Prüfbericht-Nr.: *Test report no.:*	**CN23JVCB 002**	**Auftrags-Nr.:** *Order no.:*	168486438	Seite 1 von 19 *Page 1 of 19*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum** *Order date:*	2024-03-37	
Auftraggeber: *Client:*	Zhejiang Huaxiao Technology Co., Ltd. 1-3/F, Building A2 ,No. 28 Dongqiao Road, Dongzhou Street, Fuyang District, Hangzhou, Zhejiang, P.R. China			
Prüfgegenstand: *Test item:*	Carbon Monoxide Alarm			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	DHI-HY-GC30A, DHI-HY-GC30A-R8, DHI-HY-GC30A-R9 Refer all model number in page 8 & 9			
Auftrags-Inhalt: *Order content:*	TÜV-Mark Approval			
Prüfgrundlage: *Test specification:*	EN 50291-1: 2018 EN 50291-1: 2018/AC:2021 EN 50291-2: 2019 BS EN 50291-1: 2018			
Wareneingangsdatum: *Date of sample receipt:*	2024-03-27, 2024-04-28	See photo documentation for product photo.		
Prüfmuster-Nr.: *Test sample no:*	A003684959 001 to 012 A003707860 004 to 006			
Prüfzeitraum: *Testing period:*	2024-03-25 to 2024-06-21			
Ort der Prüfung: *Place of testing:*	See page 7			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: *Test result*:*	**Pass**			

geprüft von: *tested by: Jinhui Tan*	Jinhui Tan	**genehmigt von:** *authorized by: Eddie Tan*	Eddie Tan
Datum: *Date:* 2024-07-02		**Ausstellungsdatum:** *Issue date:* 2024-07-02	
Stellung / Position:	Sachverständige(r)/Expert	**Stellung** / Position:	Sachverständige(r)/Expert

Sonstiges / *Other:*

This report contains:
- Main report including the cover page (19 pages)
- Attachment 1: Photo documentation (2 pages)

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:* Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*

* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* *Legend:*	*P(ass) = passed a.m. test specification(s)*	*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. *The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.*
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3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. *Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.* *Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.*
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. *The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.*

TEST REPORT

EN 50291-2:2019

Electrical apparatus for the detection of carbon monoxide in domestic premises - Part 2: Electrical apparatus for continuous operation in a fixed installation in recreational vehicles and similar premises including recreational craft - Additional test methods and performance requirements

Report Number .....:	See cover page
Date of issue.....:	See cover page
Total number of pages .....:	See cover page
Applicant's name.....:	See cover page
Address .....:	See cover page
Test specification:	
Standard.....:	See cover page
Test procedure.....:	See cover page
Non-standard test method.....:	N/A
Test Report Form No.....:	EN 50291-2
Test Report Form(s) Originator.....:	TUV Rheinland (Shenzhen) Co., Ltd.
Master TRF .....:	2024-03

General disclaimer:

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

The authenticity of this Test Report and its contents can be verified by contacting the responsible for this Test Report.

Test item description ..... :	Carbon Monoxide Alarm
Trade Mark ..... :	WISUALARM, DAHUA, IMOU
Manufacturer ..... :	Same as client
Model/Type reference ..... :	See cover page
Ratings ..... :	DC3V (Primary Lithium Battery CR17450)

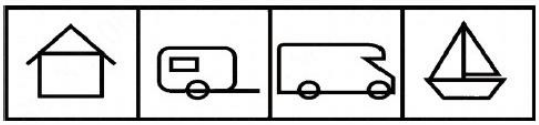
Copy of marking plate(s):



Carbon monoxide alarm(Type A)
DHI-HY-GC30A-R8
P/N:1.0.01.36.15626 3V ⎓

WISUALARM
www.wisualarm.com

S/N: 9D08787PAG03374
EN 50291-1:2018/AC:2021 BS EN 50291-1:2018
EN 50291-2:2019
WARNING:Battery not replaceable.See instruction manual.
Zhejiang Huaxiao Technology Co., Ltd.
1-3/F, Building A2, No.28 Dongqiao Road,
Dongzhou Street, Fuyang District, Hangzhou, Zhejiang, China
Batch number: 9D08787 Replacement date: 30-07-2034
CAUTION:READ THE INSTRUCTIONS CAREFULLY BEFORE OPERATING OR SERVICING
Environmental classification: 6K2/6B1/6S1/6M3

