

SLOVENSKI STANDARD SIST EN 300 911 V6.7.2:2003

01-december-2003

8][]HUb]'WY] b]'HYY_ca i b]_UW]'g_]'g]gHYa 'fZUnU'&ZŁE'?fa]`'YYb'Y'dcj YnUj Y fUX]'g_Y[UdcXg]gHYa Ufl, GA '\$) "\$, zfUn`]]WU* "+"&z]nXU'U% - +Ł

Digital cellular telecommunications system (Phase 2+) (GSM); Radio subsystem link control (GSM 05.08 version 6.7.2 Release 1997)

iTeh STANDARD PREVIEW (standards.iteh.ai)

Ta slovenski standard je istoveten z. V6723013 Version 6.7.2

578cb06c204b/sist-en-300-911-v6-7-2-2003

ICS:

33.070.50 Globalni sistem za mobilno Global System for Mobile

telekomunikacijo (GSM) Communication (GSM)

SIST EN 300 911 V6.7.2:2003 en

SIST EN 300 911 V6.7.2:2003

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 300 911 V6.7.2:2003

https://standards.iteh.ai/catalog/standards/sist/c7f58ce8-a871-46f8-80aa-578cb06c204b/sist-en-300-911-v6-7-2-2003

ETSI EN 300 911 V6.7.2 (2000-07)

European Standard (Telecommunications series)

Digital cellular telecommunications system (Phase 2+); Radio subsystem link control (GSM 05.08 version 6.7.2 Release 1997)



SIST EN 300 911 V6.7.2:2003

https://standards.iteh.ai/catalog/standards/sist/c7f58ce8-a871-46f8-80aa-578cb06c204b/sist-en-300-911-v6-7-2-2003



Reference

REN/SMG-020508Q6R5

Keywords

Digital cellular telecommunications system, Global System for Mobile communications (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

Teh Sous-Préfecture de Grasse (06) N° 7803/88/ IEW

(standards.iteh.ai)

SIST EN 300 911 V6.7.2:2003 https://standards.iteh.ai/catalog/standards/sist/c7f58ce8-a871-46f8-80aa-578cb06c204b/sist-en-300-911-v6-7-2-2003

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://www.etsi.org/tb/status/

If you find errors in the present document, send your comment to: editor@etsi.fr

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 2000.
All rights reserved.

Contents

Intell	lectual Property Rights	6
Forev	word	6
1	Scope	
1.1	References	
1.2	Abbreviations	
2		
2	General	8
3	Handover	9
3.1	Overall process	9
3.2	MS measurement procedure	9
3.3	BSS measurement procedure	
3.4	Strategy	9
4	RF power control	10
4.1	Overall process	
4.2	MS implementation	10
4.3	MS power control range	10
4.4	BSS implementation	10
4.5	BSS power control range	10
4.6	Strategy	
4.7	Timing	
4.8	Dedicated channels used for a voice group call or voice broadcast	11
5	Radio link failure	11
5.1	Radio link failure (standards.iteh.ai)	11
5.2	MS procedure	12
5.3	BSS procedure <u>SIST EN 300.911.V6.7.2:2003</u>	12
6	Idle mode tasks https://standards.iteh.ai/catalog/standards/sist/c7f58ce8-a871-46f8-80aa- Introduction 578cb06c204b/sist-en-300-911-v6-7-2-2003	13
6.1	Introduction 578cb06c204b/sist-en-300-911-v6-7-2-2003	13
6.2	Measurements for normal cell selection	
6.3	Measurements for stored list cell selection.	
6.4	Criteria for cell selection and reselection	
6.5	Downlink signalling failure	
6.6	Measurements for Cell Reselection	
6.6.1	Monitoring of received signal level and BCCH data	
6.6.2	Path loss criteria and timings for cell re-selection	17
6.7	Release of TCH and SDCCH	
6.7.1	Normal case	
6.7.2	Call re-establishment	
6.8	Abnormal cases and emergency calls	18
7	Network pre-requisites	19
7.1	BCCH carriers	19
7.2	Identification of surrounding BSS for handover measurements	19
8	Radio link measurements	20
8.1	Signal level	
8.1.1	General	
8.1.2	Physical parameter	
8.1.3	Statistical parameters	
8.1.4	Range of parameter	
8.2	Signal quality	22
8.2.1	General	22
8.2.2	Physical parameter	
8.2.3	Statistical parameters	
8.2.4	Range of parameter	23

