitted values		P
	iv) insulation of internal wiring remains undamaged		P
	v) PROTECTIVE BARRIERS not damaged or loosened		N/A
	vi) No moving parts exposed, except permitted by 7.3		N/A
	vii) no damage which could cause spread of fire		P
8.2	ENCLOSURE rigidity test		P
8.2.1	Static test		P
	- 30 N with 12 mm rod to each part of ENCLOSURE	Applied to enclosure with acceptable results	P
	- in case of doubt test conducted at maximum RATED ambient temperature	No such doubt	N/A
8.2.2	Impact test	Applied to enclosure with acceptable results	P
	Impact applied to any part of ENCLOSURE causing a HAZARD if damaged	Applied to plastic enclosure	P
	Impact energy level and corresponding IK code..... :	5J impact applied	P
	Non-metallic ENCLOSURES cooled to minimum RATED ambient temperature if below 2 °C	Performed at -10°C, no hazard	P
8.3	Drop test	Mass of equipment 320g	P
8.3.1	Other than HAND-HELD and DIRECT-PLUG-IN EQUIPMENT		N/A
	Tests conducted with a drop height or angle of ..... :		N/A
8.3.2	HAND-HELD and DIRECT-PLUG-IN EQUIPMENT		P

	Non-metallic ENCLOSURES cooled to minimum RATED ambient temperature if below 2 °C	Performed at -10°C, no hazard	P
	Drop test conducted with an height of 1 m		N/A

9	PROTECTION AGAINST THE SPREAD OF FIRE		P
9.1	No spread of fire in NORMAL and SINGLE FAULT CONDITION	see Form A.2	P
	MAINS supplied equipment meets requirements of 9.6 additionally		N/A
	Conformity is checked by minimum one or a combination of the following (see Figure 11):	(see Form A.17)	P
	a) Fault test of 4.4; or	Faults were made, see Form A.2	P
	b) Application of 9.2 (eliminating or reducing the sources of ignition); or	Not relied upon	N/A
	c) Application of 9.3 (containment of fire within the equipment)	The enclosure comply with the requirements of 9.3.1	P
9.2	Eliminating or reducing the sources of ignition within the equipment		N/A
	a) 1) Limited-energy circuit (see 9.4); or		N/A
	2) BASIC INSULATION provided for parts of different potential; or		N/A
	Bridging the insulation does not cause ignition		N/A
	b) Surface temperature of liquids and parts (see 9.5)		N/A
	c) No ignition in circuits designed to produce heat		N/A
9.3	Containment of the fire within the equipment, should it occur		P
	a) Energizing of the equipment is controlled by an operator held switch	Not used	N/A
	b) ENCLOSURE is conform with constructional requirements of 9.3.1; and	ENCLOSURE is conform with constructional requirements of 9.3.1	P
	Requirements of 9.5 are met	No flammable liquids	N/A
9.3.1	Constructional requirements		P
	a) Connectors and insulating material have flammability classification V-2 or better	Fire enclosure is made of metal and plastic flame rated V-0 (see Table: 3)	
	b) Insulated wires and cables are flame retardant (VW-1 or equivalent)	Certified connectors rated min. V-2 used. Certified wiring rated min. VW-1 used.	P
	c) ENCLOSURE meets following requirements:		P
	1) Bottom and sides in arc of 5 ° (see Figure 13) to non-limited circuits (9.4) meets:		P
	i) no openings; or	Has no openings that are not close by certified connectors.	P

	ii) perforated as specified in Table 16; or		N/A
	iii) metal screen with a mesh; or		N/A
	iv) baffles as specified in Figure 12		N/A
	2) Material of ENCLOSURE and any baffle or flame barrier is made of:	Fire enclosure is made of plastic flame rated V-0	P
	Metal (except magnesium); or		N/A
	Non-metallic materials have flammability classification V-1 or better	Plastic of enclosure is flame rated V-0	P
	3) ENCLOSURE and any baffle or flame barrier have adequate rigidity	ENCLOSURE have adequate rigidity	P
9.4	Limited-energy circuit		N/A
	a) Potential not more than 30 r.m.s. and 42.4 V peak, or 60 V dc		N/A
	b) Current limited by one of following means:		N/A
	1) Inherently or by impedance (see Table 17); or		N/A
	2) Over current protective device (see Table 18); or		N/A
	3) A regulating network limits also in SINGLE FAULT CONDITION (see Table 17)		N/A
	c) Is separated by at least BASIC INSULATION		N/A
	Fuse or a nonadjustable electromechanical device is used		N/A
9.5	Requirements for equipment containing or using flammable liquids	No flammable liquids	N/A
	Flammable liquids contained in or specified for use with equipment do not cause spread of fire	No flammable liquids	N/A
	RISK is reduced to a tolerable level :	No flammable liquids	N/A
	a) The temperature of surface or parts in contact with flammable liquids is 25 °C below fire point	No flammable liquids	N/A
	b) The quantity of liquid is limited	No flammable liquids	N/A
	c) Flames are contained within the equipment	No flammable liquids	N/A
	Detailed instructions for RISK-reduction provided	No flammable liquids	N/A
9.6	Overcurrent protection		N/A
9.6.1	MAINS supplied equipment protected		N/A
	BASIC INSULATION between MAINS parts of opposite polarity provided		N/A
	Devices not in the protective conductor		N/A
	Fuses or single-pole circuit-breakers not fitted in neutral (multi-phase)		N/A
9.6.2	PERMANENTLY CONNECTED EQUIPMENT		N/A
	Overcurrent device:		N/A
	Fitted within the equipment; or		N/A

	Specified in manufacturer's instructions		N/A
9.6.3	Other equipment		N/A
	Protection within the equipment		N/A

10	EQUIPMENT TEMPERATURE LIMITS AND RESISTANCE TO HEAT		P
10.1	Surface temperature limits for protection against burns		P
	Easily touched surfaces within the limits in NORMAL and in SINGLE FAULT CONDITION:	(see Form A.21A)	P
	- at an specified ambient temperature of 40 °C		P
	- for equipment rated above 40 °C ambient temperature limits not exceeded raised by the difference to 40 °C		N/A
	Heated surfaces necessary for functional reasons exceeding specified values:	No such surfaces	N/A
	Are recognizable as such by appearance or function; or		N/A
	Are marked with symbol 13		N/A
	Guards are not removable without tool		N/A
10.2	Temperatures of windings		P
	Limits not exceeded in:	(see Form A.21A)	P
	NORMAL CONDITION		P
	SINGLE FAULT CONDITION		P
10.3	Other temperature measurements		P
	Following measurements conducted if applicable:	(see Form A.21A)	P
	a) Value of 60 °C of field-wiring terminal box not exceeded	No such parts	N/A
	b) Surface of flammable liquids and parts in contact with this liquids	No such parts	N/A
	c) Surface of non-metallic ENCLOSURES	(see Form A.21A)	P
	d) Parts made of insulating material supporting parts connected to MAINS supply	(see Form A.21A)	N/A
	e) Terminals carrying a current more than 0,5 A	(see Form A.21A)	P
10.4	Conduct of temperature test		P
10.4.1	Tests conducted under reference test conditions and manufacturer’s instructions	(see Form A.21A)	P
10.4.2	Temperature measurement of heating equipment	No such equipment	N/A
	Tests conducted in test corner		N/A
10.4.3	Equipment intended for installation in a cabinet or wall	No such equipment	N/A
	Equipment built in as specified in installation instructions		N/A
10.5	Resistance to heat		P
10.5.1	Integrity of CLEARANCE and CREEPAGE DISTANCES		N/A

10.5.2	Non-metallic ENCLOSURES	Unit was subjected to non-operative treatment at 70°C for 7 hours with acceptable results, there was no deformation (see Form A.22)	P
	Within 10 min after treatment:		—
	Equipment subjected to suitable stresses of 8.2 and 8.3 complying with criteria of 8.1	Unit passed tests of 8.2 with acceptable results. Tests of 8.3 waived based on engineering judgment	P
10.5.3	Insulating material		N/A
	a) Parts supporting parts connected to MAINS supply		N/A
	b) TERMINALS carrying a current more than 0.5 A		N/A
	Examination of material data; or		N/A
	in case of doubt:		N/A
	1) Ball pressure test; or		N/A
	2) Vicat softening test of ISO 306		N/A

11	PROTECTION AGAINST HAZARDS FROM FLUIDS		P
11.1	Protection to OPERATORS and surrounding area provided by EQUIPMENT		P
	All fluids specified by manufacturer considered	Certified lithium battery employed. No other fluids	P
11.2	Cleaning		N/A
11.3	Spillage	No such liquids. Battery is located so that electrolyte leakage cannot affect safety critical insulation	P
11.4	Overflow	No such liquids	N/A
11.5	Battery electrolyte		P
	Battery electrolyte leakage presents no HAZARD	Battery is located so that electrolyte leakage cannot affect safety critical insulation	P
11.6	Specially protected equipment	IP2X	N/A
11.7	Fluid pressure and leakage	No fluids	N/A
11.7.1	Maximum pressure ..... :		N/A
	Maximum pressure of any part does not exceed P_{RATED}		N/A
11.7.2	Leakage and rupture at high pressure		N/A
	Fluid containing parts subjected to hydraulic test if:		N/A
	a) product of pressure and volume > 200 kPal; and		N/A
	b) pressure > 50 kPa		N/A

