

TEST REPORT EN 60 065 Audio, video and similar apparatus Safety requirements	
Report	
Reference No. :	DR50120407AB
Tested by (+ signature)..... :	S. J. KIM
Approved by (+ signature)	 
Date of issue	16 August, 2004
Contents	36 pages
This report is based on a blank test report that was prepared by KEMA using information obtained from the TRF originator (see below).	
Testing laboratory	
Name	Digital EMC Co., Ltd.
Address	683-3, Yubang-Dong, Yongin-City, Kyunggi-Do, Korea 449-080
Testing location	Same as above
Client	
Name	UNIMO Technology Co., Ltd.
Address	479-12 Bangbae-3Dong, Seocho-Gu, Seoul, KOREA 137-820
Test specification	
Standard	EN 60065:1998
Test procedure	DF-50-069(01)04.04.27 of DEMC
Procedure deviation	N.A.
Non-standard test method	N.A.
.....	:
Test Report Form/blank test report	
Test Report Form No. :	I0065__C/99-03
TRF originator. :	BEAB
Master TRF	reference No. 60065, dated 98-12
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EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict

<p>Test item</p> <p>Description : Digital Hard Disk Recorder</p> <p>Trademark..... : UNIMO</p> <p>Model and/or type reference..... : UDR-204</p> <p>Manufacturer : UNIMO Technology Co., Ltd.</p> <p>Rating(s)..... : 100 – 240 V~, 50/60 Hz, 50W, Protection class I</p>
<p>Test case verdicts</p> <p>Test case does not apply to the test object..... : N(.A.)</p> <p>Test item does meet the requirement : P(ass)</p> <p>Test item does not meet the requirement : F(ail)</p>
<p>Testing</p> <p>Date of receipt of test item : 16 August, 2004</p> <p>Date(s) of performance of test..... : 15 July, 2004 – 04 August, 2004</p> <p>..... :</p>
<p>General remarks</p> <p>This report shall not be reproduced except in full without the written approval of the testing lab.</p> <p>The test results presented in this report relate only to the item tested.</p> <p>"(see remark #)" refers to a remark appended to the report.</p> <p>"(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report, a comma is used as the decimal separator.</p>
<p>General information :</p> <ul style="list-style-type: none"> - Product dimensions : Overall size 431 mm(W) by 407 mm(D) by 100 mm(H). - Weight of product : 6.6 kg - Production site : UNIMO Technology Co., Ltd. 435-030, 626 Dangeong-dong, Gunpo-si, Gyeonggi-do, Korea

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Copy of marking plate

UNIMO Digital Hard Disk Recorder

Model No. : UDR-204
 Input : 100-240V~,50/60Hz,50W
 Date :
 Manufacturer : UNIMO Technology Co., Ltd.
 Made In Korea
<http://www.unimo.co.kr/eng>
 S/N :


 LISTED
 COMMERCIAL
 CCTV PRODUCT
 E202331




 E-A900-04-3155(A)


 KETI XXXXX-XX

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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Clause	Requirement – Test	Result - Remark	Verdict
3	GENERAL REQUIREMENTS		
	Safety class of the apparatus	Class I apparatus	P
4	GENERAL CONDITIONS OF TESTS		
4.1.4	Ventilation instructions require the use of the test box	This instruction is expressed on user's manual. "Do not block any ventilation openings. Install in accordance with the manufacturer's instructions."	P
5	MARKING		
	Comprehensible and easily discernible	Complied	P
	Permanent durability against water and petroleum spirit	Complied	P
5.1	Identification, maker, model	Model : UDR-204 Maker : UNIMO	P
	Class II symbol	Class I equipment	N
	Rated supply voltage and symbol	100-240V~, 50/60Hz	P
	Rated current or power consumption	50W	P
5.2	Earth terminal	Earth symbol according to 60417-2-IEC-5019 is marked near earthing screw.	P
	Hazardous live terminals		N
	Supply output terminals (other than mains)		N
5.3	Use of triangle with exclamation mark	Exclamation marks are located near critical components on circuit diagram.	P
5.4	Instructions for use	indicated on user's manual.	P
5.4.1	Mains powered equipment not exposed to dripping or splashing	This instruction is expressed on user's manual. "Do not use this appliance near water."	P
	Hazardous live terminals, instructions for wiring	No hazardous live terminals	N
	Instructions for replacing lithium battery	No lithium battery in apparatus.	N
	Explanation of marking of the manually operated mechanical switch (MOMS)	No MOMS.	N
5.4.2	Instructions for permanently connected equipment	Portable Apparatus	N

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6	HAZARDOUS RADIATION		
6.1	Ionizing radiation ≤ 36 pA/kg (0,5 mR/h)	No ionizing radiation	N
6.2	Laser radiation, emission limits to IEC 60 825 :	No laser radiation	N
	Emission limits under fault conditions :		N

7	HEATING UNDER NORMAL OPERATING CONDITIONS		
7.1	Temperature rises not exceeding specified values, no operation of fuse links	(see appended table)	P
7.1.1	Temperature rise of accessible parts	(see appended table)	P
7.1.2	Temperature rise of parts providing electrical insulation	(see appended table)	P
7.1.3	Temperature rise of parts acting as a support or as a mechanical barrier	(see appended table)	P
7.1.4	Temperature rise of windings	(see appended table)	P
7.1.5	Parts not subject to a limit under 7.1.1 to 7.1.4	(see appended table)	P
7.2	Softening temperature of insulating material supporting parts conductively connected to the mains carrying a current $> 0,2$ A at least 150 °C		P

8	CONSTRUCTIONAL REQUIREMENTS WITH REGARD TO THE PROTECTION AGAINST ELECTRIC SHOCK		
8.1	Conductive parts covered by lacquer, paper, untreated textile oxide films and beads etc. considered to be bare	Considered.	P
8.2	No shock hazard when changing voltage setting device, fuse-links or handling drawers etc.	No such devices.	N
8.3	Insulation of hazardous live parts not provided by hygroscopic material	No hygroscopic materials used.	N
8.4	No risk of electric shock following the removal of a cover which can be removed by hand	No such parts.	N
8.5	Class I equipment	All clearances and creepage distances between hazardous live parts and earthed chassis are separated more than 3.0 mm.	P
	Basic insulation between hazardous live parts and earthed accessible parts		P

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	Capacitors bridging basic insulation complying with 14.2.1 a)	Sub-class Y2 capacitors(C24, C25) used between hazardous live parts and earthed chassis. C24 and C25 are certified according to IEC60384-14 2 nd Edition.	P
	Basic insulation bridged by components complying with 14.3.4.3		N
8.6	Class II equipment and Class II constructions within Class I equipment	Class I apparatus only	N
	Reinforced or double insulation between hazardous live parts and accessible parts	All accessible parts are separated from hazardous live parts by double insulation.	P
	Components bridging reinforced or double insulation complying with 14.1 a) or 14.3	No such resistor	N
	Basic and supplementary insulation each being bridged by a capacitor complying with 14.2.1 a)	Not used.	N
	Reinforced or double insulation being bridged with 2 capacitors in series complying with 14.2.1 a)	Sub-class Y2 capacitors(C24, C25) are not used in series as double insulation. C21, sub-class Y1 capacitor, is used between hazardous live part and accessible part as reinforced insulation	N
	Reinforced or double insulation being bridged with a single capacitor complying with 14.2.1 b)	C7 is sub-class Y1 approved by IEC 60384-14.	P
8.7	Basic insulation between parts at 35 V to 71 V (peak) a.c. or 60 V to 120 V d.c. and accessible parts	No such parts.	N
	Reinforced or double insulation between circuits operating at voltages between 35 V and 71 V (peak) a.c. or between 60 V and 120 V d.c. and hazardous live parts at higher voltage	No such parts.	N
	Separation by Class II isolating transformer		N
	Separation by Class I transformer		N
	Separation by earthed conductive part		N
8.8	Basic or supplementary insulation $\geq 0,4$ mm (mm) :		N
	Reinforced insulation $\geq 0,4$ mm (mm)	Transformer bobbin : Min. 0.78 mm	P
	Thin sheet insulation	T1 & T2(primary winding – secondary winding) : 3 layers, each of thickness 0.025 mm.	P
	Basic or supplementary insulation, at least two layers, each meeting 10.3		N
	Basic or supplementary insulation, three layers any two of which meet 10.3		N

