

NSAI

ECE TYPE-APPROVAL CERTIFICATE



Communication Concerning: Approval granted
 ~~Approval extended~~
 ~~Approval refused~~
 ~~Approval withdrawn~~
 ~~Production definitively discontinued~~

Of a type of electrical/electronic sub-assembly with regard to Regulation No.10.

Approval No: E24*10R06/00*3558*00

Reason for extension: *-N/A*

1. Make (trade name of manufacturer): *Schrader Electronics Ltd*
2. Type and general commercial description: *ATFPG4*
Tire Pressure Monitoring Sensor

Variant(s): *N/A*

3. Means of identification of type, if marked on the ~~vehicle/~~
component/~~separate technical unit~~: *Model name on part*

3.1 Location of that marking: *Outer sensor casing*

4. Category of vehicle: *N/A*

5. Name and address of manufacturer: *Schrader Electronics Ltd,*
Unit 11, Antrim Technology Park,
Antrim, Co Antrim,
N.Ireland, BT41 1QS

6. In the case of components and separate technical units,
location and method of affixing of the approval mark: *Indelible label to outer casing lazer*
etching or embossed.

7. Address(es) of assembly plant(s): *Schrader Electronics Ltd,*
Unit 11, Antrim Technology Park,
Antrim, Co Antrim,
N.Ireland, BT41 1QS



Approval No: E24*10R06/00*3558*00

8. Additional information (where applicable):

See appendix below

9. Technical service responsible for carrying out the tests:

***Compliance Engineering Ireland Ltd
CLONROSS, DUNSHAUGHLIN, CO
MEATH, IRELAND***

10. Date of test report:

10.05.2021

11. Number of test report:

21E9356-1

12. Remarks (if any):

See Appendix below

13. Place:

Dublin

14. Date:

28th May, 2021

15. Signature:



16. The index to the information package lodged with the approval authority, which may be obtained on Request, is attached.



Approval No: E24*10R06/00*3558*00

Appendix

To type-approval communication concerning the type approval of an electrical/electronic sub-assembly under Regulation No.10.

- | | | |
|-------|---|--|
| 1. | Additional information | |
| 1.1. | Electrical system rated voltage: | <i>DC 3V</i> |
| 1.2. | This ESA can be used on any vehicle type with the following restrictions: | <i>See manufacturer's specifications.</i> |
| 1.2.1 | Installation conditions, if any: | <i>See manufacturer's specifications.</i> |
| 1.3. | This ESA can only be used on the following vehicle types: | <i>N/A</i> |
| 1.3.1 | Installation conditions, if any: | <i>N/A</i> |
| 1.4. | The specific test method(s) used and the frequency ranges covered to determine immunity were: | <i>Absorber Chamber Test:
Frequency: (20 – 2000 MHz)</i> |
| 1.5. | Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests: | <i>Compliance Engineering Ireland Ltd</i> |
| 2. | Remarks: | <i>N/A</i> |

Appendix to type-approval communication concerning the type approval of a vehicle under Regulation No.10.

- | | | |
|-----|---|------------|
| 1. | Additional information | |
| 2. | Special devices for the purpose of Annex 4 to this Regulation: | <i>N/A</i> |
| 3. | Electrical system rated voltage: | <i>N/A</i> |
| 4. | Type of bodywork: | <i>N/A</i> |
| 5. | List of electronic systems installed in the tested vehicle(s) not limited to the items in the information document: | <i>N/A</i> |
| 5.1 | Vehicle equipped with 24 GHz short-range radar equipment (yes/no): | <i>N/A</i> |
| 6. | Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests: | <i>N/A</i> |
| 7. | Remarks: | <i>N/A</i> |



Approval No: E24*10R06/00*3558*00

Index to the Information Package

Date of issue: *28th May, 2021*

Date of latest amendment: *N/A*

Reason for extension/revision: *N/A*

1. Additional conditions, and advisory notes on legal alternatives.

2. Test report(s)

- numbers(s): *21E9356-1*

- date of issue: *10.05.2021*

- date of latest amendment: *N/A*

3. Information document

- number(s): *ATFPG4_UNECE_R10_Revision2*

- date of issue: *19.05.2021*

- date of latest amendment: *N/A*

Documentation: *23 pages*



Approval No: E24*10R06/00*3558*00

Appendix: **Additional conditions, and advisory notes on legal alternatives**

A: Additional conditions:

