

# ETSI TS 151 010-5 V7.12.1 (2009-01)

Technical Specification

**Digital cellular telecommunications system (Phase 2+);  
Mobile Station (MS) conformance specification;  
Part 5: Inter-Radio-Access-Technology (RAT) (GERAN /  
UTRAN) interaction Abstract Test Suite (ATS)  
(3GPP TS 51.010-5 version 7.12.1 Release 7)**



GLOBAL SYSTEM FOR  
MOBILE COMMUNICATIONS



**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/88c99b3d-01f2-4112-b91c-3806aebbf95/etsi-ts-151-010-5-v7.12.1-2009-01>



---

Reference

RTS/TSGG-0351010-5v7c1

---

Keywords

GSM

**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

---

**Important notice**

---

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

[http://portal.etsi.org/chaicor/ETSI\\_support.asp](http://portal.etsi.org/chaicor/ETSI_support.asp)

---

**Copyright Notification**

---

No part may be reproduced except as authorized by written permission.  
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2009.  
All rights reserved.

**DECT™**, **PLUGTESTS™**, **UMTS™**, **TIPHON™**, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

**3GPP™** is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

**LTE™** is a Trade Mark of ETSI currently being registered

for the benefit of its Members and of the 3GPP Organizational Partners.

**GSM®** and the GSM logo are Trade Marks registered and owned by the GSM Association.

---

## Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://webapp.etsi.org/IPR/home.asp>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

---

## Foreword

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

**PRE-ETSI STANDARD**  
(standards.iteh.ai)  
Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/186a2b3d-0112-4112-b91c-3806aebbf95/etsi-ts-151-010-5-v7.12.1-2009-01>

# Contents

Intellectual Property Rights .....	2
Foreword.....	2
Foreword.....	5
Introduction .....	5
1 Scope .....	7
2 References .....	7
3 Definitions and abbreviations.....	8
3.1 Definitions .....	8
3.2 Abbreviations .....	8
4 ATS Structure.....	8
5 Abstract test method and test configurations.....	8
6 Specific Test Suite Operations for InterRAT GERAN to UTRAN Handover testing .....	8
<b>Annex A (normative): Abstract Test Suites (ATS).....</b>	<b>11</b>
A.1 Version of specification.....	11
A.2 IR_G ATS .....	11
A.2.1 Void.....	12
A.2.2 The TTCN Machine Processable form (TTCN.MP).....	12
<b>Annex B (normative): Partial IXIT proforma.....</b>	<b>13</b>
B.0 Introduction .....	13
B.1 Parameter values .....	13
<b>Annex C (normative): Additional information to IXIT.....</b>	<b>15</b>
C.1 Identification Summary.....	15
C.2 Abstract Test Suite Summary.....	15
C.3 Test Laboratory .....	15
C.3.1 Test Laboratory Identification.....	15
C.3.2 Accreditation status of the test service .....	16
C.3.3 Manager of Test Laboratory .....	16
C.3.4 Contact person of Test Laboratory .....	16
C.3.5 Means of Testing.....	17
C.3.6 Instructions for Completion.....	18
C.4 Client .....	19
C.4.1 Client Identification.....	19
C.4.2 Client Test Manager .....	19
C.4.3 Client Contact person .....	19
C.4.4 Test Facilities Required.....	20
C.5 System Under Test .....	21
C.5.1 SUT Information .....	21
C.5.2 Limitations of the SUT.....	22
C.5.3 Environmental Conditions.....	23
C.6 Ancillary Protocols.....	24
C.6.1 Ancillary Protocols 1.....	24
C.6.2 Ancillary Protocols 2.....	24

C.7 Protocol Layer Information for L3 of Mobile Station .....24  
C.7.1 Information provided for test purposes by the MS supplier .....24  
C.7.2 MMI information.....24  
C.7.3 Test house specified parameters.....24

**Annex D (normative): PCTR Proforma.....25**

**Annex E (informative): Guidance on test execution.....26**

E.1 InterRAT test execution .....26

**Annex F (informative): Change history .....27**

History .....30

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**  
Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/186a9b3d-01f2-4112-b91c-3806aebbf95/etsi-ts-151-010-5-v7.12.1-2009-01>

---

## Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> Generation Partnership Project (3GPP).

The present document describes the technical characteristics and methods of test for Mobile Stations (MSs), operating in the different frequency bands within the digital cellular telecommunications system.

The present document corresponds to technical specification 3GPP TS 51.010-5, covering the Digital cellular telecommunications system (3GPP Release 99, Release 4, Release 5, Release 6 and Release 7) version 7.x.x.