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	Reinforced insulation, two layers each of which meet 10.3		N
	Reinforced insulation, three layers any two which meet 10.3	Insulation tape of three layers between pri. winding and sec. winding in transformer is used. (Dielectric strength test for each two layers was conducted at 3000V/1min.)	P
8.9	Adequate insulation between internal hazardous live conductors and accessible parts		P
	Adequate insulation between internal hazardous live parts and conductors connected to accessible parts	All PVC wires > 0.4 mm thickness.	P
8.10	Double insulation between conductors connected to the mains and accessible parts	Class I apparatus.	N
8.11	Detaching of wires		N
	No undue reduction of creepage or clearance distances if wires become detached		N
	Vibration test carried out :	No doubt	N
8.12	Adequate cross-sectional area of internal wiring to mains socket-outlets	No socket-outlets.	N
8.13	Adequate fastening of windows, lenses, lamp covers etc. (pull test 20 N for 10 s)	No such parts.	N
8.14	Adequate fastening of covers(pull test 50 N, for 10s)	Hazardous live parts are not rendered.	N
8.15	No risk of damage to the insulation of internal wiring due to hot parts or sharp edges	Complied.	P
8.16	Only special supply equipment can be used	No such apparatus designed to be supplied exclusively by a SUPPLY APPARATUS..	N

9	ELECTRIC SHOCK HAZARD UNDER NORMAL OPERATING CONDITIONS		
9.1.1	Touch current measured from terminal devices using the network in Annex D	U1 = 0.31 Vpk, U2 = 0.28 Vpk (Measured location : Live/Neutral(forward and reverse position) – secondary BNC connector)	P
	Discharge not exceeding 45 μ C		N
	Energy of discharge not exceeding 350 mJ		N
	Test with test finger and test probe	Complied.	P
9.1.2	No hazardous live shafts of knobs, handlers or levers	They are not become to hazardous live.	P
9.1.3	Ventilation holes tested by means of 4 mm x 100 mm test pin	The test pin is not become to hazardous live.	P

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9.1.4	Terminal devices tested with 1 mm x 20 mm test pin (10 N); test probe 16 of IEC 61 032	The test probe 16 is not become to hazardous live.	P
	Terminal devices tested with 1 mm x 100 mm straight wire (1 N); test probe D of IEC 61 032	The test probe D is not become to hazardous live.	P
9.1.5	Pre-set controls tested with 2 mm x 100 mm test pin (10 N); test probe C of IEC 61 032	No pre-set controls.	N
9.1.6	No shock hazard due to stored charge on withdrawal of the mains plug; voltage (V) after 2 s :		N
	If C is not greater than 0,1 μ F no test needed	Nominal capacitance across the MAINS poles is 0.1 μ F. Capacitance discharge test is exempted.	P
9.1.7	Enclosure sufficiently resistant to external force		P
	Test probe 11 of IEC 61 032 for 10 s (50 N)	Enclosure is not become to hazardous live	P
	Test hook of fig. 4 for 10 s (20 N)	Hazardous live parts is not become to accessible parts.	P
	30 mm diameter test tool for 5 s (100 or 250 N) :	100 N applied. The apparatus is no damage and no reduction of spacing.	P
9.2	No hazard after removing a cover by hand	No hazard..	P

10	INSULATION REQUIREMENTS		
10.1	Insulation resistance ($M\Omega$) at least 2 $M\Omega$ min. after surge test for basic and 4 $M\Omega$ min. for reinforced insulation:	> 100 Mohm	P
10.2	Humidity treatment 48 h or 120 h	30 °C / 95% RH for 48 hr	P
10.3	Insulation resistance and dielectric strength	(see appended table)	P

11	FAULT CONDITIONS		
11.1	No shock hazard under fault conditions	Two capacitors (sub-class Y2) in the apparatus are not used in series.	N
11.2	Heating under fault condition	(see appended table)	P
	No hazard from softening solder		P
11.2.1	Measurement of temperature rises	Complied. (see appended table)	P
11.2.2	Temperature rise of accessible parts	(see appended table)	P

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11.2.3	Temperature rise of parts, other than windings, providing electrical insulation	(see appended table)	P
	Temperature rise of printed circuit boards (PCB) exceeding the limits of Table 2 by max. 100 K for max. 5 min		P
	a) Temperature rise of printed circuit boards (PCB) to 20.1.3, exceeding the limits of Table 2 by not more than 100 K for an area not greater than 2 cm ²		P
	b) Temperature rise of printed circuit boards (PCB) to 20.1.3 up to 300 K for an area not greater than 2 cm ² for a maximum of 5 min		P
	Meets all the special conditions if conductors on printed circuit boards are interrupted	No conductors on PCB are interrupted.	N
11.2.4	Temperature rise of parts acting as a support or mechanical barrier	(see appended table)	P
11.2.5	Temperature rise of windings		P
11.2.6	Temperature rise of parts not subject to the limits of 11.2.1 to 11.2.5		P

12	MECHANICAL STRENGTH		
12.1.1	Bump test	Mass of the apparatus : 6.6 kg	N
12.1.2	Vibration test	No damage & connection loosening	P
12.1.3	Impact test	No damage and breakdown.	P
12.2	Fixing of knobs, push buttons, keys and levers	No actuating elements.	N
12.3	Remote controls with hazardous live parts	No remote controls..	N
12.4	Drawers (pull test 50 N, 10 s)	No drawers.	N
12.5	Antenna coaxial sockets providing isolation	No antenna coaxial sockets.	N

13	PARTS CONNECTED TO THE SUPPLY MAINS		
13.1	Clearances and creepage distances in accordance with 13.2 (fig. 9); minimum distance	All clearances and creepage distances between primary and secondary are separated more than 6.0mm.	P
13.1.1	Reduction applied if the 3 conditions are met	No applied.	N
	Reduction applied for Grade 2 winding wire		N
13.1.2	Use of cemented joints	No cemented joints.	N
	Tests to confirm cemented joints		N

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13.2	Clearances and creepage distances of parts of different polarity connected to the mains, as in fig. 9; minimum distance	Clearances and creepage distances of parts of different polarity connected to the mains are maintained to minimum 3.0mm.	P
	Clearances and creepage distances between conductors on printed circuit boards, one of which may be conductively connected to the mains, as in fig. 10		P
13.3	Enclosed, enveloped or hermitically sealed parts: clearances and creepage distances to Table 4	No such parts	N
13.4	Parts filled with insulating compound, meeting the requirements of 8.8	No such parts	N
13.5	Type B coated printed circuit boards complying with IEC 60 664-3 (basic insulation only)		N

14	COMPONENTS		
14.1	Resistors		
	a) Resistors between hazardous live parts and accessible metal parts	No such resistor used.	N
	b) Resistors, other than between hazardous live parts and accessible parts	No such resistor used	N
	b) Resistors separately approved		N
14.2	Capacitors and RC units		P
	Capacitors separately approved	See the appended list of critical components and materials	P
14.2.1	Y capacitors tested to IEC 384-14, 2nd edition :	Sub-class Y1 : C21 Sub-class Y2 : C24, C25	P
14.2.2	X capacitors tested to IEC 384-14, 2nd edition :	Sub-class X2 : C1	P
14.2.3	Capacitors operating at mains frequency but not connected to the mains: tests for X2	No such capacitors	N
14.2.5	Capacitors with volume exceeding 1750 mm ³ , where short-circuit current exceeds 0,2 A: compliance with IEC 60 384-1, 4.38 category B or better		N
	Capacitors with volume exceeding 1750 mm ³ , mounted closer to a potential ignition source than Table 5 permits: compliance with IEC 60 384-1, 4.38 category B or better	X-Capacitor (C1) : 1259 mm ³	N
	Shielded by a barrier to FV 0 or metal	The volume of X-Capacitor(C1) does not exceed 1750 mm ³ . But, the material of shielding barrier below power supply is metal.	N