1. The attached technical report, with any of its attachments, forms part of this Type Approval certificate.
2. Each device from series production shall be to the measurements specified in the attached drawings, and shall be manufactured only from the materials specified in the Approval documents.
3. Changes in the type are permitted only with the explicit permission of NSAI. Breaches of this requirement will lead to a withdrawal of the Type Approval, and in addition may be subject to criminal prosecution.
4. At regular intervals, any tests or associated checks prescribed by the applicable legislation to verify continued conformity with the approved type shall be carried out. The manufacturer shall demonstrate compliance with this by submitting to NSAI evidence of adequate arrangements and documented control plans for each type approved.
5. Any set of samples or test pieces showing evidence of non-conformity shall give rise to further sampling and testing and all steps shall be taken to restore conformity of production.
6. This Type Approval will expire when it is surrendered by the holder, or withdrawn by NSAI, or when the approved type no longer conforms to legal requirements. The recall of the Type Approval can be issued by NSAI when the conditions required for the issuing or continuation of the Type Approval are no longer current, or when the Approval holder is in breach of the duties attached to the Type Approval, or when it is established that the approved type no longer meets the requirements of traffic safety.
7. Changes in the company name, address or manufacturing site, as well as in any of the sales or other agents specified in the issuing of the approval must immediately be notified to NSAI.
8. The duties imposed by the issuing of this certificate are not transferable. The legal protection of third parties is not affected by this certificate.
9. When the manufacture or sale of the system, component or separate technical unit has not been started within one year of the date of issue of this certificate, then NSAI is to be informed. This requirement also applies when the manufacture or sale has been halted for more than one year, or when it ought to have been halted for more than one year. The initial commencement of manufacture or sale, or the resumption of manufacture or sale, shall then be notified to NSAI within one month of commencement or resumption.

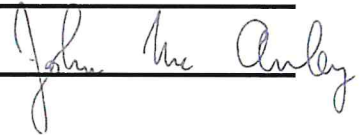
B: Legal Options:

Any objection to the requirements set out in this certificate shall be made within one month of the date of issue. The objection shall be made, in writing, to NSAI in Dublin.

Confidential Report

Client: Schrader Electronics Ltd Unit 11, Antrim Technology Park, Antrim, Co Antrim, N. Ireland, BT41 1QS Att: Zoe Gourley	Test of: Tire Pressure Monitoring Sensor ATFPG4 To: Regulation UNECE R10 Revision 6
---	--

COPIES TO: Files

REPORT REF: 21E9356-1	TESTED BY: P Reilly/ D Dunne
DATE RECEIVED: 27 th April 2021	REPORT BY: P Reilly
ISSUE DATE: 10 th May 2021	APPROVED SIGNATORY: J McAuley
	JOB TITLE: Technical Manager
	SIGNATURE: 

Compliance Engineering Ireland Ltd Terms and Conditions

1. All quotations are submitted, orders are accepted and services supplied by Compliance Engineering Ireland Limited ("CEIL") subject to and upon the following express Terms and Conditions and all other Conditions, warranties and representations express or implied and statutory or otherwise are hereby excluded insofar as it is lawful to do so. No addition thereto or variation therefrom, contained or referred to in the Customers order form or otherwise effected shall apply unless specifically agreed in writing by a duly Authorised Officer of CEIL.
2. All orders including any based on a quotation previously submitted by CEIL are subject to acceptance in writing by CEIL.
- 3.(a) The prices set out in any quotation are based upon current costs and if there is any variation in the said costs between the date of the order or Contract and delivery of the final report CEIL shall be entitled to adjust prices to reflect such variations.
 - b) In the event of any suspension or variation of work arising from the Customer's instructions or lack of instructions the price set out in any quotation may be increased to cover any extra expense incurred by CEIL.
 - c) All prices quoted are strictly NET. The customer shall where applicable, in addition to the relevant price, pay a sum equal to the VAT chargeable in respect of the supply of services.
 - d) Accounts must be paid in full in advance or by way of an irrevocable letter of credit opened with a Bank approved by CEIL unless credit terms have been agreed by CEIL in which event accounts must be paid in full within 1 month from the date of the invoice. Time for payment is of the essence and the customer shall be liable to pay any outstanding amount from its due date until the date of payment at a rate of 2% per month or part thereof.
4. Any times quoted for the performance of services are to be treated as estimates only. CEIL shall not be liable in any manner whatsoever for failure to perform services within the time quoted, nor in such circumstances shall the Customer be entitled to cancel or terminate any order or contract.
5. The Customer is responsible for delivery to CEIL of test item(s) free of any duty, VAT, freight charges etc. unless otherwise agreed in writing by CEIL.
6. The Customer shall be responsible for collecting non-perishable samples received for testing or laboratory work upon completion of tests or laboratory work. If the Customer fails to collect such samples within 90 days from completion of the tests or laboratory work CEIL shall be entitled without further notice to dispose of the samples without liability.
7. No action or legal proceedings shall be taken (except in the case of willful neglect or default) against CEIL by reason of or arising out of any research, investigation, test or analyses or the publication of the results thereof in the name of CEIL. Under no circumstances shall CEIL be liable to the Customer for any indirect, incidental, special or consequential damages of any nature whatsoever (including but not limited to loss of use, revenue, profit, data or business opportunity) either based upon a claim or action in Contract or in Tort, indemnity or contribution, or otherwise arising out of the Contract or performance of services by CEIL even if CEIL has been advised of the possibility of such damages. The limit of CEIL's aggregate liability (whether in Contract, Tort, strict liability in Tort or by statute or otherwise) to the Customer or to any third party for non-performance by CEIL and for any and all other claims shall not in the aggregate exceed the fees paid by the Customer to CEIL. The Customer shall indemnify CEIL against all claims made against CEIL by any third party arising from this Contract.
8. The copyright of any report is reserved to CEIL and it shall not be used either in whole or in part, for the purposes of advertising, publicity, litigation or otherwise without the prior written consent of a duly Authorised Officer of CEIL where such consent is given the Customer shall comply with any conditions attaching to the consent. In conformance with laboratory accreditation requirements reports shall only be produced in full. The test results tabulated shall relate only to the defined item(s) tested.
9. If in CEIL's judgment, the customer's financial condition is such as could adversely affect the customers ability to perform any of its obligations or if the customer is in default in any of its obligations to CEIL whether hereunder or under any other Contract CEIL may terminate this Contract and/ or any other Contract between CEIL and the Customer, cancel any uncompleted order or suspend performance of services or the delivery of any reports and if it does so the Customer shall indemnify CEIL against all costs, charges, expense and damages incurred thereby.
10. CEIL will not be liable for non-performance in whole or in part of its obligations if this is attributable to any cause beyond the control of CEIL including (without limitation) any act of god, force majeure, war, civil war, disturbance, rebellion, embargo, strike, labour dispute, illness, flood, fire, sabotage or government action or regulation. If a Contract or order or any part thereof shall become impossible of performance or otherwise frustrated CEIL shall be entitled to reasonable remuneration for any work done up to the date of such impossibility or frustration, due credit being given for any amounts in respect of the Contract or order paid by the Customer.
11. CEI agrees to keep confidential all matters relating to this contract. This includes but is not limited to products tested, methods used, results of the work and contents of any reports.
12. These Conditions and the Contract to which the document relates shall in all respects be governed by and construed in accordance with the laws of the Republic of Ireland and in accordance with the Republic of Ireland shall have exclusive jurisdiction to determine any disputes arising therefrom unless otherwise agreed.
13. CEI is an accredited test laboratory and relevant test reports are denoted by use of the accreditation logo. When the accreditation logo is not used, the report is outside our scope of accreditation.
14. In IEC standards measurement uncertainty is already incorporated into the specifications. Statements of conformity in the CEI test report follow these decision rules: Pass – Results within the stated limit, Fail – Results outside the stated limit.

