

VERIFICATION

OF COMPLIANCE With Low Voltage Directive



Verification No.: 09GC1203-LVD

Applicable Standard : EN60950-1:2006 / A11:2009


This Verification of Compliance is hereby issued to the below named company.
The test results of this report relate only to the tested sample identified in this report.

General Information

Document holder : VIVOTEK INC.
6F, No. 192, Lien-Cheng Rd., Chung-Ho, Taipei County,
Taiwan, R.O.C.

Product Description : Network Camera

Model Number : IP8161

Trademark : 




This device has been tested and found to comply with the stated standard(s), which is(are) required by the Council Directive of 2006/95/EC. The test results are indicated in the test report and are applicable only to the tested sample identified in the report

Winnie Chiu/ Reviewer

Date: Dec.15, 2009

Global Compliance Co., Ltd.



TEST REPORT EN 60950-1 : 2006 Safety of Information Technology Equipment	
Report reference No.....	09GC1203-LVD
Test engineer (name and signature).....	Jason Chen 
Reviewer (name and signature).....	Winnie Chiu 
Date of issue	Dec.10, 2009
Contents.....	46 pages of test report
Date received.....	Dec.10, 2009
Date tested.....	Dec.8-10, 2009
Quantity.....	1
Testing laboratory	Global Compliance Co., Ltd.
Address.....	6F-2, No.11, Jingguo Rd., Taoyuan City, Taoyuan 330, Taiwan (R.O.C.)
Applicant.....	VIVOTEK INC.
Address.....	6F, No. 192, Lien-Cheng Rd., Chung-Ho, Taipei County, Taiwan, R.O.C.
Manufacturer.....	VIVOTEK INC.
Standard	EN 60950-1:2006 / A11:2009
Test procedure for.....	CE-LVD Verification
Type of test object.....	Network Camera
Trademark.....	
Model/type reference.....	IP8161
Rating.....	12Vdc, 1.5A (By Power Adapter) or 48.0Vdc, 0.35A (By PoE)



Test item particulars:

Operating condition.....: Continuous
Tested for IT power systems.....: No
IT testing, phase-phase voltage(V).....: N/A
Class of equipment.....: Class III
Equipment mobility.....: Fixed
Mass of the equipment.....: Approx. 0.82kg
Protection against ingress of water.....: IPX0

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)**

General remarks:

This report shall not be reproduced except in full without the written approval of the testing laboratory.
The test results presented in this report relate only to the item(s) tested
The tested specimen(s) shall be preserved for thirty days from the date issued.



Brief description of the test sample:

The equipment is a Fixed Class III equipment that it consists of a main unit and an external AC adapter or PoE (Power-over-Ethernet) which is evaluated Separately.

Enclosure with Metal material and secured together by screws.

The test sample is pre-production sample without serial number.

Copy of Marking Plate :





EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
1.5	Components		P
1.5.1	Comply with IEC 60950 or relevant component standard	Components that were found to affect safety aspects comply with the requirements of this standard or with the safety aspects of the relevant IEC component standards. (see appended table 1.5.1)	P
1.5.2	Evaluation and testing components	Components that were certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
1.5.3	Thermal controls	No thermal controls.	N
1.5.4	Transformers	Transformers used are suitable for their intended application and comply with the relevant requirements of the standard and particularly Annex C.	P
1.5.5	Interconnecting cables	Interconnecting o/p cable to other device is carrying only SELV on an energy level below 240VA. Except the insulation material, there are no further requirements to the o/p interconnecting cable.	P
1.5.6	Capacitors in primary circuits	No X capacitor or Y capacitor is used.	N
1.5.7	Resistors bridging insulation	Class III equipment	N
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N
1.5.7.4	Accessible parts	Class III equipment	N
1.5.8	Components in equipment for IT power systems	Class III equipment.	N
1.5.9	Surge suppressors	No such component.	N
1.5.9.1	General		N
1.5.9.2	Protection of VDRs		N
1.5.9.3	Bridging of functional insulation by a VDR		N
1.5.9.4	Bridging of basic insulation by a VDR		N
1.5.9.5	Bridging of Supplementary, double or reinforced insulation by a VDR		N

1.6	Power interface		P
1.6.1	AC power distribution systems	No supply from the mains.	N
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	Not hand-held equipment.	N
1.6.4	Neutral conductor	Class III equipment.	N

1.7	Marking and instructions		P
1.7.1	Power rating	12Vdc, 1.5A (By Power Adapter) or 48.0Vdc, 0.35A (By PoE)	P
	Rated voltage(s) or voltage range(s) (V)	12Vdc(By Power Adapter) or 48.0Vdc(By PoE) (not direct connect to the mains supply)	N
	Symbol for nature of supply for d.c.	Optional. IEC 60417, Symbol No. 5031 used. (not direct connect to the mains supply)	N
	Rated frequency or frequency range (Hz)	DC supplied (not direct connect to the mains supply)	N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
	Rated current (A)	1.5A (By Power Adapter) or 0.35A (By PoE) (not direct connect to the mains supply)	N
	Manufacturer's name/Trade mark		P
	Type/Model Number	IP8161	P
	Symbol of Class II	Class III equipment	N
	Other symbols	Additional symbols or markings do not cause misunderstanding	P
	Certification marks	CE marking	P
1.7.2	Safety instructions	The user's manual contains information for operation, installation and technical.	P
1.7.2.1	General	The user's manual contains information for operation, installation and technical.	P
1.7.2.2	Disconnect devices	Class III equipment	N
1.7.2.3	Overcurrent protective device	No such parts	N
1.7.2.4	IT power distribution system	Class III equipment	N
1.7.2.5	Operator access with a tool	No such parts	N
1.7.2.6	Ozone	No such parts	N
1.7.3	Short duty cycles	Unit is designed for continuous operation.	N
1.7.4	Supply voltage adjustment	Class III equipment	N
	Methods and means of adjustment ; reference to installation instructions		N
1.7.5	Power outlets on the equipment	No outlet	N
1.7.6	Fuse identification(marking, special fusing characteristics, cross-reference)	Class III equipment	N
1.7.7	Wiring terminals	See below	N
1.7.7.1	Protective earthing and bonding terminals	Class III equipment	N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
1.7.7.2	Terminal for a.c. mains supply conductors	Class III equipment	N
1.7.7.3	Terminal for d.c. mains supply conductors	Ditto	N
1.7.8	Controls and indicators	No safety relevant switch or controls.	N
1.7.8.1	Identification, location and marking	The marking and indication of the power switch is located that indication of function is clearly.	N
1.7.8.2	Colours	The colors used for LED are indicating	P
1.7.8.3	Symbols according to IEC 60417		N
1.7.8.4	Markings using figures	No indicators for different positions.	N
1.7.9	Isolation of multiple power sources	Class III equipment.	N
1.7.10	IT power system	Not intended for use on IT power systems.	N
1.7.11	Thermostats and other regulating devices	No thermostats or other regulating devices.	N
1.7.12	Removable parts	No removable parts	N
1.7.13	Replaceable batteries	No batteries provided	N
	Language		--
1.7.14	Equipment for restricted access locations	No restricted access locations.	N

2	Protection from hazards		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	No such parts.	N
2.1.1.1	Access to energized parts		P
	Test by inspection		N
	Test with test finger(Figure 2A)		N
	Test with test pin(Figure 2B)		N
	Test with test probe(Figure 2C)	No TNV circuit	N
2.1.1.2	Battery compartments	No such parts	N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
2.1.1.3	Access to ELV wiring	No ELV wiring in operator accessible area.	N
	Working voltage (V _{peak} or V _{rms}); minimum distance through insulation(mm)		---
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage wiring in operator accessible area.	N
2.1.1.5	Energy hazards	No energy hazards in operator access area. The connectors on the backside of the equipment below 240VA.	P
2.1.1.6	Manual controls	No manual controls.	N
2.1.1.7	Discharge of capacitors in the primary circuit	Class III equipment.	N
	Measured voltage(V) ; time-constant(s)		--
2.1.1.8	Energy hazard-d.c. mains supply	Class III equipment.	N
	Capacitor connected to the d.c. mains supply		--
	Internal battery connected to the d.c. mains supply		--
2.1.1.9	Audio amplifiers	No audio amplifiers	N
2.1.2	Protection in service access areas	No service access areas.	N
2.1.3	Protection in restricted access locations	The unit is not intended to be used in restricted locations.	N

