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Title	Concurrent UL Burst limitation
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Re:	IEEE P802.16e/D32004
Abstract	Concurrent UL Burst limitation per MSS
Purpose	The document proposes to specify a limit to the number of UL concurrent burst supported by an MSS.
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Concurrent UL Burst limitation per MSS

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1. Motivation

There is no parameter today which limits the maximum number of concurrent bursts needed to be supported by the MSS in the UL-MAP allocation of OFDMA. Regulating the number of concurrent bursts is necessary for reducing implementation resources like processing power, memory etc. This also enables architectural and implementation flexibility for target multiple device configurations.

2. Details

The syntax of today's OFDMA UL data allocation is unidirectional burst allocation in time first manner. In such allocation technique, it's more then reasonable to allocate single region of burst for all the data needs of a single MSS, reasons are:

1. The UL allocations are unicast only and identified only by the basic CID
2. In the UL due to the one-dimensional data allocations, the scheduling complexity of the DL doesn't exist. Therefore, from efficiency reasons the BS should concatenate all data allocations to one SS in one UL burst.
3. Concurrent UL allocations may create transmission power variance, which degrades the system efficiency, whereas the transmission power variance in a single data allocation is bounded by 3dB.

In addition to the data allocation procedure which described above there are other control based allocation in the UL sub-frame:

1. Feedback channel (including CQI)
2. CDMA contention based Ranging & BW Request
3. HARQ feedback

Contention based ranging and/or BW requests are not being used by the MSS when explicit unicast data grant allocation is available: according to the spec the MSS does not need to perform ranging while it sends data (the BS can correct the MSS based on the data received). In addition, BW request can be sent in piggybacking technique on the data header itself (again without using the contention area).

We propose a constant limitation of 2 concurrent bursts -1 for data allocation and 1 for control (feedback channel). This limitation is not applied on HARQ allocations, in which remains as before unlimited.

3. Changes summary:

8.4.4.5 Uplink transmission allocations

[Insert the following rows at the end of the section]

In the uplink, the BS shall not allocate to any SS more than one UL-MAP_IE with data burst profile UIUC (1-10) in a single frame. This limitation does not apply to H-ARQ data allocation regions.