CONTENTS

Section 1:	Equipment Under Test (EUT)
Section 2:	Test Specification, Methods and Procedures
Section 3:	Deviations or Exclusions from the Test Specifications
Section 4:	Operation of EUT During Testing
Section 5:	Results
Section 6:	Analysis of Test Results, Conclusions

Appendix A	Test Equipment Used
Appendix B:	Test Configuration
Appendix C:	Test Results

1 Equipment Under Test (EUT)

1.1 Identification of EUT

Manufacturer:	Schrader Electronics Ltd
Type:	Tire Pressure Monitoring Sensor ATFPG4
Power Supply Requirement:	3 V Battery
Modulation Type:	FSK
Power:	0.01 mW
Duty Cycle (%)	< 0.1 %

1.2 Description of EUT

The EUT is an intelligent pressure indication device capable of measuring and transmitting data via RF at frequency of 433.92 MHz.

1.3 Modifications

There were no modifications on the EUT

1.4 Date of Test

The tests were carried out on one sample of the EUT on the 27th of April 2021.

2 Test Specification, Methods and Procedures

2.1 Testing

Tests were carried out to the requirements of UNECE R10 Revision 6

Immunity testing was performed in accordance with the requirements of item 6 of annex 9 of regulation 10.

- 6.5 Specifications concerning broadband electromagnetic interference generated by ESAs
- 6.6 Specifications concerning narrowband electromagnetic interference generated by ESAs
- 6.8 Specifications concerning immunity of ESAs to electromagnetic radiation

2.2 Directive UNECE R10 Agreement:

Agreement:

Concerning the adoption of uniform technical prescriptions for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of these prescriptions

Addendum 9: Regulation No. 10

3 Deviations or Exclusions from the Test Specifications

3.1 Deviations

Up to date versions of the basic standards have been used in this test programme. Where necessary, we have verified that the requirements of any older basic standards as may be referred to in the product standard have been complied with.

3.2 Exclusions

6.7 Specifications concerning the emission of transient conducted disturbances generated by ESAs on 12/24 V supply lines

6.9 Specifications concerning the immunity of ESAs to transient disturbances conducted along 12/24 V supply lines

Both the above tests were not carried out as the unit under test was a battery operated device and did not contain any 12/24 V supply lines.

4 Operation of E.U.T. During Testing

4.1 Operating Environment

The EUT was battery powered.

4.2 Operating Mode:

The EUT was operated in continuous modulated transmit mode for immunity and emissions tests.