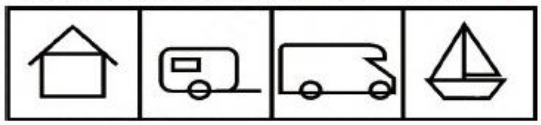


CE UKCA

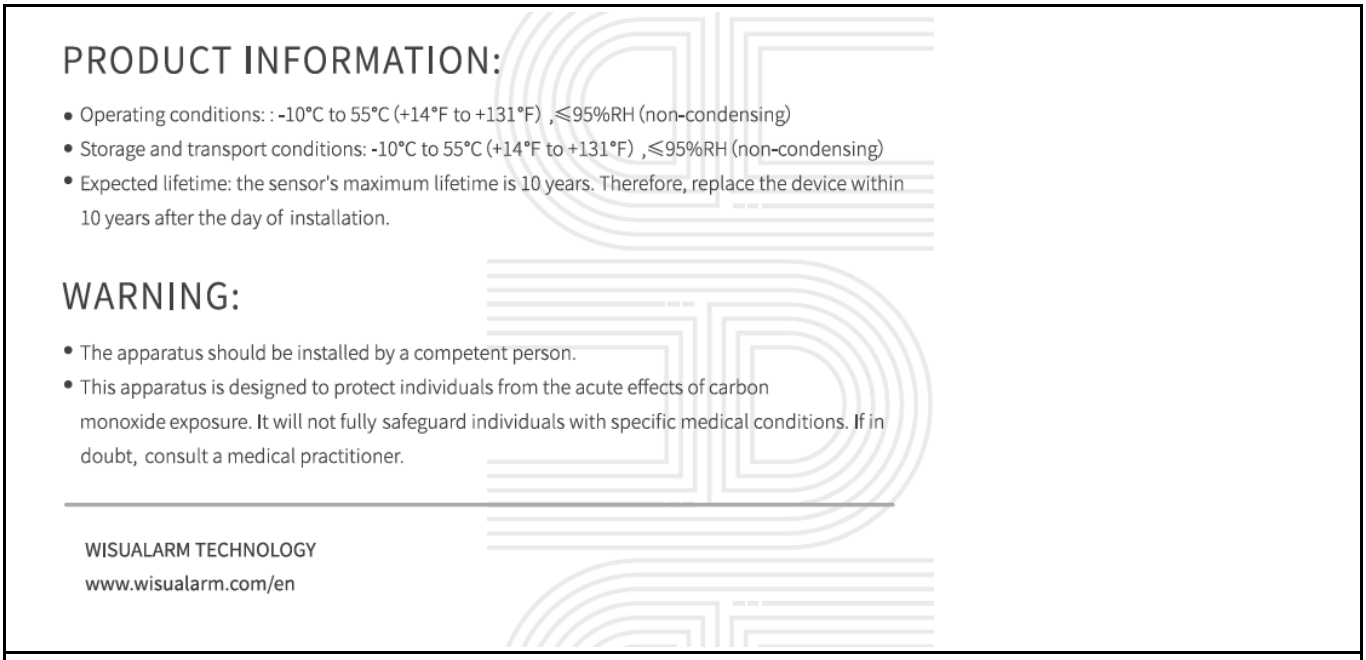
Carbon monoxide alarm(Type A)
DHI-HY-GC30A-R9
P/N:1.0.01.36.15627 3V ⎓

WISUALARM
www.wisualarm.com

S/N: 9D08787PAG03375
EN 50291-1:2018/AC:2021 BS EN 50291-1:2018
EN 50291-2:2019
WARNING:Battery not replaceable.See instruction manual.
Zhejiang Huaxiao Technology Co., Ltd.
1-3/F, Building A2, No.28 Dongqiao Road,
Dongzhou Street, Fuyang District, Hangzhou, Zhejiang, China
Batch number: 9D08787 Replacement date: 30-07-2034
CAUTION:READ THE INSTRUCTIONS CAREFULLY BEFORE OPERATING OR SERVICING
Environmental classification: 6K2/6B1/6S1/6M3



Remark: The marking plates may be only a draft, the model number, trademark and type of apparatus can be replaced by others in this report. Listed above three marking plates with different trademarks to represent others.



PRODUCT INFORMATION:

- Operating conditions: : -10°C to 55°C (+14°F to +131°F) ,≤95%RH (non-condensing)
- Storage and transport conditions: -10°C to 55°C (+14°F to +131°F) ,≤95%RH (non-condensing)
- Expected lifetime: the sensor's maximum lifetime is 10 years. Therefore, replace the device within 10 years after the day of installation.

WARNING:

- The apparatus should be installed by a competent person.
- This apparatus is designed to protect individuals from the acute effects of carbon monoxide exposure. It will not fully safeguard individuals with specific medical conditions. If in doubt, consult a medical practitioner.

WISUALARM TECHNOLOGY
www.wisualarm.com/en

Remark: Waring instruction on package.

Summary of testing:

Tests performed (name of test and test clause):

All applicable tests as described in Test Case and Measurement Sections were performed.

- The test samples are pre-production sample without serial numbers.

Clause	Test
6.3.101	Degree of protection
6.3.102.1	Vibration
6.3.102.2	Shock
6.3.102.3	Orientation static
6.3.102.4	Orientation dynamic motion
6.3.102.5	Acceleration steady state
6.3.103	Electromagnetic emission
6.3.104	Immunity to electromagnetic environment

Testing location:

1. Hangzhou EVERFINE Test and Calibration Technology Co., Ltd.
#669 Binkang RD, Binjiang Hi-Tech Zone, Hangzhou, China

POSSIBLE TEST CASE VERDICTS:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
TESTING:	
Date of receipt of test item.....:	See cover page
Date (s) of performance of tests.....:	See cover page
GENERAL REMARKS:	
"(See Enclosure #)" refers to additional information appended to the report. **"(See appended table)" refers to a table appended to the report.** **Throughout this report a ☐ comma / ☒ point is used as the decimal separator.**	
Name and address of factory (ies).....:	Same as client
GENERAL PRODUCT INFORMATION:	
This is an electrically operated carbon monoxide gas detection apparatus, designed for continuous operation in domestic premises. This apparatus is not to monitor low levels of CO for health purposes.	

