Test Report issued under the responsibility of:

TEST REPORT
IEC 60950-22
Information technology equipment – Safety –
Part 22: Equipment to be installed outdoors

Report Number. .....:	E484144-A4-IT-1
Date of issue .....:	2017-11-27
Total number of pages.....	22
Name of Testing Laboratory preparing the Report.....:	UL Fremont 47173 Benicia Street, Fremont, CA, 94538, USA
Applicant's name.....:	TIP.
Address .....:	N/A
Test specification:	
Standard .....:	IEC 60950-22(ed.2)
Test procedure .....:	Informative
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC60950_22B
Test Report Form(s) Originator.....:	The Standards Institution of Israel
Master TRF .....:	Dated 2016-04

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

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description .....:	Base transceiver station
Trade Mark .....:	N/A
Manufacturer.....:	TIP Address: N/A OPEN CELLULAR-CONNECT-1
Model/Type reference .....:	16-24 Vdc, 3A
Ratings .....:	48 Vdc PoE, 1.5A (provided from external power source)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	UL Fremont	UL Fremont	
Testing location/ address..... :		47173 Benicia Street, Fremont, CA, 94538, USA	
☐	**Associated CB Testing Laboratory:**		
Testing location/ address..... :			
Tested by (name, function, signature) ..... :		Paul Pham/ Handler	
Approved by (name, function, signature).. :		Anh Nguyen/ Reviewer	
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address..... :			
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature).. :			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address..... :			
Tested by (name + signature) ..... :			
Witnessed by (name, function, signature). :			
Approved by (name, function, signature).. :			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address..... :			
Tested by (name, function, signature) ..... :			
Witnessed by (name, function, signature). :			
Approved by (name, function, signature).. :			
Supervised by (name, function, signature) :			

List of Attachments (including a total number of pages in each attachment):
N/A

Summary of testing:
Unless otherwise indicated, all tests were conducted at UL Fremont, 47173 Benicia Street, Fremont, CA, 94538, USA

Tests performed (name of test and test clause):	**Testing location:**
1. Impact (4.2.5, 4.2.1, Part 22 10.2) 2. Part 22, 9.1, Annex B – Water Spray Test	UL Fremont 47173 Benicia Street, Fremont, CA, 94538, USA

Summary of compliance with National Differences (List of countries addressed):
Countries outside the CB Scheme membership may also accept this report.

List of countries addressed: CA, US

☒ **The product fulfils the requirements of IEC 60950-22 (ed.2) (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)**

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Not Applicable

The product is to be marketed by other manufacturers; the Original Equipment Manufacturer doesn't provide the marking label or installation manual for this product.

The tests conducted on this product for this Informative Test Report are for information only; all required tests under the applicable standards shall be considered in the end-use application.

The product is not provided with outdoor bushing for the Ethernet RJ45 connectors. Suitable components shall be considered in the end-use application.

Test item particulars ..... :	
Temperature range ..... :	-20℃ to +55℃
Overvoltage category ..... :	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV
IP protection class ..... :	
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing ..... :	
Date of receipt of test item..... :	2017-11-06
Date (s) of performance of tests ..... :	2017-11-17, 2017-11-21

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

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

This Test Report Form is intended for the investigation of safety of equipment to be installed outdoors in accordance with IEC 60950-22. It can only be used together with the IEC 60950-1 requirements.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	☐ **Yes** ☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies):

Not applicable

General product information:

The product is an OEM GSM Base transceiver station. The product is powered by nominal 24 Vdc from a UL Listed/ IEC certified external Power Supply or 48 Vdc from PoE source of a host equipment. The product consists of electronic components mounted on PWB, housed within a fully enclosed metallic enclosure with a front plastic cover, then secured together by screws.

The product is intended to be for outdoor installation and to be mounted on a pole.

