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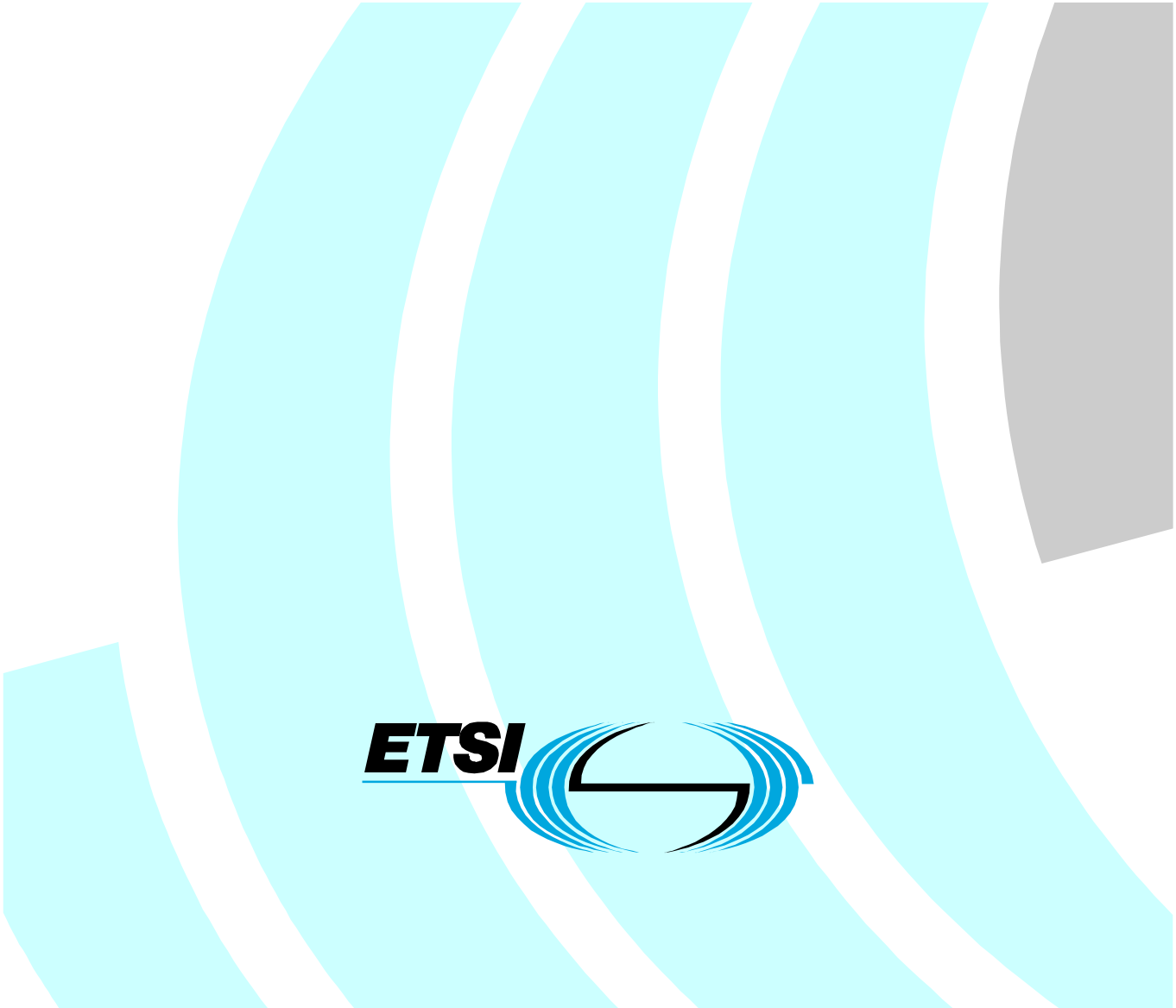
Technical Report

Satellite Earth Stations and Systems (SES);
Satellite component of UMTS/IMT-2000;
General aspects and principles



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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Satellite Earth Stations and Systems (SES).

