



TECHNICAL SPECIFICATION

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
Digital Mobile Radio (DMR) Systems;
Part 1: DMR Air Interface (AI) protocol**

Reference

RTS/ERM-TGDMR-356

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Foreword

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

The present document is part 1 of a multi-part deliverable covering the Technical Requirements for Digital Mobile Radio (DMR), as identified below:

- Part 1:** "DMR Air Interface (AI) protocol";
- Part 2: "DMR voice and generic services and facilities";
- Part 3: "DMR data protocol";
- Part 4: "DMR trunking protocol".

Modal verbs terminology

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1 Scope

The present document contains technical requirements for Digital Mobile Radio (DMR) operating in the existing licensed land mobile service frequency bands, as identified in CEPT/ERC/T/R 25-08 [i.3].

The present document describes the Air Interface of a scalable Digital Mobile Radio system which covers three tiers of possible products:

- Tier I: DMR equipment having an integral antenna and working in direct mode (communication without infrastructure) under a general authorization with no individual rights operation.
- Tier II: DMR systems operating under individual licences working in direct mode or using a Base Station (BS) for repeating.
- Tier III: DMR trunking systems under individual licences operating with a controller function that automatically regulates the communications.

NOTE 1: Tier II and Tier III products encompass both simulcast and non-simulcast systems.

NOTE 2: The three tiers of possible products will work only independently and not interoperable.

(For more information please see the System reference documents ETSI TR 102 335-1 [i.1] and ETSI TR 102 335 2 [i.2].)

The present document specifies the Air Interface, complying with either ETSI EN 300 113-1 [1] and ETSI EN 300 113-2 [2] or ETSI EN 300 390-1 [3] and ETSI EN 300 390-2 [4], that has been specifically developed with the intention of being suitable for all identified product tiers. A polite spectrum access protocol for sharing the physical channel has also been specified. Specifically, in this case for use in the existing land mobile service bands with the intention of causing minimum change to the spectrum planning and regulations. Thus the DMR protocol is intended to be applicable to the land mobile frequency bands, physical channel offset, duplex spacing, range assumptions and all other spectrum parameters without need for any change.

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.

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

- [1] ETSI EN 300 113-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Part 1: Technical characteristics and methods of measurement".
- [2] ETSI EN 300 113-2: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive".