Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0016**   **Comment submitted by:** Richard   Pace   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 2   **Starting Line #** 16   **Fig/Table#**   **Section** 1.3.4

In Table 1, the options for the OFDMA PHY are understated. Several options should be added. For example, HARQ is not listed as a separate option but carries an alternate stack. There are a number of different FFT sizes but these are not listed. Also there a significant number of subtle options that should be discussed. For example, the alternate permutations for the Fully Used Subchannelization (FUSC) and Partially Used Subchannelization (PUSC) should be called out.

Suggested Remedy

Develop a more comprehensive options table or linkage to an additional table with more information.

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

(1) Add definitions of PUSC and FUSC to Clause 3.
(2) Add abbreviations PUSC and FUSC to Clause 4.

Reason for Group's Decision/Resolution

Originally rejected for lack of specific text, during comment resolution Roger Marks submitted a follow up comment to partially address this, which was accepted. The group noted that abbreviations and definitions for PUSC and FUSC can be found on page 500 of IEEE Std 802.16-2004 in the paragraph following Figure 218, but are more properly to be included in the sections identified by the editor.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0033**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 4   **Starting Line #**   **Fig/Table#**   **Section** 6.3.21.1

Several issues:

The reference model does not include an entitiy called the Paging Controller which is as it should be. Therefore no reference should be made to such an entity. Additionally the retention of information in the network after a MSS enters Idle mode is totally up to the configuration of the network. There is no need to negotiate it between MSS and BS. Additionally the parameters mentioned in the text are currently not allowed parameters for the DREG-REQ and DREG-CMD messages which again is the things should be.

Obviously there is a timer somewhere in the network (outside the scope of the air interface). Now the based on the information it receives in the DREG-CMD it wakes up to look for a message that there is something for it on its way. If the network is badly designed the information might not get to the MSS, but that is not an issue of the air interface.

On location updates: There is some empty text on Location Updates in this fuzzy section. If location updates are needed (which they should be) it would be dersirable that the protocol was clearly defined without any unecessary sugarcoated BS.

Suggested Remedy
Change lines 4-27 to :

 The MSS shall maintain an Idle Mode Timer to prompt MSS Idle Mode Location Update activity
and demonstrate MSS continued network presence
Idle Mode Timer and Idle Mode System Timer shall start on Serving BS transmission
of DREG-CMD directing MSS transition to Idle Mode. Idle Mode Timer and Idle Mode System
Timer shall reset on any successful MSS network Idle Mode Location Update. Upon expiry of the Idle Mode System
Timer the MSS shall delete any state information learned during operation.

Resolution of Group   **Decision of Group:** **Rejected**

Motion from the floor to create a definition for Paging controller and add to section 3:
"Paging Controller: the Serving BS or other network entity administering Idle Mode activity for the MSS"

Reason for Group's Decision/Resolution

The vote on the motion from the floor to add a Paging Controller definition failed: For - 1 Against - 9
While the group agrees that the Paging controller is not defined, the proposed remedy deletes too much other material to be considered acceptable.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0034**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 4   **Starting Line #** 1   **Fig/Table#**   **Section** 1.4.3.1

The current reference model does not support soft hand over. It is not clear where protocols are terminated, especially on the control plane and what happens in potential race conditions.

This comment does not contest or affirm the usefulness of the concept in the standard. The point is that the group should not introduce insufficiently defined features. If it is included it should be defined in a way that a) fits the reference model, b) offers the protocol to deal with new events that will occur as a result of this added feature.

Suggested Remedy

Delete everything that has to do with soft hand over or rewrite the reference model in such a way that is supports it witout breaking the legacy protocol.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter has not provided sufficient text to determine exactly what needs to be changed.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0077**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 9   **Starting Line #** 28   **Fig/Table#**   **Section** 3.6

The text added to the definition is confusing. The definition of the basic connection should not per definition be PHY specific.

Suggested Remedy

Delete the addition to the definition.

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

Delete the following text from P802.16e/D5:
3.6 basic connection: Connection that is established during mobile subscriber station (MSS) initial ranging
and used to transport delay-intolerant medium access control (MAC) management messages and MAC management messages that might
enable to maintain some session information depending on PHY.

Reason for Group's Decision/Resolution

In addition to the reason stated in the comment, changing SS to MSS in the first sentence prevents fixed subscriber stations from using the basic
management channel.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   Comment Date

Comment # **0080**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 9   **Starting Line #** 31   **Fig/Table#**   **Section** 3.41

The text added to the definition is confusing. The definition of the basic connection should not per definition be PHY specific.

Suggested Remedy

Delete the addition to the definition.

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

Remove the following text from 802.16e (reverting to the base document):
3.41 primary management connection: A connection that is established during initial mobile subscriber
station (MSS) ranging and used to transport delay-tolerant medium access control (MAC) management messages
and MAC management messages that might enable to maintain some session information not depending
on PHY.

Reason for Group's Decision/Resolution

In addition to the reason stated in the comment, changing SS to MSS in the first sentence prevents fixed subscriber stations from using the primary
management connection.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0089**   **Comment submitted by:** Lei   Wang   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 9   **Starting Line #** 61   **Fig/Table#**   **Section** 3.75

The description given in page 9, line 61 contradicts with the definition of "serving BS" on page 9, line 8, from which there is at most one serving BS for a MSS.

Suggested Remedy

Change "one of the serving BS ..." to "one of the active BS ...".

Resolution of Group   **Decision of Group:** **Accepted**

Change "one of the serving BS ..." to "one of the active BS ...".

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0105**   **Comment submitted by:** John   Barr   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 13   **Starting Line #** 1   **Fig/Table#**   **Section** 6

[Identical comment submitted by John Barr, Mark Cudak, Lester Eastwood, Colin Frank, Qiang Guo, Scott Migaldi, Nat Natarajan, Huaiyuan Wang.] The combination of wide channel bandwidths (up to 20 MHz or more) and practical constraints on the output power of portable, battery operated devices leads to severe link budget imbalance between the downlink and uplink. In addition, the economics of cellular deployments favor larger cell sizes (e.g. at least 2 km). As a result, the larger power-amp (PA) at the base station. allows the downlink to achieve much higher throughput rates than the uplink. In addition, the variety of data-rate enhancing techniques such as MIMO server to exacerbate this problem. Techniques to aid the uplink data-rate are need to support all possible cellular deployments. A solution enabling low-cost relays would prove useful in systems that don't employ AAS solutions for zoning or physical constraints without the additional cell planning burden that micro-cells require.

Suggested Remedy

Provide a solution to enable low-cost relays. Adopt the transparent relay in contribution IEEE C802.16e-04/417

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

There are several reasons for the rejection of this comment. They are enumerated below:
1) The magnitude of this problem has not been adequately quantified, so it is unclear if the complexity of this solution is justified.
2) The uplink delay due to relays may cause problems in H-ARQ operation.
3) This comment proposes a substantial change in air interface structure without adequate justification. The contribution is incomplete, glossing over issues of synchronization, UL frame re-transmission latency, and security to name only a few. Substantially more diligence needs to be done before the group should adopt such an enhancement. It may be better to add this as a feature in a future 'enhanced' mobility project.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0106**   **Comment submitted by:**   Richard   Pace   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 13   **Starting Line #** 1   **Fig/Table#**   **Section** 6

The combination of wide channel bandwidths up to 20 MHz or more and practical constraints on the output power of portable, battery operated devices leads to severe link budget imbalance between the downlink and uplink. Also, the economics of cellular deployments favor larger cell sizes, e.g. at least 2 km. As a result, the larger power-amp (PA) at the base station allows the downlink to achieve much higher throughput rates than the uplink. The variety of data-rate enhancing techniques such as MIMO further exacerbate this problem. Additional techniques to aid the uplink data-rate are required to support all possible cellular deployments. A solution enabling low-cost relays would prove useful in systems that don't employ AAS solutions for zoning or physical constraints without the additional cell planning burden that micro-cells require.

Suggested Remedy

Provide a solution to enable low-cost relays. Adopt the transparent relay in contribution IEEE C802.16e-04/417

Resolution of Group   **Decision of Group:** **Rejected-Duplicate**

This comment is identical to Comment #105 which was rejected.

Reason for Group's Decision/Resolution

Comment #105 was rejected for the following reasons, repeated below:

There are several reasons for the rejection of this comment. They are enumerated below:
1) The magnitude of this problem has not been adequately quantified, so it is unclear if the complexity of this solution is justified.
2) The uplink delay due to relays may cause problems in H-ARQ operation.
3) This comment proposes a substantial change in air interface structure without adequate justification. The contribution is incomplete, glossing over issues of synchronization, UL frame re-transmission latency, and security to name only a few. Substantially more diligence needs to be done before the group should adopt such an enhancement. It may be better to add this as a feature in a future 'enhanced' mobility project.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0107**   **Comment submitted by:** Richard   Pace   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 13   **Starting Line #** 1   **Fig/Table#**   **Section** 6.3.1

Several different prefixes are used to qualify the Connection ID (CID). For example, there are the Basic CID, Short Basic CID, the Primary CID, the Management CID, Secondary Management CID, Multicast CID and the reduced CID. The problems are: 1)The description of CID functions are scattered throughout the document, and 2) it is difficult to quickly discern the relevance and purpose of each CID. 3), it is unclear why so many different CID's are necessary and likely that several CIDs could be consolidated.

Suggested Remedy

Address the taxonomy of all CIDs in the introductory section on addressing in 6.3.1.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

While the commentor makes a valid point that the CID language could use some clean-up, the overall assertion that many of the CIDs presented in the document could be consolidated into fewer is unsupported. Which CIDs would the commenter suggest be combined? Which ones would the commenter suggest be eliminated?

The comment is rejected due to a lack of specific text.

Document under Review: **P802.16e/D5**		**Ballot Number:** **0000754**	**Comment Date**
Comment # **0125**	**Comment submitted by:** Mo-Han	Fong Member	2004-11-04
Comment Type Technical, Binding	**Starting Page #** 14 **Starting Line #**	**Fig/Table#** **Section**	6.3.2, 6.3.20

During fast BS switching, the old Anchor BS and the new Anchor BS need to communicate in order to identify the next information unit to transmit at the new Anchor BS. This backbone communication incurs delay and overhead. Therefore, a mechanism is required to avoid the need backbone communication during FBSS. Such mechanism will facilitate more implementation flexibility in the BS network.

Suggested   Remedy

Adopt the proposed text in contribution C802.16e-04/548 "Fast MSS-BS Data Flow Coordination for FBSS Support".

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

1. Accept the changes proposed in contribution IEEE C802.16e-04/548r2.

2. Incorporate the correct proposed text in contribution IEEE C802.16e-04/225r1 as follows:
[Section 6.3.2.3.51, page 88, add the following rows to Table 106j, after line 7:]

```
--------------------------------------------------------------------------------------------
| Service level prediction          | 8 bits |                                            |
--------------------------------------------------------------------------------------------
| HO_ID_included_indicator          | 1 bit   | To indicate if the field HO_IND is included |
--------------------------------------------------------------------------------------------
| If (HO_ID_included_indicator == 1) { |       |                                          |
--------------------------------------------------------------------------------------------
|    HO_ID                           | 8 bits | ID assigned for use in initial ranging to the |
|                                    |        |   target BS once this BS is selected as the  |
|                                    |        |   target BS                                  |
--------------------------------------------------------------------------------------------
| }                                  |        |                                            |
--------------------------------------------------------------------------------------------
```

[Section 6.3.2.3.51, page 92, add the following description after line 35 (i.e. after the 'New CID' description')]

HO_ID_included_indicator
    Indicates whether HO_ID is included or not in this message
HO_ID
    ID assigned for use in initial ranging to the target BS once this BS is selected as the target BS

[Section 6.3.20.4, page 139, changes on line 21-22:]

An MSS and a Target BS shall conduct Ranging per 6.3.9.5 to begin network entry/re-entry management message handshaking process except

an MSS may take advantage of a non-contention based MSS Initial Ranging opportunity if present. Non-contention based MSS Initial Ranging, as part of the MSS re-entry process, shall be considered the same as Invited Initial Ranging as defined in 6.3.9.5, except that the MSS RNG-REQ message will use the HO_ID, if HO_ID is assigned in MOB-BSHO-REQ or MOB-BSHO-RSP, or MSS MAC Address if HO_ID is not assigned in MOB-BSHO-REQ or MOB-BSHO-RSP instead of the Basic CID, which will not have been sent at the time of the RNG-REQ management message, and the Target BS shall return the MSS Basic CID and Primary CID in the RNG-RSP management message.

