CENTRE OF TESTING SERVICE INTERNATIONAL

OPERATE ACCORDING TO ISO/IEC 17025

LVD TEST REPORT

TEST REPORT NUMBER : CGZ3141231-04410-L

CTS (Ningbo) Testing Service Technology Co., Ltd.
Fl.2 South Huoju Building, No.181 Canghai Rd., Jiangdong High-tech Park,
Ningbo, China

SOLO MANUFACTURED BY TEKNOLINE

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CTS (Ningbo) Testing Service Technology Co., Ltd.
Fl.2 south Huoju Building, No.181 Canghai Rd., Jiangdong High-tech Park, Ningbo, China
Tel：+86-574-87912121 (16 lines) Fax：+86-574-87907993
Complaint line：+86-574-87908003 E-mail：cts@cts-lab.com

1.3 Testing laboratory

1.3.1 Location

CTS (Ningbo) Testing Service Technology Co., Ltd.
Fl. 2 South Huoju Building, No. 181. Canghai Rd., Jiangdong High-tech Park, Ningbo, China
Telephone: + 86-574-87912121
Telefax : + 86-574-87907993

1.3.2 Test location, where different from CTS:

Name: ./.
Street: ./.
Town: ./.
Country: ./.
Telephone: ./.
Fax: ./.
Teletex: ./.

1.4 Client details

1.4.1 Details of applicant

Name : SOLO manufactured by : TEKNOLINE & TELEtek
Street : ORNEK MAH.1538 SOK.NO.32 ESENYURT
Town : ISTANBUL
Country : TURKEY
Telephone : +90212 6204111
Fax : +90212 6204333
Teletex : ./.

Contact : ./.
Telephone : ./.

1.5.2 Test item particulars

Test item .....:	MULTISWITCH
Trade Mark .....:	SOlO
Appliance Mobility .....:	☒ PORTABLE APPARATUS; ☐ TRANSPORTABLE APPARATUS; ☐ Others: N/A
Protection Class.....:	☐ Class I; ☐ Class II; ☒ Others: Class III
RATED SUPPLY VOLTAGE (Range).....:	Input: 18 V dc
Rated MAINS Frequency.....:	☐ 50Hz; ☐ 60Hz; ☐ 50/60Hz; ☒ DC; ☐ Other: N/A
Rated Power(Current) CONSUMPTION.....:	Max. 2000 mA
Degree of Protection.....:	☒ IP20; ☐ IP24; ☐ Other:
Fed from .....:	☐ MAINS; ☐ SUPPLY APPARATUS FOR GENERAL USE; ☐ SPECIAL SUPPLY APPARATUS; ☐ Batteries; ☐ REMOTE POWER FEEDING; ☒ Other: not conductively connected to the mains
Mass of Equipment.....:	0,85 Kg
Dimension of Equipment……:	---
Instructions language.....:	☒ English; ☐ French; ☐ Other:

(all informations was provided by the applicant or detected at the sample)
Please see also attachment

1.6 Test standards

EN 60728-11: 2010
Cable networks for television signals, sound signals and interactive services
-- Part 11: Safety
(IEC 60728-11: 2010)

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

2.2 Test environment

Temperature:	15 ... 35 °C
Relative humidity content:	20 ... 75 %
Air pressure:	86 ... 103 kPa
Details of power supply:	100-300V, AC / 0-60V, DC
Other parameters:	---

2.3 Conformity verification - Summary of inspection

Clause	Summary of inspection	Test result		
		N.A.	Pass	Fail
4	General requirements	☐	☒	☐
5	Protection against environmental influences	☐	☒	☐
6	Equipotential bonding and earthing	☐	☒	☐
7	Mains-supplied equipment	☐	☒	☐
8	Remote power feeding in cable networks	☒	☐	☐
9	Protection against contact and proximity to electric power distribution systems	☒	☐	☐
10	System outlets and transfer points	☐	☒	☐
11	Protection against atmospheric over-voltages and elimination of potential differences	☒	☐	☐
12	Mechanical stability	☒	☐	☐
Annexes		☒	☐	☐

Test case verdicts
N.A.: Test case does not apply to the test object
Pass: Test item does meet the requirement
Fail: Test item does not meet the requirement