Measurement reporting for the MS on a TCH 8.4.1 Measurement reporting for the MS on a SDCCH 8.4.2 Measurement reporting for the MS on a SDCCH 8.4.3 Additional cell reporting requirements for multi band MS 8.4.4 Common aspects for the MS on a TCH or a SDCCH 8.4.5 Measurement reporting for the BSS 8.4.6 Extended measurement reporting 8.5.1 Absolute MS-BTS distance 8.5.2 Physical parameter 9 Control parameters 10 GPRS mode tasks 10.1.1 Cell Re-selection 10.1.1 Monitoring the received signal level and PBCCH data 10.1.1.1 Packet idle mode 10.1.2 Cell Re-selection Algorithm 10.1.3 Cell Re-selection Algorithm 10.1.3 Cell Re-selection Algorithm 10.1.4 Network controlled Cell re-selection 10.1.4 Measurement reporting 10.1.4 Measurement reporting 10.1.4 Measurement reporting 10.1.5 Extended Measurement reporting 10.1.6 Per More Control Little STAND ARPT PRESYTEW 10.2 RP Power Control Little STAND ARPT PRESYTEW 10.2.3 Measurement st MS side 10.2.3 Measurement and MS side 10.2.3.1 Packet transfer mode 10.2.3.2 Packet transfer mode 10.2.3.3 Measurement at MS side 10.2.3.1 Packet transfer mode 10.3.3.2 Packet transfer mode 10.3.3.3.3 Measurement reporting 10.3.4 Measurement at a SS side 10.3.3.2 Packet transfer mode 10.3.3.2 Packet	24
8.4.2 Measurement reporting requirements for multi band MS. 8.4.4 Common aspects for the MS on a TCH or a SDCCH. 8.4.5 Measurement reporting for the BSS. 8.4.6 Extended measurement reporting. 8.5.1 Absolute MS-BTS distance. 8.5.2 Physical parameter. 9 Control parameters. 10 GPRS mode tasks. 10.1 Cell Re-selection. 10.1.1 Monitoring the received signal level and PBCCH data. 10.1.1.1 Packet transfer mode. 10.1.1.2 Cell Re-selection Criteria. 10.1.3 Cell Re-selection Algorithm. 10.1.3 Abnormal cell reselection. 10.1.4 Network controlled Cell re-selection. 10.1.5 Exceptional cases. 10.1.6 Exceptional cases. 10.1.6 Exceptional cases. 10.1.7 Exceptional cases. 10.1.8 Exceptional cases. 10.1.9 Extended Measurement reporting. 10.1.2 Exceptional cases. 10.2 RF Fower Control. I CLL STANDON DELECTION. 10.2 RF Power Control. I CLL STANDON DELECTION. 10.2 RF Power Control. I CLL STANDON DELECTION. 10.2 AND DELECTION. 10.2 BEST OUTPUT POWER. 10.2 BEST OUTPUT	24
8.4.2 Measurement reporting requirements for multi band MS. 8.4.4 Common aspects for the MS on a TCH or a SDCCH. 8.4.5 Measurement reporting for the BSS. 8.4.6 Extended measurement reporting. 8.5.1 Absolute MS-BTS distance. 8.5.2 Physical parameter. 9 Control parameters. 10 GPRS mode tasks. 10.1 Cell Re-selection. 10.1.1 Monitoring the received signal level and PBCCH data. 10.1.1.1 Packet transfer mode. 10.1.1.2 Cell Re-selection Criteria. 10.1.3 Cell Re-selection Algorithm. 10.1.3 Abnormal cell reselection. 10.1.4 Network controlled Cell re-selection. 10.1.5 Exceptional cases. 10.1.6 Exceptional cases. 10.1.6 Exceptional cases. 10.1.7 Exceptional cases. 10.1.8 Exceptional cases. 10.1.9 Extended Measurement reporting. 10.1.2 Exceptional cases. 10.2 RF Fower Control. I CLL STANDON DELECTION. 10.2 RF Power Control. I CLL STANDON DELECTION. 10.2 RF Power Control. I CLL STANDON DELECTION. 10.2 AND DELECTION. 10.2 BEST OUTPUT POWER. 10.2 BEST OUTPUT	24
8.4.3 Additional cell reporting requirements for multi band MS 8.4.4 Common aspects for the MS on a TCH or a SDCCH 8.4.5 Measurement reporting for the BSS 8.4.6 Extended measurement reporting 8.5.1 Absolute MS-BTS distance 8.5.2 Physical parameter 9 Control parameters 10 GPRS mode tasks 10.1 Cell Re-selection 10.1.1 Monitoring the received signal level and PBCCH data 10.1.1.1 Packet idle mode 10.1.1.2 Packet transfer mode 10.1.2 Cell Re-selection Criteria 10.1.3 Cell Re-selection Trieria 10.1.4 Abnormal cell reselection. 10.1.4 Network controlled Cell re-selection 10.1.4.1 Measurement reporting 10.1.4.2 Cell re-selection command 10.1.4.3 Exceptional cases 10.1.5 Extended Measurement reporting 10.2.1 MS output power 10.2.2 RF Power Control. 10.2.3 Measurements at MS side 10.2.3 Measurements at MS side 10.2.3.1.1 Packet idle mode 10.2.3.1.2 Packet transfer mode 10.2.3.1.2 Packet transfer mode 10.2.3.1.3 Packet transfer mode 10.2.3.2.3 Derivation of Channel Quality Report. 10.2.3.2 Derivation of Channel Quality Report. 10.2.3 Measurements at MS side 10.2.3.2 Packet transfer mode 10.2.3.3 Measurement averaging process 10.3 Measurement averaging process 10.4 Control parameters 10.5 Measurement averaging process	
8.4.4 Common aspects for the MS on a TCH or a SDCCH. 8.4.5 Measurement reporting for the BSS. 8.4.6 Extended measurement reporting. 8.5.1 General. 8.5.2 Physical parameter. 9 Control parameters. 10 GPRS mode tasks. 10.1.1 Monitoring the received signal level and PBCCH data. 10.1.1.1 Packet idle mode. 10.1.1.2 Packet transfer mode. 10.1.3 Cell Re-selection Criteria. 10.1.3 Cell Re-selection Indicate the mode. 10.1.4 Network controlled Cell re-selection. 10.1.4 Network controlled Cell re-selection. 10.1.4 Network controlled Cell re-selection. 10.1.5 Exceptional cases. 10.1.5 Extended Measurement reporting. 10.1.5 Extended Measurement reporting. 10.2 RF Power Control. I CH STANDARD PREVIEW. 10.2.1 MS output power. 10.2.3 Measurements at MS side. 10.2.3.1.1 Packet idle mode. 10.2.3.2 Derivation of Channel Quality Report. 10.2.3.2 Derivation of Channel Quality Report. 10.2.3.2 Packet idle mode. 10.2.3.2 Packet idle mode. 10.3.3.3 Measurement reporting. 10.4.3 Measurement as BSS side. 10.2.3.4 Measurement reporting. 10.2.3.5 Packet idle mode. 10.2.3.5 Packet idle mode. 10.2.3.6 Measurement as BSS side. 10.2.3.7 Packet idle mode. 10.2.3.8 Measurement reporting. 10.3.9 Packet idle mode. 10.3.1 Packet idle mode. 10.3.3 Measurement reporting. 10.4 Measurement reporting. 10.5 Packet idle mode. 10.6 Measurement reporting. 10.7 Packet idle mode. 10.8 Measurement reporting. 10.8 Measurement reporting. 10.9 Packet idle mode. 10.8 Measurement reporting. 10.9 Packet idle mode. 10.9	