	Parts of refrigerating systems meets pressure-related requirements of IEC 60335-24 or IEC 60335-24		N/A
11.7.3	Leakage from low-pressure parts		N/A
11.7.4	Overpressure safety device		N/A
	Does not operate in NORMAL USE		N/A
	a) Connected as close as possible to parts intended to be protected		N/A
	b) Easy access for inspection, maintenance and repair		N/A
	c) Adjustment only with TOOL		N/A
	d) No discharge towards person		N/A
	e) No HAZARD from deposit of discharged material		N/A
	f) Adequate discharge capacity		N/A
	No shut-off valve between overpressure safety device and protected parts		N/A

12	PROTECTION AGAINST RADIATION, INCLUDING LASER SOURCES, AND AGAINST SONIC AND ULTRASONIC PRESSURE	No radiation, lasers or considerable sound pressure produced	N/A
12.1	Equipment provides protection		N/A
12.2	Equipment producing ionizing radiation		N/A
12.2.1	Ionizing radiation		N/A
12.2.1.1	Equipment meets the following requirements:		N/A
	a) if intended to emit radiation meets requirements of 12.2.1.2; or		N/A
	tested, classified and marked in accordance to IEC 60405		N/A
	b) if only emits stray radiation meets requirements of 12.2.1.3		N/A
12.2.1.2	Equipment intended to emit radiation		N/A
	Effective dose rate of radiation measured..... :		N/A
	If dose rate exceeds 5 µSv/h marked with the following:		N/A
	a) Symbol 17 (ISO 361)		N/A
	b) Abbreviations of the radionuclides ..... :		N/A
	c) With maximum dose at 1 m; or..... :		N/A
	with dose rate value between 1 µSv/h and 5 µSv/h in m..... :		N/A
12.2.1.3	Equipment not intended to emit radiation		N/A
	Limit for unintended stray radiation of 1 µSv/h at any easily reached point kept ..... :		N/A
12.2.2	Accelerated electrons		N/A
	Compartments opened only by the use of a TOOL		N/A
12.3	Ultraviolet (UV) radiation		N/A

	No unintentional HAZARDOUS escape of UV radiation:		—
	- checked by inspection; and		N/A
	- evaluation of RISK assessment documentation		N/A
12.4	Micro-wave radiation		N/A
	Power density does not exceed 10 W/m^2 ..... :		N/A
12.5	Sonic and ultrasonic pressure		N/A
12.5.1	Sound level		N/A
	No HAZARDOUS sound emission		N/A
	Maximum sound pressure level measured and calculated for maximum sound power level as specified in ISO 3746 or ISO 9614-1		N/A
	Instruction describes measures for protection		N/A
12.5.2	Ultrasonic pressure		N/A
	Equipment not intended to emit ultrasound does not exceed limit of 110 dB between 20 kHz and 100 kHz		N/A
	Equipment intended to emit ultrasound:		N/A
	Outside useful beam does not exceed limit of 110 dB between 20 kHz and 100 kHz		N/A
	If inside useful beam above values exceeded:		N/A
	Marked with Symbol 14 of Table 1		N/A
	and following information in the documentation:		N/A
	a) dimensions of useful beam		N/A
	b) area where ultrasonic pressure exceed 110 dB		N/A
	c) maximum sound pressure inside beam area		N/A
12.6	Laser sources		N/A
	Equipment meets requirements of IEC 60825-1		N/A

13	PROTECTION AGAINST LIBERATED GASES, EXPLOSION AND IMPLOSION		P
13.1	Poisonous and injurious gases	No such gases	N/A
	No poisonous or injurious gases or substances liberated in NORMAL CONDITION		N/A
	Attached data/test reports demonstrate conformity		N/A
13.2	Explosion and implosion		P
13.2.1	Components	No components liable to explode	N/A
	Components liable to explode:		—
	Pressure release device provided; or		N/A
	Apparatus incorporates operator protection (see also 7.7)		N/A
	Pressure release device:		—
	Discharge without danger		N/A
	Cannot be obstructed		N/A

13.2.2	Batteries and battery charging	Rechargeable lithium battery employed. (see Form A.28)	P
	If explosion or fire HAZARD could occur:		—
	Protection incorporated in the equipment; or	see Form A.28 and Form A.2	P
	Instructions specify batteries with built-in protection		N/A
	In case of wrong type of battery used:	Battery isn't replaceable	—
	No HAZARD; or		N/A
	Warning by marking and within instructions		N/A
	Equipment with means to charge rechargeable batteries:	see Form A.28 and Form A.2	P
	Warning against the charging of non-rechargeable batteries; and		N/A
	Type of rechargeable battery indicated; or	Battery isn't replaceable	N/A
	Symbol 14 used		N/A
	Battery compartment design		N/A
	Single component failure	see Form A.28 and Form A.2	P
	Polarity reversal test	Battery isn't replaceable	N/A
13.2.3	Implosion of cathode ray tubes	No CRT	N/A
	If maximum face dimensions > 160 mm ..... :		—
	Intrinsically protected and correctly mounted; or		N/A
	ENCLOSURE provides protection:		N/A
	If non-intrinsically protected:		—
	Screen not removable without TOOL		N/A
	If glass screen, not in contact with surface of tube		N/A

14	COMPONENTS AND SUBASSEMBLIES		P
14.1	Where safety is involved, components and subassemblies meet relevant requirements	(see Table 3)	P
14.2	Motors	No such device	N/A
14.2.1	Motor temperatures		N/A
	Does not present a HAZARD when stopped or prevented form starting; or		N/A
	Protected by over-temperature or thermal protection device conform with 14.3	No such device	N/A
14.2.2	Series excitation motors	No such motors	N/A
	Connected direct to device, if over-speeding causes a HAZARD		N/A
14.3	Overtemperature protection devices	No such devices	N/A
	Devices operating in a SINGLE FAULT CONDITION		N/A
	a) Reliable function is ensured		N/A
	b) RATED to interrupt maximum current and voltage		N/A
	c) Does not operate in NORMAL USE		N/A

	If self-resetting device used to prevent a HAZARD, protected part requires intervention before restarting		N/A
14.4	Fuse holders	No such parts	N/A
	No access to HAZARDOUS LIVE parts		N/A
14.5	MAINS voltage selecting devices	No such devices, voltage is automatically selectable	N/A
	Accidental change not possible		N/A
14.6	MAINS transformers tested outside equipment	Part of certified power supply	N/A
14.7	Printed circuit boards	Certified PCB flame rated V-0 used	P
	Data shows conformity with V-1 of IEC 60695-11-10 or better; or		P
	Test shows conformity with V-1 of IEC 60695-11-10 or better		N/A
	Not applicable for printed wiring boards with limited-energy circuits (9.4)	No such parts	N/A
14.8	Circuits or components used as transient overvoltage limiting devices	No such components	N/A
	Test conducted between each pair of MAINS SUPPLY TERMINALS		N/A
	No HAZARD resulting from rupture or overheating of the component:		N/A
	- no bridging of safety relevant insulation		N/A
	- no heat to other parts above the self-ignition points		N/A

15	PROTECTION BY INTERLOCKS	No interlocks	N/A
15.1	Interlocks are designed to remove a HAZARD before OPERATOR exposed		N/A
15.2	Prevention of reactivation		N/A
15.3	Reliability		N/A
	Single fault unlikely to occur; or		N/A
	Cannot cause a HAZARD		N/A

16	HAZARDS RESULTING FROM APPLICATION		N/A
16.1	REASONABLY FORESEEABLE MISUSE	No such hazards	N/A
	No HAZARDS arising from settings not intended and not described in the instructions	No such settings that can present a hazard	N/A
	Other cases of REASONABLY FORESEEABLE MISUSE addressed by RISK assessment	No such hazards	N/A
16.2	Ergonomic aspects	No such hazards	N/A
	Factors giving rise to a HAZARD the RISK assessment is reflecting those aspects:		N/A
	a) limitation of body dimensions		N/A
	b) displays and indicators		N/A

	c) accessibility and conventions of controls		N/A
	d) arrangement of TERMINALS		N/A

17	RISK assessment		N/A
	RISK assessment conducted, if HAZARD might arise and not covered by Clauses 6 to 16	Risk of Fire, Risk of Electrocution and Risk of Hazardous energy all are fully covered by Clauses 6 to 16	N/A
	TOLERABLE RISK achieved by iterative documented process covering the following:		N/A
	a) RISK analysis		N/A
	Identifies HAZARDS and estimates RISK		N/A
	b) RISK evaluation		N/A
	Plan to judge acceptability of resulting RISK level based on the estimated severity and likelihood of a RISK		N/A
	c) RISK reduction		N/A
	Initial RISK reduced by counter measures;		N/A
	Repeated RISK evaluation without new RISKS introduced		N/A
	RISKS remaining after RISK assessment addressed in instructions to RESPONSIBLE BODY:		N/A
	Information contained how to mitigate these RISKS		N/A
	Following principles in methods of RISK reduction applied by manufacturer in given order:		N/A
	1) RISKS eliminated or reduced as far as possible		N/A
	2) Protective measures taken for RISKS that cannot be eliminated		N/A
	3) User information about residual RISK due to any defect of the protective measures		N/A
	Indication of particular training is required		N/A
	Specification of the need for personal protective equipment		N/A
	Conformity checked by evaluation of the RISK assessment documentation		N/A
ANNEX F	ROUTINE TESTS		N/A
	Manufacturer ´s declaration		N/A

