ETSI TS 102 902 V1.2.1 (2013-04)

Electromagnetic compatibility and Radio spectrum matters (ERM); Methods, parameters and test procedures for cognitive interference mitigation towards ER-GSM for use by UHF RFID using Detect-And-Avoid (DAA) or other similar techniques

Reference
RTS/ERM-TG34-21

Keywords
radio, RFID, SRD, UHF

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 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

Introduction

In order to accommodate the spectrum needs for the increasing number of RFID devices and systems, an extension band for high power RFID systems in the frequency range between 915 MHz and 921 MHz is under discussion. This band is already used by RFID in several countries worldwide and its availability in Europe would simplify the global movement of tagged goods. In Europe, part of this new frequency band will be shared between the primary user ER-GSM and RFID. In order to guarantee an interference-free coexistence between the two systems, mechanisms have to be implemented on the RFID side to reduce the probability of interference to a minimum. These mechanisms can be regulatory, technical mechanisms or operational restrictions.

The present document proposes a set of these mechanisms which, together with the necessary parameters, will avoid interference with the ER-GSM system in the frequency band 918 MHz to 921 MHz. In addition to the main goal of reducing the potential for interference with ER-GSM, the overall achievable performance of RFID systems should be optimized. The main strategy adopted in the present document has been to split the task into phases with three different time horizons:

- Short term solution for the next 1 to 3 years;
- Mid term solutions for the coming 3 to 6 years; and
- Long term solutions for a stable deployment of RFID systems in the shared bands.

This strategy will allow for the fast implementation of initial systems in the band without having to wait for the full implementation of the final solution. Some of the proposed techniques will be based on software upgrades of existing systems and only the mechanisms for the long term solution will require additional hardware and the implementation of new reader systems. On the other hand the long term solution will use all available mechanisms and procedures and thus will guarantee the best performance.

The values used in the present document are working assumptions and therefore these values have to be verified in practical measurements and adapted to the state of the art technology.

The present document will be complemented by TS 102 903 [i.11], which will include the results of an initial practical evaluation of the proposed mechanisms, and a description of the test procedures necessary for verifying the compliance of RFID devices and systems.