



1 **TYPE EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 19ATEX4108X** Issue: **1**

4 Equipment: **NIR-O Analyser Model 405V4-1PWCH (Type pzc)**

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., certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design of Category 3 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 60079-2:2014	EN 60079-11:2012
EN 60079-15:2010	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 Type Examination Certificate relates only to the design of the specified equipment, and not to specific items of equipment subsequently manufactured. 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 3G
Ex h ic nA op pr pzc IIB+H₂ T4 Gc
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

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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 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 pressurised.

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

Returning fiber optic cables from the probes are connected to the Multiplexor (Mux), which selects the light energy from one of the fiber 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 manual control unit to purge and pressurization the inside of the enclosure before electrical is applied. The Type pzc system includes an indicator, inlet kit, and over pressure vent. Certification information of these components can be found in the table listed below.

The following IECEx/ATEX certified components have been utilized for Type pzc model based on listed standards in section 1.7

Item #	Manufacturer Document#	Balloon no per manufacturer document#	Component	Manufacturer/m odel	ATEX Certification	IECEx Certification	Application
11521-90M16	40669-1V2PCH	398	CABLE GLAND	U.I.Lapp GmbH / 54115215	IBExU08ATEX106 3 X	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.
					Protection method : Ex eb IIC, Ex ta III		
11093-00001	40669-1V2PCH	408	INDICATOR [INLET KIT & VENT]	Purge Solutions, Inc. / CYCLOPS Z- Purge Indicators	DNV 09 ATEX 52751X Rev 1	IECEx DNV 09.0001X issue 1	The indicator monitors the internal pressure to ensure proper purging. An alarm will be triggered in the event of out-of-range pressure. The inlet kit and vent help regulate the inflow and outflow of purge gas respectively.
					Protection method : Ex nA ic [pz] IIC T6 Gc Ex tc IIIC T79°C Dc IP66		

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Item #	Manufacturer Document#	Balloon no per manufacturer document#	Component	Manufacturer/model	ATEX Certification	IECEx Certification	Application
11663-00105 11663-00106 11663-00201	14064-J000V	222 267 268	Shaft coupling	ROTEX GS	IBExU03ATEXB002_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.

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 19ATEX4108X 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 h ic nA op pr pzc IIB+H2 T4 Gc", any fibre optic cable must 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.

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 Type Examination Certificates are required to comply with the conformity to type requirements defined in Article 13 of Directive 2014/34/EU.
- 17.1 Each and every NIR-O Analyser shall be subjected to a routine overpressure test of 107.5 (71.6*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
- 17.2 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 125L/min.

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- 17.3 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).
- 17.4 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
11521-90M16	CABLE GLAND	U.I.Lapp GmbH / 54115215	IBExU08ATEX1063 X
11093-00001	INDICATOR [INLET KIT & VENT]	Purge Solutions, Inc. / CYCLOPS Z-Purge Indicators	DNV 09 ATEX 52751X Rev 1
11663-00105 11663-00106 11663-00201	14064-J000V	Shaft coupling	ROTEX GS

Certificate Annexe

Certificate Number: Sira 19ATEX4108X
Equipment: NIR-O Analyser Model 405V4-1PWCH
(Type pzc)
Applicant: Guided Wave Inc.

Issue 0

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
405V2-4PWCH	1 to 1	A	31 Jul 19	Nir-O Z-Purge Wiring Diagram
405V4-1PWCH	1 to 1	A	25 Dec 18	ASSY, ANALYZER, NIRO, TYPE PZC
405V4-8PWCH	1 to 4	A	27 Jun 19	INSTALL, ANALYZER, NIRO, Z-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
40629-02PCH	1 to 1	A	27 Jun 19	ENCLOSURE, Z-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
40651-00004	1 to 1	A	31 Jul 19	LABEL, ANALYZER, NIR-O, Z-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
40669-1V2PCH	1 to 1	A	25 Dec 18	ASSY, ENCLOSURE, Z-PURGE
40669-112212	1 to 2	A	27 Jun 19	BOM - Z-PURGE ENCLOSURE ASSY
40672-00001	1 to 1	A	11 May 17	NAMEPLATE, NIR-O SERIAL NUMBER

Issue 1. No new drawings were introduced.

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