P802.16m to Sponsor Ballot: Conditional Approval

14 May 2010

Rules

motions requesting conditional approval to forward when the prior ballot has closed shall be accompanied by:

- Date the ballot closed
- Vote tally including Approve, Disapprove and Abstain votes
- Comments that support the remaining disapprove votes and Working Group responses.
- Schedule for confirmation ballot and resolution meeting.

Date the ballot closed:
30 April 2010

Stage	Open	Close	
WG Letter Ballot #31	3 Feb	5 Mar	2010
WG Letter Ballot Recirc #31a	14 Apr	30 Apr	2010

Note: Prior drafts were reviewed in WG Letter Ballot #30, with two recircs.

Vote tally including Approve, Disapprove and Abstain votes

- 291   Approve   98.3%
-   5   Disapprove with comments
-   4   Abstain
-   2   Disapprove without comment
- 80%   Return ratio

- Note:
  - 2 "Disapprove without Comment" voters have provided no comments in WG Letter Ballot #31 (including Recirc #31a).

Comment resolution

	Comment database	Editorial	Technical	Total	Disapprove Comment	Disapprove Voter
LB #31	IEEE C802.16-10/018r6	153	811	964	169	32
Recirc #31a	IEEE C802.16-10/035r2	133	535	668	5	7
		286	**1346**	**1632**	**174**	**32**

Comments that support the remaining disapprove votes and Working Group responses

- Remaining 15 outstanding comments from 5 Disapprove voters attached

Schedule for confirmation ballot and resolution meeting

- May 25:   Issue D6

- May 25-Jun 9:   Recirculation #31b

- July 12-15:   comment resolution at Session #68, if necessary

802.16 WG Motions

802.16 Closing Plenary: 13 May 2010:

Motion: Request that the WG initiate a WG LB #31b recirculation on P802.16m/D6, based on P802.16m/D5 as modified by the comment resolutions contained in 802.16-10/0035r2, to start by May 25, 2010 and that the WG Chair request Conditional Approval to forward P802.16m for Sponsor Ballot

- Proposed: Brian Kiernan
- Seconded: Mark Cudak
- Approved 81-0-0.

Motion

To grant conditional approval, per the IEEE 802
   Operations Manual, to forward P802.16m for
   Sponsor Ballot

Moved: Marks

Seconded:

Approve:

Disapprove:

Abstain:

Comment by: Joerg Schaepperle   **Membership Status:**   Member   **Date:** 3/5/2010

Comment # **A0007**   **Document under Review:** **P802.16m/D4**   **Ballot ID:** **LB31**

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☒   **Page** 5   **Line** 11   **Fig/Table#**   **Subclause** 3,

In definition 3.114, by saying "The number of encoded layers MAY be more than 1", horizontal encoding is defined in such a way that it includes vertical encoding defined in definition 3.115.

Suggested Remedy

Modify definition 3.114 on page 5 in such a way that horizontal encoding is clearly distinguished from vertical encoding. E.g., if appropriate, by saying "The number of encoded layers is more than 1".

GroupResolution   **Decision of Group:**   **Accepted-Modified**

Change 3.114 as indicated:

"The number of encoded layers ~~may be~~ is more than 1"

Reason for Group's Decision/Resolution

Group's Notes
General: Definitions

Editor's Notes   **Editor's Actions**   a) done

Comment by: Scott   Probasco   **Membership Status:**   Member   **Date:** 3/5/2010

Comment # A0094   **Document under Review: P802.16m/D4**   **Ballot ID: LB31**

Comment   **Type** Technical   **Part of Dis** ⊠ **Satisfied** ☐   **Page** 60   **Line** 16   **Fig/Table#**   **Subclause** 16.2.3

Many messages are missing ASN.1 code

Suggested Remedy

Add the ASN.1 code for each MAC message. Alternatively, delete each MAC message which does not have ASN.1 code.

GroupResolution   **Decision of Group:**   **Rejected**

Reason for Group's Decision/Resolution

Vote:
0: in favor
3: oppose
Rejected

Inconsistent with SDD.

