1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 10ATEX2369X** Issue: **2**

4 Equipment: **Type SM1xSR Electronic Ear-Muff**

5 Applicant: **Sensear PTY Limited**

6 Address: 197-199 Great Eastern Highway
Belmont
Western Australia
6104
Australia

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

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2006
EN 60079-0:2009 (used for guidance in respect of marking)
EN 60079-11:2007

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment 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 and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

II 2G
Ex ia IIB T3 Gb

I M1
Ex ia I Ma

C Ellaby
Deputy Certification Manager

Project Number 25275







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**SCHEDULE**

**EC TYPE-EXAMINATION CERTIFICATE** **Sira 10ATEX2369X**
**Issue 2**

13 **DESCRIPTION OF EQUIPMENT**

The Type SM1xSR Electronic Ear-Muff is a battery powered, noise cancelling, headphone set designed to reduce background noise. It consists of two, plastic, ear cups each of which contains a speaker. Attached to the left hand, ear cup is a boom microphone that is plugged into a connector mounted in the left hand, ear cup enclosure wall. Small microphones are also mounted in both the left hand side and the right hand side enclosure walls, two in each. The right hand, ear cup has a compartment with a lid which contains two connectors, i.e. a USB connector and a 3.5 mm stereo connector. A connector mounted in the right hand, ear cup enclosure wall is used to optionally connect an external radio via a separate, cable mounted, interface unit indentified as an SRCK0045 SM1xSR IS Interface Cable, this interface being associated with, and certified as part of, this equipment.

The SRCK0045 SM1xSR IS Interface Cable has the following intrinsic safety parameters at the Mini XLR connector:

Ui = 10 V
Ci = 0.69 µF
Li = 0

Uo = 4.1 V
Io = 26.9 mA
Po = 27.6 mW
Co = 1000 µF
Lo = 196 mH

**Variation 1** - This variation introduced the following changes:

i. The introduction of revision AC.02 of BOM drawing IECEx015; this is a rationalised version of the previous certified revision AA.06 that incorporates a minor correction and changes the specification of an inductive component.
ii. The introduction of revision AD.02 of BOM drawing IECEx016; this is a rationalised version of the previous certified revision AC.01.
iii. The drawing lists were corrected to show that:
   - drawing SENSEAR-DN-145 is at revision 1.5 and not revision 1.4.
   - drawing MFP00025 sheet 1 of 2 is at revision AB.02 and not revision AA.02.
iv. The introduction of a modified version of the SRCK0045 SM1xSR IS Interface Cable; the parameters at the Mini XLR connector of the SRCK0045 SM1xSR IS Interface Cable were also corrected by changing Lo from 197 mH to 196 mH.
v. The introduction of an SRCK0300 SM1xSR IS Interface Cable and an SRCK0400 SM1xSR IS Interface Cable (The parameters originally specified for the SRCK0045 SM1xSR IS Interface Cable are also applicable to the SRCK0300 SM1xSR IS Interface Cable and the SRCK0400 SM1xSR IS Interface Cable).
vi. The introduction of a Throat Microphone for use in place of the Boom Microphone.
vii. The introduction of certification marking drawing IECEx023 which replaces drawing IECEx012.

**Variation 2** - This variation introduced the following changes:

i. The specification of an inductive component was changed.







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## 14 DESCRIPTIVE DOCUMENTS

### 14.1 Drawings

Refer to Certificate Annexe.

### 14.2 Associated Sira Reports and Certificate History

| Issue | Date | Report no. | Comment |
|---|---|---|---|
| 0 | 15 February 2011 | R22940A/00<br>R22940B/00 | The release of prime certificate. |
| 1 | 25 February 2011 | R22940A/01 | Report no.R24940A/01 replaced R24940A/00. |
| 2 | 20 October 2011 | R25275A/00<br>R25275B/00 | This Issue covers the following changes:<br>• The introduction of Variation 1 based on report R25275A/00.<br>• The introduction of Variation 2 based on report R25275B/00. |

## 15 SPECIAL CONDITIONS FOR SAFE USE (denoted by X after the certificate number)

15.1 The battery shall only be charged when the equipment is located in a safe area via the jack socket on the left hand, ear cup; the maximum permitted voltage at this charging input is Um = 6 V.

15.2 User connection to the USB connector located in the connector compartment of the right hand, ear cup is not permitted.

15.3 Connection to the 3.5 mm stereo connector in the connector compartment of the right hand, ear cup shall only be made in the safe area. The maximum permitted voltage at this connecter is Um = 0.6 V and the maximum permitted power at this connector is Pm = 0.1 W.