Model different:

Application model	Type of Apparatus	Alternative Customer Model	Description	Battery user replaceable
DHI-HY-GC30A	Type B	--	Basic model	No
		DHI-HY-GC30A-x HY-GC30A HY-GC30A-x GC30A GC30A-x C06-x DHI-HY-GC30A-DE HY-GC30A-DE GC30A-DE DHI-HY-GC30A-FR HY-GC30A-FR GC30A-FR DHI-HY-GC30A-BX HY-GC30A-BX GC30A-BX C06	Same structure as DHI-HY-GC30A	
DHI-HY-GC30A-R8	Type A	--	Add 868 Wireless module basis of DHI-HY-GC30A	No
		DHI-HY-GC30A-R8-x HY-GC30A-R8 HY-GC30A-R8-x GC30A-R8 GC30A-R8-x	Same structure as DHI-HY-GC30A-R8	

		C06-R8-x DHI-HY-GC30A-R8-DE HY-GC30A-R8-DE GC30A-R8-DE DHI-HY-GC30A-R8-FR HY-GC30A-R8-FR GC30A-R8-FR DHI-HY-GC30A-R8-BX HY-GC30A-R8-BX GC30A-R8-BX C06-R8		
DHI-HY-GC30A-R9	Type A	--	Add 925 Wireless module basis of DHI-HY-GC30A	No
		DHI-HY-GC30A-R9-x HY-GC30A-R9 HY-GC30A-R9-x GC30A-R9 GC30A-R9-x C06-R9-x C06-R9	Same structure as DHI-HY-GC30A-R9	
Where lower case x can be from A to Z in alphabet.				

EN 50291-2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
5	**Design requirements**		P
5.1	**General requirements**		P
	This sub-clause of EN 50291-1 is applicable, with the following addition:	Refer to report CN 23JVCB 001 for EN 50291-1.	P
	In this European Standard there are requirements that cover all apparatus. Additional application specific requirements apply to certain groups of recreational vehicles, such as boats.		P
	An apparatus which complies with there requirements for recreational craft will automatically comply with the requirements for motor caravans and caravans.		P
	An apparatus which complies with there requirements for motor caravans will automatically comply with there requirements for caravans. The apparatus are designed for continuous operation.		P
	The apparatus may consist of one or more sensor(s)and a control unit. Sensors (integrated into the apparatus or remote) shall be designed to detect carbon monoxide.	The sensor integrated into the apparatus.	P
	The apparatus shall reliably detect the presence of carbon monoxide in recreational vehicles under the stated application conditions, shall produce an alarm and Type A apparatus shall be able to initiate executive actions whenever the level exceeds the alarm set point.		P
	The apparatus, electrical assemblies and components shall comply with EN 50291-1, where applicable, with the construction requirements of 5.2 and the test and performance requirements of Clause 6.		P
5.2	**Construction**		P
	This sub-clause of EN 50291-1 is applicable, with the following addition:		P
	Each sensor shall be constructed of materials that will not corrode in the environment where it is designed for.		P
	Adequate means shall be provided to mount the remote sensor(s), pointing vertically downwards, securely to the vehicle's substructure.		P
	The control unit shall be constructed of materials that are suitable for use in the intended application.		P
5.4	**Alarms**		P
	This sub-clause of EN 50291-1 is applicable, with the following addition:		P

EN 50291-2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.4	Addition: If more than one sensor is connected to a control unit, the control unit shall indicate the alarm condition of the different sensors individually.		P
5.6	**Fault warnings**		P
	This sub-clause of EN 50291-1 is replaced by:		-
	The apparatus shall provide a visual and audible fault signal in the event of interruption of communication between control unit and the remote sensor(s).	No remote sensor used. The sensor is mounted on the PCB of control unit.	N/A
	The audible fault signal shall be clearly identified and different from a gas alarm.	Alarm: Alarm LED flash red. Fault: Fault LED is flashing yellow.	P
5.9	**Transmittable output signal (applicable for type A apparatus only)**		P
	This sub-clause of EN 50291-1 is applicable, with the following addition:		P
	The output signal of the apparatus shall operate under the same conditions as the visual and audible alarm. For triggering an output signal, there shall be no built-in delay.		P
5.11	**Labelling**		P
5.11.1	This sub-clause of EN 50291-1 is applicable, with the following addition:		P
	The manufacturer shall declare for which of the following application(s) the device is approved: • domestic premises; • caravans; • motor caravans; • boats. This shall be noted on a label on the device or fixed to the device with a more detailed explanation in the manual (see Figure 1).		P
5.11.2	This sub-clause of EN 50291-1 is applicable, with the following additions:		P
	The following is applicable to recreational craft only:		P
	The classification of the environmental condition as defined in EN 60721-3-6: • remote sensor(s):6K3/6B1/6S1/6M3; • control unit:6K2/6B1//6S1/6M3.	Control unit	P
6	**Test and performance requirements**		P
6.3.1	**General**		P
	This sub-clause of EN 50291-1 is applicable, with the following addition:		P