3 Test results basic standard(s)

3.1 Particulars: test item vs. Test requirements

IEC 60728-11 and/or EN 60728-11 Cable networks for television signals, sound signals and interactive services -- Part 11: Safety	
Possible test case verdicts:	
- test case does not apply to the test object.....	: N(N.A.)
- test object does meet the requirement.....	: P(Pass)
- test object does not meet the requirement.....	: F(Fail)
Test specification:	
Standard	: ☐ IEC 60728-11: 2010 ☒ EN 60728-11: 2010
Test procedure	: LVD DOC approval.
Non-standard test method.....	: N/A
Test Report Form No.....	: IEC 60728-11_A
Test Report Form(s) Originator	: Centre of Testing Service
Master TRF.....	: Dated Jan 2014
Copyright blank test report	Centre of Testing Service

3.2 General requirements and results

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
4	General requirements		——
4.1	General		P
	Designed, constructed and installed as to present no danger, either under normal condition or abnormal (any single fault) condition, to subscribers, personnel working on, or externally inspecting, the system, or to any other person, providing particularly		P
4.2	Mechanical requirements		P
	All parts no danger of physical injury from contact with sharp edges or corners.		P
4.3	Accessible parts		P
	Access to hazardous parts shall not be possible to the general public without first removing a protective cover by use of a tool.		P
	IEC 60065 defines accessible parts and test procedures.		P
4.4	Laser radiation		N
	Laser products shall be paid to radiation safety. Refer to IEC 60825-1 and IEC 60825-2 for requirements and recommendations.		N

5	Protection against environmental influences		——
	All system parts, taking into account external influences to which they might be exposed, have to be selected and set up in such a way that, when used properly, the effectiveness of the required protective measures is ensured.		P

6	Equipotential bonding and earthing		——
6.1	General requirements		P
	The cable network shall be designed and constructed in accordance with the requirements of the IEC 60364 series so that no hazardous voltages can be present on the outer conductors of any cable or accessible metalwork of any equipment, including passive items.		P

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
	The requirements for the system outlet are specified in Clause 10;		P
	The requirements for bonding and lightning protection of antenna systems are given in Clause 11.		N
	Earthing arrangements and protective conductors shall be designed and constructed in accordance with the requirements of IEC 60364-5-54.		P
6.2	Equipotential bonding mechanisms	See marking plate.	P
	a) In order to prevent potential differences between a cable network and other extraneous conductive parts, the cable network shall be included in the equipotential bonding system of the building.		P
	b) Equipotential bonding can be achieved by means of equipotential bonding conductors, cable shielding or conductive housings or system parts.	Equipotential terminal	P
	c) The equipotential bonding conductors connected to earthing terminals shall be mechanically stable and shall have a minimum cross-sectional area of 4 mm^2 Cu.	For instruction manual	P
	d) Metallic enclosures for mains-supplied equipment shall be bonded if they are located outside buildings.		N
	e) direct connection to an earthing system is not suitable, this protection can be achieved by		N
	– mounting the equipment within a non-metallic enclosure; or		N
	– connecting an over-voltage protective element between the metallic enclosure and the earthing connection that hazardous voltages shall be removed from the outer conductor and accessible metal parts of the system.		N
	f) galvanic isolation is provided between sections of the network, to eliminate balancing currents due to local potential differences, the outer conductors of each isolated section shall be connected to an earthing system.		N
	g) The outer conductors of coaxial cables entering or leaving a building shall be included in the equipotential bonding system of the building		N

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
	h) equipotential bonding is not possible and to avoid balancing currents between the cable network and the building installation, a galvanic isolator shall be used.		N
	i) changing or removing equipment or coaxial cable, care shall be taken to avoid hazardous voltages between the interrupted parts		P
	j) Every connection of an equipotential bonding conductor or an earthing conductor to an earthing terminal shall be readily accessible and soundly made by the use of crimps, clamps, weld or hard-soldered joints.		P
	k) All metallic enclosures, housings, mounting bays, racks and mains-supplied equipment, shall be provided with an external earthing terminal complying with IEC 60065 or IEC 60950-1.		P
	l) For antennas, do not have to be grounded, at least the outer conductor of the coaxial cable connected to the antenna should be included in the equipotential bonding.		P
	All interconnected, conductive, accessible parts of the installation should be included in the equipotential bonding. For these connections, either of the following solutions is permitted.		P
	– Connection to an equipotential bonding terminal by means of a bonding conductor (cross-section $\geqslant$ 4 mm^2 Cu).		P
	– Connection by means of the shielding of the coaxial cable. The d.c. resistance to the nearest point of equipotential bonding (or PE) shall be lower than 5 Ω. The connection of the shield of the coaxial cable to the protective conductor shall only be disconnected by means of a tool.		N
6.3	Equipotential bonding in meshed systems		N
6.3.1	References to other standards		N
	Equipotential bonding shall comply with IEC 60364-5-54, EN 50174-2, EN 50310 and CENELEC R 064-004.		N
6.3.2	General on a.c. mains		N
	Due to the varying load of the individual phases of the a.c. mains supply in a building, high balancing currents can occur in the neutral conductors.		N

