TEST REPORT ON : TRIP AMPLIFIER	PAGE 01 OF 29

1.0 SCOPE

1.1 Service Request No. : TE/0010/01-22

1.2 Test Report No. : ERTL(E)/TES/T238/0004/01-22/NABL
Date : 21-02-2022

ULR No. : TC563722000000035F

1.3 Requested by (Name & address of the organisation) : **TROLEX LTD.**
NEWBY ROAD INDL.ESTATE.HAZEL GROVE,STOCKPORT,
CHESHIRE,-SK75DY,
UNITED KINGDOM

1.4 Description of the item to be tested

Identification	Item	:	TRIP AMPLIFIER
	Make	:	TROLEX
	Model	:	TX9131
	Sl.No.	:	PROTOTYPE
	Qty	:	1

1.4.1 Applicable Spec. of the item(s) tested : Ui=16.5V, Ci= 3.6nF , Li=0

1.4.2 Characterisation and condition of item
Characterisation : Not applicable
Condition : Satisfactory

1.5 Date of receipt of item : 13-01-2022

1.6 Date of start of testing : 13-01-2022

1.6.1 Date of completion of testing : 21-02-2022

1.7 Location where testing performed : IN HOUSE

1.8 Ambient condition during measurement : 25+/-2 °C
45-70%RH

1.9 Discipline (NABL) : ELECTRICAL DISCIPLINE

1.9.1 Spec. used for testing : IS/IEC 60079-0:2017 & IS/IEC 60079-11:2011,GAS GROUP I

1.9.2 Details of non standard method followed (if any):

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2.0 TEST RESULT

Gap Analysis Report on Revision of Standard (Part-A)

Scope: Impact analysis on the testing and certification carried out vide test report nos. ERTL(E)/TES/T238/0002/12-12, dated 12.03.2013 for the item TRIP AMPLIFIER, Make: Trolex, Model:TX9131 in respect of changes brought out in IS/IEC 60079-0:2007 over IS/IEC 60079-0:2004 .

Standards : IS/IEC 60079-0:2007 and IS/IEC 60079-0:2004

Sl. No	Detail of change	Clause No.		Observation	Results
		2007	2004		
1.	Requirements for explosive dust atmospheres transferred from IEC 61241-0	5.3.2.3	—	No impact on existing testing & certification as the DUT is designed for Gas Group I atmosphere.	Pass
2.	The marking Group "II" alone has been replaced by "IIA", "IIB", or "IIC" as many of the enclosure requirements are now aligned with a specific sub-group	4.2	4.2.1	No impact on existing testing & certification as DUT is not designed for Group II.	Pass
3.	Dust groups defined as Group IIIA, IIIB and IIIC	4.3	—	No impact on existing testing & certification as the DUT is designed for Gas Group I atmosphere.	Pass

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2.0 TEST RESULT

Sl. No	Detail of change	Clause No.		Observation	Results
		2007	2004		
4.	Addition of limits for ultrasonic and electromagnetic radiation	6.6	—	No impact on existing testing & certification as DUT contains neither ultrasonic nor electromagnetic source.	Pass
5.	Remainder of "electrostatic" requirements transferred from IEC 60079-26	7.4.2 (f)	—	No impact on existing testing & certification.	Pass
6.	Addition of limits for Equipment Protection Levels (EPL)	29.3(e)	—	The equipment protection level 'Ga / Ma' is included in marking (refer drawing no. P5460.2009, Issue- A, Sheet 1 of 1, dt. 23.08.2021)	Pass
7.	Transition of term from "apparatus" to "equipment" (where appropriate)	—	—	This change does not have any impact on design or testing requirements.	Pass

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2.0 TEST RESULT

Gap Analysis Report on Revision of Standard (Part-B)

Scope: Impact analysis on the testing and certification carried out vide test report nos. ERTL(E)/TES/T238/0002/12-12, dated 12.03.2013 for the item TRIP AMPLIFIER, Make: Trolex, Model:TX9131 in respect of changes brought out in IS/IEC 60079-0:2011 over IS/IEC 60079-0:2007.

Standards : IS/IEC 60079-0:2011 and IS/IEC 60079-0:2007

Sl. No	Details of change	Clause No.		Observation	Remarks
		2011	2007		
1	Relocation of definitions for energy limitation parameters to IEC 60079-11	—	3.15	No impact on existing testing & certification.	Pass
2	Addition of note to clarify that the non-metallic 'enclosure' requirements are applied to other than 'enclosures' by some of the sub parts	7.1.1	7.1.1	No impact on existing testing & certification as DUT has no non-metallic parts on which the type of protection 'Intrinsic Safety' depends.	Pass
3	Expansion of material specification data for plastics and elastomers, including UV resistance	7.1.2.2.(e) 7.1.2.3.(e) 7.3	7.1.3 7.1.4 7.3	No impact on existing testing & certification as neither plastic nor elastomeric material is used in the design which has a bearing on the type of protection 'Intrinsic Safety'.	Pass
4	Addition of alternative qualification for O-rings	7.2.3	—	No impact on existing testing & certification as no 'O' ring is used in the DUT.	Pass