Model Differences

N/A

IEC 60950-22			
Clause	Requirement + Test	Result - Remark	Verdict

4	**CONDITIONS FOR OUTDOOR EQUIPMENT**		
4.1	**Ambient air temperature**		
	Suitability for use at any temperature in the range specified by the manufacturer. If not specified by the manufacturer, the range is taken as -33°C to +40°C	The temperature range is -20 degree C to +55 degree C specified by the manufacturer.	P
4.2	**Mains supply**		N/A
4.2.1	General	N/A	
	Suitability for the highest mains transient voltage expected in the installation location	Not directly connected to mains.	N/A
	Components within outdoor equipment that reduce mains transient voltage or the prospective fault current comply with IEC 61643-series		N/A
4.2.2	Mains transient voltage on AC mains supply		N/A
4.2.3	Mains transient voltage on DC mains supply		N/A
4.3	**Rise of earth potential**		N/A
	Special earthing conditions	N/A	N/A
	Reference to installation instructions .....:		N/A
5	**MARKING AND INSTRUCTIONS**		
	Special installation features for protection from conditions in the outdoor location (see 1.7.2 of IEC 60950-1:2005)	Precautions in the installation instruction.	To be evaluated in end-use product
	outdoor enclosure classification according to IEC 60529 (IP Code)	IP65 - Based on IEC 60529 Test Report Ref. No. QL-17-0834 issued by Quanta Laboratories, Santa Clara, CA 95054, U.S, dated 2017-07-26	P
6	**PROTECTION FROM ELECTRICAL SHOCK IN AN OUTDOOR LOCATION**		
6.1	**Voltage limits of user-accessible parts in outdoor locations** (2.2.2 and 2.2.3 of IEC 60950-1:2005/AMD2:2013 with voltage limits of IEC60950-22)		P
	Voltages under normal conditions (V) .....:	Supplied by SELV and LPS source.	P
	Voltages under fault conditions (V) .....:	Product is intended to be supplied by Certified SELV power supply. Fault conditions covered under the evaluation of the Certified power supply.	P

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Clause	Requirement + Test	Result - Remark	Verdict

6.2	**Limited current circuits in outdoor locations**		N/A
	The requirements of 2.4 of IEC60950-1:2005/ AMD1:2009/AMD2:2013 apply without change	(see separate test report IEC 60950-1)	N/A
6.3	**Protection for socket-outlet in outdoor locations**		N/A
	Use of residual current protective device (RCD) with rated residual operating current not exceeding 30 mA in the mains supply to socket-outlets intended for general use and with a rated current not exceeding 20 A.		N/A
	RCD is an integral part of the equipment		N/A
	RCD is part of the building installation (installation instructions)		N/A
7	**WIRING TERMINALS FOR CONNECTION OF EXTERNAL CONDUCTORS**		
	The mains supply terminations powered via the normal building installation wiring are as specified in 3.3 of IEC 60950-1:2005/AMD2:2013		N/A
	The mains supply terminations powered directly from the mains distribution system are as specified in IEC 60364		N/A
8	**CONSTRUCTION REQUIREMENTS FOR OURDOOR ENCLOSURES**		
8.1	**General**		P
	Protection against corrosion by use of suitable materials or by application of a protective coating	Aluminum alloy used for enclosure chassis.	P
	Parts serving as a functional part of an outdoor enclosure (e.g., dials, connectors, etc.) comply with the same environmental protection requirements as for the outdoor enclosure	All relevant parts comply with applicable requirements.	P
	Use of outdoor enclosure to carry current during normal operation	Not used.	N/A
	Connection of a conductive part of an outdoor enclosure to protective earth for carrying fault currents (see 2.6 of IEC60950-1:2005/ AMD1:2009/AMD2:2013 and 8.3 of this standard)	(see separate test report IEC 60950-1 and 8.3 of this report)	N/A
8.2	**Resistance to ultra-violet radiation**		P
	Resistance of non-metallic parts of an outdoor enclosure to degradation by ultra-violet (UV) radiation	Top cover, antenna cover and light pipe external cover are UL approved plastic with UV rating used	P
	Parts providing mechanical support:		N/A
	Tensile strength test (ISO 527)		N/A
	Flexural strength test (ISO 178)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Parts providing impact resistance:		N/A
	Charpy impact test (ISO 179)		N/A
	Izod impact test (ISO 180)		N/A
	Tensile impact test (ISO 8256)		N/A
	All parts:		N/A
	Flammability classification (1.2.12 and annex A of IEC 60950-1:2005)		N/A
8.3	**Resistance to corrosion**		P
8.3.1	General	--	P
	Resistance of metallic parts of an outdoor enclosure to the effects of water-borne contaminants	Aluminum alloy used for enclosure, deemed compliant	P
	Alternate method for 8.3.2-8.3.4 (IEC 61587-1)		N/A
8.3.2	Test apparatus		N/A
	Salt-spray test (IEC 60068-2-11)		N/A
	Test in a water-saturated sulphur dioxide atmosphere (water-saturated sulphur dioxide atmosphere as described in Annex A; chamber as described in ISO 3231)		N/A
8.3.3	Test procedure		N/A
	Alternate test procedure		N/A
8.3.4	Compliance criteria:		N/A
	No rust other than surface corrosion of the protective coating; no cracking or other deterioration that will jeopardize the safety aspects as follows:		N/A
	– continued protection against access to hazardous parts, including after mechanical strength tests; and		N/A
	– continued protection against ingress of dust and water; and		N/A
	– continued provision of earth continuity		N/A
8.4	**Bottoms of fire enclosures**		N/A
	Comply with 4.6.2 of IEC 60950-1:2005		N/A
	Bottom of fire enclosure of outdoor equipment mounted directly and permanently on a non-combustible surface (e.g., concrete or metal)		N/A
8.5	**Gaskets**		P
8.5.1	General		P
8.5.2	Oil resistance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.5.3	Securing means	Mechanical means used	P
9	**PROTECTION OF EQUIPMENT WITHIN AN OUTDOOR ENCLOSURE**		
9.1	**Protection from moisture**		N/A
	Adequate protection from the effect of moisture on the enclosed equipment (see Table 2)	The OEM product is not provided with outdoor bushing for the Ethernet RJ45 connectors. Suitable components shall be considered in the end-use application.	To be evaluated in end-use product
9.2	**Protection from plants and vermin**		N/A
	Adequate protection if entry by plants and vermin is a consideration		N/A
9.3	**Protection from excessive dust**		P
9.3.1	General	IP65 - Based on IEC 60529 Test Report Ref. No. QL-17-0834 issued by Quanta Laboratories, Santa Clara, CA 95054, U.S, dated 2017-07-26	P
	Adequate protection against the ingress of the dust through the use of an appropriately rated IP5X or IP6X enclosure, or equivalent		P
9.3.2	IP5X equipment		N/A
9.3.3	IP6X equipment		P
10	**MECHANICAL STRENGTH OF ENCLOSURES**		
10.1	**General**		P
	Adequate mechanical strength and protection against access to energized parts and other hazards within the equipment throughout the intended ambient operating range		P
10.2	**Impact test (4.2.5 of IEC 60950-1)**		P
	Low temperature conditioning for polymeric enclosures	Impact test conducted after unit was conditioned in a chamber at temperature of - 20 Deg C at least for 3 hours	P
	Compliance criteria:		P
	- after test the level of protection remains in accordance with 9.1of this standard		P
	- after test the requirements of 4.2.1 of IEC 60950-1: 2005/ AMD1:2009/AMD2:2013 are met		P
11	**OUTDOOR EQUIPMENT CONTAINING VENTED BATTERIES**		

