



**SLOVENSKI STANDARD**  
**SIST EN 302 208 V3.4.1:2024**

**01-februar-2024**

---

**Oprema za radiofrekvenčno identifikacijo, ki deluje v pasu od 865 MHz do 868 MHz z močnostnimi nivoji do 2 W in v pasu od 915 MHz do 921 MHz z močnostnimi nivoji do 4 W - Harmonizirani standard za dostop do radijskega spektra**

Radio Frequency Identification Equipment operating in the band 865 MHz to 868 MHz with power levels up to 2 W and in the band 915 MHz to 921 MHz with power levels up to 4 W - Harmonised Standard for access to radio spectrum

**iTeh Standards**  
**(<https://standards.iteh.ai>)**  
**Document Preview**

**Ta slovenski standard je istoveten z: ETSI EN 302 208 V3.4.1 (2023-10)**

[SIST EN 302 208 V3.4.1:2024](https://standards.iteh.ai/catalog/standards/sist/ba59f216-49eb-48a7-9713-bce849b001bb/sist-en-302-208-v3-4-1-2024)

<https://standards.iteh.ai/catalog/standards/sist/ba59f216-49eb-48a7-9713-bce849b001bb/sist-en-302-208-v3-4-1-2024>

**ICS:**

33.060.99	Druga oprema za radijske komunikacije	Other equipment for radiocommunications
-----------	---------------------------------------	---

**SIST EN 302 208 V3.4.1:2024**                      **en**



# ETSI EN 302 208 V3.4.1 (2023-12)



**Radio Frequency Identification Equipment operating in the  
band 865 MHz to 868 MHz with power levels up to 2 W and  
in the band 915 MHz to 921 MHz with power levels up to 4 W;  
Harmonised Standard for access to radio spectrum**

<https://standards.itech.ai>  
**Document Preview**

[SIST EN 302 208 V3.4.1:2024](https://standards.itech.ai)

<https://standards.itech.ai/catalog/standards/sist/ba59f216-49eb-48a7-9713-bce849b001bb/sist-en-302-208-v3-4-1-2024>

---

**Reference**REN/ERM-TG34-270

---

**Keywords**harmonised standard, ID, radio, RFID, SRD

---

**ETSI**650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

---

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° w061004871

---

**Important notice**

---

The present document can be downloaded from:  
<https://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at [www.etsi.org/deliver](http://www.etsi.org/deliver).

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at <https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:  
<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

If you find a security vulnerability in the present document, please report it through our Coordinated Vulnerability Disclosure Program:  
<https://www.etsi.org/standards/coordinated-vulnerability-disclosure>

---

**Notice of disclaimer & limitation of liability**

---

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied. In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

---

**Copyright Notification**

---

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI. The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2023.  
All rights reserved.

# Contents

Intellectual Property Rights .....	7
Foreword.....	7
Modal verbs terminology.....	8
1 Scope .....	9
2 References .....	9
2.1 Normative references .....	9
2.2 Informative references.....	10
3 Definition of terms, symbols and abbreviations.....	11
3.1 Terms.....	11
3.2 Symbols.....	12
3.3 Abbreviations .....	12
4 Technical requirements specifications .....	13
4.1 Environmental profile.....	13
4.2 General requirements .....	13
4.2.1 Functional requirements .....	13
4.2.2 Designated frequencies .....	13
4.2.2.1 Lower band .....	13
4.2.2.2 Upper band.....	14
4.2.3 Testing of operational frequencies.....	15
4.2.4 Interrogator Category.....	15
4.2.5 Choice of samples for test suite .....	15
4.3 Interrogator transmitter conformance requirements .....	15
4.3.1 Frequency error.....	15
4.3.1.1 Applicability.....	15
4.3.1.2 Definition .....	15
4.3.1.3 Limits .....	16
4.3.1.4 Conformance.....	16
4.3.2 Frequency stability under low voltage conditions .....	16
4.3.2.1 Applicability.....	16
4.3.2.2 Definition .....	16
4.3.2.3 Limits .....	16
4.3.2.4 Conformance.....	16
4.3.3 Effective radiated power.....	16
4.3.3.1 Applicability.....	16
4.3.3.2 Definition .....	16
4.3.3.3 Limits .....	16
4.3.3.3.1 Operation in the lower band (865 MHz to 868 MHz) .....	16
4.3.3.3.2 Operation in the upper band (915 MHz to 921 MHz) .....	17
4.3.3.4 Conformance.....	17
4.3.4 Transmitter antenna beam-width .....	17
4.3.4.1 Applicability.....	17
4.3.4.2 Definition .....	17
4.3.4.3 Limits .....	17
4.3.4.4 Conformance.....	17
4.3.5 Transmitter spectrum masks .....	17
4.3.5.1 Applicability.....	17
4.3.5.2 Definition .....	17
4.3.5.3 Limits .....	18
4.3.5.3.1 Limits for lower band (865 MHz to 868 MHz) .....	18
4.3.5.3.2 Limits for upper band (915 MHz to 921 MHz) .....	18
4.3.5.4 Conformance.....	19
4.3.6 Transmitter spurious emissions.....	19
4.3.6.1 Applicability.....	19
4.3.6.2 Definition .....	19