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
6.3.3	AC power distribution and connection of the protective conductor		N
	In low-voltage installations, different systems are distinguished by the type of earthing connection on the one hand and by the exposed conductive part otherwise (IEC 60364-1 or EN 50310).		N
6.3.4	Dangers and malfunction		N
6.3.4.1	Within buildings		N
	Due to the connecting of the PEN conductor in TN-C and TN-C-S systems to earthed shielding of the cable network, currents can be carried off from the PEN conductor to the cable network and leak away via the cable shielding.		N
6.3.4.2	Between buildings		N
	Due to different currents in N or PEN conductors, the equipotential bonding bars in the individual buildings can carry different potentials which can cause critically high balancing currents to flow through the shielding of the coaxial cables or the shielding of data cables between the buildings.		N
6.3.5	Measures		N
	a) Equipment of telecommunications and information technology should be connected to a TN-S system.		N
	b) If possible, use equipment of protection class II.		N
	c) When using equipment of protection class I, galvanic isolators should be used in the coaxial connector to avoid PEN conductor currents being carried over.		N
	d) To avoid interference according to 6.3.4.2:		N
	– use relieving equipotential bonding (see IEC 60364-5-54);		N
	– galvanic isolation at NIU.		N

7	Mains-supplied equipment		——
	The equipment used in a cable network shall meet the requirements of IEC 60065 or IEC 60950-1. Preferably, equipment of protection class II should be used.		P

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
	Devices installed outdoors and operated from the mains supply shall be so constructed that the harmful effects of moisture, water, dust, etc. are prevented.	Indoor use only	N
	Alternatively, they shall be installed in an appropriate drip-proof, splash-proof or watertight enclosure so as to provide the appropriate degree of protection (see IEC 60529).		N

8	Remote power feeding in cable networks		——
8.1	Remote power feeding		N
8.1.1	Maximum allowed voltages		N
	The rated value of the remote powering voltage shall not exceed 65 V a.c. or 120 V d.c.		N
	The following conditions must be complied with:		N
	– remote powering shall not extend to the subscriber feeder (for an exception, see 8.2); the necessary isolation shall be provided by equipment according to 8.1.2;		N
	– the remote powering voltage shall only be accessible to skilled persons after removal of equipment covers by means of a tool.		N
8.1.2	General provisions for equipment		N
	The equipment used in a cable network shall meet the requirements of IEC 60065 or IEC 60950-1.		N
	For protection against over-voltages in cable networks, see 10.1.		N
	The occurrence of hazardous currents shall be prevented by a suitable selection of fuses or by the power supply (for example, power-supply unit with integrated current limitation).		N
8.1.3	Current-carrying capacity and dielectric strength of the components		N
	With respect to the current-carrying capacity and dielectric strength, only components specified for the maximum current and maximum operating voltage according to Table 1 shall be used, if not specified otherwise by the manufacturer.		N
8.2	Remote powering from subscriber premises		N

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
	the system shall comply with the following requirements.		N
	– The maximum voltage applied between the inner and outer conductors of the subscriber feeder shall not exceed 24 V a.c., r.m.s or 34 V d.c.		N
	– no dangerous currents can flow under normal operating or single-fault conditions.		N
	– The equipment providing the power shall, if that power is derived from a mains supply, comply with all the relevant clauses of IEC 60065 or IEC 60950-1 as specified in Clause 7.		N
	– Repointing motors and de-icing devices are normally separately fed. Specific requirements and recommendations are not specified here. Refer to IEC 60065 or IEC 60950-1.		N

