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Contents

Intellectual Property Rights	2
Foreword.....	2
Modal verbs terminology.....	2
Foreword.....	10
1 Scope	11
1.1 References	12
1.2 Abbreviations	13
1.3 Definitions.....	14
2 Frequency bands and channel arrangement.....	14
3 Reference configuration	17
4 Transmitter characteristics	18
4.1 Output power.....	18
4.1.1 Mobile Station	18
4.1.2 Base station.....	23
4.1.2.1 Additional requirements for PCS 1 900 and MXM 1900 Base stations.....	25
4.1.2.2 Additional requirements for GSM 850 and MXM 850 Base stations.....	25
4.1.2.3 Additional requirements for GSM 700 Base stations.....	25
4.1.2.4 Additional requirements for ER-GSM 900 Base stations	25
4.1.2.4.1 Uncoordinated deployment	26
4.1.2.4.2 Coordinated deployment	26
4.2 Output RF spectrum	26
4.2.1 Spectrum due to the modulation and wide band noise.....	26
4.2.1.1 General requirements for all types of Base stations and MS.....	26
4.2.1.2 Additional requirements for multicarrier BTS.....	27
4.2.1.3 Tables for spectrum requirements due to modulation and wideband noise.....	28
4.2.1.4 Exceptions for spectrum due to modulation and wideband noise	32
4.2.1.4.1 Mobile Stations and Base Transceiver Stations except multicarrier BTS	32
4.2.1.4.2 Multicarrier BTS	33
4.2.2 Spectrum due to switching transients.....	33
4.2.2.1 General requirements	33
a) Mobile Station:.....	34
b) Base transceiver station:.....	34
4.3 Spurious emissions	35
4.3.1 Principle of the specification	35
4.3.2 Base Transceiver Station	37
4.3.2.1 General requirements	37
4.3.2.2 Additional requirements for co-existence with GSM systems on other frequency bands.....	38
4.3.2.3 Additional requirements for co-existence with 3 G	39
4.3.3 Mobile Station	40
4.3.3.1 Mobile Station GSM 400, T-GSM 810, GSM 900, ER-GSM 900 and DCS 1 800.....	40
4.3.3.2 Mobile Station GSM 700, GSM 850 and PCS 1 900.....	41
4.4 Radio frequency tolerance.....	42
4.5 Output level dynamic operation	42
4.5.1 Base Transceiver Station	42
4.5.2 Mobile Station	42
4.6 Modulation accuracy	43
4.6.1 GMSK modulation.....	43
4.6.2 QPSK, AQPSK, 8-PSK, 16-QAM and 32-QAM modulations	43
4.6.2.1 RMS EVM	44
4.6.2.1.1 MS requirements	44
4.6.2.1.2 Requirements for BTS.....	44
4.6.2.2 Origin Offset Suppression.....	45
4.6.2.3 Peak EVM.....	45
4.6.2.4 95:th percentile.....	45