Reason for Group's Decision/Resolution

During comment resolution, updated contributions were submitted for consideration and accepted with the stated changes.

Document under Review: **P802.16e/D5**		**Ballot Number:** **0000754**	**Comment Date**
Comment # **0126**	**Comment submitted by:** Lei Wang	Member	2004-11-04

Comment	**Type** Technical, Binding	**Starting Page #** 14	**Starting Line #** 11	**Fig/Table#**	**Section**

1. The description of the modification on the MAC generic header shall be in the section 6.3.2.1.1, not before section 6.3.2.
2. Due to new MAC headers introduced in TGe, the first paragraph in section 6.3.2.1 shall be updated.

Suggested Remedy

1. move page 14, line 11 to line 15, that is, the section headings "6.3.2" and "6.3.2.1" , to page 13 line 13. and
2. insert the section heading "6.3.2.1.1. Generic MAC header" before line 14, page 13
3. insert the following text right after the section heading "6.3.2.1 MAC Header Formats:

6.3.2.1 MAC Header Formats

[modify the existing text in the first paragraph of Section 6.3.2.1 as shown below:]

~~Two~~ Five MAC header formats are defined. The first is the generic MAC header that begins each MAC PDU containing either MAC management messages or CS data. The second is the bandwidth request header used to request additional bandwidth. ~~The single-bit Header Type (HT) field distinguishes the generic MAC header and bandwidth request header formats. The HT field shall be set to zero for the Generic Header and to one for a bandwidth request header.~~ The third is the PHY channel report header used for the MSS to send a PHY channel report to the BS. The fouth is the Mode Selection Feedback header used for the MSS to provide its mode slection feedback. The fifth is the bandwidth request and UL TX power report header used for the MSS to send bandwidth request and UL Tx power report. The single-bit Header Type (HT) field distinguishes the generic MAC header and the rest of the header formats. The HT field shall be set to zero for the Generic Header and to one for other MAC headers.

Resolution of Group   **Decision of Group:** **Accepted**

1. move page 14, line 11 to line 15, that is, the section headings "6.3.2" and "6.3.2.1" , to page 13 line 13. and
2. insert the section heading "6.3.2.1.1. Generic MAC header" before line 14, page 13
3. insert the following text right after the section heading "6.3.2.1 MAC Header Formats:

6.3.2.1 MAC Header Formats

[modify the existing text in the first paragraph of Section 6.3.2.1 as shown below:]

~~Two~~ Five MAC header formats are defined. The first is the generic MAC header that begins each MAC PDU containing either MAC management messages or CS data. The second is the bandwidth request header used to request additional bandwidth. ~~The single-bit Header Type (HT) field distinguishes the generic MAC header and bandwidth request header formats. The HT field shall be set to zero for the Generic Header and to one for a bandwidth request header.~~ The third is the PHY channel report header used for the MSS to send a PHY channel report to the BS. The fouth is the Mode Selection Feedback header used for the MSS to provide its mode slection feedback. The fifth is the bandwidth request and UL TX

power report header used for the MSS to send bandwidth request and UL Tx power report. The single-bit Header Type (HT) field distinguishes the generic MAC header and the rest of the header formats. The HT field shall be set to zero for the Generic Header and to one for other MAC

headers.

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0128**   **Comment submitted by:** Jonathan   Labs   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 14   **Starting Line #** 16   **Fig/Table#**   **Section** 6.3.2.1

I believe there is a backward compatibility issue with respect to the MAC header formats. In P802.16-REVd/D5, p. 35, line 51 it states:

"Two MAC header formats are defined. The first is the generic MAC header that begins each MAC PDU
containing either MAC management messages or CS data. The second is the bandwidth request header used
to request additional bandwidth. The single-bit Header Type (HT) field distinguishes the generic MAC
header and bandwidth request header formats. The HT field shall be set to zero for the Generic Header and
to one for a bandwidth request header."

But in P802.16e/D5, three new additional MAC headers have been defined:
--Phy channel report header with HT = 1
--Mode selection feedback header with HT = 1
--BW request and UL Tx power report header with HT = 0

A fixed base station will use the HT field to determine if the MAC message is generic or a bandwidth request. It has no knowledge of the other
three types that a MSS might send. It seems to me that if a fixed BS receives, for example a Phy channel report header and tries to interpret the
message as a bandwidth request, unpredictable results will occur.

It seems to me the functionality of these special MAC headers (and it was not clear how the Phy channel report header and the BW request and UL
Tx power report header are to be used) should instead be put into MAC management messages and placed under Section 6.3.2.3.2. Or they
should be deleted all together (the Mode Selection Feedback functionality is already handled in a subheader and does not also need to have a
special MAC header).

Suggested Remedy
Delete Sections 6.3.2.1.3, 6.3.2.1.4, and 6.3.2.1.5.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution
The commenter is incorrect. There is no backward compatibility issue, therefore these changes are not required.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0133**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 15   **Starting Line #**   **Fig/Table#** 7a   **Section** 6.3.2.1.3

The UL-Headroom parameter is meaningless. The measurement of the parameter is not defined. What is the required accuracy?

Suggested Remedy

Make the bits reserved instead.
Alternatively define the measurement on the PHY layer. Define a PHY SAP and transport the result of the measurement to the MAC layer via an appropriate primitive!.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The headroom parameter is still needed and is defined in the current text. The commenter did not provide specific text for further clarifying the definition of the parameter.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0137**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 15   **Starting Line #** 12   **Fig/Table#** 7a   **Section** 6.3.2.1.3

The UL-TX-POWER field is totally meaningless as there is no definition of what that parameter means in real life. Where is it measured? What is the accuracy? And please don't even try to add explanatory text on how to do the measurement to the MAC section!

Suggested Remedy

Make the bits reserved instead.
Alternatively define the measurement on the PHY layer. Define a PHY SAP and transport the result of the measurement to the MAC layer via an appropriate primitive!.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The UL-TX-POWER field is still needed and is defined in the current text. The commenter did not provide specific text for further clarifying the definition of the parameter.
The method of measurement (where measured, etc.) can be either vendor specific or should be specified in a separate conformance document.

Document under Review:	**P802.16e/D5**		Ballot Number:	**0000754**		Comment Date
Comment #	**0140**	Comment submitted by:	Mo-Han	Fong	Member	2004-11-04
Comment	Type	Technical, Binding	Starting Page # 15	Starting Line # 32	Fig/Table#	Section 6.3.2.1.4

Enhance the Mode Selection Feedback header to achieve the following:

1) Since feedback types and feedback contents are increased due to new PHY techniques, such as close loop MIMO, this Mode Selection feedback header shall be modified to enable provide more feedback content.

2) When Mode Selection Feedback header is transmited on a dedicated UL channel or along with UL traffic, and at the same time, the feedback amount is small, the size of this header shall be reduced.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/537 "Enhanced MAC Feedback Header".

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

Accept the changes proposed in contribution IEEE C802.16e-04/537r2 "Enhanced MAC Feedback Header".

During comment resolution the following additional changes to comment #140 were adopted:

Accept the changes proposed in contribution IEEE C802.16e-05/041r2 - OPTION #2.

In addition, make the following text change:

Page 13, line 23-24: 'The fourth is the ~~mode selection~~ feedback header used for the MSS to provide its ~~mode selection~~ feedback.'

Page 258, line 43: 'For a MSS which supports the feedback method by using ~~Mode Selection~~ feedback header, …'.

Page 390, table 351a, line 28-29: '... for MSS to initiate <u>feedback on</u> ~~mode selection~~ feedback <u>header</u>.'

Page 405, Section 11.7.17:
    - replace 'mode selection feedback' by 'feedback' on the section title, the text on line 12
    - in the table, line 21-22, replace 'Mode Selection Feedback Header Supported' by 'Feedback header supported'

Page 403: remove section 11.7.11 since it is duplicate of 11.7.17.

Page 253, Section 8.4.5.3.19, line 60-61: 'This IE is used by the BS to allocate dedicated UL resource <u>to the MSS to transmit Feedback header</u> ~~for the purpose to obtain certain type of transfeedback from one or more MSS~~.'

Page 254, Line 55: 'The ~~D~~UL resource region is dedicated …'

Reason for Group's Decision/Resolution

During comment resolution, updated contributions were provided and accepted with modifications.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0146**   **Comment submitted by:** Lei   Wang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 15   **Starting Line #** 40   **Fig/Table#**   **Section** 6.3.2.1.4

The way of introducing the Mode Selection Feedback header is a bad idea. shall use the same way as introducing the PHY channel report header (section 6.3.2.1.3).

Suggested Remedy

1. on page 15, line 40, Figure 20b, change "EC=1(1) " to "EC=0(1)"
2. on page 15, line 40, Figure 20b, split the "Type (6)" field into two fields: "Type (3)" and "Rsv (3)"
3. on page 16, line 2, change "EC field is set to 1" to "EC field is set to 0"
4. on page 16, line 3, change "000000" to "100"

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

During comment resolution, the following modifications were accepted:

On page 18, line 14, append the following sentence at the end of the paragraph:
For the Min feedback header, the feedback type of 0b1111 shall not be used.

Prevent the use of type = 1111 in table 7b as follows, so that 0xFF will not appear:

[modify page 17, line 41]

```
-------------------------------------------------------------------
|  0b1000-0b1111-0 | Reserved for future use                   |
-------------------------------------------------------------------
|  0b1111            | Shall not be used                        |
-------------------------------------------------------------------
```

Reason for Group's Decision/Resolution

During comment resolution an alternate remedy was developed and accepted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0151**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 16   **Starting Line #** 23   **Fig/Table#**   **Section** 6.3.2.1.4

Table 296a is a inappropriate reference for the feedback content for two reasons. First, the feedback content is only four bits while the values in Table 296a are 6 bits. More signficantly, it appears that Figure 231c would be a more appropriating mapping.

Suggested Remedy

Reconcile field size and select Figure 231c as the reference

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

This comment is addressed by the resolution of Comment #140, which is repeated below:

Adopt the proposed text in contribution IEEE C802.16e-04/537r2 "Enhanced MAC Feedback Header".

During comment resolution the following additional changes to comment #140 were adopted:

Adopt the contribution IEEE C802.16e-05/041r2 - OPTION #2.

In addition, make following text change:

Page 13, line 23-24: 'The fourth is the ~~mode selection~~ feedback header used for the MSS to provide its ~~mode selection~~ feedback.'

Page 258, line 43: 'For a MSS which supports the feedback method by using ~~Mode Selection~~ feedback header, …'.

Page 390, table 351a, line 28-29: '... for MSS to initiate <u>feedback on</u> ~~mode selection~~ feedback <u>header</u>.'

Page 405, Section 11.7.17:
      - replace 'mode selection feedback' by 'feedback' on the section title, the text on line 12
      - in the table, line 21-22, replace 'Mode Selection Feedback Header Supported' by 'Feedback header supported'

Page 403: remove section 11.7.11 since it is duplicate of 11.7.17.

Page 253, Section 8.4.5.3.19, line 60-61: 'This IE is used by the BS to allocate dedicated UL resource <u>to the MSS to transmit Feedback header</u> ~~for the purpose to obtain certain type of transfeedback from one or more MSS~~.

