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**Universal Mobile Telecommunications System (UMTS);
Requirements on User Equipments (UEs)
supporting a release-independent frequency band
(3GPP TS 25.307 version 9.7.0 Release 9)**

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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

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# Foreword

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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 UEs supporting a frequency band that is independent of release. TSG-RAN has agreed that the standardisation of new frequency bands may be independent of a release. However, in order to implement a UE that conforms to a particular release but supports a band of operation that is specified in a later release, it is necessary to specify some extra requirements.

For example, Band III is contained in the Release 5 specifications. In order to implement a UE conforming to Release '4 but supporting Band III, it is necessary for the UE to additionally conform to some parts of the Release 5 specifications, such as the radio frequency requirements for the Band III and some signalling extensions relating to the UE radio access capabilities.

All frequency bands are fully specified in this release of the specifications. The present document does not contain any requirements for UEs supporting frequency bands independent of release.

# 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 TR 21.905: "Vocabulary for 3GPP Specifications".

[2] to [21] Void.

[22] 3GPP TS 25.331 (Release 10, version 10): "Radio Resource Control Protocol".

[23] 3GPP TS 25.101 (Release 10, version 10): "UE Radio Transmission and Reception (FDD)".

[24] 3GPP TS 25.133 (Release 10, version 10): "Requirements for Support of Radio Resource Management (FDD)".

[25] 3GPP TS 25.331 (Release 11, version 11): "Radio Resource Control Protocol".

[26] 3GPP TS 25.101 (Release 11, version 11): "UE Radio Transmission and Reception (FDD)".

[27] 3GPP TS 25.133 (Release 11, version 11): "Requirements for Support of Radio Resource Management (FDD)".

# 3 Definitions and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in [1] apply.

## 3.2 Abbreviations

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

| | |
|---|---|
| FDD | Frequency Division Duplex |
| RRC | Radio Resource Control |
| UE | User Equipment |

# 4 Void

# 5 Void

# 6 Void

# 7 Void

# 8 Void

# 9 Void

# 10 Void

# 11 Void

# 12 Void

# 13 Void

# 14 Void

# 15 Void

# 16 Void

# 17 Void

# 18 Void

# 19 Void

# 20 Void

# 21 Void

# 22 Void

# 23 Band XXV Independent of Release

Band XXV is specified in Release 10 but is defined as a release-independent frequency band. This approach aligns the Band XXV band with other frequency bands when considering features that have to be supported in different releases.

## 23.1 Band XXV UE

UEs that conform to Release 9 and support band XXV shall support the following requirements in Release 10.

### 23.1.1 RF Requirements

The UE shall comply with the RF requirements for band XXV specified in [23]. These requirements are:

| Section / Clause | Description |
|---|---|
| 5 | Frequency bands and channel arrangement |
| 6.2.1 | UE maximum output power |
| 6.6 | Output RF spectrum emissions |
| 7.3 | Reference sensitivity level |
| 7.6 | Blocking characteristics |
| 7.8 | Intermodulation characteristics |
| 7.9 | Spurious emissions |
| B2.2 | Multi-path fading propagation conditions |

The UE shall comply with the following Radio Resource Management requirements for band XXV specified in [24]. These requirements are:

| Section / Clause | Description |
|---|---|
| 9.1 | Measurement Performances for UE. |

### 23.1.2 Signalling Requirements

The UE shall support the following RRC extensions specified in [22]:

- The parameter value "Band XXV" for the IE "FDD frequency band 3" contained within the IEs "UE radio access capability extension" and "Measurement capability extension". The UE shall use this parameter value in order to signal its radio access capabilities relating to band XXV.

- The IEs "Frequency band indicator", "Frequency band indicator 2" and "Frequency band indicator 3"contained within the IEs "System Information Block type 5" and "System Information Block type 6". The UE shall use these IEs to determine whether it is compliant with the RF requirement in the indicated frequency band, in case the UE is in the frequency that belongs to multiple frequency bands.

The UE shall be able to at least decode any unrelated RRC extensions that can be included in between the release it supports, and the IE "Frequency band indicator" and "Frequency Band Indicator 2" and "Frequency band indicator 3".

# 24 Band XXII Independent of Release

Band XXII is specified in Release 10 but is defined as a release-independent frequency band. This approach aligns the Band XXII band with other frequency bands when considering features that have to be supported in different releases.

## 24.1 Band XXII UE

UEs that conform to Release 9 and support band XXII shall support the following requirements in Release 10.