The present document, contains Tree and Tabular Combined Notation (TTCN) for Mobile Station (MS) Inter-RAT (GERAN to UTRAN) service conformity specifications, for which Mobile Stations, within the digital cellular telecommunications system (3GPP Release 99, Release 4, Release 5, Release 6 and Release 7), are tested for compliance.

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

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

---

## Introduction

The present document describes the technical characteristics and methods of test for Mobile Stations (MSs) within the digital cellular telecommunications system.

### The graphical form ATS

The electronic form of the graphical representation (TTCN.GR format) corresponding to the ATS for Layer 3, is contained in the Adobe Portable Document Format™ file IR\_XXX.pdf where XXX corresponds to the current version.

### The machine processable ATS

The electronic form of the machine processable file (TTCN.MP format) corresponding to the ATS for Layer 3, is contained in the file IR\_XXX.mp where XXX corresponds to the current version.

The present document is part 5 of a multi-part 3GPP TS covering the digital cellular telecommunications system; Mobile Station (MS) conformance specification, as identified below:

- Part 1: Conformance specification  
Reference: 3GPP TS 51.010-1.
- Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification.  
Reference: 3GPP TS 51.010-2.

Part 3: Layer 3 (L3) Abstract Test Suite (ATS).  
Reference: 3GPP TS 51.010-3.

Part 4: SIM Application Toolkit conformance specification  
Reference: 3GPP TS 11.10-4.

**Part 5: Inter-RAT (GERAN to UTRAN) Abstract Test Suite (ATS)**  
**Reference: 3GPP TS 51.010-5.**

NOTE: At the present time, part 4 is 3GPP TS 11.10.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/186a9b3d-0112-4112-b91c-3806aebbf95/etsi-ts-151-010-5-v7.12.1-2009-01>

---

# 1 Scope

The present document specifies the Abstract Test Suites (ATS) and partial IXIT proforma for the Network Layer (Layer 3) at the mobile radio interface of the GSM/3GPP mobile stations (MS) conforming to the TSs for Layer 3, for the digital cellular telecommunications systems.

The present document is valid for MS implemented according to R99, 3GPP Release 4, Release 5, Release 6 or Release 7.

The ISO standards for the methodology of conformance testing and the TTCN language are used as the basis for the test specifications.

---

# 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TS 51.010-1: "Mobile Station (MS) conformance specification; Part 1: Conformance Specification".
- [2] 3GPP TS 51.010-2: "Mobile Station (MS) conformance specification; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".
- [3] ETSI TR 101 666 (V1.0.0): "Information technology; Open Systems Interconnection Conformance testing methodology and framework; The Tree and Tabular Combined Notation (TTCN) (Ed. 2++)".
- [4] 3GPP TS 34.123-3: "User Equipment (UE) conformance specification; Part 3: Abstract Test Suites (ATSs)".
- [5] 3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core network protocols; Stage 3".
- [6] 3GPP TS 04.18: "Mobile radio interface layer 3 specification; Radio Resource Control (RRC) protocol".
- [7] 3GPP TS 25.331: "Radio Resource Control (RRC) protocol specification"
- [8] 3GPP TS 34.108: "Common test environments for User Equipment (UE) conformance testing".
- [9] ISO/IEC 9646 (all parts): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework".
- [10] ISO/IEC 8824 (all parts): "Information technology - Abstract Syntax Notation One (ASN.1)".
- [11] ISO/IEC 8825 (all parts): "Information technology - ASN.1 encoding rules".



## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TS 34.123-3 [4] apply.

### 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TS 51.010-1 [1], 3GPP TS 24.008 [5], 3GPP TS 04.18 [6], 3GPP TS 25.331[7] and TR 101 666 [3] apply.

## 4 ATS Structure

The modular TTCN approach is used for the development of the 3GPP ATS specification work. Four modules, BasicM, RRC\_M, M\_RAT\_HO\_GERAN\_M and L3M are installed. Please refer to 3GPP TS 34.123-3 [4] for details of the modular structure.

## 5 Abstract test method and test configurations

Please refer to 3GPP TS 34.123-3 [4].