Group's Notes
AAI: MAC Control messages

Editor's Notes   **Editor's Actions**   b) none needed

| **Comment by:** | Peretz Feder | **Membership Status:** | Member | **Date:** | 3/5/2010 |

Comment # **A0188**   **Document under Review:** **P802.16m/D4**   **Ballot ID:** **LB31**

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☐   **Page** 92   **Line** 1   **Fig/Table#**   **Subclause** 16.2.3.6

Delete SON-ADV message

Suggested Remedy

SON is a network feature, what is being advertised? Who is using it, Ideally it shouldn't affect the AMS.

GroupResolution   **Decision of Group:**   **Rejected**

Reason for Group's Decision/Resolution

Lack of specific proposed remedy.

Group's Notes

AAI: MAC Control messages

Editor's Notes   **Editor's Actions**   b) none needed

| **Comment by:** | Peretz Feder | **Membership Status:** | Member | **Date:** | 3/5/2010 |

Comment # **A0190**   **Document under Review:** **P802.16m/D4**   **Ballot ID:** **LB31**

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☐   **Page** 93   **Line** 6   **Fig/Table#**   **Subclause** 16.2.3.7

Delete Action Type

Suggested Remedy

not clear how these defined values affect the AMS behavior.

GroupResolution   **Decision of Group:**   **Rejected**

Reason for Group's Decision/Resolution

Wrong reference page, not clear proposed remedy.

Group's Notes

AAI: MAC Control messages

Editor's Notes   **Editor's Actions**   b) none needed

| **Comment by:** | Scott Probasco | **Membership Status:** Member | **Date:** 3/5/2010 |

Comment # **A0435**   **Document under Review:** **P802.16m/D4**   **Ballot ID:** **LB31**

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☐   **Page** 259   **Line** 1   **Fig/Table#**   **Subclause** 16.2.12

Procedures for management of Flows has not been defined.

Suggested Remedy

Copy text from 802.16-2009 sections 16.3.14.7.1, 6.3.14.8 and 6.3.14.9, and update as required for use in the AAI.

GroupResolution   **Decision of Group:**   **Rejected**

Reason for Group's Decision/Resolution

Specific text is not supplied.

Group's Notes
AAI: MAC QoS

Editor's Notes   **Editor's Actions**   b) none needed

Comment by:	Joerg Schaepperle	**Membership Status:** Member	**Date:** 3/5/2010

Comment # A0705   **Document under Review:** P802.16m/D4   **Ballot ID:** LB31

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☐   **Page** 528   **Line** 37   **Fig/Table#**   **Subclause** 16,3,7,1

The sentence in parenthesis "(horizontal MIMO encoding or combination of vertical and horizontal MIMO encoding at transmit side, which is called multi-layer encoding)." is unclear. The terms "horizontal MIMO encoding" and "vertical MIMO encoding" have not been defined and are not necessary because they are not used a second time.

Additionally it is not clearly defined what multi-layer coding is.

Suggested Remedy

Replace the sentence in parenthesis starting on page 528, line 37 by something like:
". The existence of multiple FEC blocks at the input of the MIMO encoder can be caused by either using horizontal encoding in at least one MIMO layer or by using vertical encoding in several MIMO layers or by using a combination of vertical and horizontal encoding in several MIMO layers at the transmit side. Using multiple MIMO layers is called multi-layer encoding."

Additionally add a definition of multi-layer encoding in section 3.

GroupResolution   **Decision of Group:**   **Accepted-Modified**

Remedy #1. line 30-40, page 528, modify sentence as follows;

For SU-MIMO, only one user is scheduled in one Resource Unit (RU), and only one <u>channel coding</u><s>FEC</s> block exists at the input of the MIMO encoder (vertical MIMO encoding at transmit side).
For MU-MIMO, multiple users can be scheduled in one RU, and multiple <u>channel coding</u><s>FEC</s> blocks exist at the input of the MIMO encoder <s>(horizontal MIMO encoding or combination of vertical and horizontal MIMO encoding at transmit side, which is called multi-layer encoding)</s>. <u>The existence of multiple channel coding blocks at the input of the MIMO encoder can be caused by either using horizontal encoding or by using vertical encoding in several MIMO layers or by using a combination of vertical and horizontal encoding in several MIMO layers at the transmit side. Using multiple MIMO layers is called multi-layer encoding.</u>

Remedy #2. line 30-31, page 662, modify sentence as follows;

For SU-MIMO and collaborative spatial multiplexing (MU-MIMO), only one <u>channel coding</u><s>FEC</s> block exists in the allocated RU (vertical MIMO encoding at transmit side).