### 24.1.1 RF Requirements

The UE shall comply with the RF requirements for band XXII specified in [23]. These requirements are:

| Section / Clause | Description |
|---|---|
| 5 | Frequency bands and channel arrangement |
| 6.2.1 | UE maximum output power |
| 6.6 | Output RF spectrum emissions |
| 7.3 | Reference sensitivity level |
| 7.6 | Blocking characteristics |
| 7.8 | Intermodulation characteristics |
| 7.9 | Spurious emissions |
| B2.2 | Multi-path fading propagation conditions |

The UE shall comply with the following Radio Resource Management requirements for band XXII specified in [24]. These requirements are:

| Section / Clause | Description |
|---|---|
| 9.1 | Measurement Performances for UE. |

### 24.1.2 Signalling Requirements

The UE shall support the following RRC extensions specified in [22]:

- The parameter value "Band XXII" for the IE "FDD frequency band 2" contained within the IEs "UE radio access capability extension" and "Measurement capability extension". The UE shall use this parameter value in order to signal its radio access capabilities relating to band XXII.
- The IEs "Frequency band indicator" and "Frequency band indicator 2"contained within the IEs "System Information Block type 5" and "System Information Block type 6". The UE shall use these IEs to determine whether it is compliant with the RF requirement in the indicated frequency band, in case the UE is in the frequency that belongs to multiple frequency bands.

The UE shall be able to at least decode any unrelated RRC extensions that can be included in between the release it supports, and the IE "Frequency band indicator" and "Frequency Band Indicator 2".

# 25 Band XXVI Independent of Release

Band XXVI is specified in Release 11 but is defined as a release-independent frequency band. This approach aligns the Band XXVI band with other frequency bands when considering features that have to be supported in different releases.

## 25.1 Band XXVI UE

UEs that conform to Release 9 and support band XXVI shall support the following requirements in Release 11.

### 25.1.1 RF Requirements

The UE shall comply with the RF requirements for band XXVI specified in [26]. These requirements are:

| Section / Clause | Description |
|---|---|
| 5 | Frequency bands and channel arrangement |
| 6.2.1 | UE maximum output power |
| 6.6 | Output RF spectrum emissions |
| 7.3 | Reference sensitivity level |
| 7.6 | Blocking characteristics |
| 7.8 | Intermodulation characteristics |
| 7.9 | Spurious emissions |
| B2.2 | Multi-path fading propagation conditions |

The UE shall comply with the following Radio Resource Management requirements for band XXVI specified in [27]. These requirements are:

| Section / Clause | Description |
|---|---|
| 9.1 | Measurement Performances for UE. |

## 25.1.2 Signalling Requirements

The UE shall support the following RRC extensions specified in [25]:

- The parameter value "Band XXVI" for the IE "FDD frequency band 3" contained within the IEs "UE radio access capability extension" and "Measurement capability extension". The UE shall use this parameter value in order to signal its radio access capabilities relating to band XXVI.

- The IEs "Frequency band indicator", "Frequency band indicator 2" and "Frequency band indicator 3" contained within the IEs "System Information Block type 5" and "System Information Block type 6". The UE shall use these IEs to determine whether it is compliant with the RF requirement in the indicated frequency band, in case the UE is in the frequency that belongs to multiple frequency bands.

The UE shall be able to at least decode any unrelated RRC extensions that can be included in between the release it supports, and the IE "Frequency band indicator", "Frequency Band Indicator 2" and "Frequency Band Indicator 3".

# Annex A (normative): Multi-Band Signalling Requirements

UEs that conform to Release 9 and support the Multiple Frequency Band Indicators feature [22], [25.306] shall support the following RRC extensions defined in Release 10:

- The IE "Support of Multiple Frequency Band Indicators" contained within the IE "UE radio access capability". The UE shall include this IE to indicate that it supports the signalling requirements of multiple radio frequency bands in a cell.

- The IE "Multiple Frequency Band indicator list" contained within System Information Block type 5, System Information Block type 5bis and System Information Block type 6. The UE shall use these IEs to determine whether it is compliant with the RF requirement in the indicated frequency band, in case the UE is in the frequency that belongs to multiple frequency bands.

- The IE "Multiple Frequency Info List FDD" contained within System Information Block type 11, System Information Block type 11bis and System Information Block type 12. The UE shall use these IEs to determine whether it is compliant with the RF requirement in the indicated frequency band, in case the UE is in the frequency that belongs to multiple frequency bands.

The UE shall be able to at least decode any unrelated RRC extensions that can be included in between the release it supports, and the IEs "Multiple Frequency Band indicator list" and "Multiple Frequency Info List FDD".

# Annex B (normative): Frequency arrangement for overlapping operating bands

The following information is provided in order to assist a UE to derive the DL UARFCN and UL UARFCN in a multi-band environment, in which multiple overlapping operating bands may be indicated in the IE "Multiple Frequency Band indicator list" (System Information Block type 5, System Information Block type 5bis and System Information Block type 6), or the IE "Multiple Frequency Info List FDD" (System Information Block type 11, System Information Block type 11bis and System Information Block type 12).

The sets of bands (multi-band environment), independent of release, that may be indicated in a cell are shown in Table B-1. Subsets of these may also be indicated. The DL UARFCN and UL UARFCN are derived according to [25.101].