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14.3	Inductors and windings		
14.3.1	Transformers and inductors marked with manufacturer's name and type	(1) Transformer (T1) a. Type no. : CMP-50UM b. Manufacturer code : FI (Fine Industrial Co., Ltd.) (2) Transformer (T2) a. Type no. : CMP-50UMA b. Manufacturer code : FI (Fine Industrial Co., Ltd.) (3) Line Filter (LF1) a. Type no. : LF-50UM b. Manufacturer code : FI (Fine Industrial Co., Ltd.)	P
	Transformers and inductors separately approved ..	Not approved separately. Those are tested in the apparatus.	N
14.3.3.2	Transformers meet the constructional requirements	1) Dielectric strength a. between primary winding and secondary winding (T1, T2) : 3000V / 1 min, No breakdown. b. between primary/secondary winding and core (T1, T2) : 1500V / 1 min, No breakdown. 2) Insulation resistance a. between primary winding and secondary winding (T1, T2) : > 100 Mohm. b. between primary/secondary winding and core (T1, T2) : > 100 Mohm. 3) Creepage distance and clearance a. between primary winding and secondary winding (T1, T2) : > 6.0 mm. b. between primary/secondary winding and core (T1, T2) : > 3.0 mm. 4) Barrier tape width : Top side = 3.0 mm, Bottom side = 6.0 mm. 5) Insulation tape (pri. – sec.) : 3 layers / 0.025 mm thick. 6) Bobbin thickness : ≥ 0.78 mm	P
14.3.4.1	Class II transformers have adequate separation between hazardous live parts and accessible parts (double or reinforced insulation)	Reinforced insulation between the pri. and sec. windings : 3 layers of insulation tape	P
	Coil formers and partition walls ≥ 0,4 mm	Transformer bobbin ≥ 0.78 mm	P
14.3.4.2	Class I transformers, with basic insulation and protective screening only if all 7 conditions of 14.3.4.2 are met		N

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14.3.4.3	Separating transformers with at least basic insulation		N
14.3.5.1	Class II transformers have adequate insulation between hazardous live parts and accessible parts (double or reinforced insulation)	Double or reinforced insulation between hazardous live windings and accessible conductive parts. See clause 14.3.4.1 above.	P
	Coil formers and partition walls $\geq 0,4$ mm	See clause 14.3.4.1 above.	P
14.3.5.2	Class I transformers have adequate insulation between hazardous live parts and accessible conductive parts or those conductive parts or protective screens connected to a protective earth terminal		N
	Winding wires connected to protective earth have adequate current-carrying capacity		N
14.4	High voltage components	No high voltage components.	N
	High-voltage components and assemblies: $U > 4$ kV (peak) separately approved		N
	Component meets category FV 1 of IEC 60 707		N
14.4.1	High voltage transformers and multipliers tested as part of the submission		N
14.5	Protective devices	External clearance and creepage distance of fuse and its connection : ≥ 3.0 mm	P
	Protective devices used within their ratings	Fuse (F1) provided. Rated 250V, T3.15AL.	P
	External clearance and creepage distances appropriate for the voltage across the device when opened	External CLEARANCES and CREEPAGE DISTANCES of the fuse is separated to 6.8 mm.	P
14.5.1.1	a) Thermal cut-outs separately approved	No thermal cut-outs.	N
	b) Thermal cut-outs tested as part of the submission		N
14.5.1.2	a) Thermal links separately approved	No thermal links.	N
	b) Thermal links tested as part of the submission		N
14.5.1.3	Thermal devices resettable by soldering	No thermal interrupting devices.	N
14.5.2.1	Fuse-links in the mains circuit according to IEC 60 127	Fuse(F1) was approved in accordance with EN60127-1.	P
14.5.2.2	Correct marking of fuse-links adjacent to holder ... :	F1 250V T3.15AL	P
14.5.2.3	Not possible to connect fuses in parallel :		P
14.5.2.4	Not possible to touch hazardous live parts when replacing fuse-links without the use of a tool :	The fuse, F1, can not be accessible BY HAND. Tools are required.	P

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14.5.3	PTC-S thermistors comply with IEC 60 738	NTC thermistor (NT1) used.	N
	PTC-S devices (15 W) category FV 1 or better		N
14.5.4	Circuit protectors have adequate breaking capacity and their position is correctly marked		N
14.6	Switches		
14.6.1	Permanently connected equipment provided with an all-pole mains switch unless 5.4.2 is met	Portable apparatus.	N
14.6.2	Manually operated mechanical switch (MOMS), required where power consumption > 15 W and/or peak voltage > 4 kV; MOMS required	This apparatus is video recorder. MOMS is not required..	N
	Switch readily accessible and not in mains cord		N
	Exception for automatic switching	This apparatus is video recorder.	P
	Exception for continuous operation		N
14.6.3	Manually operated mechanical switch (MOMS): switch indication On position clearly discernible	MOMS is not required.	N
	Indication by marking meets Cl. 5		N
	Indication of the OFF position		N
14.6.4	Manually operated mechanical switch (MOMS) fitted, is there a Stand-by mode	Stand-by symbol according to 60417-2-IEC-5009 is marked near power switch on front side.	P
	Stand-by mode clearly discernible		N
	Exception for low Stand-by current < 0,7 mA (peak)		N
14.6.5	Components bridging contacts of mains switches comply with 14.1 a) or 14.2.2		N
14.6.6	Manually operated mechanical switches (MOMS) separately approved to IEC 61 058-1	No MOMS.	N
	Manually operated mechanical switch (MOMS) tested as part of the equipment complies with 14.6.7, 14.6.10 and 20.1.4 and meets 14.6.8 and/or 14.6.9 and Annex G (G1.1)		N
14.7	Safety interlocks		
	Safety interlocks to 2.8 of IEC 60 950	No safety interlocks.	N
14.8	Voltage setting devices		
	Voltage setting device not likely to be changed accidentally	No voltage setting devices.	N
14.9	Motors		
14.9.1	Endurance test on motors	No motors.	N
	Motor start test		N

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	Dielectric strength test		N
14.9.2	Not adversely affected by oil or grease etc.	No oil or grease.	N
14.9.3	Protection against moving parts	No moving parts.	N
14.9.4	Motors with phase-shifting capacitors, three-phase motors and series motors meet Cl. B.8, B.9 and B.10 of IEC 60 950, Annex B		N
14.10	Batteries		
14.10.1	Batteries mounted with no risk of accumulation of flammable gases	No batteries.	N
14.10.2	No possibility of recharging non-rechargeable batteries		N
14.10.3	Recharging currents and times within manufacturers limits		N
	Lithium batteries discharge and reverse currents within the manufacturers limits		N
14.11	Optocouplers		
	Optocouplers comply with Cl. 8	Insulation thickness = 0.4 mm (minimum) See list of critical components.	P
	Internal and external dimensions to 13.1.1	External creepage = 7.8 mm. Internal creepage = 5.2 mm. See list of critical components.	P

15	TERMINALS		
15.1.1	Mains plug, appliance inlet, interconnection couplers and mains socket-outlet meet the appropriate standard	Appliance inlet provided. Appliance inlet is approved in accordance with IEC 60320. See list of critical components.	P
15.1.2	Connectors for antenna, earth, audio, video or data:	No such connectors.	P
	No risk of insertion in mains socket-outlets		P
	No risk of insertion into audio or video: outlets marked with the symbol of 5.2		P
15.1.3	Output terminals of AC adaptors or similar devices not compatible with household mains socket-outlets	Complied.	P
15.2	Provision for protective earthing		
	Accessible conductive parts of Class I equipment reliably connected to earth terminal, within equipment	Reliably connected to a PROTECTIVE EARTH TERMINAL.	P
	Class I supply equipment with non-hazardous live output voltage: output circuit not connected to earth	Complied.	P