Page 254, Line 55: 'The ~~D~~UL resource region is dedicated …'

Reason for Group's Decision/Resolution

This comment is covered by the adoption of contribution IEEE C802.16e-04/537r2 which defined the feedback type as 4 bits and a new table reference of 296d.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0153**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   Type   **Starting Page #** 16   **Starting Line #** 30   **Fig/Table#**   **Section** 6.3.2.1.5

The UL-Tx- power field is totally meaningless as there is no definition of what that parameter means in real life. Where is it measured? What is the accuracy? And please don't even try to add explanatory text on how to do the measurement to the MAC section!

Suggested Remedy

Delete 6.3.2.1.5

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

Although the suggested remedy is different, this comment is essentially a duplicate of Comment #137 which was rejected. Therefore the referenced table must remain.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0155**   **Comment submitted by:**   Lei   Wang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 16   **Starting Line #** 43   **Fig/Table#**   **Section** 6.3.2.1.5

wrong header type value for the bandwidth request and UL Tx power header

Suggested Remedy

1. page 16, line 41, Figure 20c, change "HT=0 (0)" to "HT=1 (1)"
2. page 16, line 41, Figure 20c, change "EC=0 (0)" to "EC=0 (1)"
3. page 17, line 4, insert "The HT filed is set to 1" before "The EC field ...."

Resolution of Group   **Decision of Group:** **Accepted**

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0165**   **Comment submitted by:** Mo-Han   Fong   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 18   **Starting Line #**   **Fig/Table#**   **Section** 6.3.2.3, 8.4.5

DL/UL-MAPs and their access need to be enhanced to
1) support a larger number IE types as current DIUC and UIUC are all occupied.
2) define MAPs and broadcast regions that only need to be processed by specific group of MSS, e.g. MSS in normal, sleep or idle modes. This will improve the power efficiency of MSS in Sleep and Idle modes.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/539 "Hierarchical MAP Structure".

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

Accept the changes proposed in contributions IEEE C802.16e-05/023r5 and C802.16e-05/038r1.

Reason for Group's Decision/Resolution

During comment resolution, other remedies which also addressed this issue were harmonized, proposed and adopted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0166**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 18   **Starting Line #**   **Fig/Table#**   **Section** 6.3.2.3, 8.4.5

Enhance the DL/UL-MAP to resolve the following problems:

1) Current DIUC and UIUC and extended ones have all been occupied. New IE types cannot be acommodated.

2) The current DL and UL MAPs have to be processed by all MSS regardless whether the MSS is in normal, sleep or idle modes. In addition, MSS has to processed all the IEs with broadcast CID and their corresponding DL burst allocation regardless whether the broadcast information is relevant to the MSS. This incurs undersirable processing overhead and power consumption for MSS in Idle mode and sleep mode.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/539 "Hierarchical MAP Structure".

Resolution of Group   **Decision of Group:** **Accepted-Duplicate**

This comment is the same as Comment #165, the resolution of which is repeated below:

Accept the changes proposed in contribution IEEE C802.16e-04/023r5 and C802.16e-05/038r1.

Reason for Group's Decision/Resolution

This comment is a duplicate of Comment #165

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0173**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 18   **Starting Line #** 32   **Fig/Table#**   **Section** 6.3.2.2.7

Table 340a is a wholy inappropriate reference. This table does not having anything to do with MIMO feedback

Suggested Remedy

Reconcile field size and select Figure 231c as the reference

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

Change table reference to 296a.

Reason for Group's Decision/Resolution

The table reference is incorrect. However, the field size is correct.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0179**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 19   **Starting Line #** 29   **Fig/Table#** 14a   **Section** 6.3.2.3

The table isn't up to date

Suggested Remedy

Change the table to reflect the messages defined in the spec

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

Update the table to reflect the removal of MS_PINGPONG_REPORT

Reason for Group's Decision/Resolution

This change updates the table.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0206**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 21   **Starting Line #** 51   **Fig/Table#**   **Section** 6.3.2.3.6

It would be nice to know what constitutes network re-entry in order to be able to meet the requirement on including the message parameters. A definition for what contitutes network re-entry is missing from the document.

Suggested Remedy

Provide a clear and unambiguous definition for network re-entry.

Resolution of Group   **Decision of Group:** **Accepted**

Add to definitions Section 3. :

3.xx R**e-entry** or **network re-entry**: MSS return to Normal Operation with a target BS that shares network affiliation with the MSS previous serving BS.

Reason for Group's Decision/Resolution

This change provides the requested definition.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0225**   **Comment submitted by:** John   Barr   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 22   **Starting Line #** 48   **Fig/Table#**   **Section** 6.3.2.3.7

[Identical comment submitted by John Barr, Mark Cudak, Lester Eastwood, Colin Frank, Qiang Guo, Scott Migaldi, Nat Natarajan, Huaiyuan Wang.] Successive interference cancellation (SIC) receivers providing significant performance gains when used in conjunction with MIMO transmission. Subscriber stations with this receiver design can provide a considerable system capacity gain provided that base station schedulers are aware of this capability. IA base station must adjust the modulation and coding rate assigned to take advantage of the superior performance. As a result, a SIC receiver capability should be included as part of a subscriber station profile and exchanged during the system registration process.

Suggested Remedy

Provide a SIC receiver capability as part of a subscriber stations capabilities. Adopt contribution number IEEE C802.16e-04/419

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

During comment resolution, the author of contribution IEEE C802.16e-04/419 withdrew the contribution. However the commenters did not withdraw this related comment, therefore the comment resolution group was forced to reject this comment for lack of a proposed remedy.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0226**   **Comment submitted by:**   Richard   Pace   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 22   **Starting Line #** 48   **Fig/Table#**   **Section** 6.3.2.3.7

Successive interference cancellation (SIC) receivers provide significant performance gains when used in conjunction with MIMO transmission. Subscriber stations (SS) with this receiver design can provide considerable system capacity gain provided that base station schedulers are aware of the SS's capability. A base station must adjust the modulation and coding rate assigned to take advantage of the superior performance. As a result, a SIC receiver capability should be included as part of the SS profile and exchanged during the system registration process.

Suggested Remedy

Provide a SIC receiver capability as part of a subscriber stations capabilities. Adopt contribution number IEEE C802.16e-04/419

Resolution of Group   **Decision of Group:** **Rejected-Duplicate**

Reason for Group's Decision/Resolution

This comment is identical to Comment #225 from John Barr, the resolution of which is repeated below:

During comment resolution, the author of contribution IEEE C802.16e-04/419 withdrew the contribution. However the commenters did not withdraw this related comment, therefore the comment resolution group was forced to reject this comment for lack of a proposed remedy.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0227**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 22   **Starting Line #** 51   **Fig/Table#**   **Section** 6.3.2.3.8

It is not clear when the requirement to include CID_update and SAID_update applies. First because the spec refers to some obscure 'available information' when in fact the text should state what needs to be there. Also 'normal operation' what does that mean? Merriam Webster gives the following defintion "normal : according with, constituting, or not deviating from a norm, rule, or principle b : conforming to a type, standard, or regular pattern". I would like to emphasize the 'conforming to a standard' part. I guess that the intent here is to indicate that the MSS isn't in Sleep Mode but I cannot be sure. BTW Sleep mode should be normal operation as would any opeation performed by a 802.16 conformant implementation. I say should becaus reading this document it is not clear that 'normal operation' is possible at all...

Suggested Remedy

Rename the 'Normal Operation ' state to 'Active' , 'Awake' or any other suitable name you can conceive and do a global replace.

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

Add definition to Section 3. :

3.xx **normal operation**: state of MSS connection to serving BS whereby MSS has completed network entry or re-entry and remains available for communication with the serving BS.

Reason for Group's Decision/Resolution

As we are creating the standard, we can assign language to have whatever meaning we choose. That being said, it is best to try to use commonly understood terms to avoid confusion. 'Normal Operation' had existed in the 'd' document (it has since been excised) to indicate that the SS had completed network entry and entered into 'Normal Operation' with its connected BS, thus becoming available to statefull MAC traffic only provided to SS that had successfully completed network entry. Of course, in fixed service it was anticipated that SS would be in constant communication with the BS; never having structured interruptions in service. We had been using it for similar state value: completed network entry/re-entry and was available to send and receive normal statefull MAC management messages consistent with the fixed SS model. Now we also have HO, Sleep, and Idle states. So we need to have some name for when the MSS is in a regular, constant state of communications with the serving BS, and 'Normal' seems as good as any. A good way to look at it is that we have 'Normal' Operation and three types of 'Interrupted' or 'Intermittent' Operation: HO, Sleep, and Idle.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0252**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 24   **Starting Line #** 10   **Fig/Table#** 37a   **Section**

The EAP Protocol attribute is undefined

Suggested Remedy

Define it or delete it.

Resolution of Group   **Decision of Group:** **Accepted**

Insert row into beginning of Table 368a with:
Type = 28, PKM Attribute = EAP Protocol
Adjust all of the other values in the table (increment), change the reserved values from "41-255" to "42-255".
Insert a new TLV "EAP Protocol" between 11.9.19 and 11.9.20.

Reason for Group's Decision/Resolution

The accepted text provides the requested EAP protocol attribute definition.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0257**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 24   **Starting Line #** 39   **Fig/Table#**   **Section** 6.3.2.3

EAP Establish-Key Request message is also suggested to be used by MSS when MK is cached or hand-overred. If MSS sends this message first, then Nonce should not be sent.

Suggested Remedy

See comment and address it accordingly.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter did not propose any specific remedy. During comment resolution, extensive discussion took place on this and other security related issues, however, group consensus could not be reached on acceptable text. The commenter also did not provide sufficiently convincing justification for the suggested change.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0258**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 24   **Starting Line #** 41   **Fig/Table#**   **Section** 6.3.2.3.9.12

The message definitions is the wrong place to define protocol. Tying sending the EAP Establish Key to reception of a primitive is much better. Also I wonder about the naming of the message this really isn't an EAP message or is it? It shouldn't be as alla EAP messages are carried in EAP transfer messages.

Now if one reads this section and the following ones the picture of the 4 way hand shake looks like (omitting the EAP from message names):
Key Request
Key Reply
Establish Key
Key Reject

I don't know if this was the intention as this doesn't to me look like a very successful operation.

Suggested Remedy
Delete EAP from the message names.
Define the protocol for doing the 4-way handshake in section 7. MSCs, state machines etc. are helpful. Show the successful case and unsuccessful case. Show primitives from the authenticator and from the supplicant.
Get rid of statements like first second, third and final in the message descriptions in sections on the messages mentioned above.

Resolution of Group   **Decision of Group:** **Accepted-Modified**
Change "EAP Establish Key" to "EAP-Establish-Key"
Make similar changes for "EAP Key Request", "EAP Key Reply", "EAP Key Reject".

Reason for Group's Decision/Resolution
The handshake protocol is defined in 7.2.1.2.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0280**   **Comment submitted by:**   Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 29   **Starting Line #** 21   **Fig/Table#** 55a   **Section** 6.3.2.3.26

The editorial instruction is totally wrong. Not all changes are shown with revision marks. Also the proposed change breaks the fixed standard. A MSS is a SS but the reverse is not true.

Suggested Remedy

Fix the editorial instruction and the content of the table.

Resolution of Group   **Decision of Group:** **Accepted**

Accept the changes in contribution IEEE C802.16e-04/568.

Reason for Group's Decision/Resolution

The accepted contribution provides the requested editorial instruction changes.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0287**   **Comment submitted by:** Yong   Chang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 30   **Starting Line #**   **Fig/Table#**   **Section** 6.3.2.3.42

Current IEEE802.16e/D5 did not reflect main part of the previous comment #779 with C80216e-04_245r1.doc(idle mode harmonization contribution) that was accepted at the previous session #33.