EN 50291-2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	When the apparatus is switched on, a warm-up time not exceeding 15 min is acceptable.		P
6.3.11	**Electromagnetic compatibility**		P
	This sub-clause of EN 50291-1 is replaced by 6.3.103 and 6.3.104 of this European Standard.		P
6.3.101	**Degree of protection (additional requirements)**		P
	Remote sensors shall provide protection of at least IP44 and the control unit shall provide protection of at least IP42 as defined in EN 60529:1991.	IP42 complied. The apparatus works normal after test.	P
6.3.102	**Mechanical environment**	See appendix table	P
6.3.102.1	Vibration		P
6.3.102.1.1	Test		P
	The apparatus shall be subjected to a sinusoidal vibration frequency sweep carried out in accordance with EN 60068-2-6 using a vibration test machine having the characteristics specified in EN 60068-2-6:		P
	Excursion: ±1,5 mm±10% Frequencyrange:2 Hz to 13,2 Hz Acceleration amplitude:2 g or higher if declared by the manufacturer. Frequencyrange:10 Hz to 100 Hz Sweep rate:1 octave per min Number of sweep cycles:10 Number ofaxes:3, mutually perpendicular		P
	The apparatus shall be mounted in its normal operating position and the power switched on.		P
6.3.102.1.2	Performance requirement		P
	After the test specified in6.3.102.1.1, the apparatus shall be subjected to the test gas as described in EN 50291-1:2018,6.3.2.		P
	When exposed to CO-air mixtures, the alarm shall operate according to the conditions in EN 50291-1:2018, Table 5.		P
	Recovery from the alarm state shall take place, after manual resetting if necessary, within 6 min when exposed to clean air.		P
6.3.102.2	**Shock(applicable for recreational craft only)**	See appendix table	P
6.3.102.2.1	Test		P
	The apparatus shall be subjected to a half-sine pulse carried out in accordance with EN 60068-2-27 using a shock Test machine having the characteristics specified in EN 60068-2-27.		P

EN 50291-2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	The shock severity, equal to 6M3 of EN 60721-3-6, shall be as follows: Maximum acceleration Pulse duration 100 m/s²11 ms 300 m/s² 6 ms 500 m/s²2,3 ms		P
	The apparatus shall be mounted in its normal operating position and the power switched on.		P
6.3.102.2.2	Performance requirement		P
	During the test specified in 6.3.102.2.1, no alarms or fault signals shall be generated.		P
	After the test specified in 6.3.102.2.1, the apparatus shall be subjected to test gas as described in EN 50291-1:2018,6.3.2.		P
	When exposed to CO-air mixtures, the alarm shall operate according to the conditions in EN 50291-1:2018, Table 5.		P
	Recovery from the alarm state shall take place, after manual resetting if necessary, within 6 min when exposed to clean air.		P
6.3.102.3	**Orientation static (applicable for recreational craft only)**	See appendix table	P
6.3.102.3.1	Test		P
	The sensor, or the whole apparatus if relevant, shall be rotated around each of its three mutually perpendicular axes within the orientation limits stated in the manufacturer's instructions, but in no case less than an inclination of 15°from the nominal orientation.		P
6.3.102.3.2	Performance requirement		P
	During the test specified in 6.3.102.3.1, the apparatus shall be subjected to just test gas C as described in EN 50291-1:2018, 6.3.2.		P
	When exposed to CO-air mixtures, the alarm shall operate according to the conditions in EN 50291-1:2018, Table 5 for test gas C.		P
	Recovery from the alarm state shall take place, after manual reseting if necessary, within 6 min when exposed to clean air.		P
	It is acceptable to have the CO alarm apparatus in a sealed container, with test gas C, mounted on the test rig.		P
6.3.102.4	**Orientation dynamic motion (applicable for recreational craft only)**	See appendix table	P
6.3.102.4.1	Test		P

