TEST REPORT

Application No.....:	S202302094094
Applicant's name.....:	Targa Telematics spa
Applicant's address.....:	Via Reginato, 87-31100 Treviso (TV)-Italy
Sample description.....:	Vehicle Tracker
Model.....:	GV302TP 4G WW IP67
Date of receipt of test item.....:	2023.03.17
Test location.....:	G9 building, China Sensor Network International innovation Park, No.200, Linghu Ave, Wuxi, China
Test standard.....:	IEC 60529:1989+AMD1:1999+AMD2:2013 Degrees of protection provided by enclosures (IP 67)
Test date(s).....:	2023.03.18 to 2023.03.24
Test result.....:	The test results are in compliance with the above mentioned standards.
Date of issue.....:	2023.03.30

Tested by:	**Reviewed by:**	**Approved by:**
Terry.qi	Anhua Chen	Tisheng Zhu

FANGGUANG INSPECTION & TESTING CO.,LTD. APPROVED(02)

Other aspects:N/A

Abbreviations: *P = passed; F = failed; N/A / N = not applicable*

The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced, except in full, without the written approval of FGTEST.

In China, this test report is only used for scientific research, teaching or internal quality control if there is no China Metrology Accreditation (CMA) mark.

Test item description..:	/
Trade mark.....:	TARGA TELEMATICS
Manufacturer.....:	Targa Telematics spa
Manufacturer's address .....:	Via Reginato, 87-31100 Treviso (TV)-Italy
Factory.....:	Queclink Wireless Solutions Co., Ltd.
Factory's address.....:	No.30, Lane 500, Xinlong Road，Minhang District,Shanghai, China, 201101
Ratings.....:	12/24Vdc

General product information:

See ANNEX: Photos of Product

Copy of marking plate:

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
5	**Degrees of protection against access to hazardous parts and against solid foreign objects indicated by the first characteristic numeral**		P
	The designation with a first characteristic numeral implies that conditions stated in both 5.1 and 5.2 are met.		P
	The first characteristic numeral indicates that:		P
	– the enclosure provides protection of persons against access to hazardous parts by preventing or limiting the ingress of a part of the human body or an object held by a person; and simultaneously		P
	– the enclosure provides protection of equipment against the ingress of solid foreign objects.		P
	An enclosure shall only be designated with a stated degree of protection indicated by the first characteristic numeral if it also complies with all lower degrees of protection.		N/A
	However, the tests establishing compliance with any one of the lower degrees of protection need not necessarily be carried out provided that these tests would obviously be met if applied.		N/A
5.1	Protection against access to hazardous parts		P
	Degrees of protection listed in this table shall be specified only by the first characteristic numeral and not by reference to the brief description or definition.		P
	To comply with the conditions of the first characteristic numeral, adequate clearance shall be kept between the access probe and hazardous parts.		P
	The tests are specified in clause 12.		P
5.2	Protection against solid foreign objects		P
	Degrees of protection listed in this table shall only be specified by the first characteristic numeral and not by reference to the brief description or definition.		P
	The protection against the ingress of solid foreign objects implies that the object probes up to numeral 2 in table 2 shall not fully penetrate the enclosure. This		N/A

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	means that the full diameter of the sphere shall not pass through an opening. in the enclosure. Object probes for numerals 3 and 4 shall not penetrate the enclosure at all.		
	Dust-protected enclosures to numeral 5 allow a limited quantity of dust to penetrate under certain conditions. Dust-tight enclosures to numeral 6 do not allow any dust to penetrate.	IP6X	P
	The tests are specified in clause 13.		P
6	**Degrees of protection against ingress of water indicated by the second characteristic numeral**		
	The second characteristic numeral indicates the degree of protection provided by enclosures with respect to harmful effects on the equipment due to the ingress of water.		P
	The tests for the second characteristic numeral are carried out with fresh water. The actual protection may not be satisfactory if cleaning operations with high pressure and temperature water jet outside the requirements of second characteristic numeral 9 and/or solvents are used.		P
	Degrees of protection listed in this table shall be specified only by the second characteristic numeral and not by reference to the brief description or definition.		P
	The tests are specified in clause 14		P
	Up to and including second characteristic numeral 6, the designation implies compliance also with the requirements for all lower characteristic numerals. However, the tests establishing compliance with any one of the lower degrees of protection need not necessarily be carried out provided that these tests obviously would be met if applied.		N/A