Suggested Remedy

Reflect again the previously accepted comment #779 with C80216e-04_245r1.doc.

Missed parts are
6.3.2.3.42 at page 30 should contain "idle mode retain information" and whole section 6.3.21.9 for location and followings are missing and should be added after page 133.

Resolution of Group   **Decision of Group:** **Accepted**

In 6.3.2.3.42, page 29, line 56, modify as:
When the DREG-CMD message is sent with Action Code = 0x05, the following TLVs shall be included:

     Paging Information (see 11.14)
          The Paging Information TLV defines the Paging Group ID and the PAGING_CYCLE and PAGING OFFSET parameters to be used by the MSS in IDLE mode
     Paging Controller ID
          This is a logical network identifier for the Serving BS or other network entity retaining MSS service and operational information and/or administering paging activity for the MSS while in IDLE Mode. Paging Controller ID shall be set to BS ID when a BS is acting as Paging Controller
     Idle Mode Retain Information
          Idle Mode Retain Information is provided as part of this message is indicative only. Network Re-entry from Idle Mode process requirements may change at time of actual re-entry. For each Bit location, a value of '0' indicates the information for the associated re-entry management messages shall not be retained and managed, a value of '1' indicates the information for the associated re-entry management message shall be retained and managed.
          Bit #0: Retain MSS service and operational information associated with SBC-REQ/RSP MAC management messages
          Bit #1: Retain MSS service and operational information associated with PKM-REQ/RSP MAC management messages
          Bit #2: Retain MSS service and operational information associated with REG-REQ/RSP MAC management messages
          Bit #3: Retain MSS service and operational information associated with Network Address
          Bit #4: Retain MSS service and operational information associated with Time of Day
          Bit #5: Retain MSS service and operational information associated with TFTP MAC management messages
          Bit #6: Retain MSS service and operational information associated with Full service (MAC state machines, CS classifier information, etc…)

The DREG-CMD may include the following parameters encoded as TLV tuples:

REQ-duration
Waiting value for the DREG-REQ message re-transmission (measured in frames).If Serving BS includes REQ-duration in a message including an Action Code = 0x05, the MSS shall initiate an Idle Mode request through a DREG-REQ with Action Code = 0x01, request for MSS de-registration from Serving BS and initiation of MSS Idle Mode, at REQ-duration expiration.

Changes to 6.3.21.9:
n 6.3.21 MSS Idle Mode (optional), page 129, line 51, append new section 6.3.21.9 Location Update, and new section 6.3.21.10 Network Re-entry to end of section:

6.3.21.9 Location Update
Location Update is comprised of condition evaluation and update processing.

6.3.21.9.1 Location Update Conditions
An MSS in Idle mode shall perform a Location Update process operation if any Location Update condition is met. There are two location update evaluation conditions: Zone Update and Timer Update. MSS may also perform Location Update process at will.

6.3.21.9.1.1 Paging Group Update
The MSS shall perform Location Update process when the MSS detects a change in paging group. The MSS shall detect the change of paging group by monitoring the paging group identifier, PG_ID, which is transmitted by the Preferred BS in the MOB_PAG-ADV broadcast message during the Transmission Interval. If the PG_ID detected does not match the Paging Group to which the MSS belongs, or if the MSS fails to detect a MOB-PAG-ADV message at the appropriate interval, the MSS shall determine that paging group has changed.

6.3.21.9.1.2 Timer Update
The MSS shall periodically perform Location Update process prior to the expiration of the Idle Mode Timer. This mechanism enables the Paging Controller to ascertain an MSS in Idle Mode continued availability without requiring active intervention by the Paging Controller. If the Paging Controller ascertains that an MSS in Idle Mode is no longer available, the Paging Controller shall delete all information for the MSS and discontinue Idle Mode Paging Control for the MSS.

6.3.21.9.2 Location Update Process
If an MSS in Idle Mode determines or elects to update its location, depending on the security association the MSS shares with the Target BS, the MSS shall use one of two processes: Secure Location Update Process or Un-secure Location Update Process. For purposes of Location Update Process, the Target BS shall be the Preferred BS.

6.3.21.9.2.1 Secure Location Update Process
If the MSS shares a valid security context with the Target BS such that the MSS may include a valid HMAC Tuple in the RNG-REQ, then the MSS shall conduct initial ranging with the Target BS by sending a RNG-REQ including HO Indication, Location Update Request and Paging Controller ID TLVs and HMAC Tuple. If the Target BS evaluates the HMAC Tuple as valid and can supply a corresponding authenticating HMAC Tuple, then the Target BS shall reply with a RNG-RSP including the Location Update Response TLV and HMAC Tuple completing the Location Update Process. If Paging Group ID has changed, then Target BS shall include Paging Group ID TLV in the RNG-RSP. If the Target BS responds with a successful Location Update Response=0x01, Success of Location Update, the Target BS shall notify the Paging Controller via the backbone of the MSS new location information, the MSS shall assume the Paging Group ID of the Target BS, and the Paging Controller may send a backbone message to inform the BS at which the MSS entered Idle Mode that the MSS has transitioned to a different Paging Group. If the Target BS evaluates the HMAC Tuple as invalid or cannot supply a corresponding authenticating HMAC Tuple, then the Target BS shall instruct the MSS to continue network re-entry using the Un-Secure Location Update process by inclusion of Location Update Response TLV in

RNG-RSP with a value of 0x00= Failure of Location Update.

6.3.21.9.2.2 Un-secure Location Update Process
For MSS and Target BS that do not share current, valid security context, they shall process Location Update using the Network Re-Entry from Idle Mode method.

6.3.21.10 Network Re-Entry from Idle Mode
For the Network Re-Entry from Idle Mode method, the MSS shall initiate network re-entry with the Target BS by sending a RNG-REQ including HO Indication and Paging Controller ID TLVs.

If the MSS shares a valid security context with the Target BS such that the MSS may include a valid HMAC Tuple in the RNG-REQ, then the MSS shall conduct initial ranging with the Target BS by sending a RNG-REQ including HMAC Tuple.

If MSS RNG-REQ includes an HO Indication and Paging Controller ID TLVs, and Target BS had not previously received MSS information over the backbone, then Target BS may make an MSS information request of Paging Controller over the backbone network and Paging Controller may respond. Regardless of having received MSS information from Paging Controller, Target BS may request MSS information from another network management entity via the backbone network.

Network re-entry proceeds per 6.3.9.5 except as may be shortened by Target BS possession of MSS information obtained from Paging Controller or other network entity over the backbone network.

For the Target BS to notify an MSS seeking Network Re-entry from Idle Mode of re-entry process management messages that may be omitted during the current re-entry attempt due to the availability of MSS service and operational context information obtained over the backbone network, the Target BS shall place an HO Process Optimization TLV in the RNG-RSP indicating which re-entry management messages may be omitted. The Target BS shall not direct the omission of any re-entry process management messages that would compromise the security or integrity of Normal Operation of the communications as established through an unabridged Initial Entry.

If the Target BS evaluates a HMAC Tuple included in the RNG-REQ as valid and can supply a corresponding authenticating HMAC Tuple, then the Target BS may reply with a RNG-RSP including the valid HMAC Tuple. The Target BS shall not indicate through the HO Process Optimization TLV that the PKM-REQ/RSP management messages may be omitted in the current re-entry attempt without inclusion of a valid HMAC Tuple. If an MSS detects an invalid HMAC Tuple included as part of a RNG-RSP during Network Re-entry from Idle Mode, the MSS shall continue with network re-entry but shall process full PKM security re-keying regardless of HO Process Optimization TLV settings.

Regardless of the HO Process Optimization TLV settings, the Target BS may elect to use MSS service and operational information obtained over the backbone network to build and send unsolicited SBC-RSP and/or REG-RSP management messages to update MSS operational information, or to include 11.7 REG-RSP specific or 11.8 SBC-RSP specific message items as TLV items in the RNG-RSP. Target BS may ignore only the first corresponding REQ management message received if it sends an unsolicited SBC-RSP or unsolicited REG-RSP message. MSS is not required to send the complimentary REQ management message if it receives an unsolicited SBC-RSP or unsolicited REG-RSP management message prior to MSS attempt to send the corresponding REQ management message. Target BS re-entry unsolicited response management messages may be grouped into the same DL frame transmission and may be grouped into the same DL frame transmission with the RNG-RSP. However, unsolicited SBC-RSP and unsolicited REG-RSP may not be grouped together into the same DL frame transmission when the PKM-REQ/RSP management message process is required. The integrity of the 6.3.9.5 sequence process must be preserved.

For a security keying process that has not been determined to be omitted in the HO Process Optimization TLV settings, if MSS RNG-REQ includes HO Indication and Paging Controller ID TLVs, and Target BS has received a backbone message (see section Backbone network HO procedures) containing MSS information, MSS and Target BS shall use the embedded TLV PKM-REQ information and the re-authorization

process as defined in 7.2.

If MSS RNG-REQ includes HO Indication and Paging Controller ID TLVs, and Target BS has received a backbone message (see section Backbone network HO procedures) containing MSS information, the Target BS may use MSS service and operational information obtained over the backbone network to build and send a REG-RSP management message that includes Service Flow remapping information in New_CID, Old_CID and Connection_Info TLVs.

During network re-entry, the Target BS may notify the MSS, through the Bit#7 MSS DL data pending element of the HO Process Optimization TLV item in RNG-RSP, of post- network reentry MSS DL data pending. Upon MSS successful re-entry at Target BS, now new Serving BS, and new Serving BS completing reception of any network re-entry pending MSS DL data retained and forwarded, MSS may re-establish IP connectivity and new Serving BS may send a backbone message to request the old Serving BS or other network entity to stop forwarding pre-HO pending MSS DL data.

Network entry/re-entry process completes with establishment of Normal Operations.

The Target BS shall notify the Paging Controller via the backbone of MSS successful network re-entry and the Paging Controller may send a backbone message to inform the BS at which the MSS entered Idle Mode that the MSS has resumed Normal Operations at the new Serving BS.

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **0294**   **Comment submitted by:**   Richard   Pace   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 31   **Starting Line #** 4   **Fig/Table#**   **Section** 6.3.2.3.43.1

Several methods are defined for allocating resource for the IEEE 802.16 PHY in the OFDMA PHY.   For example, the DL_MAP, compressed DL_MAP, the HARQ_MAP and the AAS_MAP. An AAS_MAP is required to provide additional link margin when using adaptive antenna technology as a range extension technique. It is not clear why three alternate MAPs are defined to provide similar functionality. Commonality and duplication exist between the DL_MAP, compressed DL_MAP and HARQ_MAP: 1) all allocate resources in the adjacent subcarrier mode, fully utilized subcarrier mode and partially used subcarrier mode, 2) all allocate resources on the uplink and downlink, 3) all provision to support STC and MIMO. This duplication unecessarily fragments the specification and hinders interoperability. Most importantly, all three maps are very verbose raising the concern that significant system resources may be required to guarantee reliable distribution of the allocation IEs. The DL_MAPs functionality should be consolidated into a single format serving all needs but having reduced overhead.

Suggested Remedy

The functionality in the OFDMA DL_MAP, compressed DL_MAP and HARQ_MAP should be consolidated into a single comprehensive map having reduced overhead.

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

Accept the changes proposed by contributions IEEE C802.16e-04/023r5 and IEEE C802.16e-05/038r1.