EN 50291-2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	The sensor, or the whole apparatus if relevant, shall be rotated cyclically around the X-and Y-axes (according to EN 60721-3-6:1993, Table 5) with a frequency of 0,14 Hz up to an inclination of 22,5°from the nominal orientation		P
6.3.102.4.2	Performance requirement		P
	Performance requirement During the test specified in 6.3.102.4.1, the apparatus shall be subjected to just test gas C as described in EN 50291-1:2018,6.3.2.		P
	When exposed to CO-air mixtures, the alarm shall operate according to the conditions in EN 50291-1:2018, Table 5 for test gas C.		P
	Recovery from the alarm state shall take place, after manual resetting if necessary, within 6 min when exposed to clean air.		P
	It is acceptable to have the CO alarm apparatus in a sealed container, with test gas C, mounted on the test rig.		P
6.3.102.5	**Acceleration steady state (applicable for recreational craft only)**	See appendix table	P
6.3.102.5.1	Test		P
	The sensor, or the whole apparatus if relevant, shall be subjected to a steady acceleration carried out in accordance with EN 60068-2-7 using an acceleration test machine having the characteristics specified in EN 60068-2-7: Direction (related to nominal orientation) Maximum acceleration x and y6m/s² Z 10m/s²		P
6.3.102.5.2	Performance requirement		P
	During the test specified in 6.3.102.5.1, the apparatus shall be subjected just to test gas C as described in EN 50291-1:2018,6.3.2.		P
	When exposed to CO-air mixtures, the alarm shall operate according to the conditions in EN50291-1:2018, Table 5 for test gas C.		P
	Recovery from the alarm state shall take place, after manual resetting if necessary, within 6 min when exposed to clean air.		P
	It is acceptable to have the CO alarm apparatus in a sealed container, with test gas C, mounted on the test rig.		P
6.3.103	**Electromagnetic emission (applicable for recreational craft only)**		P
6.3.103.1	Test and performance requirements		P

EN 50291-2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	Navigation and radio communication systems on recreational craft are susceptible to radiated emissions. The critical frequency ranges for these systems are not covered by the generic standards. Therefore, in addition to the tests of EN 50270, the following test conditions and requirements from EN 60945:2002, Clause 9, shall apply for recreational craft (see Table 1).		P
	For all other types of recreational vehicle the requirements of EN 50291-1 apply.		P
	Tests shall be carried out in clean air.		P
6.3.104	**Immunity to electromagnetic environment**		P
6.3.104.1	General		P
	For caravans the requirements of EN 50291-1 apply.		P
	For all recreational craft and any other motorized recreational vehicles the industrial requirements of EN 50270 apply		P
	In addition, one test is replaced by the more stringent requirements of EN 60945:2002, Clause 10, as listed in Table 2.		P
	For the purposes of these tests the complete apparatus is to be considered as "protected equipment" as defined in EN 60945:2002,4.4.		P
6.3.104.2	Immunity tests		P
	Table 2—Electromagnetic immunity-Test conditions and performance requirements.	Apparatus with internal battery.	P
6.3.104.3	**Performance requirement**		P
6.3.104.3.1	General		P
	The performance required during these tests shall be as shown in EN 50270:2015, Table 5, and described in EN 60945:2002,10.1.		P
6.3.104.3.2	Electrical transient conduction immunity for DC powered apparatus		N/A
	"Vehicles DC supply powered apparatus "column B, as shown in Table 2, shall tolerate electrical transient conduction on the supply lines, so that when tested in accordance with Table3: for the values of Table3, line a):it shall comply with performance criterion A according to EN 50270; for the values of Table 3, line b): it shall comply with performance criterion B according to EN50270.		N/A
6.3.104.3.3	**Electrical transient conduction immunity test**		N/A
	The system shall be tested in accordance with ISO 7637-2:2011.		N/A

EN 50291-2:2019			
Clause	Requirement + Test	Result - Remark	Verdict
	For systems with different power supply voltage levels, the values for test pulses shall be adapted according to the required test level.		N/A
6.3.105	**Fault in the connection between control unit and remote Sensor**	The sensor integrated into the apparatus.	N/A
6.3.105.1	Test		N/A
	Expose the remote sensor(s)to clean air in an energized state.		N/A
	At the control unit and at the remote sensor(s)open circuit and short circuit the cable cores connecting the control unit to each remote sensor in turn.		N/A
	The test should be carried out with the shortest and the longest specified cable between the control unit and the remote sensor(s).		N/A
	It is permitted to replace the cable by resistors having a value equivalent to the minimum and maximum length.		N/A
6.3.105.2	Performance requirements		N/A
	Under every combination of short circuit and open circuit, the audible and visual fault indicators shall operate.		N/A
7	**Apparatus using radio links**		P
	This clause of EN 50291-1 is applicable without modification.		P
8	**User instructions**	See User instructions	P
8.3	This sub-clause of EN 50291-1 is applicable, with the following addition:		P
q)	power consumption of mains operated apparatus;		N/A
r)	the correct operating voltage, fuse-rating, if any, and method of connection to the vehicle's power system;		N/A
s)	A list of materials that may be expected to be found in recreational vehicles that may produce vapours or gases, e.g. oils, cleaning fluids, polishes, paints, greases, cooking operations, etc. which may affect the reliabiity of the apparatus in the short or long term;		P
t)	the expected lifetime for the control unit and sensors;		P
u)	a note stating the working temperature and humidity range for control unit and remote sensors.		P
9	**Packaging**		P
	This clause of EN 50291-1 is applicable without modification.		P
	Annexes		P
	The annexes of EN 50291-1 is applicable without modification.		P