Measurement reporting for the BSS 8.5 Absolute MS-BTS distance 8.5.1 General. 8.5.2 Physical parameter 9 Control parameters 10 GPRS mode tasks 10.1 Cell Re-selection 10.1.1 Monitoring the received signal level and PBCCH data 10.1.1.1 Packet idle mode. 10.1.2 Cell Re-selection Criteria. 10.1.3 Cell Re-selection Orderia. 10.1.4 Packet transfer mode 10.1.5 Cell Re-selection orderia. 10.1.6 Cell Re-selection orderia. 10.1.1 Monitoring the control parameter. 10.1.2 Cell Re-selection orderia. 10.1.3 Cell Re-selection orderia. 10.1.4 Measurement reporting. 10.1.4 Network controlled Cell re-selection. 10.1.4 Measurement reporting. 10.1.5 Extended Measurement reporting. 10.1.6 Extended Measurement reporting. 10.1.1 MS output power. 10.2.1 MS output power. 10.2.2 RF Power Control II Cell RS II STANDARD PREVIEW. 10.2.1 MS output power. 10.2.3 Measurements at MS side. 10.2.3.1 Packet transfer mode deads to have authors standards sixty (158 co. p. as 71, 468, 80aa. 10.2.3.1.1 Packet tidle mode deads to have authors standards sixty (158 co. p. as 71, 468, 80aa. 10.2.3.2.1 Packet transfer mode (10.1.1 Measurement reporting. 10.2.3.2.2 Packet transfer mode (10.1.1 Measurement reporting. 10.2.3.2.3 Measurement sat MS side. 10.2.3.2 Derivation of Channel (10.1.1 Measurement are profiting. 10.2.3.2 Packet transfer mode (10.1.1 Measurement are profiting. 10.2.3.2 Packet transfer mode (10.1.1 Measurement are profiting. 10.2.3.2 Packet transfer mode 10.3.3 Measurement sat BSS side. 10.4 Measurement are profiting. 10.5 Measurement are profiting. 10.6 Measurement are profiting. 10.7 Measurement are profiting. 10.8 Measurement are profiting. 10.9 Measurement are profiting. 10.1 Measurement are profiting. 10.2 Measurement are profiting. 10.3 Measurement are profiting. 10.4 Measurement are profiting. 10.5 Measurement are profiting. 10.6 Measurement are profiting. 10.7 Measurement are profiting. 10.8 Measurement are profiting. 10.9 Measurement are profiting. 10.1 Measurement are profiting. 10.2 Measurement are profiting. 10.3 Measurement	
Absolute MS-BTS distance 8.5. Absolute MS-BTS distance 8.5.1 General. 8.5.2 Physical parameter 9 Control parameters 10 GPRS mode tasks. 10.1 Cell Re-selection 10.1.1 Monitoring the received signal level and PBCCH data 10.1.1.1 Packet idle mode. 10.1.1.2 Packet transfer mode. 10.1.1.3 Cell Re-selection Algorithm 10.1.3 Abnormal cell reselection. 10.1.4 Network controlled Cell re-selection 10.1.4.1 Measurement reporting. 10.1.4.2 Cell re-selection command. 10.1.4.3 Exceptional cases 10.1.5 Extended Measurement reporting. 10.1.6 RF Power Control. A. C. U. S. A. C. W. S. C.	
Absolute MS-BTS distance 8.5.1 General. 8.5.2 Physical parameter. 9 Control parameters. 10 GPRS mode tasks. 10.1 Cell Re-selection. 10.1.1 Monitoring the received signal level and PBCCH data. 10.1.1.1 Packet idle mode. 10.1.2 Cell Re-selection Criteria. 10.1.3 Cell Re-selection Criteria. 10.1.4 Network controlled Cell re-selection. 10.1.4 Network controlled Cell re-selection. 10.1.4.1 Measurement reporting. 10.1.5 Extended Measurement reporting. 10.1.6 Ry Sevential Cell Re-selection Criteria. 10.1.1 Sevential Sevential Cell Re-selection. 10.1.2 Cell re-selection command. 10.1.4 Measurement reporting. 10.1.5 Extended Measurement reporting. 10.1.6 No unput power. 10.2 RP Power Control I Cell Te-selection. 10.2 RP Power Control Cell Te-selection. 10.2 RP Power Control Power. 10.2 RP Po	
8.5.1 General. 8.5.2 Physical parameter. 9 Control parameters. 10.1 GPRS mode tasks. 10.1 Cell Re-selection 10.1.1.1 Monitoring the received signal level and PBCCH data. 10.1.1.1 Packet idle mode. 10.1.2 Cell Re-selection Algorithm 10.1.3.1 Abnormal cell reselection. 10.1.4 Network controlled Cell re-selection. 10.1.4 Network controlled Cell re-selection. 10.1.4 Network controlled Cell re-selection. 10.1.5 Extended Measurement reporting. 10.1.6 Extended Measurement reporting. 10.2.1 MS output power. 10.2.2 RF Power Control In Cell reselection. 10.2.3 Measurements at MS side. 10.2.3 Deriving the C value. SIST, FN 300,911, V6, 7,22003. 10.2.3.1.1 Packet idle modets. ach air arthog standards sixte (758,688,8871,4688,80na. 10.2.3.2.2 Derivation of Channel Quality Report. 10.2.3 Packet transfer mode. 10.2.3.2.2 Packet idle modets. ach air arthog standards sixte (758,688,8871,4688,80na. 10.2.3.2.2 Packet idle modets. ach air arthog standards sixte (758,688,8871,4688,80na. 10.2.3.2.2 Packet idle modets. ach air arthog standards sixte (758,688,8871,4688,80na. 10.2.3.2.2 Packet idle mode 10.2.3 Measurement reporting. 10.3 Measurement reporting. 10.3 Measurement reporting. 10.3 Measurement reporting. 10.4 Control parameters. 10.5 Measurement reporting. 10.5 Measurement reporting. 10.6 Measurement reporting. 10.7 Measurement reporting. 10.8 Measurement reporting. 10.9 Measurement reporting. 10.9 Measurement reporting. 10.1 Measurement reporting. 10.2 Measurement reporting. 10.3 Measurement reporting. 10.4 Measurement reporting. 10.5 Measurement reporting. 10.6 Measurement reporting. 10.7 Measurement reporting. 10.8 Measureme	
S.5.2 Physical parameter GORS mode tasks. 10.1 Cell Re-selection 10.1.1 Monitoring the received signal level and PBCCH data 10.1.1.2 Packet transfer mode 10.1.3 Cell Re-selection Criteria 10.1.4 Packet transfer mode 10.1.5 Cell Re-selection Criteria 10.1.6 Abnormal cell reselection 10.1.6 Abnormal cell reselection 10.1.7 Measurement reporting 10.1.8 Exceptional cases 10.1.9 Extended Measurement reporting 10.1.0 RF Power Control 10.1.2 RF Power Control 10.1.3 Extended Measurement reporting 10.1.4 Msoutput power 10.1.5 Extended Measurement reporting 10.1.6 SITS output power 10.1.1 Msoutput power 10.1.2 RF Power Control 10.2.2 RF Power Control 10.2.3 Measurements at MS side 10.2.3 Measurements at MS side 10.2.3.1 Deriving the C value 10.2.3.1.1 Packet transfer mode 10.2.3.1.2 Packet transfer mode 10.2.3.2.2 Derivation of Channel Quality Report 10.2.3.2.1 Packet transfer mode 10.2.3.2.2 Packet idle mode 10.2.3.2.3 Measurement sat BSS side 10.3 Measurement requirements 10.4 Measurement requirements 10.5 Measurement requirements 10.6 Measurement requirements 10.7 Measurement requirements 10.8 Measurement requirements 10.9 Annex A (informative): Definition of a basic GSM or DCS 1 800 handover and RF power control algorithm 10.1 Measurement averaging process 10.2 Functional requirement 10.3 Measurement averaging process 10.4 Measurement averaging process 10.5 Macsurement averaging process 10.6 Macsurement averaging process 10.7 Macsurement averaging process 10.8 Measurement averaging process 10.9 Macsurement averaging process 10.1 Measurement averaging process 10.2 Macsurement averaging process 10.3 Measurement averaging process 10.4 Internal intracell handover according to radio criteria: (Interference problems)	
