CE

VERIFICATION OF COMPLIANCE

This Verification of Compliance is hereby issued to the product designated below.

Product	**Outdoor wireless AP**
Model	**OA-200**
Trade name	**SparkLAN**
Applicant	**SparkLAN Communications,Inc. 3F, No. 246, Sec 1 ,Neihu Rd,Neihu District, TaipeiCity,114, Taiwan,(R.O.C.)**
Applicable Standard(s)	**IEC 60950-1:2001 EN 60950-1:2001**
Report No.	**50923005-LV**
Test Laboratory	**Compliance Certification Services Inc. No. 11, Wu-Gong 6th Rd., Wu-Gu Industrial Park Taipei Hsien, Taiwan Tel: +886-2-2299-9720 / Fax: +886-2-2299-1792**

This device has been tested and found to comply with the stated standard(s), which is(are) required by the Council Directive of 73/23/EEC and Amendment Directive of 93/68/EEC. The test results are indicated in the test report and are applicable only to the tested sample identified in the report.

Jimmy Lu / Safety Lab. Supervisor
Date: October 21, 2005

LVD Test Report

Project No. 50923005-LV
Equipment Outdoor wireless AP
Trade Name SparkLAN
Model No. OA-200
Issued Date Oct, 21, 2005

Issued to
SparkLAN Communications, Inc.
3F,No,246,Sec 1, Neihu Rd,Neihu District,
TaipeiCity,114, Taiwan (R.O.C.)

Declaration :

CCS represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C.**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

CCS's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components.**CCS** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **CCS** issued reports.

CCS's reports must not be used by the client to claim product endorsement by the authorities or any agency of the Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **CCS-self**, extracts from the test report shall not be reproduced except in full with **CCS's** autho-rized written approval.

2005.10.21
(Tested By): Safety Engineer

2005.10.21
(Reviewed By) : Reviewer

2005.10.21
(Authorized Signature) : Safety Lab. Supervisor

Compliance Certification Services Inc.
No.11, Wu-Gong 6th Rd, Wu Gu Industrial Park,
Taipei Hsien, Taiwan TEL : 886-2-2299-9720 FAX : 886-2-2299-1792

TEST REPORT EN 60950-1：2001 Safety of Information Technology Equipment including Electrical Business Equipment	
Report reference No. ……..	50923005-LV
Tested by (+ signature) ……..	See Cover Sheet
Approved by (+ signature) …….	See Cover Sheet
Date of receipt	2005/10/04
Test duration	2005/10/08 - 2005/10/14
Testing laboratory ……	Compliance Certification Services Inc.
Location……	No.11, Wu-Gong 6th Rd, Wu Gu Industrial Park, Taipei Hsien, Taiwan
Applicant……..	SparkLAN Communications, Inc.
Address:……..	3F,No,246,Sec 1, Neihu Rd,Neihu District, TaipeiCity,114, Taiwan (R.O.C.)
Standards……	EN 60950-1:2001 IEC 60950-1:2001
Procedure deviation……..	N/A
Non-standard test method……	N/A
Type of test equipment ……	Outdoor wireless AP
Trade mark……..	SparkLAN
Model/Type designation……	OA-200
Manufacturer……..	SparkLAN Communications, Inc. 3F,No,246,Sec 1, Neihu Rd,Neihu District, TaipeiCity,114, Taiwan (R.O.C.)
Rating……..	48Vdc, 0.35A
Copyright TRF……	This test report is based on a blank TRF(Test Report Form Ref. No. 1950 C, dated 95-10) that was prepared by KEMA. The copyright of blank test report is belong to the CCB body of KEMA.

Test item particulars:	
Equipment mobility	Equipment for movable
Operating Condition..……	Continuous
Tested for IT power systems……..	No
IT testing, phase-phase voltage (V)……..	N/A
Class of equipment……	Class III
Mass of equipment.(Kg)……..	1.04Kg
Protection against ingress of water…….	IPX6
Possible test case verdicts:	
-Test case does not apply to the test object.	N(.A.)
-Test object does meet the requirement.	P(ass)
-Test object does not meet the requirement.	F(ail)
General Remarks:	
"(see remark #) refers to a remark appended to the report.	
“(see appended table)” refers to a table appended to the report.	
Throughout this report a point is used as the decimal separator	
The test results presented in this report relate only to the object tested.	
This report shall not be reproduced except in full without the written approval of the testing laboratory.	

Comments:

Brief description of the test sample:

The equipment is a movable Class III equipment that it consists of a main unit and an external AC adaptor which is evaluated Separately.

PoE Host that provides DC 48V voltage into Ethernet cable and allow the Ethernet cable between the Host and splitter to transfer data and power simultaneously. PoE splitter that in charge of data and power separation for end-point device.

The unit should be placed ina safe and secure location. To ensure proper operation, please keep the unit away from water and other damaging elements.

The device should be placed in a sheltered and non-slip location within a temperature range of +5 to +40 Celsius degree.

The PoE system is treated as L.P.S power system. During the evaluation.

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Unless otherwise specified, all tests were performed on model OA-200 to represent other similar models. The test sample is pre-production without serial numbers.
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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	No interconnecting cables.	**N**
1.5.6	Capacitors in primary circuits	No X capacitor or Y capacitor is used.	**N**
1.5.7	Double or reinforced insulation bridged by components	See below.	**N**
1.5.7.1	Bridging capacitors	No bridging capacitors.	**N**
1.5.7.2	Bridging resistors	No bridging resistors.	**N**
1.5.7.3	Accessible parts	Class III equipment.	**N**
1.5.8	Components in equipment for IT power systems	Class III equipment.	**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	Class III equipment. For information purpose only.	**P**
1.7.1	Power rating	No power rating required, other marking is locked on the outside surface of the equipment on a self-adhesive label.	**N**
	Rated voltage(s) or voltage range(s) (V)	Ethernet equipment	**N**
	Symbol for nature of supply for d.c.	Optional, comply with IEC 60417 Symbol No.5031	**N**
	Rated frequency or frequency range (Hz)	DC supplied	**N**
	Rated current (A)	Ethernet equipment	**N**
	Manufacturer’s name/Trade mark	SparkLAN Communications, Inc.	**P**
	Type/Model Number	OA-200	**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**
1.7.3	Short duty cycles	Unit is designed for continuous operation.	**N**
1.7.4	Supply voltage adjustment	Class III equipment	**N**
1.7.5	Power outlets on the equipment	No outlet	**N**
1.7.6	Fuse identification	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**
1.7.7.2	Terminal for a.c. mains supply conductors	Class III equipment	**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.	**P**