4.6.3	Phase and amplitude coherency when using blind physical layer transmissions	45
4.6.3.1	General	45
4.6.3.2	EC-GSM-IoT MS	46
4.6.3.3	BTS supporting EC-GSM-IoT	46
4.7	Intermodulation attenuation	46
4.7.1	Base transceiver station	46
4.7.2	Intra BTS intermodulation attenuation	46
4.7.2.1	GSM 400, GSM 900, ER-GSM 900, DCS 1800	47
4.7.2.1.1	Requirements for BTS except multicarrier BTS	47
4.7.2.1.2	Requirements for multicarrier BTS	47
4.7.2.2	MXM 850 and MXM 1900	47
4.7.2.3	GSM 700, GSM 850 and PCS 1900	48
a)	Requirements for BTS except multicarrier BTS	48
b)	Requirements for multicarrier BTS	48
c)	Additional requirements for all BTS	48
4.7.3	Void	48
4.7.4	Mobile PBX (GSM 900 only)	48
5	Receiver characteristics	48
5.1	Blocking characteristics	49
5.1.1	Definitions of applicable frequency ranges	49
5.1.2	Requirements for MS	51
5.1.3	Requirements for BTS	52
5.1.4	Signal levels of blocking signal	54
5.1.5	Micro- and pico-BTS	59
5.2	AM suppression characteristics	59
5.2.1	Requirements for MS	59
5.2.2	Requirements for BTS	60
5.3	Intermodulation characteristics	61
5.3.1	Requirements for MS	61
5.3.2	Requirements for BTS	61
5.4	Spurious emissions	61
6	Transmitter/receiver performance	62
6.1a	MS conditions	62
6.1b	BTS conditions	63
6.1	Nominal Error Rates (NER)	64
6.1.1	GMSK modulation	64
6.1.1.1	General performance requirements	64
6.1.1.2	Requirements for MS	65
6.1.1.3	Requirements for BTS	65
6.1.2	QPSK/8-PSK modulation	65
6.1.2.1	Requirements for MS	65
6.1.2.2	Requirements for BTS	66
6.1.3	16-QAM/32-QAM modulation	67
6.1.3.1	Requirements for MS	67
6.1.3.2	Requirements for BTS	67
6.2	Reference sensitivity level	68
6.2.1	Circuit-switched channels	68
6.2.1a	Reference performance in VAMOS mode	71
6.2.2	Packet-switched channels	72
6.2.3	Flexible Layer One	74
6.2.4	Repeated associated control channel performance	75
6.2.4a	Extended Coverage control channel and data channel performance for EC-GSM-IoT	75
6.2.5	Enhanced MS receiver performance	75
6.2.6	Additional performance conditions	76
6.3	Reference interference level	76
6.3.1	GMSK modulated speech channels and associated control channels	76
6.3.2	Co-channel reference interference performance	77
6.3.2.1	MS requirements	77
6.3.2.2	BTS requirements	77
6.3.3	Adjacent channel reference interference performance	78

6.3.3.1	Normal symbol rate used	78
6.3.3.1.1	MS requirements	78
6.3.3.1.2	BTS requirements	79
6.3.3.2	Higher symbol rate used:	79
6.3.3.2.1	MS requirements	79
6.3.3.2.2	BTS requirements	79
6.3.4	Reference interference performance – signal levels	80
6.3.5	Additional reference interference performance requirements and conditions.....	81
6.4	Erroneous frame indication performance	83
6.5	Random access and paging performance at high input levels	84
6.6	Frequency hopping performance under interference conditions	85
6.7	Incremental Redundancy Performance for EGPRS and EGPRS2 MS	85
Annex A (informative): Spectrum characteristics (spectrum due to the modulation).....		196
Annex B (normative): Transmitted power level versus time		204
Annex C (normative): Propagation conditions.....		210
C.1	Simple wideband propagation model	210
C.2	Doppler spectrum types	210
C.3	Propagation models	210
C.3.1	Typical case for rural area (RAX): (6 tap setting)	211
C.3.2	Typical case for hilly terrain (HTx): (12 tap setting)	211
C.3.3	Typical case for urban area (TUX): (12 tap setting)	212
C.3.4	Profile for equalization test (EQx): (6 tap setting)	212
C.3.5	Typical case for very small cells (TIX): (2 tap setting)	212
Annex D (normative): Environmental conditions		213
D.1	General	213
D.2	Environmental requirements for the MSs.....	213
D.2.1	Temperature (GSM 400, GSM 900, ER-GSM 900 and DCS 1 800)	213
D.2.1.1	Environmental Conditions (PCS 1 900, GSM 850 and GSM 700).....	213
D.2.2	Voltage	213
D.2.3	Vibration (GSM 400, GSM 900, ER-GSM 900 and DCS 1 800).....	214
D.2.3.1	Vibration (PCS 1 900, GSM 850 and GSM 700).....	214
D.3	Environmental requirements for the BSS equipment	214
D.3.1	Environmental requirements for the BSS equipment	215
Annex E (normative): Repeater characteristics		216
E.1	Introduction	216
E.2	Spurious emissions	216
E.3	Intermodulation products	217
E.4	Out of band gain	217
E.5	Frequency error and modulation accuracy	217
E.5.1	Frequency error	217
E.5.2	Modulation accuracy at GMSK modulation.....	217
E.5.3	Modulation accuracy at 8-PSK, 16-QAM, 32-QAM, QPSK and AQPSK modulation.....	217
Annex F (normative): Antenna Feeder Loss Compensator Characteristics (GSM 400, GSM 900 and DCS 1800).....		219
F.1	Introduction	219
F.2	Transmitting path	219
F.2.1	Maximum output power	219
F.2.2	Gain	220