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	Protective earth conductors correctly coloured	Green/Yellow	P
	Equipment with non-detachable mains cord provided with separate protective earth terminal near mains input	Portable apparatus	N
	Protective earth terminal resistant to corrosion	Mild steel – Copper alloy	P
	Earth resistance (Ω) test: $\leq 0,1 \Omega$ at 25 A	(see appended table)	P
15.3	Terminals for external flexible cords and for permanent connection to the mains supply		
15.3.1	Adequate terminals for connection of permanent wiring	Portable apparatus	N
15.3.2	Reliable connection of non-detachable cords:	Detachable power cord set provided.	N
	not soldered to conductors of a printed circuit board		N
	adequate clearances and creepage distances between connections should a wire break away		N
	wire secured by additional means to the conductor		N
15.3.3	Screws and nuts clamping conductors have adequate threads: ISO 261, ISO 262 or similar	Considered.	P
15.3.4	Soldered conductors wrapped around terminal prior to soldering or held in place by additional means	Appliance inlet terminals	P
	Clamping of conductor and insulation if not soldered or held by screws		N
15.3.5	Terminals allow connection of appropriate cross-sectional area of conductors, for the rated current of the equipment		N
15.3.6	Terminals to 15.3.3 have sizes required by Table 8	Diameter of earthing screw : 4.0 mm	P
15.3.7	Terminals clamp conductors between metal and have adequate pressure	Star washer having a lock style is inserted between earthing screw and protective earthing terminal.	P
	Terminals designed to avoid conductor slipping out when tightened or loosened	Complied.	P
	Terminals adequately fixed to avoid loosening when the clamping is tightened or loosened and stress on internal wiring is avoided	Complied.	P
15.3.8	Terminals carrying a current more than 0,2 A: contact pressure not transmitted by insulating material except ceramic	No such terminals.	N
15.3.9	Termination of non-detachable cords: wires terminated near to each other	Detachable power cord set used.	N
	Terminals located and shielded: test with 8 mm strand		N

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15.4	Devices forming a part of the mains plug		
15.4.1	No undue strain on mains socket-outlets	Portable apparatus.	N
15.4.2	Device complies with standard for dimensions of mains plugs		N
	Device has adequate mechanical strength (tests a,b,c)		N

16	EXTERNAL FLEXIBLE CORDS		
16.1	Mains cords sheathed type, complying with IEC 60 227 for PVC or IEC 60 245 for synthetic rubber cords	Detachable power cord set used. This apparatus employ the mains cord according to IEC 60 227.	P
	Non-detachable cords for Class I have green/yellow core for protective earth	Detachable power cord set used.	N
16.2	Mains cords conductors have adequate cross-sectional area for rated current consumption of the equipment	Operating current of the apparatus under normal operating condition is 1.0 A maximum. The cross-sectional area of the conductor of power cord set is 0.75 mm ² minimum.	P
16.3	a) Flexible cords not complying with 16.1, used for interconnections between separate units of equipment used in combination and carrying hazardous live voltages, have adequate dielectric strength		N
	b) Flexible cords not complying with 16.1, withstand bending and mechanical stress (3.2 of IEC 60 227-2)		N
16.4	Flexible cords used for connection between equipment have adequate cross-sectional areas to avoid temperature rise under normal and fault conditions	No flexible cords.	N
16.5	Adequate strain relief on external flexible cords		N
	Not possible to push cord back into equipment		N
	Strain relief device unlikely to damage flexible cord		N
	For mains cords of Class I equipment, hazardous live conductors become taut before earth conductor		N
16.6	Apertures for external flexible cord: no risk of damage to the cord during assembly or movement in use		N
16.7	Transportable musical instruments and amplifiers fitted with detachable cord set with appliance inlet to IEC 60 320-1	No musical instruments and their associated amplifiers.	N

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict
	Transportable musical instruments and amplifiers fitted with detachable cord sets or with means of stowage to protect the cord		N

17	ELECTRICAL CONNECTIONS AND MECHANICAL FIXINGS		-
17.1	Torque test to Table 12:		P
	- screws into metal: 5 times	Diameter of enclosure fixing screw : 2.9 mm. Enclosure fixing screw (0.5 Nm, 5 times)	P
	- screws into non-metallic material: 10 times		N
17.2	Correct introduction into female threads in non-metallic material	Metal materials	N
17.3	Cover fixing screws: captive		P
	Non-captive fixing screws: no hazard when replaced by a screw whose length is 10 times its diameter	Considered.	P
17.4	No loosening of conductive parts carrying a current > 0,2 A	No such parts.	N
17.5	Contact pressure not transmitted through plastic other than ceramic for connections carrying a current > 0,2 A	Appliance inlet is approved in accordance with IEC 60320.	P
17.6	Stranded conductors of flexible supply cords carrying a current > 0,2 A with screw terminals not consolidated by solder		N
17.7	Cover fixing devices other than screws have adequate strength and their positioning is unambiguous	No such devices.	N
17.8	Fixing devices for detachable legs or stands provided	No such devices..	N
17.9	Internal pluggable connections, affecting safety, unlikely to become disconnected	Mains input connector(CN1) has strength against a pull of 2 N.	P

18	MECHANICAL STRENGTH OF PICTURE TUBES AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		
18.1	Picture tube separately approved	No picture tubes.	N
	Picture tubes > 16 cm intrinsically protected		N
	Non-intrinsically protected tubes > 16 cm used with protective screen		N
18.2	Intrinsically protected tubes: tests on 12 samples	No picture tubes.	N
18.2.1	Samples subject to ageing: 6		N

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict
18.2.2	Samples subject to implosion test: 6		N
18.2.3	Samples subject to mechanical strength test (steel ball): 6		N
18.3	Non-intrinsically protected tubes tested to 18.3		N

19	STABILITY AND MECHANICAL HAZARDS		
	Mass of the equipment exceeding 18 kg	Mass of the apparatus : 6.6 kg	N
19.1	Test on a plane, inclined at 10° to the horizontal	The mass of the apparatus does not exceed 18 kg. This test is not required.	N
19.2	100 N force applied vertically downwards	The mass of the apparatus does not exceed 18 kg. This test is not required.	N
19.3	Smooth edges and corners	All corners and edges are well smooth..	P
19.4	Glass surfaces with an area exceeding 0,1 m ² or maximum dimension > 450 mm, pass the test of 19.4.1	No any glasses.	N

20	RESISTANCE TO FIRE		-
20.1	Electrical components and mechanical parts		P
	a) Exemption for components contained in an enclosure of material FV 0 to IEC 60 707 with openings not exceeding 1 mm in width		N
	b) Exemption for small components as defined in 20.1	All components in this apparatus are complied with b).	P
20.1.1	Electrical components meet the requirements of 14.2.5, 14.4, 14.5.3, 14.6.6 or 20.1.4	All components are components are complied with this clause 20.1.1.	P
20.1.2	Insulation of internal wiring working at voltages > 4 kV or leaving an internal fire enclosure, not contributing to the spread of fire	No high voltages inside. All insulations of the wires in the apparatus are PVC material.	N
20.1.3	Material of printed circuit boards on which the available power exceeds 15 W at a voltage between 50 V and 400 V (peak) a.c. or d.c. meets FV 1 or better to IEC 60 707, unless used in a fire enclosure	PCB flammability class V-0	N
	Material of printed circuit boards on which the available power exceeds 15 W at a voltage 400 V (peak) a.c. or d.c. meets FV 0 to IEC 60 707	PCB flammability class V-0	P

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict
20.1.4	Components and parts not covered by 20.1.1, 20.1.2 and 20.1.3 (other than fire enclosures) mounted nearer to a potential ignition source than the distances in Table 13 comply with the relevant flammability category in Table 13	The material of enclosure having a function as barrier is metal.	P
	Components and parts as above but shielded from a potential ignition source, with the barrier area in accordance with Table 13 and fig. 13	The material of enclosure having a function as barrier is metal.	P
20.2	Fire enclosure		
20.2.1	Potential ignition sources with open circuit voltage > 4 kV (peak) a.c. or d.c. contained in a fire enclosure to FV 1	The open circuit voltages exceeding 4 kV (peak) in this apparatus are not exist.	N
20.2.2	Internal fire enclosures with openings not exceeding 1 mm in width and with openings for wires completely filled	No internal fire enclosures.	N
20.2.3	Requirements of 20.2.1 and 20.2.2 met by an internal fire enclosure	No internal fire enclosures.	N

A	APPENDIX A, ADDITIONAL REQUIREMENTS FOR APPARATUS WITH PROTECTION AGAINST SPLASHING WATER		
A.5.1	j) Marked with IPX4 (IEC 60 529), 5.4.1 a) does not apply		N
A.10.2.1	Enclosure provides protection against splashing water		N
A.10.2.2	Humidity treatment carried out for 7 days		N

B	APPENDIX B, APPARATUS TO BE CONNECTED TO THE TELECOMMUNICATION NETWORKS		
B.5.4.1	e) Where the separation of TNV circuits from other circuits relies on protective earthing the instructions make it clear that protective earthing is essential	No TNV circuits	N
B.8.1	TNV circuits separated from the mains circuit and from hazardous live parts by either:		
	a) double or reinforced insulation		N
	b) basic insulation with earthed protective screening		N
B.8.2	TNV circuits separated from circuits other than those in B.8.1 and from accessible conductive parts by basic insulation meeting the requirements for clearances and creepage distances for the voltages concerned		N
B.9.1.1	TNV circuit terminals contacts which cannot be touched by probe B.1, exempt from the requirements inaccessible terminal contacts in 9.1.1		N

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict
B.10.1	Insulation between TNV terminals and antenna terminals (including interconnection terminals which may be connected to equipment with antenna terminals) withstands the 50 discharges of 10.1		N
B.14.12	Surge suppressors between TNV circuits and other parts of the equipment have breakdown voltage at least 1,8 times the mains voltage		N

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict
7.1	TABLE: temperature rise measurements		P
	Power consumption in the OFF/Stand-by	Stand-by: max 1.6W	
	Position of the functional switch (W) :	On position: max 42.8W	—
Operating conditions			
- Continuous operation. - USB port : 500 mA loaded.			
	Un (V)	In (A)	Pin (W)
Operation mode			
	90V / 50Hz	0.803	41.1
	90V / 60Hz	0.782	41.2
	100V / 50Hz	0.736	41.1
	100V / 60Hz	0.714	40.9
	240V / 50Hz	0.370	42.2
	240V / 60Hz	0.360	42.6
	254V / 50Hz	0.348	42.8
	254V / 60Hz	0.342	42.6
Stand-by mode			
	90V / 50Hz	0.020	0.6
	90V / 60Hz	0.019	0.7
	100V / 50Hz	0.019	0.7
	100V / 60Hz	0.019	0.7
	240V / 50Hz	0.014	1.5
	240V / 60Hz	0.016	1.4
	254V / 50Hz	0.014	1.6
	254V / 60Hz	0.016	1.6
	Loudspeaker impedance (Ω) :		—
	Several loudspeaker systems		N
	Marking of loudspeaker terminals		N

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict

monitored point:	Max. Temp.(°C) @ 90V / 60Hz	Max. Temp.(°C) @ 254V / 50Hz	Required Max. temp.(°C)/dT (K)
Transformer coil (T1)	49.9 / 24.8	58.5 / 33.8	85 K
Transformer core (T1)	45.4 / 20.3	51.8 / 27.1	85 K
Transformer coil (T2)	34.1 / 9.0	35.5 / 10.8	85 K
Transformer core (T2)	33.7 / 8.6	35.0 / 10.3	85 K
Line filter coil (LF1)	36.2 / 11.1	34.4 / 9.7	85 K
X-Capacitor (C1)	31.7 / 6.6	33.5 / 8.8	Max. 85 °C
Input connector body (CN1)	31.5 / 6.4	32.6 / 7.9	-
PWB between NT1 and BD1	46.3 / 21.2	39.1 / 14.4	Max. 105 °C
Electrolytic capacitor (C5)	36.2 / 11.1	36.9 / 12.2	Max. 85 °C
Heatsink for U1	37.3 / 12.2	43.3 / 18.6	-
Optocoupler (PC1)	33.5 / 8.4	35.0 / 10.3	Max. 100 °C
PWB near sec. Heatsink	37.8 / 12.7	38.8 / 14.1	Max. 105 °C
Fan body for CN4	36.6 / 11.5	37.5 / 12.8	-
Fan body for Hard Rack	36.2 / 11.1	37.3 / 12.6	-
Top enclosure	29.8 / 4.7	30.0 / 4.3	40 K
Dial knob body	25.8 / 0.7	25.0 / 0.3	Max. 60 °C
Menu button (OK)	26.4 / 1.3	25.8 / 1.1	Max. 60 °C
BNC connector for CAMARA out	31.8 / 6.7	32.6 / 7.9	30 K
Room ambient	25.1 / -	24.7 / -	-

	Winding temperature rise measurements					N
	Ambient temperature t1 (°C)					—
	Ambient temperature t2 (°C)					—
temperature rise dT of winding:	R ₁ (Ω)	R ₂ (Ω)	dT (K)	required dT (K)	insulation class	

7.2	TABLE: softening temperature of thermoplastics			N
temperature T of part	T - normal conditions (°C)	T - fault conditions (°C)	T softening (°C)	

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict

9.1	TABLE: Touch current expressed as voltages U1 and U2 in Annex D					P
Location	Polarity	Switch ON/OFF	Measured U_1 V(peak)	Measured U_1 V(dc)	Measured U_2 V(peak)	Calculated Touch current For U_2 mA(peak)
BNC connector for CAMERA IN/OUT	Forward	N.A.	0.31	N.A.	0.28	0.537
	Reverse	N.A.	0.31	N.A.	0.28	0.551

(1) The limit values of $U_2 = 0.35$ V (peak) for a.c. and $U_1 = 1.0$ V for d.c. correspond to the values 0.7 mA (peak) a.c. and 2.0 mA d.c.
 (2) The limit value $U_1 = 35$ V(peak) for a.c. correspond to the value 70mA(peak)a.c. for frequencies greater than 100KHz

10.3	TABLE: insulation resistance measurements		P
insulation resistance R between:	R (M Ω)	required R (M Ω)	
Between the poles of the circuit directly connected to the supply mains. (primary fuse disconnected)	> 100	> 2	
Between parts separated by basic or supplementary insulation	> 100	> 2	
Between parts separated by double or reinforced insulation	> 100	> 4	

10.3	TABLE: electric strength measurements		P
test voltage applied between:	test voltage (V)	breakdown	
Between the poles of the circuit directly connected to the supply mains.	1500 Vac	No	
Between parts separated by basic or supplementary insulation	1500 Vac	No	
Between parts separated by double or reinforced insulation	3000 Vac	No	

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict

10.2, 10.3	DIELECTRIC STRENGTH/INSULATION RESISTANCE TEST AFTER HUMIDITY TREATMENT		P
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METHOD

The complete sample was placed in a humidity chamber operating at an ambient of:

- [X] 28 to 30°C with a relative humidity between 90 and 95 percent for a period of two days (Actual condition : 30 °C,95%RH,48hrs.)
- [] 38 to 42°C with a relative humidity between 90 and 95 percent for a period of five days (120 h) for an apparatus to be used under tropical conditions).

Before being placed in the humidity chamber, the apparatus was placed in an oven until the sample reached the specified ambient temperature indicated above.