9 Control parameters. 10 GPRS mode tasks 10.1 Cell Re-selection 10.1.1 Monitoring the received signal level and PBCCH data 10.1.1.1 Packet idle mode. 10.1.1.2 Packet transfer mode 10.1.2 Cell Re-selection Criteria. 10.1.3 Cell Re-selection Algorithm 10.1.4 Network controlled Cell re-selection 10.1.4 Network controlled Cell re-selection 10.1.4.1 Measurement reporting. 10.1.4.2 Cell re-selection command. 10.1.5 Extended Measurement reporting. 10.1.6 Extended Measurement reporting. 10.2 RF Power Control. Letter Standards. 10.2.1 MS output power. 10.2.2 BTS output power. 10.2.3 Measurements at MS side. 10.2.3.1 Deriving the C value. SISTEN. 200.911. Vol. 7.2.2003. 10.2.3.1.1 Packet right mode as is the hardwards standards sister. TSS cos-8.8371. 468. 80aa. 10.2.3.2 Derivation of Channel Quality Report. 10.2.3.2 Packet transfer mode. 10.2.3.2.2 Packet transfer mode. 10.2.3.2.3 Measurement sat BSS side. 10.3 Measurements at BSS side. 10.3 Measurements at BSS side. 10.4 Measurement sat BSS side. 10.5 Measurements at BSS side. 10.6 Measurement are porting. 10.7 Measurement at BSS side. 10.8 Measurement at BSS side. 10.9 Measurement at BSS side. 10.9 Measurement are porting. 10.1 Measurement at BSS side. 10.2 Measurement are porting. 10.3 Measurement are porting. 10.4 Control parameters 10.4 Control parameters 10.5 Princtional requirement. 10.6 Measurement are profing process. 10.7 Measurement are profing process. 10.8 Measurement are profing process. 10.8 Measurement are process. 10.8 Measurement are process. 10.8 Measurement are process. 10.9 Measurement are process. 10.1 Measurement are process. 10.2 Measurement are process. 10.3 Measurement are process. 10.4 Measurement are process. 10.5 Measurement are process. 10.6 Measurement are process. 10.7 Measurement are process. 10.8 Measurement are process. 10.8 Measurement are process. 10.9 Measurement are process. 10.1 Measurement are process. 10.1 Measurement are process. 10.2 Measurement are process. 10.3 Measurement are process. 10.4 Measurement are process. 10.5 Meas	
Cell Re-selection	
10.1.1 Monitoring the received signal level and PBCCH data 10.1.1.1 Packet idle mode 10.1.2 Cell Re-selection Criteria 10.1.3 Cell Re-selection Algorithm 10.1.4 Abnormal cell reselection 10.1.4 Measurement reporting 10.1.4.1 Measurement reporting 10.1.4.2 Cell re-selection command 10.1.4.2 Exceptional cases 10.1.5 Extended Measurement reporting 10.1.6 RF Power Control. 10.2 RF Power Control. 10.2 BTS output power (standards.itch.air) 10.2.1 Measurements at MS side 10.2.3 Measurements at MS side 10.2.3.1 Packet idle mode. SISTEN 300.911.W6.7.2.2003 10.2.3.1.1 Packet idle mode. SISTEN 300.911.W6.7.2.2003 10.2.3.2 Derivation of Channel Quality Report. 10.2.3.2.1 Packet transfer mode 10.2.3.2.2 Packet idle mode. 10.2.3.2.3 Measurement sat BSS side 10.3 Measurements at BSS side 10.4 Control parameters 10.5 Efficient of a basic GSM or DCS 1 800 handover and RF power control algorithm 10.4 Control parameters 10.5 Efficient of a basic GSM or DCS 1 800 handover and RF power control algorithm 10.5 Efficient of a basic GSM or DCS 1 800 handover and RF power control algorithm 10.5 Efficient of a basic GSM or DCS 1 800 handover and RF power control algorithm 10.5 Efficient of a basic GSM or DCS 1 800 handover and RF power control algorithm 10.5 Efficient of a basic GSM or DCS 1 800 handover and RF power control algorithm 10.5 Efficient and threshold comparisons 10.6 Efficient and threshold comparisons 10.7 Efficient and threshold comparisons 10.8 Efficient and threshold comparison	30
10.1.1 Packet idle mode 10.1.1 Packet irdnesser mode 10.1.1 Packet transfer mode 10.1.2 Cell Re-selection Criteria 10.1.3 Cell Re-selection Algorithm 10.1.3.1 Abnormal cell reselection 10.1.4 Network controlled Cell re-selection 10.1.4.1 Measurement reporting 10.1.4.2 Cell re-selection command 10.1.4.2 Cell re-selection command 10.1.5 Extended Measurement reporting 10.1.5 Extended Measurement reporting 10.2.1 MS output power 10.2.1 MS output power 10.2.2 BTS output power 10.2.3 Measurements at MS side 10.2.3 Measurements at MS side 10.2.3.1 Packet transfer mode 10.2.3.1 Packet transfer mode 10.2.3.1 Packet transfer mode 10.2.3.2 Packet transfer mode 10.2.3.2 Packet transfer mode 10.2.3.2 Packet idle mode 10.2.3.2 Packet idle mode 10.2.3.2 Packet idle mode 10.2.3.2 Measurement reporting 10.2.3.2 Measurement reporting 10.2.3.2 Measurement reporting 10.2.3.2 Measurement reporting 10.2.3.2 Packet idle mode 10.3.3.2 Packet idle mode 10.3.3.3 Measurement reporting 10.3.4 Measurement reporting 10.3.4 Measurement reporting 10.3.5 Measurement reporting	30
10.1.1 Packet idle mode 10.1.1 Packet irdnesser mode 10.1.1 Packet transfer mode 10.1.2 Cell Re-selection Criteria 10.1.3 Cell Re-selection Algorithm 10.1.3.1 Abnormal cell reselection 10.1.4 Network controlled Cell re-selection 10.1.4.1 Measurement reporting 10.1.4.2 Cell re-selection command 10.1.4.2 Cell re-selection command 10.1.5 Extended Measurement reporting 10.1.5 Extended Measurement reporting 10.2.1 MS output power 10.2.1 MS output power 10.2.2 BTS output power 10.2.3 Measurements at MS side 10.2.3 Measurements at MS side 10.2.3.1 Packet transfer mode 10.2.3.1 Packet transfer mode 10.2.3.1 Packet transfer mode 10.2.3.2 Packet transfer mode 10.2.3.2 Packet transfer mode 10.2.3.2 Packet idle mode 10.2.3.2 Packet idle mode 10.2.3.2 Packet idle mode 10.2.3.2 Measurement reporting 10.2.3.2 Measurement reporting 10.2.3.2 Measurement reporting 10.2.3.2 Measurement reporting 10.2.3.2 Packet idle mode 10.3.3.2 Packet idle mode 10.3.3.3 Measurement reporting 10.3.4 Measurement reporting 10.3.4 Measurement reporting 10.3.5 Measurement reporting	30
10.1.2 Cell Re-selection Criteria. 10.1.3 Cell Re-selection Algorithm 10.1.3.1 Abnormal cell reselection. 10.1.4 Network controlled Cell re-selection. 10.1.4.1 Measurement reporting. 10.1.4.2 Cell re-selection command. 10.1.4.3 Exceptional cases. 10.1.5 Extended Measurement reporting. 10.2.1 MS output power. 10.2.2 BTS output power. 10.2.3 Measurements at MS side. 10.2.3.1 Deriving the C value. 10.2.3.1.1 Packet it alle mode. 10.2.3.1.2 Packet transfer mode. 10.2.3.2 Derivation of Channel Quality Report. 10.2.3.2 Derivation of Channel Quality Report. 10.2.3.2.1 Packet transfer mode. 10.2.3.2.2 Packet transfer mode. 10.2.3.2.3 Measurement at BSS side. 10.2.3.2 Packet transfer mode. 10.2.3 Packet transfer mode. 10.2.3 Packet transfer mode. 10.2.3 Packet transfer mode. 10.2.4 Packet transfer mode. 10.2.5 Packet transfer mode. 10	
10.1.2 Cell Re-selection Criteria. 10.1.3 Cell Re-selection Algorithm 10.1.3.1 Abnormal cell reselection. 10.1.4 Network controlled Cell re-selection. 10.1.4.1 Measurement reporting. 10.1.4.2 Cell re-selection command. 10.1.4.3 Exceptional cases. 10.1.5 Extended Measurement reporting. 10.2.1 MS output power. 10.2.1 MS output power. 10.2.2 BTS output power. 10.2.3 Measurements at MS side. 10.2.3.1 Deriving the C value	31
10.1.3 Cell Re-selection Algorithm 10.1.3.1 Abnormal cell reselection	