2.2	SELV circuits		P
2.2.1	General requirements	SELV circuits are maintained after single fault condition. Insulating materials used are solid or laminated, having adequate thickness and adequate creepage distance over their surfaces and there are adequate clearances through air.	P
2.2.2	Voltage under normal conditions (V)	Between any SELV circuits 42.4V peak or 60Vdc are not exceeded.	P



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
2.2.3	Voltage under fault conditions (V)	Single fault did not cause excessive voltage in accessible SELV circuits. Limits of 71V peak and 120Vdc were not exceeded for a period longer than 0.2s.	P
2.2.3.1	Separation by double or reinforced insulation (method 1)	Class III equipment.	N
2.2.3.2	Separation by earthed screen (method 2)	Class III equipment.	N
2.2.3.3	Protection by earthing of the SELV circuit (method 3)	Class III equipment.	N
2.2.4	Connection of SELV circuits to other circuits	Be considered to complies with the requirement of clause 2.2.2 and 2.2.3. No direct connection between SELV and primary circuit.	P

2.3	TNV circuits		N
2.3.1	Limits	Between any SELV circuits 42.4V peak or 60Vdc are not exceeded under normal operating conditions.	N
	Type of TNV circuits	No TNV circuit.	N
2.3.2	Separation from other circuits and from accessible parts	Single fault did not cause excessive voltage in accessible SELV circuit.	N
2.3.2.1	General requirements	Single fault did not cause excessive voltage in accessible SELV circuit.	N
2.3.2.2	Protection by basic insulation		N
2.3.2.3	Protection by earthing	Class III equipment.	N
2.3.2.4	Protection by other constructions		N
2.3.3	Separation from hazardous voltages		N
	Insulation employed		---
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed		--



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
2.3.5	Test for operating voltages generated externally		N

2.4	Limited current circuits		N
2.4.1	General requirements		N
2.4.2	Limit values		N
	Frequency (Hz)		N
	Measured current (mA)		N
	Measured voltage (V)		N
	Measured circuit capacitance (Nf or μ F)		N
2.4.3	Connection of limited current circuits to other circuits		N

2.5	Limited power source		N
	Inherently limited output		N
	Impedance limited output		N
	Overcurrent protective device limited output		N
	Regulating network limited output under normal operating and single fault condition		N
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition		N
	Output voltage (V), output current (A), apparent power (VA)..... :		N
	Current rating of overcurrent protective device (A)		N

2.6	Provisions for earthing and bonding Class III equipment.		N
2.6.1	Protective earthing	Class III equipment	N
2.6.2	Functional earthing	Class III equipment	N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
2.6.3	Protective earthing and protective bonding conductors	Class III equipment	N
2.6.3.1	General		N
2.6.3.2	Size of protective earthing conductors		N
	Rated current (A), cross-sectional area (mm ²), AWG		---
2.6.3.3	Size of protective bonding conductors		N
	Rated current (A), cross-sectional area (mm ²), AWG		N
2.6.3.4	Resistance of earthing conductors and their terminations, resistance (Ω), voltage drop (V), test current (A), duration (min)		N
2.6.3.5	Colour of insulation		N
2.6.4	Terminals	Class III equipment	N
2.6.4.1	Protective earthing and bonding terminals		N
	Rated current (A), type and nominal thread diameter (mm)		---
2.6.4.2	Separation of the protective earthing conductor from protective bonding conductors		N
2.6.5	Integrity of protective earthing	Class III equipment	N
2.6.5.1	Interconnection of equipment		N
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N
2.6.5.3	Disconnection of protective earth		N
2.6.5.4	Parts that can be removed by an operator	No such parts	N
2.6.5.5	Parts removed during servicing	No such parts	N
2.6.5.6	Corrosion resistance	No such parts	N
2.6.5.7	Screws for protective bonding	No such parts	N
2.6.5.8	Reliance on telecommunication network or cable distribution system		N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
2.7	Over current and earth fault protection in primary circuits		N
2.7.1	Basic requirements		N
	Instruction when protection relies on building installation		N
2.7.2	Faults not covered in 5.3		N
2.7.3	Short-circuit backup protection		N
2.7.4	Number and location of protective devices		N
2.7.5	Protection by several devices		N
2.7.6	Warning to service personnel		N
2.8	Safety interlocks		N
2.8.1	General principles		N
2.8.2	Protection requirements		N
2.8.3	Inadvertent reactivation		N
2.8.4	Fail-safe operation		N
2.8.5	Interlocks with moving parts		N
2.8.6	Overriding an interlock		N
2.8.7	Switches and relays		N
2.8.7.1	Contact gaps (mm)		N
2.8.7.2	Overload test		N
2.8.7.3	Endurance test		N
2.8.7.4	Electric strength test (V)		N
2.8.8	Mechanical actuators		N
2.9	Electrical insulation		N
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials not used.	N
2.9.2	Humidity conditioning	Class III equipment.	N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
	Relative humidity (%), temperature (°C)		--
2.9.3	Grade of insulation		N
2.9.4	Separation from hazardous voltage	Class III equipment.	N
	Method (s) used		--

2.10	Clearance, creepage distances and distances through insulation		N
2.10.1	General	See below	N
2.10.1.1	Frequency		N
2.10.1.2	Pollution degrees	Pollution 2	N
2.10.1.3	Reduced values for functional insulation		N
2.10.1.4	Intervening unconnected conductive parts	No such parts	N
2.10.1.5	Insulation with varying dimensions		N
2.10.1.6	Special separation requirements		N
2.10.1.7	Insulation in circuits generating Starting pulses	No such parts	N
2.10.2	Determination of working voltage	See below.	N
2.10.2.1	General		N
2.10.2.2	RMS working voltage		N
2.10.2.3	Peak working voltage		N
2.10.3	Clearances	Only SELV circuit	N
2.10.3.1	General	When measuring clearances, the steady force, 10N±1N for components 30N±3N for internal enclosure and 250N±10N for external enclosure, were applied.	N
2.10.3.2	Main Transient voltage	Power supply an approved adapter	N
	a)AC mains supply	Ditto	N
	b)Earthed d.c. mains supplies	Ditto	N
	c)Unearthed d.c. mains supply	Ditto	N
	d)Battery operation	Ditto	N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
2.10.3.3	Clearance in secondary circuits		N
2.10.3.4	Clearance in secondary circuits	See clause 5.3.4	N
2.10.3.5	Clearance in circuits having starting pulses	Not directly connected to mains.	N
2.10.3.6	Transients from a.c. mains supply		N
2.10.3.7	Transients from d.c. mains supply		N
2.10.3.8	Transients from telecommunication networks and cable distribution systems	See clause 2.10.3.4	N
2.10.3.9	Measurement of transient voltage levels	See below	N
	a) Transients from a mains supply		N
	For an a.c. mains supply		N
	For a d.c. mains supply		N
	b) Transients from a telecommunication network	Each pair terminal (tip and ring) in an interface	N
2.10.4	Creepage distance	Only SELV circuit	N
2.10.4.1	General	See below	N
2.10.4.2	Material group and comparative tracking index	Material group IIIa, IIIb	N
	CTI tests	CTI rating for all materials of minimum 100.	--
2.10.4.3	Minimum creepage distances	(see appended table 2.10.3 and 2.10.4)	N
2.10.5	Solid insulation	See below	N
2.10.5.1	General	No used such parts.	N
2.10.5.2	Distances through insulation		N
2.10.5.3	Insulating compound as solid insulation	Not applied for.	N
2.10.5.4	Semiconductor devices		N
2.10.5.5	Cemented joints		N
2.10.5.6	Thin sheet material-General		N
2.10.5.7	Separable thin sheet material		N
	Number of layers (pcb)		N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
2.10.5.8	Non-separable thin sheet material		N
2.10.5.9	Thin sheet material-standard test procedure		N
	Electric strength test		N
2.10.5.10	Thin sheet material-alternative test procedure		N
	Electric strength test		N
2.10.5.11	Insulation in wound components		N
2.10.5.12	Wire in wound components		N
	Working voltage		N
	a)basic insulation not under stress		N
	b)basic supplementary, reinforced insulation		N
	c)Compliance with Annex U		N
	Tow wires in contact inside wound component : angle between 45° and 90°		N
2.10.5.13	Wire with solvent-based enamel in wound components		N
	Electric strength test		--
	Routine test		--
2.10.5.14	Additional insulation in wound components		N
	Working voltage		N
	-basic insulation not under stress		N
	-supplementary, reinforced insulation		N
2.10.6	Coated printed boards		N
2.10.6.1	Uncoated printed boards		N
2.10.6.2	Coated printed boards		N
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N
2.10.6.4	Insulation between conductors on different layers of a printed board		N
	Distance through insulation		---