DIELECTRIC STRENGTH TEST

Test Locations	Test Voltage	Breakdown
Between the poles of the circuit directly connected to the supply mains. (primary fuse disconnected)	1500Vac	No
Between parts separated by basic or supplementary insulation	1500Vac	No
Between parts separated by double or reinforced insulation	3000Vac	No

INSULATION RESISTANCE TEST

Test Locations	R (MΩ)	Required R (MΩ)
Between the poles of the circuit directly connected to the supply mains. (primary fuse disconnected)	>100	>2
Between parts separated by basic or supplementary insulation	>100	>2
Between parts separated by double or reinforced insulation	>100	>4

11.2	TABLE: summary of fault condition tests						P
	Voltage (V) 0,9 or 1,06 times rated voltage					254V, 60Hz	-
	Ambient temperature (°C)						-
No.	Component No.	Fault	Test voltage (V)	Test Time	Fuse No.	Short current (A)	Result
1	BD1	S/C	254	1sec	F1	0	F1 opened. BD1 damaged. No hazard.
2	C3	S/C	254	1sec	F1	0	F1 opened. BD1 damaged. No hazard.
3	D10	S/C	254	5min	F1	0.322	Display unstable. Function keys disabled. No hazard.

EN 60 065							
Clause	Requirement – Test					Result - Remark	Verdict
No.	Component No.	Fault	Test voltage (V)	Test Time	Fuse No.	Short current (A)	Result
4	D1	S/C	254	5min	F1	0.407	Display unstable. Function keys disabled. No hazard.
5	D2	S/C	254	5min	F1	0.015	Immediately unit shutdown. No hazard.
6	U1(1,4)	S/C	254	1sec	F1	0	F1 opened. U1 damaged. No hazard.
7	U1(3,4)	S/C	254	5min	F1	0.334	Display unstable. Function keys disabled. No hazard.
8	U1(3,5)	S/C	254	5min	F1	0.338	Display unstable. Function keys disabled. No hazard.
9	D7	S/C	254	10min	F1	0.346	Display unstable. Function keys disabled. No hazard.
10	D8	S/C	254	10min	F1	0.343	Display unstable. Function keys disabled. No hazard.
11	U6(1,2)	S/C	254	1sec	F1	0	F1 opened. ZD2 and U6 damaged. No hazard.
12	U6(2,8)	S/C	254	1sec	F1	0	F1 opened. ZD2 and U6 damaged. No hazard.
13	U6(2,7)	S/C	254	10min	F1	0.345	Display unstable. Function keys disabled. No hazard.
14	C16	S/C	254	10min	F1	0.015	Immediately unit shutdown. No hazard.
15	C17	S/C	254	5min	F1	0.015	Immediately unit shutdown. No hazard.
16	C18	S/C	254	5min	F1	0.015	Immediately unit shutdown. No hazard.
17	C30	S/C	254	40min	F1	0.178↔ 0.265	Immediately unit shutdown. Temperature stabilized at T1coil = 51.8 ° C T1 core = 45.4 ° C, T2 coil = 34.2 ° C, PCB(BD1) = 37.8 ° C. No hazard.
18	T1(8,11)	S/C	254	5min	F1	0.015	Immediately unit shutdown. No hazard.
19	T1(13,11)	S/C	254	67min	F1	0.409	Immediately unit shutdown. Temperature stabilized at T1coil = 70.9 ° C, T1 core = 60.0 ° C, T2 coil = 39.5 ° C, T2 coil = 38.6 ° C, PCB(BD1) = 44.5 ° C. No hazard.
20	T2(5,6)	S/C	254	10min	F1	0.339	Display unstable. Function keys disabled. No hazard.
21	Ventilation openings	Block- ed	254	1hr 23min	F1	0.339	Temperature stabilized at T1 coil = 59.7 ° C, T1 core = 51.8 ° C, T2 coil = 36.9 ° C, T2 core = 36.2 ° C, PCB(NT1, BD1) = 40.1 ° C. No hazard.

EN 60 065							
Clause	Requirement – Test					Result - Remark	Verdict
No.	Component No.	Fault	Test voltage (V)	Test Time	Fuse No.	Short current (A)	Result
22	Fan	Open-ed	254	1hr 23min	F1	0.335	Temperature stabilized at T1 coil = 74.7 ° C, T1 core = 69.9 ° C, T2 coil = 47.8 ° C, T2 core = 46.8 ° C, PCB(NT1, BD1) = 53.9 ° C. No hazard.
O/C: Open Circuit, S/C: Short Circuit							

12.1.3	IMPACT TEST			P
Test location	Materials	Impact, Joules	Observations	
Knob(OK)	ABS (LG Chemical)	0.5J	No damage	
Knob(REW/FF)	ABS (LG Chemical)	0.5J	No damage	
Front door	ABS (LG Chemical)	0.5J	No damage	
Side	Metal	0.5J	No damage	
Fan opening for ventilation	Metal	0.5J	No damage	
DIELECTRIC STRENGTH TEST				
Between the poles of the circuit directly connected to the supply mains.(primary fuse disconnected)		1500Vac	No	
Between parts separated by basic or supplementary insulation		1500Vac	No	
Between parts separated by double or reinforced insulation		3000Vac	No	


15.2.1	PROTECTIVE EARTH TERMINAL RESISTANCE TEST		P
METHOD			
A current of 25 A, derived from an AC or DC source was passed between the internal protective earth terminal and the following accessible conductive parts for 1 minute. The test voltage did not exceed 12 V. The voltage drop between the protective earth terminal and accessible metal parts was measured and the resistance between the two points was calculated.			
Accessible Metal Parts		Voltage Drop (V)	Resistance (ohm)
Earthed metal chassis		0.1662	0.00665
NOTE			
The resistance of the protective earth conductor of the power supply cord shall not be included in the resistance measurement.			

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict
15.4.3	MECHANICAL TEST FOR DIRECT PLUG-IN UNIT		N
a) DROP TEST			
METHOD – One sample is dropped three times in succession from a height of 1 m onto a horizontal surface consisting of hardwood of at least 13 mm thick, mounted on two layers of plywood each 19 mm to 20 mm thick, and supported on a concrete or equivalent non-resilient floor. On each successive drop the enclosure struck the surface in a different orientation.			
	Test Position	Drop No.	Observations
		1	
		2	
		3	
<u>Requirements</u>			
a. No damage to the enclosure that would allow access to live hazardous parts.			
b. No damage to insulating materials.			
c. No reduction in creepage and clearance distances.			
b) BLADE TORQUE TEST			
METHOD – Each blade of a Direct Plug-In device is subjected to a torque of 0.4 Nm. The torque is applied in one direction for 1 minute and then in the opposite direction for 1 minute.			
	Tested part	Applied torque	Observations
<u>Requirement</u>			
The blades shall not be turned .			
c) BLADE SECURENESS PULL TEST			
METHOD – Each pin of a Direct Plug-In device was subjected to a pull force as specified in Table 9. The force is applied, without jerks, for a period of 1 minute, in the direction of the longitudinal axis of the pin. The pull force is applied 1 hour after the device has been placed in a heating cabinet operating at a temperature of $70 \pm 2^{\circ}\text{C}$. After the test, the device is allowed to cool down to ambient temperature.			
	Rating of Attachment Plug	Number of Poles	Pull Force, N
<u>Requirement</u>			
Each of the pins shall not be displaced in the body of the device by more than 1 mm.			