F.2.3	Burst transmission characteristics	220
F.2.4	Phase error	220
F.2.5	Frequency error	220
F.2.6	Group delay	221
F.2.7	Spurious emissions	221
F.2.8	VSWR	221
F.2.9	Stability	221
F.3	Receiving path	222
F.3.1	Gain	222
F.3.2	Noise figure	222
F.3.3	Group delay	222
F.3.4	Intermodulation performance	222
F.3.5	VSWR	222
F.3.6	Stability	222
F.4	Guidelines (informative)	222
Annex G (normative):	Calculation of Error Vector Magnitude	224
Annex H (normative):	Requirements on Location Measurement Unit	226
H.1	TOA LMU Requirements	226
H.1.1	Void	226
H.1.2	LMU characteristics	226
H.1.2.1	Blocking characteristics	226
H.1.2.2	AM suppression characteristics	226
H.1.2.3	Intermodulation characteristics	227
H.1.2.4	Spurious emissions	227
H.1.3	Time-of-Arrival Measurement Performance	227
H.1.3.1	Sensitivity Performance	227
H.1.3.2	Interference Performance	228
H.1.3.3	Multipath Performance	229
H.1.4	Radio Interface Timing Measurement Performance	229
H.2	E-OTD LMU Requirements	229
H.2.1	LMU Characteristics	229
H.2.1.1	Blocking characteristics	230
H.2.1.2	AM suppression characteristics	230
H.2.1.3	Intermodulation characteristics	230
H.2.2	Sensitivity and Interference Performance	230
H.2.2.1	Sensitivity Performance	230
H.2.2.2	Interference Performance	231
H.2.2.3	Multipath Performance	231
Annex I (normative):	E-OTD Mobile Station Requirements	233
I.1	Introduction	233
I.2	Sensitivity and Interference Performance	233
I.2.1	Sensitivity Performance	233
I.2.2	Interference Performance	234
I.2.3	Multipath Performance	234
Annex J (informative):	Guidance on the Usage of Dynamic ARFCN Mapping	235
J.1	Introduction	235
J.2	Dynamic allocation of GSM 400, GSM 800, GSM 900, ER-GSM 900, DCS 1800 and PCS 1900 ARFCNs	235
J.3	Controlling changes in dynamic mapping	235
Annex K (normative):	Reference TFCs for FLO	237
Annex L (normative):	Reference Test Scenarios for DARP	239