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2.0 TEST RESULT

Sl. No	Details of change	Clause No.		Observation	Remarks
		2011	2007		
5	Addition of alternative criteria for surface resistance	7.4.2.(a)	7.4.2(a)	No impact on existing testing & certification since update is of 'informative' type	Pass
6	Addition of breakdown voltage limit for non-metallic layers applied to metallic enclosures	7.4.2.(c)	7.4.2.(c)	No impact on existing testing & certification since update is of 'informative' type	Pass
7	Expansion of 'X' marking options for non-metallic enclosure materials not meeting basic electrostatic requirements	7.4.3.(d) & (e)	7.4.2 (f) & (g)	'X' marking is not applicable	Pass
8	Clarification of test to determine capacitance of accessible metal parts with reduction in acceptable capacitance.	7.5	—	Equipment enclosure Is having no metal unearthed metal parts.	Pass
9	Clarification that non-metallic enclosure requirements also apply to painted or coated metal enclosures	8.1 Note 2	—	No impact on existing testing & certification since update is of 'informative' type	Pass
10	Addition of limits on zirconium content for Group III and Group II (Gb only) enclosures	8.3	8.1.2	No impact on existing testing & certification as DUT is designed for Group I	Pass
11	Introduction of 'X' marking for Group III enclosures not complying with basic material requirements, similar to that existing for Group II	8.4	—	No impact on existing testing & certification as DUT is designed for Group I and not Group III	Pass

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2.0 TEST RESULT

Sl. No	Details of change	Clause No.		Observation	Remarks
		2011	2007		
12	Addition of button-head cap screws to be permitted as 'Special Fasteners'	9.2	9.2	No impact on existing testing & certification as DUT does not have any button head cap screw in design	Pass
13	Reference for protective earthing (PE) requirements for electrical machines to IEC 60034-1	15.3	15.3	No impact on existing testing & certification as DUT is not from the category of electrical machine.	Pass
14	Clarification of terminology for cable glands, blanking elements, and thread adapters.	16.3, 16.4, 16.5	16.3,16.4	No impact on existing testing & certification as DUT is not from the category of cable glands, blanking elements, and thread adapters.	Pass
15	Addition of requirements for ventilating fans	17.1.5	—	No impact on existing testing & certification as no ventilation fans is used in design.	Pass
16	Addition of alternative construction for disconnectors	18.2	18.2	No impact on existing testing & certification as DUT is not from category of Switchgear.	Pass

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2.0 TEST RESULT

Sl. No	Details of change	Clause No.		Observation	Remarks
		2011	2007		
17	Removal of voltage limits on plugs and sockets	20.2	20.1.1	No impact on existing testing & certification as DUT is not from category of Plug & Socket	Pass
18	Addition of test requirements for arc-quenching test on plugs and sockets	20.2	20.1.1	No impact on existing testing & certification as DUT is not from category of Plug & Socket.	Pass
19	Update of cell and battery information to reflect latest standards	23 Table-11, 12	23 Table 10,11	No impact on existing testing & certification as no cells or batteries used in the product.	Pass
20	Revision to impact test of glass parts	26.4.2	26.4.2	No impact on existing testing & certification	Pass
21	Revision to impact test procedure to address 'bounce' of impact head	26.4.2	26.4.2	No impact on existing testing & certification	Pass
22	Clarification of the test requirements for 'service' and 'surface' temperature	26.5.1.2	26.5.1.2	Determination of service temperature is not a requirement for type of protection Intrinsic Safety. The surface Temperature of the enclosure does not exceed the Temperature Class corresponding to maximum ambient temperature as reflected in previous test report no. ERTL(E)/TES/T234/ 0002/ 12-12, dt. 12.03.2013.	Pass

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2.0 TEST RESULT

Sl. No	Details of change	Clause No.		Observation	Remarks
		2011	2007		
23	Addition of temperature rise tests for converter-fed motors	26.5.1.3	—	No impact on existing testing & certification as DUT is not from category of converter fed motor.	Pass
24	Addition of alternative test method for thermal endurance	26.8 Table 15	—	No impact on existing testing & certification as conducting thermal endurance test is not relevant as DUT is metallic enclosure	Pass
25	Removal of 'charging test' and addition of note providing guidance	—	26.14	No impact on existing testing & certification	Pass
26	Clarification of test for the measurement of capacitance	26.14	26.15	No impact on existing testing & certification as	Pass
27	Addition of a 'Schedule of Limitations' to certificates for Ex Components	28.2	28.2	No impact on existing testing & certification as DUT is not having Ex components	Pass
28	Clarification of the marking for multiple temperature classes	29.4 (d)	29.3 (d)	No impact on existing testing & certification as DUT is not designed for multiple Temperature class	Pass
29	Addition of marking for converter-fed motors	29.15	—	No impact on existing testing & certification as DUT is not a converter fed motor.	Pass