10.1.3.1 Abnormal cell reselection 10.1.4 Network controlled Cell re-selection 10.1.4.1 Measurement reporting 10.1.4.2 Cell re-selection command 10.1.4.3 Exceptional cases 10.1.5 Extended Measurement reporting 10.2.1 MS output power 10.2.2 BTS output power 10.2.3 Measurements at MS side 10.2.3.1 Deriving the C value SISLEN 300.91L.No.7.2.2003 10.2.3.1.1 Packet tidle mode.nds. itch.al/catalog/standards/sist/c7/58ce8_a871_46f8_80aa- 10.2.3.2.1 Packet transfer mode/clude/204h/sist_ens_300.91L.No.7.2.2.003 10.2.3.2.1 Packet transfer mode 10.2.3.2.2 Packet transfer mode 10.2.3.2.3 Measurement reporting 10.2.3.2 Packet idle mode. 10.2.3.2.3 Measurement st at BSS side 10.3 Measurement requirements 10.2.4 Measurement st at BSS side 10.3 Measurement requirements 10.4 Control parameters Annex A (informative): Definition of a basic GSM or DCS 1 800 handover and RF power control algorithm A.1 Scope A.2 Functional requirement A.3 BSS pre-processing and threshold comparisons A.3.1 Measurement averaging process A.3.2 Threshold comparison process A.3.2 Threshold comparison process A.3.2 RF power control process A.3.2 Handover Process A.4 BSS decision algorithm A.4 Internal intracell handover according to radio criteria: (Interference problems)	
10.1.4 Network controlled Cell re-selection 10.1.4.1 Measurement reporting 10.1.4.2 Cell re-selection command 10.1.4.3 Exceptional cases 10.1.5 Extended Measurement reporting 10.2.1 MS output power (Standards.iteh.at) 10.2.2 BTS output power (Standards.iteh.at) 10.2.3 Measurements at MS side 10.2.3.1 Deriving the C value SST_EN_300_911_V6.7.2.2003 10.2.3.1.1 Packet transfer mode.bt.fc.20.bb.ss.co.300.911_v6.7.2.2003 10.2.3.2.2 Derivation of Channel Quality Report 10.2.3.2.2 Packet transfer mode 10.2.3.2.2 Packet transfer mode 10.2.3.2.3 Measurement set BSS_side 10.2.4 Measurements at BSS_side 10.3 Measurement reporting 10.2.4 Measurement reporting 10.2.4 Measurement requirements 10.4 Control parameters 10.5 Control par	
10.1.4.1 Measurement reporting 10.1.4.2 Cell re-selection command 10.1.4.3 Exceptional cases 10.1.5 Extended Measurement reporting 10.1.4.3 Exceptional cases 10.1.5 Extended Measurement reporting 10.2.4 MS output power (stantdards:iteh.air) 10.2.1 MS output power (stantdards:iteh.air) 10.2.3 Measurements at MS side 10.2.3.1 Deriving the C value SIST_EN 300.911.V6.7.2.2003 10.2.3.1.1 Packetridle mode.us. teh.air.air.ajvstaxdards/sstx/c7/EScept-as71.46/E-80aa 10.2.3.1.2 Packet transfer mode.ch/dc/204h/sstx.cr.300.911.v6.7.2.2003 10.2.3.2 Derivation of Channel Quality Report 10.2.3.2.2 Packet idle mode 10.2.3.2.2 Packet idle mode 10.2.3.2.3 Measurement reporting 10.2.4 Measurements at BSS side 10.3 Measurement requirements 10.4 Control parameters 10.4	
10.1.4.2 Cell re-selection command. 10.1.4.3 Exceptional cases Extended Measurement reporting	
10.1.4.3 Exceptional cases	
Extended Measurement reporting Stantiards Stantiard	
MS output power Standards.itch.ai	
MS output power Standards.itch.ai	ý37
Measurements at MS side	
Measurements at MS side	38
10.2.3.1 Deriving the C value	
10.2.3.1.1 Packettidle/moderds.itch.ai/catalog/standards/sist/c7f58ce8-a871-46f8-80aa 10.2.3.1.2 Packet transfer modech06c204b/sist-en-300-911-v6-7-2-2003 10.2.3.2.1 Derivation of Channel Quality Report 10.2.3.2.1 Packet transfer mode 10.2.3.2.2 Packet idle mode 10.2.3.2.3 Measurement reporting 10.2.4 Measurements at BSS side 10.3 Measurement requirements 10.4 Control parameters Annex A (informative): Definition of a basic GSM or DCS 1 800 handover and RF power control algorithm A.1 Scope A.2 Functional requirement A.3 BSS pre-processing and threshold comparisons A.3.1 Measurement averaging process A.3.2 Threshold comparison process A.3.3.1 RF power control process A.3.2 Handover Process A.3.3.2 Handover Process A.4.4 BSS decision algorithm A.4.1 Internal intracell handover according to radio criteria: (Interference problems)	39
10.2.3.1.2 Packet transfer modech06c204h/sist.cn.300.91.1.w6.7.2.2003. 10.2.3.2.1 Derivation of Channel Quality Report	0aa39
10.2.3.2 Derivation of Channel Quality Report	
10.2.3.2.1 Packet transfer mode 10.2.3.2.2 Packet idle mode	
10.2.3.2.2 Packet idle mode	
10.2.3.2.3 Measurement reporting	
10.2.4 Measurements at BSS side 10.3 Measurement requirements 10.4 Control parameters Annex A (informative): Definition of a basic GSM or DCS 1 800 handover and RF power control algorithm A.1 Scope A.2 Functional requirement A.3 BSS pre-processing and threshold comparisons A.4.1 Measurement averaging process A.5 Threshold comparison process A.6 BSS decision algorithm A.7 BSS decision algorithm A.8 BSS decision algorithm	
10.3 Measurement requirements	
Annex A (informative): Definition of a basic GSM or DCS 1 800 handover and RF power control algorithm A.1 Scope A.2 Functional requirement A.3 BSS pre-processing and threshold comparisons A.3.1 Measurement averaging process A.3.2 Threshold comparison process A.3.2.1 RF power control process A.3.2.1 RF power control process A.3.2.2 Handover Process A.4.4 BSS decision algorithm A.4.1 Internal intracell handover according to radio criteria: (Interference problems)	
Annex A (informative): Definition of a basic GSM or DCS 1 800 handover and RF power control algorithm A.1 Scope A.2 Functional requirement A.3 BSS pre-processing and threshold comparisons A.3.1 Measurement averaging process A.3.2 Threshold comparison process A.3.2.1 RF power control process A.3.2.1 RF power control process A.3.2.2 Handover Process A.4.4 BSS decision algorithm A.4.1 Internal intracell handover according to radio criteria: (Interference problems)	
A.2 Functional requirement	
A.3 BSS pre-processing and threshold comparisons A.3.1 Measurement averaging process A.3.2 Threshold comparison process A.3.2.1 RF power control process A.3.2.2 Handover Process A.4 BSS decision algorithm A.4.1 Internal intracell handover according to radio criteria: (Interference problems)	46
A.3.1 Measurement averaging process A.3.2 Threshold comparison process A.3.2.1 RF power control process A.3.2.2 Handover Process A.4 BSS decision algorithm A.4.1 Internal intracell handover according to radio criteria: (Interference problems)	46
A.3.1 Measurement averaging process A.3.2 Threshold comparison process A.3.2.1 RF power control process A.3.2.2 Handover Process A.4 BSS decision algorithm A.4.1 Internal intracell handover according to radio criteria: (Interference problems)	47
A.3.2 Threshold comparison process A.3.2.1 RF power control process A.3.2.2 Handover Process A.4 BSS decision algorithm A.4.1 Internal intracell handover according to radio criteria: (Interference problems)	
A.3.2.1 RF power control process	
A.3.2.2 Handover Process	
A.4 BSS decision algorithm	
A.4.1 Internal intracell handover according to radio criteria: (Interference problems)	
A.4.1 Internal intracell handover according to radio criteria: (Interference problems)	50
A.4.3 General considerations	51