1.7.8.2	Colours	The colors used for LED are indicating the following function : Green (On condition and transmit messages)	**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	Language	Instructions and marking in English.	**P**
1.7.13	Durability	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15s and then again for 15s with the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was no curling nor lifting of the label edge.	**P**
1.7.14	Removable parts	No removable parts.	**N**
1.7.15	Replaceable batteries	No batteries.	**N**
1.7.16	Operator access with a tool	No operator access with a tool.	**N**
1.7.17	Equipment for restricted access locations	No restricted access locations.	**N**

2	Protection from hazards		**P**
2.1	Protection from electric shock and energy hazards	Only SELV circuit and TNV-2, TNV-3 circuit inside the unit.	**P**
2.1.1	Protection in operator access areas		**N**
2.1.1.1	Access to energized parts		**N**
	Test by inspection		**N**
	Test with test finger		**N**
	Test with test pin		**N**

	Test with test probe		**N**
2.1.1.2	Battery compartments		**N**
2.1.1.3	Access to ELV wiring	No ELV wiring in operator accessible area.	**N**
	Working voltage (V); distance (mm) through insulation		**---**
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**
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**
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		**N**
	Type of TNV circuits		**N**
2.3.2	Separation from other circuits and from accessible parts		**N**
	Used insulation	Basic insulation between TNV and unearthed SELV provided.	**---**
2.3.3	Separation from hazardous voltages		**N**
	Used insulation		**---**
2.3.4	Connection of TNV circuits to other circuits	TNV circuit only connected to SELV circuit.	**N**
	Used insulation		**---**
2.3.5	Test for operating voltages generated externally		**N**

2.4	Limited current circuits No Limited current circuits.		**N**
2.4.1	General requirements		**N**
2.4.2	Limit values		**N**
2.4.3	Connection of limited current circuits to other circuits		**N**

2.5	Limited power source No Limited power source		**N**

2.6	Provisions for earthing and bonding		**N**
2.6.1	Protective earthing	Class III equipment	**N**

2.6.2	Functional earthing	Class III equipment	**N**
2.6.3	Protective earthing and protective bonding conductors	Class III equipment	**N**
2.6.3.1	Size of protective earthing conductors		**N**
	Rated current (A), cross-sectional area (mm^2), AWG		**---**
2.6.3.2	Size of protective bonding conductors		**N**
	Rated current (A), cross-sectional area (mm^2), AWG		**---**
2.6.3.3	Rated current (A), type and nominal thread diameter (mm)		**N**
	Resistance (Ω) of earthing conductors and their terminations, test current (A)		**N**
2.6.3.4	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	No telecommunication network	**N**

2.7	Overcurrent and earth fault protection in primary circuits Class III equipment.	**N**

2.7.1	Basic requirements		**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 No 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 in interlock systems		**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		**P**
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials not used.	**P**
2.9.2	Humidity conditioning		**N**
2.9.3	Requirements for insulation	Insulation complies with 2.10, 4.5.1 and 5.2	**P**
2.9.4	Insulation parameters	Both parameters considered.	**P**

2.9.5	Categories of insulation	The adequate levels of safety insulation are provided and maintained to comply with the requirements of this standard.	**P**

2.10	Clearance, creepage distances and distances through insulation		**P**
2.10.1	General		**---**
2.10.2	Determination of working voltage		**---**
2.10.3	Clearances	Functional insulation only.	**P**
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.	**P**
2.10.3.2	Clearance in primary circuits	No primary circuits.	**N**
2.10.3.3	Clearance in secondary circuits		**N**
2.10.3.4	Measurement of transient levels	Not directly connected to mains.	**N**
2.10.4	Creepage distance	Not directly connected to mains.	**N**
	CTI tests	CTI rating for all materials of minimum 100.	—
2.10.5	Solid insulation	No used such parts in equipment.	**N**
2.10.5.1	Minimum distance through insulation	No used such parts.	**N**
2.10.5.2	Thin sheet material		**N**
2.10.5.3	Printed boards	Not applied for.	**N**
2.10.5.4	Wound components		**N**
2.10.6	Coated printed boards	No coated printed boards.	**N**
2.10.6.1	General		**N**
2.10.6.2	Sample preparation and preliminary inspection		**N**
2.10.6.3	Thermal cycling		**N**
2.10.6.4	Thermal ageing		**N**
2.10.6.5	Electric strength test	(see appended table 5.2)	**---**
2.10.6.6	Abrasion resistance test		**N**
2.10.7	Enclosed and sealed parts	No hermetically sealed components.	**N**

2.10.8	Spacings filled by insulating compound	No such parts.	**N**
2.10.9	Component external terminations	See sub-clause 2.10.3 to 2.10.4	**P**
2.10.10	Insulation with varying dimensions	No such parts used.	**N**

3	WIRING, CONNECTIONS AND SUPPLY		**P**
3.1.1	Current rating and overcurrent protection		**N**
3.1.2	Protection against mechanical damage	The wires are routed away from sharp edges and parts which could damage 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	Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltages involved. (See appended table 5.2)	**P**
3.1.5	Beads and ceramic insulators	Not used.	**N**
3.1.6	Screws for electrical contact pressure	No electrical contact pressure by screwed connection.	**N**
3.1.7	Non-metallic materials in electrical connections	No contact pressure through insulating material.	**P**
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 used.	**N**

3.2	Connection to a.c. mains supples Class III equipment.		**N**
3.2.1	Means of connection		**N**
3.2.2	Multiple supply connections		**N**