Remedy #3. line 11-16, page 5, modify sentence as follows;

3.114 horizontal encoding: Indicates transmitting multiple <s>separately FEC-encoded</s> <u>MIMO</u> layers over multiple antennas. The number of

~~encoded~~ MIMO layers ~~may be~~ is more than 1. The number of MIMO stream is same as the number of MIMO layer in this case.

3.115 vertical encoding: Indicates transmitting a single ~~FEC-encoded~~ MIMO layer over multiple antennas. The number of ~~encoded~~ MIMO layers is always 1.

3.xxx multi-layer encoding: Indicates transmitting multiple MIMO layers over multiple antennas. The number of MIMO layers is more than 1. The number of MIMO stream can be different from the number of MIMO layer in this case.

Reason for Group's Decision/Resolution

Group's Notes
AAI: PHY Downlink MIMO

Editor's Notes	**Editor's Actions**	a) done

PHY Downlink MIMO Remedy 1, 2 done by Lei (remedy 3 needs to be done by Ron)
Done (Ron)

Comment by:	Joerg Schaepperle		**Membership Status:** Member		**Date:** 3/5/2010

Comment # A0706   **Document under Review: P802.16m/D4**   **Ballot ID: LB31**

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☐   **Page** 529   **Line** 11   **Fig/Table#**   **Subclause** 16,3,7,1,1

The sentence starting on page 529 at line 11"One AMS shall have at most one MIMO layer." doesn't fit into the downlink section because a MIMO layer is defined as an input to the MIMO encoder and therefore an AMS has no MIMO layer in the downlink. Additionally it is supposed that by definition of the term "MIMO layer" at most one MIMO layer shall be assigned to one AMS.

Suggested Remedy

Remove the sentence "One AMS shall have at most one MIMO layer." and replace it by a proper definition of MIMO layer as proposed in another comment.

GroupResolution   **Decision of Group: Accepted-Modified**

Resolved by comment #708.

Resolution:
Remedy #1. Insert the following sentence in line 26, page 528;

The MIMO encoder block maps L MIMO layers (L >= 1) onto Mt MIMO streams (Mt>=L), which are fed to the Precoder block. MIMO layer is an information path fed to the MIMO encoder as an input. A MIMO layer represents one channel coding block. For the spatial multiplexing modes in SU-MIMO, "rank" is defined as the number of MIMO streams to be used for the user allocated to the Resource Unit (RU).

Remedy #2. line 6, page 5, modify MIMO layer definition as follows;

3.112 MIMO layer: An information path fed to the MIMO encoder as an input. A MIMO layer represents one channel coding block.

Reason for Group's Decision/Resolution

Group's Notes
AAI: PHY Downlink MIMO

Editor's Notes   **Editor's Actions**   b) none needed

Comment by: Joerg Schaepperle   **Membership Status:**   Member   **Date:** 3/5/2010

Comment # **A0708**   **Document under Review:** **P802.16m/D4**   **Ballot ID:** **LB31**

Comment   **Type** Technical   **Part of Dis** ⊠ **Satisfied** ☐   **Page** 530   **Line** 39   **Fig/Table#**   **Subclause** 16,3,7,1,1,2

It is not clear what "belong to the same MIMO layer" means, because MIMO layer is not properly defined. Definition 3.112 on page 5 says A MIMO layer is "An information path fed to the MIMO encoder as an input".
But "information path" is not defined and in definition 3.113 also used for MIMO streams. The part "fed to the MIMO encoder as an input" is not sufficient to define MIMO layer. From the context one can suspect that a MIMO layer is the input to the MIMO encoder related to a single user, but this should be said explicitly. (If this is true I'm wondering why it is called "MIMO layer". But that's another question.)