(GSM 05.08 version 6.7.2 Release 1997) 5 ETSI EN 300 911 V6.7.2		ETSI EN 300 911 V6.7.2 (2000-07)
A.5	Channel allocation	51
A.6	Handover decision algorithm in the MSC	52
Anno	ex B (informative): Power Control Procedures	54
B.1	Open loop control	54
B.2	Closed loop control	55
B.3	Quality based control	55
B.4	BTS power control	56
B.5	Example	56
Anno	ex C (informative): Change Request History	58
Histo	ory	60

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 300 911 V6.7.2:2003 https://standards.iteh.ai/catalog/standards/sist/c7f58ce8-a871-46f8-80aa-578cb06c204b/sist-en-300-911-v6-7-2-2003 6

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://www.etsi.org/ipr).

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 European Standard (Telecommunications series) has been produced by the Special Mobile Group (SMG).

The present document specifies the Radio sub-system link control implemented in the Mobile Station (MS), Base Station System (BSS) and Mobile Switching Centre (MSC) of the digital mobile cellular and personal communication systems operating in the 900 MHz and 1 800 MHz band (GSM 900 and DCS 1 800).

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

Version 6.x.y

where:

iTeh STANDARD PREVIEW (standards.iteh.ai)

6 indicates release 1997 of GSM Phase 2+.

SIST EN 300 911 V6.7.2:2003

- x the second digit is incremented for all changes of substance i.e. technical enhancements, corrections, updates, etc. 578cb06c204b/sist-en-300-911-v6-7-2-2003
- y the third digit is incremented when editorial only changes have been incorporated in the specification.

National transposition dates		
Date of adoption of this EN:	19 May 2000	
Date of latest announcement of this EN (doa):	31 August 2000	
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	28 February 2001	
Date of withdrawal of any conflicting National Standard (dow):	28 February 2001	

1 Scope

The present document specifies the Radio sub-system link control implemented in the Mobile Station (MS), Base Station System (BSS) and Mobile Switching Centre (MSC) of the GSM and DCS 1 800 systems.

Unless otherwise specified, references to GSM also include DCS 1 800.

1.1 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.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release 1997 document, references to GSM documents are for Release 1997 versions (version 6.x.y).

[1]	GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms". Teh STANDARD PREVIEW
[2]	GSM 03.03: "Digital cellular telecommunications system (Phase 2+); Numbering, addressing and identification".
[3]	GSM 03.09: "Digital cellular telecommunications system (Phase 2+); Handover procedures".
[4]	GSM 03.22: "Digital cellular telecommunications system (Phase 2+); Functions related to Mobile Station (MS) in idle mode and group receive mode".
[5]	GSM 04.04: "Digital cellular telecommunications system (Phase 2+); Layer 1; General requirements".
[6]	GSM 04.06: "Digital cellular telecommunications system (Phase 2+); Mobile Station - Base Station System (MS - BSS) interface; Data Link (DL) layer specification".
[7]	GSM 04.08: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification".
[8]	GSM 05.02: "Digital cellular telecommunications system (Phase 2+); Multiplexing and multiple access on the radio path".
[9]	GSM 05.05: "Digital cellular telecommunications system (Phase 2+); Radio transmission and reception".
[10]	GSM 05.10: "Digital cellular telecommunications system (Phase 2+); Radio subsystem synchronization".
[11]	GSM 06.11: "Digital cellular telecommunications system; Full rate speech; Substitution and muting of lost frames for full rate speech channels".
[12]	GSM 08.08: "Digital cellular telecommunications system (Phase 2+); Mobile-services Switching Centre - Base Station System (MSC - BSS) interface, Layer 3 specification".
[13]	GSM 08.58: "Digital cellular telecommunications system (Phase 2+); Base Station Controller - Base Transceiver Station (BSC - BTS) interface; Layer 3 specification".

(GSM 05.08 version 6.7.2 Release 1997)

ETSI EN 300 911 V6.7.2 (2000-07)

- [14] GSM 11.10: "Digital cellular telecommunications system (Phase 2+); Mobile Station (MS) conformity specification".
- [15] GSM 03.64: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Overall description of the GPRS Radio Interface; Stage 2".

1.2 Abbreviations

Abbreviations used in the present document are listed in GSM 01.04.

2 General

The radio sub-system link control aspects that are addressed are as follows:

- Handover;
- RF Power control;
- Radio link Failure;
- Cell selection and re-selection in Idle mode, in Group Receive mode and in GPRS mode (see GSM 03.22).

Handover is required to maintain a call in progress as a MS engaged in a point-to-point call or with access to the uplink of a channel used for a voice group call passes from one cell coverage area to another and may also be employed to meet network management requirements, e.g. relief of congestion.

Handover may occur during a call from one TCH or multiple TCHs (in the case of multislot configuration) to another TCH or multiple TCHs. It may also occur from DCCH to DCCH or from DCCH to one or multiple TCH(s), e.g. during the initial signalling period at call set-up.

The handover may be either from channel(s) on one cell to other channel(s) on a surrounding cell, or between channels on the same cell which are carried on the same frequency band. Examples are given of handover strategies, however, these will be determined in detail by the network operator.

For a multiband MS, specified in GSM 02.06, the handover described is also allowed between any channels on different cells which are carried on different frequency bands, e.g. between a GSM 900/TCH and a DCS 1 800/TCH. Handover between two co-located cells, carried on different frequency bands, is considered as inter-cell handover irrespective of the handover procedures used.

Adaptive control of the RF transmit power from an MS and optionally from the BSS is implemented in order to optimize the uplink and downlink performance and minimize the effects of co-channel interference in the system.

The criteria for determining radio link failure are specified in order to ensure that calls which fail either from loss of radio coverage or unacceptable interference are satisfactorily handled by the network. Radio link failure may result in either re-establishment or release of the call in progress. For channels used for a voice group call, an radio uplink failure results in the freeing up of the uplink.

Procedures for cell selection and re-selection whilst in Idle mode (i.e. not actively processing a call), are specified in order to ensure that a mobile is camped on a cell with which it can reliably communicate on both the radio uplink and downlink. The operations of an MS in Idle Mode are specified in GSM 03.22.

