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Title	Contents of empty and gap allocations in the DL in OFDMA is undefined
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Re:	IEEE P802.16e/D3-2004
Abstract	Contents of empty and gap allocations in the DL in OFDMA is undefined
Purpose	“
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Contents of empty and gap allocations in the DL in OFDMA is undefined

Yuval Lomnitz

1. Motivation

Contents of empty and gap allocations in the DL in OFDMA is undefined.

1. Gap areas may be formed between DL allocations, depending on the 2 dimensional scheulding scheme. Filling these gaps with "gap allocations" (UIUC=13) is not required by the standard and may required redundant overhead. So unallocated slots are potentially allowed.
2. The SS needs to know if some/all pilots are modulated or not, for channel and phase estimation purposes.
3. It is important to define for the SS if it can assume data carriers are always modulated, or not, for initial acqusition and AGC purposes.
4. The BS may wish to turn off unused data carriers in order to reduce inter cell interference.

This issue is not defined in 802.16d and we consider this as an errata (since the transmitted signal cannot be undefined).

We propose to define this as follows:
Data carriers need not necessarily be modulated for unused slots. For PUSC, FUSC and optional FUSC permutations, pilots will be modulated for symbols including unused slots. For AMC pilots need not be modulated

2. Changes summary

In 8.4.9.4.2 (Data modulation) add the following text at the end of the section:
"In the downlink, data subcarriers which belong to slots that are not allocated in the DL-MAP, or that are part of a gap allocation (DIUC=13) may or may not be modulated, at the BS discretion".

In 8.4.9.4.3 (Pilot modulation), add the following text at the end of the section:
"In the downlink, for PUSC, FUSC and optional FUSC permutations, all pilots (of the segment, in case of PUSC) will be modulated, whether or not all the subchannels are allocated in the DL-MAP. For AMC permutation, the BS is not required to modulate the pilots that belong to bins that are not allocated in the DL-MAP, or are allocated as gaps (UIUC=13)."