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict

17.1	SCREW SECUREMENT TEST		P
<p>METHOD – Samples of terminal screws, screws for fixing covers, handles, knobs, legs, stands, and the like are loosened, and then tightened with a torque of <u>0.5</u> Nm (see Table 12 of the Standard). The screws are loosened and tightened 5 times for screws screwed into metal.</p>			
Tested screws	materials	Observations	
Screw for fixing enclosure (diameter 2.9mm)	metal	No damage or deterioration.	
<p><u>Requirement</u> No evidence of damage or deterioration to the screw or the mounting means which might impair the safety of the apparatus.</p>			

14	TABLE: list of critical components and materials				P
Object/part No.	Manufacturer/ Trademark	Type/model	Technical data	Standard	Mark(s) of conformity ¹⁾
Appliance inlet	DONG IL Technology	DAC-12	250V, 10A	EN 60320-1	TUV-R, VDE, UL
HDD	Samsung Electronics	SP1203N	7200 rpm, +12V, +5V	EN 60950-1	TUV-R, SEMKO
Alt.	Various	Various	7200 rpm, +12V, +5V	EN 60950 or EN 60950-1	TUV-R or equivalent. *
Mobile Rack	Lian Li Industrial	RH-007	+5Vdc, +12Vdc	UL60950	UL
Material for mobile rack	Shinkong Synthetic Fibers Corp.	D202G30	V-0, 140°C	UL94	UL
Alt.	Various	Various	V-2 or better	UL94	UL *
Fan for mobile rack	Tranyoung Technology	MW-410M12S	+12V, 0.09A, 4.3Cfm	EN 60950	TUV-PS
Fan	Power Logic Technology	PL50B12M	+12V, 0.09A, 11.9 Cfm	EN 60950	TUV-PS
Material for front panel, knobs and door	LG Chemical	HF-380	HB, 60 °C, min. 1.5mm thick.	UL94	UL
Alt.	Various	Various	HB or better, 60 °C, min. 1.5mm thick.	UL94	UL *
PCB	Hwan Duck Electronics	1	V-0, 105 °C	UL94	UL
Alt.	Come In Tech	3-V-0	V-0, 105 °C	UL94	UL
Alt.	Various	Various	V-0, Min. 105 °C	UL94	UL *

EN 60 065					
Clause	Requirement – Test	Result - Remark		Verdict	
Object/part No.	Manufacturer/ Trademark	Type/model	Technical data	Standard	Mark(s) of conformity ¹⁾
Power cord set (for Europe)	Korea KDK Co., Ltd.	Plug : KKP-4819R, Cable : H05VV-F Connector : KKS-16A	Plug : 250V, 10/16A Cable : 0.75mm ² x 3C Connector : 250V, 10A	DIN VDE 0620 DIN VDE 0625	VDE VDE VDE
Power cord set (for Korea)	Korea KDK Co., Ltd.	Plug : KKP-4819KA, Cable : VCTF Connector : KKS-16K	Plug : 250V, 7A Cable : 0.75mm ² x 3C Connector : 250V, 7A		KS, 
Mains input connector (CN1)	Han Lim Electronics	CH1143-03	250V, 7A, 105°C	DIN VDE 0627	TUV-R
Alt.	Various	Various	250V, 7A	DIN VDE 0627	TUV-R *
Fuse (F1)	ORISEL Co., Ltd.	50T	250V, T3.15AL	DIN EN 60127-1 DIN EN 60127-2	VDE, BSI
Fuse holder	Geo Young Ind.	GF-205B	250V, 10A	UL512	UL
X-Capacitor (C1)	Youchang Electronics	WBU 1942	275V, 0.1 uF, X2	EN 132400 IEC 60384-14 2 nd	VDE, SEV, FIMKO
Alt.	Pilkor Electronics	PCX2 335M or PCX2 337	275V, 0.1 uF, X2	EN 132400 IEC 60384-14 2 nd	VDE, FIMKO
Varistor (VD1)	Centra Science Corp.	CNR-10D471K	300Vac, 2500Apk	CECC 42000 CECC 42201 CECC 42200	VDE
Alt.	Xian Xiwuer Elect.	MYG3-10K300	300Vac, 2500Apk	CECC 42000 CECC 42201 CECC 42200	VDE
Line filter (LF1)	Fine Industrial	LF-50UM	12 mH min. (pin1-2/pin3-4) Thermal class B	EN 60065	Tested in apparatus.
Y-Capacitor (C24, C25)	Netron Tech	AA	250V, 2200pF, Y2	EN 132400 IEC 60384-14 2 nd	VDE, FIMKO
Alt.	Daemyung	DE	250V, 2200pF, Y2	EN 132400 IEC 60384-14 2 nd	VDE, FIMKO
Electrolytic capacitor (C3)	Various	Various	Min. 400V, 105°C. Max. 150uF.	EN 60065	Tested in apparatus.
Main transformer (T1)	Fine Industrial	CMP-50UM	700 uH±10% (pin1-pin4) Insulation class B	EN 60065	Tested in apparatus.
Aux transformer (T2)	Fine Industrial	CMP-50UMA	2 mH±10% (pin1-pin2) Insulation class B	EN 60065	Tested in apparatus.

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict

Object/part No.	Manufacturer/ Trademark	Type/model	Technical data	Standard	Mark(s) of conformity ¹⁾
Thermistor (NT1)	Various	Various	5 ohm at 25 °C	EN 60065	Tested in apparatus. *
Bridging capacitor (C21)	Netron Tech	AD	250V, 2200pF, Y1	EN 132400 IEC 60384-14 2 nd	VDE, FIMKO, SEMKO
Alt.	Dae Myung Electronics	DG	250V, 2200pF, Y1	EN 132400 IEC 60384-14 2 nd	VDE, FIMKO, SEMKO
Heat shrinkable tube for fan lead	Korea Expol	KEHS-225	600V, 125 °C, VW-1	-	UL
Alt.	Various	Various	Min. 300V, 105 °C, VW-1	-	UL *

¹⁾ an asterisk indicates a mark which assures the agreed level of surveillance

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict

Photo # 1



(Front side of the appliance)



(Rear side of the appliance)

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict

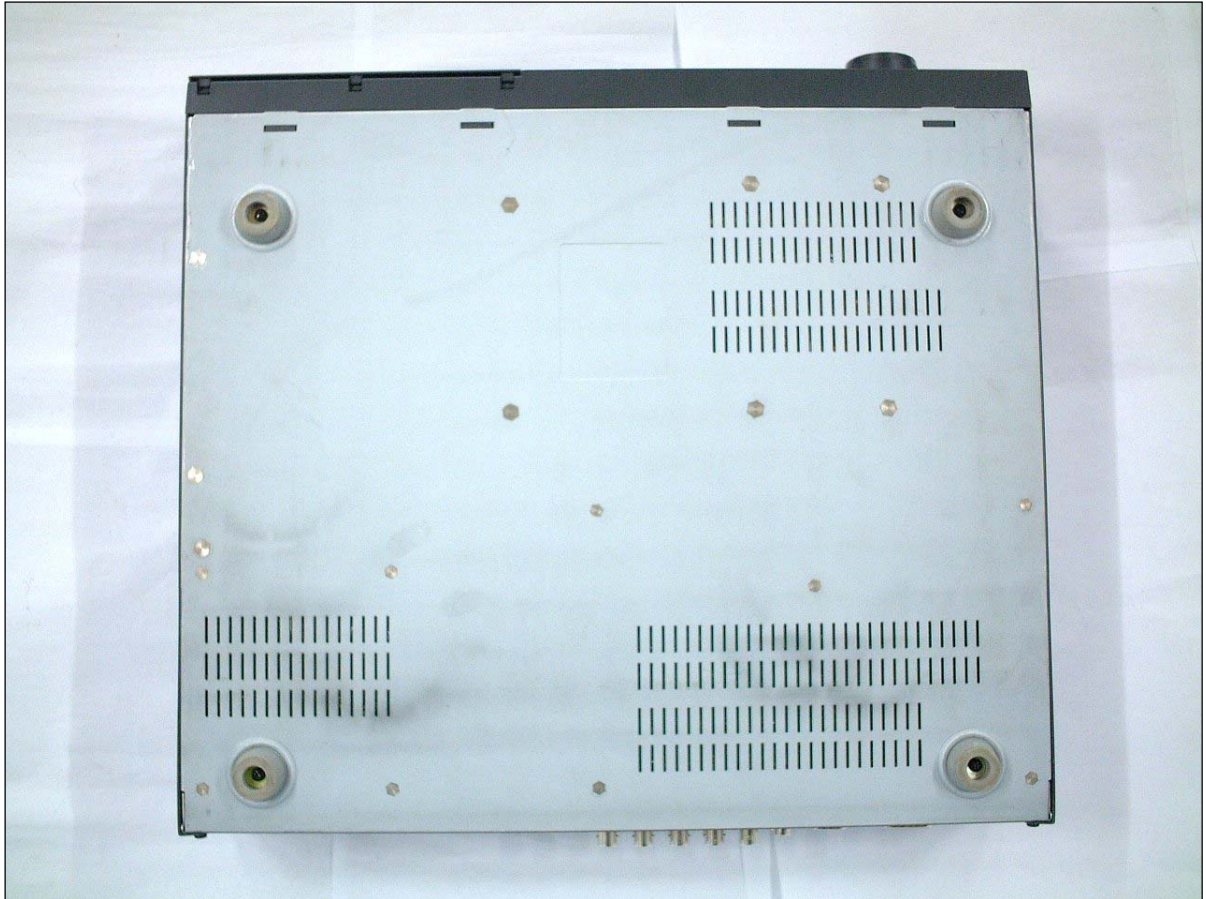
Photo # 2



(Right and Left of the appliance)