	Number of conductors, diameter (mm) of cable and conduits		**---**
3.2.3	Permanently connected equipment		**N**
3.2.4	Appliance inlets		**N**
3.2.5	Power supply cords		**N**
	Type		**---**
	Rated current (A), cross-sectional area (mm^2), AWG		**---**
3.2.6	Cord anchorages and strain relief		**N**
	Mass of equipment (kg), pull (N)		**---**
	Longitudinal displacement (mm)		**---**
3.2.7	Protection against mechanical damage		**N**
3.2.8	Cord guards		**N**
	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	Rated current (A), type and nominal thread diameter (mm)		**N**
3.3.5	Rated current (A), type and nominal thread diameter (mm)		**N**
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 a.c. mains supply Class III equipment.	**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**
3.4.5	Switches in flexible cords		**N**
3.4.6	Single-phase equipment		**N**
3.4.7	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 SELV circuits are connected to other equipment.	**P**
3.5.2	Types of interconnection circuits	Interconnection circuits is SELV to SELV, No ELV circuit interconnection	**P**
3.5.3	ELV circuits as interconnection circuits	No ELV interconnections.	**N**

4	Physical requirements		**N**
4.1	Stability		**N**
4.1.1	Angle of 10°		**N**

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**
4.2.5	Impact test	A steel ball fall freely from rest through a vertical distance of 1.3m onto the sample.	**P**

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	See below	**P**
	force (N)	50N	—

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**
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**
4.3.7	Heating elements in earthed equipment	No heating elements.	**N**
4.3.8	Batteries	No batteries.	**N**
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**
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**
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		**N**
4.3.13.4	Human exposure to ultraviolet (UV) radiation		**N**
4.3.13.5	Laser (including LEDs)		**N**
4.3.13.6	Other types		**N**

4.4	Protection against hazardous moving parts No 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	Temperature rise	See appended table 4.5.1	**P**
4.5.2	Resistance to abnormal heat	No thermoplastic parts on which parts at hazardous voltage are directly mounted.	**N**

4.6	Openings in enclosures		**P**
4.6.1	Top and side openings	Top no opening.	**P**
	Dimensions (mm)		**N**
4.6.2	Bottom of fire enclosures	No openings	**P**
	Construction of the bottom		**N**
4.6.3	Doors or covers in fire enclosures	No door or cover.	**N**

4.6.4	Openings in transportable equipment	Movable equipment	**N**
4.6.5	Adhesives for constructional purposes	No adhesives for constructional purpose.	**N**

4.7	Resistance to fire		**P**
4.7.1	Reducing the risk of ignition and spread of flame		**N**
4.7.2	Conditions for a fire enclosure	A FIRE ENCLOSURE is required when temperatures of part under fault conditions could be sufficient for ignition.	**P**
4.7.2.1	Parts requiring a fire enclosure	See append table 1.5.1	**P**
4.7.2.2	Parts no requiring a fire enclosure	The power source supplier DC adapter supply, which connected component in the secondary circuit. the component are mounted on PCB material of flammability rating V-0 min. the fire enclosure are not require.	**N**
4.7.3	Materials	See append table 1.5.1	**P**
4.7.3.1	General	See append table 1.5.1	**P**
4.7.3.2	Materials for fire enclosures	See append table 1.5.1	**P**
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		**P**
5.1	Touch current and protective conductor current		**P**
5.1.1	General		**P**
5.1.2	Equipment under test (EUT)		**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.		**N**
5.1.8.1	Limitation of the touch current to a telecommunication network		**P**
	Test voltage (V)		**---**
	Measured current (mA)		**---**
	Max. allowed current (mA)		**---**
5.1.8.2	Summation of touch current from telecommunication networks		**P**

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	(see appended table 4.5.1)	**P**
5.3.2	Motors	No such parts	**N**
5.3.3	Transformers	Input:350mA(MAX) for DC +48V Output:2.0A(MAX) for DC +5V	**P**
5.3.4	Functional insulation	Method c consider. Due to ● No risk of fire, due to all component are mounted on PCB material of flammability rating V-0 and EUT is supplied by limit power source. ● No risk of electric energy shock.	**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.	**P**
5.3.8.1	During the tests		**P**
5.3.8.2	After the tests	Electric Strength tests performed after abnormal and fault tests.No fire, no emit and no shrinkage, distortion or loosening if any enclosure part was noticeable on the equipment.	**P**

6	CONNECTION TO TELECOMMUNICATION NETWORKS		**N**
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		**N**
6.1.2	Separation of the telecommunication network from earth		**N**
6.1.2.1	Requirements		**N**
	Test voltage (V)		**---**
	Current in the test circuit (mA)		**---**
6.1.2.2	Exclusions		**N**

6.2	Protection of equipment users from overvoltages on telecommunication networks		**N**
6.2.1	Separation requirements	.	**N**
6.2.2	Electric strength test procedure		**N**
6.2.2.1	Impulse test		**N**
6.2.2.2	Steady-state test		**N**
6.2.2.3	Compliance criteria		**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**
7.2	Protection of equipment users from overvoltages 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		**N**
7.3.3	Impulse test		**N**

A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		
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		---
	Wall thickness (mm)		----
A.1.2	Conditioning of samples; temperature (℃)		**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**
	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		---
	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 (℃)		**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 (℃)		**---**

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		**---**
	Rated values		**---**
C.1	Overload test		**N**
C.2	Insulation		**N**

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. (see 2.10)	**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)		**---**
	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 EQUIPEMENT (see 1.2.2.1 and 4.5.1)		**N**
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		**N**

M	ANNEX, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		**N**
M.2	Method A		**N**
M.3	Method B		**N**
M.3.1	Ringing signal		**N**
M.3.1.1	Frequency (f)	Maximum 19.49 Hz	**---**
M.3.1.2	Voltage (V)	Maximum 142 V peak-peak	**---**
M.3.1.3	Cadence; time (s), voltage (V)	see appended table M3.1.1	**---**
M.3.1.4	Single fault current (mA)		**---**
M.3.2	Tripping device and monitoring voltage	See below	**P**
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage	see appended table M3.2.1	**P**
M.3.2.2	Tripping device		**N**
M.3.2.3	Monitoring voltage (V)		**N**

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

1.5.1	TABLE: list of critical components					P
No	Object/ Part No.	Manufacturer/ trademark	Type/ Model	Technical Data	Standard	Marks of conformity
1	Top Enclosure material	SOMAX PRECISSION LNDUSTRLAL CO,LTD	P380A	min V-2 , 80°C thickness 1.1mm min.	UL 94	UL
2	Bottom Enclosure material	--	--	Metal thickness 1.95mm min	--	--
3	PCB material	---	---	V-1 or better , 105°C	UL 796	UL