4.3.6.3	Limits .....	19
4.3.6.4	Conformance .....	20
4.3.7	Transmission times .....	20
4.3.7.1	Applicability.....	20
4.3.7.2	Definition .....	20
4.3.7.3	Limits .....	20
4.3.7.4	Conformance.....	21
4.4	Interrogator receiver conformance requirements.....	21
4.4.1	Adjacent channel selectivity .....	21
4.4.1.1	Applicability.....	21
4.4.1.2	Definition .....	21
4.4.1.3	Limits .....	21
4.4.1.4	Conformance .....	21
4.4.2	Blocking or desensitization.....	21
4.4.2.1	Applicability.....	21
4.4.2.2	Definition .....	21
4.4.2.3	Limits .....	21
4.4.2.4	Conformance.....	21
4.4.3	Void .....	22
4.4.4	Receiver spurious response rejection.....	22
4.4.4.1	Applicability.....	22
4.4.4.2	Definition .....	22
4.4.4.3	Limits .....	22
4.4.4.4	Conformance .....	22
4.4.5	Receiver sensitivity.....	22
4.4.5.1	Applicability.....	22
4.4.5.2	Definition .....	22
4.4.5.3	Limits .....	22
4.4.5.4	Conformance.....	22
4.4.6	Receiver radio-frequency intermodulation .....	23
4.4.6.1	Applicability.....	23
4.4.6.2	Definition .....	23
4.4.6.3	Limits .....	23
4.4.6.4	Conformance.....	23
4.5	Tag transmitter conformance requirements.....	23
4.5.1	Radiated power (e.r.p.) .....	23
4.5.1.1	Applicability.....	23
4.5.1.2	Definition .....	23
4.5.1.3	Limits .....	23
4.5.1.4	Conformance.....	24
4.5.2	Unwanted emissions .....	24
4.5.2.1	Applicability.....	24
4.5.2.2	Definition .....	24
4.5.2.3	Limits .....	24
4.5.2.4	Conformance.....	25
5	Testing for compliance with technical requirements.....	25
5.1	Environmental conditions for testing .....	25
5.1.0	General conditions .....	25
5.1.1	Thermal test conditions.....	25
5.1.2	Test power sources.....	26
5.1.2.1	General considerations .....	26
5.1.2.2	External test power source .....	26
5.1.2.3	Internal test power source .....	26
5.2	Interpretation of the measurement results .....	26
5.3	Submission for testing .....	26
5.3.1	Void .....	26
5.3.2	General conditions for testing of transmitters.....	26
5.3.2.1	Test signals.....	26
5.3.2.2	Artificial antenna.....	27
5.3.2.3	Test sites and general arrangements for radiated measurements.....	27
5.3.2.4	Receiver measurements.....	27