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	An enclosure designated with second characteristic numeral 9 only is considered unsuitable for exposure to water jets (designated by second characteristic numeral 5 or 6) and immersion in water (designated by second characteristic numeral 7 or 8) and need not comply with requirements for numeral 5,6,7 or 8 unless it is multiple coded.		N/A
7	**Degrees of protection against access to hazardous parts indicated by the additional letter**		N/A
	The additional letter indicates the degree of protection of persons against access to hazardous parts.		N/A
	Additional letters are only used		N/A
	- if the actual protection against access to hazardous parts is higher than that indicated by the first characteristic numeral		N/A
	– or if only the protection against access to hazardous parts is indicated, the first characteristic numeral being then replaced by an X.		N/A
	For example, such higher protection may be provided by barriers, suitable shape of openings or distances inside the enclosure.		N/A
	An enclosure shall only be designated with a stated degree of protection indicated by the additional letter if the enclosure also complies with all lower degrees of protection. However, the tests establishing compliance with any one of the lower degrees of protection need not necessarily be carried out provided that these tests obviously would be met if applied.		N/A
	The tests are specified in clause 15.		N/A
10	**Marking**		N/A
	The requirements for marking shall be specified in the relevant product standard.		N/A
	Where appropriate, such a standard should also specify the method of marking which is to be used when		N/A

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	– one part of an enclosure has a different degree of protection to that of another part of the same enclosure;		N/A
	– the mounting position has an influence on the degree of protection;		N/A
	– the maximum immersion depth and time are indicated.		N/A
11	**General requirements for tests**		P
11.1	Atmospheric conditions for water or dust tests		P
	Unless otherwise specified in the relevant product standard, the tests should be carried out under the standard atmospheric conditions described in IEC 60068-1.		P
	The recommended atmospheric conditions during the tests are as follow:		P
	Temperature range: 15 °C to 35 °C	25.0°C	P
	Relative humidity: 25% to 75%	55%	P
	Air pressure: 86 kPa to 106 kPa (860 mbar to 1 060 mbar).	102kPa	P
11.2	Test samples		P
11.3	Application of test requirements and interpretation of test results		P
11.4	Combination of test conditions for the first characteristic numeral		P
	Designation with a first characteristic numeral implies that all test conditions are met for this numeral.		P
11.5	Empty enclosures		N/A
12	**Tests for protection against access to hazardous parts indicated by the first characteristic numeral**		P
12.1	Access probes		P
12.2	Test conditions		P
	The access probe is pushed against or (in case of the test for first characteristic numeral 2) inserted through any openings of the enclosure with the force specified in table 6.		P
	For tests on low-voltage equipment, a low-voltage supply (of not less than 40 V and not more than 50 V)		P

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	in series with a suitable lamp should be connected between the probe and the hazardous parts inside the enclosure. Hazardous live parts covered only with varnish or paint, or protected by oxidation or by a similar process, are covered by a metal foil electrically connected to those parts which are normally live in operation.		
	The signal-circuit method should also be applied to the hazardous moving parts of high voltage equipment.		N/A
	Internal moving parts may be operated slowly, where this is possible.		N/A
12.3	Acceptance conditions		P
	The protection is satisfactory if adequate clearance is kept between the access probe and hazardous parts.		P
	For the test of first characteristic numeral 1, the access probe 50 mm diameter shall not completely pass through the opening.		N/A
	For the test of first characteristic numeral 2, the jointed test finger may penetrate to its 80 mm length, but the stop face (Ø50 mmx20 mm) shall not pass through the opening. Starting from the straight position, both joints of the test finger shall be successively bent through an angle of up to 90° with respect to the axis of the adjoining section of the finger and shall be placed in every possible position.		N/A
12.3.1	For low-voltage equipment (rated voltages not exceeding 1 000 V a.c. and 1 500 V d.c.)		P
	The access probe shall not touch hazardous live parts.		P
	If adequate clearance is verified by a signal circuit between the probe and hazardous parts, the lamp shall not light.		P
12.3.2	For high-voltage equipment (rated voltages exceeding 1 000 V a.c. and 1 500 V d.c.)		N/A
	When the access probe is placed in the most unfavourable position(s), the equipment shall be		N/A