## 6 Specific Test Suite Operations for InterRAT GERAN to UTRAN Handover testing

Table 1: TSO definitions for InterRAT GERAN to UTRAN testing

TSO Name	Description
o_GSM_ToUTRANHO_PER_Encoding	<p><b>Type of the result:</b> OCTETSTRING</p> <p><b>Parameters:</b>            p_Msg : HandoverToUTRANCommand            p_Len : O1</p> <p><b>Description:</b>            It returns the aligned PER encoding of the input downlink message p_Msg (with "Encoder added (1-7) bits padding") of p_Len octets.</p>
o_P_CheckClassmark3	<p><b>Type of the result:</b> BOOLEAN</p> <p><b>Parameters:</b>            p_FromUE : MSCLSMK3;            p_FDD, p_TDD, p_P_GSM_900_BAND, p_E_GSM_900_BAND: BOOLEAN            p_R_GSM_900_BAND, p_DCS_1800_BAND, p_PCS_1900_BAND: BOOLEAN            p_GSM_450_BAND, p_GSM_480_BAND, p_GSM_700_BAND: BOOLEAN            p_GSM_850_BAND, p_TypeGSMClass2, p_TypeGSMClass3 : BOOLEAN            p_TypeGSMClass4, p_TypeGSMClass5, p_TypeDCSClass1:BOOLEAN            p_TypeDCSClass2, p_TypeDCSClass3, p_TypePCSClass1: BOOLEAN            p_TypePCSClass2, p_TypePCSClass3, p_TypeGSM850Class2: BOOLEAN            p_TypeGSM850Class3, p_TypeGSM850Class4, p_TypeGSM850Class5, BOOLEAN            p_DTM_Multislotclass5, p_DTM_Multislotclass9, p_DTM_SingleSlotAllocation : BOOLEAN            p_EOTD_Assist, p_A_GPS_Assist, p_A_GPS_Based, p_Conv_GPS : BOOLEAN            p_EOTD_Based, p_GERANFeatPackage1, p_GERANFeatPackage2: BOOLEAN            p_GERANluMode, p_DTMEnhancCap, p_TAOffset : BOOLEAN            p_MultiSlotClass, p_EGPRS_MultiSlotClass : B5; p_SMS_Value, p_SM_Value : B4            p_GSM400_RadioCapability, p_T400_RadioCapability, p_710_RadioCapability,            p_T810_RadioCapability, p_T900_RadioCapability : B4</p>

p\_RGSM\_RadioCapability, p\_DTMGPRSHighMultiSlotClass : B3  
 p\_DTMEGPRSHighMultiSlotClass, p\_MultislotCapDIDualCarrier : B3  
 p\_DTM\_EGPRS\_MultiSlotSubClass, p\_EDGEPrCap1, p\_EDGEPrCap2 : B2  
 p\_ExtDTM\_MultiSlotClass, p\_ExtDTM\_EGPRS\_MultiSlotClass, p\_HighMultiSlotCap : B2  
 p\_GMSKPowerProfile, p\_8PSKPowerProfile, p\_TGSM400Support : B2  
 p\_DLAdvRxPerformance : B2  
 p\_MS\_ClsmkA5\_4, p\_MS\_ClsmkA5\_5, p\_MS\_ClsmkA5\_6, p\_MS\_ClsmkA5\_7 : B1  
 p\_CDMA2000, p\_ExtMeasCap, p\_ModulationCapability, p\_UCS2Treatment : B1  
 p\_RptACCHCap, p\_CipherModeSetDTM, p\_AddPositionCap : B1

**Description**  
 This is used when UE sends the MSCLSMK3 PDU in CLASSMARK CHANGE

To check each bit of the received octetstring from the UE against the CSN.1 format constraint.

Please Note: Due to the shared radio frequency channel numbers between DCS 1800 and PCS 1900, even if both p\_DCS\_1800\_BAND and p\_PCS\_1900\_BAND are set to TRUE, the UE can only ever indicate support for one of these bands.

