ETSI EN 302 208-2 V2.1.1 (2015-02)

Electromagnetic compatibility and Radio spectrum Matters (ERM); 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; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

Reference
REN/ERM-TG34-261

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Foreword

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

The present document has been produced by ETSI in response to the mandate M/284 issued from the European Commission under Directive 98/34/EC [i.3] as amended by Directive 98/48/EC [i.4].

The title and reference to the present document are intended to be included in the publication in the Official Journal of the European Union of titles and references of Harmonized Standard under the Directive 1999/5/EC [i.1].

The requirements relevant to Directive 1999/5/EC [i.1] are summarized in annex A.

The present document is part 2 of a multi-part deliverable covering 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 e.r.p. as identified below:

Part 1: "Technical requirements and methods of measurement";

Part 2: "Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive".

The present document includes improvements to the previous version of the standard that take advantage of technical developments within the RFID industry. In addition it includes provisions for RFID to operate in the band 915 MHz to 921 MHz at power levels up to 4 W e.r.p.

National transposition dates	
Date of adoption of this EN:	16 February 2015
Date of latest announcement of this EN (doa):	31 May 2015
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 2015
Date of withdrawal of any conflicting National Standard (dow):	30 November 2016

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**may not**", "**need**", "**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.

Introduction

The present document is part of a set of standards developed by ETSI and is designed to fit in a modular structure to cover all radio and telecommunications terminal equipment within the scope of the R&TTE Directive [i.1]. The modular structure is shown in ETSI EG 201 399 [i.2].

1 Scope

The present document applies to RFID interrogators and tags operating together as a system. The interrogators transmit either within the lower band in up to four specified channels of 200 kHz or in the upper band in up to four specified channels of 400 kHz. The tags preferably respond with a modulated signal in the adjacent low power channels. Interrogators may be used with either integral or external antennas.

The present document applies to RFID interrogators used in conjunction with their RFID transponders (tags). The interrogators preferably operate in the dense interrogator mode in either 200 kHz channels or 400 kHz channels as applicable using a modulated carrier. The tags respond in the adjacent channels with a modulated signal. 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 radio equipment types are capable of operating in all or any part of the frequency band as specified below.

Table 1: Frequencies of operation

Equipment	Operating frequencies
Interrogator Transmit channel 4	865,6 MHz to 865,8 MHz
Interrogator Transmit channel 7	866,2 MHz to 866,4 MHz
Interrogator Transmit channel 10	866,8 MHz to 867,0 MHz
Interrogator Transmit channel 13	867,4 MHz to 867,6 MHz
Interrogator Receive	865,0 MHz to 868,0 MHz
Tag Transmit	865,0 MHz to 868,0 MHz
Interrogator Transmit channel 3	916,1 MHz to 916,5 MHz
Interrogator Transmit channel 6	917,3 MHz to 917,7 MHz
Interrogator Transmit channel 9	918,5 MHz to 918,9 MHz
Interrogator Transmit channel 12	919,7 MHz to 920,1 MHz
Interrogator Receive	915,3 MHz to 925,0 MHz
Tag Transmit	915,3 MHz to 920,9 MHz

The present document is intended to cover the provisions of Directive 1999/5/EC [i.1] (R&TTE Directive), article 3.2, which states that "….. radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference".

In addition to the present document, other ENs that specify technical requirements in respect of essential requirements under other parts of article 3 of the R&TTE Directive [i.1] may apply to equipment within the scope of the present document.

NOTE: A list of such ENs is included on the web site http://www.newapproach.org/.

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 http://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] ETSI EN 302 208-1 (V2.1.1) (02-2015): "Electromagnetic compatibility and Radio spectrum Matters (ERM); 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; Part 1: Technical requirements and methods of measurement".

[2] ETSI TR 100 028 (V1.4.1) (12-2001) (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

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] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE Directive).

[i.2] ETSI EG 201 399 (V2.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".

[i.3] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.

[i.4] Directive 98/48/EC of the European Parliament and of the Council laying down a procedure for the provision of information in the field of technical standards and regulations.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in the R&TTE Directive [i.1] and ETSI EN 302 208-1 [1] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in ETSI EN 302 208-1 [1] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI EN 302 208-1 [1] apply.

4 Technical requirements specifications

4.1 Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be declared by the supplier. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the declared operational environmental profile.

4.1.1 Choice of samples for test suite

Measurement shall be performed according to the present document on samples of equipment defined in ETSI EN 302 208-1 [1], clause 4.2.3.

4.2 Transmitter conformance requirements

4.2.1 Frequency error

This requirement shall apply only to interrogators.

The frequency error, as defined in ETSI EN 302 208-1 [1], clause 8.1.1 shall not exceed the limits in ETSI EN 302 208-1 [1], clause 8.1.3.

4.2.2 Frequency stability under low voltage conditions

This requirement shall apply only to battery- powered interrogators.

The frequency stability under low voltage conditions as defined in ETSI EN 302 208-1 [1], clause 8.2.1 shall comply with the limits given in ETSI EN 302 208-1 [1], clause 8.2.3.

4.2.3 Effective radiated power

This requirement applies only to interrogators.

The effective radiated power, as defined in ETSI EN 302 208-1 [1], clause 8.3.1 shall not exceed the limits in ETSI EN 302 208-1 [1], clause 8.3.3.

4.2.4 Transmitter antenna beamwidth

This requirement shall apply only to antennas of interrogators.

The transmitter antenna beamwidth shall comply with the limits in ETSI EN 302 208-1 [1], clause 8.3.3.

4.2.5 Transmitter spectrum masks

This requirement shall apply only to interrogators.

The transmitter spectrum masks, as applicable, defined in ETSI EN 302 208-1 [1], clause 8.4.1 shall not exceed the limits in ETSI EN 302 208-1 [1], clause 8.4.3.

4.2.6 Transmitter spurious emissions

This requirement shall apply only to interrogators.

The transmitter spurious emissions, as defined in ETSI EN 302 208-1 [1], clause 8.5.1 shall not exceed the limits in ETSI EN 302 208-1 [1], clause 8.5.3.

4.2.7 Transmission times

This requirement shall apply only to interrogators.

Transmission times, as defined in ETSI EN 302 208-1 [1], clause 8.6.1 shall comply with the conditions in ETSI EN 302 208-1 [1], clause 8.6.3.

4.2.8 Mitigation using DAA

This requirement shall apply only to interrogators operating in the upper band.

The mitigation requirements specified in ETSI EN 302 208-1 [1], clause 8.7.1 shall comply with the conditions in ETSI EN 302 208-1 [1], clause 8.7.2

4.3 Receiver conformance requirements

4.3.1 Receiver spurious radiations

This requirement shall apply only to interrogators.

Spurious radiations from the receiver of an interrogator, as defined in ETSI EN 302 208-1 [1], clause 9.4.1 shall not exceed the limits in ETSI EN 302 208-1 [1], clause 9.4.3.

4.4 Tag conformance requirements

4.4.1 Radiated power

This requirement shall apply only to tags.

Tag emissions as defined in ETSI EN 302 208-1 [1], clause 10.1.1 shall not exceed the limits in ETSI EN 302 208-1 [1], clause 10.1.3.

4.4.2 Unwanted emissions

This requirement shall apply only to tags.

Unwanted emissions as defined in ETSI EN 302 208-1 [1], clause 10.2.1 shall not exceed the limits in ETSI EN 302 208-1 [1], clause 10.2.3.