

3GPP-(Technical Speciation
Group Radio Access Network;
User Equipment (UE)
requirements for shared spectrum
channel access)



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Technical Specification

3rd Generation Partnership Project; Technical Specification Group Radio Access Network; User Equipment (UE) requirements for shared spectrum channel access (Release 15)



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Foreword

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

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

Version x.y.z

where:

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

1 Scope

The present document establishes the minimum UE RF characteristics for shared spectrum channel access.

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] ITU-R Recommendation M.1545: "Measurement uncertainty as it applies to test limits for the terrestrial component of International Mobile Telecommunications-2000".
 - [3] 3GPP TS 36.213: "Physical layer procedures".
 - [4] 3GPP TS 36.101: "User Equipment (UE) radio transmission and reception".
 - [5] 3GPP TS 36.521-1 : "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Conformance testing".
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3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

Channel bandwidth: The RF bandwidth supporting a single E-UTRA RF carrier with the transmission bandwidth configured in the uplink or downlink of a cell. The channel bandwidth is measured in MHz and is used as a reference for transmitter and receiver RF requirements.

3.2 Symbols

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

BW_{Channel} Channel bandwidth

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

BS Base Station

E-UTRA	Evolved Universal Terrestrial Radio Access
PUSCH	Physical Uplink Shared Channel
UE	User Equipment

4 General

4.1 Relationship between minimum requirements and test requirements

The Minimum Requirements given in this specification make no allowance for measurement uncertainty. The test specification TS 36.521-1 [5] Annex F defines Test Tolerances. These Test Tolerances are individually calculated for each test. The Test Tolerances are used to relax the Minimum Requirements in this specification to create Test Requirements.

The measurement results returned by the Test System are compared - without any modification - against the Test Requirements as defined by the shared risk principle.

The Shared Risk principle is defined in ITU-R M.1545 [2].

4.2 Applicability of minimum requirements

- In this specification the Minimum Requirements are specified as general requirements and additional requirements. Where the Requirement is specified as a general requirement, the requirement is mandated to be met in all scenarios
- For specific scenarios for which an additional requirement is specified, in addition to meeting the general requirement, the UE is mandated to meet the additional requirements.
- The requirements in this specification for E-UTRA TDD operating bands apply for downlink and uplink operations using Frame Structure Type 3.

5 Channel access procedures

5.1 Uplink channel access procedure

For uplink operation in Band 46 and Band 49, a channel access procedure for PUSCH transmission as described in TS 36.213 [3], Clause 15.2.1 is specified.

5.1.1 Channel access parameters

Channel access related parameters for PUSCH are listed in Table 5.1.1-1.

Table 5.1.1-1: Channel access parameters for PUSCH

Parameter	Unit	Value	
LBT measurement bandwidth (BW)	MHz	20	10
Energy detection threshold	dBm/BW	-72	-75
Detection timing	microseconds	25	

5.1.2 Minimum requirement

The UE shall be able to assess whether the medium is busy or idle with at least 90% probability, using a channel access procedure with the parameters in Table 5.1.1-1.

Annex A (informative): Change history

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2018-02	RAN4#86	R4-1801547				TS skeleton	0.0.1
2018-06	RAN#80	RP-181030				v1.0.0 submitted for plenary approval	1.0.0
2018-06	RAN#80					Approved by plenary – Rel-15 spec under change control	15.0.0