1. # EC-TYPE EXAMINATION CERTIFICATE

2. **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3. **EC-Type Examination Certificate Number:** ITS09ATEX26890X Issue 3

4. **Equipment or Protective System:** PHOCHECK TIGER

5. **Manufacturer:** Ion Science Limited

6. **Address:** The Way, Fowlmere, Cambridgeshire, SG8 7UJ

7. This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8. Intertek Testing and Certification Limited, notified body number 0359 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

   The examination and test results are recorded in confidential Intertek Report 101706597MAN-001, dated February 2015 and Intertek Report 102437242CHE-001, Dated: April 2016

9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with standards EN60079-0: 2012 and EN60079-11: 2012 except in respect of those requirements referred to at item 16 of the Schedule.

10. If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11. This EC Type examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12. The marking of the equipment or protective system shall include the following:-

    II 1 G Ex ia IIC T4 Ga

    -15°C ≤ Ta ≤ 45°C (with Lithium Ion Battery Pack)

    -15°C ≤ Ta ≤ 40°C (with Alkaline Battery Pack)

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A T Austin
Certification Officer
19 April 2016

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13. **Description of Equipment or Protective System**

The Ion Science PhoCheck TIGER is a handheld, battery powered Instrument using Photo-ionization technology for the detection of Volatile Organic Compounds (VOCs) which can be dangerous from both a poisoning and explosive perspective. The TIGER uses a Photo-Ionization Detector (PID) to measure gas concentrations and a patented fence electrode technology to minimize the effects of moisture and contamination, avoiding the need for compensation. The TIGER can be connected directly to a PC via a standard USB cable facilitating data download. An audio output, vibration and LEDs are used to indicate alarm conditions. Orange and Red LEDs indicate High and Low conditions respectively.

The Instrument comprises three printed circuit boards, a pump motor, a vibration motor, a Certified PID Sensor and a battery pack all housed inside a plastic enclosure.
There are two battery pack options; namely a rechargeable lithium ion battery pack using a SAFT MP174565 Integration cell and a non-rechargeable pack using three alkaline cells, type Duracell Process MN1500 which are user replaceable.

14. **Report Number**

Intertek Report 101706597MAN-001, Dated: February 2015
Intertek Report 102437242CHE-001, Dated: April 2016

15. **Conditions of Certification**

(a). Special Conditions for safe use

- The PhoCheck Tiger must be functionally checked prior to entering a hazardous area after every occasion when a connection has been made to the USB port. The instrument must complete its start up routine and display legible readings. If the LCD fails to show an intelligible and uncorrupted display the instrument must not enter a hazardous area.
- Do not make any connection to the charger port or USB port of this instrument in a hazardous area.

(b). Conditions of Manufacture

- There are no routine tests.

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16. **Essential Health and Safety Requirements (EHSR's)**

The relevant EHSR's have been identified and assessed in Intertek Report 101706597MAN-001 Dated: February 2015

17. **Drawings and Documents**

Title	Drawing No.:	Rev. Level:	Date:
PhoCheck Tiger Mechanical - General Assembly (Mechanical)	CERT0082	12	26/01/2015
PhoCheck REAR MOUNT PID ASSEMBLY (Mechanical)	CERT0083	15	26/01/2015
Phocheck Tiger Mechanical – Rechargeable Battery Assembly (2 Pages)	CERT0084	9	20/04/2010
PhoCheck Tiger Mechanical – Alkaline Battery Assembly. (2 Pages)	CERT0085	6	31/03/2010
PhoCheck Tiger Mechanical – Charger Assembly	CERT0086	3	20/04/2010
PhoCheck Tiger Instrument Label Details	CERT0091	16	14/06/2011
PhoCheck Tiger Li-ion Battery Label Details	CERT0092	12	14/06/2011
PhoCheck Tiger Alkaline Battery Label Details	CERT0093	13	14/06/2011
PhoCheck Tiger Alkaline Battery Warning Label Details	CERT0094	7	14/06/2011
PhoCheck Tiger Mechanical – Exploded Assembly	CERT0095	2	01/04/2010
PhoCheck Tiger user manual warnings (3 Pages)	CERT0096	1.9	05/08/14
Main PCB Schematic (17 Pages)	CERT0097	0.9	06/09/2010
Main PCB Layout (6 Pages)	CERT0098	0.9	06/09/2010
Safety Bill Of Materials for Main PCB Schematic	CERT0099	1.0	27 June 2014
Sensor PCB Schematic (2 Pages)	CERT0100	0.5	06/09/2010
Sensor PCB Layout (4 Pages)	CERT0101	0.5	06/09/2010
Safety Bill of Materials for Sensor PCB Schematic	CERT0102	1.0	30 September 2014
Alkaline Battery PCB Schematic	CERT0103	0.5	02/07/2010
Alkaline Battery PCB Layout (4 Pages)	CERT0104	0.5	25/05/2010
Safety Bill of Materials for Alkaline Battery PCB	CERT0105	0.5	06 September 2010
Li-ion Battery PCB Schematic	CERT0106	0.5	25/05/2010
Li-ion battery PCB Layout (4 Pages)	CERT0107	0.5	25/05/2010
Safety Bill of Materials for Li-Ion Battery PCB	CERT0108	0.5	10 August 2010
Charger PCB Schematic (2 Pages)	CERT0109	0.8	29/09/2011
Charger PCB Layout (4 Pages)	CERT0110	0.8	29/09/2011
Safety Bill of Materials for Charger PCB	CERT0111	0.8	30 September 2011
Rework of Main PCB Conformal Coating Instructions	CERT0112	0.5	14/06/2011
Li-ion Battery.	CERT0115	08	18/08/2010
PhoCheck Tiger Sensor Cover Label Details	CERT0123	02	14/06/2011
PhoCheck Tiger Battery Contact Label Details	CERT0124	02	14/06/2011
Tiger Charger Label	CERT0152	04	20/09/2011