**Table B-1: Overlapping bands (multi-band environments) for each UTRA band**

| UTRA Operating Band | Overlapping UTRA operating bands | Duplex Mode |
|---|---|---|
| 2 | 25 | FDD |
| 3 | 9 | FDD |
| 4 | 10 | FDD |
| 5 | 18, 19, 26 | FDD |
| 9 | 3 | FDD |
| 10 | 4 | FDD |
| 18 | 5, 26 | FDD |
| 19 | 5, 26 | FDD |
| 25 | 2 | FDD |
| 26 | 5, 18, 19 | FDD |

# Annex C (informative): Change history

| Change history | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Date** | **TSG #** | **TSG Doc.** | **CR** | **Rev** | **Subject/Comment** | **Old** | **New** |
| 09/2001 | RP-13 | RP-010557 | | | Approved at TSG-RAN #13 and placed under Change Control | - | 3.0.0 |
| | RP-13 | RP-010558 | 001 | 1 | Correction to create Release 4 | 3.0.0 | 4.0.0 |
| 12/2001 | RP-14 | RP-010759 | 003 | | Inclusion of release independent RF related information | 4.0.0 | 4.1.0 |
| 03/2002 | RP-15 | RP-020096 | 004 | | Creation of Rel-5 specification | 4.1.0 | 5.0.0 |
| 12/2003 | RP-22 | RP-030630 | 010 | | Introduction of UMTS800 | 5.0.0 | 6.0.0 |
| 03/2004 | RP-23 | RP-040092 | 016 | 1 | Frequency band alignment with 25.101 | 6.0.0 | 6.1.0 |
| | RP-23 | RP-040090 | 023 | | Introduction of UMTS1700/2100 (Band IV) | 6.0.0 | 6.1.0 |
| | RP-23 | RP-040091 | 027 | | Introduction of UMTS850(Band V) | 6.0.0 | 6.1.0 |
| 09/2005 | RP-29 | RP-050467 | 0038 | | Introduction of UMTS2600 internal band, Band VII | 6.1.0 | 6.2.0 |
| 12/2005 | RP-30 | RP-050800 | 0042 | | Introduction of UMTS 900 (Band VIII) | 6.2.0 | 6.3.0 |
| | RP-30 | RP-050801 | 0034 | | Introduction of UMTS1700 | 6.2.0 | 6.3.0 |
| 06/2006 | RP-32 | RP-060369 | 0043 | | Creation of release 7 version | 6.3.0 | 7.0.0 |
| 12/2006 | RP-34 | RP-060715 | 0057 | | Introduction of Band X (Extended UMTS 1.7/2.1 GHz) in 25.307 | 7.0.0 | 7.1.0 |
| 09/2007 | RP-37 | RP-070633 | 0066 | | Introduction of Band XI | 7.1.0 | 8.0.0 |
| 03/2008 | RP-39 | RP-080200 | 0072 | - | Introduction of UMTS 700 MHz (Bands XII – XIV) in 25.307 | 8.0.0 | 8.1.0 |
| 09/2008 | RP-41 | RP-080676 | 0077 | - | Introduction of UMTS Band d in 25.307 | 8.1.0 | 8.2.0 |
| 09/2008 | RP-41 | RP-080695 | 0082 | - | Introduction of UMTS Band e in 25.307 | 8.1.0 | 8.2.0 |
| 03/2009 | RP-43 | RP-090146 | 0087 | - | Introduction of UMTS Band f in 25.307 | 8.2.0 | 8.3.0 |
| 09/2009 | RP-45 | RP-090921 | 0089 | - | Introduction of Band XIX | 8.3.0 | 8.4.0 |
| 09/2009 | RP-45 | RP-090921 | 0088 | 1 | Introduction of Band XIX | 8.4.0 | 9.0.0 |
| 12/2009 | RP-46 | RP-091333 | 0094 | - | Editorial corrections for Introduction of Band XIX | 9.0.0 | 9.1.0 |
| | RP-46 | RP-091335 | 0100 | 1 | Introduction of band XXI - 25.307 | 9.0.0 | 9.1.0 |
| 03/2010 | RP-47 | RP-100302 | 0106 | - | Introduction of band XX (800 MHz) | 9.1.0 | 9.2.0 |
| 06/2011 | RP-52 | RP-110844 | 0140 | 1 | Add Expanded 1900 MHz Band for UTRA and LTE to TS25.307 | 9.2.0 | 9.3.0 |
| 09/2011 | RP-53 | RP-111289 | 0147 | - | Removal of System Information Block Type 5bis for release independent band XXV | 9.3.0 | 9.4.0 |
| | RP-53 | RP-111294 | 0160 | - | Add Band XXII for LTE/UMTS 3500 (FDD) | 9.3.0 | 9.4.0 |
| 03/2012 | RP-55 | RP-120328 | 0167 | - | Add Extending 850 MHz Upper Band (814 - 849 MHz) to TS25.307 | 9.4.0 | 9.5.0 |
| 12/2012 | RP-58 | RP-121922 | 0191 | - | Multiple frequency band indicators per cell | 9.5.0 | 9.6.0 |
| 12/2013 | RP-62 | RP-131981 | 0199 | - | Early implementation of MFBI feature | 9.6.0 | 9.7.0 |

# History

| Document history | | |
|---|---|---|
| V9.1.0 | February 2010 | Publication |
| V9.2.0 | April 2010 | Publication |
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| V9.6.0 | January 2013 | Publication |
| V9.7.0 | January 2014 | Publication |