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Clause	Requirement + Test	Result - Remark	Verdict

11.1	**Risk of explosion from lead acid, NiCd and NiMH batteries**		N/A
	Adequate ventilation in the compartment housing a valve regulated or vented battery, where gassing is possible during normal usage or over-charging	No gassing and VRLA battery used.	N/A
	Protection against the risk of ignition of local concentrations of hydrogen and oxygen in a compartment containing both a battery and electrical components		N/A
	Construction of the ventilation system to ensure explosive gases venting in case of any potential fault, including distortion of the battery cases due to overheating or thermal runaway		N/A
	Ventilation tubes used for conducting explosive gas from the battery cases to the outside air		N/A
	Adequate ventilation under single-fault failure conditions in case of mechanical or forced-air ventilation		N/A
	Enclosures with mechanical or electromechanical dampers		N/A
11.2	**Ventilation preventing an explosive gas concentration**		
	Comply with M.7 of IEC 62368-1:2014		N/A
11.3	**Ventilation test**		N/A
	Measured hydrogen gas concentration (% by volume) .....:		—
	Max. allowed gas concentration for the mixture location in proximity to an ignition source (% by volume) .....:	≤ 1% by volume	—
	Max. allowed gas concentration for the mixture location not in proximity to an ignition source (% by volume) .....:	≤ 2% by volume	—
	Overcharging of rechargeable battery (see 4.3.8 of IEC 60950-1:2005/AMD2:2013)	(see separate test report IEC 60950-1)	N/A
A	**ANNEX A, WATER-SATURATED SULPHUR DIOXIDE ATMOSPHERE (see 8.3.2 and 8.3.3)**		
	Test chamber .....:		N/A
	Test method .....:		N/A
B	**ANNEX B, WATER SPRAY TEST (see 9.1)**		

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Clause	Requirement + Test	Result - Remark	Verdict