5 Results

5.1 Immunity to Radiated, Radio Frequency Electromagnetic Fields

Port: Enclosure
Performance Criterion: A
Limit: 30 V/m for the frequency range 20 – 2000 MHz

Frequency range: 20-800 MHz (AM)
Frequency range: 800-2000 MHz (PM)

The step sizes from 20-2000 MHz were in 1% steps. The dwell time at each frequency was 3 seconds. The test level was maintained at 30V/m between 20 MHz and 2000 MHz.

The EUT was in normal running mode during the test.

For the free field tests a field sensor was placed in close proximity to the system. The tests were carried out with the antenna oriented in horizontal and vertical polarisations.

The EUT was placed in a controlled pressure vessel in the anechoic chamber. The vessel was maintained at a pressure of 30 psi.

The EUT was set to repeated transmit mode and a receiver placed outside the chamber monitored data transmitted from the EUT.

The test configuration is shown in Appendix B.

Manufacturer test limits

Pressure reading +/- 4 psi from nominal

Temperature reading +/- 2 deg C from nominal

EUT complied with manufacturers specifications throughout the test.

The EUT operated normally during and subsequent to testing.

Radiated Immunity Tests

Frequency MHz	Polarisation (V/H)	Level (V/m)	Result
20 - 2000 MHz	V and H	30	Complied

Free Field Results

5.2 Radiated Emissions

Compliant measurements of radiated emissions were carried out from 30 MHz to 1 GHz in accordance with the requirements outlined in section 6.5 and 6.6 of UNECE R10 Revision 6.

The equipment and cable orientation were investigated to ensure that maximum emissions were obtained at critical frequencies. Measurements were made at 1m distance.

See Appendix C for results.

The EUT complied with the radiated emissions requirements of UNECE R10 Revision 6.

6 Analysis of Test Results, Conclusions

6.1 Measurement Uncertainties

The measurement uncertainties stated were calculated in accordance with the requirements of CISPR 16-4 with a confidence level of 95%.

6.2 Radiated Emissions

The EUT complied with the UNECE Reg 10 radiated emissions specifications.

6.3 Immunity

The EUT complied with the immunity tests carried out to demonstrate compliance with the Regulation UNECE R10 Revision 6 when tested in accordance with manufacturer's specifications.

**Appendix A:
Test Equipment Used**

Instrument	Mfr.	Model	Serial No.
Measuring Receiver	Rohde and Schwarz	ESVS30	607
Bilog Antenna	Schwarzbeck	VULB 9160	889
Signal Generator	Rohde and Schwarz	SME 06	923
Power Amplifier	Schaffner	CBA 9433	-
Power Amplifier	Milmega	AS0825-125	-
Electrostatic Discharge Simulator	Schaffner	NSG435	611
Signal Generator	Rohde and Schwarz	SME 06	923
Bilog Antenna	Schaffner	CBL6140	-
Horn Antenna	EMCO	-	920