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18	**Revisions**

Issue	Date	Change
Original issue	27 April 2010	Original Issue. Assessment Standards: EN60079-0: 2006 & EN60079-11: 2007. Marking:  II 2 G Ex ib IIC T4 Tamb: -15°C to +45°C (With Li-Ion battery pack) Tamb: -15°C to +40°C (with Alkaline battery pack) Refer to Report: 08036757A1, dated 26 April 2010 and 08036757B1, dated 27 April 2010
Variation 1	30 September 2010	Assessment updated to consider the requirements of IEC60079-0: 2007. • PCB layout of all PCBs modified to improve segregation allowing the product to remain safe under conditions of two countable faults (Drawings CERT0098, CERT0101, CERT0104, CERT0110) • The voltage clamping circuits which were duplicated in the previous design have now been triplicated to give resilience against two countable faults. (Drawings CERT0097 Pages 16 & 17 and CERT0100 Page 2.) • The Battery Pack PCBs have value changes on resistors R14 and R20, and an additional resistor in parallel with these, R21. The three parallel resistors give resilience against two countable faults. (Drawings CERT0103 and CERT 0106). • The schematic diagrams for all circuits have been re-drawn for clarity. (Drawings CERT0097, CERT0100, CERT0103, CERT0106, CERT0109) • The Lithium Ion battery has added encapsulant to provide improved anchorage of wire connections. (Drawing CERT0115). Marking updated to:  II 2 G Ex ia IIC T4 Gb Tamb: -15°C to +45°C (With Li-Ion battery pack) Tamb: -15°C to +40°C (with Alkaline battery pack) Refer to Report: 10047646E1, dated 14 September 2010
Variation 2	Not applicable	Document not issued.
Variation 3	Not applicable	Document not issued.

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Issue	Date	Change
Variation 4	25 November 2011	Assessment updated to address EN60079-26: 2007 • Construction in accordance with schedule documents to permit use within ATEX Category 1 environments and marking with EPL Ga in accordance with the coding shown below. • Changes to product labels to facilitate inclusion of a second language translation for some label content as detailed in the schedule drawings. • Changes to the battery charger in accordance with schedule drawings allowing marking of the charger label with parameters: Um 42.4Vac, 60Vdc and Uo: 6V. • The battery charger defined in accordance with this schedule may be used with the Phocheck tiger units carrying either Ex ia … or Ex ib … markings. Marking updated to: Ⓔx II 1 G Ex ia IIC T4 Ga Tamb: -15°C to +45°C (With Li-Ion battery pack) Tamb: -15°C to +40°C (with Alkaline battery pack) Refer to Reports: 11052972C1 dated 30 June 2011; 11052792D1, dated 20 June 2011 and 11054572B1, dated 30 September 2011
Issue 2	24 March 2015	Assessment updated to address EN60079-0: 2012 and EN60079-11: 2012. • Alternative fuse specified for FU1 on Main PCB. • The maximum permitted capacitance of metallic probes is reduced to 3pF in accordance with EN60079-0: 2012, Section 7.5. • Drawing CERT0082 is modified to clarify the permitted metallurgy and to reflect changes to materials permitted for the probe accessory. • Drawing CERT0083 is modified to reflect changes to the materials permitted for the LCD window. The drawing title is also changed. • Change to Drawings CERT0099 and CERT0102 to correct package type for transistors Q4-Q6 and Q390-Q392 on the Main PCB and Q100 – Q102 on the Sensor PCB. Refer to report 101706597MAN-001, Dated February 2015.
Issue 3	19 April 2016	To permit the following: Additional of alternative casting compound for fuses FU400 & FU401 Alternative vibration motor specified. Unused connectors made optional on Bill of Materials

Manufacturer's Documents

Title:	Drawing No.:	Rev. Level:	Date:
PhoCheck Tiger REAR MOUNT PID ASSEMBLY (MECHANICAL)	CERT0083	16	12/04/2016
Safety Bill Of Materials For Main PCB Schematic	CERT0099	1.1	06 April 2016

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