Reason for Group's Decision/Resolution

This comment proposes consolidating the functionality in the OFDMA DL_MAP, compressed DL_MAP and HARQ_MAP into a single comprehensive map. During comment resolution, an extension to the normal MAP was made for H-ARQ for both MIMO and non-MIMO cases using the above referenced contributions, effectively creating a single consolidated MAP

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0303**   **Comment submitted by:** Yigal   Leiba   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 34   **Starting Line #** 24   **Fig/Table#** 94   **Section** 6.3.2.3.43.6.1

The H-ARQ mode = "Generic" is not backwards compatible with 802.16-2004, and will cause an H-ARQ supporting 802.16-2004 compliant MSS operate improperly

Suggested Remedy
Undo ALL the changes made to sections:
6.3.2.3.43.6.1
6.3.2.3.43.6.2
6.3.2.3.43.6.3
6.3.2.3.43.6.8
6.3.2.3.43.7.1
6.3.2.3.43.7.2
6.3.2.3.43.7.3
because of this lack of bacwards compatibility.
To retain the functionality, use this with an extended IUC in the mandatory maps, by applying the changes in contribution: C80216e-04/486

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

Accept the changes proposed in contributions IEEE C802.16e-04/23r5 and IEEE C802.16e-05/038r1.
Incorporate changes documented in contribution IEEE C802.16e-05/022r1 with the following changes:
8.4.5.4.x: "a UIUC value of ~~15~~11"
8.4.5.3.x: "~~15~~14"
8.4.5.3.1: ~~UIUC~~DIUC

Reason for Group's Decision/Resolution

This comment proposes changes to the H-ARQ MAP. During comment resolution, an extension to the normal MAP was made for H-ARQ for both MIMO and non-MIMO cases using the above referenced contributions.

The text in contribution IEEEE C802.16e-05/22r1, accepted during comment resolution, specifically addresses the backward compatibility issue raised by the commenter.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0315**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 38   **Starting Line #**   **Fig/Table#**   **Section** 6.3.2.1.2

This is comment on 16d that should be fixed in 16e. BW request header has no any authentication info attached. Thus, any a molicious MSS can send BW request header using CIDs assigned to any other MSSs. The UL operation of a 802.16 may be interfered

Suggested Remedy

Use the first DL-MAP as a Root MAP to point to additional DL/UL MAPs and resource allocation for initial network access. Use the first UL-MAP for resoruce allocation for the initial network access. All the additional MAP messages shall be encrypted. The creation and renewal of such a key is the same as that for MBS. This key is delivered to a MSS along with TEKs during authentication stage.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The supplied text is not suficient to fully describe the proposed change.   In addition, it would require a non-backward compatible change to the fixed operation defined in the base standard."

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0319**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 40   **Starting Line #** 30   **Fig/Table#**   **Section** 6.3.2.3.43.6.6.1

It is unclear how the TimeDiversity_MBS_DL-MAP_IE alloations interacts with the other allocations in the H-ARQ map because it uses a "Subchannel Offset" while all the other messages do not.

Suggested Remedy

This IE should either be clarified or removed.

Resolution of Group   **Decision of Group:** **Accepted**

Remove this IE from the amendment text

Reason for Group's Decision/Resolution

The TimeDiversity_MBS_DL-MAP_IE has been removed as a consequence of accepting Contribution IEEE C802.16e-04/442r3 and the deletion of section 6.3.2.3.43.6.6.1.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0320**   **Comment submitted by:** Yigal   Leiba   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 40   **Starting Line #** 55   **Fig/Table#**   **Section** 6.3.2.3.43.6.7

Not clear how a non-MIMO MSS, or an 802.16-2004 MSS are going to handle the MIMO portion of the H-ARQ MAP

Suggested Remedy

Either clarify how the compatibility (both backwards, and for non MIMO MSS) is maintained, or remove sections 6.3.2.3.43.6.7 and 6.3.2.3.43.7.8

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

Accept the changes proposed by contributions IEEE C802.16e-04/023r5 and C802.16e-05/038r1.

Reason for Group's Decision/Resolution

This comment proposes fixing the H-ARQ MAP. During comment resolution, an extension to the normal MAP was made for H-ARQ for both MIMO and non-MIMO cases using the above referenced contributions.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0327**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 42   **Starting Line #** 5   **Fig/Table#**   **Section** 6.3.2.3.43.6.7

The HARQ MAP supports MIMO allocation and STC allocations, however, there is no way to allocate spatial multiplexed users. It is impossible for two HARQ_MAP allocations to overlap in the time-frequency space due to the inherent cumulative nature of the HARQ_MAP assignments. To remedy this problem, a solution similar to that employed for MIMO HARQ can be used to enable spatial multiplexing.

Suggested Remedy

Adopt contribution number IEEE C802.16e-04/473

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

Accept the changes in contribution IEEE C802.16e-04/473r5

After the table, add the sentence: "The CQI control information and H-ARQ control information shall be provided by the preceding compact DL MAP IE."
For each Padding entry in the table, in the notes, define the padding to be "Shall be set to zero".

Accept the changes in contribution IEEE C802.16e-05/084r4.

Reason for Group's Decision/Resolution

This comment was initially rejected, however during comment resolution, the contribution cited in the suggested remedy was updated and ultimately accepted with modifications.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0331**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 42   **Starting Line #** 48   **Fig/Table#**   **Section** 6.3.2.3.43.6.7

In the Table 97a—MIMO Compact DL-MAP IE, the CQICH_Num field allows one to allocate 1 to 4 CQI channels. However, when uplink channel sounding techniques are employed in a TDD deployment no CQI channels are necessary. This message must be updated to allow for the case where zero CQI channels are allocated.

Suggested Remedy

In Table 97a, increase the field size fo the CQICH_Num field from 3 bits to 2 bits. Replace the note text , "Total number of CQICHs assigned to this MSS is (CQICH_Num +1)" with "Total number of CQICHs assigned"

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

Delete: "Total number of CQICHs assigned to this MSS is (CQICH_Num +1)"

Reason for Group's Decision/Resolution

This is a simpler remedy.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # 0333   **Comment submitted by:** Mo-Han   Fong   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 43   **Starting Line #**   **Fig/Table#**   **Section** 6.3.2.2.6

Current DL FAST_FEEDBACK allocation subheader can only poll upto 4 types of feedback. As the Phy and MIMO features are enhanced, more feedback types are required from the MSS.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/537 "Enhanced MAC Feedback Header".

Resolution of Group   **Decision of Group:** **Superceded**

Reason for Group's Decision/Resolution

The proposed remedy is identical to that in Comment #140.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0334**   **Comment submitted by:** Geng   Wu   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 43   **Starting Line #**   **Fig/Table#**   **Section** 6.3.2.2.6,

As the Phy and MIMO features are enhanced, more feedback are required from the MSS, including UL phy parameter, MIMO per-antenna feedback, AMC band CQI feedback etc. However, the current DL FAST_FEEDBACK subheader can only be used to poll 4 types of feedback.

Suggested Remedy

Enhance the polling mechanism by BS to enable additional feedback types, including UL phy parameters, MIMO antenna feedback, AMC band CQI feedback

Resolution of Group   **Decision of Group:** **Superceded**

This comment is superceded by the resolution of Comment #140, which is repeated below:

Adopt the proposed text in contribution IEEE C802.16e-04/537r2 "Enhanced MAC Feedback Header".

During comment resolution the following additional changes to comment #140 were adopted:

Adopt the contribution IEEE C802.16e-05/041r2 - OPTION #2.

In addition, make following text change:

Page 13, line 23-24: 'The fourth is the ~~mode selection~~ feedback header used for the MSS to provide its ~~mode selection~~ feedback.'

Page 258, line 43: 'For a MSS which supports the feedback method by using ~~Mode Selection~~ feedback header, …'.

Page 390, table 351a, line 28-29: '... for MSS to initiate <u>feedback on</u> ~~mode selection~~ feedback <u>header</u>.'

Page 405, Section 11.7.17:
    - replace 'mode selection feedback' by 'feedback' on the section title, the text on line 12
    - in the table, line 21-22, replace 'Mode Selection Feedback Header Supported' by 'Feedback header supported'

Page 403: remove section 11.7.11 since it is duplicate of 11.7.17.

Page 253, Section 8.4.5.3.19, line 60-61: 'This IE is used by the BS to allocate dedicated UL resource <u>to the MSS to transmit Feedback header</u> ~~for the purpose to obtain certain type of transfeedback from one or more MSS~~.'

Page 254, Line 55: 'The ~~D~~UL resource region is dedicated …'

Reason for Group's Decision/Resolution

The resolution of Comment #140 provides the requested enhanced feedback mechanism.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0338**   **Comment submitted by:** Yong   Chang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 44   **Starting Line #**   **Fig/Table#**   **Section** 6.3.2.3.43.6.9

Current IEEE802.16e/D5 did reflect the previous comment #1015 with C80216e-04_368.doc that was widthrawn at the previous session #33.

Suggested Remedy

Remove the section is 6.3.2.3.43.6.9 and 6.3.2.3.43.6.10 should be removed as whole.

Resolution of Group   **Decision of Group:** **Accepted**

Remove the section is 6.3.2.3.43.6.9 and 6.3.2.3.43.6.10 should be removed as whole.

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0343**   **Comment submitted by:** Yigal   Leiba   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 44   **Starting Line #** 9   **Fig/Table#**   **Section** 6.3.2.3.43.6.9

Two issues with this section:
1. Not clear what is it doing, and what benefit is gained by all this complexity
2. Not clear how is it bacwrds compatible to 802.16-2004

Suggested Remedy

Either provide a very convincing explanation as to the benefit and compatibilty, or delete sections 6.3.2.3.43.6.9 and 6.3.2.3.43.6.10.

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

An explanation has been provided as follows. . .

H-ARQ Compact MBS MAP IE is for MBS service only for MSS's supporting H-ARQ.
Like MBS MAP IE in DL_MAP, H-ARQ Comapct MBS MAP IE support single BS MBS and multi BS MBS.
And when usage of H-ARQ Compact MBS MAP IE will enhance coverage of MBS service with time diversity and macro diversity.
And it is marked that it is used only when there is MBS service for H-ARQ enabled MSS. Therefore, it does not invoke any compatibility problem.
The only remaining issue is that 6.3.2.3.43.6.4 is duplicated with 6.3.2.3.43.6.9, therefore 6.3.2.3.43.6.4 should be deleted.

Reason for Group's Decision/Resolution

The group has provided an explanation as requested by the commenter. The explanation is provided above. No changes are required to the document.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0349**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 44   **Starting Line #** 44   **Fig/Table#**   **Section** 6.3.2.3.43.6.9

Multi-frame transmission IE's in subclauses 6.3.2.3.43.6.9 and 6.3.2.3.43.6.10 are not defined sufficiently. No normative text describing the operation of the multi-frame transmission exists.

Suggested Remedy

A disccusion of multi-frame transmissions should be added to the specification or the IE's should be removed.

Resolution of Group   **Decision of Group:** **Superceded**

This comment is superceded by Comment #338

Reason for Group's Decision/Resolution

The commenter has provided no specific text, however, one of the suggested remedies is accomplished by the resolution of Comment #338 which removes these sections.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0355**   **Comment submitted by:** Jun   Li   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 47   **Starting Line #** 7   **Fig/Table#**   **Section** 6.3.2.3

The current DL/UL-MAP do not support HARQ. Also, the HARQ MAP does not effectively support other permutation except for AMC.

Suggested Remedy

Add the support of HARQ in DL/UL-MAPs

Resolution of Group   **Decision of Group:** **Superceded**

This comment has been superseded by the resolution of Comment #320, which is repeated below:

Accept the changes proposed by contributions IEEE C802.16e-04/023r5 and C802.16e-05/038r1.

Reason for Group's Decision/Resolution

This comment is superseded by the resolution of Comment #320, which incorporates the proposed remedy.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0384**   **Comment submitted by:** Itzik   Kitroser   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 56   **Starting Line #** 54   **Fig/Table#**   **Section** 6.3.2.3.44

The MOB-SLP-REQ requires that the HMAC field will be included in the message, but there is no appropriate container for this TLV within the message (i.e. no TLV field or specific HMAC field).