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2.0 TEST RESULT

Sl. No	Details of change	Clause No.		Observation	Remarks
		2011	2007		
30	Removal of IP marking for Group III	29.16	29.14	No impact on existing testing & certification as DUT is designed for Group I.	Pass
31	Addition of specific instructions for electrical machines	30.3	—	No impact on existing testing & certification as DUT is not from the category of electrical machine.	Pass
32	Addition of specific instructions for ventilating fans	30.4	—	No impact on existing testing & certification as no ventilating fans used in design	Pass
33	Update to informative Annex D on converter fed motors	Annex-D	Annex-E	No impact on existing testing & certification since update is of 'informative' type	Pass
34	Update to informative Annex E on temperature testing of motors	Annex-E	—	No impact on existing testing & certification since update is of 'informative' type	Pass
35	Addition of informative Annex F, flowchart for testing of non-metallic enclosures and non-metallic parts of enclosures	Annex-F	—	No impact on existing testing & certification since update is of 'informative' type	Pass

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Gap Analysis Report on Revision of Standard (Part-C)

Scope: Impact analysis on the testing and certification carried out vide test report nos. ERTL(E)/TES/T238/ 0002/12-12, dated 12.03.2013 for the item TRIP AMPLIFIER, Make: Trolex, Model:TX9131 in respect of changes brought out in IS/IEC 60079-0 :2017 over IS/IEC 60079-0:2011.