1.6.2	Table: Input current test data				**P**
No.	Voltage	Frequency	Ampere	Watt	Note
1.	+47.9V	--	46mA	2.20W	Normal operation

4.5.1	TABLE: temperature rise measurements			**P**
Operating condition	Maximum normal load.			
Test position :	Measured (℃)		Condition : Allowed T (℃)	
	Ambient: 24.0℃	Tmra: 40℃		
1. C3 body	57.3	73.3	105	
2. T1 coil	63.4	79.4	105	
3. T1 core	64.8	80.8	--	
4. PCB near T1	58.0	74.0	105	
5. L1 body	53.6	69.6	105	
6. PCB near TR4	55.4	71.4	105	
7. PCB near U10	47.8	63.8	105	
8. Enclosure of inside	48.0	64.0	80	
9. Enclosure of outside	37.6	53.6	95	

Comments:

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.

With a specified ambient temperature of 40℃, the maximum temperature rise is calculated as follows :

Winging components :

-Plastic Tmax = 95℃

-Metal Tmax = 70℃

Attachment

Attachment - A.	EUT Photos
Attachment - B.	Product ID Label
Attachment - C.	Measuring Instrument List
Attachment - D.	Schematics and Layout
Attachment - E.	User manual
Attachment - F.	Sample of CE Declaration

Attachment - A.

EUT Photos

This Appendix-A. attached with total 3 pages EUT photograph, not including this page. EUT photos exhibition are follows

Photo # 1	Front View
Photo # 2	Real View
Photo # 3-7	Unit Partially Disassembled View