15.4 Connection to the multi-pin connector on the right hand, ear cup shall only be made via one of the following IS Interface Cables, no direct external connection to this connector is permitted.
SRCK0045 SM1xSR SRCK0300 SM1xSR SRCK0400 SM1xSR

15.5 The SM1xSR Electronic Ear-Muff and the IS Interface Cable enclosures both provide minimum IP 20 protection and as such this equipment shall only be used in environments appropriate to this level of protection.

## 16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

## 17 CONDITIONS OF CERTIFICATION

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

17.3 Drawing IECEx010 Revision 1.3 shows that a separation distance of 0.5 mm +/-10% shall be met at a specific location on the Bottom Layer of PCB00037 Rev BB.04. Compliance with this will require verification by measurement on the manufactured PCBs to check that this particular separation distance is within the specified limits.





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# Certificate Annexe

**Certificate Number:** Sira 10ATEX2369X

**Equipment:** Type SM1xsr Electronic Ear-Muff

**Applicant:** Sensear PTY Limited

**Issues 0 and 1**

| Drawing | Sheets | Rev. | Date (Sira stamp) | Title |
|---|---|---|---|---|
| IECEx009 | 1 to 20 | 1.4 | 16 Feb 11 | SM1xSR IS PCB Layout |
| IECEx010 | 1 to 5 | 1.4 | 16 Feb 11 | SM1xSR IS PCB Layout - Modified PCB00037 |
| IECEx011 | 1 to 13 | 1.3 | 16 Feb 11 | SM1xSR IS Encapsulation Drawing |
| IECEx012 | 1 to 11 | 1.3 | 16 Feb 11 | SM1xSR Certification Markings |
| IECEx013 | 1 to 7 | 1.2 | 16 Feb 11 | SM1xSR IS Encapsulation Drawing – Modified PCB00037 Rev B |
| IECEx015 | 1 of 1 | AA.06 | 16 Feb 11 | SM1xSR IS PCB00029 BOM |
| IECEx016 | 1 of 1 | AC.01 | 16 Feb 11 | SM1xSR IS PCB00037 BOM |
| IECEx017 | 1 of 1 | AA.01 | 16 Feb 11 | SM1xSR IS Inline Radio Cable PCB00024 BOM |
| IECEx018 | 1 to 6 | 1.3 | 16 Feb 11 | Critical Components List – CSA-ATEX-IECEx |
| IECEx019 | 1 to 6 | 1.3 | 16 Feb 11 | SM1xSR IS Schematic Layout – Modified PCB00037 |
| IECEx020 | 1 to 5 | 1.2 | 16 Feb 11 | PCB00029 Specification |
| IECEx022 | 1 to 4 | 1.6 | 16 Feb 11 | PCB00037 Specification |
| IECEx021 | 1 to 5 | 1.1 | 16 Feb 11 | PCB00034 Specification |
| SENSEAR-DN-145 | 1 to 8 | 1.5 | 16 Feb 11 | Sensear Modification of PCAA0037 Rev B |
| PCB00029 | 1 to 11 | BB.08 | 16 Feb 11 | SM1xSR IS Right |
| PCB00034 | 1 of 1 | BB.04 | 16 Feb 11 | PCB00034 SM1xSR IS Inline Cable |
| PCB00037 | 1 of 1 | CC.06 | 16 Feb 11 | SM1xSR IS Left Design Version |
| MFP00023 | 1 of 1 | AA.05 | 16 Feb 11 | SM1 Microphone Harness |
| IECEx014 | 1 of 4 | AA.03 | 25 Feb 11 | IECEx014 Sensear SM1xSR IS High Level |
| IECEx014 | 2 of 4 | AA.01 | 25 Feb 11 | IECEx014 Sensear SM1xSR IS High Level |
| IECEx014 | 3 of 4 | AA.01 | 25 Feb 11 | IECEx014 Sensear SM1xSR IS High Level |
| IECEx014 | 4 of 4 | AA.01 | 25 Feb 11 | IECEx014 Sensear SM1xSR IS High Level |
| BAT00003 | 1 of 3 | AA.05 | 16 Feb 11 | SM1xSR IS Battery Pack |
| BAT00003 | 2 of 3 | AA.02 | 16 Feb 11 | SM1xSR IS Battery Pack |
| BAT00003 | 3 of 3 | AA.02 | 16 Feb 11 | SM1xSR IS Battery Pack |
| SRCK0045 | 1 of 1 | AA.03 | 16 Feb 11 | SM1xSR IS Inline Radio Connection |
| MIC00004 | 1 of 1 | AA.04 | 16 Feb 11 | IS Dongson DSTBM-78239W |
| MFP00033 | 1 of 3 | AA.06 | 16 Feb 11 | MFP SM/x Headband Cable Assembly |
| MFP00033 | 2 of 3 | AA.05 | 16 Feb 11 | MFP SM/x Headband Cable Assembly |
| MFP00033 | 3 of 3 | AA.05 | 16 Feb 11 | MFP SM/x Headband Cable Assembly |
| MFP00034 | 1 of 3 | AA.06 | 16 Feb 11 | MFP SM/x Helmet Cable Assembly |
| MFP00034 | 2 of 3 | AA.05 | 16 Feb 11 | MFP SM/x Helmet Cable Assembly |
| MFP00034 | 3 of 3 | AA.05 | 16 Feb 11 | MFP SM/x Helmet Cable Assembly |
| MFP00026 | 1 of 1 | AA.04 | 16 Feb 11 | MFP SM1 Speaker Harness |
| MFP00025 | 1 of 2 | AB.02 | 16 Feb 11 | MFP SM1 Boom Mic Harness |
| MFP00025 | 2 of 2 | AA.04 | 16 Feb 11 | MFP SM1 Boom Mic Harness |
| MFP00024 | 1 of 1 | AA.03 | 16 Feb 11 | SM1 Radio Connection Harness |
| MFP00049 | 1 & 2 | AA.01 | 16 Feb 11 | SM1 Behind the Head Neck Band |
| Doc. SE363 | 1 & 2 | 1.0 | 16 Feb 11 | Thuder T1H Product Information |
| Doc. SE364 | 1 & 2 | 1.0 | 16 Feb 11 | Thuder T1 Product Information |
| IECEx0006 | 1 to 6 | 1.6 | 16 Feb 11 | Critical Component list |