Standards : IS/IEC 60079-0:2017 and IS/IEC 60079-0:2011

Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
1	Throughout document, "electrical equipment" replaced by "equipment" where appropriate	----	---	No impact on existing testing & certification since update is of 'informative' type	Pass
2	List of "Type of "Protection" and "Product" standards combined into one list.	1	1	No impact on existing testing & certification since update is of 'informative' type	Pass
3	Definitions used in multiple sub-parts added. Definitions harmonized across sub-parts and added to 60079-0 where appropriate. Battery definitions updated	3	3	No impact on existing testing & certification since update is of 'informative' type. The DUT is not a battery	Pass
4	Clarification of the way that information on process temperature influences can be expressed.	5.1.2	5.1.2	No impact on existing testing & certification since equipment is physically not connected to or influenced by a separate external source of heating.	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
5	Clarification regarding the determination of service temperatures when dust layers are present	. 5.2	5.2	No impact on existing testing & certification since it is not an EPL Da equipment.	Pass
6	Clarification on the need to provide service temperature information for Ex components in the Schedule of Limitations	. 5.2	5.2	The device under consideration is not an Ex component.	Pass
7	Relocation of EPL Da dust layer requirements from IEC 60079-18 & IEC 60079-31	5.3.2.3.1	5.3.2.3.1	No impact on existing testing & certification since it is not an EPL Da equipment.	Pass
8	Clarified that for EPL Db, a maximum specified dust layer of greater than 200 mm is not permitted as thicker layers have no additional effect on maximum surface temperature.	5.3.2.3.2(b)	5.3.2.3.2	No impact on existing testing & certification since it is not an EPL Db equipment.	Pass
9	Added for EPL Db, a dust layer in a specified orientation, marked as 7L	5.3.2.3.2(c)	5.3.2.3.2	No impact on existing testing & certification since it is not an EPL Db equipment.	Pass
10	Clarified that for EPL Dc, no dust layer tests are required	5.3.2.3.3	—	No impact on existing testing & certification since it is not an EPL Dc equipment.	Pass
11	Clarified that the "temperature" is the temperature of the air surrounding the component	5.3.3	5.3.3	No impact on existing testing & certification since update is of 'informative' type	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
12	Subdivided section dealing with higher permitted surface temperatures for "smooth" surfaces. Corrected area from 1 000 mm2 to 10 000 mm2.	5.3.4	—	No impact on existing testing & certification since update is of 'informative' type	Pass
13	Clarified that the "Ex" requirements of IEC 60079 supplement those of the relevant industrial standards.	6.1	6.1	No impact on existing testing & certification since update is of 'informative' type	Pass
14	Added requirement that where an adhesive is used to secure a gasket, it shall be used within its COT and shall comply with the requirements for cements.	6.5	6.5	No impact on existing testing & certification as according Table 1 of IS/IEC 60079-11:2011, this clause of IS/IEC 60079-0:2017 is not applicable for Intrinsically Safe apparatus	Pass
15	Requirements relocated to IEC 60079-28	-	6.6.2	No impact on existing testing & certification as this equipment does not exist in the current standard.	Pass
16	Ultrasonic requirements updated based on latest research work	6.6.3	6.6.3	No impact on existing testing & certification since the DUT is not an ultrasonic radiating equipment	Pass
17	Added reference to IEC 60079-28	6.6.4	---	The equipment does not fall under the category mentioned in the clause.	Pass
18	Material identification parameters have been revised to reflect reasonably obtainable information	7.1.2.2	7.1.2.2	No impact on existing testing & certification.	Pass
19	"RTI-mechanical" has been clarified to include "RTI-mechanical strength" and "RTI-mechanical impact"	7.1.2.2	7.1.2.2	No impact on existing testing & certification.	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
20	Material identification parameters have been revised to reflect reasonably obtainable information	7.1.2.3	7.1.2.3	No impact on existing testing & certification.	Pass
21	Relocated information on "cements" from Clause 12.	7.1.2.4	12	No impact on existing testing & certification since update is of 'informative' type.	Pass
22	"RTI-mechanical" has been clarified to include "RTI mechanical strength" and "RTI-mechanical impact". Requirements for cements aligned with the requirements for elastomers.	7.2.2	7.2.2	No impact on existing testing & certification.	Pass
23	Relocation of 10 K margin for EPL Gc or Dc from IEC 60079-15, IEC 60079-18 & IEC 60079-31	7.2.2	7.2.2	No impact on existing testing & certification since update is of 'informative' type. Also it is not an EPL Gc or Dc DUT.	Pass
24	Added clarification with respect to gaskets and seals where only the outer edge is potentially exposed to light.	7.3	7.3	No impact on existing testing & certification as since update is of 'informative' type.	Pass
25	Clarification added that one or more of the described techniques may be used	7.4.2	7.4.2	No impact on existing testing & certification since update is of 'informative' type.	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
26	Added additional relaxation for the case where a surface is in contact with an earthed surface on only two of four sides.	7.4.2	7.4.2	No impact on existing testing & certification since update is of 'informative' type.	Pass
27	Added reference to IEC 60243-1 and IEC 60243-2 for test method to require a 4 kV DC test.	7.4.2	7.4.2	No impact on existing testing & certification since update is of 'informative' type	Pass
28	Additional guidance added with respect to the possible Specific Conditions of Use	7.4.2 (e)	7.4.2	No impact on existing testing & certification since update is of 'informative' type	Pass
29	New option added for portable, mains-powered equipment with earth-connected guard	7.4.2	7.4.2	No impact on existing testing & certification since update is of 'informative' type.	Pass
30	Added option for determination of maximum transferred charge.	7.4.2	7.4.2	No impact on existing testing & certification as no non-metallic materials used in the enclosure	Pass