The same problem exists in section 16.3.7.1.1.3 in the sentence starting on page 530 at line 59.

Suggested Remedy

Add a definition of MIMO layer to section 16.3.7.1 saying e.g. that a "MIMO layer is all the input to the MIMO encoder destined to a single user (AMS)".

Additionally modify the definition 3.112 on page 5 accordingly.

GroupResolution   **Decision of Group:**   **Accepted-Modified**

Remedy #1. Insert the following sentence in line 26, page 528;

The MIMO encoder block maps L MIMO layers (L >= 1) onto Mt MIMO streams (Mt>=L), which are fed to the Precoder block. MIMO layer is an information path fed to the MIMO encoder as an input. A MIMO layer represents one channel coding block. For the spatial multiplexing modes in SU-MIMO, "rank" is defined as the number of MIMO streams to be used for the user allocated to the Resource Unit (RU).

Remedy #2. line 6, page 5, modify MIMO layer definition as follows;

3.112 MIMO layer: An information path fed to the MIMO encoder as an input. A MIMO layer represents one channel coding block.

Reason for Group's Decision/Resolution

Group's Notes
AAI: PHY Downlink MIMO

Editor's Notes   **Editor's Actions**   a) done

Remedy 1 done by Lei (remedy 2 needs to be done by Ron)
Done (Ron)

2010/10/14   **802.16-10/0018r6**

Comment by:	Joerg Schaepperle	**Membership Status:** Member	**Date:** 3/5/2010

Comment # A0788   **Document under Review:** P802.16m/D4   **Ballot ID:** LB31

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☒   **Page** 661   **Line** 8   **Fig/Table#** Fig.   **Subclause** 16,3,10,1

The figure shows several MIMO layers, but there is only one MIMO layer in UL.

Suggested Remedy

Replace figure 575 by one showing only one MIMO layer. Replace in the figure "MIMO layers" by "MIMO layer".

GroupResolution   **Decision of Group:**   **Accepted**

Replace figure 575 by one showing only one MIMO layer. Replace in the figure "MIMO layers" by "MIMO layer".

Note: Remove material to only have one arrow going in to the MIMO encoder block.

Reason for Group's Decision/Resolution

Group's Notes
AAI: PHY Uplink MIMO transmission schemes

Editor's Notes   **Editor's Actions**   a) done

Comment by:	Joerg Schaepperle	**Membership Status:** Member	**Date:** 3/5/2010

Comment # A0791   **Document under Review:** P802.16m/D4   **Ballot ID:** LB31

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☒   **Page** 662   **Line** 48   **Fig/Table#**   **Subclause** 16,3,10,1,1

Th sentence "The uplink MIMO encoder is identical to the downlink MIMO encoder described in 16.3.7.1.1." is not completely true. The downlink MIMO encoder supports multi-layer encoding as described in 16.3.7.1.1.3 but the uplink MIMO encoder doesn't.

Suggested Remedy

Replace
   "The uplink MIMO encoder is identical to the downlink MIMO encoder described in 16.3.7.1.1."
by
   "The uplink MIMO encoder is identical to the downlink MIMO encoder described in 16.3.7.1.1 but with only a
   single MIMO layer (L=1), i.e. it doesn't support multi-layer encoding as described in subclause 16.3.7.1.1.3."

GroupResolution   **Decision of Group:** **Accepted-Modified**

The uplink MIMO encoder is identical to the downlink MIMO encoder described in 16.3.7.1.1 but with only a single MIMO layer (L=1)

Reason for Group's Decision/Resolution

Group's Notes

AAI: PHY Uplink MIMO transmission schemes

Editor's Notes   **Editor's Actions**   a) done

| Comment by: | Maximilian Riegel | Membership Status: | Member | Date: | 4/15/2010 |

Comment # B0004   **Document under Review:** IEEE P802.16m/D5   **Ballot ID:** LB31a

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☐   **Page** 11   **Line** 20   **Fig/Table#**   **Subclause** 5.2

"ABS and AMS shall use IP CS for all packet based protocols" is plain nonsense, as IP-CS is limited to IP protocol only and is not able to process any other packet based protocol.