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	capable of withstanding the dielectric tests as specified in the relevant product standard applicable to the equipment.		
	Verification may be made either by dielectric test or by inspection of the specified clearance dimension in air which would ensure that the tests would be satisfactory under the most unfavourable electric field configuration (see IEC 60071-2).		N/A
	In the case where an enclosure includes sections at different voltage levels the appropriate acceptance conditions for adequate clearance shall be applied for each section.		N/A
12.3.3	For equipment with hazardous mechanical parts:		N/A
	The access probe shall not touch hazardous mechanical parts.		N/A
	If adequate clearance is verified by a signal circuit between the probe and hazardous parts, the lamp shall not light.		N/A
13	**Tests for protection against solid foreign objects indicated by the first characteristic numeral**		P
13.1	Test means		P
13.2	Test conditions for first characteristic numerals **1, 2, 3, 4**		N/A
13.3	Acceptance conditions for first characteristic numerals **1, 2, 3, 4**		N/A
13.4	Dust test for first characteristic numerals **5** and **6**	IP6X	P
	The test is made using a dust chamber incorporating the basic principles shown in figure 2 of this standard whereby the powder circulation pump may be replaced by other means suitable to maintain the talcum powder in suspension in a closed test chamber.		P

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	The talcum powder used shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50μm and the nominal width of a gap between wires 75μm. The amount of talcum powder to be used is 2 kg per cubic metre of the test chamber volume. It shall not have been used for more than 20 tests.		P
	Enclosures are of necessity in one of two categories:		P
	Category 1: Enclosures where the normal working cycle of the equipment causes reductions in air pressure within the enclosure below that of the surrounding air, for example, due to thermal cycling effects.		P
	Category 2: Enclosures where no pressure difference relative to the surrounding air is present.		N/A
	Category 1 enclosures:		P
	The enclosure under test is supported inside the test chamber and the pressure inside the enclosure is maintained below the surrounding atmospheric pressure by a vacuum pump. The suction connection shall be made to a hole specially provided for this test. If not otherwise specified in the relevant product standard, this hole shall be in the vicinity of the vulnerable parts.		P
	If it is impracticable to make a special hole, the suction connection shall be made to the cable inlet hole. If there are other holes (for example, more cable inlet holes or drain-holes) these shall be treated as intended for normal use on site.		P
	The object of the test is to draw into the enclosure, by means of depression, a volume of air 80 times the volume of the sample enclosure tested without exceeding the extraction rate of 60 volumes per hour. In no event shall the depression exceed 2 kPa (20 mbar) on the manometer shown in figure 2.		P

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	If an extraction rate of 40 to 60 volumes per hour is obtained the duration of the test is 2 h.		N/A
	If, with a maximum depression of 2 kPa (20 mbar), the extraction rate is less than 40 volumes per hour, the test is continued until 80 volumes have been drawn through, or a period of 8 h has elapsed.		P
	Category 2 enclosures:		N/A
	The enclosure under test is supported in its normal operating position inside the test chamber, but is not connected to a vacuum pump. Any drain-hole normally open shall be left open for the duration of the test. The test shall be continued for a period of 8 h.		N/A
	Category 1 and category 2 enclosures: – If it is impracticable to test the complete enclosure in the test chamber, one of the following procedures shall be applied:		N/A
	– testing of individually enclosed sections of the enclosure;		N/A
	– testing of representative parts of the enclosure, comprising components such as doors, ventilation openings, joints, shaft seals, etc., in position during test;		N/A
	– testing of a smaller enclosure having the same full-scale design details.		N/A
	In the last two cases, the volume of air to be drawn through the enclosure under test shall be the same as for the whole enclosure in full scale.		N/A
13.5	Special conditions for first characteristic numeral **5**		N/A
13.5.1	Test conditions for first characteristic numeral **5**		N/A
	The enclosure shall be deemed category 1 unless the relevant product standard for the equipment specifies that the enclosure is category 2.		N/A
13.5.2	Acceptance conditions for first characteristic numeral **5**		N/A
	The protection is satisfactory if, on inspection, talcum powder has not accumulated in a quantity or location such that, as with any other kind of dust, it could		N/A