EN 50291-2:2019			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE 6.3.102.1	Vibration		DHI-HY-GC30A-R8	P	
Serial number	(Gas) Co volume ratio	keep time	alarm time or recovery time	lower limit	upper limit
			17#		
1.	fresh air	15min	-	-	-
2.	(A)30(27±3) ppm	120min	>120min	120 min	-
3.	fresh air	15min	-	-	6min
4.	(B)50(55±5) ppm	90min	81min29s	60min	90min
5.	fresh air	15min	01min12s	-	6min
6.	(C)100(110±10) ppm	40min	22min39s	10min	40min
7.	fresh air	15min	01min31s	-	6min
8.	(D)300(330±30) ppm	3min	00min57s	-	3min
9.	fresh air	15min	01min59s	-	6min

TABLE 6.3.102.2	Shock(applicable for recreational craft only) DHI-HY-GC30A-R8			P	
Serial number	(Gas) Co volume ratio	keep time	alarm time or recovery time	lower limit	upper limit
			17#		
1.	fresh air	15min	-	-	-
2.	(A)30(27±3) ppm	120min	>120min	120 min	-
3.	fresh air	15min	-	-	6min
4.	(B)50(55±5) ppm	90min	81min34s	60min	90min
5.	fresh air	15min	01min05s	-	6min
6.	(C)100(110±10) ppm	40min	23min10s	10min	40min
7.	fresh air	15min	01min48s	-	6min
8.	(D)300(330±30) ppm	3min	00min30s	-	3min
9.	fresh air	15min	02min21s	-	6min

EN 50291-2:2019			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE 6.3.102.3	**Orientation static(applicable for recreational craft only) DHI-HY-GC30A-R8**			**P**	
Serial number	(Gas) Co volume ratio	keep time	alarm time or recovery time	lower limit	upper limit
			17#		
1.	fresh air	15min	-	-	-
2.	(C)100(110±10) ppm	40min	23min10s	10min	40min
3.	fresh air	15min	01min48s	-	6min

TABLE 6.3.102.4	**Orientation dynamic motion(applicable for recreational craft only) DHI-HY-GC30A-R8**			**P**	
Serial number	(Gas) Co volume ratio	keep time	alarm time or recovery time	lower limit	upper limit
			17#		
1.	fresh air	15min	-	-	-
2.	(C)100(110±10) ppm	40min	23min13s	10min	40min
3.	fresh air	15min	01min37s	-	6min

TABLE 6.3.102.5	**Acceleration steady state (applicable for recreational craft only) DHI-HY-GC30A-R8**			**P**	
Serial number	(Gas) Co volume ratio	keep time	alarm time or recovery time	lower limit	upper limit
			17#		
1.	fresh air	15min	-	-	-
2.	(C)100(110±10) ppm	40min	22min01s	10min	40min
3.	fresh air	15min	01min23s	-	6min

EN 50291-2:2019			
Clause	Requirement + Test	Result - Remark	Verdict

List of Critical Components:

