

# ETSI TS 145 015 V16.0.0 (2020-09)



**Digital cellular telecommunications system (Phase 2+) (GSM);  
GSM/EDGE Release independent  
Downlink Advanced Receiver Performance (DARF);  
Implementation guidelines  
(3GPP TS 45.015 version 16.0.0 Release 16)**



---

**Reference**RTS/TSGR-0645015vg00

---

**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**

---

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at [www.etsi.org/deliver](http://www.etsi.org/deliver).

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

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

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

<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

---

**Copyright Notification**

---

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2020.

All rights reserved.

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

**3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

**oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners.

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

---

## Intellectual Property Rights

### Essential patents

IPRs essential or potentially essential to normative deliverables 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 (<https://ipr.etsi.org/>).

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.

### Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

---

## Legal Notice

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. These shall be interpreted as being references to the corresponding ETSI deliverables.

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

---

## Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

---

# Contents

Intellectual Property Rights .....	2
Legal Notice .....	2
Modal verbs terminology.....	2
Foreword.....	4
1 Scope .....	5
2 References .....	5
3 Definitions and abbreviations.....	5
3.1 Abbreviations .....	5
4 Void.....	5
5 DARP Phase II MS Independent of Release .....	5
5.1 RF Requirements.....	6
5.2 Signalling Requirements .....	6
<b>Annex A (informative): Change history .....</b>	<b>7</b>
History .....	8

---

# Foreword

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

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.

---

# 1 Scope

The present document specifies requirements on MSs supporting Downlink Advanced Receiver Performance (DARP) that are independent of release. TSG GERAN has agreed that the standardisation of DARP be independent of a release. However, in order to implement an MS that conforms to a particular release but supports DARP, which is specified in a later release, it is necessary to specify some extra requirements.

DARP - phase II is contained in the Release 7 specifications. In order to implement an MS conforming to Release 5 but supporting DARP – phase II, it is necessary for the MS to additionally conform to some parts of the Release 7 specifications, such as the radio frequency requirements for DARP and some signalling extensions relating to the MS Classmark and radio access capabilities.

---

# 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] (void)

[2] (void)

[3] 3GPP TS 45.005: "Radio transmission and reception (Release 7)".

[4] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core Network protocols; Stage 3 (Release 7)".

---

# 3 Definitions and abbreviations

Unless listed below, all definitions and abbreviations used in the present document are listed in documents referenced in clause 2.

## 3.1 Abbreviations

For the purposes of the present document, the following abbreviations apply:

DARP	Downlink Advanced Receiver Performance
SAIC	Single Antenna Interference Cancellation, also known as DARP - phase I
MSRD	Mobile Station Receive Diversity, also known as DARP - phase II

---

# 4 Void

---

# 5 DARP Phase II MS Independent of Release

MSs that conform to Release 5 and support DARP - phase II shall support the following requirements in Release 7.

## 5.1 RF Requirements

The MS shall comply with the RF requirements for DARP - phase II specified in [3]. These requirements are:

Section 6.2: Reference sensitivity level.

Section 6.3: Reference interference level.

## 5.2 Signalling Requirements

The MS shall support the following information elements specified in [4]:

Section 10.5.1.7 Mobile Station Classmark 3, with the following exceptions:

- Fields T-GSM 400 Bands Supported / T-GSM 400 Associated Radio Capability, T-GSM 900 Associated Radio Capability, DTM GPRS High Multi Slot Class / Offset required / DTM EGPRS High Multi Slot Class, GSM 710 Associated Radio Capability, T-GSM 810 Associated Radio Capability, and Multislot Capability Reduction for Downlink Dual Carrier shall be indicated as not present since they are not defined in Release 5. This is done by setting the related indication bit to '0'.
- Parameter DTM Enhancement Capability, Repeated ACCH Capability and Ciphering Mode Setting Capability shall be indicated as not supported since it is not defined in Release 5. This is done by setting the bit value '0' for this parameter.

Section 10.5.5.12a MS Radio Access Capability, with the following exceptions:

- Fields DTM GPRS High Multi Slot Class / DTM EGPRS High Multi Slot Class, Multislot Capability Reduction for Downlink Dual Carrier, and Downlink Dual Carrier for DTM Capability shall be indicated as not present since they are not defined in Release 5. This is done by setting the related indication bit to '0'.
- Parameters Multiple TBF Capability, Extended RLC/MAC Control Message Segmentation Capability, DTM Enhancements Capability, PS Handover Capability, and DTM Handover Capability shall be indicated as not supported since they are not defined in Release 5. This is done by setting the bit value '0' for each of these parameters.
- In addition, for Access Technology Type, the values '1001' through to '1101' shall not be used since GSM T 380, GSM T 410, GSM T 900, GSM 710 and GSM T 810 are not supported in Release 5.

NOTE: The lack of one or more of the fields following the Downlink Advanced Receiver Performance field in Mobile Station Classmark 3 IE or MS Radio Access Capability IE should not be considered as an error by the network. In this case the meaning "not supported" or "not present" should be assumed as indicated above.

## Annex A (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2004-11	22	GP-042854			Version for Release 5		5.0.0
2006-01	28	GP-060330	0004	2	Release independent DARP Implementation guidelines update	5.0.0	5.1.0
2007-05	34	GP-071051	0005	1	Release independent DARP Implementation guidelines update	5.1.0	5.2.0
2007-05	34	GP-07105	0006	1	Release independent DARP Implementation guidelines update	5.2.0	6.1.0
2007-08	35				Version for Release 7	6.1.0	7.0.0
2008-12	40				Version for Release 8	7.0.0	8.0.0
2009-12	44				Version for Release 9	8.0.0	9.0.0
2011-03	49				Version for Release 10	9.0.0	10.0.0
2012-09	55				Version for Release 11	10.0.0	11.0.0
2014-09	63				Version for Release 12 (frozen at SP-65)	11.0.0	12.0.0
2015-12	68				Version for Release 13 (frozen at SP-70)	12.0.0	13.0.0

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2017-03	RP-75	-	-	-	-	Version for Release 14 (frozen at TSG-75)	14.0.0
2018-06	RP-80	-	-	-	-	Version for Release 15 (frozen at TSG-80)	15.0.0
2020-07	RP-88e	-	-	-	-	Upgrade to Rel-16 version without technical change	16.0.0



---

# History

<b>Document history</b>		
V16.0.0	September 2020	Publication