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Technical Report

3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Downlink configurations for Four-carrier High Speed Download Packet Access (4C-HSDPA) (Release 10)



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Foreword

This Technical Report 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 is intended to maintain the list of 4C-HSDPA downlink configurations in the context of the work item "For carrier HSDPA" [2]. Each downlink configuration is composed of the frequency band(s) and the number of downlink adjacent carriers in each band.

In addition, the present document also captured the framework to specify the Rx core requirements for 4C-HSDPA.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TD RP-091438: "Four carrier HSDPA"

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 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 TR 21.905 [1].

example: text used to clarify abstract rules by applying them literally.

3.2 Symbols

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

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 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 TR 21.905 [1].

4C-HSDPA Four Carrier HSDPA. HSDPA operation comprising of 3 or 4 carriers in a single or dual bands.

4 4C-HSDPA Downlink Configurations per Release Time Frame

4.1 Release 10 Time Frame

The list of 4C-HSDPA downlink configurations for release 10 time frame is given in Table 4.1-1.

Table 4.1-1: 4C-HSDPA downlink configurations for release 10 time frame

Configuration	Band A		Band B	
	Band number	Number of DL adjacent carriers	Band number	Number of DL adjacent carriers
10-1	I	3	N/A	N/A
10-2	I	3	VIII	1
10-3	I	2	VIII	1
10-4	I	2	V	2
10-5	I	2	V	1
10-6	II	2	IV	2
10-7	II	2	IV	1
10-8	II	1	IV	2

Note: Following the finalization of the core requirements on the configurations in the Table 4.1-1, TSG RAN will schedule the specification work to complete the core requirements of the priority #1 configurations in Table 5-1. TSG RAN currently expects the target completion date for the configurations in Table 4.1-1 to be December 2010.

4.2 Release X Time Frame

Provide the list of 4C-HSDPA downlink configurations that will be specified in RAN WG4 during Release X time frame. New subsections can be created under Section 4 as new 4C-HSDPA downlink configurations are agreed for new release time frame.

5 4C-HSDPA Downlink Configurations for Future Release Time Frame

The list of 4C-HSDPA downlink configurations for the future release time frame is given in Table 5-1.

Table 5-1: 4C-HSDPA downlink configurations for future release time frame

Priority Order	Configuration	Band A		Band B	
		Band number	Number of DL adjacent carriers	Band number	Number of DL adjacent carriers
# 1	F-1	I	4	N/A	N/A
	F-2	I	2	VIII	2
	F-3	I	3	III	1
	F-4	I	2	III	1
	F-5	V	3	N/A	N/A
# 2	F-6	I	2	III	2
	F-7	I	2	XI	2
	F-8	II	3	IV	1
	F-9	IX	4	N/A	N/A
	F-10	IX	3	N/A	N/A

6 Framework of Rx Core Requirements for 4C-HSDPA

The principles to specify the Rx core requirements for 4C-HSDPA are summarized as follows:

- In the case of a single uplink, the Rx core requirements for single band 4C-HSDPA are specified with the farthest and closest UL carrier frequencies to the DL band. If the difference in the requirements due to the farthest and closest UL carrier frequencies is less than [1] dB, the requirements are specified only with the closest UL carrier frequency.

- In the case of a single uplink, the Rx core requirements for dual band 4C-HSDPA are specified with the farthest and closest UL carrier frequencies (if different) to the corresponding DL band for each band. If the difference in the requirements due to the farthest and closest UL carrier frequencies is less than [1] dB in each DL band, the requirements are specified only with the closest UL carrier frequency for that band.
- In the case of dual uplinks, the Rx core requirements for the single band 4C-HSDPA are specified with the farthest and closest dual UL carrier frequencies to the DL band. The UE transmit power for the requirements with the closest dual UL carrier frequencies is adjusted (reduced) to meet the requirements with the farthest dual UL carrier frequencies within [1] dB. If the UE transmit power for both cases are the same, the requirements are specified only with the closest dual UL carrier frequencies.
- In the case of dual uplinks, the Rx core requirements for dual band 4C-HSDPA are specified with the farthest and closest dual UL carrier frequencies (if different) to the corresponding DL band for each band (where dual uplinks are available). The UE transmit power for the requirements with the closest dual UL carrier frequencies is adjusted (reduced) to meet the requirements with the farthest dual UL carrier frequencies within [1] dB. If the UE transmit power for both cases are the same, and the requirements in each DL band are within [1] dB with both cases, the requirements are specified only with the closest dual UL carrier frequencies for that band.
- The 4C-HSDPA Rx core requirements with dual uplinks are specified for in-band blocking, narrow-band blocking, intermodulation and narrow-band intermodulation.
- The UEs supporting specific dual-band configurations, defined in Table 5.0aA and Table 5.0aC in TS 25.101, have an additional front-end complexity compared to UEs supporting only single band operation. This additional complexity affects the performance even when the dual-band capable UE operates in a single band mode (for these particular bands). In particular, for the single band receiver core requirements with dual uplinks (expressed with absolute input levels), the $\langle \text{HS-PDSCH}_{\text{Ec}} \rangle$ and $\langle \hat{I}_{\text{or}} \rangle$ are allowed to be increased by the same amount as the assumed insertion loss increase used to derive the dual-band requirements. This is captured in Table 7.12 and Table 7.13 in TS 25.101.

Annex A: Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2010-08	WG4#56	R4-102766			TR skeleton created		0.1.0
2010-11	WG4#57	R4-103898			Text proposal to TR 25.864, Section 3.3, 4.1 and 5	0.1.0	0.2.0
2010-11	WG4#57	R4-104104			Text proposal to TR 25.864, Section 1 and 6	0.2.0	0.3.0
2011-05	WG4#59	R4-112908			Text proposal to TR 25.864, Section 6	0.3.0	0.4.0
2011-06	RAN#52	RP-110726			V2.0.0 approved by TSG RAN	2.0.0	10.0.0