Photo # 1 Front View

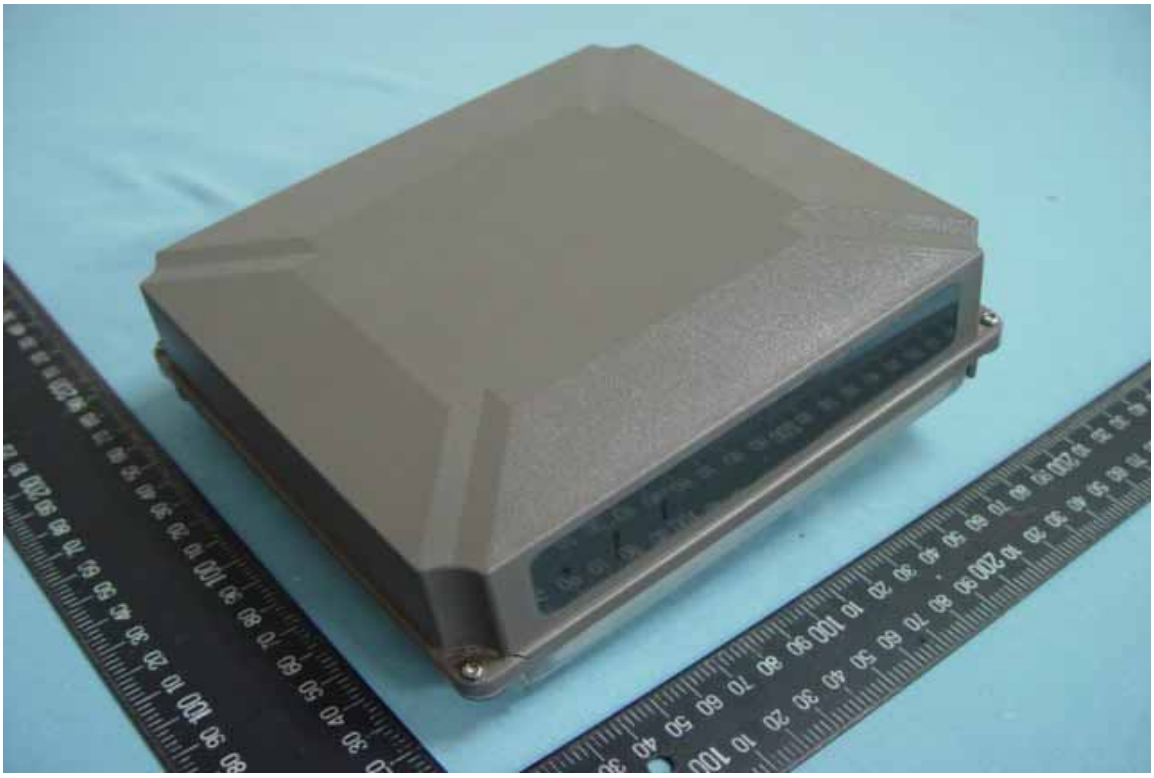


Photo # 2 Real View

Photo # 3 Unit Partially Disassembled View

Photo # 4 Unit Partially Disassembled View

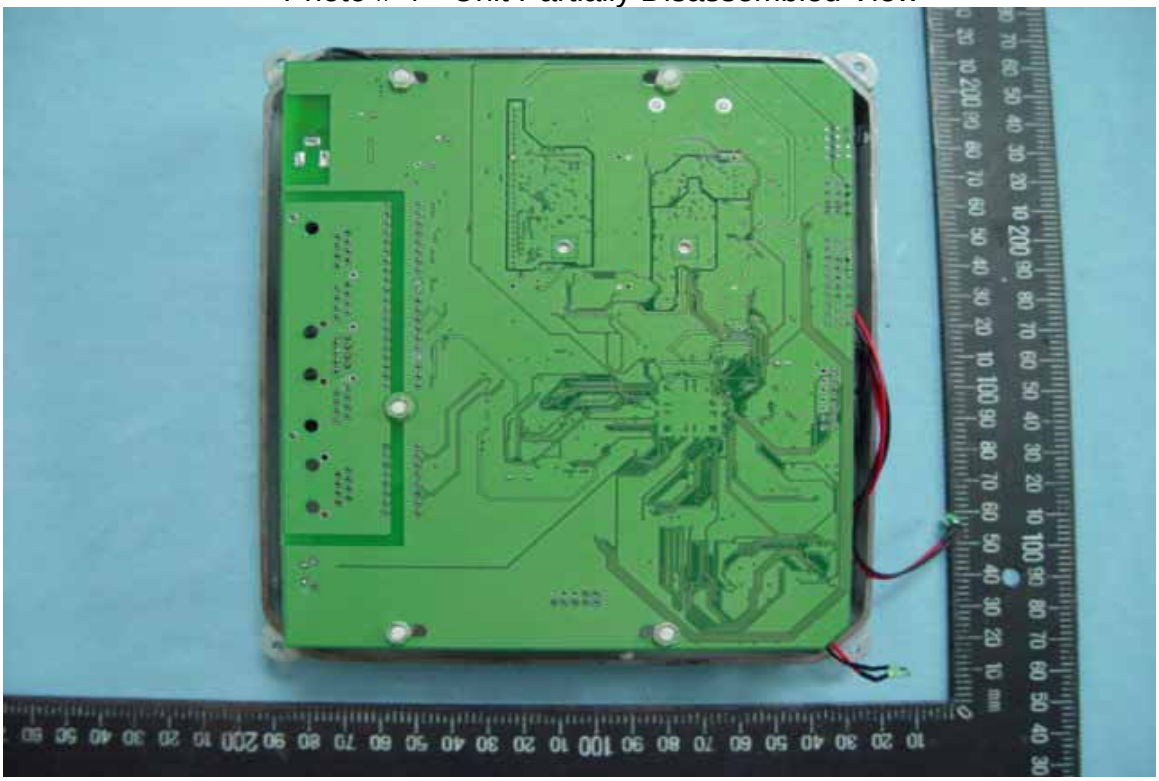


Photo # 5 Unit Partially Disassembled View