Appendix B: Test Configuration

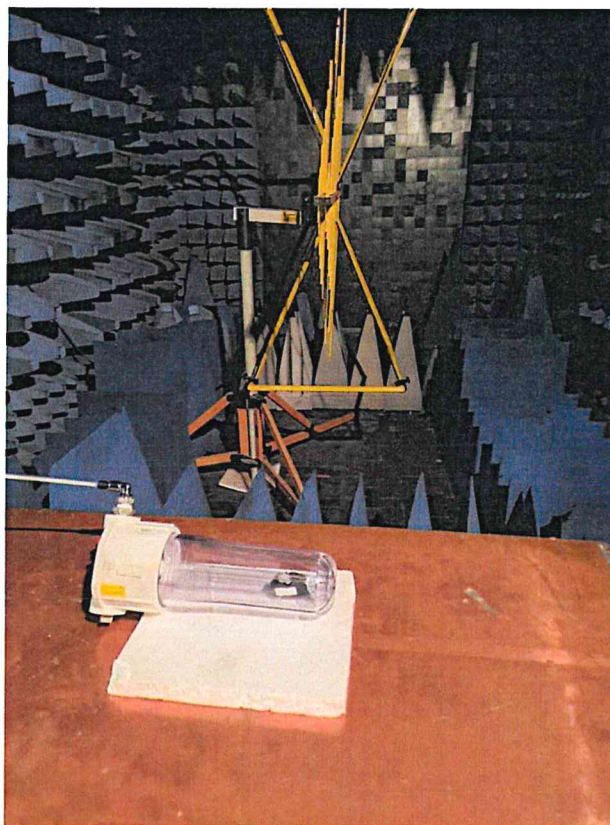


Figure 1: Radiated Immunity Test Setup

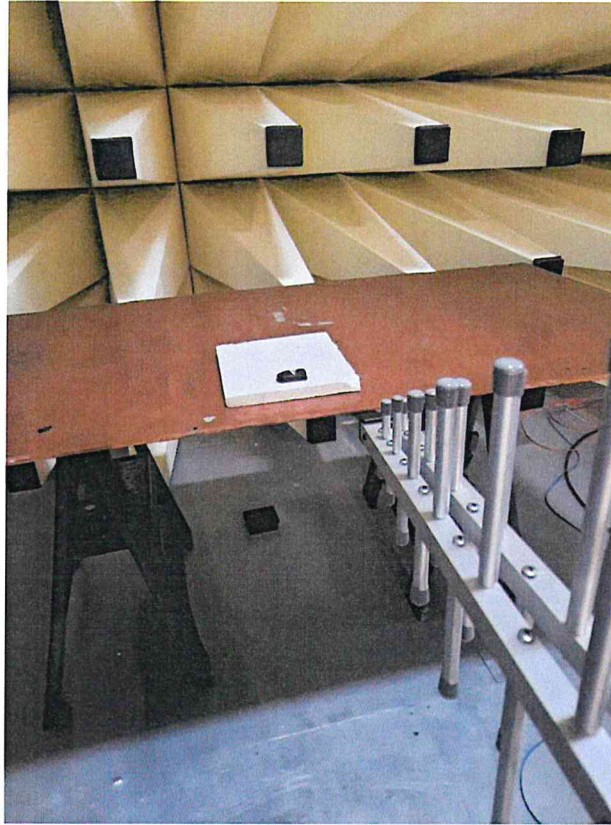


Figure 2: Radiated Emissions Test Setup

Appendix C: Test Results

27. Apr 21 14:23

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp OpRge
30M	1000M	120k	120k	PK	5ms	0dB	LD OFF 60dB

Transducer No.	Start	Stop	Name
1	16	30M	1000M
21	30M	1000M	963CABLE
			BILOG889

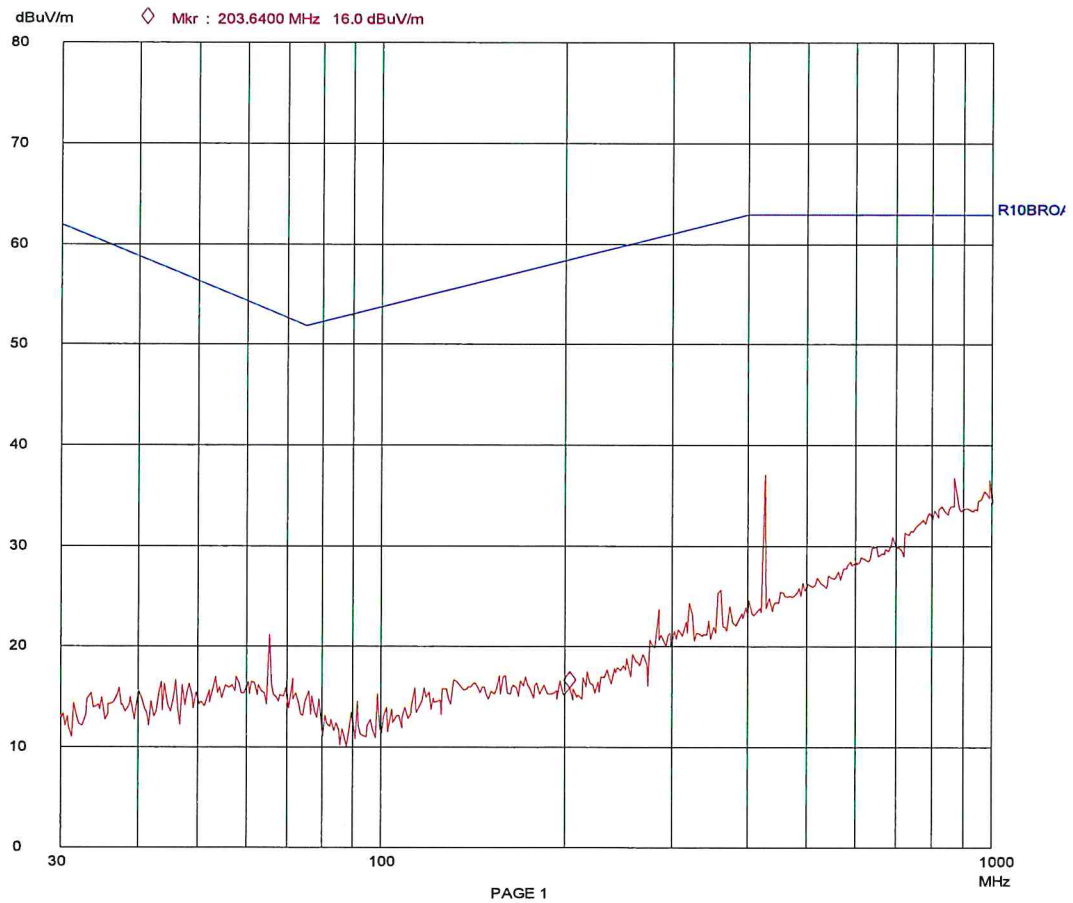


Figure 1: Radiated Emissions, Broadband, Vertical Scan

27. Apr 21 14:28

Scan Settings (1 Range)					Receiver Settings				
Frequencies									
Start	Stop	Step	IF	BW	Detector	M-Time	Atten	Preamp	OpRge
30M	1000M	120k	120k		PK	5ms	0dB	LD OFF	60dB