9	Protection against contact and proximity to electric power distribution systems		——
9.1	General		N
	The risk of hazardous voltages in cable networks due to an accidental contact to electric power lines shall be minimized. These protection requirements are intended, where no local regulations exist, to protect cable networks against potentially hazardous voltages.		N
9.2	Overhead lines		N
9.2.1	Overhead lines up to 1 000 V		N
	The distance between any part of the antenna and the antenna support structure and electric power distribution systems shall be not less than 1 m or according to national regulations, if more stringent		N
9.2.2	Overhead lines above 1 000 V		N
	For phase conductors carrying voltages of more than 1 kV, the distance to any part of an antenna structure shall be at least 3 m or according to national regulations, if more stringent.		N
	The cable network shall not cross over in open air any open power-distribution system carrying voltages of more than 1 kV.		N

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
9.3	House installations up to 1 000 V The distance between conductive parts of a cable network and conductive parts, including all support structures, of an electric power-distribution system carrying voltages between 50 V and 1 000 V shall be at least 10 mm when installed inside and 20 mm when installed outside.		N
	These distances may be less only if there is sufficient insulating material		N
	For isolation requirements of coaxial cables, see the EN 50117 series.		N
	With respect to common line routing for cable networks and electrical building installations, IEC 60364-5-52 shall be taken into account.		N

10	System outlets and transfer points		——
10.1	General		P
	The subscriber equipment can be connected to the cable network directly or by means of system outlets and/or transfer points which provide the necessary over-voltage protection.		P
	over-voltage protection is provided by means of isolating capacitors or transformers, the isolated conductors		N
	The manufacturer shall design the isolating means in such a way that, under fault conditions of equipment connected to the outlet or transfer point, the a.c. leakage current (50 Hz or 60 Hz) does not exceed 8 mA r.m.s with an applied voltage of 230 V r.m.s.		N
10.2	System outlet		P
	There are four types of system outlets in common use providing varying degrees of protection against electric shock (shock currents), but also more or less liable to radiate or pick up highfrequency energy.		P
10.2.1	Fully isolated system outlet		N
	This type of outlet incorporates isolating components in series with both the inner and the outer conductors of the coaxial connections. The isolating components may be either highvoltage capacitors or double-wound transformers.		N

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
10.2.2	Semi-isolated system outlet		N
	This type of outlet incorporates an isolating component in series with the inner conductors only of the coaxial connections.		N
	If this outlet is used, the protection shall be provided by equipotential bonding of the outer conductor of the subscriber feeder.		N
	In this case, the d.c. resistance between the outer conductor of the connection and the nearest network equipotential bonding point shall be less than 5 Ω.		N
	The isolating component may be either a high-voltage capacitor or a double-wound transformer.		N
10.2.3	Non-isolated system outlet with protective element		N
	This type of outlet does not incorporate any series isolation. Protection shall be provided by equipotential bondings as in 10.2.2.		N
	The d.c. resistance of this protective element shall be less than 1 Ω.		N
	The d.c. resistance between the outer conductor of the coaxial connections and the nearest network equipotential point shall be less than 5 Ω.		N
10.2.4	Non-isolated system outlet without protective element		P
	This type of outlet incorporates coaxial connector(s) only and does not contain any isolation component or protective element.		P
10.3	Transfer point		N
	This device can also provide varying degrees of protection against electric shock (shock currents), depending on the elements incorporated. The same requirements as for the system outlet are applicable.		N

11	Protection against atmospheric over-voltages and elimination of potential differences		——
11.1	General		N

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
	All parts of the outer antenna system shall be so designed that they will withstand a lightning discharge without danger of fire or separation of the outer antenna system or parts thereof from the supporting structure.	Indoor multiswitch system	N
	These protection requirements shall not be considered as providing protection for buildings or any other structures.		N
	The following cases are excluded:		N
	– antenna systems on buildings which are located at a minimum distance of 2 m below the roof covering or the eaves and less than 1,5 m from the building (see Figure 9);		N
	– antenna systems enclosed within the building structure.		N
	Antennas shall not be installed on buildings having roofs covered with highly flammable materials		N
	Antennas shall not be installed on buildings having roofs covered with highly flammable materials.		N
	Antenna cables and earthing conductors shall not be laid in areas used for the storage of easily ignitable materials,		N
	or in areas in which explosive gases can develop or collect.		N
	AM sound-broadcasting receiving antennas shall incorporate a protective device connected to a bonding conductor.		N
11.2	Protection of the antenna system		N
11.2.1	Building equipped with a lightning protection system (LPS)		N
	If the building is equipped with an LPS conforming to IEC 61024-1, the antenna mast, being a metal installation, shall be connected to the building's LPS via the shortest possible path and using an earthing conductor as specified in 11.3.		N
	The outer conductors of all coaxial cables coming from the antennas shall be connected to the mast via an equipotential bonding conductor having a minimum cross-sectional area of 4 mm2 Cu (see Figure 8).		N
11.2.2	Building not equipped with an LPS		N