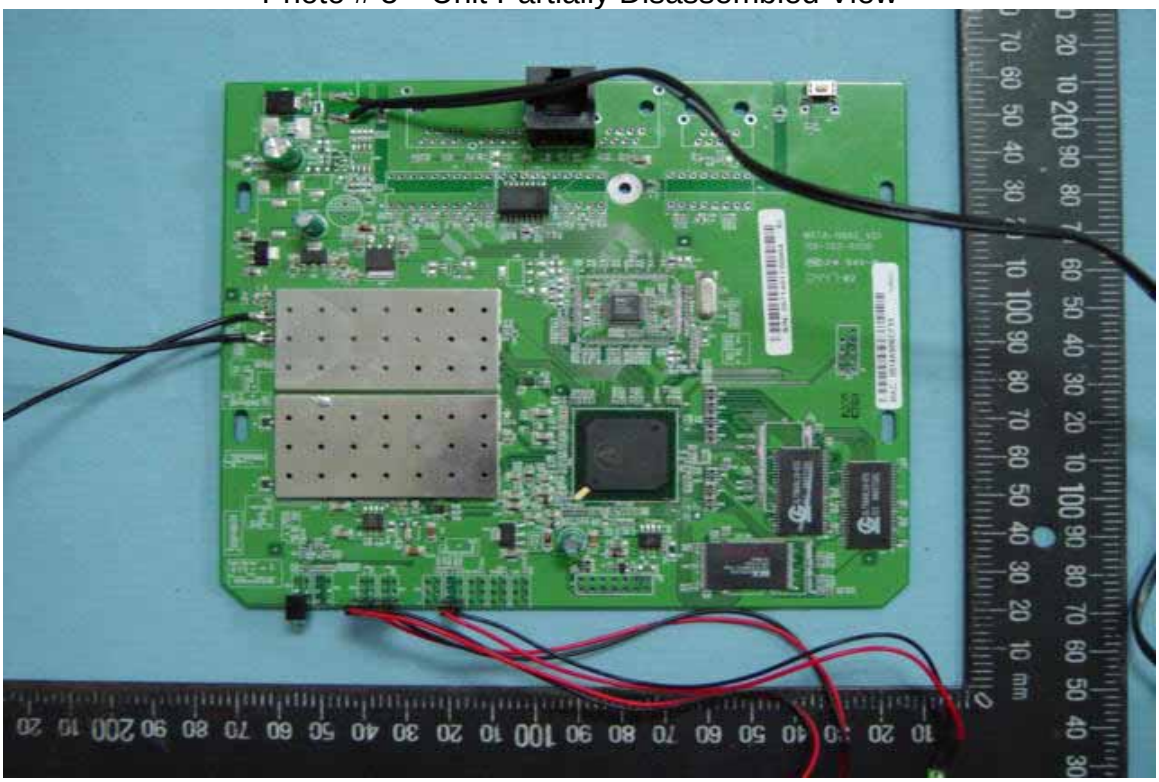


Photo # 6 Unit Partially Disassembled View

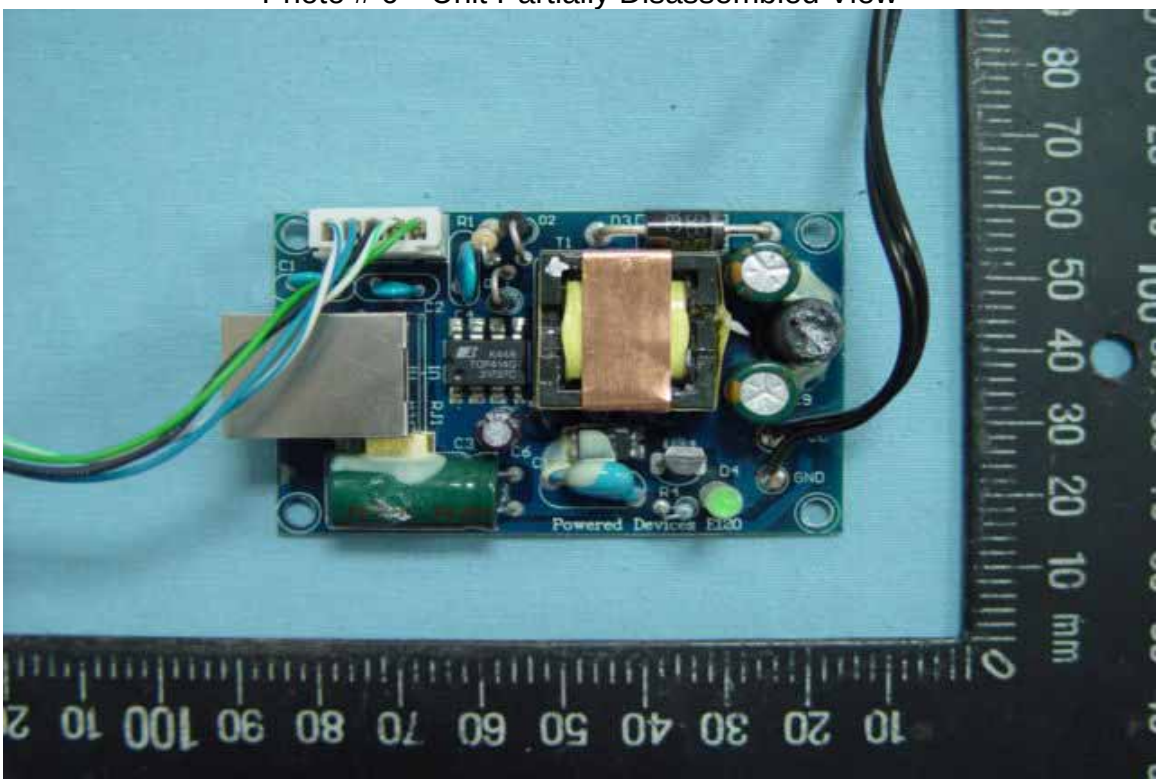
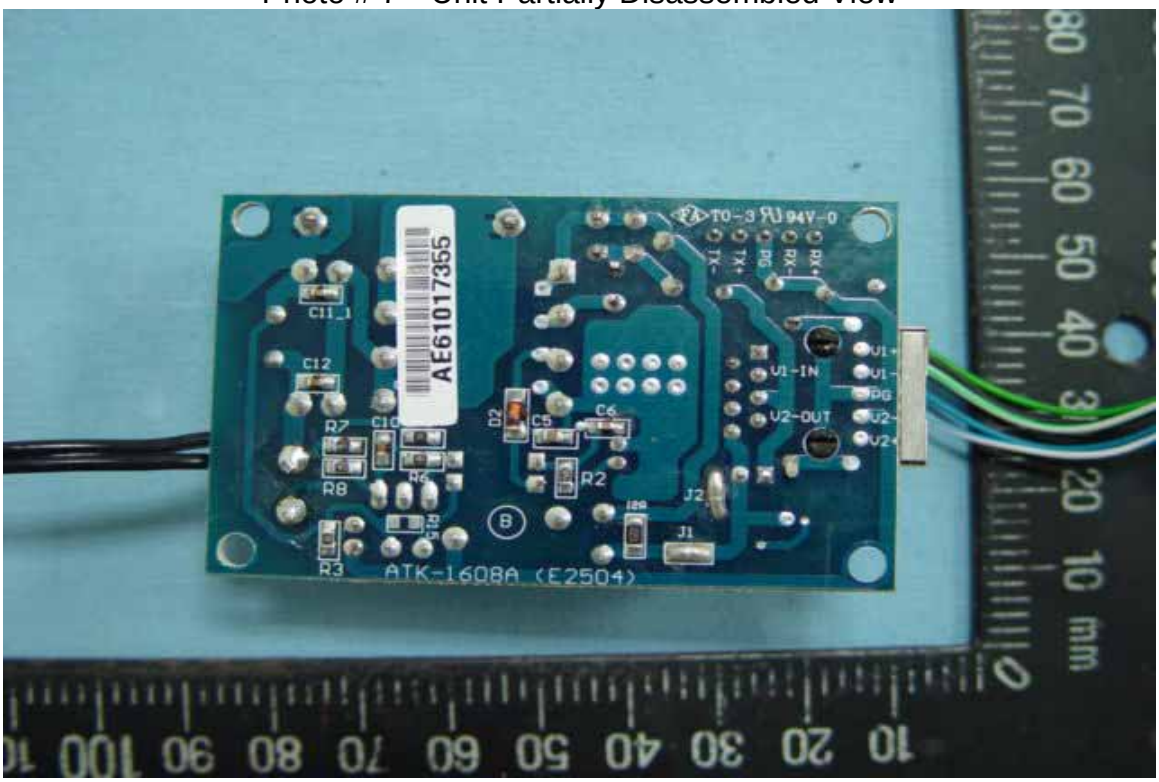


Photo # 7 Unit Partially Disassembled View



Attachment - B.

Product ID Label

Attachment - C.