Annex M (normative):	Minimum Performance Requirements for Assisted Global Positioning System (A-GPS)	241
M.1	General	241
M.1.1	Abbreviations	241
M.1.2	Measurement parameters	241
M.1.2.1	MS based A-GPS measurement parameters	241
M.1.2.2	MS assisted A-GPS measurement parameters	241
M.1.3	Response time	241
M.1.4	Time assistance	241
M.1.4.1	Use of fine time assistance	242
M.1.4.2	2D position error	242
M.2	A-GPS minimum performance requirements	242
M.2.1	Sensitivity	242
M.2.1.1	Coarse time assistance	242
M.2.1.1.1	Minimum Requirements (Coarse time assistance)	242
M.2.1.2	Fine time assistance	243
M.2.1.2.1	Minimum Requirements (Fine time assistance)	243
M.2.2	Nominal Accuracy	243
M.2.2.1	Minimum requirements (nominal accuracy)	243
M.2.3	Dynamic Range	243
M.2.3.1	Minimum requirements (dynamic range)	244
M.2.4	Multi-Path scenario	244
M.2.4.1	Minimum Requirements (multi-path scenario)	244
M.2.5	Moving scenario and periodic location	244
M.2.5.1	Minimum Requirements (moving scenario and periodic location)	245
M.3	Test conditions	246
M.3.1	General	246
M.3.1.1	Parameter values	246
M.3.1.2	Time assistance	246
M.3.1.3	GPS Reference Time	246
M.3.1.4	Reference and MS locations	246
M.3.1.5	Satellite constellation and assistance data	247
M.3.1.6	Atmospheric delays	247
M.3.1.7	GSM Frequency and frequency error	247
M.3.1.8	Information elements	247
M.3.1.9	GPS signals	247
M.3.1.10	RESET MS POSITIONING STORED INFORMATION Message	247
M.4	Propagation Conditions	247
M.4.1	Static propagation conditions	247
M.4.2	Multi-path Case G1	247
M.5	Measurement sequence chart	249
M.5.1	General	249
M.5.2	MS Based A-GPS Measurement Sequence Chart	249
M.5.3	MS Assisted A-GPS Measurement Sequence Chart	250
M.6	Assistance data required for testing	251
M.6.1	Introduction	251
M.6.2	Information elements required for MS-based	251
M.6.3	Information elements available for MS-assisted	252
M.7	Converting MS-assisted measurement reports into position estimates	253
M.7.1	Introduction	253
M.7.2	MS measurement reports	253
M.7.3	Weighted Least Squares (WLS) position solution	254
Annex N (normative):	Reference Test Scenarios for DARP Phase II (MSRD)	256
N.1	Interferer configurations	256
N.2	Correlation and antenna gain imbalance	257

N.3	Testing MSRD terminal conformance to legacy requirements	258
Annex O (normative):	Minimum Performance Requirements for Assisted Galileo and Additional Navigation Satellite Systems (A-GANSS)	260
O.1	General	260
O.1.1	Abbreviations	260
O.1.2	Measurement parameters.....	260
O.1.2.1	MS based A-GANSS measurement parameters.....	260
O.1.2.2	MS assisted A-GANSS measurement parameters	260
O.1.3	Response time	260
O.1.4	Time assistance	261
O.1.4.1	Use of fine time assistance.....	261
O.1.5	Error definitions	261
O.1.6	Mobile stations supporting multiple constellations	261
O.1.7	Mobile stations supporting multiple signals.....	261
O.2	A-GANSS minimum performance requirements	262
O.2.1	Sensitivity.....	262
O.2.1.1	Coarse time assistance	262
O.2.1.1.1	Minimum Requirements (Coarse time assistance).....	263
O.2.1.2	Fine time assistance	263
O.2.1.2.1	Minimum Requirements (Fine time assistance).....	263
O.2.2	Nominal Accuracy.....	264
O.2.2.1	Minimum requirements (nominal accuracy)	264
O.2.3	Dynamic Range	264
O.2.3.1	Minimum requirements (dynamic range)	265
O.2.4	Multi-Path scenario	265
O.2.4.1	Minimum Requirements (multi-path scenario).....	266
O.2.5	Moving scenario and periodic location	266
O.2.5.1	Minimum Requirements (moving scenario and periodic location).....	267
O.3	Test conditions	268
O.3.1	General	268
O.3.1.1	Parameter values	268
O.3.1.2	Time assistance	268
O.3.1.3	GANSS Reference Time.....	268
O.3.1.4	Reference and MS locations	268
O.3.1.5	Satellite constellation and assistance data.....	269
O.3.1.6	Atmospheric delays.....	269
O.3.1.7	Sensors	269
O.3.1.8	Information elements	269
O.3.1.9	GNSS signals	269
O.3.1.10	RESET MS POSITIONING STORED INFORMATION Message	269
O.3.2	GNSS System Time Offsets	269
O.4	Propagation Conditions	270
O.4.1	Static propagation conditions	270
O.4.2	Multi-path case	270
O.5	Measurement sequence chart.....	271
O.5.1	General	271
O.5.2	TTFB Measurement Sequence Chart.....	271
O.6	Assistance data required for testing.....	272
O.6.1	GPS assistance data	272
O.6.2	GANSS assistance data	272
O.7	Converting MS-assisted measurement reports into position estimates	275
O.7.1	Introduction	275
O.7.2	MS measurement reports.....	275
O.7.3	Weighted Least Squares (WLS) position solution.....	276
Annex P (normative):	Minimum receiver performance requirements for MSR BS	279