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
	If the building is not equipped with an LPS conforming to IEC 61024-1, the mast and outer conductors of the coaxial cables shall be earthed as specified in 11.3.		N
	For individual receiving systems or MATV systems confined to one building, where, due to low lightning probability, local regulations allow it, protection against lightning is not necessary but only recommended.		N
11.3	Earthing and bonding of the antenna system		N
11.3.1	Earthing and bonding mechanisms		N
	The antenna mast shall be connected to earth via an earthing conductor.		N
	The earthing conductor shall be installed straight and vertical such that it can provide the shortest, most direct path to the earthing system.		N
	The outer conductors of all coaxial cables coming from the antenna shall be connected to the antenna mast or to the earthing conductor via an equipotential bonding conductor having a minimum cross-section of 4 mm^2 Cu (see Figure 8).		N
	The formation of loops shall be avoided.		N
11.3.2	Earth termination system		N
	The earth termination system shall be provided by one of the following methods as shown in Figure 10:		N
	• connection to the building's lightning protection system;		N
	• connection to the building's earthing system;		N
	• connection to		N
	– a minimum of two horizontal earth electrodes of at least 2,5 m length buried in an angle larger than 60°, at least 0,5 m deep and not closer than 1 m to the foundation; or		N
	– a vertical or inclined earth electrode of at least 2,5 m length or two vertical earth electrodes of at least 1,5 m length with a spacing of 3 m and not closer than 1 m to the foundation.		N
	The minimum cross-sectional area of each earth electrode is 50 mm^2 Cu or 80 mm^2 Fe.		N

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
	"Natural" components such as interconnected concrete reinforcing steel or other suitable underground metal structures, incorporated in the building's foundation and whose dimensions comply with the above-mentioned limits, can also be employed.		N
	Other earth termination systems according to IEC 61024-1 are also allowed.		N
11.3.3	Earthing conductors		N
	A suitable earthing conductor is a single solid wire having a minimum cross-sectional area of not less than 16 mm^2 Cu insulated or bare, or 25 mm^2 insulated Al or 50 mm^2 Fe.		N
	Only materials, which do not show corrosive behaviour towards each other, shall be used.		N
	"Natural" components can be employed, for example (see Figure 10):		N
	• metallic installations provided that		N
	– local regulations allow it;		N
	– the electrical continuity between the various parts is made durable;		N
	– their dimensions are at least equal to those specified for standard earthing conductors;		N
	• the metal framework of the structure;		N
	• the interconnected steel of the structure;		N
	• facade elements, profiled rails and sub-constructions of metal facades, provided that		N
	– their dimensions comply with the requirements for down conductors and their thickness is not less than 0,5 mm;		N
	– their electrical continuity in a vertical direction is assured (joints shall be made secure by such means as brazing, welding, crimping, screwing, or bolting) or the distance between the metal parts does not exceed 1 mm and the overlap between two elements is at least 100 cm^2.		N
	The following are specifically excluded:		N
	• protective earth and/or neutral conductors of the electricity supply;		N
	• the outer conductor of any coaxial cable.		N

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
11.4	Over-voltage protection		N
	Induction can introduce high voltages at transfer points, system outlets, at the head end of the cable network or at the input of subscriber equipment. Protection can be achieved, for example, by equipotential bonding via surge suppressors. Examples are shown in Figures 11 and 12.		N

12	Mechanical stability		——
12.1	General requirements		N
	This standard deals only with the mechanical stability of outdoor antenna systems, including satellite antennas.	Indoor multiswitch system	N
	All parts of the antenna system shall be so designed that they will withstand the maximum wind forces defined below, without breakage and without any of the components being torn away.		N
12.2	Bending moment		N
	For antenna systems with masts up to a maximum free length of 6 m, as shown in Figure 13, the bending moment at the fixing point shall not exceed 1 650 Nm. The wind load of the mast shall be included. The fixed part of the mast shall be at least one-sixth of the full length.		N
12.3	Wind-pressure values		N
	For the purpose of establishing mast loadings, the following values can be used in the absence of specific local regulations.		N
	– If antenna systems are established within 20 m of ground level, the value of p (wind pressure) shall be assumed to be 800 N/m^2 (wind speed 36 m/s or approximately 130 km/h)		N
	– If antenna systems are established higher than 20 m above ground level, the value of p (wind pressure) shall be assumed to be 1 100 N/m^2 (wind speed 42 m/s or approximately 150 km/h).		N
	Loading due to snow and ice is not considered.		N
12.4	Mast construction		N