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# Certificate Annexe

**Certificate Number:** Sira 10ATEX2369X

**Equipment:** Type SM1xsr Electronic Ear-Muff

**Applicant:** Sensear PTY Limited

**Issue 2**

Drawings associated with Variation 1.

| Drawing | Sheets | Rev. | Date (Sira stamp) | Title |
|---|---|---|---|---|
| IECEx015 | 2 | AC.02 | 04 Oct 11 | SM1xSR IS PCB00029 BOM |
| IECEx016 | 2 | AD.02 | 17 Oct 2011 | SM1xSR IS PCB00037 BOM |
| IECEx018 | 6 | 1.4 | 04 Oct 11 | Critical Components List – CSA-ATEX-IECEx |
| IECEx023 | 11 | 1.4 | 04 Oct 11 | SM1xSR Certification markings |
| IECEx029 | 1 | AB.01 | 04 Oct 11 | PCB00041 BOM for use in SRCK0300 cables |
| IECEx030 | 1 | AA.04 | 04 Oct 11 | PCB00040 BOM for use in SRCK0400 cables |
| IECEx031 | 1 | AA.05 | 04 Oct 11 | PCB00034 BOM for use in SRCK0045 cables |
| IECEx033 | 4 | AA.04 | 04 Oct 11 | PCB00041 Specification (Schedule) |
| IECEx034 | 4 | AA.03 | 04 Oct 11 | PCB00040 Specification (Schedule) |
| IECEx035 | 4 | AA.03 | 04 Oct 11 | PCB00034 Specification (Schedule) |
| IECEx036 | 7 | AA.02 | 04 Oct 11 | PCB00034(BB.05) PCB Layout |
| IECEx037 | 10 | AA.02 | 04 Oct 11 | PCB00040(AA.03) PCB Layout |
| IECEx039 | 10 | AA.03 | 04 Oct 11 | PCB00041(BB.04) PCB Layout |
| SRCK0045 | 1 | AC.01 | 04 Oct 11 | SM1xSR IS Inline Radio Connection |
| SRCK0300 | 1 | AD.01 | 04 Oct 11 | Intrinsically Safe Radio Connection Kit – Incotechnology |
| SRCK0400 | 1 | AB.01 | 04 Oct 11 | SM1xSR Inline Radio Connection - McKay |
| SMBM0002 | 1 | AA.02 | 04 Oct 11 | Pryme MR-1500-SM1 Throat Microphone |

No new drawings were introduced by Variation 2.







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