Transducer No.	Start	Stop	Name	
1	16	30M	1000M	963CABLE
21	30M	1000M	BILOG889	

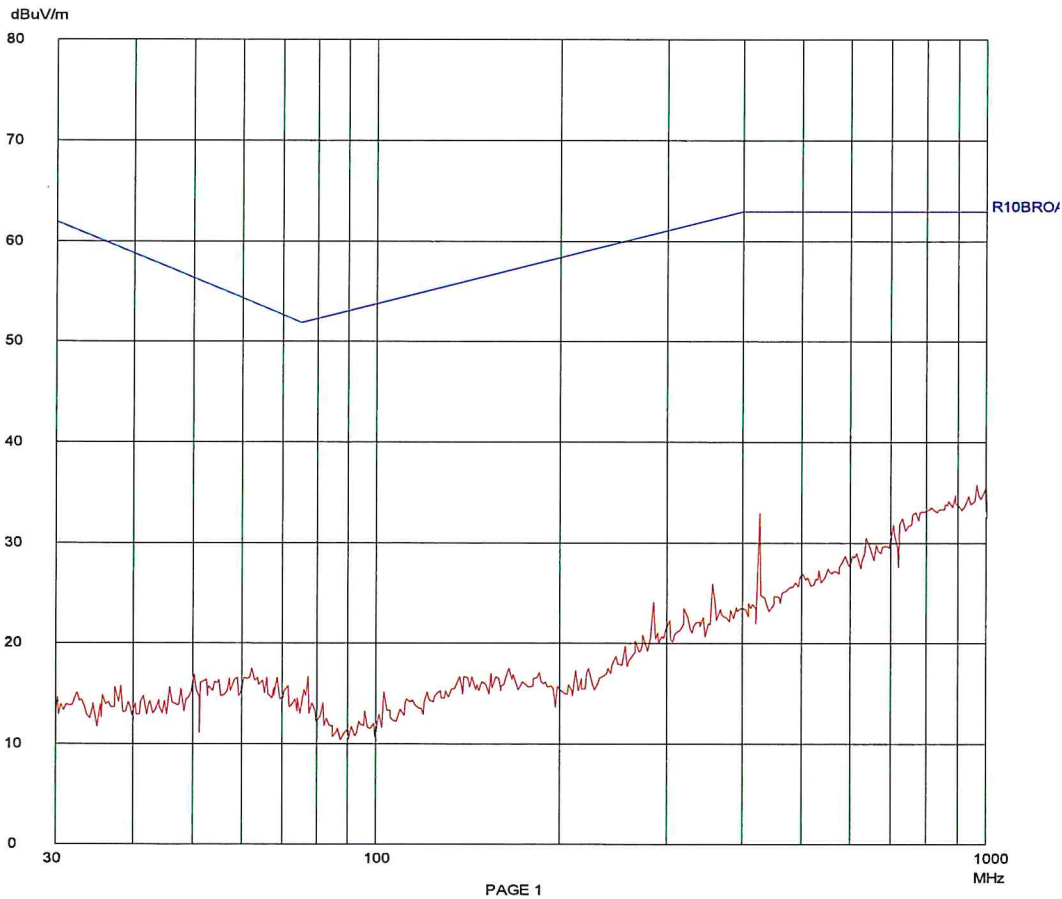


Figure 2: Radiated Emissions, Broadband, Horizontal Scan

27. Apr 21 14:48

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
30M	1000M	120k	120k	AV	5ms	0dB	LD OFF	60dB