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	interfere with the correct operation of the equipment or impair safety.		
	Except for special cases to be clearly specified in the relevant product standard, no dust shall deposit where it could lead to tracking along the creepage distances.		N/A
13.6	Special conditions for first characteristic numeral **6**		P
13.6.1	Test conditions for first characteristic numeral **6**		P
	The enclosure shall be deemed category 1, whether reductions in pressure below the atmospheric pressure are present or not.		P
13.6.2	Acceptance conditions for first characteristic numeral **6**		P
	The protection is satisfactory if no deposit of dust is observable inside the enclosure at the end of the test.	No deposit of dust is observable inside the enclosure at the end of the test	P
14	**Tests for protection against water indicated by the second characteristic numeral**		P
14.1	Test means		P
14.2	Test conditions		P
	The tests are conducted with fresh water.		P
	During the tests for IPX1 to IPX6 the water temperature should not differ by more than 5 K form the temperature of the specimen under test. If the water temperature is more than 5 K below the temperature of the specimen a pressure balance shall be provided for the enclosure.		P
	For IPX7 and IPX9 details of the water temperature are given in 14.2.7 and 14.2.9 respectively.		N/A
	During the test, the moisture contained inside the enclosure may partly condense. The dew which may thus deposit shall not be mistaken for an ingress of water.		P

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
14.2.1	Test for second characteristic numeral **1** with the drip box		N/A
	The test is made with a device which produces a uniform flow of water drops over the whole area of the enclosure.		N/A
	The duration of test is 10 min		N/A
14.2.2	Test for second characteristic numeral **2** with the drip box		N/A
	The enclosure is tested for 2,5 min in each of four fixed positions of tilt.		N/A
	These positions are 15° on either side of the vertical in two mutually perpendicular planes		N/A
	The total duration of the test is 10 min.		N/A
14.2.3	Test for second characteristic numeral **3** with oscillating tube or spray nozzle		N/A
14.2.4	Test for second characteristic numeral **4** with oscillating tube or spray nozzle		N/A
14.2.5	Test for second characteristic numeral **5** with 6.3 mm nozzle		N/A
	The conditions to be observed are as follows:		N/A
	-- internal diameter of the nozzle: 6.3 mm		N/A
	-- delivery rate: 12.5 L/min±5 %		N/A
	-- water pressure: to be adjusted to achieve the specified delivery rate		N/A
	-- core of the substantial stream: circle of approximately 40 mm diameter at 2.5 m distance from nozzle;		N/A
	-- test duration per square metre of enclosure surface area likely to be sprayed:1 min:		N/A
	-- minimum test duration 3 min		N/A
	-- distance form nozzle to enclosure surface: 2.5 m and 3 m		N/A
14.2.6	Test for second characteristic numeral **6** with 12.5 mm nozzle		N/A

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	The conditions to be observed are as follows:		N/A
	– internal diameter of the nozzle: 12,5 mm;		N/A
	– delivery rate: 100 l/min ± 5 %;		N/A
	– water pressure: to be adjusted to achieve the specified delivery rate;		N/A
	– core of the substantial stream: circle of approximately 120 mm diameter at 2,5 m distance from nozzle;		N/A
	– test duration per square metre of enclosure surface area likely to be sprayed: 1 min;		N/A
	– minimum test duration: 3 min;		N/A
	– distance from nozzle to enclosure surface: between 2,5 m and 3 m.		N/A
14.2.7	Test for second characteristic numeral **7** : temporary immersion between 0.15 m and 1 m		P
	The test is made by completely immersing the enclosure in water in its service position as specified by the manufacturer so that the following conditions are satisfied:		P
	a) the lowest point of enclosures with a height less than 850 mm is located 1 000 mm below the surface of the water;		P
	b) the highest point of enclosures with a height equal to or greater than 850 mm is located 150 mm below the surface of the water;		N/A
	c) the duration of the test is 30 min;		P
	d) the water temperature does not differ from that of the equipment by more than 5 K.		P
	However, a modified requirement may be specified in the relevant product standard if the tests are to be made when the equipment is energized and/or its parts in motion.		N/A
14.2.8	Test for second characteristic numeral **8** : continuous immersion subject to agreement		N/A
14.2.9	Test for second characteristic numeral **9** by high pressure and temperature water jetting		N/A
	The test duration is 1 min/m^2 of the calculated surface area of the enclosure (excluding any mounting surface), with a minimum duration of 3 min.		N/A
14.3	Acceptance conditions		P