5.3.2.5	Testing of operational frequencies .....	27
5.4	Presentation of equipment for testing .....	27
5.4.1	Void .....	27
5.4.2	Choice of model for testing .....	27
5.4.2.1	General considerations .....	27
5.4.2.2	EUT with an external RF connector.....	27
5.4.2.3	EUT without an external RF connector.....	28
5.4.2.3.1	General Considerations .....	28
5.4.2.3.2	EUT with an internal connector.....	28
5.4.2.3.3	EUT with a temporary antenna connector .....	28
5.4.2.3.4	Use of a Test Fixture .....	28
5.4.3	Adjustable carrier levels .....	28
5.4.4	Test mode.....	28
5.5	Essential interrogator transmitter test suites .....	29
5.5.1	Measurement of frequency error for mains operated equipment .....	29
5.5.2	Frequency stability under low voltage conditions .....	29
5.5.3	Effective radiated power (e.r.p.) .....	30
5.5.3.1	General .....	30
5.5.3.2	Method of measurement.....	30
5.5.3.2.1	General .....	30
5.5.3.2.2	Radiated measurement.....	30
5.5.3.2.3	Conducted measurement.....	31
5.5.4	Transmitter antenna beam-width .....	32
5.5.4.1	General .....	32
5.5.4.2	Radiated measurement .....	32
5.5.5	Transmitter spectrum mask.....	33
5.5.5.1	Method of measurement.....	33
5.5.6	Transmitter spurious emissions.....	34
5.5.6.1	Method of measurement.....	34
5.5.6.2	Method of measuring the spurious power level in a specified load, clause 5.5.6.1 a) i) .....	34
5.5.6.3	Method of measuring the spurious effective radiated power, clause 5.5.6.1 a) ii) .....	35
5.5.6.4	Method of measuring spurious effective radiated power, clause 5.5.6.1 b) .....	36
5.5.7	Transmission times .....	36
5.5.7.1	Method of measurement.....	36
5.5.8	Void .....	37
5.5.9	Channel use.....	37
5.5.9.1	Method of measurement.....	37
5.6	Essential interrogator receiver test suites .....	38
5.6.1	Adjacent channel selectivity .....	38
5.6.1.1	General .....	38
5.6.1.2	Method 1: Measuring radiated signals .....	38
5.6.1.3	Method 2: Conducted method of measurement.....	39
5.6.2	Blocking or desensitization.....	40
5.6.2.1	General .....	40
5.6.2.2	Method 1: Measuring radiated signals .....	40
5.6.2.3	Method 2: Conducted method of measurement.....	41
5.6.3	Receiver spurious response rejection.....	42
5.6.3.1	General .....	42
5.6.3.2	Method 1: Measuring radiated signals .....	42
5.6.3.3	Method 2: Conducted method of measurement.....	43
5.6.4	Receiver sensitivity.....	44
5.6.4.1	Method of measurement.....	44
5.6.5	Receiver radio-frequency intermodulation .....	45
5.6.5.1	General .....	45
5.6.5.2	Method 1: Measuring radiated signals .....	45
5.6.5.3	Method 2: Conducted method of measurement.....	46
5.7	Essential tag transmitter test suites .....	48
5.7.1	Tag radiated power (e.r.p.).....	48
5.7.1.1	General Requirements .....	48
5.7.1.2	Measurement setup.....	48
5.7.1.3	Method of measuring the power in an un-modulated sub-carrier, clause 5.7.1.1 a).....	49
5.7.1.4	Method of measuring the power in a modulated sub-carrier, clause 5.7.1.1 b).....	50

5.7.2	Unwanted emissions .....	51
5.7.2.1	Method of measurement.....	51
<b>Annex A (informative):</b>	<b>Relationship between the present document and the essential requirements of Directive 2014/53/EU .....</b>	<b>54</b>
<b>Annex B (normative):</b>	<b>Radiated measurement.....</b>	<b>56</b>
B.1	Test sites and general arrangements for measurements involving the use of radiated fields .....	56
B.1.1	General .....	56
B.1.2	Anechoic chamber .....	56
B.1.3	Anechoic chamber with a conductive ground plane .....	57
B.1.4	Open Area Test Site (OATS) .....	58
B.1.5	Test antenna.....	59
B.1.6	Substitution antenna .....	59
B.1.7	Measuring antenna .....	60
B.1.8	Stripline arrangement .....	60
B.1.8.1	General.....	60
B.1.8.2	Description.....	60
B.1.8.3	Calibration .....	60
B.1.8.4	Mode of use .....	60
B.2	Guidance on the use of radiation test sites .....	60
B.2.1	General .....	60
B.2.2	Verification of the test site .....	61
B.2.3	Preparation of the EUT.....	61
B.2.4	Power supplies to the EUT .....	61
B.2.5	Range length.....	61
B.2.6	Site preparation .....	62
B.3	Coupling of signals.....	62
B.3.1	General .....	62
B.3.2	Data signals .....	62
B.4	Standard test position .....	63
B.5	Test fixture .....	63
B.5.1	General .....	63
B.5.2	Description .....	63
B.5.3	Calibration.....	64
B.5.4	Mode of use.....	65
<b>Annex C (normative):</b>	<b>Void .....</b>	<b>66</b>
<b>Annex D (informative):</b>	<b>Maximum measurement uncertainty.....</b>	<b>67</b>
<b>Annex E (informative):</b>	<b>Receiver parameter assessment.....</b>	<b>68</b>
<b>Annex F (informative):</b>	<b>Bibliography.....</b>	<b>69</b>
<b>Annex G (informative):</b>	<b>Change history .....</b>	<b>70</b>
History .....		71



# Intellectual Property Rights

## Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

## Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

# Foreword

This Harmonised European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.10] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.3].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

The present document replaces all previous versions of ETSI EN 302 208.