31	Added missing limits	7.4.3	7.4.3	No impact on existing testing & certification as DUT is designed for Group I and not Group III	Pass
32	Clarified that it is a dc test that is conducted	7.4.3	7.4.3	No impact on existing testing & certification as DUT is designed for Group I and not Group III	Pass
33	Clarified that this requirement is not applied to personal or portable equipment	7.5	7.5	No impact on existing testing & certification since update is of 'informative' type	Pass
34	Clarified Group I limits	8.2	8.2	No impact on existing testing & certification since update is of 'informative' type/	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
35	Clarified Group II, EPL Ga limits	8.3	8.3	No impact on existing testing & certification since DUT is designed for Group I.	Pass
36	Added limitation for external surfaces of >65% copper	8.5	-----	No impact on existing testing & certification since update is of 'informative' type. It is not designed for acetylene atmosphere.	Pass
37	Added clarification as to what is considered a tool	9.1	9.1	No impact on existing testing & certification since update is of 'informative' type	Pass
38	Clarified that the tolerance class of the set screw is not critical, only that it not protrude from the threaded hole after tightening.	9.4	9.3.3	No impact on existing testing & certification since update is of 'informative' type and there is no set screw used in the design	Pass
39	Reserved for future use Information on cements transferred to Clause 7	12	12	No impact on existing testing & certification since update is of 'informative' type	Pass
40	Required that Ex Component Certificates require a Schedule of Limitations in all cases	13.5	13.5	The DUT is not an Ex component.	Pass
41	Revised to clarified that all connection facilities may not be a "Compartment".	14	14	No impact on existing testing & certification since update is of 'informative' type	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
42	Sub-clause split to separate the requirements for protective earthing and equipotential bonding into separate sections	15.3 15.4	15.3	No impact on existing testing & certification since update is of 'informative' type	Pass
43	Section split to separate secureness of electrical connections from the internal earth continuity plate.	15.6 15.7	15.5	No impact on existing testing & certification since update is of 'informative' type	Pass
44	Non-threaded Group I cable glands are no longer required to be Ex Components.	16.3	16.3	No impact on existing testing & certification as DUT is not a Cable gland	Pass
45	Non-threaded Group I blanking elements are no longer required to be Ex Components.	16.4	16.4	No impact on existing testing & certification as DUT is not a Blanking element	Pass
46	Scope of Clause 17 clarified to define applicability	17	17	No impact on existing testing & certification as DUT is not from the category of electric machine.	Pass
47	Additional guidance notes added to address bearings	17.3	17.2	No impact on existing testing & certification as DUT is not from the category of electric machine.	Pass
48	Clarified applicability to disconnectors, interlocks, and maintenance switches.	18.2	18.2	No impact on existing testing & certification as DUT is not from the category of Switchgear	Pass
49	Reserved for future use Fuse requirements deleted as they are addressed in the individual sub-parts	19	19	No impact on existing testing & certification since update is of 'informative' type	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
50	Added requirements for EPL Gc and Dc	20.1	20.1	No impact on existing testing & certification since as DUT is not designed for EPL Gc or Dc.	Pass
51	The test circuit requirements for a flameproof connection have been removed as they are more completely specified in IEC 60079-1	20.2	20.2	No impact on existing testing & certification as the DUT is not from the category of External Socket outlets and connectors for field wiring	Pass
52	The impact test requirements for luminaires are relocated to Table 15	21.1	21.1	No impact on existing testing & certification since it is not from category of luminaires	Pass
53	Clarified interlock switch operation for flameproof luminaires	21.2	21.2	No impact on existing testing & certification as DUT is not from the category of Luminaires	Pass
54	Clarified that some Types of Protection permit connection of cells in parallel	23.2	23.2	No impact on existing testing & certification as DUT is not from the category of Cells and Batteries.	Pass
55	New cell types and data added based on latest available data	23.3 Table 13 & 14	23.3 Table 11 & 12	No impact on existing testing & certification as DUT is not from the category of Cells and Batteries.	Pass
56	Clarification of what documentation is to be prepared regarding the explosion safety aspects of the equipment	24	24	Up-dated drawings has been prepared as listed in the Annexure-I.	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
57	Clarification that the type tests are to take into Consideration the installation instructions	26.2	26.2	No impact on existing testing & certification since update is of 'informative' type	Pass
58	Clarification that the "glass" requirements also apply to "ceramic" parts	26.4.1.1	26.4.1.1	No impact on existing testing & certification as DUT is not having glass or ceramic parts	Pass
59	Added a permission to interchange the order of tests at the "lower test temperature" and the "upper test temperature".	26.4.1.2	26.4.1.2	No impact on existing testing & certification since update is of 'informative' type	Pass
60	Clarified the construction of the impact test fixture	26.4.2	26.4.2	No impact on existing testing & certification since update is of 'informative' type	Pass
61	Clarified the impact tests for glass parts	26.4.2	26.4.2	No impact on existing testing & certification as DUT is not having any glass part.	Pass
62	Added clarification to deal with the new IPX9 ratings	26.4.5.1	26.4.5.1	No impact on existing testing & certification since it was not submitted for IPX9	Pass
63	Clarified the test voltage for maximum surface temperature	26.5.1.3	26.5.1.3	No impact on existing testing & certification since update is of 'informative' type.	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
64	Relocation of EPL Da dust layer requirements from IEC 60079-18 & IEC 60079-31	26.5.1.3	26.5.1.3	No impact on existing testing & certification as DUT is not an EPL Da type.	Pass
