

ETSI TR 102 886 V1.1.1 (2011-07)

Technical Report

**Electromagnetic compatibility and
Radio spectrum Matters (ERM);
Technical characteristics of Smart Metering (SM)
Short Range Devices (SRD) in the UHF Band;
System Reference Document, SRDs,
Spectrum Requirements for Smart Metering
European access profile Protocol (PR-SMEP)**

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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
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Foreword

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

The present document includes necessary information to support the co-operation under the MoU between ETSI and the Electronic Communications Committee (ECC) of the European Conference of Postal and Telecommunications Administrations (CEPT).

Introduction

The requirement to wirelessly interconnect Smart Meters is one of the responses to the EC's mandate 441 [i.1] for an open architecture for utility meters. Short Range Device (SRD) technology, has been identified as a candidate technology to interconnect meters to the Wide Area Network (WAN) Access Point (AP).

- The TR 102 649-2 [i.22] identified.
- Preliminary performance requirements for SRDs for use with Smart Meters.
- An uncoordinated time bound access mechanism, with 25 mW. e.r.p. power.

A suggested frequency designation of 873 MHz to 876 MHz which is one of the sub-bands of the 870 MHz to 876 MHz and 915 MHz to 921 MHz duplex pair currently allocated for E-GSM-R and military use.

The present document examines whether the performance requirements, access mechanism and transmitted power currently in use for SRDs are adequate for Smart Meters and opens a discussion on further work required to establish the magnitude of any compatibility issues in sharing the 873 MHz to 876 MHz frequency band.

The present document identifies the key service requirements which will impact the volume of traffic to be transmitted between meter and AP. A mesh network is assumed for the delivery of data between meter and AP as this accommodates the limited power available for data transmission and minimises the number of APs. The mesh traffic is modelled and the expected network performance established. This is then compared with the current SRD regulatory limits.

The discussion on compatibility assumes that the military services will be displaced by E-GSM-R and that it is with this service that the SRDs will share the frequency band. The report examines the potential for co-channel inter-system interference using as a starting point the work undertaken at the BNetzA laboratory at Kolberg in August 2009 [i.25]. Adjacent channel interference has already been considered in TR 102 649-2 [i.22] and is not repeated here.

Intra-system interference from collocated SRD systems is being addressed in CEPT SE 24 under WI23 and although the results of these deliberations are not yet available draft information is available on the CEPT web site. Further work on low duty cycle as a mitigation technique for SRDs has been approved by ETSI and the Special Task Force (STF) 411 expects to complete its work within 9 months. A measurement campaign on Low Duty Cycle requirements was recently completed by the JRC [i.33] and the reader is invited to consider the preliminary results of this work when reviewing clause B.3 on Access mechanisms. These activities will guide the development of future analyses in the present document.

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