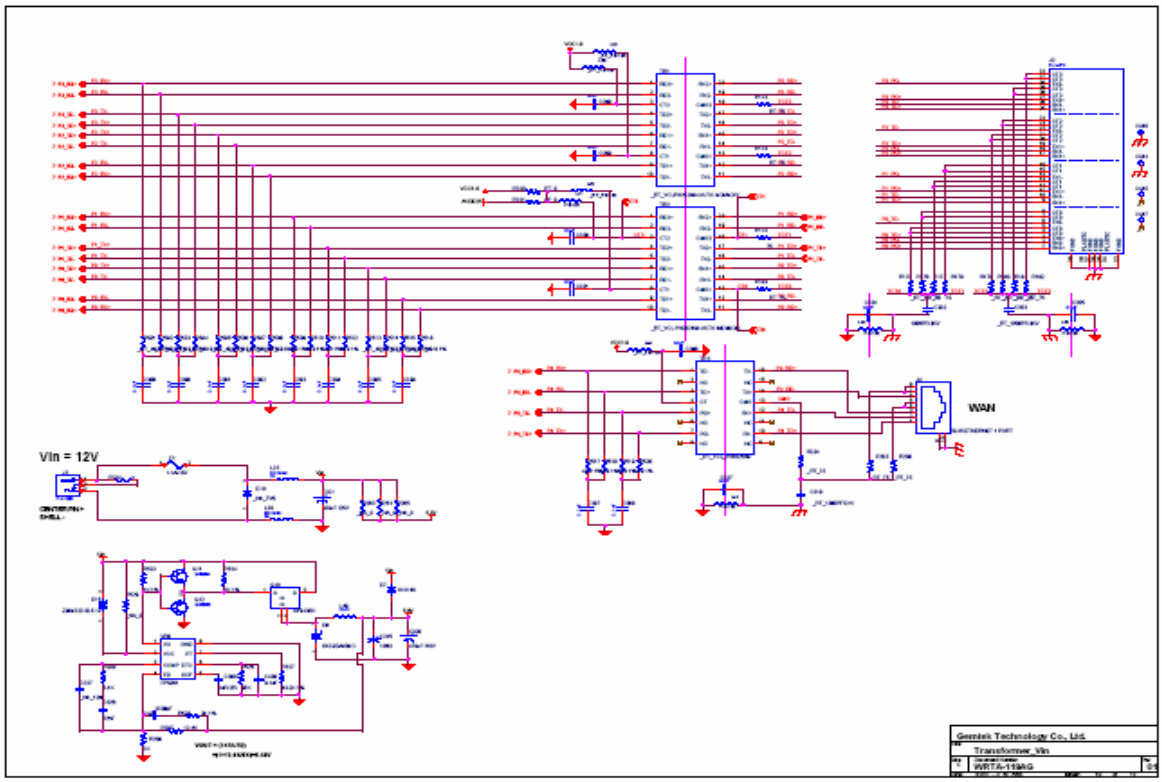
Measuring Instrument List

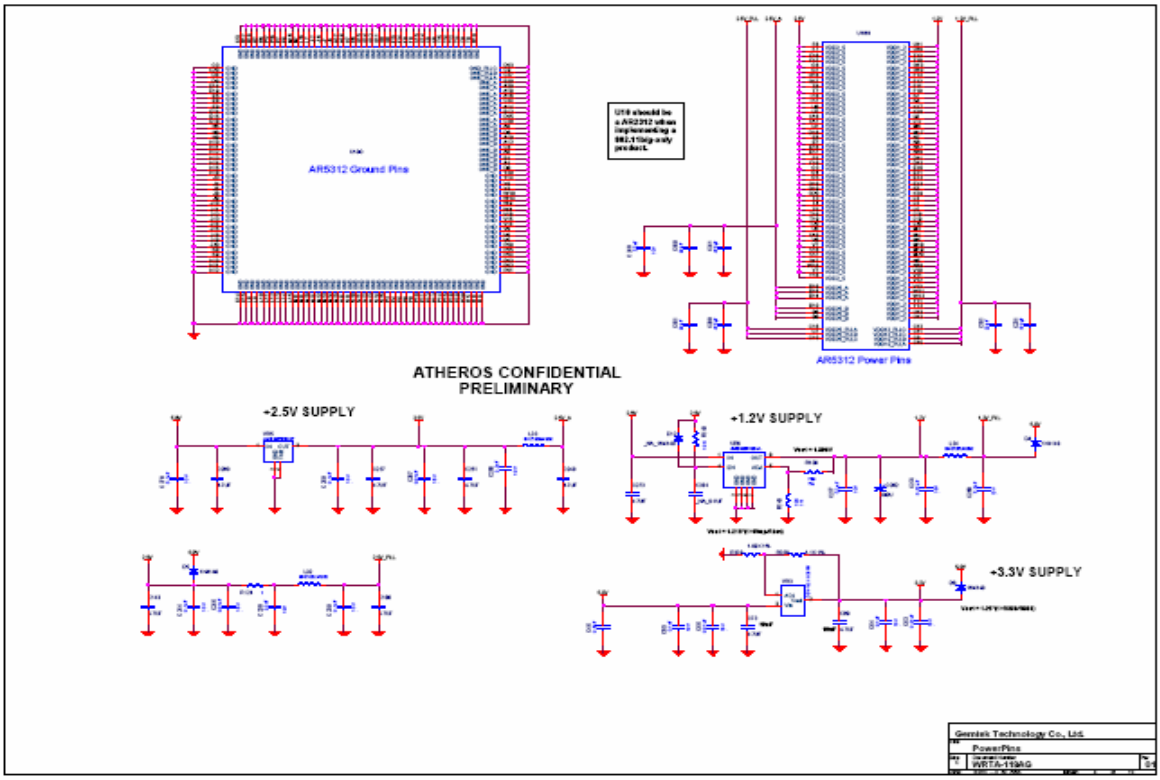
ID NO	Instrument Type	Manufacture	Model Series No.	Scope	Calibration Date	Due Date
CR05	Hybrid Recorder	YOKOGAWA	DR130-02-24-1D 27D839890	-200~400℃ 20 Chance	12.Jan.2005	11.Jan.2006
FC02	AC Source	EXTECH	6210 1150381	1KV	11.Apr.2005	10.Apr.2006
VM01	Multi-Meter	BRYMEN	BM817 044470022	DC / AC 10Hz~125KHz/10 A	10.Jan.2005	09.Jan.2006
MF01	Push Pull Gauge	ALGOL	NK-300 39403	0~30Kg	23.Mar.2005	22.Mar.2006