4.4.2	**TABLE: Summary of SINGLE FAULT CONDITIONS**	**Form A.1**	P

Subclause	Title	Does not apply	Carried out	Comments
4.4.2.1	SINGLE FAULT CONDITIONS not covered by 4.4.2.2 to 4.4.2.14	X		No such faults considered
4.4.2.2	PROTECTIVE IMPEDANCE	X		Not employed
4.4.2.3	PROTECTIVE CONDUCTOR	X		Not employed, 12Vdc powered
4.4.2.4	Equipment or parts for short-term or intermittent operation	X		Continuous operation
4.4.2.5	Motors	X		No such parts
	– stopped while fully energized	X		
	– prevented from starting	X		
	– one phase interrupted (multi-phase)	X		
4.4.2.6	Capacitors	X		
4.4.2.7	MAINS transformers Attach drawing of MAINS transformers showing all protective devices (see Forms A.30 and A.31)	X		No such parts
4.4.2.8	Outputs		X	Short-circuit were applied to all outputs. No hazard.
4.4.2.9	Equipment for more than one supply	X		Unit for one main supply
4.4.2.10	Cooling	X		
	– air holes closed	X		
	– fans stopped	X		
	– coolant stopped	X		
	– loss of cooling liquid	X		
4.4.2.11	Heating devices	X		No heating devices
	– timer overridden	X		
	– temperature controller overridden	X		
4.4.2.12	Insulation between circuits and parts	X		method of 9.1 a) isn't used
4.4.2.13	Interlocks	X		No such parts
4.4.2.14	Voltage selectors	X		No such parts
List below all SINGLE FAULT CONDITIONS not covered by 4.4.2.2 to 4.4.2.14:				
Supplementary information: (see Form A.2 for details of tests)				

TESTED BY: DATE: TEST EQUIPMENT LIST ITEM:

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

4.4	**TABLE: Testing in SINGLE FAULT CONDITION – Results**			**Form A.2**	P
Test subclause	Fault No.	Fault description	Td 4.4.3 (NOTE)	How was test terminated Comments	Meets 4.4.4
4.4.2	1.	Short circuit of D8	--	Voltage dropped from 446Vp to 336Vp, Current consumption didn't change (measured with test circuit A1). No hazard.	P
4.4.2	2.	Short circuit of T2 primary (at pin 1) and secondary (at pin 4)	--	Voltage dropped from 446Vp to 0V, no accessible parts became hazardous. No hazard.	P
4.4.2	3.	Short over C110	01:00:00	Battery was charged for 7H and after that short circuit was apply. Initial short circuit current was 45mA. Stabilized short circuit current 14.5mA (immediately after apply the short circuit the unit stop function). No Fire, No Explosion (battery is internally protected) – No hazard.	P
4.4.2	4.	Short over C121	01:00:00	Battery was charged for 7H and after that short circuit was apply. Initial short circuit current was 45mA. Stabilized short circuit current 58mA. No Fire, No Explosion (battery is internally protected) – No hazard.	P
4.4.2	5.	Short over R113	00:05:00	Battery was charged for 7H and after that short circuit was apply. Initial battery charge current was 1284mA (input at 12Vdc / 1.12A). Stabilized short circuit current 0mA. No Fire, No Explosion (battery is internally protected) – No hazard.	P
4.4.2	6.	Short over R113	01:45:00	Battery wasn't charged and after that short circuit was apply. Initial battery charge current was 1284mA (input at 12Vdc / 1.12A). Stabilized short circuit current 0mA. No excessive temperature was measured, No Explosion (battery is internally protected) – No hazard.	P

NOTE Td = Test duration in hh:mm:ss
Record dielectric strength test on Form A.14 and temperature tests on Form A.21.
Record in the comments column for each test whether carried out during or after SINGLE FAULT CONDITION.

Supplementary information:

Discharge current - 60mA, Charge current - 492mA (input at 12Vdc / 0.4A)

TESTED BY: Yariv Keidar DATE: 12-13/03/2012 TEST EQUIPMENT LIST ITEM 1140, 1040, 1147, 1302

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

5.1.3c)	**TABLE: MAINS supply**	**Form A.3**	N/A
	Marked rating.....:	V	—
	Phase.....:		—
	Frequency .....:	Hz	—
	Current .....:	A	—
	Power .....:	W	—
	Power .....:	VA	—

Test No.	Voltage V	Frequency Hz	Current A	Power in W	Power in VA	Comments
--	--	--	--	--	--	--

Note – Measurements are only required for marked ratings.

Supplementary information:
Powered 12Vdc from external AC/DC adapter.

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

5.3	**TABLE: Durability of markings**	**Form A.4**	P

Marking method (see NOTE)	Agent
1) Adhesive label	A Water
2) Ink printed	B Isopropyl alcohol 70%
3) Laser marked	C (specify agent)
4) Filmcoated (plastic foil control panel)	D (specify agent)
5) Imprinted on plastic (moulded in)	E (specify agent)

NOTE – Where applicable include print method, label material, ink or paint type, fixing method, adhesive and surface to which marking is fixed.

Marking location	Marking method (see above)
Identification (5.1.2)	1
MAINS supply (5.1.3)	
Fuses (5.1.4)	
terminals and operating devices (5.1.5.2)	1
Switches and circuit breakers (5.1.6)	
Double/reinforced equipment (5.1.7)	
Field wiring Terminal boxes (5.1.8)	
Warning marking (5.2)	
Battery charging (13.2.2)	

Method	Test agent	Remains legible	Label loose	Curled edges	Comments
		Verdict	Verdict	Verdict	
1	A, B	P	P	P	

Supplementary information:

TESTED BY: Yariv Keidar DATE: 12/03/2012 TEST EQUIPMENT LIST ITEM: N/A

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6	**TABLE: Protection against electric shock - Block diagram of system Form A.5**	P

Pollution degree..... : II | Overvoltage category.....: II

Location or description	Insulation type (NOTE 1)	Maximum working voltage (NOTE 2)	CREEPAGE Distance (NOTE 3)				CLEARANCE (NOTE 3)	Test voltage	Comments
			PWB mm	CTI	Other mm	CTI	mm	(NOTE 2) V	
Hazardous live parts of sonar device and accessible parts of other connectors	RI	420V peak	5 (*)	--	--	--	0.94 (*)	*	*) CL and CR are less than required, see Form A.2 fault #2.

NOTE 1 – Type of insulation:
BI = BASIC INSULATION
DI = DOUBLE INSULATION
PI = PROTECTIVE IMPEDANCE
RI = Reinforced INSULATION
SI = Supplementary INSULATION

NOTE 2 - Types of voltage
Peak impulse test voltage (pulse)
r.m.s.
d.c.
peak

NOTE 3 - INSTALLATION CATEGORIES (OVERVOLTAGE CATEGORIES) or POLLUTION DEGREES which differ from these should be shown under "Comments".

Supplementary Information:

TESTED BY: Yariv Keidar DATE: 12/03/2012 TEST EQUIPMENT LIST ITEM: 1335, 1040

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.2	**TABLE: List of ACCESSIBLE parts**	**Form A.6**	P
6.1.2	Exceptions		—
6.2	Determination of ACCESSIBLE parts		—

Item	Description	Determination method (NOTE 5)	Exception under 6.1.2 (NOTE 4)
1.	Plastic enclosure	V	There are no openings in the enclosure
2.	DC input connector	J	There is no access to hazard parts. The unit is powered 12Vdc. Capacitor test not required.
3.	USB port connector	J	There is no access to hazard parts. The unit is powered 12Vdc. USB limit to 5Vdc. Capacitor test not required.
4.	Distance sensor	V	Capacitor test required.
5.	pH input connector	P4	There is no access to hazard parts. The unit is powered 12Vdc. Capacitor test not required.
6.	External Temperature input connector	P4	There is no access to hazard parts. The unit is powered 12Vdc. Capacitor test not required.
7.	USB connector (below Light sensor)	P4	There is no access to hazard parts. The unit is powered 12Vdc. USB limit to 5Vdc. Capacitor test not required.
8.	Current and Voltage connectors	P4	There is no access to hazard parts. The unit is powered 12Vdc. Capacitor test not required.
9.	Air Pressure sensor input	P4	There is no access to hazard parts. The unit is powered 12Vdc. Capacitor test not required.

NOTE 1 – Test fingers and pins are to be applied without force unless a force is specified (see 6.2.2)
NOTE 2 – Special consideration should be given to inadequate insulation and high voltage parts (see 6.2)
NOTE 3 – Parts are considered to be ACCESSIBLE if they could be touched in the absence of any covering which is not considered to provide suitable insulation (see 6.4).
NOTE 4 – Capacitor test may be required (see Form A.7).
NOTE 5 – The determination methods are:
V = visual; R = rigid test finger; J = jointed test finger; P3 = pin 3 mm diameter; P4 = pin 4 mm diameter.