P.1	Reference Sensitivity and interference performance.....	279
P.2	Other receiver characteristics	279
P.2.1	Blocking characteristics	279
P.2.2	Intermodulation characteristics	279
P.2.3	AM suppression.....	280
Annex Q (normative):	Reference Test Scenarios for Voice services over Adaptive Multi-user channels on One Slot (VAMOS).....	281
Q.1	Interferer configurations in downlink.....	281
Q.2	Interferer configurations in uplink	282
Q.3	Sensitivity test configuration in downlink.....	283
Q.4	Sensitivity test configuration in uplink.....	283
Q.5	Time and frequency offset in uplink	283
Q.6	VAMOS DTX scenario in downlink.....	283
Q.7	Correlation and antenna gain imbalance for VAMOS III MS.....	284
Annex R (normative):	Reference Test Scenarios for Overlaid CDMA	286
R.1	Frequency offset in uplink.....	286
Annex S (normative):	Normalized coherency error	287
Annex T (normative):	Calculation of the equivalent combined power	289
Annex U (informative):	Change history	290
History		300

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1 Scope

The present document defines the requirements for the transceiver of the pan-European digital cellular telecommunications systems GSM.

Requirements are defined for two categories of parameters:

- those that are required to provide compatibility between the radio channels, connected either to separate or common antennas, that are used in the system. This category also includes parameters providing compatibility with existing systems in the same or adjacent frequency bands;
- those that define the transmission quality of the system.

The present document defines RF characteristics for the Mobile Station (MS) and Base Station System (BSS). The BSS will contain Base Transceiver Stations (BTS), which can be normal BTS, micro-BTS or pico-BTS. The precise measurement methods are specified in 3GPP TS 51.010 and 3GPP TS 51.021.

Unless otherwise stated, the requirements defined in this EN apply to the full range of environmental conditions specified for the equipment (see annex D).

In the present document some relaxations are introduced for GSM 400 MSs, GSM 900 MSs, GSM 700 MSs and GSM 850 MSs which pertain to power class 4, 5 or 6 (see subclause 4.1.1). In the present document these Mobile Stations are referred to as "small MS".

In the present document some relaxations to receiver requirements are introduced for a MS indicating support for Downlink Multi Carrier (DLMC), see 3GPP TS 24.008, when in DLMC configuration. DLMC configurations are specified for only GSM 850, GSM 900, DCS 1800 and PCS 1900.

MSs may operate on more than one of the frequency bands specified in clause 2. These MSs are referred to as "Multi band MSs" in this EN. Multi band MSs shall meet all requirements for each of the bands supported. The relaxation on GSM 400 MSs, GSM 900 MSs, GSM 700 MSs and GSM 850 MSs for a "small MS" are also valid for a multi band MS if it complies with the definition of a small MS.

The RF characteristics of repeaters are defined in annex E of this EN. Annexes D and E are the only clauses of this EN applicable to repeaters. Annex E does not apply to the MS or BSS. The precise measurement methods for repeaters are specified in 3GPP TS 51.026 [35].

The present document also includes specification information for mixed mode operation at 850 MHz and 1900 MHz (MXM 850 and MXM 1900). 850 MHz and 1900 MHz mixed-mode is defined as a network that deploys both 30 kHz RF carriers and 200 kHz RF carriers in geographic regions where the Federal Communications Commission (FCC) regulations are applied or adopted.

The requirements for a MS in a mixed-mode system, MXM 850 and MXM 1900, correspond to the requirements for GSM 850 MS and PCS 1900 MS respectively.