Transducer No.	Start	Stop	Name
1	16	30M	963CABLE
21	30M	1000M	BILOG889

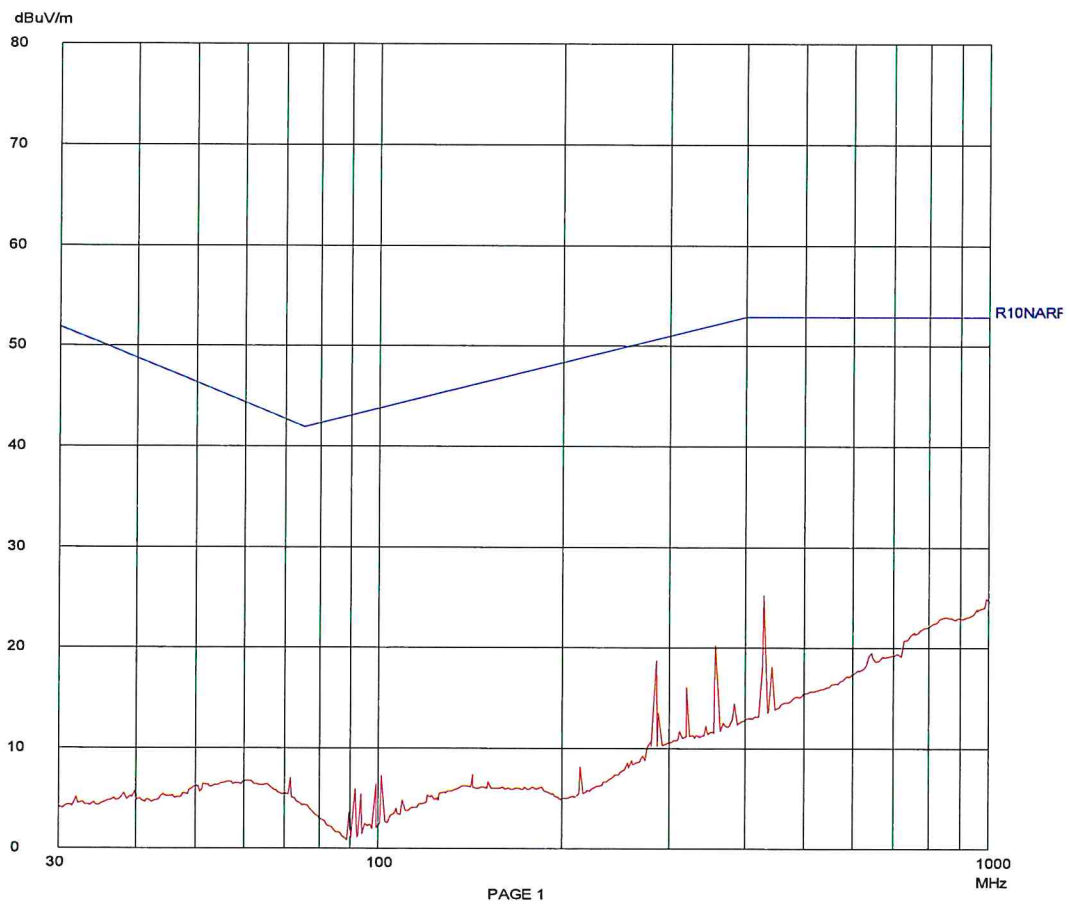


Figure 3: Radiated Emissions, Narrowband, Vertical Scan

27. Apr 21 14:42

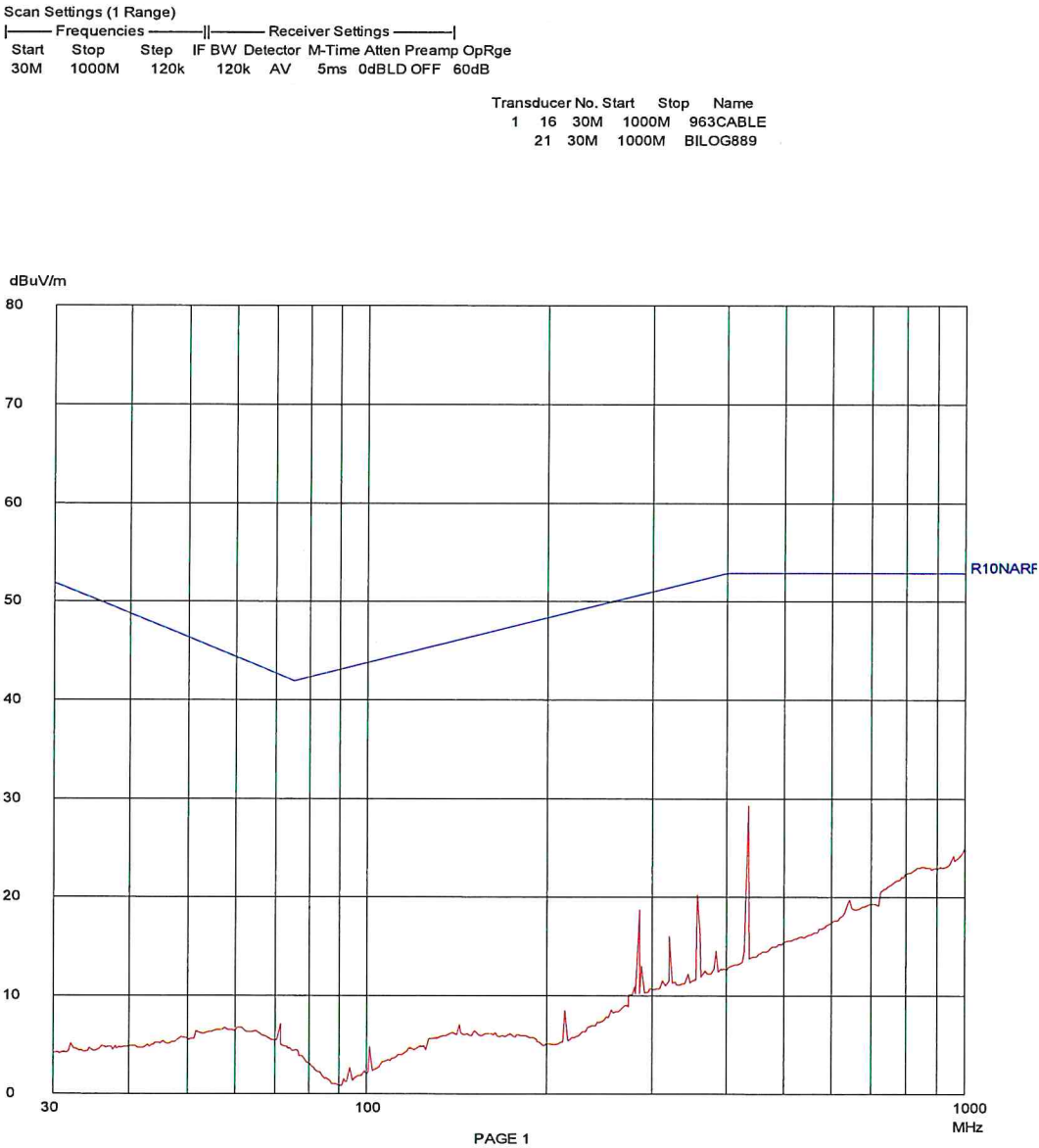


Figure 4: Radiated Emissions, Narrowband, Horizontal Scan



Schrader Electronics Ltd
Unit 11 Technology Park
Belfast Road
Antrim, Northern Ireland, BT41 1QS

APPLICATION FOR EC TYPE PURSUANT TO THE EUROPEAN
DIRECTIVE UNECE R10 REVISION 6 CONCERNING THE APPROVAL OF ELECTRIC/ELECTRONIC
SUB-ASSEMBLIES

TYPE: Tire Pressure Monitoring Sensor

Date: 19th May 2021

The World Depends on Sensors and Controls

ATFPG4_UNECE_R10_Revision2

E24*10R06/00*3558*00



Schrader Electronics Ltd
Unit 11 Technology Park
Belfast Road
Antrim, Northern Ireland, BT41 1QS

CERTIFICATE

This is to certify that the product

1. Product Name..... ATFPG4

submitted to be tested pursuant to the requirements of Directive UNECE R10 Revision 6 have been manufactured and assembled according to the approved production documentation and correspond to the specification documentation stated here in this application.

The World Depends on Sensors and Controls

ATFPG4_UNECE_R10_Revision2

E24*10R06/00*3558*00



Schrader Electronics Ltd
Unit 11 Technology Park
Belfast Road
Antrim, Northern Ireland, BT41 1QS

- | | | |
|------|--|--|
| 1. | Make (Trade name and manufacturer): | Schrader Electronics Ltd |
| 2. | Type: | ATFPG4 |
| | Variants: | N/A |
| 2.2. | Means of Identification of type: | Model name on part |
| 3.1. | Location of that marking: | Outer sensor casing |
| 4. | Name and address of Manufacturer: | Schrader Electronics Ltd, Unit 11, Antrim
