



1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **Sira 19ATEX1119X** Issue: **1**

4 Equipment: **NIR-O Analyzer Model 405V5-1PWCH (Type pxb)**

5 Applicant: **Guided Wave Inc. An Advanced Company**

6 Address: **3033 Gold Canal Drive  
Rancho Cordova,  
California 95670  
USA**

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

8 CSA Group Netherlands B.V., notified body number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 60079-0:2012/A11:2013 | EN 60079-1:2014  | EN 60079-2:2014       |
| EN 60079-11:2012         | EN 60079-28:2015 | EN ISO 80079-36: 2016 |
| EN ISO 80079-37: 2016    | EN 14986: 2017   |                       |

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-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 db h ib [ib] op pr pxb IIB+H<sub>2</sub> T4 Gb

Ta = 0°C to +45°C

Project Number 80067777

Signed: J A May

Title: Director of Operations

CSA Group Netherlands B.V.  
Utrechtseweg 310, Building B42,  
6812AR, Netherlands



## SCHEDULE

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#### 13 DESCRIPTION OF EQUIPMENT

The NIR-O is a spectrographic analyser designed to analyse a spectrum of light after it passes through optics at a given sample point.

NIR-O has a pressurized main enclosure, which consists of the following modules inside:

- Light Source and Filter Wheel
- Multiplexer and Spectrometer (includes the detector)
- Computer
- Cabinet Heat Exchanger
- Communications Converters (Ethernet to Fibre Optic)
- Power Supplies

A small enclosure is mounted on the exterior of the enclosure to provide impact protection for the fibre cables and used as a junction box for service loops. This enclosure is not purged or pressurized.

The Fibre Optic output assembly receives the source light energy and directs it into a manifold of fibre optic cables for distribution to the field mounted probe(s) or flow cells. The fibre optic cables are mechanically protected against damage that would allow the light to escape from the cable.

Returning fibre optic cables from the probes are connected to the Multiplexer (Mux), which selects the light energy from one of the fibre optic cables and directs it into the spectrograph. The spectrograph receives the light energy through the Mux and gives a spectrum on a detector.

The thermal electric A/C is a nominal 1200 BTU/hr (680 BTU/hr actual) instrument air conditioning unit that is designed to be installed external to the pressurized main enclosure.

The enclosure is made of powder-coated steel and zinc plated hardware for the clamps and hinges. It has a control unit that automatically purges and pressurizes the inside of the enclosure once the enclosure is no longer pressurized. This contactor is housed in an Ex d certified enclosure (IECEX and ATEX certified Model XIHLFCX). The power connections at the contactor are provided by the customer and is routed to the Type pxb control unit. Once the purge process is completed and safe pressure is maintained inside the enclosure, the control unit energizes the contactor, which sends power to the analyser. The type pxb system includes a control unit, purge vent, I.S. cable between vent and control unit, contactor enclosure, cable sealing glands, and flexible conduit. The location and the certification information of these components can be found in the table listed below.

Customer connect incoming power on the contactor in the small flameproof enclosure located externally under the main enclosure. The purge control unit energizes the contactor if safe pressure and proper purge operation is completed. Once the contactor is energized, the breakers for the main enclosure are also energized which powers the A/C and internal modules. If pressurization falls below the safe setting, the purge control unit cuts put to the contactor subsequently removing power to the main enclosure. Power to the main enclosure will not be restored until the pressurization and purge operations are completed.

The following IECEX/ATEX certified components and equipment's as applicable have been utilized in Type pxb model based on the listed standards