Supplementary information:

TESTED BY: Yariv Keidar DATE: 13/03/2012 TEST EQUIPMENT LIST ITEM: 1135, 1012, 1013, 1014

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6	**TABLE: Values in NORMAL CONDITION**	**Form A.7**	P
6.1.2	Exceptions	11.2 Cleaning and decontamination	—
6.3.1	Values in NORMAL CONDITION (see NOTE 1)	11.3 Spillage	—
6.6.2	Terminals for external circuit	11.4 Overflow	—
6.10.3	Plugs and connections		—

Item	Voltage			Current				Capacitance		10 s / 5 s test (NOTE)			Comments
(see Form A.6)	V r.m.s.	V peak	V d.c.	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.	μC	mJ	V	μC	mJ	
1.			0										
2.			12										
3.			5										
4.		446		A1		0.126mA							446Vp for 330μS and then voltage dropped to less than 46.7 V peak in 45mS.
5.			>5										
6.			>5										
7.			5										
8.			0										
9.			>5										

NOTE – A 10 s test is specified in 6.1.2 a) b). A 5 s test is specified in 6.10.3. The capacitance level versus voltage below the limits given from figure 3 of IEC 61010-1.

Supplementary information:

TESTED BY: Yariv Keidar DATE: 13/03/2012 TEST EQUIPMENT LIST ITEM: 1040, 1135, 1147

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.3.2	**TABLE: Values in SINGLE FAULT CONDITION**										**Form A.8**	N/A
Item	Subclause and	Voltage			Transient (see NOTE)		Current				Capacitance	
(see Form A.6)	fault No. (see Form A.2)	V r.m.s.	V peak	V d.c.	V	s	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.	µF (see NOTE)	Comments
1.	1		336				A1		0.126 mA			420Vp for 330µS and then voltage dropped to less than 46.7 V peak in 45mS.
NOTE – Transient voltages must be below the limits given from Figure 2 and the capacitance below the limits from figure 3 of IEC 61010-1.												
Supplementary information:												

TESTED BY: Yariv Keidar DATE: 13/03/2012 TEST EQUIPMENT LIST ITEM: 1040, 1135, 1147

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.5.2.2	**TABLE: Cross-sectional area of bonding conductors**	**Form A.9**	N/A
CONDUCTOR LOCATION	CROSS-SECTIONAL AREA mm²		VERDICT

6.5.2.3	**TABLE: Tighting torque test**		N/A
Conductor location	Size of screw	Tighting torque Nm	Verdict

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.5.2.4	**TABLE: Bonding impedance of plug connected equipment**			**Form A.10**	N/A
ACCESSIBLE part under test		Test current A	Voltage attained after 1 min V (NOTE 2)	Calculated resistance (Maximum 0,1 or 0,2 Ω) Ω (NOTE 1)	Verdict
NOTE 1 – For none-detachable power cord the impedance between protective conductor plug pin of MAINS cord and each ACCESSIBLE part shall not exceed 0,2 Ohm.					
Supplementary information:					

6.5.2.5	**TABLE: Bonding impedance of permanently connected equipment**			N/A
ACCESSIBLE part under test		Test current A	Voltage attained after 1 min (maximum 10 V) V	Verdict
Supplementary information:				

TESTED BY: I. Braschinsky DATE: 16/10/2011 TEST EQUIPMENT LIST ITEM: 1006, 1040

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.5.2.6	**TABLE: Transformer PROTECIVE BONDING screen**		**Form A.11**	N/A
ACCESSIBLE part under test	Test current (see NOTE) A	Voltage attained after 1 min (maximum 10 V) V	Calculated resistance (maximum 0,1 Ω) Ω	Verdict
NOTE – Test current must be twice the value of the overcurrent protection means of the winding. Test is specified in 6.5.2.6 a) or b).				
Supplementary information:				

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.5.4	**TABLE: protective impedance**	**Form A.12**	N/A

A single component

Component	Location	Measured		Calculated	Rated		Verdict	Comments
		Working voltage V	Current A	Power dissipation W	Working voltage V	Power dissipation W		

A combination of components

Component	Location	Comments

NOTE – A PROTECTIVE IMPEDANCE shall not be a single electronic device that employs electron conduction in a vacuum, gas or semiconductor.

Supplementary information:

6.5.6	**TABLE: Current- or voltage-limiting device**	N/A

Component	Location	Measured		Rated		Verdict	Comments
		Working voltage V	Current A	Working voltage V	Current A		

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.7	**TABLE: CLEARANCES and CREEPAGE distances**		**Form A.13**	N/A
6.4.2	ENCLOSURES and protective barriers	8	Mechanical resistance to shock and impact	—
6.4.4	Impedance	9.6.1	Overcurrent protection basic insulation between MAINS parts	—
6.5.4	Protective impedance	10.5.1	Integrity of CLEARANCES and CREEPAGE distances	—
6.5.6	Current- or voltage-limiting device			—

Location (see Form A.5)	Measured (initial – 6.7)		Verdict	Mechanical tests (note)					Test at max.	Measured after test (if required)		Verdict	Comments
	CREEPAGE DISTANCE	CLEARANCE		Applied force	Rigidity (8.2)		Drop (8.3)		RATED ambient	CREEPAGE DISTANCE	CLEARANCE		
	mm	mm		N	Static (8.2.1)	Impact (8.2.2)	Normal (8.3.1)	Hand-held/ Plug-in	(10.5.1)	mm	mm		

NOTE – Refer to Form A.14 for dielectric strength tests following the above tests.

Supplementary information:

TESTED BY: _____ DAT E: TEST EQUIPMENT LIST ITEM _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.8	**TABLE: Dielectric strength tests** **Form A.14**	N/A
4.4.4.1 b)	Conformity after application of SINGLE FAULT CONDITIONS[1]	N/A
6.4	Primary means of protection[2]	N/A
6.6	Connections to external circuits	N/A
6.7.	Insulation requirements[2] (see Annex K)	N/A
6.10.2	Fitting of non-detachable MAINS supply cords[1]	N/A
9.2 a) 2)	Eliminating or reducing the sources of ignition within the equipment	N/A
9.4 c)	Limited-energy circuit	N/A
9.6.1	Overcurrent protection basic insulation between MAINS - parts	N/A

[1] Record the fault, test or treatment applied before the dielectric strength test. [2] Humidity preconditioning required.

	Test site altitude .....:	55m	—
	Test voltage correction factor (see Table 10).....:		—

Location or references from Forms A.2 and A.5	Clause or sub-clause	Humidity Yes/No	Working voltage V	Test voltage r.m.s./peak/d.cV	Comments	Verdict

Supplementary information: Reinforced insulation between primary and SELV was evaluated as part of certified power supply

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.10.2	**TABLE: Cord anchorage**	**Form A.15**	N/A

Location	Mass kg	Pull N	Verdict	Torque Nm	Verdict	Comment

Dielectric strength test for 1 min. (6.8.3.1) .....:		V r.m.s.	

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

7.	**TABLE: Protection against mechanical HAZARDS**	**Form A.16**	N/A
7.3.4	Limitation of force and pressure		—
7.3.5	Gap limitations between moving parts		—

	Clause 7.3.4		Clause 7.3.5.1								Clause 7.3.5.2				
	Continuous	Temporary	Minimum gaps (mm)								Maximum gaps (mm)				
Part / Location	Contact présure max. 50 N /cm² @ max. 150 N	max. 250 N / 3 cm² @ max. 0,75 s	Torso 500	Head 300	Leg 180	Foot 120	Toes 50	Arm 120	Hand 100	Finger 25	Head 120	Foot 35	Finger 4	Verdict	Comments

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

9	**TABLE: Protection against the spread of fire**			**Form A.17**	P
Item	Source of HAZARD or area of the equipment considered (circuit, component, liquid etc.)	Protection Method (9a, 9b or 9c)	Protection details		Verdict
	Any internal component	9c	Components are located within compliant fire enclosure (V-1 or better), internal components are rated V-2 or better and mounted on PCB rated V-0, insulated wiring is rated min. VW-1		P
Supplementary information:					

TESTED BY: Yariv Keiadr DATE: 13/03/2012 TEST EQUIPMENT LIST ITEM 1335

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

9.3.2	**TABLE: Constructional requirements**	**Form A.18**	N/A
14.7	Printed circuit boards		

Material tested..... :		—
Generic name ..... :		—
Material manufacturer..... :		—
Type ..... :		—
Colour..... :		—
Conditioning details..... :		—

		Sample 1	Sample 2	Sample 3
Thickness of specimen	mm			
Duration of flaming after first Application	s			
Duration of flaming plus glowing After second application	s			
Specimen burns to holding clamp	Yes/No			
Cotton ignited	Yes/No			
Sample result	Pass/Fail			

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

9.4	**TABLE: Limited-energy circuit**					**Form A.19**	N/A
Item	9.4 a)	9.4 b) Current and power limitation			9.4 c)	Decision	
or Location (see Form A.17)	Maximum potential in circuit voltage r.m.s./d.c. V	Maximum available current A	Maximum available power VA	Overload protection after 120 s A	Circuit separation	Yes/No	Comments

Supplementary information:

TESTED BY: S.Beloborodov DATE: 10/04/2011 TEST EQUIPMENT LIST ITEM 1040

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

9.5	**TABLE: Requirements for equipment containing or using flammable liquids**		**Form A.20**	N/A
Type of liquid	9.5 Flammable liquids			Verdict
	b) Quantity	c) Containment		
Supplementary information:				

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

10.	**TABLE : Temperature Measurements** **Form A.21A**	P
10.1	Surface temperature limits - NORMAL CONDITION	P
10.2	Temperature of windings- NORMAL CONDITION	N/A
10.3	Other temperature measurements	P

Operating conditions:	Normal condition, application running		
Frequency.....	-- Hz	Test room ambient temperature (ta) :	21 °C
Voltage	12 V	Test duration .....:	1 h 10 min