In other messages we have both HMAC specific field and a TLV field. This duality is redundant, since in such cases, the HMAC can be inserted as TLV, and we can specify that it must be used.

Suggested Remedy

Page 56, line 29 Table 106a:
Add the following entry to the end of the table:
Syntax   Size   Description
==============================
HMAC Tuple   21 bytes

On Page 56 delete line 55 (indication that HMAC is a TLV)

Page 58, line 20 Table 106b:
Add the following entry to the end of the table:
Syntax   Size   Description
==============================
HMAC Tuple   21 bytes

On Page 58 delete line 55 (indication that HMAC is a TLV)

Page 76, line 52, Table 106j
Delete the HMAC entry from the table
Page 77, Delete lines 8-11
Page 77, line 55:
Add the following text:

Resolution of Group   **Decision of Group:** **Accepted**

Make amendments below.

Page 56, line 29 Table 106a:
Add the following entry to the end of the table:
Syntax   Size   Description
==============================

HMAC Tuple   21 bytes

On Page 56 delete line 55 (indication that HMAC is a TLV)

Page 58, line 20 Table 106b:
Add the following entry to the end of the table:

Syntax	Size	Description
===	===	===
HMAC Tuple	21 bytes	

On Page 58 delete line 55 (indication that HMAC is a TLV)

Page 76, line 52, Table 106j
Delete the HMAC entry from the table
Page 77, Delete lines 8-11
Page 77, line 55:
Add the following text:

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0397**   **Comment submitted by:** Lei   Wang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 59   **Starting Line #** 23   **Fig/Table#**   **Section**

There is really no reason for having two different formats for the MOB_TRF-IND message. Any uneccessary duplicate stuff really hurts the quality of the standard.

I would suggest to remove the short CID format to start with. I would welcome any other suggestions/discussions on the same direction of having one format for this message.

Suggested Remedy

1. remove line 24 to line 30 on page 59;
2. remove line 13 to line 18 on page 60;
3. remove line 1 to line 23 on page 61.

Resolution of Group   **Decision of Group:** **Accepted**

1. remove line 24 to line 30 on page 59;
2. remove line 13 to line 18 on page 60;
3. remove line 1 to line 23 on page 61.

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0411**   **Comment submitted by:**   Mika   Kasslin   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 62   **Starting Line #** 31   **Fig/Table#**   **Section** 6.3.2.3.47

The neighbor advertisement message as described would be quite awful to decode and parse in a batter power terminal with all the possible information available one can imagine. Such a message doed not only mean a lot of management overhead but will really be quite power hungry to parse in a mobile.

Suggested Remedy

Simplify the message a lot. Please consider if it's really necessary to provide all the detailed service and resource information for every neighbor. Same applies to all the information currently in the message.

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

Accept the changes proposed in contribution IEEE C802.16e-04/438

Reason for Group's Decision/Resolution

Although the commenter provided no text, the referenced contribution, which was accepted under Comment #406, appears to address the commenter's concerns.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0424**   **Comment submitted by:** Ron   Murias   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 65   **Starting Line #**   **Fig/Table#**   **Section** 6.3.2.3.47

Several messages are not sufficiently defined for the OFDM PHY. An example is the Neighbor Advertisement message (MOB_NBR-ADV). Specifically the definition is missing from Page 65, line 57, Table 106e, and Table 106f.

Suggested Remedy

Modify the relevant definitions in Section 6.3.2.47 and other sections as required to include the OFDM PHY.

Resolution of Group   **Decision of Group:** **Accepted**

Reason for Group's Decision/Resolution

Comment #430, which accepted the changes proposed by contribution IEEE C802.16e-04/520, provides the suggested remedy.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0435**   **Comment submitted by:** Lei   Wang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 66   **Starting Line #** 32   **Fig/Table#**   **Section**

It is confusing to use "scheduling service supported =1111" to denote no info on service available. How about a BS supports all four service types?

Use "0000" is a natural choice.

Suggested Remedy
Change "1111" to "0000".

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

This comment was superseded by the resolution of Comment #420, the resolution of which is provided below:

Correct the text to read:
"Bitmap to indicate if BS supports a particular
scheduling service. '1' indicates support, '0'
indicates not support:
bit 0: Unsolicited Grant Service (UGS)
bit 1: Real-time Polling Service (rtPS)
bit 2: Non-real-time Polling service (nrtPS)
bit 3: Best Effort
value of '~~1111~~ 0000' indicates no
information on service available"

The same fix applies to page 66, line 27

Reason for Group's Decision/Resolution

This comment was superseded by the resolution of Comment #420

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0454**   **Comment submitted by:** Yong   Chang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 69   **Starting Line #** 49   **Fig/Table#**   **Section** 6.3.2.3.48

Current IEEE802.16e/D5 did not reflect the previous comment 685 with C802.16e-04/304(association harmonization contribution) that was accepted at the previous session #33.

Suggested Remedy

Reflect the previously accepted comment 685 with contribution IEEE C802.16e-04/304.

Resolution of Group   **Decision of Group:** **Accepted**

Comment 455 resolves this and is already applied.

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0462**   **Comment submitted by:** Yong   Chang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 71   **Starting Line #**   **Fig/Table#**   **Section** 6.3.2.3.51

Current IEEE802.16e/D5 did not reflect some part of the previous comment #700 with C80216e-04_332r2.doc that was accepted at the previous session #33.

Suggested Remedy

Reflect again the previously accepted comment #700 with C80216e-04_332r2.doc as followings:

Missed parts are as followings:

- Service level prediction is removed for this case:

6.3.2.3.51 BS HO Request (MOB_BSHO-REQ) message
Mode == 0b011 Ω
For(j=0;j<N_current_BSs;j++) {
Temp BS-ID
~~Service level prediction~~
}

Mode == 0b100
For(j=0;j<N_current_BSs;j++) {
Temp BS-ID
~~Service level prediction~~
}

- Service level prediction is added for this case:

6.3.2.3.51 BS HO Response (MOB_BSHO-RSP) message
Mode == 0b100
For(j=0;j<N_new_BSs;j++) {
Neighbor BS-ID
Temp BS-ID
<u>Service level prediction</u>

- The Table 131 of 6.3.20.2.6.2.1 Fast Anchor BS Selection Feedback Mechanism on page 123 is wrong.
  Re-draw this figure again as shown in C80216e-04_332r2.doc

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

Reflect again the previously accepted comment #700 with IEEE C802.16e-04/332r2 as followings:

Missed parts are as followings for page 71

- Service level prediction is removed for this case:

6.3.2.3.51 BS HO Request (MOB_BSHO-REQ) message
Mode == 0b011 Ω
For(j=0;j<N_current_BSs;j++) {
Temp BSID
~~Service level prediction~~
}

Mode == 0b100
For(j=0;j<N_current_BSs;j++) {
Temp BSID
~~Service level prediction~~
}

- Service level prediction is added for this case:

6.3.2.3.51 BS HO Response (MOB_BSHO-RSP) message
Mode == 0b100
For(j=0;j<N_new_BSs;j++) {
Neighbor BSID
Temp BSID
<u>Service level prediction</u>

- The Table 131 of 6.3.20.2.6.2.1 Fast Anchor BS Selection Feedback Mechanism on page 123 is wrong.
   Re-draw this figure again as shown in IEEE C802.16e-04/332r2.

Reason for Group's Decision/Resolution

Requested correction applied

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **0468**   **Comment submitted by:** Yong   Chang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 72   **Starting Line #**   **Fig/Table#**   **Section** 6.3.2.3.50

Current IEEE802.16e/D5 did not reflect the previous comment #991 with C80216e-04_353r2.doc that was accepted at the previous session #33.

At section 6.3.2.3.50(scan-report) at page 72, new parameter "comp_NBR_BS_ID_IND" and related thing should be added
At section 6.3.2.3.52 page 78(MSSHO-REQ), new parameter also should be added.

Suggested Remedy

Reflect the previously accepted comment #991 with C80216e-04_353r2.doc.

Resolution of Group   **Decision of Group:** **Accepted**

At section 6.3.2.3.50(scan-report) at page 72, new parameter "comp_NBR_BS_ID_IND" and related thing should be added
At section 6.3.2.3.52 page 78(MSSHO-REQ), new parameter also should be added.

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0561**   **Comment submitted by:** Phillip   Barber   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 89   **Starting Line #** 62   **Fig/Table#**   **Section** 6.3.2.3.57

PMC_REQ & RSP are PHY specific for OFDMA PHY but do not show that constraint in the section, section inappropriately indicate as mandatory features for all PHYs; need to clarify that requirement is PHY specific

Paragraph is confusing and out of logical sequence. Needs re-write.

Suggested Remedy

In 6.3.2.3.57, page 89, line 62, modify as:

~~PMC_REQ is sent from SS to BS when BS wants to change uplink power control mode. SS's intention to change the power control mode to the open loop or closed loop power control can be made by this message. PMC _RSP from the BS confirms the power control mode change and the corresponding power control scheme shall be applied after the PMC_RSP. SS shall change the uplink power control mode when the unsolicited PMC_RSP from BS is received. The closed and open loop power control scheme is described in 8.4.10.3.~~

For OFDMA PHY mode only, PMC_REQ is used by the SS to change the uplink power control mode to/from open loop to/from closed loop. The SS shall transmit PMC_REQ in response to receipt of an unsolicited PMC_RSP from the BS directing a change to uplink power control mode. Uplink closed and open loop power control schemes are described in 8.4.10.3.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

Although it is recognized that these messages are currently used only by OFDMA, the definitions of these messages are in the generic section of the document and are not necessarily PHY specific. The commenter's proposed text change is also incomplete.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0563**   **Comment submitted by:** Phillip   Barber   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 90   **Starting Line #** 49   **Fig/Table#**   **Section** 6.3.2.3.58

PMC_REQ & RSP are PHY specific for OFDMA PHY but do not show that constraint in the section, section inappropriately indicate as mandatory features for all PHYs; need to clarify that requirement is PHY specific

Suggested Remedy

In 6.3.2.3.58, page 90, line 49, modify as:

For OFDMA PHY mode only, PMC_RSP is sent from BS as a confirmation of SS's uplink power control change intention with PMC_REQ message or it is sent unsolicited manner to command SS to change the uplink power control mode as indicated in the PMC_RSP. When the open loop power control is indicated, OffsetperSS is included. When the closed loop power control is indicated, power adjust can be signaled. BS may allocate the CQICH or update the CQICH allocation using PMC_RSP.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

Although it is recognized that these messages are currently used only by OFDMA, the definitions of these messages are in the generic section of the document and are not necessarily PHY specific. The commenter's proposed text change is also incomplete.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0569**   **Comment submitted by:** Lei   Wang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 93   **Starting Line #** 1   **Fig/Table#**   **Section**

The entire section 6.3.13 needs a re-organization and clarification due to multiple reasons:
1. the current text really mixed up the descriptions for two different types of multicast connections, i.e., single BS and multiple BS;
2. Comparing to the TGd section 6.3.13, the newly added text in TGe is really just for the MBS for multiple BS cases;
3. Support multicast and broadcast services in both single BS case and multiple BS case is optional.
4. The multi-BS-MBS must have a centralized server, multi-BS-MBS server.

Suggested Remedy

see contribution C80216e-04_461 for suggested changes.

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

Accept the changes proposed in harmonized contribution IEEE C802.16e-04/442r3. Contributions IEEE C802.16e-04/461, C802.16e-04/442, C802.16e-04/449, and C802.16e-04/450 are included in this harmonization.

Reason for Group's Decision/Resolution

During comment resolution, the proposed remedy was harmonized with additional contributions to create contribution IEEE C802.16e-04/442r3, which was accepted.