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| Item #                                    | Manufacturer Document# | Balloon no per manufacturer document# | Component  | Manufacturer/m odel   | ATEX Certification           | IECEX Certification  | Application  |
|---|------------------------|---------------------------------------|--|---|------------------------------|--|--|
| 40677-00002                               | 40669-1V3PCH           | 445                                   | ENCLOSURE, FLAMEPROOF                            | ADALET/SCOTT FETZER CO. / Model XIHLFCX                         | DEMKO 07 ATEX 0622294U Rev 3 | IECEX UL 08.0005U Issue 6  | Housing of the contactor   |
| 11113-UFF92                               | 40669-1V3PCH           | 442                                   | UNION, STRAIGHT, F-F, ¼ NPT, AL GUF-2-EX         | Killark, Div of Hubbell Inc / GUF-2-EX                          | ITS09ATEX1641 7U/02          | IECEX ITS 09.0024U   | Connection between the purge control unit (balloon # 447) and the contactor enclosure (balloon # 445)  |
| 11521-90M16                               | 40669-1V3PCH           | 398                                   | CABLE GLAND                                      | U.I.Lapp GmbH / 54115215  | IBExU08ATEX10 63X            | IECEX IBE 13.0027X issue 0   | It is used to seal around the fiber-optic cables that run in and out of the analyser on the right side of the equipment.   |
| 23287-00002<br>23287-00003                | 40669-1V3PCH           | 443<br>458                            | GLAND, MC CABLE, A, ¾ NPT, Ni 711-A-3/4-Ni BRASS | Hawke International / 711-A-3/4-Ni BRASS                        | SIRA 07ATEX4330X Issue: 6    | IECEX SIR 06.0082X Issue 9   | It is used to seal the contactor enclosure entries and also seal the entry on the bottom of the main enclosure that connects to the contactor enclosure  |
| 10665-00001<br>11060-00001                | 40669-1V3PCH           | 447<br>455                            | CONTROL UNIT + VENT                              | Pepperl + Fuchs Inc. / Model 6000 Pressurization Control System | -                            | IECEX UL 08.0003X Issue 8<br>Ex d [ib px] IIC T4 tD A21 IP6X T60°C | The control unit provides automatic monitoring and control of purging, temperature, leakage, alarm and system power of the main enclosure. This control unit comes with a pressure relief vent that allows gas to exit the enclosure when the breaking pressure of the vent is reached |
| 11663-00105<br>11663-00106<br>11663-00201 | 14064-J000V            | 222<br>267<br>268                     | Shaft coupling                                   | ROTEX GS  | IBExU03ATEXB0 02_05_X        | -  | The coupler is housed inside the large fan shaft sleeve to protect from misalignment of motor shaft.   |

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

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#### 14.2 Associated Reports and Certificate History

| Issue | Date             | Report number | Comment  |
|-------|------------------|---------------|--|
| 0     | 05 August 2019   | R70175360A    | The release of the prime certificate.  |
| 1     | 22 December 2020 | R80067777A    | Transfer of certificate Sira 19ATEX1119X from Sira Certification Service to CSA Group Netherlands B.V. |

#### 15 SPECIFIC CONDITIONS OF USE (denoted by X after the certificate number)

- 15.1 When marked with the code "Ex db h ib op pr pxb IIB+H2 T4 Gb", any fibre optic cable shall be protected in accordance with the relevant code of practice.
- 15.2 Ensure that the purge gas supply does not exceed 40°C.
- 15.3 Inspect the air conditioning unit for dust build-up in accordance with the manufacturer's instructions
- 15.4 The equipment when used in the outdoor locations shall be installed in a protective shelter as indicated in the user manual.
- 15.5 All unused device openings of the ADALET/SCOTT FETZER CO. / Model XIHLFCX flameproof enclosure must be fitted with a suitably certified close-up plug with protection types 'd', 'tb', and have an IP66 rating.

#### 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 MANUFACTURE

- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of CSA Certificates.
- 17.2 Holders of EU-Type Examination Certificates are required to comply with the conformity to type requirements defined in Article 13 of Directive 2014/34/EU.
- 17.3 Each and every NIR-O Analyser shall be subjected to a routine overpressure test of 9 (6\*1.5) mbar for a period of 2 min ± 10 s, in accordance with Clause 16.2 of EN 60079-2:2014.  
There shall be no permanent deformation.
- 17.4 Each and every NIR-O Analyser shall be subjected to a routine leakage test, in accordance with Clause 16.3 of EN 60079-2:2014. The leakage flow rate shall not exceed 17 L/min.
- 17.5 The fan blades shall be balanced by the manufacturer to G 6.3 per ISO 1940 which states that fans should be balanced to G 6.3 (ISO 14694 references ISO 1940 for balance grades, so by balancing blades to ISO 1940).

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- 17.6 The NIR-O Analyser incorporates previously certified devices as listed below. It is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with this device. The manufacturer shall inform Sira of any modifications to the device that may impinge upon the explosion safety design of the equipment

| Item #                                    | Component  | Manufacturer/ model   | ATEX Certification           |
|---|--|---|------------------------------|
| 40677-00002                               | ENCLOSURE,<br>FLAMEPROOF,                                | ADALET/SCOTT FETZER CO.<br>/ Model XIHLFCX                            | DEMKO 07 ATEX 0622294U Rev 3 |
| 11113-UFF92                               | UNION, STRAIGHT, F-<br>F, 3/4 NPT, AL<br>GUF-2-EX        | Killark, Div of Hubbell Inc /<br>GUF-2-EX                             | ITS09ATEX16417U/02           |
| 11521-90M16                               | CABLE GLAND  | U.I.Lapp GmbH / 54115215  | IBExU08ATEX1063 X            |
| 23287-00002                               | GLAND, MC CABLE, A,<br>3/4 NPT, Ni<br>711-A-3/4-Ni BRASS | Hawke International / 711-A-<br>3/4-Ni BRASS                          | SIRA 07ATEX4330X<br>Issue: 6 |
| 10665-00001<br>11060-00001                | CONTROL UNIT +<br>VENT                                   | Pepperl + Fuchs Inc. / Model<br>6000 Pressurization Control<br>System | -                            |
| 11663-00105<br>11663-00106<br>11663-00201 | 14064-J000V  | Shaft coupling  | ROTEX GS                     |

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# Certificate Annexe

Certificate Number: Sira 19ATEX1119X

Equipment: NIR-O Analyzer Model 405V5-1PWCH  
(Type pxb)

Applicant: Guided Wave Inc.

