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**Universal Mobile Telecommunications System (UMTS);
LTE;
Digital cellular telecommunications system (Phase 2+) (GSM);
User Equipment (UE) and Mobile Station (MS)
GSM, UTRA and E-UTRA over the air performance
requirements
(3GPP TS 37.144 version 14.5.0 Release 14)**



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Foreword

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1 Scope

The present document establishes over the air antenna minimum requirements for user equipment (UE) and mobile station (MS).

Handheld UE requirements are defined for roaming bands for the speech position (beside the head and beside the head and hand) and hand phantom browsing mode position. Laptop mounted equipment requirements are defined for roaming bands for the data transfer position (laptop ground plane phantom). Laptop embedded equipment requirements are defined for roaming bands for the data transfer position (free space).

All bands are potential roaming bands, and the requirements for roaming bands shall therefore be fulfilled for all bands supported by a UE/MS.

Requirements for operating bands are dependent on how the network has been built and are thus operator specific and cannot be specified here. Recommended performance values for operating bands (Annex B) are however included in this specification for information. It should be recognised that the ability to meet the recommended performance values depends on the number of frequency bands supported by the UE/MS.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

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- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 25 101: "User Equipment (UE) radio transmission and reception (FDD)".
- [3] 3GPP TS 45.005: "Radio transmission and reception".
- [4] 3GPP TS 34.114: "User Equipment (UE) / Mobile Station (MS) Over The Air (OTA) antenna performance; Conformance testing".
- [5] ETSI ETR 273: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement of radiated methods of measurement (using test sites) and evaluation of the corresponding measurement uncertainties; Part 1: Uncertainties in the measurement of mobile radio equipment characteristics; Sub-part 2: Examples and annexes".
- [6] 3GPP TR 25.914: "Measurements of radio performances for UMTS terminals in speech mode"
- [7] 3GPP TR 37.977: "Verification of radiated multi-antenna reception performance of User Equipment (UE)"
- [8] 3GPP TR 37.902: "Measurements of User Equipment (UE) radio performances for LTE/UMTS terminals; Total Radiated Power (TRP) and Total Radiated Sensitivity (TRS) test methodology"
- [9] 3GPP TS 36.521-1: "User Equipment (UE) conformance specification Radio transmission and reception; Part 1: Conformance Testing;"