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
	Number of insulation layers (pcs)		--
2.10.7	Component external terminations	No hermetically sealed components.	N
2.10.8	Test on coated printed boards and coated components	No such parts.	N
2.10.8.1	Sample preparation and preliminary inspection		N
2.10.8.2	Thermal conditioning		N
2.10.8.3	Electric strength test		N
2.10.8.4	Abrasion resistance test		N
2.10.9	Thermal cycling	No such parts	N
2.10.10	Test for Pollution Degree 1 environment and insulation compound	No such parts	N
2.10.11	Test for semiconductor devices and cemented joints	No such parts	N
2.10.12	Enclosed and sealed parts	No such parts	N

3	WIRING, CONNECTIONS AND SUPPLY		P
3.1.1	Current rating and over current protection	All internal wires are UL recognized wiring which is PVC insulated, rated VW-1, min. 80 °C, 300V. Internal wiring is PVC insulated, the wiring gauge is suitable for current intended to be carried.	P
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges which could damage the insulation	P
3.1.3	Securing of internal wiring	The wires are positioned in such a manner that prevents excessive strain, loosening of terminal connections and damage of conductor insulation.	P
3.1.4	Insulation of conductors		N
3.1.5	Beads and ceramic insulators	Not used.	N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
3.1.6	Screws for electrical contact pressure	No electrical contact pressure by screwed connection.	N
3.1.7	Insulation materials in electrical connections	No contact pressure through insulating material.	N
3.1.8	Self-tapping and spaced thread screws	No self-tapping or spaced thread screw.	N
3.1.9	Termination of conductors	The connection of conductors is soldered, crimped, push-in and similar means.	P
3.1.10	Sleeving on wiring	No sleeving on wiring.	N

3.2	Connection to a.c. mains supply or d.c. mains supply Class III equipment		N
3.2.1	Means of connection		N
3.2.1.1	Connection to an a.c. mains supply		N
3.2.1.2	Connection to an d.c. mains supply		N
3.2.2	Multiple supply connections		N
	Number of conductors, diameter (mm) of cable and conduits		--
3.2.3	Permanently connected equipment		N
	Number of conductors, diameter (mm) of cable and conduits		--
3.2.4	Appliance inlets		N
3.2.5	Power supply cords		N
3.2.5.1	AC power supply cords		N
	Type		---
	Rated current (A), cross-sectional area (mm ²), AWG		---
3.2.5.2	DC power supply cords		N
3.2.6	Cord anchorages and strain relief		N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
	Mass of equipment (kg), pull (N)		---
	Longitudinal displacement (mm)		---
3.2.7	Protection against mechanical damage		N
3.2.8	Cord guards		N
	Diameter or minor dimension D (mm); test mass (g)		---
	Radius of curvature of cord (mm)		---
3.2.9	Supply wiring space		N

3.3	Wiring terminals for connection of external conductors		N
3.3.1	Wiring terminals		N
3.3.2	Connection of non-detachable power supply cords		N
3.3.3	Screw terminals		N
3.3.4	Conductor sizes to be connected		N
	Rated current (A), type and nominal thread diameter (mm)		--
3.3.5	Wiring terminal sizes		N
	Rated current (A), type and nominal thread diameter (mm)		--
3.3.6	Wiring terminals design		N
3.3.7	Grouping of wiring terminals		N
3.3.8	Standard wire		N

3.4	Disconnection from the mains supply		N
3.4.1	General requirement		N
3.4.2	Disconnect devices		N
3.4.3	Permanently connected equipment		N
3.4.4	Parts which remain energized		N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
3.4.5	Switches in flexible cords		N
3.4.6	Number of poles-Single-phase and d.c. equipment		N
3.4.7	Number of poles -Three-phase equipment		N
3.4.8	Switches as disconnect devices		N
3.4.9	Plugs as disconnect devices		N
3.4.10	Interconnected equipment		N
3.4.11	Multiple power source		N

3.5	Interconnection of equipment		P
3.5.1	General requirements	Only be connected to other SELV circuits.	P
3.5.2	Types of interconnection circuits	Only be connected to other SELV circuits.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnections.	N
3.5.4	Data ports for additional equipment		P

4	Physical requirements		P
4.1	Stability	Under conditions of normal use, equipment is stable at inclined surface to the degree.	P
4.1.1	Angle of 10°		P

4.2	Mechanical strength		P
4.2.1	General	See below. After the tests, the unit continued to comply with 2.1.1 and 2.10.	P
4.2.2	Steady force test, 10N	10N applied to components.	P
4.2.3	Steady force test, 30N	No internal enclosure.	N
4.2.4	Steady force test, 250N	250N applied to external enclosure.	P



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
4.2.5	Impact test	A steel ball fall freely from rest through a vertical distance of 1.3m onto the sample.	N
	Fall test		N
	Swing test		N
4.2.6	Drop test	Movable equipment.	N
4.2.7	Stress relief		N
4.2.8	Cathode ray tubes	No cathode ray tubes	---
	Picture tube separately certified		N
	Picture tubes > 16 cm intrinsically protected		N
	Non-intrinsically protected tubes > 16 m used with protective screen		N
	Intrinsically protected tubes : tests on 12 samples		N
	Samples subject to ageing : 6		N
	Samples subject to implosion test : 6		N
	Samples subject to mechanical strength test (steel ball) : 6		N
	Non-intrinsically protected tubes tested		N
4.2.9	High pressure lamps	No high pressure lamp.	N
4.2.10	Wall or ceiling mounted equipment	The equipment and its associated mounting means shall remain secure during test. 0.58kg x 3=1.74kg (3 times weight of equipment)	P
	force (N)	50N/1min	P

4.3	Design and construction		P
4.3.1	Edges and corners	All edges and corners judged to be sufficiently well rounded.	P
4.3.2	Handles and manual controls; force (N)	No such controls.	N



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Clause	Requirement - Test	Result - Remark	Verdict
4.3.3	Adjustable controls	No adjustable controls.	N
4.3.4	Securing of parts	No loosening of parts impairing clearance or creepage distance is likely to occur.	P
4.3.5	Connection of plugs and sockets	IEC60083 and IEC60320 connectors are not used in equipment.	N
4.3.6	Direct plug-In equipment	No direct plug-In equipment.	N
	Torque		--
	Compliance with the relevant mains plug standard		--
4.3.7	Heating elements in earthed equipment	No heating elements.	N
4.3.8	Batteries	No batteries.	N
	-Overcharging of a rechargeable battery		--
	-Unintentional charging of a non-rechargeable battery		--
	-Reverse charging of a rechargeable battery		--
	Excessive discharging rate for any battery		--
4.3.9	Oil and grease	No oil and grease.	N
4.3.10	Dust, powders, liquids and gases	Equipment in intended use not considered to be exposed to these.	N
4.3.11	Containers for liquids or gases	No container for liquid or gases.	N
4.3.12	Flammable liquids	No flammable liquids.	N
	Quantity of liquid (l)		--
	Flash point (°C)		--
4.3.13	Radiation; type of radiation	No ionizing radiation, laser or flammable liquids presents.	N
4.3.13.1	General		N
4.3.13.2	Ionizing radiation		N
	Measured radiation (pA/kg)		--
	Measured High-voltage (kV)		--



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
	Measured focus voltage (kV)		--
	CRT markings		--
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N
	Part, property, retention after test, flammability classification		--
4.3.13.4	Human exposure to ultraviolet (UV) radiation		N
4.3.13.5	Laser (including LEDs)		N
	Laser class	LED below the limit of laser Class 1.	--
4.3.13.6	Other types		N

4.4	Protection against hazardous moving parts		N
4.4.1	General		N
4.4.2	Protection in operator access areas		N
4.4.3	Protection in restricted access locations		N
4.4.4	Protection in service access areas		N

4.5	Thermal requirements		P
4.5.1	General		P
4.5.2	Temperature rise	See appended table 4.5.1	P
	Normal load condition per Annex L		P
4.5.3	Temperature limits for materials	(see appended table 4.5.1)	P
4.5.4	Touch temperature limits	(see appended table 4.5.1)	P
4.5.5	Resistance to abnormal heat	No thermoplastic parts on which parts at hazardous voltage are directly mounted.	N

4.6	Openings in enclosures		N
4.6.1	Top and side openings	No openings.	N



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Clause	Requirement - Test	Result - Remark	Verdict
	Dimensions (mm)	(see appended table 4.6.1)	--
4.6.2	Bottom of fire enclosures	No openings.	N
	Construction of the bottom	(see appended table 4.6.1)	--
4.6.3	Doors or covers in fire enclosures	No door or cover.	N
4.6.4	Openings in transportable equipment	Movable equipment	N
4.6.4.1	Constructional design measures		N
	Dimensions(mm)		N
4.6.4.2	Evaluation measures for larger openings		N
4.6.4.3	Use of metalized parts	Plastic enclosure	N
4.6.5	Adhesives for constructional purposes	No adhesives for constructional purpose.	N
	Conditioning temperature (°C),time (weeks)		N

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	Use of materials with the required flammability classes.	N
	Method 1, selection and application of components wiring and materials		--
	Method 2, application of all of simulated fault condition tests		--
4.7.2	Conditions for a fire enclosure	See below	N
4.7.2.1	Parts requiring a fire enclosure	See clause 4.7.2.2	N
4.7.2.2	Parts no requiring a fire enclosure	Connectors in secondary circuits supplied by limited power source complying with 2.5 and mounted on materials of flammability class V-1.	P
4.7.3	Materials	See below.	P
4.7.3.1	General	PCB rated V-1 or better.	P
4.7.3.2	Materials for fire enclosures	See sub-clause 4.7.2	N



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Clause	Requirement - Test	Result - Remark	Verdict
4.7.3.3	Materials for components and other parts outside fire enclosures	See sub-clause 4.7.2	N
4.7.3.4	Materials for components and other parts inside fire enclosures.	Internal components except small parts are V-2 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filter assemblies	N
4.7.3.6	Materials used in high-components	No high voltage components.	N

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		N
5.1	Touch current and protective conductor current	Class III equipment.	N
5.1.1	General		N
5.1.2	Equipment under test (EUT)		N
5.1.2.1	Single connection to an a.c. mains supply		N
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N
5.1.3	Test circuit		N
5.1.4	Application of measuring instrument		N
5.1.5	Test procedure		N
5.1.6	Test measurements		N
	Test voltage (V)		---
	Measured current		---
	Max. allowed current (mA)		---
5.1.7	Equipment with touch current	Class III equipment.	N
	Exceeding 3.5 Ma		---
5.1.8	Touch currents to and from telecommunication networks.	See appended table 5.1.8	N
5.1.8.1	Limitation of the touch current to a telecommunication network		N
	Test voltage (V)		---



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Clause	Requirement - Test	Result - Remark	Verdict
	Measured current (Ma)		---
	Max. allowed current (Ma)		---
5.1.8.2	Summation of touch current from telecommunication networks		N

5.2	Electric strength		N
5.2.1	General		N
5.2.2	Test procedure		N

5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	Class III equipment	N
5.3.2	Motors	No such parts	N
5.3.3	Transformers	No such parts	N
5.3.4	Functional insulation		P
5.3.5	Electromechanical components	No electromechanical components.	N
5.3.6	Simulation of faults		N
5.3.7	Unattended equipment	No thermostat, temperature limiter or thermal cut-cut.	N
5.3.8	Compliance criteria for abnormal operating and fault conditions	See appended table 4.5.1 for temperature.	N
5.3.9	Compliance criteria for abnormal operating and fault conditions	No fire, no emit and no shrinkage, distortion or loosening if any enclosure part was noticeable on the equipment.	P
5.3.9.1	During the tests	Ditto	P
5.3.9.2	After the tests	Ditto	P

6	CONNECTION TO TELECOMMUNICATION NETWORKS		N
---	--	--	----------



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
6.1	Protection of telecommunication network service personnel, and users of other equipment connected to the network, from hazards in the equipment.		N
6.1.1	Protection from hazardous voltages	Only SELV circuit.	N
6.1.2	Separation of the telecommunication network from earth		N
6.1.2.1	Requirements	Only SELV circuit.	N
	Test voltage (V)		---
	Current in the test circuit (mA)		---
6.1.2.2	Exclusions		N

6.2	Protection of equipment users from over voltages on telecommunication networks		N
6.2.1	Separation requirements	Only SELV circuit.	N
6.2.2	Electric strength test procedure	See clause 6.2.2.2	N
6.2.2.1	Impulse test		N
6.2.2.2	Steady-state test	(See appended table 6.2.2.2)	N
6.2.2.3	Compliance criteria	During the tests of 6.2.2.2 There shall be no breakdown of insulation.	N

6.3	Protection of telecommunication wiring system from overheating		N
	Max. output current (A)		---
	Current limiting method		---

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N
---	--	--	---

7.1	Protection of cable distribution system service personnel, and users of other equipment connected to the system, from hazards voltage in the equipment.		N
-----	---	--	---



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
7.2	Protection of equipment users from over voltages on the cable distribution system		N

7.3	Insulation between primary circuits and cable distribution systems		N
7.3.1	General		N
7.3.2	Voltage surge test	Between accessible parts of terminal to L/N of power adapter and have been tested and passed.	N
7.3.3	Impulse test		N

A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment.	See 4.7.3.2	N
A.1.1	Samples, material		N
	Wall thickness (mm)		---
A.1.2	Conditioning of samples; temperature (°C)		N
A.1.3	Mounting of samples		N
A.1.4	Test flame		N
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	Sample 1 burning time (s)		---
	Sample 2 burning time (s)		---
	Sample 3 burning time (s)		---
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures.	See 4.7.3.2 and 4.7.3.4	N
A.2.1	Samples, material		---
	Wall thickness (mm)		---
A.2.6	Compliance criteria		N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
	Sample 1 burning time (s)		---
	Sample 2 burning time (s)		---
	Sample 3 burning time (s)		---
A.2.7	Alternative test acc. To IEC 60695-2-2, cl.4.8		N
	Sample 1 burning time (s)		---
	Sample 2 burning time (s)		---
	Sample 3 burning time (s)		---
A.3	High current arcing ignition test	See 4.7.3.2	N
A.3.1	Samples, material		---
	Wall thickness (mm)		---
A.3.5	Compliance criteria		N
	Sample 1 number of arcs to ignition (pcs)		---
	Sample 2 number of arcs to ignition (pcs)		---
	Sample 3 number of arcs to ignition (pcs)		---
	Sample 4 number of arcs to ignition (pcs)		---
	Sample 5 number of arcs to ignition (pcs)		---
A.4	Hot wire ignition test	See 4.7.3.2	N
A.4.1	Samples, material		---
	Wall thickness (mm)		---
A.4.5	Compliance criteria		N
	Sample 1 ignition time (s)		---
	Sample 2 ignition time (s)		---
	Sample 3 ignition time (s)		---
	Sample 4 ignition time (s)		---
	Sample 5 ignition time (s)		---
A.5	Hot flaming oil test	See 4.6.2	N
A.6	Flammability tests for classifying materials V-0,V-1 or V-2		N
A.6.1	Samples, material		---