Cell re-selection is also performed by the MS when attached to GPRS, except when the MS simultaneously has a circuit switched connection. Optional procedures are also specified for network controlled cell re-selection for GPRS. Cell reselection for GPRS is defined in subclause 10.1.

An MS listening to a voice group call or a voice broadcast use cell re-selection procedures to change cell. This may be supported by a list of cells carrying the voice group or voice broadcast call downlink, provided to the MS by the network. The operations of an MS in Group Receive Mode are specified in GSM 03.22.

Information signalled between the MS and BSS is summarized in tables 1, 2 and 3. A full specification of the Layer 1 header is given in GSM 04.04, and of the Layer 3 fields in GSM 04.08.

3 Handover

3.1 Overall process

The overall handover process is implemented in the MS, BSS and MSC. Measurement of radio subsystem downlink performance and signal levels received from surrounding cells, is made in the MS. These measurements are signalled to the BSS for assessment. The BSS measures the uplink performance for the MS being served and also assesses the signal level of interference on its idle traffic channels. Initial assessment of the measurements in conjunction with defined thresholds and handover strategy may be performed in the BSS. Assessment requiring measurement results from other BTS or other information resident in the MSC, may be performed in the MSC.

GSM 03.09 describes the handover procedures to be used in PLMNs.

3.2 MS measurement procedure

A procedure shall be implemented in the MS by which it monitors the downlink RX signal level and quality from its serving cell and the downlink RX signal level and BSIC of surrounding BTS. The method of identification of surrounding BTS is described in subclause 7.2. The requirements for the MS measurements are given in subclause 8.1.

3.3 BSS measurement procedure

A procedure shall be implemented in the BSS by which it monitors the uplink RX signal level and quality from each MS being served by the cell. In the case of a multislot configuration the evaluation shall be performed on a timeslot per timeslot basis. A procedure shall be implemented by which the BSS monitors the levels of interference on its idle traffic channels.

(standards.iteh.ai)

3.4 Strategy

SIST EN 300 911 V6.7.2:2003

The handover strategy employed by the network for radio link control determines the handover decision that will be made based on the measurement results reported by the MS/BSS and various parameters set for each cell. Network directed handover may also occur for reasons other than radio link control, e.g. to control traffic distribution between cells. The exact handover strategies will be determined by the network operator, a detailed example of a basic overall algorithm appears in annex A. Possible types of handover are as follows:

Inter-cell handover:

Intercell handover from the serving cell to a surrounding cell will normally occur either when the handover measurements show low RXLEV and/or RXQUAL on the current serving cell and a better RXLEV available from a surrounding cell, or when a surrounding cell allows communication with a lower TX power level. This typically indicates that an MS is on the border of the cell area.

Intercell handover may also occur from the DCCH on the serving cell to a TCH or multislot configuration on another cell during call establishment. This may be used as a means of providing successful call establishment when no TCH resource is available on the current serving cell.

Inter-cell handover between cells using different frequency bands is allowed for a multi band MS.

Intra-cell handover:

Intra-cell handover from one channel/timeslot in the serving cell to another channel/timeslot in the same cell will normally be performed if the handover measurements show a low RXQUAL, but a high RXLEV on the serving cell. This indicates a degradation of quality caused by interference even though the MS is situated within the serving cell. The intra-cell handover should provide a channel with a lower level of interference. Intra-cell handover can occur either to a timeslot on a new carrier or to a different timeslot on the same carrier. Similarly, intra-cell handover may occur between different multislot configurations in the same cell. These multislot configurations may comprise different number of timeslots and may partly overlap.

Intra-cell handover from one of the bands of operation to another one is allowed for a multiband MS.

ETSI EN 300 911 V6.7.2 (2000-07)

10

GSM 08.08 defines the causes for handover that may be signalled from BSS to MSC.

4 RF power control

4.1 Overall process

RF power control is employed to minimize the transmit power required by MS or BSS whilst maintaining the quality of the radio links. By minimizing the transmit power levels, interference to co-channel users is reduced.

4.2 MS implementation

RF power control shall be implemented in the MS.

The power control level to be employed by the MS on each uplink channel, except PDCH, is indicated by means of the power control information sent either in the layer 1 header of each SACCH message block (see GSM 04.04) on the corresponding downlink channel, or in a dedicated signalling block (see GSM 04.08). Power control for PDCH is defined in subclause 10.2.

The MS shall employ the most recently commanded power control level appropriate to each channel for all transmitted bursts on either a TCH (including handover access burst), FACCH, SACCH or SDCCH.

The MS shall confirm the power control level that it is currently employing in the SACCH L1 header on each uplink channel. The indicated value shall be the power control level actually used by the mobile for the last burst of the previous SACCH period.

In case of a multislot configuration, each bi-directional channel shall be power controlled individually by the corresponding SACCH. Power control information on downlink unidirectional channels shall be neglected.

When accessing a cell on the RACH (random access) and before receiving the first power command during a communication on a DCCH or TCH (after an IMMEDIATE ASSIGNMENT), all GSM and class 1 and class 2 DCS 1 800 MS shall use the power level defined by the MS_TXPWR_MAX_CCH parameter broadcast on the BCCH of the cell. The class 3 DCS 1 800 MS shall use the power level defined by MS TXPWR MAX CCH plus the value POWER OFFSET also broadcast on the BCCH of the cell.

If a power control level defined in GSM 05.05 is received but the level is not supported by the MS, the MS shall use the supported output power which is closest to the output power indicated by the received power control level.

4.3 MS power control range

The range over which a MS shall be capable of varying its RF output power shall be from its maximum output down to its minimum, in steps of nominally 2 dB.

GSM 05.05 gives a detailed definition of the RF power level step size and tolerances.

4.4 BSS implementation

RF power control may optionally be implemented in the BSS.

4.5 BSS power control range

The range over which the BSS shall be capable of reducing its RF output power from its maximum level shall be nominally 30 dB, in 15 steps of nominally 2 dB.

GSM 05.05 gives a detailed definition of the RF power level step size and tolerances.

11

ETSI EN 300 911 V6.7.2 (2000-07)

4.6 Strategy

The RF power control strategy employed by the network determines the ordered power level that is signalled to the MS, and the power level that is employed by the BSS.

The power level to be employed in each case will be based on the measurement results reported by the MS/BTS and various parameters set for each cell. The exact strategies will be determined by the network operator. A detailed example of a basic algorithm appears in annex A.

4.7 Timing

Upon receipt of a command from an SACCH to change its power level on the corresponding uplink channel, the MS shall change to the new level at a rate of one nominal 2 dB power control step every 60 ms (13 TDMA frames), i.e. a range change of 15 steps should take about 900 ms. The change shall commence at the first TDMA frame belonging to the next reporting period (as specified in subclause 8.4). The MS shall change the power one nominal 2 dB step at a time, at a rate of one step every 60 ms following the initial change, irrespective of whether actual transmission takes place or not.

In case of channel change, except for multislot configuration change, the commanded power control level shall be applied on each new channel immediately. The multislot configuration change message does not command the MS to use new power control levels. For those time slots not used by the MS before the multislot configuration change procedure, the MS shall use the power control level used on the main channel before the multislot configuration change.