Annex M defines the minimum performance requirements for A-GPS for MSs that support A-GPS. Annex M does not apply to the BSS.

The present document also includes specific requirements for multicarrier BTS, wherever explicitly stated in the text, that apply for all classes of multicarrier BTS (Wide Area, Medium Range and Local Area) if nothing else is stated. All other requirements designated for BTS and normal BTS apply if not otherwise stated. The multicarrier BTS classes have relaxed requirements in the areas of Tx spurious emissions, intermodulation attenuation and, when multicarrier receiver is included, Rx blocking. Usage of multicarrier BTSs in some geographical regions might be subject to regulatory restrictions to protect other radio systems operating in bands of adjacent frequency assignments, in particular for all safety related applications like railway applications. In areas where such systems coexist with multicarrier BTSs, the received interference power originating from multicarrier BTSs might have to be limited.

The document also includes entry points in some tables for the multicarrier BTS requirements to which TS 37.104 [33] for Multi-Standard Radio Base Stations (MSR BS) is referring to as specific GSM/EDGE single-RAT requirements not covered by the general requirements. These entry points are marked with ^{M)} and, as described in a note in each applicable table, identify the relevant column(s) that are applicable as MSR BS requirements. In general the requirements for multicarrier BTS equipped with multicarrier receiver also apply to Multi-Standard Radio Base Stations. The GSM requirements for Multi-Standard Radio Base Stations are defined for GSM 850, GSM 900, DCS 1800 and PCS 1900 only. Requirements for other frequency bands and MXM base stations are excluded. Annex P defines the minimum performance

for the receiver in MSR BS.

For equipment not declared as MSR BS the ^{M)} indications can be ignored.

The present document defines requirements for the usage of the ER-GSM band. The national implementation might be subject to regulatory coordination agreements to avoid system impacts (RF scenarios for ER-GSM introduction are given in 3GPP TR 45.050).

The present document defines requirements for supporting a low-complexity, low data throughput service in environments experiencing high propagation attenuation as indoors in basements etc. This service, based on EGPRS, with extended coverage is called EC-GSM-IoT. For EC-GSM-IoT, in case no specific requirement is explicitly stated, the requirements for EGPRS apply.

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. 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 TR 21.905: "Vocabulary for 3GPP Specifications".
- [1A] 3GPP TS 25.144: "User Equipment (UE) and Mobile Station (MS) Over the Air Performance Requirements".
- [1B] 3GPP TS 34.114: "User Equipment (UE) - Mobile Station (MS) Over The Air (OTA) antenna performance; Conformance testing"
- [2] 3GPP TR 43.030: "Radio network planning aspects".
- [3] 3GPP TS 43.052: "GSM Cordless Telephony System (CTS); Lower layers of the CTS radio interface; Stage 2".
- [4] 3GPP TS 43.059: "Functional Stage 2 description of Location Services in GERAN".
- [5] 3GPP TS 43.064: "General Packet Radio Service (GPRS); GPRS Radio Interface Stage 2".
- [6] 3GPP TS 44.014: "Individual equipment type requirements and interworking; Special conformance testing functions".
- [7] 3GPP TS 44.018: "Mobile radio interface layer 3 specification; Radio Resource Control Protocol".
- [7A] 3GPP TS 44.031: "Mobile Station (MS) - Serving Mobile Location Centre (SMLC) Radio Resource LCS Protocol (RRLP)".
- [8] 3GPP TS 44.071: "Mobile radio interface layer 3 Location Services (LCS) specification".
- [9] 3GPP TS 45.001: "Physical layer on the radio path General description".
- [10] 3GPP TS 45.002: "Multiplexing and multiple access on the radio path".
- [11] 3GPP TS 45.003: "Channel coding".
- [12] 3GPP TS 45.004: "Modulation".
- [13] 3GPP TS 45.008: "Radio subsystem link control".
- [14] 3GPP TS 45.010: "Radio subsystem synchronization".
- [15] 3GPP TS 45.050: "Background for Radio Frequency (RF) requirements".