Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Bitmap in DCD for DL PUSC**
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Re:	
Abstract	Used channel bitmap for DL PUSC in DCD
Purpose	Adopting of proposed method into P802.16e
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Bitmap for DL PUSC in DCD

Problem Definition and Proposed Solutions

There is a field “Used subchannel bitmap” in FCH to indicate which subchannels are used in first DL PUSC zone. If “with all subcarriers” indicator in Zone_Switch_IE is turned on, then PUSC zone will be used with all subchannels regardless of the value of “Used subchannel bitmap”. Otherwise PUSC zone will be used only with the subchannels specified by “Used subchannel bitmap”. But when “Used subchannel bitmap” in FCH indicates that all the subchannels are used in DL PUSC, there is no way to use PUSC with partial subchannels in that frame. In Figure 1, all possible combination of DL PUSC zone usage is depicted. Currently all combinations are supported except (d). In this contribution, we propose to insert bitmap similar to “Used subchannel bitmap” in DCD to support usage of PUSC like (d). Using the proposed bitmap in DCD, we can use DL PUSC with partial subchannels even if the “Used subchannel bitmap” in FCH indicates that all subchannels are used in the first PUSC zone.

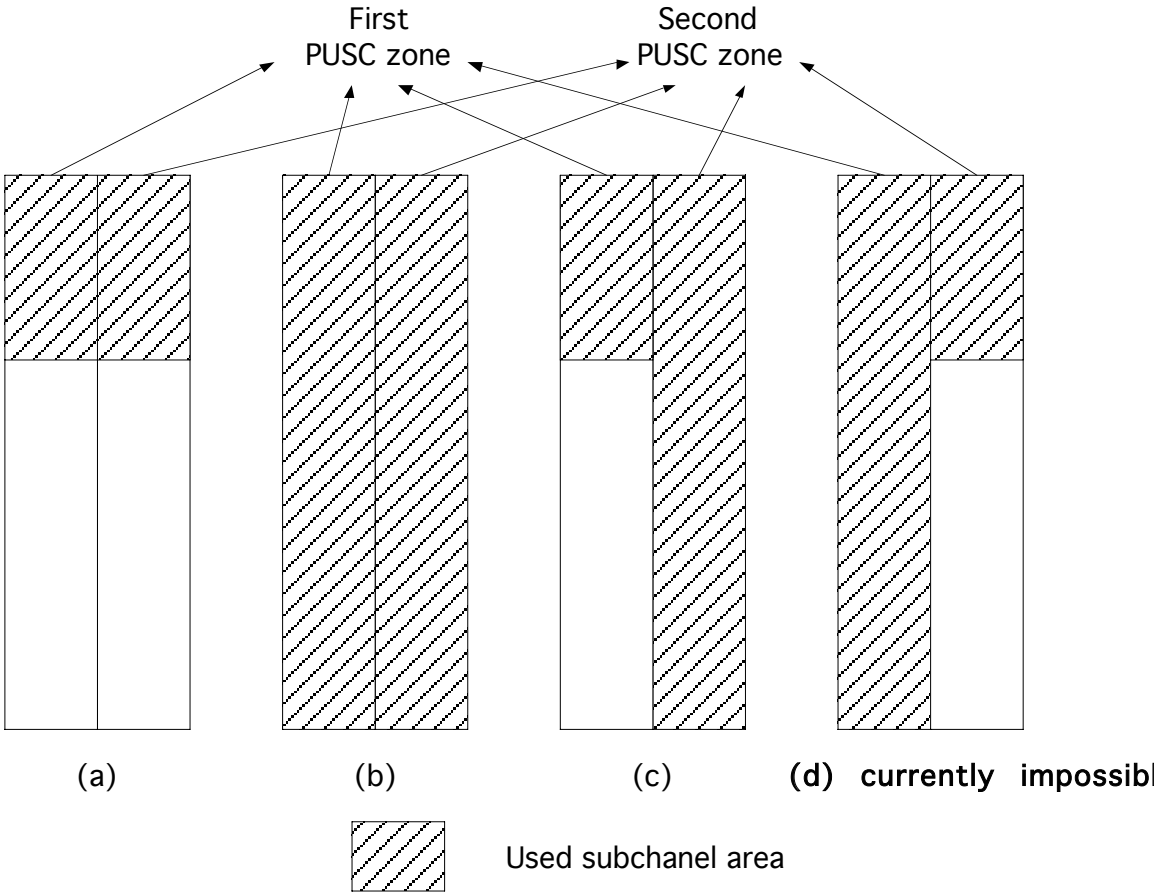

Figure 1. Possible usage of DL PUSC zone

Suggested change to the standard

[Add the following text in section 8.4.5.3.4, line 56, page 163]

Use All SC indicator

When set, this indicator indicates transmission on all available subchannels. For FUSC permutation, transmission is always on all subchannels.

For PUSC permutation, if the “Used subchannel bitmap” field in FCH indicates that all the subchannels are

used and “Use all SC indicator” is 0, then subchannels indicated by “Used subchannel bitmap for DL PUSC” in DCD shall be used.

[Add the following row to table 356a in section 11.4.1, page283, line 51]

Name	Type (1 byte)	Length	Value (variable length)
Used subchannel bitmap for DL PUSC	21	1	This is a bitmap describing the subchannel groups allocated to the segment in the DL, when using the PUSC permutation. The LSB shall correspond to subchannel group 0 and upper 2 bits are not used. For any bit that is not set, the corresponding subchannel group shall not be used on that segment. The subchannel groups are defined in Table 266b in section 8.4.4.3.

References

[1] IEEE P802.16-REVd/D5-2004 Draft IEEE Standards for local and metropolitan area networks part 16: Air interface for fixed broadband wireless access systems.

[2] IEEE P802.16-REVe/D5-2004 Amendment for Physical and Medium Access Control Layers for Combined Fixed and Mobile Operation in Licensed Band.