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Clause	Requirement - Test	Result - Remark	Verdict
	Wall thickness (mm)		---
A.6.5	Compliance criteria		N
A.6.6	Permitted retest		N
A.7	Flammability tests for classifying foamed materials HF-1, HF-2 or HFB		N
A.7.1	Sample, material		---
	Wall thickness (mm)		---
A.7.4	Compliance criteria		N
A.7.5	Compliance criteria, HF-2		N
A.7.6	Compliance criteria, HF-1		N
A.7.7	Compliance criteria, HBF		N
A.7.8	Permitted retest, HF-1 or HF-2		N
A.7.9	Permitted retest, HBF		N
A.8	Flammability test for classifying materials HB		N
A.8.1	Samples, material		---
	Samples thickness (mm)		---
A.8.2	Conditioning of samples; temperature (°C)		N
A.8.4	Test procedure		N
A.8.5	Compliance criteria		N
A.8.6	Permitted retest		N
A.9	Flammability test for classifying materials 5V		N
A.9.1	Samples, material		---
	Sample thickness (mm)		---
A.9.4	Test procedure, test bare		N
A.9.5	Test procedure, test plaques		N
A.9.6	Compliance criteria		N
A.9.7	Permitted retest		N
A.10	Stress relief conditioning		N
	Temperature (°C)		---



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS		N
B.1	General requirements		N
	Position		---
	Manufacturer		---
	Type		---
	Rated values		---
B.2	Test conditions		N
B.3	Maximum temperatures		N
B.4	Running overload test		N
B.5	Locked-rotor overload test		N
	Test duration (days)		---
	Electric strength test; test voltage (V)		---
B.6	Running overload test for DC motors in secondary circuits		N
B.7	Locked-rotor overload test for DC motors in secondary circuits		N
B.7.1	Test procedure		N
B.7.2	Alternative test procedure; test time (h)		N
B.7.3	Electric strength test		N
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Operating voltage (V)		---

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		N
	Position		---
	Manufacturer		---
	Type		---



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Clause	Requirement - Test	Result - Remark	Verdict
	Rated values		---
C.1	Overload test		---
C.2	Insulation		---
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS		N
D.1	Measuring instrument		N
D.2	Alternative measuring instrument		N
E	ANNEX E, TEMPERATURE RISE OF A WINDING Thermocouple method used.		N
F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES Considered.		N
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES The alternative method is not considered.		N
G.1	Summary of the procedure for determining minimum clearances		N
G.2	Determination of mains transient voltage (V)		N
G.3	Determination of telecommunication network transient voltage (V)		N
G.4	Determination of required withstand voltage (V)		N
G.5	Measurement of transient levels (V)		N
G.6	Determination of minimum clearances		N
H	ANNEX, IONIZING RADIATION		N
	Ionizing radiation		---
	Measured radiation (mr/h)		---
	Measured high voltage (KV)		---
	Measured focus voltage (KV)		---



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
	CRT markings		---

J	ANNEX, TABLE OF ELECTROCHEMICAL POTENTIALS		N
	Metal used		---

K	ANNEX, THERMAL CONTROLS		N
K.1	Marking and breaking capacity		N
K.2	Thermostat reliability; operating voltage (V)		N
K.3	Thermostat endurance test; operating voltage (V)		N
K.4	Temperature limiter endurance; operating voltage (V)		N
K.5	Thermal cut-cut reliability		N
K.6	Stability of operation		N

L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.1)		P
L.1	Typewriters		N
L.2	Adding machines and cash registers		N
L.3	Erasers		N
L.4	Pencil Sharpeners		N
L.5	Duplicators and copy machines		N
L.6	Motor-operated files		N
L.7	Other business equipment	See 1.6.2	P

M	ANNEX, CRITERIA FOR TELEPHONE RINGING SIGNALS		N
M.2	Method A		N
M.3	Method B		N
M.3.1	Ringling signal		N



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Clause	Requirement - Test	Result - Remark	Verdict
M.3.1.1	Frequency (f)		---
M.3.1.2	Voltage (V)		---
M.3.1.3	Cadence; time (s), voltage (V)		---
M.3.1.4	Single fault current (Ma)		---
M.3.2	Tripping device and monitoring voltage		N
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N
M.3.2.2	Tripping device		N
M.3.2.3	Monitoring voltage (V)		N
N	ANNEX N, IMPULSE TEST GENERATORS (see 2.10.3.4, 6.2.2.1, 7.3.2 and clause G.5)		N
N.1	ITU-T impulse test generators		N
N.2	IEC 60065 impulse test generator		N
P	ANNEX P, NORMATIVE REFERENCES		P
Q	ANNEX Q, BIBLIOGRAPHY		P
R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6)		N
R.2	Reduced clearances (see 2.10.3)		N
S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N
S.1	Test equipment		N
S.2	Test procedure		N
S.3	Examples of waveforms during impulse testing		N



EN 60950-1 : 2006			
Clause	Requirement - Test	Result - Remark	Verdict
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N
		See separate test report	--

U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		P
	Separate test report	Approved component.	P

V	ANNEX V, AC POWER DISTRIBUTION SYSTEM (see 1.6.1)		N
V.1	Introduction		N
V.2	TN power distribution systems		N
V.3	TT power systems		N
V.4	IT power systems		N

W	ANNEX W, SUMMATION OF TOUCH CURRENTS		N
W.1	Touch current from electronic circuits		N
W.1.2	Earthed circuits		N
W.2	Interconnection of several equipments		N
W.2.1	Isolation		N
W.2.2	Common return, isolated from earth		N
W.2.3	Common return, connected to protective earth		N

X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		N
X.1	Determination of maximum input current		N
X.2	Overload test procedure		N

Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		N
Y.1	Test apparatus		N
Y.2	Mounting of test samples		N
Y.3	Carbon-arc light-exposure apparatus		N



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Clause	Requirement - Test	Result - Remark	Verdict
Y.4	Xenon-arc light exposure apparatus		N



1.5.1		TABLE: list of critical components					P
No	Object/ Part No.	Manufacturer/ trademark	Type/ Model	Technical Data	Standard	Marks of conformity	
1.	AC Power Adapter	Various	Various	Output:12Vdc, 1.5A ,LPS	Various	Various	
2.	Metal Enclosure material	--	--	Metal	--	--	
3.	Plastic Enclosure material	Various	Various	HB or better	UL 94	UL	
4.	PCB material	Various	Various	V-1 or better, 105°C min	UL 796	UL	
Note :							

1.6.2		TABLE: electrical data (in normal conditions)					P
Fuse #	I rated (A)	U (V)	P (W)	I (A)	I fuse (A)	Condition/status	
--	1.5	12	3.48	0.29	--	Supply by AC Adapter	
--	0.35	48	4.32	0.09	--	Supply by PoE	
Supplementary information : All connectors connected and transmission data continuously.							