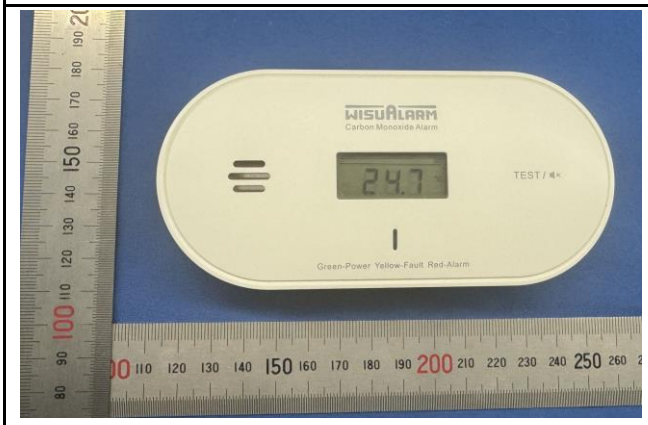
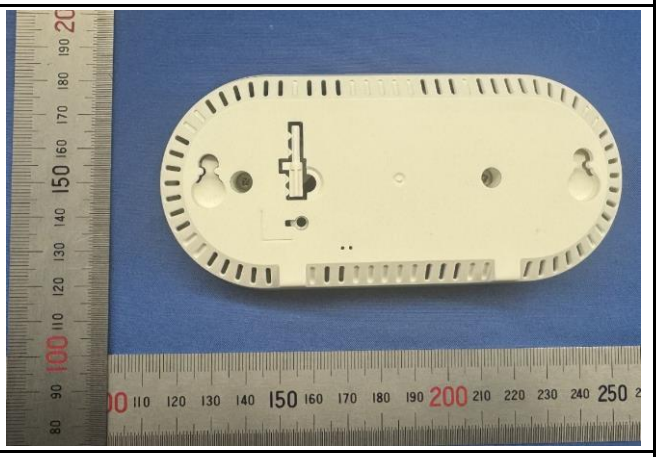
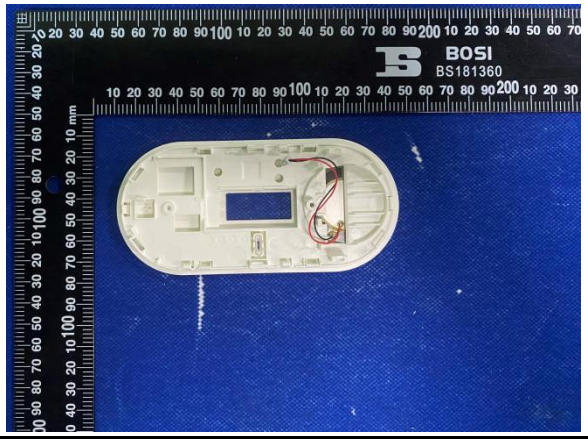
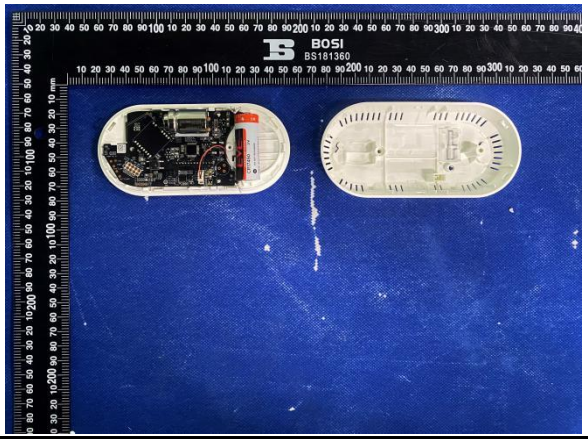
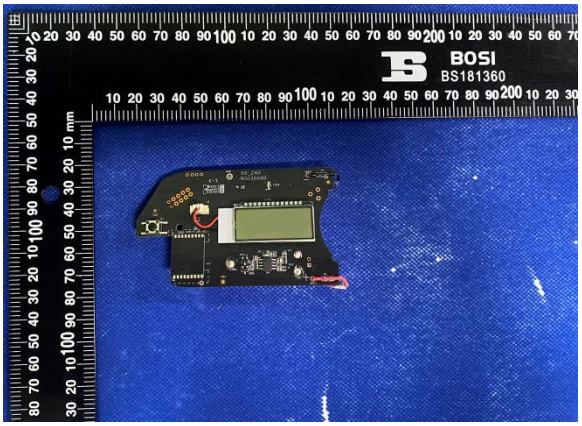
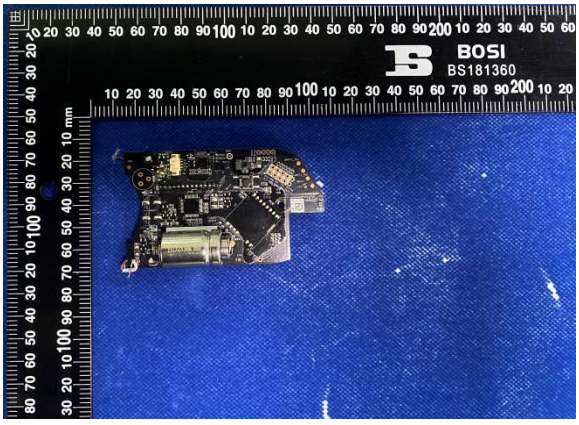
Item No.	Object/part no.	Manufacturer/ Trademark	Type/Model	Technical Data	Standard	Mark(s) of Conformity
1	Enclosure	SHANGHAI KUMHO SUNNY PLASTICS CO LTD	PC+ABSHAC 825XNH	V-0, Min. 80°C, Min. thickness: 1.7mm	IEC 60695-11-10, IEC 60695-11-20, UL94	UL E254819
2	PCB	Shenzhen Chongda multilayer circuit board Co., LTD	DS-206T	94V-0	UL 796	UL E303478
3	Lithium Battery	Huizhou EVE Energy Co., Ltd.	CR17450	Nominal Voltage :3.0V Nominal Capacity: 2300~2400mAh	UL1642	UL MH28717
4	BUZZER	Hexiang (Changzhou) Electronics Co., LTD	FGT-35G-2.9A1WC75	Resonant Impedance (MAX):350Ω	EN 50291-1	Test with appliance
5	CO Sensor	Shenzhen Hede Security Technology Co., Ltd	HD28	Range: 0 ~ 10,000ppm Sensitivity: 1~2.5nA/ppm Ø16.3mm x L29.0mm	EN 50291-1	Test with appliance
	CO Sensor - Alternative	Ningbo Chaomei Technology Co., LTD	CM8	Range: 0 ~ 10,000ppm Sensitivity: 0.8~2.0nA/ppm Ø16.3mm x L29.3mm	EN 50291-1	Test with appliance
	CO Sensor - Alternative	Zhuzhou De Mei electronic Technology Co., LTD	DM29	0-10000ppm	EN 50291-1	Test with appliance
6	MCU	Shanghai Fudan Microelectronics Group Company Limited	FM33LE015	ARM Cortex-M0/64MHz-64KB Flash/16KB RAM	EN 50291-1	Test with appliance
7	Wireless module	Shenzhen Hope Microelectronics Co., Ltd.	CMT2300A-EQR	127MHz~1020MHz	EN 50291-1	Test with appliance