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	After testing in accordance with the appropriate requirements of 14.2.1 to 14.2.8 the enclosure shall be inspected for ingress of water		P
	It is the responsibility of the relevant technical committee to specify the amount of water which may be allowed to enter the enclosure and the details of a dielectric strength test, if any.	No water of dust is observable inside the enclosure at the end of the test.	P
	In general, if any water has entered, it shall not:		N/A
	– be sufficient to interfere with the correct operation of the equipment of impair safety;		N/A
	– deposit on insulation parts where it could lead to tracking along the creepage distances;		N/A
	– reach live parts or windings not designed to operate when wet;		N/A
	– accumulate near the cable end or enter the cable if any.		N/A
	If the enclosure is provided with drain-holes, it should be proved by inspection that any water which enters does not accumulate and that it drains away without doing any harm to the equipment.		N/A
	For enclosures without drains-holes, the relevant product standard shall specify the acceptance conditions if water can accumulate to reach live parts.		N/A
15	**Tests for protection against access to hazardous parts indicated by the additional letter**		N/A
15.1	Access probes		N/A
15.2	Test conditions		N/A
	The access probe is pushed against any openings of the enclosure with the force specified in table 6. If it partly or fully penetrates, it is placed in every possible position, but in no case shall the stop face fully penetrate through the opening.		N/A
	For tests on low-voltage equipment, a low-voltage supply (of not less than 40 V and not more than 50 V) in series with a suitable lamp should be connected between the probe and the hazardous parts inside the enclosure. Hazardous live parts covered only with varnish or paint, or protected by oxidation or by a		N/A

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	similar process, are covered by a metal foil electrically connected to those parts which are normally live in operation.		
	The signal-circuit method should also be applied to the hazardous moving parts of high voltage equipment.		N/A
	Internal moving parts may be operated slowly, where this is possible.		N/A
15.3	Acceptance conditions		N/A
	The protection is satisfactory if adequate clearance is kept between the access probe and hazardous parts.		N/A
	In the case of the test for the additional letter B, the jointed test finger may penetrate to its 80 mm length, but the stop face (Ø 50 mm × 20 mm) shall not pass through the opening. Starting from the straight position, both joints of the test finger shall be successively bent through an angle of up to 90° with respect to the axis of the adjoining section of the finger and shall be placed in every possible position.		N/A
	In case of the tests for the additional letters C and D, the access probe may penetrate to its full length, but the stop face shall not fully penetrate through the opening.		N/A