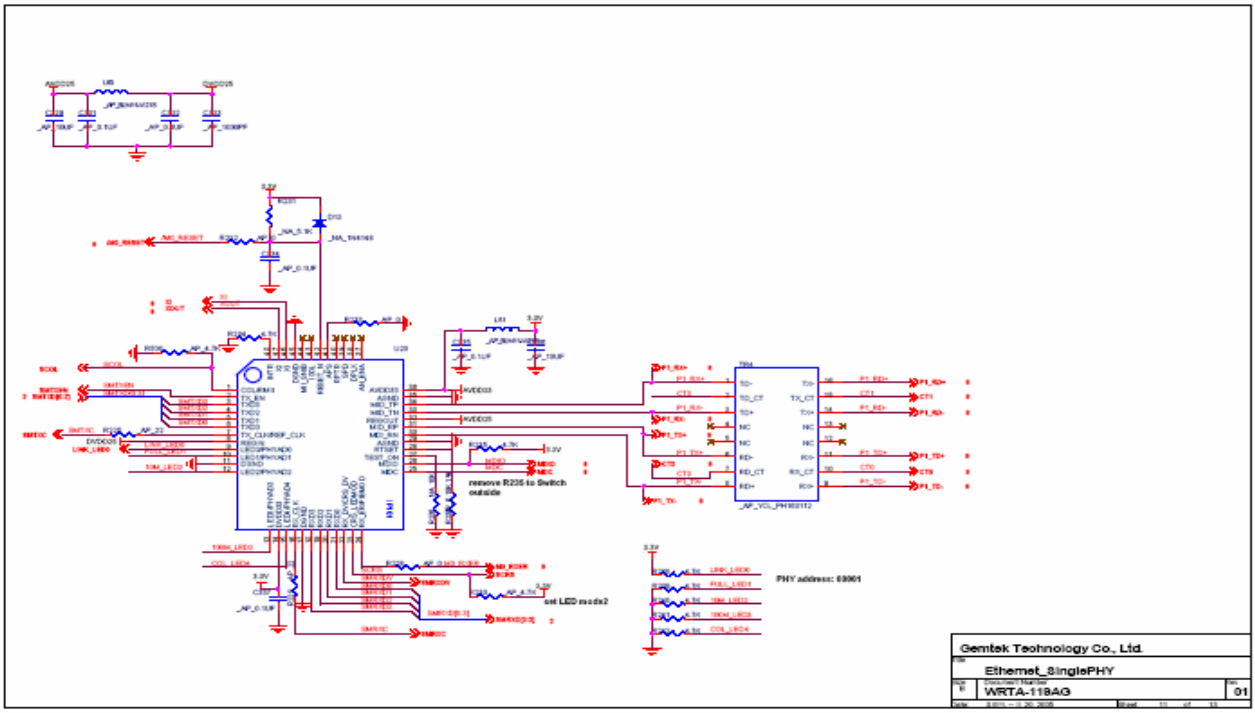
Attachment - D

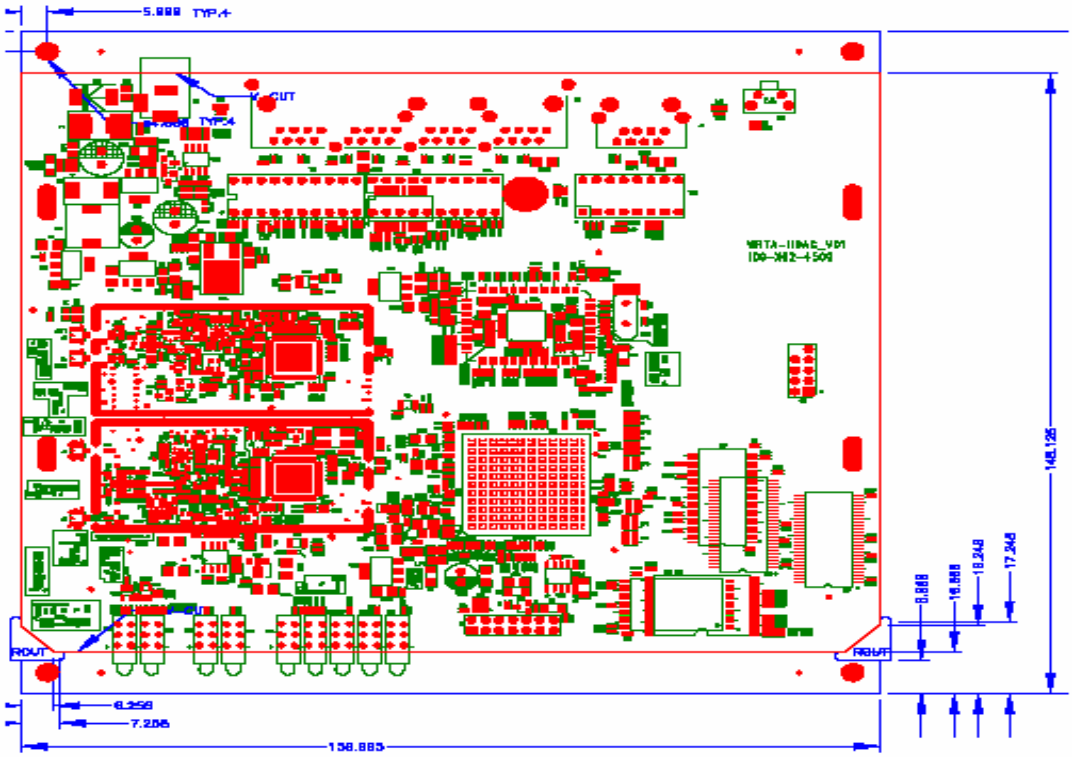
Schematics and Layout

This Appendix-D. attached with total 2 pages


Vin = 12V
WAN
Gemtek Technology Co., Ltd.
Transformer_Vin
WRTA-119AG


AR5312 Ground Pins
AR5312 Power Pins
ATHEROS CONFIDENTIAL
PRELIMINARY
+2.5V SUPPLY
+1.2V SUPPLY
+3.3V SUPPLY
Gemtek Technology Co., Ltd.
PowerPins
WRTA-119AG


Gemtek Technology Co., Ltd.
Ethernet_SinglePHY
WRTA-118AG
01
remove R235 to Switch outside
set LED mode2
PHY address: 00001


5.000 TYP.4
V-CUT
TYP.4
WRTA-118AG_V01
ROUT
ROUT
6.250
7.250
138.885
148.125
8.888
16.888
18.248
17.248

Attachment - E.

User manual

(see attachment software copy)

Attachment –F.

Sample of CE Declaration

Company Letter Head

CE Declaration of Conformity

*For the following equipment **:***

Product Name _____ *(Enter Your Product Name)*

Model Designation _____ *(Enter Your Model No.)*

Manufacturer _____ *(Enter Mfr's Name)*

_____ *(Enter Mfr's Address.)*

*Is herewith confirmed to comply with the requirements set put in the Council Directive on the Approximation of the Lows of the Member States relating to **Low-Voltage Directive(73/23/EEC).** and **Amendment Directive(93/68/EEC)**. For the evaluation to compliance with the Directives, the following standards were applied:*

EN 60950-1:2001

The following importer/manufacturer are responsible for this declaration:

(Company Name , Importer)	*(Company Name , Manufacturer)*
(Person Responsible , Importer)	*(Person Responsible , Manufacturer)*
(Position/Title , Importer)	*(Position/Title , Manufacturer)*
(Legal Signature , Importer)	*(Legal Signature , Manufacturer)*
(Place , Importer)	*(Place , Manufacturer)*
(Date)	*(Date)*