

Proposal for IEEE 802.16m UL Fast Feedback Control

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*<http://standards.ieee.org/faqs/affiliationFAQ.html>>

Re: "SDD Session 56 Cleanup, Call for PHY Details"; in response to the Call for Contributions and Comments on Project 802.16m System Description Document (SDD) 802.16m-08/033 for Session 57

Purpose: Adopt the proposal into the IEEE 802.16m System Description Document

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The contributor is familiar with the IEEE-SA Patent Policy and Procedures:

<http://standards.ieee.org/guides/bylaws/sect6-7.html#6> and <http://standards.ieee.org/guides/opman/sect6.html#6.3>.

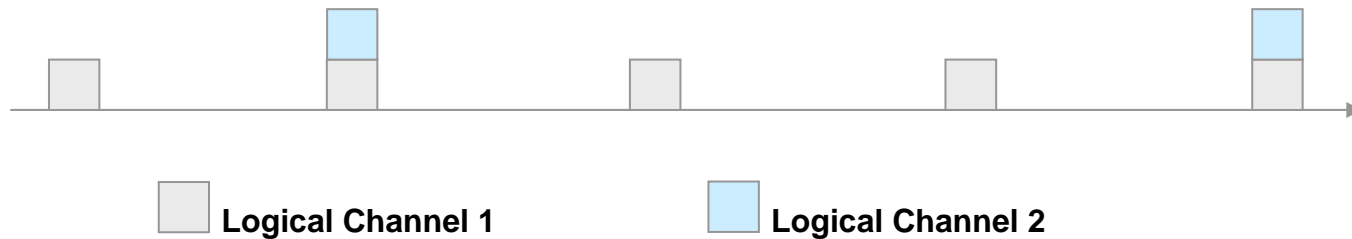
Further information is located at <http://standards.ieee.org/board/pat/pat-material.html> and <http://standards.ieee.org/board/pat>.

UL Fast Feedback Control (1/2)

- The fast feedback control channel may contain
 - Broadband CQI
 - Sub-band CQI for a number of sub-bands (for localized assignments)
 - PMI and rank for each sub-band reported (for closed loop MIMO)
 - Bandwidth request
- The amount of feedback by the MS depends on the type of transmission the MS is configured to receive.
 - Sub-band scheduling for slow moving mobiles
 - Closed loop MIMO transmission for slow moving mobiles capable of CL MIMO
- The fast feedback channel should adapt the number of resources to accommodate different user geometries.
 - All of the above types of feedback should be supported for both cell edge and cell centre mobiles.
 - The reliability of the fast feedback channel should be the same for both cell edge and cell centre mobiles.
 - Since the reliability of each CQI and PMI feedback should be the same, it is best to code the information together.

UL Fast Feedback Control (2/2)

- The frequency of different types of feedback can be different.
- In order to accommodate different feedback intervals for different information, the number of resources assigned can be different each feedback instance.
- In this case, multiple logical channels can be assigned.
- For example, one logical channel may be assigned for transmitting information that is sent every 5 ms and a second logical channel may be assigned for information that is sent every 20 ms
- All feedback information is coded together and is transmitted on one physical channel.



Event Driven Feedback

- Event driven feedback, such as a bandwidth request, can be sent on the fast feedback control channel.
- The resource request occupies a field provisioned for some other message (CQI, PMI etc).
 - The presence of a request is specified by the UL control message type.
 - The mobile sets this type to a message configuration that includes space for a resource assignment. Therefore, the size of the message is not changed from the specified size for that subframe.
 - The presence of the request field is dynamic, but does not affect the pre-determined size of the user's UL control.
- Two types of bandwidth request messages are specified dynamically by UL fast feedback control message type:
 - Bandwidth request/renewal indicator to continue existing or default UL allocation
 - Bandwidth request message containing further details of the resource request
 - This may include delay constraints, QoS, packet backlog, resource size, etc
 - Further details of assignment can be given in a re-configuration message, or known from previous or default configurations.

Proposed Text for SDD

- Section 11.x UL Control
 - [*Add content of slides 2-4 to this section*]