Technology Park, Antrim, Co Antrim, N. Ireland,
BT41 1QS |
| 5. | Location and method of affixing the EC approval mark | Indelible label to outer casing, lazer etching or embossed. |
| 6. | Address of assembly plant: | Same as item 4 |
| 7. | This ESA shall be approved: | Component |
| 8. | Any restrictions of use and conditions for fitting: | None |
| 9. | Electrical Control system rated voltage: | 3V |

The World Depends on Sensors and Controls

ATFPG4_UNECE_R10_Revision2

E24*10R06/00*3558*00



Schrader Electronics Ltd
Unit 11 Technology Park
Belfast Road
Antrim, Northern Ireland, BT41 1QS

APPENDIX 1

Description of ESA chosen to represent the type:

Description

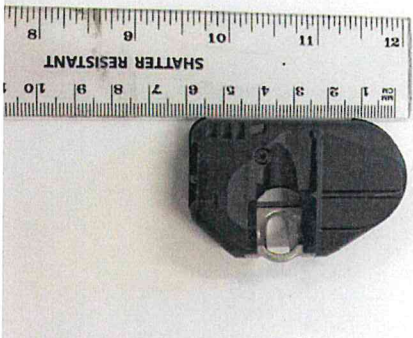
The TPMS Transmitter is installed to the valve stem in each tyre of a vehicle. The unit measures tyre pressure periodically and transmits this information by RF communication to a receiver inside the vehicle. In addition, the TPMS Transmitter performs the following functions:

- Determines a temperature compensated pressure value.
- Determines any abnormal pressure variations in the wheel.
- Monitors the state of the Transmitters' internal battery and informs the receiver of a low battery condition.

Device



Dimensions

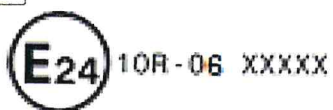
	
Fig C1: View A of UUT	Fig C2: View B of UUT
	
Fig C3: View C of UUT	

Confidential ASPÖCK

TECHNICAL DEVELOPMENT DATA



Schrader Electronics Ltd
Unit 11 Technology Park
Belfast Road
Antrim, Northern Ireland, BT41 1QS



Location of approval mark

Approval mark can be attached via the following mechanisms:

Indelible label

Molded into casing

The drawing above shows a draft of the approval mark.