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
	Where the mast is constructed from steel, the steel shall have a guaranteed extension limit and the maximum loading shall not exceed 90 % of the extension limit (0,9 $B_{0,2}$) so that the mast on being overloaded does not break but only buckles.		N
	The minimum wall thickness of the mast in the fastening area shall be 2 mm.		N
12.5	Data to be published		N
	The antenna manufacturer shall publish the following data for a wind pressure of p =800 N/m^2:		N
	a) the wind load of the antennas;		N
	b) the maximum bending moment of the masts at the fixing point.		N

3.3 Annex as stated in the standards

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
A	Annex A (informative) Use of shield wires to protect installations with coaxial cables		——
A. 1	Introduction	No such parts	N
	Cabinets containing amplifiers and/or other coaxial equipment are often widely spread in the terrain. In areas with high earth resistance between such installations, special protecting measures must be taken due to the possibility of exposure to lightning. Shield wires, steel tubes etc. must be considered for the protection of coaxial cables.		N
A.2	Soil quality determines shield-wiring necessity		N
	Shield wires should be used when the electrical resistance (ρ) of the soil in which the cables are buried in is as specified (See also Table A.1)		N
A.3	A.3 Protective measures against direct lightning strikes on under ground cables		N
	Shield wires generally consist of galvanised steel wire with a diameter of 8 mm.		N
	Lightning protected cable is generally a telecom cable with a semi-conductive plastic sheath in combination with a metal screen.		N
	Steel tubes generally consist of galvanised steel.		N
	Lightning protection cable ducts are generally armoured concrete ducts, or electric conductive metallic ducts.		N
B	Annex B (informative) Special conditions using IT power line networks		——
B.1	Introduction		N
	A.C. power distribution systems using IT-network technology are equipped with a line-to-line voltage of 230 V (see Figure B.1).		N
B.2	Equipotential bonding mechanism for cable networks		N
B.2.1	Installations in the vicinity of transformer stations		N

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
	Any earth electrode in a cable network should preferably be located at a minimum distance of 20 m from the nearest earth electrode in a high-power transformer station (high to mains voltage) (see Figure B.2 (ref. ITU-T K8 or EN 50174-3)).		N
B.2.2	Cabinets for cable networks located near cabinets/installations for mains		N
	Cabinets for cable network placed together with cabinets for mains power distributions must:		N
	• use common earth electrode; and		N
	• all parts of the cable network should be isolated from local earth; or		N
	• be placed at a minimum of 2 m apart.		N
B.3	Equipotential bonding mechanism within a building		N
	All equipment in a cable network which is installed inside a building, should be		N
	• connected to the building's local earth electrode; and		N
	• the signal feed cable should be isolated from the building's local earth electrode.		N
	This type of equipotential bonding mechanism is shown in Figure B.4.		N
B.4	Equipotential bonding mechanism between buildings		N
	If there a permanent equipotential bonding is established between two or more buildings, the cable network can be installed between the two buildings without the use of a galvanic isolator, as shown in Figure B.5.		N

ZA	Annex ZA (normative) Special national conditions		——
6	Norway, In most parts of Norway the AC power distribution systems are built as IT networks with a line-to-line voltage of 230 V. In these cases the equipotential bonding within a cable network has to be performed according to Annex B of this standard.		N

IEC 60728-11 and/or EN 60728-11			
Clause	Requirement – Test	Result - Remark	Verdict
	In parts of Norway where the power distribution systems are built as TN-networks, these special national conditions can be disregarded and the equipotential bonding shall be performed according to Clause 6 of this standard.		N
11.2.2	Finland, As the conductivity of earth in Finland is lower than what is normal in many other countries, the earthing electrodes in 11.2.2 should be as shown in Figures 16 a), 16 b) or 16 c).		N
12.3	Finland, The required wind pressure value is 700 N/m^2 for buildings up to 30 m.		N