4.5.1	TABLE: temperature rise measurements					P
Test Voltage : 12Vdc (Supply by AC Adapter) or 48Vdc (Supply by PoE)						
Operating condition		A. Supply by AC Adapter (12Vdc) B. Supply by PoE (48Vdc)				
Test position :	Measured A (°C)	Measured A Shift to 50°C	Measured B (°C)	Measured B Shift to 50°C	Allowed T (°C)	
1. Ambient	26.8	50.0	27.4	50.0	--	
2. PWB near U11	40.5	63.7	43.5	66.1	105	
3. L44 Body	42.7	65.9	47.9	70.5	105	
4. L71 Body	40.8	64.0	45.7	68.3	105	
5. LX1 Coil	42.9	66.1	47.9	70.5	105	
6. L41 Coil	36.0	59.2	39.7	62.3	105	
7. L45 Body	36.6	59.8	40.2	62.8	105	
8. T1 Coil	39.0	62.2	56.4	79.0	105	
9. C8 Body near T1	37.7	60.9	48.9	71.5	105	
10.C41 Body	38.8	62.0	43.6	66.2	105	
11.L1 Coil	41.0	64.2	49.9	72.5	105	
12.L3 Coil	40.0	63.2	46.6	69.2	105	
13.Internal Metal Enclosure near U9	34.9	58.1	37.5	60.1	--	
14.External Metal Enclosure near U9	32.0	55.2	33.7	56.3	70	
15.External Plastic Enclosure near U9	30.7	53.9	31.9	54.5	95	
<p>Comments:</p> <p>The temperatures were measured under worst case normal mode defined in 1.2.2.1 and as described in 1.6.5 at voltages as described in 1.4.5.</p> <p>With a specified ambient temperature of 50°C, the maximum temperature rise is calculated as follows :</p> <p>Electrolyte capacitor or components with :</p> <ul style="list-style-type: none"> -PWB of 105°C -Surface of equipment which may be touched : -Metal T_{max} = 70°C -Plastic T_{max} = 95°C 						