	Test apparatus .....:	The OEM product is not provided with outdoor bushing for the Ethernet RJ45 connectors. Suitable components shall be considered in the end-use application.	To be evaluated in end-use product
	Test method .....:		N/A
C	**ANNEX C, ULTRAVIOLET LIGHT CONDITIONING TEST (see 8.2)**		
C.1	Test apparatus .....:		N/A
C.2	Mounting of test samples.....:		N/A
C.3	Carbon-arc light-exposure apparatus.....:		N/A
C.4	Xenon-arc light-exposure apparatus .....:		N/A
D	**ANNEX D, GASKET TESTS (see 8.5)**		
D.1	Gasket tests		P
D.2	Tensile strength and elongation tests (for gaskets that can stretch)		P
	Tensile strength (%) .....:	Not less than 75%	P
	Elongation (%) .....:	Not less than 60%	P
	Visible deterioration, deformation, melting, cracking or hardening of the material.....:	No deterioration	P
D.3	Compression test (for gaskets with closed cell construction)	Not closed cell construction	N/A
	Initial thickness of the specimen (mm) .....:		N/A
	Thickness of the specimen after test a) (mm), compression set after test a) (%).....:		N/A
	Thickness of the specimen after test b) (mm), compression set after test b) (%).....:		N/A
	Thickness of the specimen after test c) (mm), compression set after test c) (%).....:		N/A
	Visible cracks or deterioration .....:		N/A
D.4	Oil immersion test	Not subject to oil or coolant	N/A
	Swelling (%) .....:		N/A
	Shrinking (%).....:		N/A
E	**ANNEX E, RATIONALE**		—
E.1	General		—
E.2	Electric shock		—
E.3	Energy related hazards		—

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Clause	Requirement + Test	Result - Remark	Verdict
E.4	Fire		—
E.5	Mechanical hazards		—
E.6	Heat related hazards		—
E.7	Radiation		—
E.8	Chemical hazards		—
E.9	Biological hazards		—
E.10	Explosion hazards		—

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Clause	Requirement + Test	Result - Remark	Verdict

8.2	**TABLE: Resistance to ultra-violet radiation**	
8.2a)	**Tensile strength test (ISO 527)**	N/A
Material identification (manufacturer, type designation) .....:		—
Shape and dimensions of test samples.....:		—
Conditioning for Set 1 of samples .....:		—
Conditioning for Set 2 of samples (including Annex C) .....:		—
Test conditions (T °C, RH %) .....:		—

Set 1 (without Annex C conditioning)		Set 2 (after Annex C conditioning)	
Test sample #	Tensile strength (MPa)	Test sample #	Tensile strength (MPa)

Arithmetic mean for Set 1 (MPa) ..... :	
Arithmetic mean for Set 2 (MPa) ..... :	
Retention (%)..... :	
Supplementary information:	

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Clause	Requirement + Test	Result - Remark	Verdict

8.2	**TABLE: Resistance to ultra-violet radiation**	
8.2b)	**Flexural strength test (ISO 178)**	N/A
Material identification (manufacturer, type designation) ..... :		—
Shape and dimensions of test samples..... :		—
Conditioning for Set 1 of samples..... :		—
Conditioning for Set 2 of samples (including Annex C) ..... :		—
Test conditions (T °C, RH %)..... :		—

Set 1 (without Annex C conditioning)		Set 2 (after Annex C conditioning)	
Test sample #	Flexural strength (MPa)	Test sample #	Flexural strength (MPa)

Arithmetic mean for Set 1 (MPa) .....:	
Arithmetic mean for Set 2 (MPa) .....:	
Retention (%) .....:	

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

8.2	**TABLE: Resistance to ultra-violet radiation**	
8.2c)	**Charpy impact test (ISO 179) - unnotched**	N/A
Material identification (manufacturer, type designation) ..... :		—
Shape and dimensions of test samples..... :		—
Conditioning for Set 1 of samples..... :		—
Conditioning for Set 2 of samples (including Annex C) ..... :		—
Test method (according to Tables 2 and 3 of ISO 179) ..... :		—
Test conditions (T °C, RH %)..... :		—

Set 1 (without Annex C conditioning)		Set 2 (after Annex C conditioning)	
Test sample #	Charpy impact strength (kJ/m^2)	Test sample #	Charpy impact strength (kJ/m^2)

Arithmetic mean for Set 1 (kJ/m^2)..... :	
Arithmetic mean for Set 2 (kJ/m^2)..... :	
Retention (%)..... :	