Part / Location	t_m °C	t_c °C	t_{max} °C	Verdict	Comments
DC in connector (J7)	23.9	52.9 (23.9 – 21 + 50)	85	P	
Battery ambient	24.4	53.4 (24.4 – 21 + 50)	85	P	
C157	25.1	54.1 (25.1 – 21 + 50)	85	P	
U18 at Digital board	25.8	54.8 (25.8 – 21 + 50)	105	P	
J6 at Analog board	23.9	52.9 (23.9 – 21 + 50)	105	P	
Internal ambient	23.3	52.3 (23.3 – 21 + 50)	60	P	

NOTE 1 - t_m = measured temperature
t_c = t_m corrected (t_m–t_a+ **40 °C** or max. RATED ambient)
t_{max} = maximum permitted temperature
NOTE 2 - see also 14.1 with reference to component operating conditions
NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Form use additional form if necessary
NOTE 4 - see Form A.21B for details of winding temperature measurements

Supplementary information:
Equipment intended for max. 50°C

TESTED BY: Yariv Keidar DATE: 12/03/2012 TEST EQUIPMENT LIST ITEM: 1302, 1140

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

10.2	**TABLE: Temperature of windings** **Form A.21B** **Resistance method Temperature Measurements**	N/A
4.4.2.7	MAINS transformers	
14.2.1	Motor temperatures	

Operating conditions.... :			
Frequency..... :	Hz	Test room ambient temperature (ta1/ta2) .....:	/ °C (initial / final)
Voltage..... :	V	Test duration.....:	h min

Part / Designation	Rcold Ω	Rwarm Ω	Current A	tr K	tc °C	tmax °C	Verdict	Comments

NOTE 1- R_{cold} = initial resistance R_{warm} = final resistance
t_r = temperature rise $t_c = t_r$ corrected ($t_c = t_r - \{ t_{a2} - t_{a1} \} + [40\ °C$ or max RATED ambient$]$)
t_{max} = maximum permitted temperature
NOTE 2 - Indicate insulation class (IEC 60085) under comments (optional)
NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Form use additional form if necessary

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

10.5.2	**TABLE: Resistance to heat of non-metallic ENCLOSURES**	**Form A.22**	N/A
	Test method used.....:		—
	Non operative treatment.....:	[X]	N/A
	Empty ENCLOSURE .....:	[ ]	N/A
	Operative treatment.....:	[ ]	N/A
	Temperature during tests .....:	70°C	—
	ENCLOSURE samples tested were.....:		—

Description	Material	Comments	Verdict

	Dielectric strength test (6.8)……:		V	r.m.s./peak/d.c.	

NOTE – Within 10 minutes of the end of treatment suitable tests in acc. to 8.2 and 8.3 must be conducted and pass criteria of 8.1.

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

10.5.3	**TABLE: Insulating Materials**		**Form A.23**	N/A
10.5.3 1)	Ballpressure test			
	Max. allowed impression diameter .....:	2 mm		—

Part	Test temperature °C	Impression Diameter (mm)	Verdict

Supplementary information:

10.5.3 2)	Vicat softening test (ISO 306)		N/A

Part	Vicat softening temperature °C	Thickness of sample (mm)	Verdict

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
8	**TABLE: Mechanical resistance to shock and impact**	**Form A.24**	P
11	**Protection against HAZARDS from fluids**		N/A

Voltage tests can be carried out once after performing the tests of clause **8** and clause **11**. However, if voltage tests are carried out separately after each set of tests, two forms can be used.

	Clause 8 tests				Clause 11 tests							
Location (see form A.5)	Static (8.2.1) 30 N	Impact (8.2.2)	Normal (8.3.1)	Handheld Plug-in	Cleaning (11.2)	Spillage (11.3)	Overflow (11.4)	IEC 60529 (11.6)	Working voltage V	Test voltage V	Verdict	Comments
Plastic enclosure	P	P	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	P	

NOTE – Use r.m.s., d.c. or peak to indicate the used test voltage.

Supplementary information:

TESTED BY: Yariv Keidar DATE: 13/03/2012 TEST EQUIPMENT LIST ITEM 1015

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

11.7.2	**TABLE: Leakage and rupture at high pressure**	**Form A.25**	N/A

Part	Maximum permissible working pressure Mpa	Test pressure MPa	Leakage Yes / No	Deformation Yes / No	Burst Yes / No	Comments

NOTE – see also Annex G with requirements for USA and Canada.

Supplementary information:

11.7.3	**Leakage from low-pressure parts**	N/A

Part	Test pressure Mpa	Leakage Yes / No	Comments

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

12.2.1	**TABLE: Ionizing radiation** **Form A 26**	N/A
12.2.1.2	Equipment intended to emit radiation	N/A

Locations tested	Measured values µSv/h	Verdict	Comments

Supplementary information:

12.2.1.3	Equipment not intended to emit radiation	N/A
	Max. allowed effective dose rate at 100 mm……: 1 µSv/h	—

Locations tested	Measured values µSv/h	Verdict	Comments

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

12.5.1	**TABLE: Sound level**	**Form A.27**	N/A

Locations tested	Measured values dBA	Calculated maximum sound pressure level
At operator's normal position and at bystanders' positions		
a)		
b)		
c)		
d)		
e)		
f)		

Supplementary information:

12.5.2	Ultrasonic pressure	N/A

Locations tested	Measured values		Comments
	dB	kHz	
At operator's normal position			
At 1 m from the ENCLOSURE			
a)			
b)			
c)			
d)			
e)			

NOTE – No limit is specified at present, but a limit of 110 dB above the reference pressure value of 20 μPa is under consideration for applicable frequencies between 20 kHz and 100 kHz.

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

13.2.2	**TABLE: Batteries**	**Form A.28**	P
	Battery load and charging circuit diagram:		
	See drawing #1 Appendix #2 page 84		
	Battery type.....:	Lithium Polymer	—
	Battery manufacturer/model/catalogue No.....:	AE702448P8H	—
	Battery ratings .....:	7.4Vdc / 850mAh	—
	Reverse polarity instalment test	No possibility to install battery in reverse polarity	P

Single component failures	Verdict	
Component	Open circuit	Short circuit

Supplementary information:
*See form A.2

TESTED BY: Yariv Keidar DATE: 13/03/2012 TEST EQUIPMENT LIST ITEM: 1140, 1040, 1147, 1302

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

14.3	**TABLE: Overtemperature protection devices**	**Form A.29**	N/A

Reliability test			
Component	Type (NOTE)	Verdict	Comments

NOTE:
NSR = non-self-resetting (10 times)
NR = non-resetting (1 time)
SR = self-resetting (200 times)

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

4.4.2.7	**TABLE: MAINS transformer**	**Form A.30**	N/A
4.4.2.7.2	Short circuit		
14.6	MAINS transformers tested outside equipment		
Type .....:			—
Manufacturer .....:			—
Test in equipment			
Test on bench			
Test repeated inside equipment (see 14.6)			
Optional – Insulation class (IEC 60085) of the lowest rated winding :			—

Winding identification				
Type of Protector for winding (Note 1)				
Elapsed time				
Current, A primary				
secondary				
Winding temperature, °C primary				
(see Note 2) secondary				
Tissue paper / cheesecloth OK ? (Pass / Fail)				
Voltage tests (see Note 3)				
Primary to secondary _____ V ____				
Primary to core _____ V ____				
Secondary to secondary _____ V ____				
Secondary to core _____ V ____				
Verdict				

Note 1: Primary fuse - PF / ( ) A
Secondary fuse - SF / ( ) A
Overtemperature protection - OP / ( ) °C
Impedance protection - Z

Note 2: Indicate method of measurement TC = with thermocouple
R = resistance method
If resistance method is used, record resistance in cold and warm condition in FormA.20B!

Note 3: Record the voltage applied and the type of voltage (r.m.s. / d.c. / peak) and for results use NB = no breakdown or B = breakdown

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

4.4.2.7	**TABLE: MAINS transformer**	**Form A.31**	N/A
4.4.2.7.3	Overload tests (for MAINS transformers)		
14.6	MAINS transformers tested outside equipment		
Type ..... :			—
Manufacturer ..... :			—
Test in equipment			
Test on bench			
Test repeated inside equipment (see 14.6)			
Optional – Insulation class (IEC 60085) of the lowest rated winding :			—

Winding identification				
Type of Protector for winding (Note 1)				
Elapsed time				
Current, A primary				
secondary				
Winding temperature, °C primary				
(see Note 2) secondary				
Tissue paper / cheesecloth OK ? (Pass / Fail)				
Voltage tests (see Note 3)				
Primary to secondary _____ V ____				
Primary to core _____ V ____				
Secondary to secondary _____ V ____				
Secondary to core _____ V ____				
Verdict				

Note 1: Primary fuse - PF / ( ) A
Secondary fuse - SF / ( ) A
Overtemperature protection - OP / ( ) °C
Impedance protection - Z

Note 2: Indicate method of measurement TC = with thermocouple
R = resistance method
If resistance method is used, record resistance in cold and warm condition in FormA.20B!