ANNEX: Photos of Product

Photo 1: General view

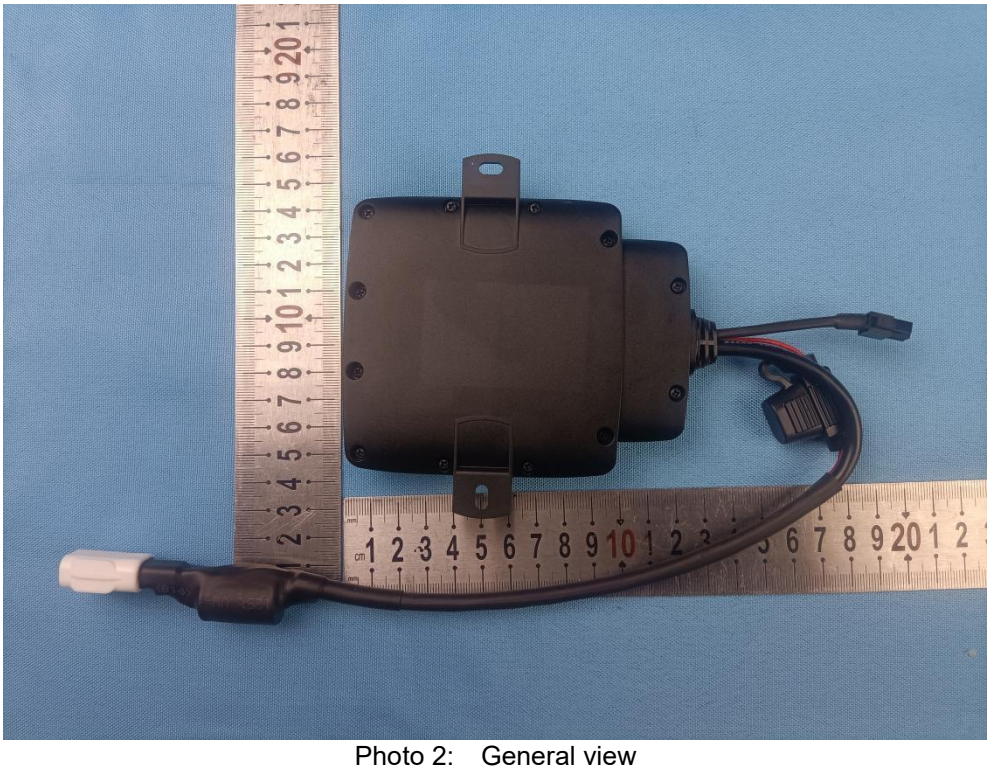

Photo 2: General view

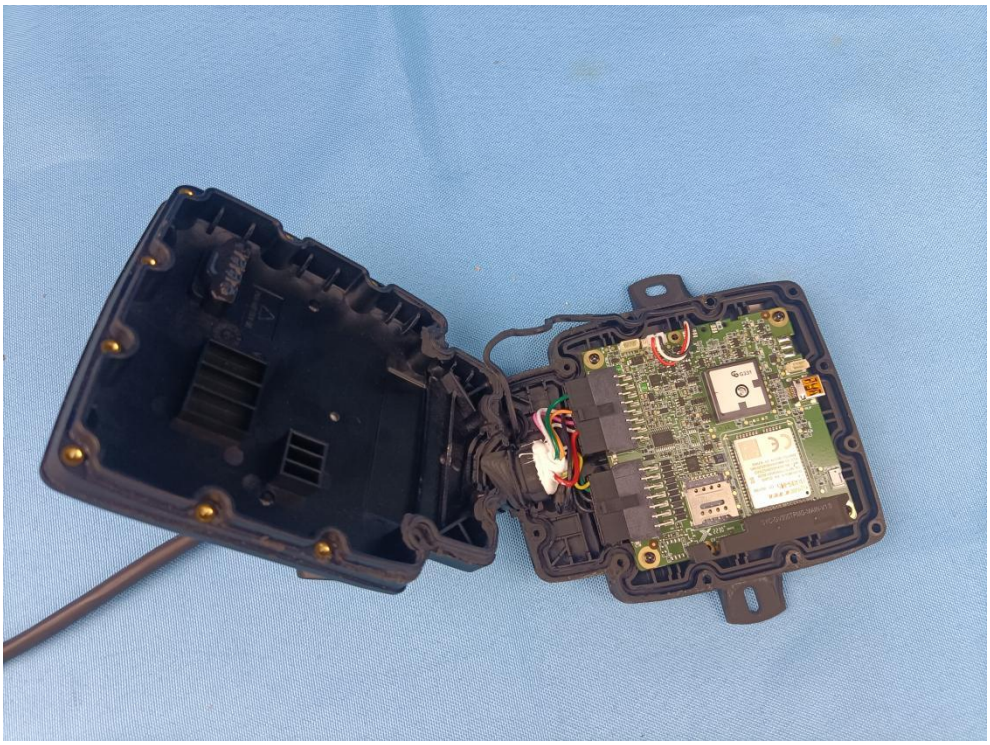

Photo 3: Internal view

-- END --