## Issue 0

| Drawing      | Sheets | Rev. | Date (Sira stamp) | Title  |
|--------------|--------|------|-------------------|--|
| 405V3-4PWCH  | 1 to 1 | A    | 31 Jul 19         | Nir-O X-Purge Wiring Diagram                 |
| 405V5-1PWCH  | 1 to 1 | A    | 25 Dec 18         | ASSY, ANALYZER, NIRO, TYPE PXB               |
| 405V5-8PWCH  | 1 to 4 | A    | 27 Jun 19         | INSTALL, ANALYZER, NIRO, X-PURGE(cert)       |
| 14064-1000V  | 1 to 3 | B    | 25 Dec 18         | ASSY, ACEX1200                               |
| 14064-40001  | 1 to 2 | A    | 27 Jan 17         | ACEX1200 Air Conditioner Wiring Diagram      |
| 14064-10002  | 1 to 3 | B    | 25 Dec 18         | BOM, ACEX Air Conditioner                    |
| 14064-J000V  | 1 to 6 | 3    | 27 Jun 19         | AUX DWG, ACEX ASSY AND COMPONENT DETAILS     |
| 23029-00002  | 1 to 1 | A    | 27 Jun 19         | RHINO Power supply                           |
| 23056-10002  | 1 to 1 | A    | 27 Jun 19         | MODIFICATION, COMPUTER, 8GB, VENT HOLES      |
| 23258-00MOD  | 1 to 1 | A    | 27 Jun 19         | MOD, MOTOR, ACEX EXT FAN                     |
| 40609-100CH  | 1 to 3 | A    | 25 Dec 18         | ASSY, MUX                                    |
| 40623-1000W  | 1 to 1 | A    | 25 Dec 18         | ASSY, DETECTOR                               |
| 40629-031CH  | 1 to 3 | A    | 27 Jun 19         | ENCLOSURE, X-PURGE                           |
| 40637-00001  | 1 to 2 | A    | 27 Jun 19         | COVER, FILTER MODULE, LED-LAMP SIDE          |
| 40637-00002  | 1 to 2 | A    | 27 Jun 19         | COVER, FILTER MODULE, POWER-COMM SIDE        |
| 40638-10WCH  | 1 to 3 | A    | 25 Dec 18         | ASSY, FILTER-LAMP                            |
| 40649-10001  | 1 to 7 | A    | 25 Dec 18         | ASSY, SPECTROGRAPH                           |
| 40651-00005  | 1 to 1 | A    | 31 Jul 19         | LABEL, ANALYZER, NIR-O, X-PURGE              |
| 40652-00002  | 1 to 1 | A    | 27 Jun 19         | COVER, MUX MODULE, BLANK                     |
| 40652-00061  | 1 to 2 | A    | 27 Jun 19         | COVER, MUX MODULE, LED SIDE, 6-CH            |
| 40652-00121  | 1 to 2 | A    | 27 Jun 19         | COVER, MUX MODULE, LED SIDE, 12-CH           |
| 40664-10WCH  | 1 to 1 | A    | 01 Aug 19         | ASSY, SPECTROMETER                           |
| 40667-100EP  | 1 to 2 | A    | 01 Aug 19         | ASSY, BACKPLATE                              |
| 40669-1V3PCH | 1 to 2 | A    | 25 Dec 18         | ASSY, ENCLOSURE, X-PURGE                     |
| 40669-123306 | 1 to 2 | A    | 27 Jun 19         | BOM - X-PURGE ENCLOSURE ASSY                 |
| 40672-00001  | 1 to 1 | A    | 11 May 17         | NAMEPLATE, NIR-O SERIAL NUMBER               |
| 40677-00002  | 1 to 1 | A    | 23 Mar 17         | ENCLOSURE, CONTACTOR, X-PROOF                |
| 40677-80002  | 1 to 2 | A    | 27 Jan 17         | CONTACTOR INSTALLATION, INSTRUMENT ENCLOSURE |

Issue 1. No new drawings were introduced.

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