Suggested Remedy

Remove sentence.

GroupResolution   **Decision of Group:**   **Rejected**

Reason for Group's Decision/Resolution

Deficiencies indicated by the commenter have been addressed by resolution of Comment #6 accepted in this meeting.

Group's Notes

General CS

Editor's Notes   **Editor's Actions**

| **Comment by:** | Maximilian Riegel | **Membership Status:** | Member | **Date:** | 4/15/2010 |

Comment # **B0005**   **Document under Review:** **IEEE P802.16m/D5**   **Ballot ID:** **LB31a**

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☐   **Page** 11   **Line** 20   **Fig/Table#**   **Subclause** 5.2

There is no technical reason, why GPCS should not be used by AMS or ABS; for sake of backward compatibiltiy, the same convergence sublayers should be available in ABS and AMS like in BS and MS.

Suggested Remedy

Remove sentence.

GroupResolution   **Decision of Group:**   **Rejected**

Reason for Group's Decision/Resolution

GPCS does not have a standardized way of sharing the classifcation rules between the peers.
Legacy operations happen in Lzone, while 16m operations are happening in Mzone.
GPCS is not prohibited for use in the Lzone.

Group's Notes
General CS

Editor's Notes   **Editor's Actions**

Comment by: Maximilian Riegel   **Membership Status:**   Member   **Date:** 4/15/2010

Comment #   **B0007**   **Document under Review:**   **IEEE P802.16m/D5**   **Ballot ID:**   **LB31a**

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☐   **Page** 15   **Line** 30   **Fig/Table#**   **Subclause**   5.2.6

The section '5.2.6 Support for multiple protocols on the same flow' is incomplete and incorrect. The proposed method does not provide any benefit in addition to the existing CS specifications, but is much less efficient, as it wastes a byte for each packet transferred over the air. The GPCS provides exactly the same functionality in a correct and efficient way.

Suggested Remedy

Remove section 5.2.6 completely
Remove sentence in line 33/34 on page 11
Revert Figure 8 on page 11 to version in 802.16-2009

GroupResolution   **Decision of Group:**   **Rejected**

Reason for Group's Decision/Resolution

Vote:
In favor: 0
Opposed: 2
Abstain:

The resolution of comment B0006 addresses the deficencies identified by the commenter.

Group's Notes
General CS

Editor's Notes   **Editor's Actions**

| Comment by: | Scott Probasco | Membership Status: | Member | Date: | 4/30/2010 |

| Comment # | B0101 | | Document under Review: | IEEE P802.16m/D5 | Ballot ID: | LB31a |

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☐   **Page** 93   **Line** 1   **Fig/Table#** 688   **Subclause** 16.2.3.7

AAI_REG-REQ message definition is wrong.

Suggested Remedy

Delete contents of Table 688.

GroupResolution   **Decision of Group:**   **Rejected**

Reason for Group's Decision/Resolution

Due to another comment accepted earlier, the existing ASN.1 is currently informative, so we need to retain normative text describing this.

Group's Notes

AAI MAC Control Messages

Editor's Notes   **Editor's Actions**

Comment by: Scott   Probasco   **Membership Status:**   Member   **Date:** 4/30/2010

Comment # **B0108**   **Document under Review:** **IEEE P802.16m/D5**   **Ballot ID:** **LB31a**

Comment   **Type** Technical   **Part of Dis** ☒ **Satisfied** ☐   **Page** 100   **Line** 11   **Fig/Table#** 689   **Subclause** 16.2.3.8

AAI_REG-RSP message definition is wrong.

Suggested Remedy

Delete contents of table 689

GroupResolution   **Decision of Group:**   **Rejected**

Reason for Group's Decision/Resolution

Due to another comment accepted earlier, the existing ASN.1 is currently informative, so we need to retain normative text describing this.

Group's Notes

AAI MAC Control Messages

Editor's Notes   **Editor's Actions**