The contents of the present document are subject to continuing work within TC-SES and may change following formal TC-SES approval. Should TC-SES modify the contents of the present document it will then be republished by ETSI with an identifying change of release date and an increase in version number as follows:

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- the third digit (n) is incremented when editorial only changes have been incorporated in the specification;
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Introduction

S-UMTS stands for the Satellite component of the Universal Mobile Telecommunication System. S-UMTS systems will complement the terrestrial UMTS (T-UMTS) and inter-work with other IMT-2000 family members through the UMTS core network. S-UMTS will be used to deliver 3rd generation mobile satellite services (MSS) utilizing either low (LEO) or medium (MEO) earth orbiting, or geostationary (GEO) satellite(s). For the purpose of the present document it is assumed that S-UMTS systems will be based on terrestrial 3GPP specifications and will support direct access to UMTS core networks.

NOTE 1: The term T-UMTS will be used in the present document to further differentiate the Terrestrial UMTS component.

Due to the differences between terrestrial and satellite channel characteristics, some modifications to the terrestrial UMTS (T-UMTS) standards are necessary. Some specifications are directly applicable, whereas others are applicable with modifications. Similarly, some T-UMTS specifications do not apply, whilst some S-UMTS specifications have no corresponding T-UMTS specification.

Since S-UMTS is derived from T-UMTS, the organization of the S-UMTS specifications closely follows the original 3rd Generation Partnership Project (3GPP) structure. The S-UMTS numbers have been chosen to correspond to the 3GPP terrestrial UMTS numbering system but are prefixed with S-UMTS.

An S-UMTS system is defined by the combination of a family of S-UMTS specifications and T-UMTS specifications.

NOTE 2: If an S-UMTS specification exists it takes precedence over the corresponding T-UMTS specification (if any). This precedence rule applies to any references in the corresponding T-UMTS specifications.

1 Scope

The present document describes the general aspects and principles that apply to satellite systems intended to be an integral part of the Universal Mobile Telecommunications System (UMTS)/IMT-2000. The S-UMTS systems considered in the present document are expected to provide a comprehensive range of satellite services, mainly derived from the terrestrial UMTS network, to a range of mobile terminals including pocket phones, PDA types, car mounted plug-in and nomadic terminals. Also the use of intermediate module repeaters (IMR) to improve coverage is highlighted. Evaluating the implication on the IP level completes the document.

The ETSI TC-SES S-UMTS Working Group provides a forum to develop voluntary S-UMTS/IMT-2000 specifications.

2 References

For the purposes of this Technical Report (TR), the following references apply:

[1] ETSI TS 121 111 (V3.0.1): "Universal Mobile Telecommunications System (UMTS); USIM and IC Card Requirements (3G TS 21.111 version 3.0.1 Release 1999)".

[2] ETSI TR 121 905 (V3.0.0): "Universal Mobile Telecommunications System (UMTS); Vocabulary for 3GPP Specifications (3G TR 21.905 version 3.0.0 Release 1999)".

[3] ETSI TS 123 101 (V3.0.1): "Universal Mobile Telecommunications System (UMTS); General UMTS Architecture (3G TS 23.101 version 3.0.1 Release 1999)".

[4] ETSI TS 122 001 (V3.1.1): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); Principals of circuit telecommunications services supported by a Public Land Mobile Network (PLMN) (3G TS 22.001 version 3.1.1 Release 1999)".

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[9] IEEE Transactions on Vehicular Technology Vol. VT 40 (May 1991): "The Land Mobile Satellite Channel - Recording, Statistics and Channel Model", E. Lutz, D. Cygan, M. Dippold, F. Dolainsky, W. Papke.

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[11] IEEE Wireless Communication and Networking Conf., WCNC '99, pp. 1203-1207 , New Orleans, (Sept. 21-24, 1999): "Satellite Diversity Exploitation in Mobile Satellite CDMA Systems", G.E. Corazza, C. Caini.

[12] ETSI TS 125 212: "Universal Mobile Telecommunications System (UMTS); Multiplexing and channel coding (FDD) (3GPP TS 25.212 version 5.1.0 Release 5)".

[13] ETSI TS 125 214: "Universal Mobile Telecommunications System (UMTS); Physical layer procedures (FDD) (3GPP TS 25.214 version 5.1.0 Release 5)".

[14] ITU-R Recommendation M.1457: "Detailed specifications of the radio interfaces of International Mobile Telecommunications-2000 (IMT-2000)".