Model : IP8161

Appendix : Photo 1



Appendix : Photo 2



Model : IP8161

Appendix : Photo 3



Appendix : Photo 4

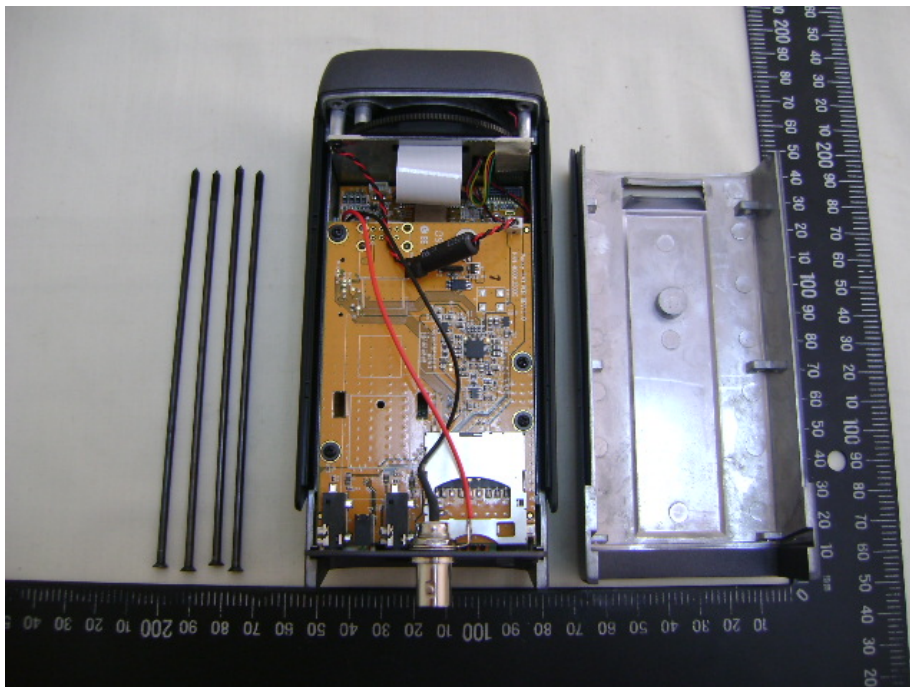


Model : IP8161

Appendix : Photo 5

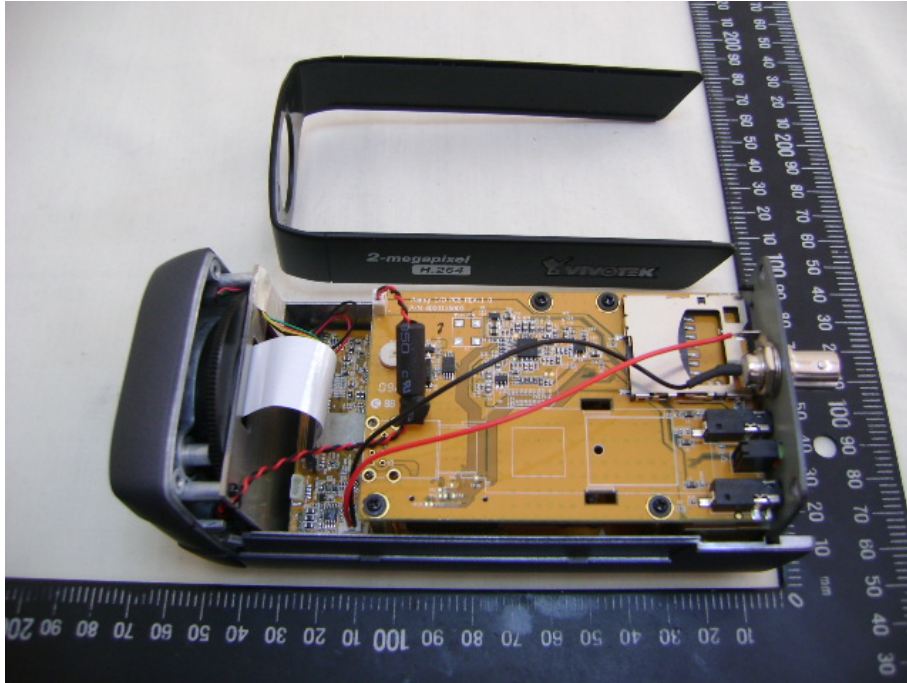


Appendix : Photo 6

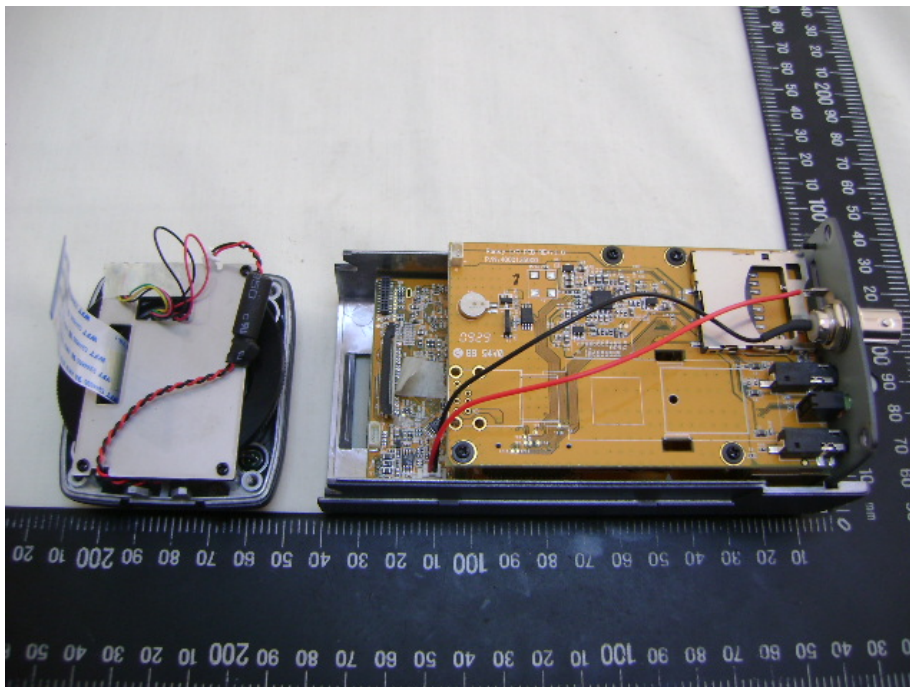


Model : IP8161

Appendix : Photo 7

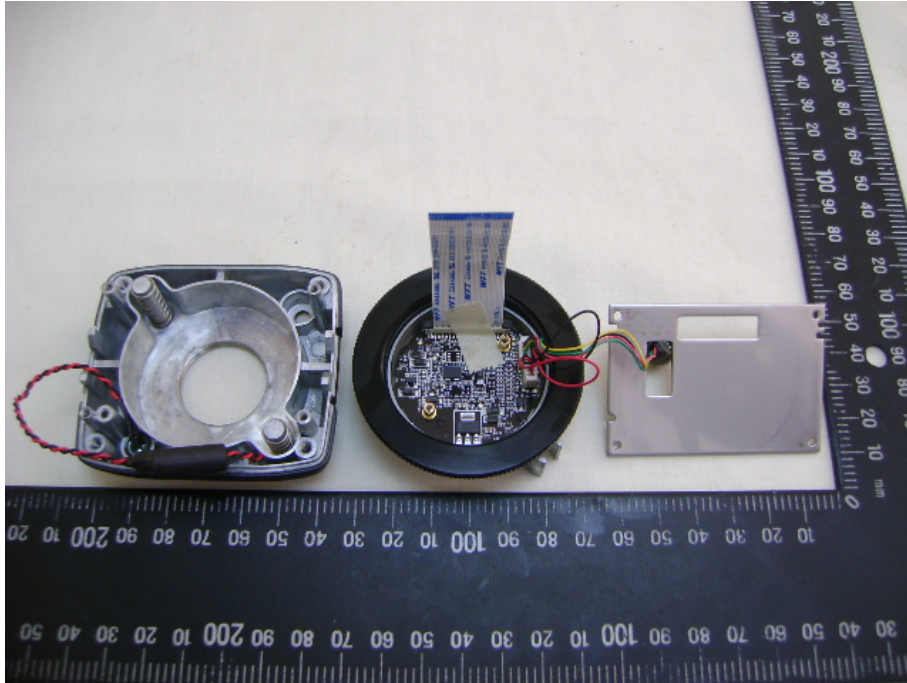


Appendix : Photo 8

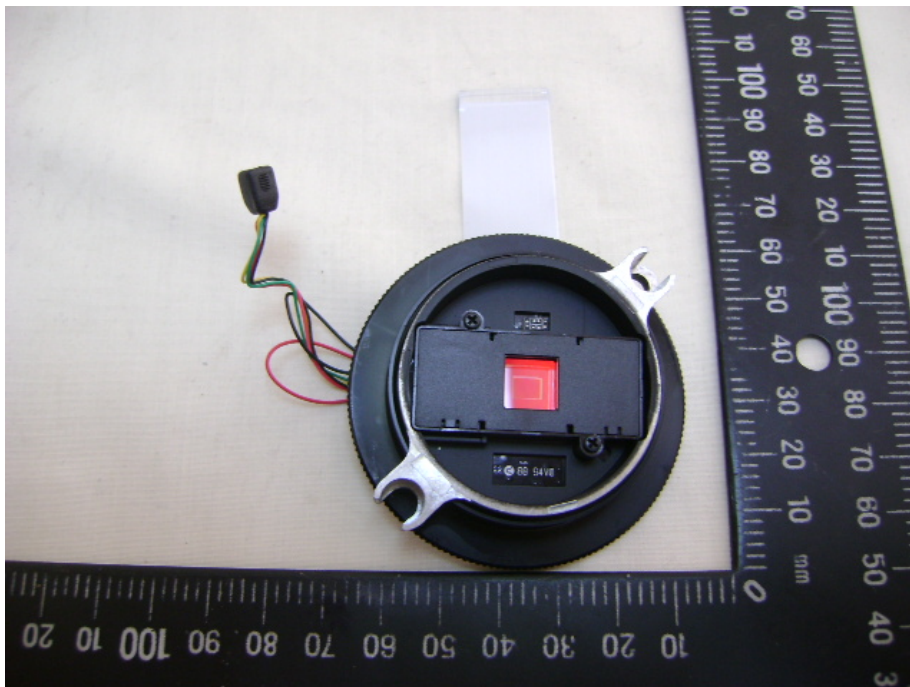


Model : IP8161

Appendix : Photo 9

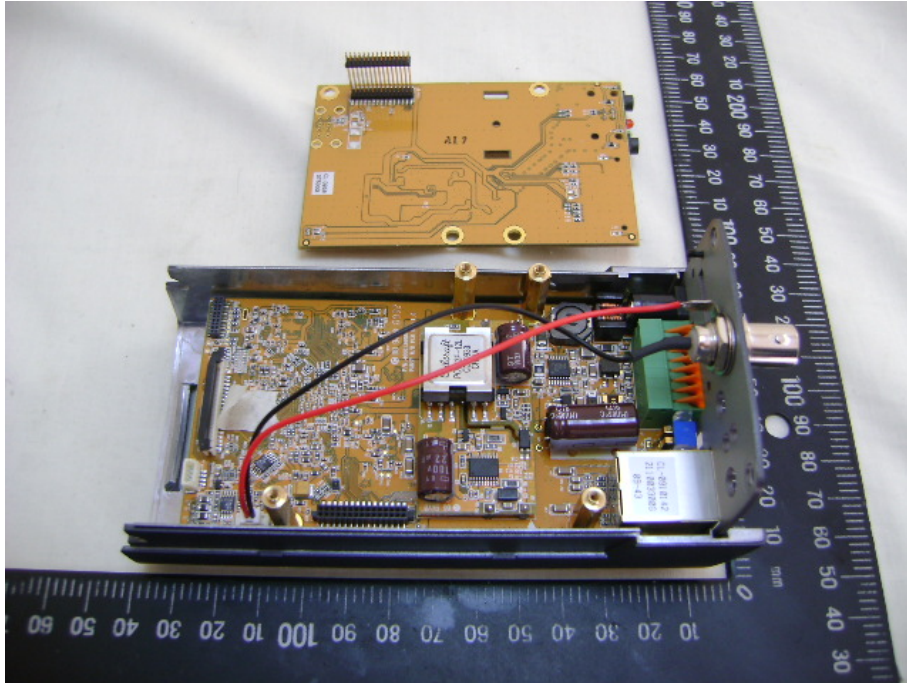


Appendix : Photo 10

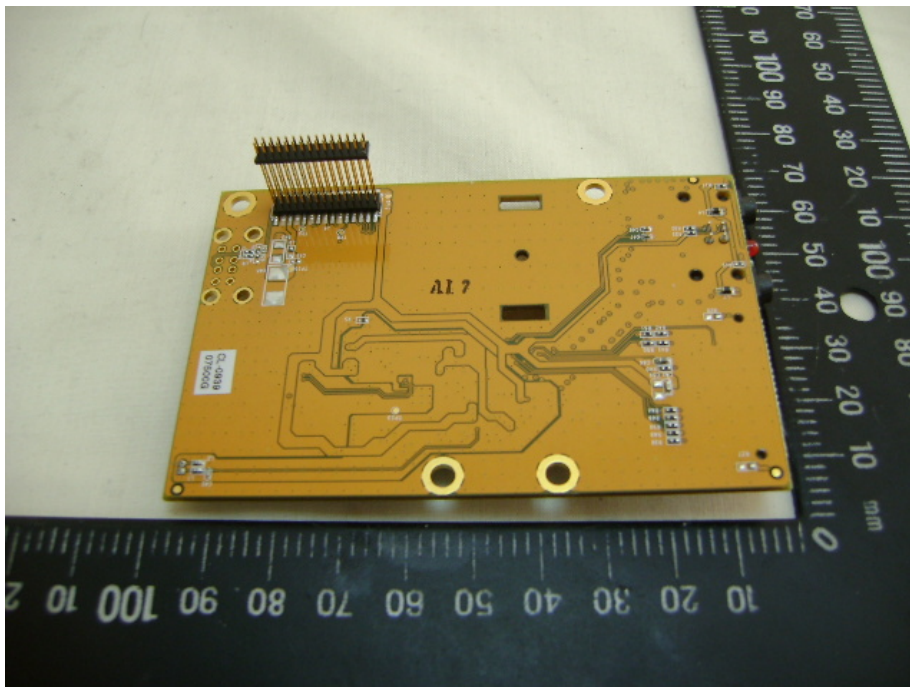


Model : IP8161

Appendix : Photo 11

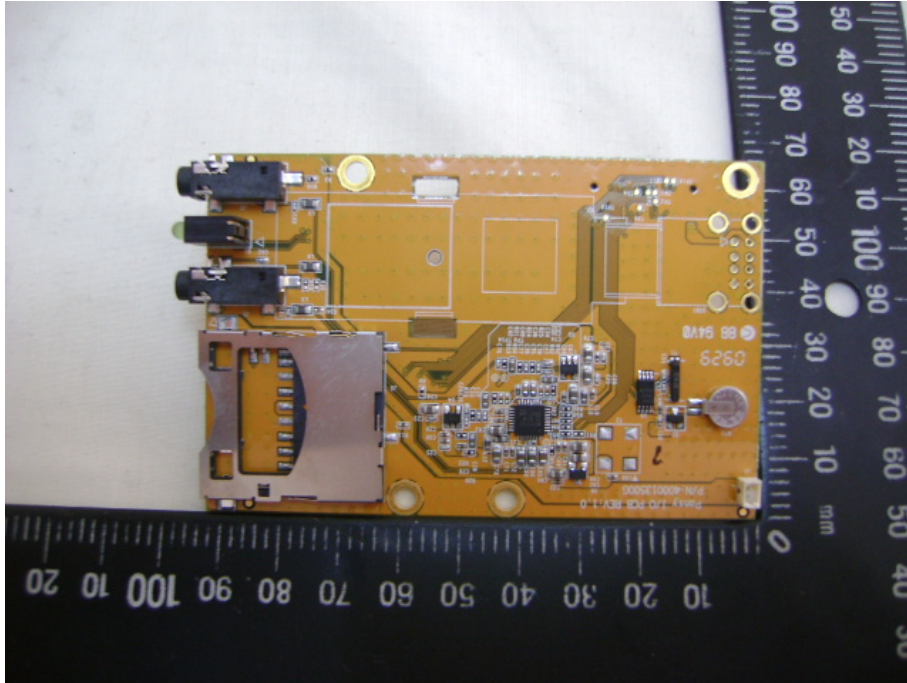


Appendix : Photo 12

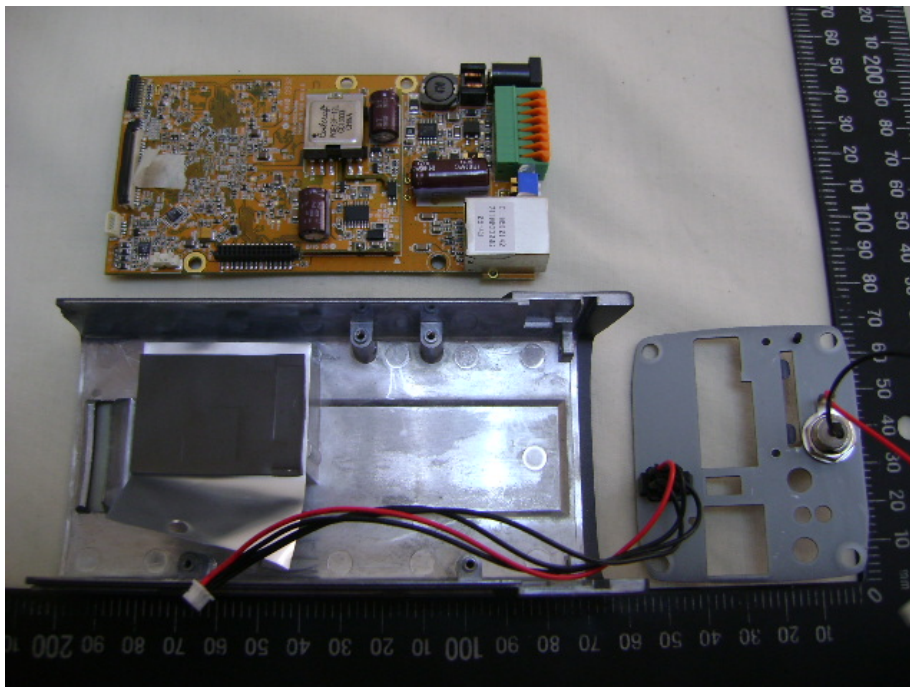


Model : IP8161

Appendix : Photo 13

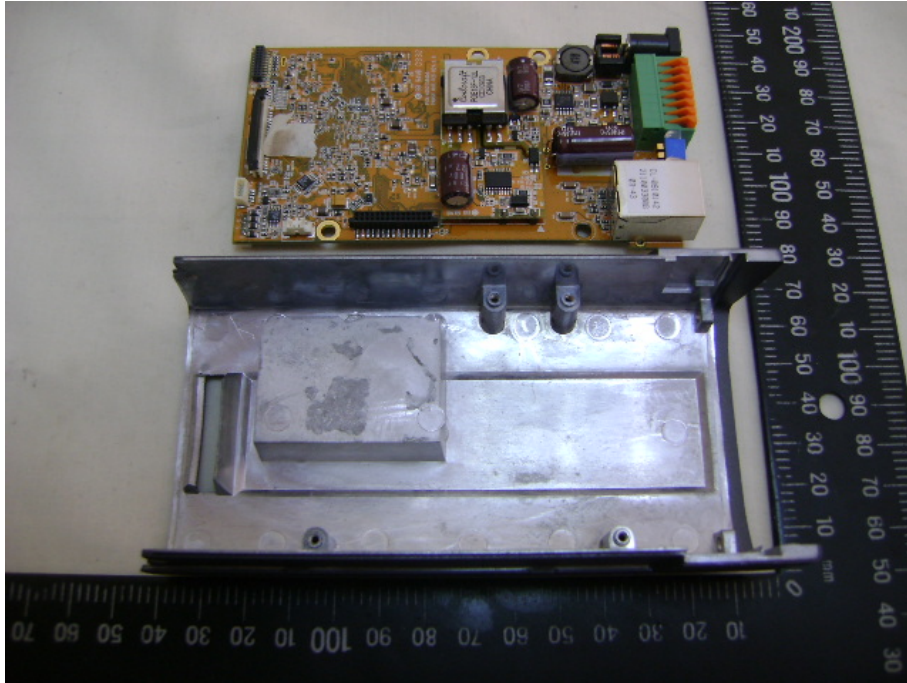


Appendix : Photo 14

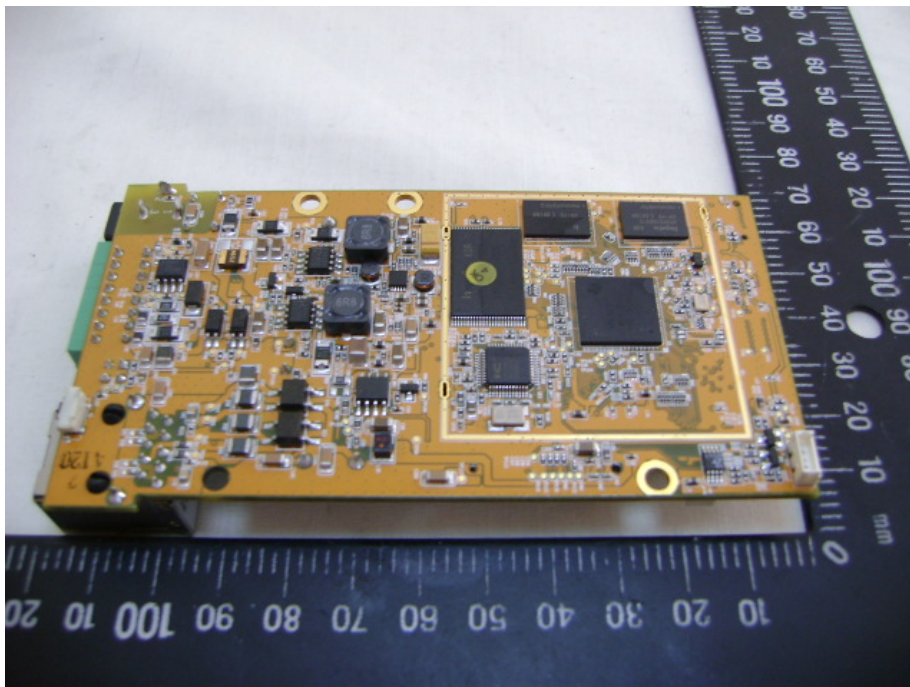


Model : IP8161

Appendix : Photo 15



Appendix : Photo 16





Model : IP8161

Appendix : Photo 17