65	Relocation of EPL Db specified dust layer requirements from IEC 60079-31	26.5.1.3	26.5.1.3	No impact on existing testing & certification as DUT is not an EPL Db type.	Pass
66	Added for EPL Db, a dust layer in a specified orientation, marked as TL	26.5.1.3	26.5.1.3	No impact on existing testing & certification as DUT is not EPL Db type.	Pass
67	Clarified that for EPL Dc, the testing is conducted without a dust layer	26.5.1.3	26.5.1.3	No impact on existing testing & certification as DUT is not EPL Dc type.	Pass
68	Relocation of thermal endurance to heat 10K relaxation for Gc equipment from IEC 60079-15, IEC 60079-18, & IEC 60079-31	26.8 Table 17	26.8 Table 15	No impact on existing testing & certification as DUT is not EPL Gc, EPL Dc type.	Pass
69	Clarification of a consistent way to address elastomeric materials exposed to ultraviolet light	26.10	26.10	No impact on existing testing & certification since update is of 'informative' type	Pass
70	Replacement of "oil No. 2" with the revised designation of "oil IRM 902".	26.11	26.11	No impact on existing testing & certification since update is of 'informative' type	Pass
71	Option added for testing at lower voltages when low resistance materials are encountered	26.13	26.13	No impact on existing testing & certification since update is of 'informative' type	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
72	Transferred charge test added based on IEC TS 60079-32-2	26.17	----	No impact on existing testing & certification since update is of 'informative' type	Pass
73	The reference to a specific instruction document instead of an "X" condition relocated to e) instead of a note giving a permission	29.3 e)	29.3 e)	No impact on existing testing & certification since update is of 'informative' type	Pass
74	Updated to reflect the additional levels of protection already shown in the sub-parts: "da", "dc", "eb", "ec", "oc", "op is", "op pr", "op sh", "pxb", "pyb", pzc", "qb", "sa", "sb", and "sc".	29.4 b)	29.4 b)	No impact on existing testing & certification since update is of 'informative' type	Pass
75	Text added to address marking of "Ex associated equipment"	29.4	29.4	No impact on existing testing & certification since the enclosure is not an "Ex associated equipment"	Pass
76	Updated to reflect the additional levels of protection already shown in the sub-parts: "ic", "op is", "op pr", "op sh", "pxb", "pyb", "pzc", "sa", "sb", and "sc".	29.5 b)	29.5 b)	No impact on existing testing & certification since update is of 'informative' type	Pass
77	Clarified marking of EPL Da, EPL Db with no dust layer, EPL Db with a specified dust layer, and EPL Dc.	29.5 d)	29.5 d)	No impact on existing testing & certification as DUT is not EPL Da, EPL Db or EPL Dc type.	Pass
78	Introduced marking for EPL Db with a dust layer in a specified orientation	29.5 d)	29.5 d)	No impact on existing testing & certification as DUT is not EPL Db type.	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
79	Text added to address marking of "Ex associated equipment"	29.5	29.5	No impact on existing testing & certification as DUT is not from the category of "Ex associated equipment"	Pass
80	Text added to address marking of equipment intended to be installed in a boundary wall.	29.9	—	No impact on existing testing & certification since update is of 'informative' type	Pass
81	The marking of Ex Component enclosure was aligned with the marking requirements of IEC 60079-1 and IEC 60079-7	29.10	29.9	No impact on existing testing & certification since update is of 'informative' type	Pass
82	Alternate marking of EPL has been deleted	29.13	29.12	No impact on existing testing & certification since update is of 'informative' type '	Pass
83	Marking for electric machines operated with a converter clarified	29.15	29.15	No impact on existing testing & certification since DUT is not from category of electric machine	Pass
84	Instruction material guidance clarified	30.1	30.1	No impact on existing testing & certification since update is of 'informative' type	Pass
85	Additional instruction material for electric machines added	30.3	30.3	No impact on existing testing & certification since the DUT is not from the category of electric machine.	Pass
86	Additional instruction material for cable glands added	30.5 A.5	Annex A	No impact on existing testing & certification as DUT is not from the category of Cable glands	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
87	Allow ISO 10807 hose assemblies to be used with cable glands.	A.1	A.1	No impact on existing testing & certification as DUT is not from the category of cable glands	Pass
88	Clarify testing with stainless steel mandrels	A.3.1.1	A.3.1.1	No impact on existing testing & certification as DUT is not from the category of cable glands	Pass
89	Reduction of the time / slippage permitted	A.3.1.1	A.3.1.1	No impact on existing testing & certification as DUT is not from the category of cable glands	Pass
90	Clarify impact testing of cable glands in Figure A.3	A.3.3	A.3.3	No impact on existing testing & certification as DUT is not from the category of Cable glands	Pass
91	Clarified the order of tests	A.3.4	A.3.4	No impact on existing testing & certification as DUT is not from the category of Cable glands	Pass
92	Clarified remarks	Annex B (normative)	Annex B (normative)	No impact on existing testing & certification since the DUT is not from Ex component.	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2017	2011		
93	Aligned Figure with text	Annex C	Annex C	No impact on existing testing & certification since update is of 'informative' type	Pass
94	Clarified operation of electric machines from converters	Annex D (informative)	Annex D (informative)	No impact on existing testing & certification as DUT is not from the category of electric machines	Pass
95	Clarified temperature testing of electric machines	Annex E (informative)	Annex E (informative)	No impact on existing testing & certification as DUT is not from the category of electric machines	Pass
96	Flowchart for Cable Gland testing	Annex G (informative)	------	No impact on existing testing & certification as DUT is not from the category of cable glands	Pass
97	Guidance of electric machine shaft voltages	Annex H (informative)	—	No impact on existing testing & certification as DUT is not from the category of electric machines	Pass