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

8.2	**TABLE: Resistance to ultra-violet radiation**	
8.2d)	**Charpy impact test (ISO 179) - notched**	N/A
Material identification (manufacturer, type designation) .....:		—
Shape and dimensions of test samples.....:		—
Conditioning for Set 1 of samples.....:		—
Conditioning for Set 2 of samples (including Annex C) .....:		—
Test method (according to Tables 2 and 3 of ISO 179) .....:		—
Test conditions (T °C, RH %).....:		—

Set 1 (without Annex C conditioning)		Set 2 (after Annex C conditioning)	
Test sample #	Charpy impact strength (kJ/m^2)	Test sample #	Charpy impact strength (kJ/m^2)

Arithmetic mean for Set 1 (kJ/m^2).....:	
Arithmetic mean for Set 2 (kJ/m^2).....:	
Retention (%).....:	

Supplementary information:

IEC 60950-22			
Clause	Requirement + Test	Result - Remark	Verdict

8.2	**TABLE: Resistance to ultra-violet radiation**	
8.2e)	**Izod impact test (ISO 180) - unnotched**	N/A
Material identification (manufacturer, type designation) .....:		—
Shape and dimensions of test samples.....:		—
Conditioning for Set 1 of samples.....:		—
Conditioning for Set 2 of samples (including Annex C) .....:		—
Test method (according to Table 1 of ISO 180) .....:		—
Test conditions (T °C, RH %).....:		—

Set 1 (without Annex C conditioning)		Set 2 (after Annex C conditioning)	
Test sample #	Izod impact strength (kJ/m^2)	Test sample #	Izod impact strength (kJ/m^2)

Arithmetic mean for Set 1 (kJ/m^2).....:	
Arithmetic mean for Set 2 (kJ/m^2).....:	
Retention (%).....:	

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

8.2	**TABLE: Resistance to ultra-violet radiation**	
8.2f)	**Izod impact test (ISO 180) - notched**	N/A
Material identification (manufacturer, type designation) ..... :		—
Shape and dimensions of test samples..... :		—
Conditioning for Set 1 of samples..... :		—
Conditioning for Set 2 of samples (including Annex C) ..... :		—
Test method (according to Table 1 of ISO 180) ..... :		—
Test conditions (T °C, RH %)..... :		—

Set 1 (without Annex C conditioning)		Set 2 (after Annex C conditioning)	
Test sample #	Izod impact strength (kJ/m^2)	Test sample #	Izod impact strength (kJ/m^2)

Arithmetic mean for Set 1 (kJ/m^2)..... :	
Arithmetic mean for Set 2 (kJ/m^2)..... :	
Retention (%) ..... :	

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

8.2	**TABLE: Resistance to ultra-violet radiation**	
8.2g)	**Tensile impact test (ISO 8256) - unnotched**	N/A
Material identification (manufacturer, type designation) .....:		—
Shape and dimensions of test samples.....:		—
Conditioning for Set 1 of samples.....:		—
Conditioning for Set 2 of samples (including Annex C) .....:		—
Test method (A or B)		—
Test conditions (T °C, RH %).....:		—

Set 1 (without Annex C conditioning)		Set 2 (after Annex C conditioning)	
Test sample #	Tensile impact strength (kJ/m^2)	Test sample #	Tensile impact strength (kJ/m^2)

Arithmetic mean for Set 1 (kJ/m^2).....:	
Arithmetic mean for Set 2 (kJ/m^2).....:	
Retention (%).....:	

Supplementary information:

IEC 60950-22			
Clause	Requirement + Test	Result - Remark	Verdict

8.2	**TABLE: Resistance to ultra-violet radiation**	
8.2h)	**Tensile impact test (ISO 8256) - notched**	N/A
Material identification (manufacturer, type designation) .....:		—
Shape and dimensions of test samples.....:		—
Conditioning for Set 1 of samples.....:		—
Conditioning for Set 2 of samples (including Annex C) .....:		—
Test method (A or B)		—
Test conditions (T °C, RH %).....:		—

Set 1 (without Annex C conditioning)		Set 2 (after Annex C conditioning)	
Test sample #	Tensile impact strength (kJ/m^2)	Test sample #	Tensile impact strength (kJ/m^2)

Arithmetic mean for Set 1 (kJ/m^2).....:	
Arithmetic mean for Set 2 (kJ/m^2).....:	
Retention (%).....:	

Supplementary information:

IEC 60950-22			
Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: Critical components information				
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
(see separate test report IEC 60950-1)					
Supplementary information: [1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.					