The format of the Classmark3 IE is as follows:

```

<Classmark 3 Value part> ::=
  < spare bit >
  {
    < Multiband supported : { 000 } >
      < A5 bits >
  |
    < Multiband supported : { 101 | 110 } >
      < A5 bits >
      < Associated Radio Capability 2 : bit(4) >
      < Associated Radio Capability 1 : bit(4) >
  |
    < Multiband supported : { 001 | 010 | 100 } >
      < A5 bits >
      < spare bit >(4)
      < Associated Radio Capability 1 : bit(4) > }
  { 0 | 1 < R Support > }
  { 0 | 1 < HSCSD Multi Slot Capability > }
  < UCS2 treatment bit >
  < Extended Measurement Capability : bit >
  { 0 | 1 < MS measurement capability > }
  { 0 | 1 < MS Positioning Method Capability > }
  { 0 | 1 < ECSD Multi Slot Capability > }
  { 0 | 1 < 8-PSK Struct > }
  { 0 | 1 < GSM 400 Bands Supported : { 01 | 10 | 11 } >
    < GSM 400 Associated Radio Capability: bit(4) > }
  { 0 | 1 <GSM 850 Associated Radio Capability : bit(4) > }
  { 0 | 1 <GSM 1900 Associated Radio Capability : bit(4) > }
  < UMTS FDD Radio Access Technology Capability : bit >
  < UMTS 3.84 Mcps TDD Radio Access Technology Capability : bit >
  < CDMA 2000 Radio Access Technology Capability : bit >

  { 0 | 1
    < DTM GPRS Multi Slot Class : bit(2) >
      < Single Slot DTM : bit >
      { 0 | 1 < DTM EGPRS Multi Slot Class : bit(2) > } }
  { 0 | 1 < Single Band Support > } -- Release 4 starts
here:
  { 0 | 1 <GSM 750 Associated Radio Capability : bit(4)>}

  < UMTS 1.28 Mcps TDD Radio Access Technology Capability : bit >
  < GERAN Feature Package 1 : bit >

  { 0 | 1 < Extended DTM GPRS Multi Slot Class : bit(2) >
    < Extended DTM EGPRS Multi Slot Class : bit(2) > }

  { 0 | 1 < High Multislot Capability : bit(2) > } ---Release
5 starts here.

  { 0 | 1 < GERAN lu Mode Capabilities > } -- '1' also means support of GERAN
lu mode
  < GERAN Feature Package 2 : bit >

```

	<pre> &lt; GMSK Multislot Power Profile : bit (2) &gt; &lt; 8-PSK Multislot Power Profile : bit (2) &gt;  { 0   1 &lt; T-GSM 400 Bands Supported : { 01   10   11 } &gt;    -- Release 6 starts here.                 &lt; T-GSM 400 Associated Radio Capability: bit(4) &gt; }  { 0   1 &lt; T-GSM 900 Associated Radio Capability: bit(4) &gt; } &lt; Downlink Advanced Receiver Performance : bit (2)&gt;  &lt; DTM Enhancements Capability : bit &gt;  { 0   1    &lt; DTM GPRS High Multi Slot Class : bit(3) &gt;                 &lt; Offset required : bit&gt;                 { 0   1 &lt; DTM EGPRS High Multi Slot Class : bit(3) &gt; } }      &lt; Repeated ACCH Capability: bit &gt; { 0   1 &lt;GSM 710 Associated Radio Capability : bit(4)&gt;}    -- Release 7 starts here. { 0   1 &lt;T-GSM 810 Associated Radio Capability : bit(4)&gt;} &lt; Ciphering Mode Setting Capability : bit &gt;  &lt; Additional Positioning Capabilities : bit &gt;      &lt; spare bits &gt; ;  &lt; A5 bits &gt; ::=     &lt; A5/7 : bit &gt; &lt; A5/6 : bit &gt; &lt; A5/5 : bit &gt; &lt; A5/4 : bit &gt; ;  &lt;R Support&gt;::=     &lt; R-GSM band Associated Radio Capability : bit(3) &gt; ;  &lt; HSCSD Multi Slot Capability &gt; ::=     &lt; HSCSD Multi Slot Class : bit(5) &gt; ;  &lt; MS Measurement capability &gt; ::=     &lt; SMS_VALUE : bit (4) &gt;     &lt; SM_VALUE : bit (4) &gt; ;  &lt; MS Positioning Method Capability &gt; ::=     &lt; MS Positioning Method : bit(5) &gt; ;  &lt; ECSD Multi Slot Capability &gt; ::=     &lt; ECSD Multi Slot Class : bit(5) &gt; ;  &lt; 8-PSK Struct &gt; ::=     &lt; Modulation Capability : bit &gt;     { 0   1 &lt; 8-PSK RF Power Capability 1: bit(2) &gt; }     { 0   1 &lt; 8-PSK RF Power Capability 2: bit(2) &gt; }  &lt; Single Band Support &gt; ::=     &lt; GSM Band : bit (4) &gt; ;  &lt; GERAN lu Mode Capabilities &gt; ::=     &lt; Length : bit (4) &gt;    -- length in bits of lu mode only capabilities and spare bits -- Additions in release 6     &lt; FLO lu Capability : bit &gt;     &lt; spare bits&gt;** ;    -- expands to the indicated length                         -- may be used for future enhancements </pre>
o_LengthofHO_Cmd	<p><b>Type of the result:</b> INTEGER</p> <p><b>Parameters:</b> p_Msg : HandoverToUTRANCommand</p> <p><b>Description:</b> it returns the no. of octets of the input downlink message p_Msg</p>