Document under Review: **P802.16e/D5**		**Ballot Number:** **0000754**	**Comment Date**
Comment # **0571**	**Comment submitted by:** Yigal	Eliaspur	Member	2004-11-04

Comment **Type** Technical, Binding	**Starting Page #** 93	**Starting Line #** 1	**Fig/Table#**	**Section** 6.3.5.2.5

UGS with Activity Detection for 802.16e

UGS has been defined in order to support real-time service flows that generate fixed size data packets on a periodic basis, for example E1/T1 or Voice Over IP (VoIP) without silence suppression. rtPS has been defined in order to support real-time service flows that generate variable bitrates and variable size data packets on an a-periodic basis, for example Compressed Video or VoIP with silence suppression.
However, rtPS Service Flows are not well suited for VoIP with silence suppression. First, the delay incurred by bandwidth requests is quite large (e.g. 20ms) and can exceed the delay budget assigned for an SS for VoIP Service Flows. Second, the bandwidth expended on unicast polling is quite large as polling for VoIP must be done very frequently, e.g. every 10ms, leading to 5-20kbps expended on bandwidth requests alone.
The proposal described here intends to alleviate these problems by defining a new scheduling mode called UGS-AD (UGS with Activity Detection). In essence, UGS-AD is a Service Flow that can switch from UGS scheduling mode to rtPS scheduling mode based on the SS Activity Detection mechanisms. This scheduling mode is well suited for VoIP with silence suppression and is optimized for exactly this pattern of traffic.

Suggested Remedy

Please adopt contribution no. C80216e-04_503.doc

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

During comment resolution, this comment was rejected in favor of Comment #566, which submitted harmonized contribution IEEE C802.16e-04/522r2, which was accepted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0573**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 93   **Starting Line #** 19   **Fig/Table#**   **Section** 6.3.13

The text "Multicast and broadcast service is defined as a kind of service that all MSSs successfully registered to the
specific multicast and broadcast content on the network level can receive on the cell the encrypted MAC
PDUs of the multicast and broadcast content that multiple BSs transmit anywhere under the given time
period." is incorrect.

First of all the MSS should not be registered with content. The MSS should only be registered with a BS. Some higher layer entitiy might have
subsribed to receive some content that is distributed over the 802.16 air interface. This should be reflected in the standards text.

Suggested Remedy

Fix the text to reflect the fact that MSS does not register with content.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The sentence is correct as is since it is simply the definition of the service. It does not impose any specific requirements on the lower layers of the
MS.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0588**   **Comment submitted by:** Jonathan   Labs   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 94   **Starting Line #** 59   **Fig/Table#**   **Section** 6.3.13.1.4

A mechanism for MBS support is needed for the OFDM PHY.

Suggested Remedy

1) On p. 92, line 24, insert the following:

6.3.7.5 Map relevance and synchronization

[Modify the second paragraph in Section 6.3.7.5 to:]

Information in the DL-MAP pertains to the current frame (the frame in which the message was received), unless the DL-MAP refers to bursts in an MBS zone. If the DL-MAP is specifying a burst in an MBS zone, then the map relevence may be for subsequent frames. Information carried in the UL-MAP pertains to a time interval starting at the Allocation Start Time measured from the beginning of the current frame and ending after the last specified allocation. This timing holds for both the TDD and FDD variants of operation. The TDD variant is shown in Figure 46 and Figure 47. The FDD variant is shown in Figure 48 and Figure 49.

2) On p. 95, change line 6 from:

"MBS zone may be associated with a CID for a multicast and broadcast service. Therefore, one BS may have multiple MBS zone identifiers. (see 8.4.5.3.10)"

to

"MBS zone may be associated with a CID for a multicast and broadcast service. Therefore, one BS may have multiple MBS zone identifiers. (see 8.3.6.2.10 for OFDM and 8.4.5.3.10 for OFDMA)"

3) On p. 158, line 53, modify the row to :

| Extended DIUC | 4 bits | 0x~~05~~07 .. 0x0F |

4) On p. 158, line 23, insert:

"8.3.6.2.10 Multicast and Broadcast Service MAP IE (MBS_MAP_IE) Format
In the DL-MAP a BS providing MBS (see 6.3.13.1) may transmit an extended IE with value of
0x06 to indicate that subsequent allocations are in an MBS zone.

Table 242c--MBS_MAP_IE Format

Syntax	Size	Comments
MBS_MAP_IE {		
Extended DIUC	4 bits	MBS_MAP = 0x06
Length	4 bits	Length = 0x1
MBS_ZONE	7 bits	MBS Zone identifier corresponds to the identifier provided by the BS at connection initiation
Macro diversity enhanced	1 bit	0 = Non Macro-Diversity enhanced zone 1 = Macro-Diversity enhanced zone
}		

Resolution of Group   **Decision of Group: Rejected**

Reason for Group's Decision/Resolution
The commenter's proposed remedy is only a partial solution for MBS for OFDM. Other areas, such as security, are not addressed.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0589**   **Comment submitted by:** Lei   Wang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 95   **Starting Line #** 14   **Fig/Table#**   **Section**

Global service class name is introduced in TGe to support the common definitions of service classes, which is required by mobile networks. So, the global service class name shall be supported.

Suggested Remedy

1. remove the sentence in line 14 page 95.
2. line 23 page 95, change "may" to "shall"

Resolution of Group   **Decision of Group:** **Accepted**

1. remove the sentence in line 14 page 95.
2. line 23 page 95, change "may" to "shall"

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0593**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 95   **Starting Line #** 21   **Fig/Table#**   **Section** 6.3.14.4.1

This scheme proposed in this section is not practical as it is impossible support in practice. It also allows setting up Global Service Flows that are impossible to deliver. E.g. Specifying a 1921000 b/s with a burst value of 1200 bits can be challenging.

Suggested Remedy

Delete section 6.3.14.4.1
Define a set of service classes that make sense.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter provided no specific text and the comment appears to be incorrect. For example, the stated 1921000 b/s traffic rate can have a maximum burst value of 1921000 bits, so one is not forced to use a burst value of 1200 bits. The rationale for the wide range of service classes is to accomodate a wide range of applications.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0595**   **Comment submitted by:** Lei   Wang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 95   **Starting Line #** 37   **Fig/Table#**   **Section**

The current global service class name encoding is very inefficient. We propose a new encoding scheme that reduces the global service class name size from 9 bytes to 4 bytes.

Suggested Remedy

see contribution C802.16e-04_460 for details.

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

Accept the changes proposed in contribution IEEE C802.16e-04/460r1.

Change 'Fixed-length versus variable-length SDU indicator' size from 6 bits to 1 bit.

Reason for Group's Decision/Resolution

During comment resolution, an updated contribution was provided and accepted with changes

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0619**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 98   **Starting Line #** 48   **Fig/Table#**   **Section** 6.3.17

The fundamental mistake was already done in 802.16-2004 but since most of the text is going to change we could correct the problem now.

The problem is that H-ARQ is not a MAC layer function. This is stated clearly on line 57. ' ... and an H-ARQ packet formed by adding a CRC to the PHY PDU' .

Suggested Remedy

Move the text on H-ARQ to the appropriate PHY section. Even better define a H-ARQ sublayer.
Also move 6.3.17.1

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

Although the comment has merit, the current text specifically states that "H-ARQ may be supported only for the OFDMA PHY" (See section 6.3.17, paragraph 1), therefore there is no technical error requiring a change in the draft.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0634**   **Comment submitted by:** José   Costa   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 102   **Starting Line #** 50   **Fig/Table#**   **Section** 6.3.19

Current Sleep Mode and Idle Mode do not support short data burst transmission. Unnecessary signaling overhead is incurred when the Mobile Station transitions back and forth between Idle/Sleep Mode and normal mode.

Suggested Remedy

Enhance sleep mode and idle mode to support short data burst transmission.

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

Resolution of comment # 636 provides the following resolution for sleep mode only:

A(1). Accept the changes in contribution IEEE C802.16e-04/459r2.

A.(2)
   Accept the changes in contribution IEEE C802.16e-05/28r2 with the following change:
   Change table 13b "Generic Downlink Sleep ~~Header~~Subheader"

B .
   [Page 19, line 44]: MOB_SLP-~~D~~ULC_Message_Format()
   [Page 20, line 36]: MOB_SLP-~~U~~DLC_Message_Format()
   [Page 20, line 7]: Encoded as ~~000~~101b
   [Page 21, line 4]: Encoded as ~~100~~000b

C .
   Modify the MOB_SLP-REQ message in Table 106a, as follows :
      1. Delete 'N_Sleep_CID' in the Table 106a, page 68, line 11.
      2. Move 'HMAC Tuple' from line 17 to line 21 before the last parenthesis.

   Remove N_Sleep_CID from table 106a, change the "For" loop on line 13 to replace "N_Sleep_CID" to "Number of Sleep CIDs"

D.
   1. Insert a new row,'Number_of_Classes', in tables 106a (line 21), and 106b (line 12), as follows:

      Syntax   Size   Notes

      MOB_SLP-RSP_Message_Format() {
         Management message type = 51   8 bits
         Number_of_Classes   8 bits   Number of Power Saving Classes
         for (i=0;i<Number_of_Classes;i++) {

E.
   [In 6.3.19.2 Power Saving Classes of type 1, page 124, line 51, add the text as follows.]

For definition and/or activation of one or several Power Saving Classes of Type 1 the MSS shall send MOB_SLP-REQ; the BS shall respond with an MOB-SLP_RSP message. The MSS may retransmit MOB-SLP-REQ message if it does not receive the MOB-SLP-RSP message within the T30 timer.

[In 6.3.19.3 Power Saving Classes of type 2, page 126, line 1, modify the text as follows.]

Power Saving Classes of this type are defined/activated/deactivated by MOB_SLPREQ/MOB_SLP-RSP transaction. The MSS may retransmit MOB-SLP-REQ message if it does not receive the MOB-SLP-RSP message within the T30 timer.

[In 6.3.19.4 Power Saving Classes of type 3, page 126, line 19, modify the text as follows.]

Power Saving Classes of this type are defined/activated by MOB_SLP-REQ/MOB_SLP-RSP transaction. The MSS may retransmit MOB-SLP-REQ message if it does not receive the MOB-SLP-RSP message within the T30 timer.

F.
    section 6.3.19.1 of C802.16e-04/459r2 , Figure NNN should be Figure 130a.
    section 6.3.20.2 , Figure 0a should be Figure 130b.
    section 6.3.20.2.1, Figure 0b should be Figure 130c.
    section 6.3.20.5, Figure 0c should be Figure 130d.
    section 6.3.20.5, Figure 0d should be Figure 130e.
    section 6.3.20.2.6.2.2, Table 131 looks more like a figure (Figure 130f) (and if not then it should be Table 131a).

Reason for Group's Decision/Resolution

The commenter did not provide any specific text for the group to review. However, comment #636, which addressed sleep mode only, provides a partial remedy to this comment.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0635**   **Comment submitted by:** Mo-Han   Fong   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 102   **Starting Line #** 50   **Fig/Table#**   **Section** 6.3.19

Current Sleep mode does not effectively support short data burst transmission. The MSS needs to wait until listening window before performing UL short data burst transmission, otherwise the MSS has to transition back to normal mode, which incurs unnecessary overhead. The BS cannot pre-schedule the MSS to wake up during sleep window to listen to DL short data burst transmission.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/538 "Support of Short Data Burst Transmission to/from an MSS in Sleep Mode or Idle Mode".

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

See the resolution of comments #634and #636..

Reason for Group's Decision/Resolution

During comment resolution, updated contributions addressing this issue were provided and accepted under comments # 634 and #636.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0637**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 102   **Starting Line #** 50   **Fig/Table#**   **Section** 6.3.19

Enhance Sleep mode to support short data burst transmission, targeted for short messaging type of services.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/538 "Support of Short Data Burst Transmission to/from an MSS in Sleep Mode or Idle Mode".

Resolution of Group   **Decision of Group:** **Superceded**

See the resolution of Comment #635, which refers to the resolution of Comment #634 and #636.