Type Designation: **MULTISWITCH, TMS9/24 S**
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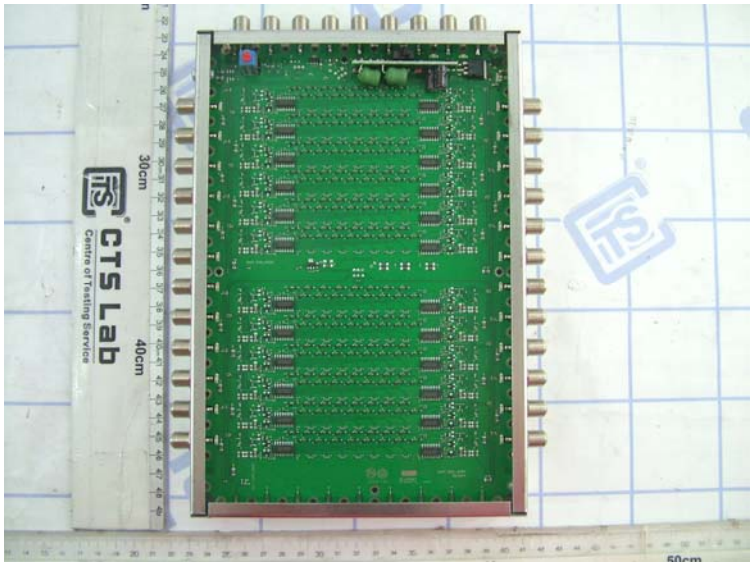

Figure 7 （Internal view -2）

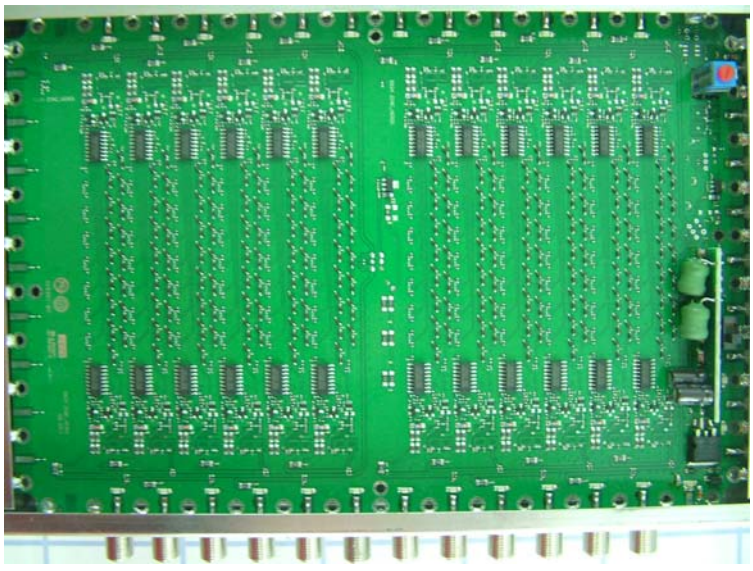

Figure 8 （PCB –side 1）

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Type Designation: **MULTISWITCH, TMS9/24 S**
Report Number: **CGZ3141231-04410-L**

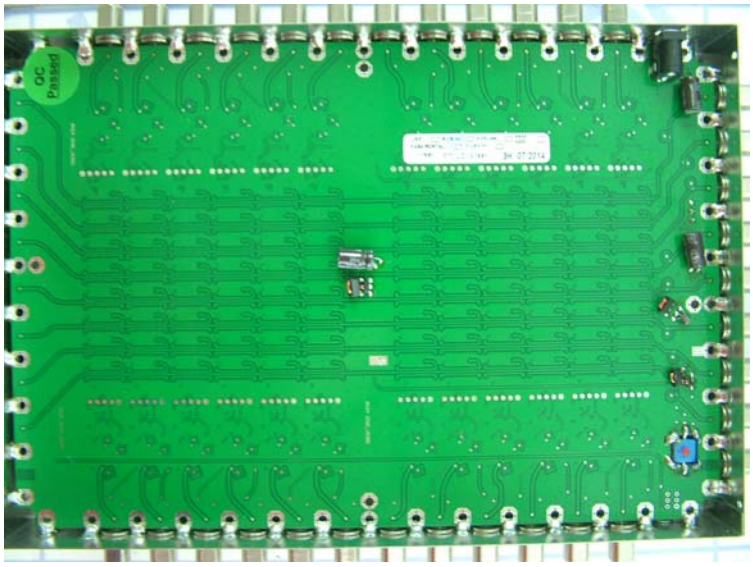

Figure 9 （PCB –side 2）