National transposition dates	
Date of adoption of this EN:	18 December 2023
Date of latest announcement of this EN (doa):	31 March 2024
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 September 2024
Date of withdrawal of any conflicting National Standard (dow):	30 September 2025

---

## Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[SIST EN 302 208 V3.4.1:2024](#)

<https://standards.iteh.ai/catalog/standards/sist/ba59f216-49eb-48a7-9713-bce849b001bb/sist-en-302-208-v3-4-1-2024>

---

# 1 Scope

The present document specifies technical characteristics and methods of measurements for Radio Frequency Identification (RFID) devices used in the frequency band 865 MHz to 868 MHz and 915 MHz to 921 MHz.

Power limits up to a maximum of 2 W e.r.p. are specified for this equipment in the frequency band 865 MHz to 868 MHz and up to a maximum of 4 W e.r.p. in the frequency band 915 MHz to 921 MHz.

NOTE 1: The term frequency band is used for reference to dedicated bands as described in ERC Recommendation 70-03 [i.9], while frequency range is used in the other cases.

The frequency usage conditions for RFID are EU wide harmonised in the band 865 MHz to 868 MHz according to Decision (EU) 2017/1483 [i.15] and in the band 915 MHz to 921 MHz according to Decision (EU) 2018/1538 [i.14]. According to Decision (EU) 2018/1538 [i.14], EU member states are requested to implement 3 channels only in the 915 MHz to 921 MHz band.

It should be noted that the frequency band 915 MHz to 921 MHz has only a limited implementation status within the European Union and the CEPT countries. ERC Recommendation 70-03 [i.9] provides in appendix 1 an overview of countries where the band is implemented.

The present document applies to RFID interrogators and tags operating together as a system. For each specified band, multiple high power channels are made available for use by interrogators. The tags respond with a modulated signal preferably in the adjacent low power channels. Interrogators may be used with either integral or external antennas.

The types of equipment covered by the present document are as follows:

- fixed interrogators;
- portable interrogators;
- batteryless tags;
- battery assisted tags;
- battery powered tags.

These types of radio equipment are capable of operating in the frequency ranges given in table 1 and table 2.

The present document contains requirements to demonstrate that the specified radio equipment both effectively uses and supports the efficient use of radio spectrum in order to avoid harmful interference.

NOTE 2: The relationship between the present document and essential requirements of article 3.2 of Directive 2014/53/EU [i.3] is given in annex A.

---

## 2 References

### 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference/>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] Void.

- [2] [IEEE/ANSI C63.5-2017](#): "American National Standard for Electromagnetic Compatibility-- Radiated Emission Measurements in Electromagnetic Interference (EMI) Control--Calibration and Qualification of Antennas (9 kHz to 40 GHz)".
- [3] Void.

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] Void.
- [i.2] Void.
- [i.3] [Directive 2014/53/EU](#) of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.
- [i.4] IEC 60489-3 Appendix J Second edition (1988): "Methods of measurement for radio equipment used in the mobile services. Part 3: Receivers for A3E or F3E emissions" (pages 156 to 164).
- [i.5] Void.
- [i.6] Void.
- [i.7] Void.
- [i.8] Void.
- [i.9] [ERC Recommendation 70-03](#): "Short Range Devices (SRD)".
- [i.10] [Commission implementing Decision C\(2015\) 5376](#) final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.
- [i.11] Void.
- [i.12] Void.
- [i.13] ETSI TR 102 273 (all parts) (V1.2.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement on Radiated Methods of Measurement (using test site) and evaluation of the corresponding measurement uncertainties".
- [i.14] [Commission implementing Decision \(EU\) 2018/1538](#) of 11 October 2018 on the harmonisation of radio spectrum for use by short-range devices within the 874-876 and 915-921 MHz frequency bands.
- [i.15] [Commission implementing Decision \(EU\) 2017/1483](#) of 8 August 2017 amending Decision 2006/771/EC on harmonisation of the radio spectrum for use by short-range devices and repealing Decision 2006/804/EC.
- [i.16] [ERC Recommendation 74-01](#): "Unwanted emissions in the spurious domain", Approved 1998 amended 29 May 2019.
- [i.17] ISO/IEC 18046-2: "Information technology - Radio frequency identification device performance test methods - Part 2: Test methods for interrogator performance".