ATTACHMENT 1 PHOTO DOCUMENTATION

TÜVRheinland®

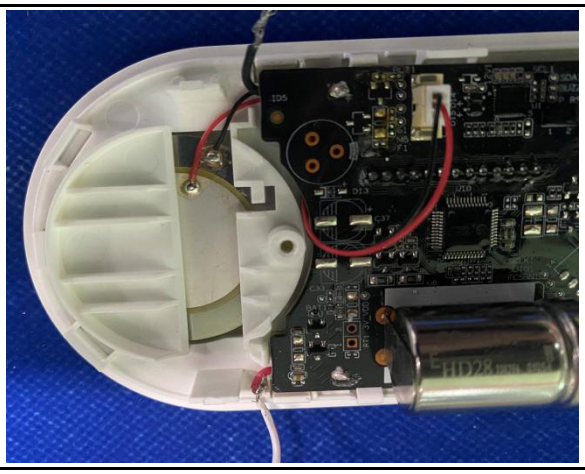
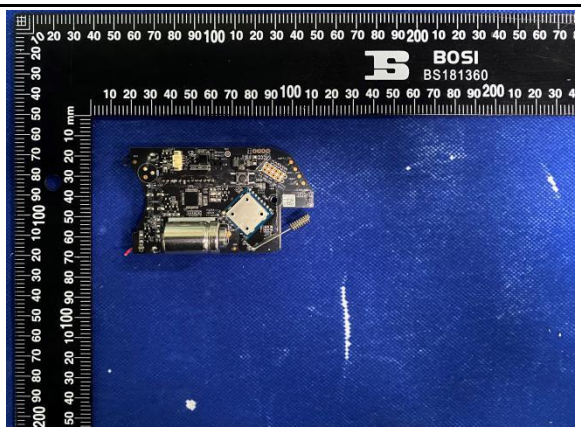
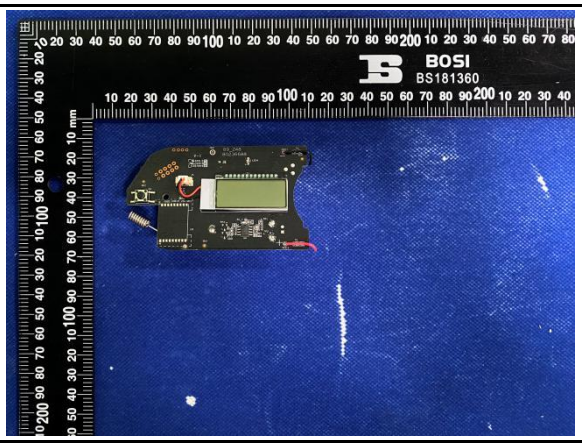
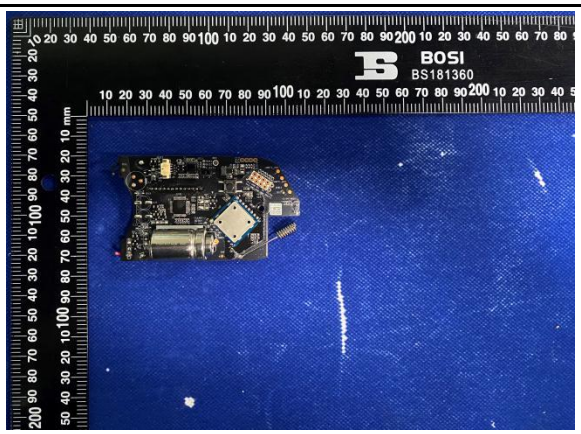
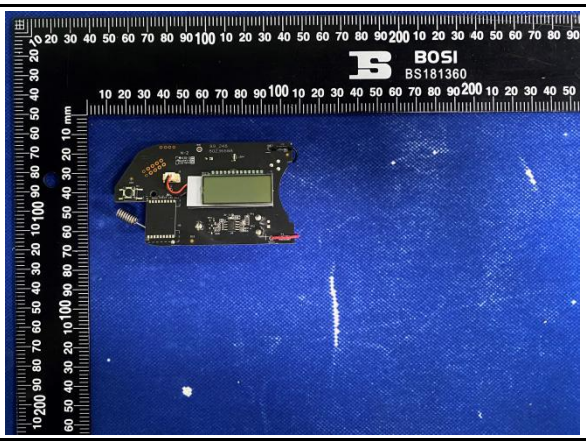
Product : Carbon Monoxide Alarm

Type Designation : See report

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<tr><td>Top view</td><td>Bottom view</td></tr>
<tr><td>
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<tr><td>Bottom view</td><td>Internal view</td></tr>
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<tr><td>PCB</td><td>PCB</td></tr>
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Product : Carbon Monoxide Alarm

Type Designation : See report

	
Internal view	Battery
DHI-HY-GC30A-R8	
	
PCB	PCB
DHI-HY-GC30A-R9	
	
PCB	PCB