Note 3: Record the voltage applied and the type of voltage (r.m.s. / d.c. / peak) and for results use NB = no breakdown or B = breakdown

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

14.8	**TABLE: Transient overvoltage limiting devices**	**Form A.32**	N/A

Component / Designation	Overvoltage Category	MAINS voltage V rms	Test voltage V	t_m °C	t_c °C	t_{max} °C	Rupture Yes / No	Circuit breaker tripped	Verdict	Comments

Test room ambient temperature ….: °C

NOTE - t_m = measured temperature
t_c = t_m corrected (t_m–t_a+ **40 °C** or max. RATED ambient)
t_{max} = maximum permitted temperature
Conformity is checked by applying 5 positive and 5 negative impulses with the applicable impulse withstand voltage, spaced up to 1 min apart, from a hybrid impulse generator (see IEC 61180-1).

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM _____

Appendix of tables to be used as needed

IEC 61010-1			
Clause	Requirement – Test	Result — Remark	Verdict

Annex H	**TABLE: Qualification of conformal coating for**	**Addition to Form A.xx**	N/A
	protection against pollution		

Technical properties		
Manufacturer ..... :		—
Type ..... :		—
Meet requirements of ANSI / UL 746E ..... :	[yes / no]	
Manufacturer declaration of coating material :	[yes / no]	
Operating temperature of coating..... :	[ ] °C	
Comparative tracking index (CTI)..... :	[ ]	
Insulation resistance..... :	[ ] Ω	
Dielectric strength..... :	[ ] V	
UV resistance (if required)..... :	[yes / no]	
Flammability rating..... :		
Preparation of the test specimens conducted :	[yes / no]	

Item	Test conditioning	Parameter	Td	Samples						Verdict	Comments
			h	1	2	3	4	5	6		
1	Scratch resistance										
	Visual inspection										
2	Cold		24								
3	Dry heat		48								
4	Rapid temp. change										
5	Damp heat		24								
6	Adhesion of coading	5 N									
	Visual inspection										
7	Humidity		48								
8	Insulation resistance	>= 100 Ω									
	Visual inspection										

NOTE Td = Test duration time

Supplementary information:

TESTED BY: _____ DATE: _____ TEST EQUIPMENT LIST ITEM _____

IEC 61010-1			
Clause	Requirement – Test	Result — Remark	Verdict

6.7.2.2.2	**TABLE: Reliability of potted components**	**Addition to Form A.14**	N/A

Temperature Cycling Test	
Manufacturer..... :	
Type ..... :	
Construction..... :	
Potting compound..... :	
CREEPAGE distances measured..... :	
CLEARANCES measured..... :	
Thickness through insulation ..... :	
Adhesive test Pass/Fail..... :	
Test temperature T °C ..... :	

Cycles at U= AC 500 V				Leakage current (500 V) mA			
Number of cycles	Date			68 h / 125 °C	1 h / 25 °C	2 h / 0 °C	1 h / 25 °C
1. Cycle from		to					
2. Cycle from		to					
3. Cycle from		to					
4. Cycle from		to					
5. Cycle from		to					
6. Cycle from		to					
7. Cycle from		to					
8. Cycle from		to					
9. Cycle from		to					
10. Cycle from		to					

After Cycling Test :		
Humidity conditioning	48 h	
Requirements for dielectric strength (s. insulation diagram)	Test voltage V r.m.s	Verdict
Basic insulation _____ V r.m.s.		
Additional insulation _____ V r.m.s.		
Reinforced insulation _____ V r.m.s.		
Supplementary information:		

TESTED BY: _____ DATE: _____ TEST EQUIPMENT LIST ITEM _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.	**TABLE: WORKING VOLTAGE of Switch Mode Power Supply**							**Addition to Form A.5**	N/A
Location / Measuring track	Insulation (Form A.5)	RMS voltage V	Peak voltage V	Required cl mm	Measured cl mm	Required cp mm	Measured cp mm	Verdict	Comments
Input supply voltage…….:		V		Hz					
Supplementary information:									

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

x.x.x	**TABLE:**	**Addition to Form A.xx**	N/A

NOTE –												
Supplementary information:												

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM _____

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

x.x.x	**TABLE:**	**Addition to Form A.xx**	N/A

Supplementary information:

TESTED BY: _____ DATE: TEST EQUIPMENT LIST ITEM: _____

National Differences

National Differences for **Switzerland (CH)**			P
1	Switzerland (Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7, Mercury - Annex 1.7 of SR 814.81 applies for mercury.) Switches containing mercury such as thermostats, relays and level controllers are not allowed. Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries Annex 2.15 of SR 814.81 applies for batteries containing cadmium and mercury. Note. Ordinance relating to environmentally hazardous substances, SR814.013 is no longer in force and superseded by SR814.81 of 2009/02/01 (ChemRRV)	No hazardous substances used	P
5.1.3	Supply cords of portable electrical appliances having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with IEC 60884-1 (3.ed) + am1, SEV 1011 or and one of the following dimension sheets: - SEV 6533-2:2009 Plug type 11, L + N, 250V 10A - SEV 6534-2:2009 Plug type 12, L + N + PE, 250V 10A - SEV 6532-2:2009 Plug type 15, 3L + N + PE, 250/400V 10A Supply cords of portable electrical appliances having a rated current not exceeding 16 A shall be provided with a plug complying with IEC 60884-1(3.ed.) + am1, SEV 1011 and one of the following dimension sheets: - SEV 5933-2:2009 Plug type 21 L + N, 250 V, 16A - SEV 5934-2:2009 Plug type 23 L + N + PE, 250 V, 16A - SEV 5932-2:2009 Plug type 25 3L + N + PE, 250/400V 16A NOTE 16 A plugs are not often used in Swiss domestic installation system. See TRF template regulatory requirements Switzerland on IECEE Website R.R. TRF templates.	No cord evaluated as part of the equipment	N/A

Appendix 1.
Photographs.