4.8 Dedicated channels used for a voice group call or voice broadcastTeh STANDARD PREVIEW

The network shall not allocate the uplink of the channel used for a voice group call to more than one MS. If marked busy, no other MS shall transmit on the channel. This marking is indicated by the network, as defined in GSM 03.68 and 04.08. Any MS allocated the uplink of a channel used for a voice group call shall only transmit if the uplink is marked busy, and shall stop using the uplink if it happens to become marked free. An MS not allocated the uplink may perform a random access procedure on the uplink to gain access to talk, only if the uplink is marked as free.

On a channel used during a voice group call, the uplink power control shall only apply to the MS currently allocated that uplink, and the MS power control level ordered by the network shall be ignored by all other MSs listening to the downlink.

When performing a random access on a cell to gain access to the uplink of a channel used for a voice group call, until receiving the first dedicated power command from the network, the MS shall use the last received power level command as defined by the MS_TXPWR_MAX_CCH parameter broadcast on the BCCH of the cell, or if MS_TXPWR_MAX_CCH corresponds to a power control level not supported by the MS as defined by its power class in GSM 05.05, the MS shall act as though the closest supported power control level had been broadcast.

RF downlink power control will normally not be applied on channels used for a voice group call or voice broadcast.

5 Radio link failure

5.1 Criterion

The criterion for determining Radio Link Failure in the MS shall be based on the success rate of decoding messages on the downlink SACCH. For a circuit switched multislot configuration, only the main SACCH shall be used for determining Radio Link Failure.

For GPRS, Radio Link Failure is determined by the RLC/MAC protocol (see GSM 04.60).

5.2 MS procedure

The aim of determining radio link failure in the MS is to ensure that calls with unacceptable voice/data quality, which cannot be improved either by RF power control or handover, are either re-established or released in a defined manner. In general the parameters that control the forced release should be set such that the forced release will not normally occur until the call has degraded to a quality below that at which the majority of subscribers would have manually released. This ensures that, for example, a call on the edge of a radio coverage area, although of bad quality, can usually be completed if the subscriber wishes.

The radio link failure criterion is based on the radio link counter S. If the MS is unable to decode a SACCH message (BFI = 1),S is decreased by 1. In the case of a successful reception of a SACCH message (BFI = 0) S is increased by 2. In any case S shall not exceed the value of RADIO_LINK_TIMEOUT. If S reaches 0 a radio link failure shall be declared. The action to be taken is specified in GSM 04.08. The RADIO_LINK_TIMEOUT parameter is transmitted by each BSS in the BCCH data (see table 1).

The MS shall continue transmitting as normal on the uplink until S reaches 0.

The algorithm shall start after the assignment of a dedicated channel and S shall be initialized to RADIO_LINK_TIMEOUT.

The detailed operation shall be as follows:

- The radio link time-out algorithm shall be stopped at the reception of a channel change command.
- (Re-)initialization and start of the algorithm shall be done whenever the MS switches to a new channel (this includes the old channel in assignment and handover failure cases), at the latest when the main signalling link (see GSM 04.08) has been established.
- The RADIO_LINK_TIMEOUT value used at (re-)initialization shall be that used on the previous channel (in the Immediate Assignment case the value received on the BCCH), or the value received on SACCH if the MS has received a RADIO_LINK_TIMEOUT value on the new channel before the initialization.
- If the first RADIO_LINK_TIMEOUT value on the SACCH is received on the new channel after the initialization, the counter shall be re-initialized with the new valuece8-a871-46f8-80aa-578cb06c204b/sist-en-300-911-v6-7-2-2003

An MS listening to a voice group call or a voice broadcast, upon a downlink radio link failure shall return to idle mode and perform cell re-selection.

5.3 BSS procedure

The criteria for determining radio link failure in the BSS should be based upon either the error rate on the uplink SACCH(s) or on RXLEV/RXQUAL measurements of the MS. The exact criteria to be employed shall be determined by the network operator.

For channels used for a voice group call, the radio link failure procedures in the BSS shall be reset upon the re-allocation of the uplink to another MS. Upon a uplink radio failure, the network shall mark it as free, see subclause 4.8.

Whenever the uplink is not used, and for channels used for voice broadcast, the BSS radio link failure procedures shall not apply on that channel.

6 Idle mode tasks

6.1 Introduction

Whilst in idle mode, an MS shall implement the cell selection and re-selection procedures described in GSM 03.22. These procedures make use of measurements and sub-procedures described in this clause.

The procedures ensure that the MS is camped on a cell from which it can reliably decode downlink data and with which it has a high probability of communications on the uplink. Once the MS is camped on a cell, access to the network is allowed.

This clause makes use of terms defined in GSM 03.22.

The MS shall not use the discontinuous reception (DRX) mode of operation (i.e. powering itself down when it is not expecting paging messages from the network) while performing the cell selection algorithm defined in GSM 03.22. However use of powering down is permitted at all other times in idle mode.

For the purpose of cell selection and reselection, the MS shall be capable of detecting and synchronizing to a BCCH carrier and read the BCCH data at reference sensitivity level and reference interference levels as specified in GSM 05.05. An MS in idle mode shall always fulfil the performance requirement specified in GSM 05.05 at levels down to reference sensitivity level or reference interference level. The allowed error rates (see GSM 05.05) might impact the cell selection and reselection procedure, e.g. trigger cell reselection. Moreover, one consequence of the allowed error rates is that in the case of no frequency hopping and a TU3 (TU1.5 for DCS 1 800) propagation profile it can not be expected that an MS will respond to paging unless the received signal level is 2 dB higher than the specified reference level.

For the purposes of cell selection and reselection, the MS is required to maintain an average of received signal levels for all monitored frequencies. These quantities termed the 'received level averages" (RLA_C), shall be unweighted averages of the received signal levels measured in dBm. The accuracy of the received signal level measurements for idle mode tasks shall be the same as for radio link measurements (see subclause 8.1,2).

The times given in subclauses 6.2, 6.3 and 6.6 refer to internal processes in the MS required to ensure that the MS camps as quickly as possible to the most appropriate cell.

For the cell selection, the MS shall be able to select the correct (fourth strongest) cell and be able to respond to paging on that cell within 30 seconds of switch on, when the three strongest cells are not suitable. This assumes a valid SIM with PIN disabled and ideal radio conditions.

The tolerance on all the timing requirements in clause 6 is \pm 10 %, except for PENALTY_TIME where it is \pm 2 s.

6.2 Measurements for normal cell selection

The measurements of this clause shall be performed by an MS which has no prior knowledge of which GSM or DCS 1 800 RF channels are BCCH carriers.

The MS shall search all RF channels in the system (124 for P-GSM, 174 for E-GSM, 194 for R-GSM, and 374 for DCS 1 800), take readings of received RF signal level on each RF channel, and calculate the RLA_C for each. The averaging is based on at least five measurement samples per RF carrier spread over 3 to 5 s, the measurement samples from the different RF carriers being spread evenly during this period.

A multi band MS shall search all channels within its bands of operation as specified above. The number of channels searched will be the sum of channels on each band of operation.

BCCH carriers can be identified by, for example, searching for frequency correction bursts. On finding a BCCH carrier, the MS shall attempt to synchronize to it and read the BCCH data.