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Gap Analysis Report on Revision of Standard (Part-D)

Scope: Impact analysis on the testing and certification carried out vide test report nos. ERTL(E)/TES/T238/0002/12-12, dated 12.03.2013 for the item TRIP AMPLIFIER, Make: Trolex, Model:TX9131 in respect of changes brought out in IS/IEC 60079-11:2011 over IS/IEC 60079-11:2006.

Standards : IS/IEC 60079-11:2011 and IS/IEC 60079-11:2006

Sl. No	Details of change	Clause No.		Observation	Remarks
		2011	2006		
1	General: Changes to remove specific clause references to other IEC 60079 standards	--	--	No impact on existing testing & certification since update is of 'informative' type	Pass
2	Scope: Expansion to include Group III	1	1	No impact on existing testing & certification since it is not a Group III equipment	Pass
3	Scope: Table 1 updated to include references to both IEC 60079-0 Edition 5 and Edition 6	Table 1	Table 1	No impact on existing testing & certification since it is 'informative' type	Pass
4	Normative references: Deletion of IEC 60079-27, and addition of IEC 61158-2 and IEC 62013-1	2	2	No impact on existing testing & certification since update is 'normative' type	Pass
5	Terms and definitions: Commonly used definitions moved to IEC 60079-0. Energy limitation definitions moved from IEC 60079-0. New definitions added	3	3	No impact on existing testing & certification since it is 'informative' type	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2011	2006		
6	Spark ignition compliance: Group III ignition requirements added	5.5	5.5	No impact on existing testing & certification since it is not a Group III equipment	Pass
7	Temperature for small components for Group I and Group II: Relocated to IEC 60079-0	5.6.2	5.6.2	No impact on existing testing & certification since it is already covered vide test report no. ERTL(E)/TES/T238/0002 /12-12, Dt. 12.03.2013	Pass
8	Intrinsically safe apparatus and component temperature for Group III	5.6.5		No impact on existing testing & certification since it is not a Group III equipment	Pass
9	Enclosures for Group I or Group II apparatus	6.1.2	6.1	No impact on existing testing & certification since it is an editorial change	Pass
10	Apparatus complying with Annex F	6.1.2.3	6.1.2	No impact on existing testing & certification since it is already assessed as per Table-5.	Pass
11	Enclosures for Group III apparatus	6.1.3	-	No impact on existing testing & certification since it is not a Group IIII equipment	Pass
12	Requirements for connections and accessories for IS apparatus when located in the non-hazardous area	6.2.5	-	No impact on existing testing & certification since it is 'informative' type	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2011	2006		
13	Separation of conductive parts	6.3.2	6.3.2	No impact on existing testing & certification since it is already covered vide test report no. ERTL(E)/TES/T238/0002/12-12, Dt. 12.03.2013	Pass
14	Encapsulation	6.6	6.6	No impact on existing testing & certification since no encapsulation used	Pass
15	Encapsulation used for the exclusion of explosive atmospheres	6.6.2	6.6	No impact on existing testing & certification since no encapsulation used	Pass
16	Primary and secondary cells and batteries	7.4	7.4	No impact on existing testing & certification since no cells or batteries used	Pass
17	Battery construction	7.4.2	7.4.9	No impact on existing testing & certification since no batteries used	Pass
18	Level of Protection "ic"	8.1	-	No impact on existing testing & certification since it is not designed for Level of Protection 'iC'	Pass
19	Filter capacitors	8.6.2	-	No impact on existing testing & certification since it is 'informative' type	Pass
20	Wiring, printed circuit board tracks, and connections	8.8	8.7	No impact on existing testing & certification since it is already covered vide test report no. ERTL(E)/TES/T238/0002 /12-12, Dt. 12.03.2013	Pass

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Sl. No	Details of change	Clause No.		Observation	Remarks
		2011	2006		
21	FISCO apparatus	9.2	-	No impact on existing testing & certification since it is not a FISCO apparatus	Pass
22	Handlights and caplights	9.3	-	No impact on existing testing & certification since it is not fall under Handlight and caplights category	Pass
23	Circuits with both inductance and capacitance	10.1.5.2	10.1.5.2	No impact on existing testing & certification	Pass
24	Electrolyte leakage test for cells and batteries	10.5.2	10.5.2	No impact on existing testing & certification since no cells or batteries used	Pass
25	Spark ignition and surface temperature of cells and batteries	10.5.3	10.5.3	No impact on existing testing & certification since no cells or batteries used	Pass
26	Determination of the acceptability of fuses requiring encapsulation	10.6.2	10.6.2	No impact on existing testing & certification since no encapsulation used	Pass
27	Optical isolators tests	10.11	-	No impact on existing testing & certification since no Optical isolator used	Pass
28	Marking	12	12	Up-dated marking label drawing no. P5460.2009, Issue- A, Sheet 1 of 1, dt. 23.08.20211 is attached	Pass
29	Encapsulation	Annex D	Annex D	No impact on existing testing & certification	Pass
30	Fieldbus intrinsically safe concept (FISCO) – Apparatus requirements	Annex G	-	No impact on existing testing & certification since this is not a FISCO apparatus	Pass
31	Ignition testing of semiconductor limiting power supply circuits	Annex H	-	No impact on existing testing & certification	Pass

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TEST REPORT NO. : ERTL(E)/TES/T238/0004/01-22/NABL
Date : 21-02-2022

ULR No. : TC563722000000035F

3.0 Equipment used

EQPT_NO	NAME	MAKE	MODEL	CAL.VALID UPTO
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No equipment used for testing the Job

4.0 Remarks (if any) :
- The findings of all tests conducted have been mentioned under head 'TEST RESULT'
Refer Annexure - II for justification of re-validation.

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Date : 21-02-2022

ULR No. : TC563722000000035F

NOTES

1. This certificate/ report refer only to the particular item submitted for calibration/test.

2. The certificate/report, if reproduced for any purpose, commercial or otherwise, should be reproduced in full. The reproduction of a part, or an abstract thereof, has to be got specially approved from Director, Electronics Regional Test Laboratory (East).

3.The results reported in the certificate /reports are valid at the time of and under the stated conditions on measurement.