Photo #1 - Top view

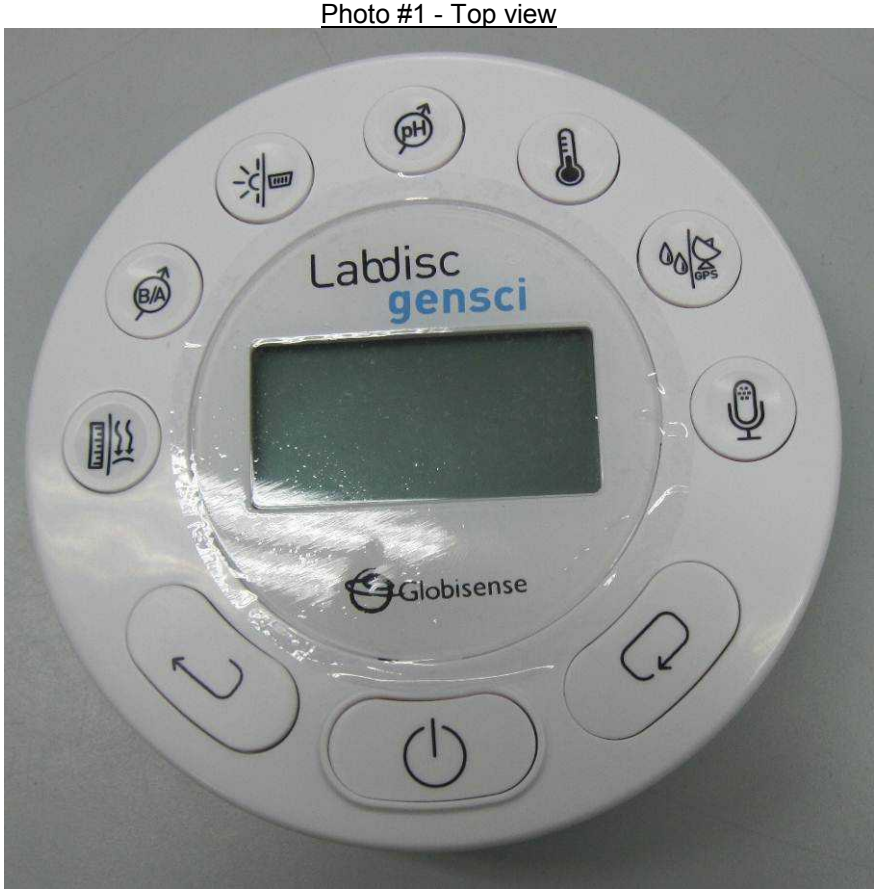


Photo #2 - Bottom view

Photo #3 - Internal view

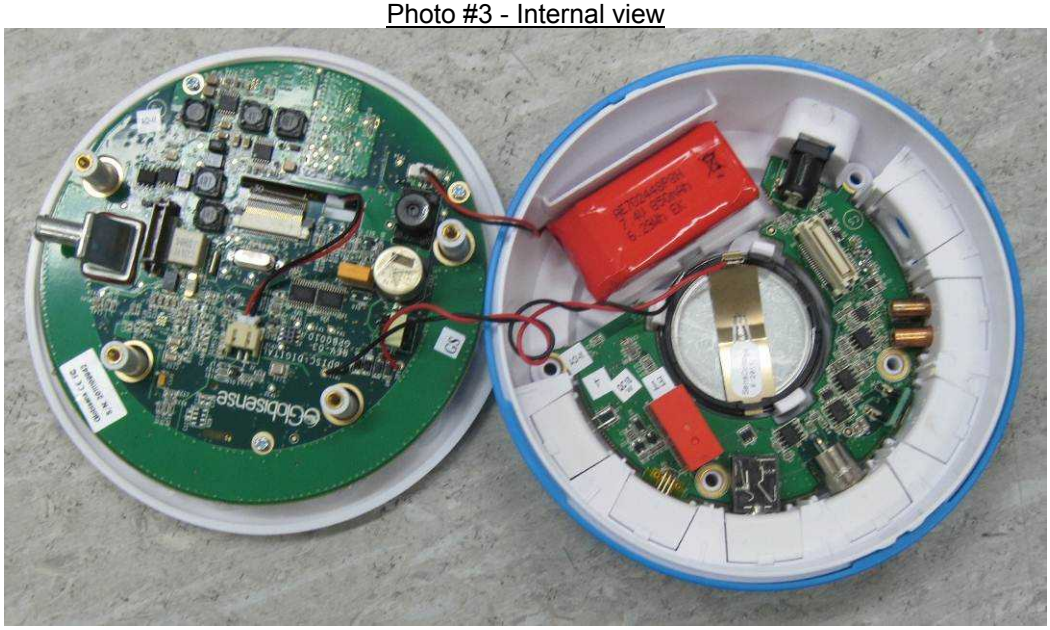


Photo #4 - General view

Photo #5 - General view

Photo #6 - General view

Photo #7 - General view

Photo #8 - Digital board CS view

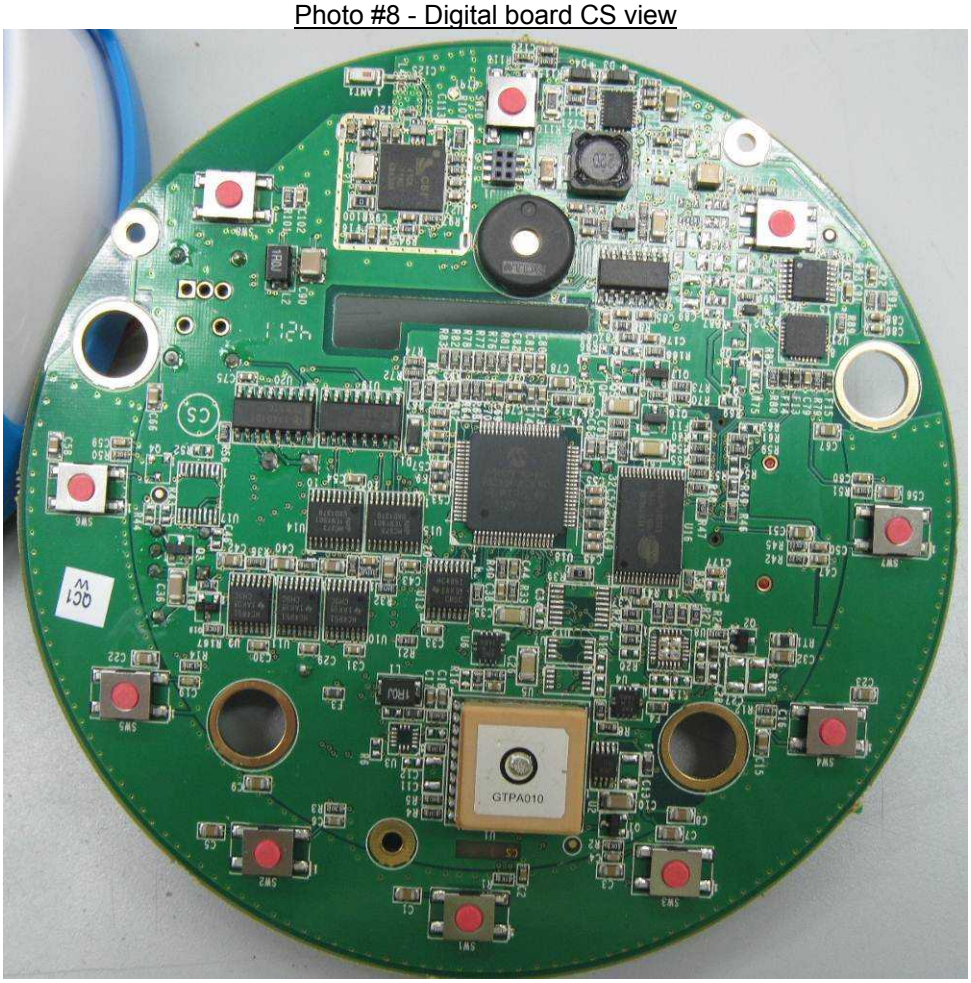


Photo #9 - Digital board PS view

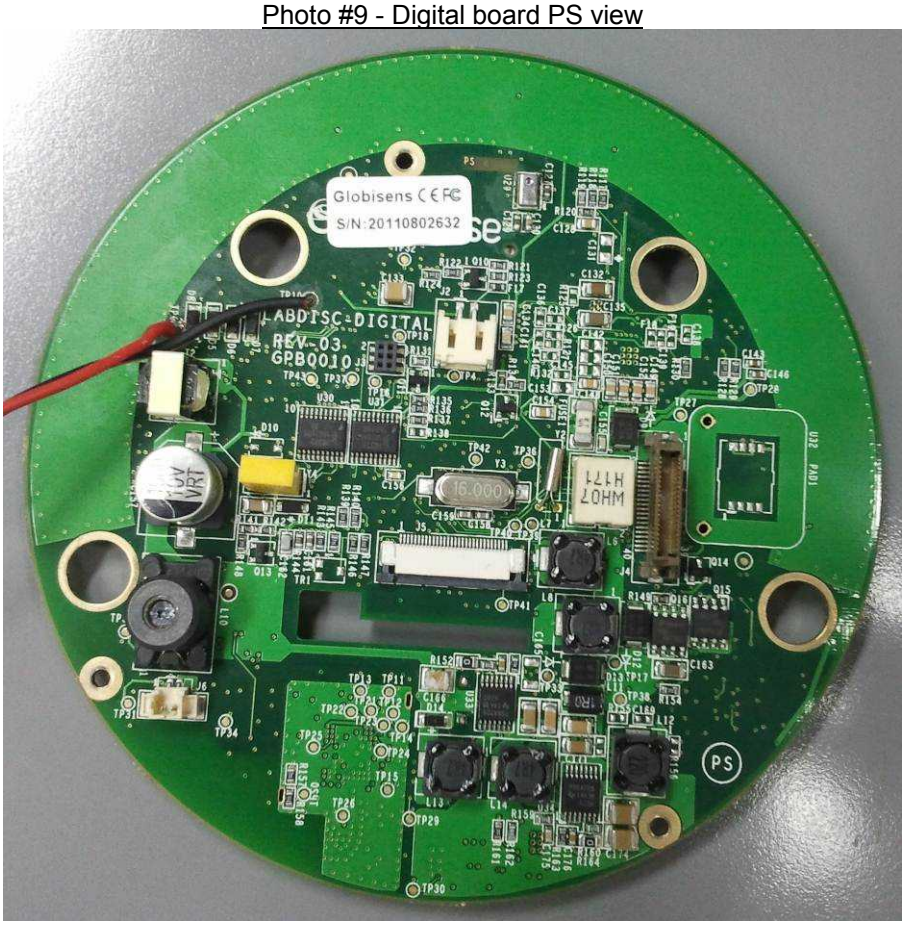