- [i.18] Void.
- [i.19] ETSI EG 203 336: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Guide for the selection of technical parameters for the production of Harmonised Standards covering article 3.1(b) and article 3.2 of Directive 2014/53/EU".
- [i.20] ISO/IEC 18000-63: "Information technology - Radio frequency identification for item management - Part 63: Parameters for air interface communications at 860 MHz to 960 MHz Type C".

---

## 3 Definition of terms, symbols and abbreviations

### 3.1 Terms

For the purposes of the present document, the following terms apply:

**adaptive frequency agility:** technique that allows an interrogator to change its frequency of operation automatically from one channel to another

**battery assisted tag:** transponder that includes a battery to enhance its receive performance and power its internal circuitry

**batteryless tag:** transponder that derives all of the power necessary for its operation from the field generated by an interrogator

**battery powered tag:** transponder that uses the power from its battery to perform all of its operational functions

**conducted measurements:** measurements which are made using a direct 50  $\Omega$  connection to the equipment under test

**dedicated antenna:** removable antenna supplied and type tested with the radio equipment, designed as an indispensable part of the equipment

**dense interrogator mode:** RFID operating mode in which multiple interrogators can transmit simultaneously in the same channel while tags respond in the adjacent channels

**designated frequency band:** frequency band within which the emission by a device is authorized

**effective radiated power:** product of the power supplied to the antenna and its gain relative to a half wave dipole in the direction of maximum gain

**ER-GSM:** extended band of 918 MHz to 921 MHz used by the railways

**external antenna:** antenna that may be connected to an interrogator via its external connector

**global scroll:** test mode in which an interrogator is able to read the same tag continuously

**integral antenna:** permanent fixed antenna, which may be built-in, designed as an indispensable part of the equipment

**interrogator:** equipment that will activate an adjacent tag and read its data

NOTE: It may also enter or modify the information in a tag.

**lower band:** frequency band 865,0 MHz to 868,0 MHz designated for use by RFID

**manufacturer:** person or company who makes a product, either through assembly of components or through production of raw materials

**radiated measurements:** measurements which involve the absolute measurement of a radiated field

**R-GSM:** interoperable band of 921 MHz to 960 MHz used by the railways

**tag:** transponder that holds data and responds to an interrogation signal

**talk mode:** transmission of intentional radiation by an interrogator

**upper band:** frequency band 915,0 MHz to 921,0 MHz designated for use by RFID

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

$C_L$	Total cable loss in dB
dB	decibel
d	distance
dB <sub>i</sub>	decibel relative to an isotropic radiator
dB <sub>m</sub>	dB relative to 1 milliwatt
dB $\mu$ V	decibel microvolt
f	frequency measured under normal test conditions
f <sub>c</sub>	centre frequency of carrier transmitted by interrogator
$G_{IC}$	Gain of a circular antenna in dB <sub>i</sub> c
$G_{MR}$	Gain Measurement Receiver
mW	milliwatt
nW	nanowatt
$\Omega$	Ohms
$P_C$	Power Carrier
$P_{MR}$	Signal strength received at the measurement receiver
$\mu$ W	microwatt
$\lambda$	wavelength

## 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AM	Amplitude Modulation
ANSI	American National Standards Institute
BER	Bit Error Ratio
BL	Blocking Level
BLF	Bit Link Frequency
BW	Bandwidth
CEPT	European Conference of Postal and Telecommunications administrations
DR	Divide Ration
e.r.p.	effective radiated power
EFTA	European Free Trade Association
EMC	ElectroMagnetic Compatibility
emf	electromotive force
ERC	European Radio communication Committee
ER-GSM	Extended Railways GSM
EUT	Equipment Under Test
GSM	Global System for Mobile
MHz	Mega Hertz
NaCl	sodium chloride
OATS	Open Area Test Site
ppm	part per million
RBW	Resolution Bandwidth
RF	Radio Frequency
RFID	Radio Frequency Identification
R-GSM	Railway GSM
RMS	Root Mean Square
$S_{ACH}$	Selectivity Adjacent Channel
SBL	Signal Blocking Level
SRD	Short Range Device
TX	Transmitter