4.Calibration need to be done periodically to maintain the accuracy of the measurement. (in case of calibration report only)

RELEASED BY
RBhattacharyya.
(Signature & Date)
23/02/2022
रत्ना भट्टाचार्य Ratna Bhattacharyya
वैज्ञानिक 'ई' Scientist 'E'
भारत सरकार Government of India
ई आर टी एल (ई) ERTL (East)
सॉल्ट लेक, कोलकाता-700091 Salt Lake, Kolkata-700091

ANNEXURE- I

Report no. ERTL/ TES/ T238/ 0004 / 01 -22/NABL

Following is the list of certified drawings/ documents for TRIP AMPLIFIER, Model: TX9131, Make: TROLEX.

Sl. no.	Title	Document/ Drawing No.	Date	Issue	No. of Sheets
01	ERTL Label Drawing TX9131	P5460.2009	23.08.2021	A	1
02	Interconnection Block Diagram	P5460.45	21.01.1998	A	1
03	Circuit Diagram Control PCB	P5460.01	07.07.1997	A	1
04	PCB Artwork (Control)	P5460.03	07.07.1997	A	1
05	Circuit Diagram Output PCB (V,I,KTY81 Input)	P5460.38	09.01.1998	A	1 of 3
06	Circuit Diagram Output PCB (V,I,KTY81 Input)	P5460.38	09.01.1998	A	2of 3
07	Circuit Diagram Output PCB (V,I,KTY81 Input)	P5460.38	06.02.2002	B	3 of 3
08	Output PCB	P5460.29	08.01.1998	A	7 Sheets 1 of 7 to 7 of 7
09	Reed Relay	P5093.27	21.01.1997	A	1

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ANNEXURE-II

Report no. ERTL(E) / TES/ T238/0004/ 01-22/NABL

DUT: TRIP AMPLIFIER, MODEL: TX9131

REMARKS

1. TRIP AMPLIFIER, MODEL: TX9131 was initially tested and certified vide report no. ERTL(E) /TES/ T238/0002/ 12-12, dt. 12.03.2013, as per IS/IEC60079-0:2004 & IS/IEC 60079-11:2006.

2. IS/IEC60079-0:2004 was subsequently revised to IS/IEC60079-0:2007, IS/IEC 60079-0:2011 and finally to IS/IEC60079-0:2017.

3. Laboratory has made a gap analysis to review the impact of changes brought in 2007 edition over 2004 edition on the existing assessment and test report (No. ERTL(E) /TES/ T238/0002/ 12-12, dt. 12.03.2013). Reference is made to 'Part-A' of this report for detail observation and compliance evaluation. It is seen from this analysis that the design and construction of TRIP AMPLIFIER, MODEL: TX9131, complies with the requirements of IS/IEC60079-0:2007.

4. Laboratory has made a gap analysis to review the impact of changes brought in 2011 edition over 2007 edition on the existing assessment and test report (No. ERTL(E) /TES/ T238/0002/ 12-12, dt. 12.03.2013). Reference is made to 'Part-B' of this report for detail observation and compliance evaluation. It is seen from this analysis that the design and construction of TRIP AMPLIFIER, MODEL: TX9131, complies with the requirements of IS/IEC60079-0:2011.

5. Laboratory has made a gap analysis to review the impact of changes brought in 2017 edition over 2011 edition on the existing assessment and test report (No. ERTL(E) /TES/ T238/0002/ 12-12, dt. 12.03.2013). Reference is made to 'Part-C' of this report for detail observation and compliance evaluation. It is seen from this analysis that the design and construction of TRIP AMPLIFIER, MODEL: TX9131, complies with the requirements of IS/IEC60079-0:2017.

6. It is therefore concluded that TRIP AMPLIFIER, MODEL: TX9131, designed and developed in accordance to Drawings (attached as Annexure-I) meets the requirements of the standards IS/IEC 60079-0:2007, IS/IEC60079-0:2011 and IS/IEC60079-1:2017.

7. Further IS/IEC60079-11:2006 was subsequently revised to IS/IEC60079-11:2011. The manufacturer has informed in wring to the laboratory that no change has been made for the product which was tested earlier except for those required to comply with the revised standard and the same has been verified by the laboratory.

8. Laboratory has made a gap analysis to review the impact of changes brought in 2011 edition over 2006 edition of IS/IEC60079-11 standard on the existing assessment and test report (No. ERTL(E) /TES/ T238/0002/ 12-12, dt. 12.03.2013). Reference is made to 'Part-D' of this report for detail observation and compliance evaluation. It is seen from this analysis that the design and construction of TRIP AMPLIFIER, MODEL: TX9131, complies with the requirements of IS/IEC60079-11:2011.

9. It is therefore concluded that TRIP AMPLIFIER, MODEL: TX9131, designed and developed in accordance Drawings (attached as Annexure-I) meets the requirements of the standards IS/IEC60079-0:2017 and IS/IEC60079-11:2011 for Gas Group I.

10. This report always to be read in conjunction with report no. ERTL(E) /TES/ T238/0002/ 12-12, dt. 12.03.2013

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