Photo #10 - Analog board CS view

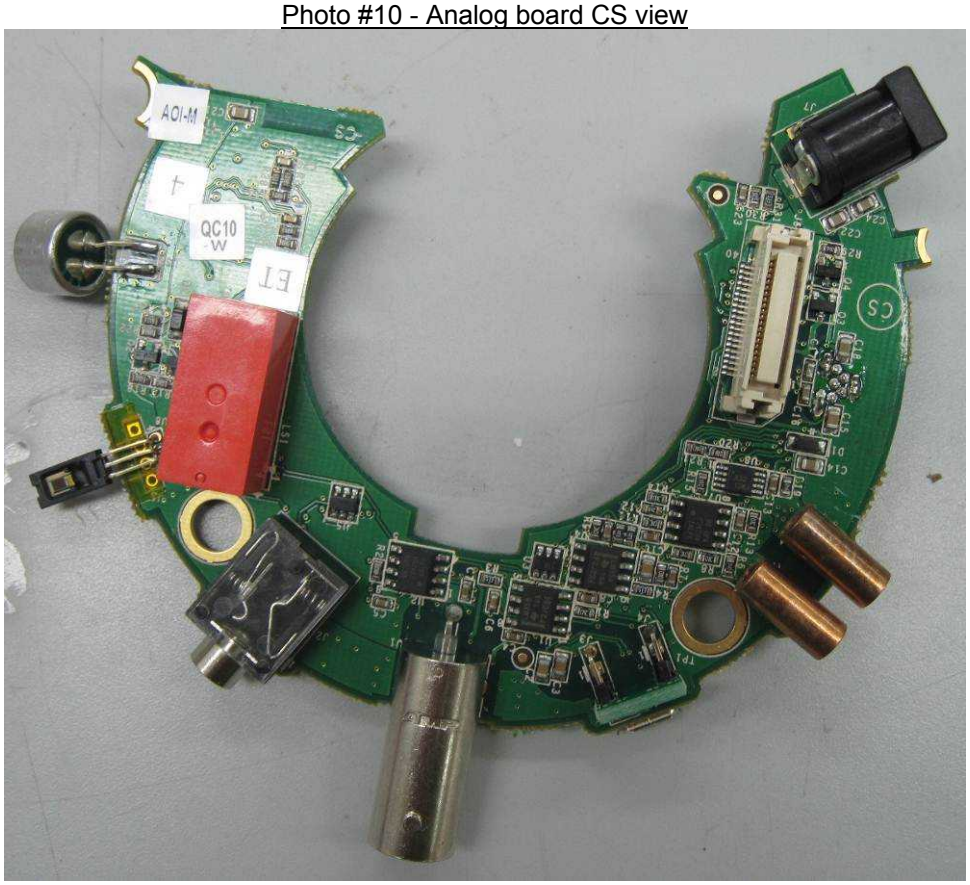


Photo #11 - Analog board PS view

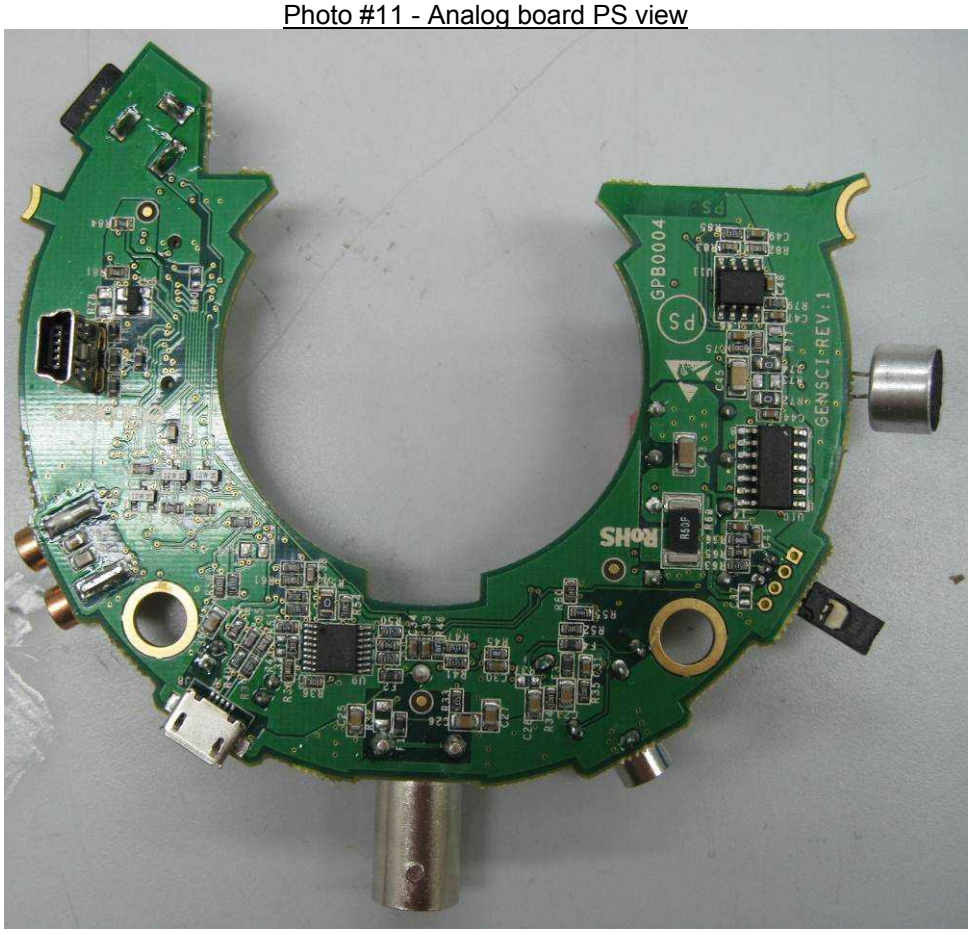


Photo #12 - Top cover internal view

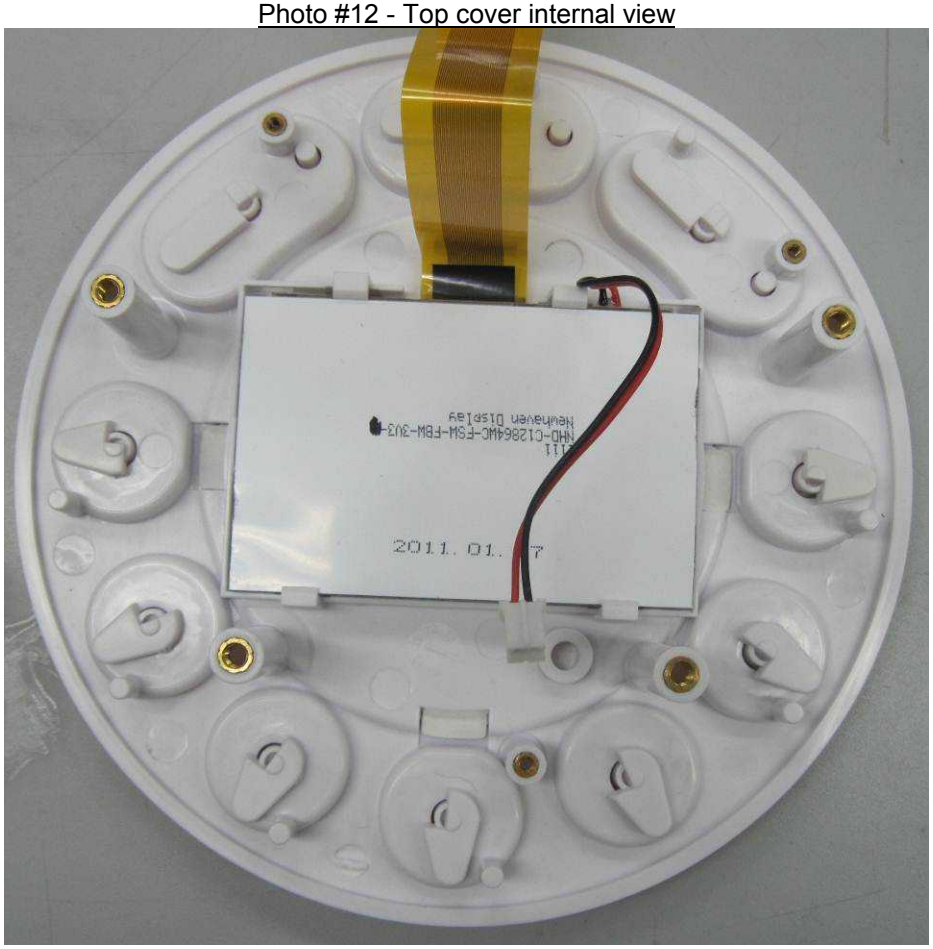
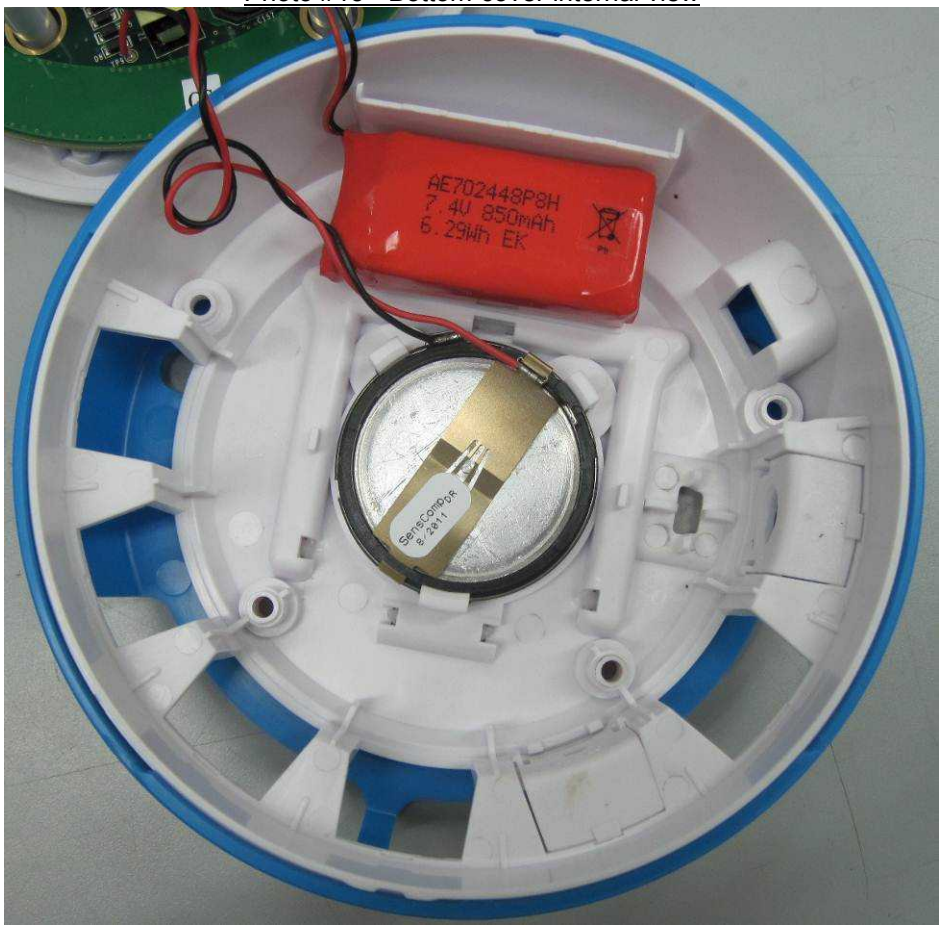


Photo #13 - Bottom cover internal view



Appendix 2
Drawings

Drawing #1 – Digital Board, power entry and Battery control