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict

Photo # 3



(Bottom of the appliance)

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict

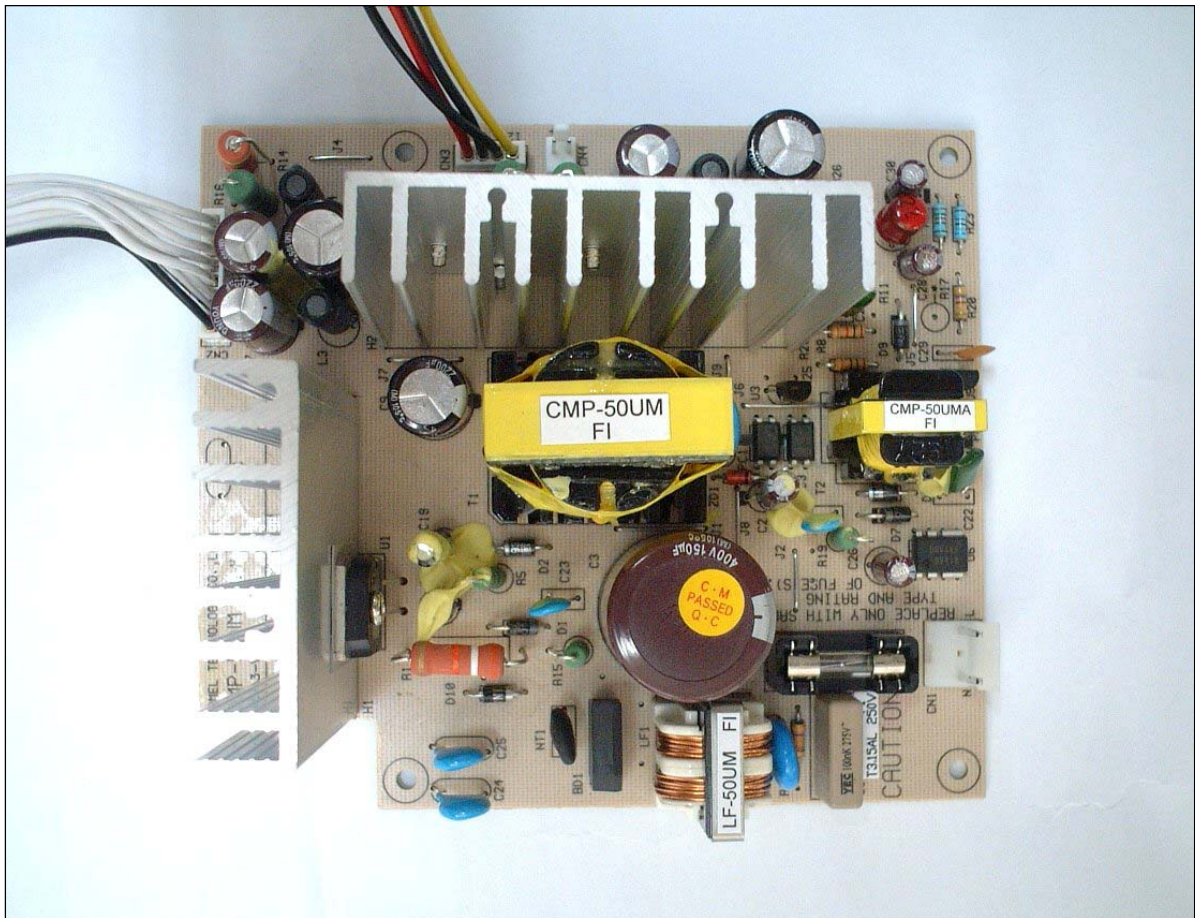
Photo # 4



(Inside of the appliance)

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict

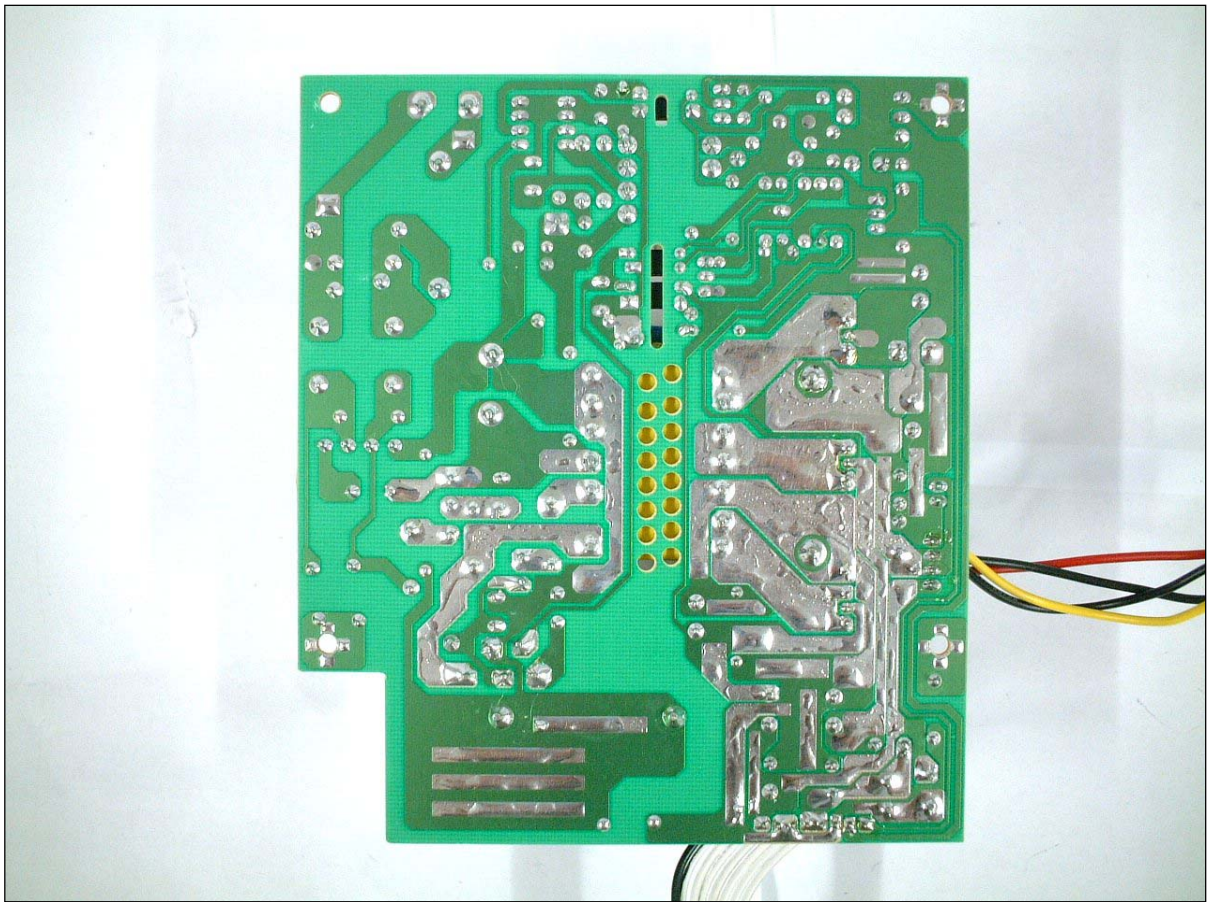
Photo # 5



(Upper side of SMPS)

EN 60 065			
Clause	Requirement – Test	Result - Remark	Verdict

Photo # 6



(Pattern side of SMPS)