Reason for Group's Decision/Resolution

The suggested remedy is identical to that requested in Comment # 635, the resolution of which refers to the resolutions of Comment #634 and #636.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0659**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 104   **Starting Line #** 25   **Fig/Table#**   **Section** 6.3.19.1

Figures 130a- 130g. do not conform with ITU-T Z.100 so the statement in the text is incorrect.

Suggested Remedy

Rename figures. Refrain from refering to SDL in the text.

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

Remove Figures 130a - 130g per contribution IEEEE C802.16e-04/459r2

Reason for Group's Decision/Resolution

Figures 130a - 130g have been removed per contribution IEEE C802.16e-04/459r2. See comments #636 and #634.

Document under Review: **P802.16e/D5**　　　　　　**Ballot Number:** **0000754**　　　　　　　　**Comment Date**

Comment # **0662**　　　**Comment submitted by:** Lei　　　　Wang　　　　　　　　Member　　　2004-11-04

Comment　　　**Type** Technical, Binding　　　**Starting Page #** 105　　**Starting Line #** 29　　　**Fig/Table#**　　　**Section**

In both Figure 130a and Figure 130b, there are condition-checks based on "After-REQ-action". However, there is no spec about this paramter in the current TGe doc.

Suggested Remedy

either add the specification of the paramter "After-REQ-action" or remove all its occurence.

Resolution of Group　　　　　　**Decision of Group:** **Superceded**

Superseded by comments #634 and #636

Reason for Group's Decision/Resolution

Figures 130a - 130g have been removed per contribution IEEE C802.16e-04/459r2. See comments #636, and #634.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # 0675   **Comment submitted by:**   Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 111   **Starting Line #** 32   **Fig/Table#**   **Section** 6.3.19.2

Text is not in line with figure 130a

Suggested Remedy

Either change the figure to match the text or vice versa.

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

Remove Figures 130a - 130g per contribution IEEE C802.16e-04/459r2

Reason for Group's Decision/Resolution

 Figures 130a - 130g have been removed per contribution IEEE C802.16e-04/459r2. See comments #636 and #634.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0679**   **Comment submitted by:** Lei   Wang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 112   **Starting Line #** 13   **Fig/Table#**   **Section**

There is no reason that the 10-bit SPIDs have to be updated.

Suggested Remedy

remove all SPID update related text.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

During comment resolution, the Commenter requested rejection of this comment.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0682**   **Comment submitted by:** Yigal   Eliaspur   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 112   **Starting Line #** 25   **Fig/Table#**   **Section** 6.3.20

Handover thresholds

As the standards stands today it allows both the MSS and the BS to trigger Handover to a target BS.
The decision making of this move is consider implementation specific.
The problem with this trend is the potentially chaos caused by contradictory decisions of each network entity (MSS, BS) implementing different decision making algorithms.
The suggestion will be to add configurable thresholds (for example: CINR, EVM etc) to the MSS to be managed by the BS/Network side.

Suggested Remedy

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution
The commenter states a perceived problem but provided no suggested remedy.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # 0723   **Comment submitted by:** Lei   Wang   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 114   **Starting Line #** 55   **Fig/Table#**   **Section**

The SHO and FBSS were accepted by the group as an optional HO mechanism to TGe. However, it is not clearly specified in the current document.

Suggested Remedy

Replace the paragraph in line 55 page 114 by the follows:

In addition to the above HO procedures, there are two optional HO modes, SHO and FBSS. The SHO or FBSS capability can be enabled or disabled in the REG-REQ/RSP message exchange. With SHO or FBSS enabled, the MSS shall perform the following stages:

Resolution of Group   **Decision of Group:** **Accepted**

Replace the paragraph in line 55 page 114 by the follows:

In addition to the above HO procedures, there are two optional HO modes, SHO and FBSS. The SHO or FBSS capability can be enabled or disabled in the REG-REQ/RSP message exchange. With SHO or FBSS enabled, the MSS shall perform the following stages:

Reason for Group's Decision/Resolution

Document under Review:	**P802.16e/D5**		Ballot Number:	**0000754**		Comment Date
Comment #	**0802**	Comment submitted by:	Vladimir	Yanover	Member	2004-11-04
Comment	Type	Technical, Binding	Starting Page #	119	Starting Line #	57	Fig/Table#	Section	6.3.20.2.6

There are many ambiguous and incomsistent elements in specification of SHO and FBSS.
The following is a list of issues

1. There is a need in detailed specification of PHY scenarios for SHO/FBS [similar to "SHO Based Macro-Diversity Transmission Scenarios" in IEEE C802.16e-04/170r1]. For MAC operations there is a big difference between RF level combining, soft combining and selection diversity.

2. The assumption of SHO is that state machines of MAC [of specific connections] at all BSs from Active Set are tightly synchronized. At SHO two BSs must transmit SAME PHY BURST at DL that means concatenation of same MAC PDUs with same payloads, headers/subheaders, CIDs, BSNs. Can it be practically implemented other way than having a single MAC processor in which the whole burst payload is being built and then distributed to several BS transceivers? Obviously not all BSs will be implemented this way. It means that ability to participate in Active Set must be not an individual capability of BS but GROUP capability [group consists of BSs having "common MAC processor"]. So the standard needs a language to describe capability of this type. There must be a definition of process MSS follows to learn such group capability. Possible implementation: a "L1 combining group ID" might be assigned to relevant BSs so that if for two BSs "group IDs" are equal, they have "common MAC processor" and therefore may be a part of same Active Set.

3. All other topics of standard consider one MSS - one BS relationship. SHO/FBSS topic is the only one that considers one MSS - many BSs relationship. So there is a need in definition of "anchor BS -MSS", "non-anchor BS - MSS" etc. relationship. Operations [like "Anchor BS update"] must be described in these terms. See also #4.

4. It is not clear from tte text at which BS the MSS is registered while in SHO/FBSS state. According to the rest of definitions in 802.16-2004/802.16e, MSS is either registered at certain BS [then having specific connections associated with specific Service Flows, security context etc.] or it is not [and then there is no network data transfer between the MSS and the BS]. If the answer is that MSS in SHO/FBSS state is not registered to any BS then there are no authentication relationship and no MAC connections between BSs and MSS and therefore most of MAC definitions is not applicable.

5. There is a need in certain set of conditions (assumptions) for SHO/FBSS procedures to be applicable (like frame clock synch - see examples in original contribution #171r1).

6. Definitions of terms SHO and FBSS are absent (see contribution #171r1).
Why described "SHO" ["FBSS"] procedure is referred to as "handover"? MSS may stay registered at certain BS just using diversity combining of any sort. Seems more logical to redefine "SHO state" as e.g. "L1 combining with respect to Active Set X " [FBSS as "L2 combining"], both not necessarily related to any HO. Then handover of certain type will include a phase when the MSS is in "SHO" state.

7. Combining SHO and FBSS specs in same sections makes text too complicated

8. There are numerous locations where text appears incomplete. Examples:
A. "When operating in FBSS, the MSS only communicates with the Anchor BS for UL and DL unicast messages
and traffic. When operating in SHO, the MSS communicates with all BSs in the Active Set for UL and
DL unicast messages and traffic. " Questions: how broadcast (multicast) data is delivered? Does MSS in FBSS communicates only to Anchor BS?
[If yes, how is it different from regular communication MSS-BS?]
B. "The second method is the MSS monitors all the BSs in the Active Set for DL control information and DL broadcast messages". Question: does

it mean that all named messages [e.g.DL-MAP] must have same content when transmitted from different BSs? [impossible because of difference in BS ID]

Seems reasonable to stop here.

Above problems make impossible to understand the procedures related to SHO/FBSS. For example, how MSS transitions from state "registered at a single BS" to state "communicates simultaneously to several BSs" . So the whole concept of soft combining needs reconsideration

Suggested Remedy

Either modify text to fix mentioned problems or delete sections 6.3.20.2.6

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

During comment resolution the following remedies were adopted:

Remedy 1: In section 6.3.20.1.1.1 page 128.
Delete section 6.3.20.1.1.1 "Neighbor preference"
Change in Table 106d "Hand Off Neighbor Preference" field to reserved bits
Delete text at p. 80
"Handoff Neighbor Preference
Defines the logical preference for handing off to a neighbor base stations as determined by the
serving base station (see section 6.3.20.1.1.1)"

Remedy 2: Accept the changes proposed in contribution IEEE C802.16e-05/003r3.

Reason for Group's Decision/Resolution

The text was modified to conform with an updated contribution (IEEE C802.16e-05/003r3) provided by the commenter.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0827**   **Comment submitted by:** Lei   Wang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 123   **Starting Line #** 60   **Fig/Table#**   **Section**

In case that an MSS has detected a drop during network re-entry with a target BS, why does it has to go back to resume the communication with the servicing BS?

It definitely makes more sense to let the MSS continue on the network re-entry procedure with a target BS, instead of coming back to resume the commincation with the old servicing BS.

Suggested Remedy

Make the following changes:

When the MSS has detected a drop during network re-entry with a target BS, it shall ~~resume communication with the Serving BS by sending MOBHO-IND message with HO_IND type = 01 (HO cancel). If resuming communication fails with the Serving BS then the MSS shall~~ attempt network re-entry with its preferred Target BS as outlined in Section 6.3.20.4. If it fails with the network re-entry with its prefered Target BS, the MSS shall follow the network initial entry procedure to enter the network.

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

In 6.3.20.3, page 139, line 1, modify as:
When the MSS has detected a drop during network re-entry with a target BS, it shall ~~resume communication with the Serving BS by sending MOBHO-IND message with HO_IND type = 01 (HO cancel). If resuming communication fails with the Serving BS then the MSS shall~~ attempt network re-entry with its preferred Target BS as ~~outlined in Section 6.3.20.4~~ presented in MOB_BSHO-REQ or MOB_BSHO-RSP, and ~~which~~ may include resuming communication with the Serving BS by sending MOBHO-IND message with HO_IND type = 01 (HO cancel). If it fails with the network re-entry with its prefered Target BS, the MSS shall follow the network initial entry procedure to enter the network.

Reason for Group's Decision/Resolution

During comment resolution, the commenter proposed new text as a remedy. This text was accepted with the modifications as shown above.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0876**   **Comment submitted by:** Lei   Wang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 129 **Starting Line #** 50   **Fig/Table#**   **Section**

The specifications given in Section 6.3.21 on page 129 and section 6.3.2.3.55 on page 87 for the MSS idle mode/paging messsage are incomplete. There are many questions that have to be answered, e.g.,

How do the BS paging groups work? For an MSS in a paging-group, if there is DL traffic for that MSS, does every BS in the paging-group will have to include the MSS' MAC address hash in its MOB_PAG-ADV messages? If so (I believe it is), how does every BS know the exisistence of the DL traffic to that MSS?

In the MOB_PAG-ADV, there is no connection between the paging group ID and MSS MAC address hash, then, generating a quesiton, i.e., why to broadcast the paging group IDs?

Suggested Remedy

To complete the specfication for the idle mode /paging messaging, otherwise Remove it.

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

Accept the changes proposed in contribution IEEE C802.16e-05/065r1 (A DREG-ACK message for the safe IDLE mode Transition).
 Accept the changes proposed in contribution IEEE C802.16e-05/027r1

Reason for Group's Decision/Resolution

During comment resolution, the text in the above contributions completed the idle mode/paging specifications, satisfying the comment.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # 0878   **Comment submitted by:** Mo-Han   Fong   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 129   **Starting Line #** 51   **Fig/Table#**   **Section** 6.3.21

For Idle mode, the MSS has to transition back to normal mode in order to transmit or receive short data burst. The back and forth transition between Idle mode and normal mode incurs unnecessary overhead.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/538 "Support of Short Data Burst Transmission to/from an MSS in Sleep Mode or Idle Mode".

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

During comment resolution, the original commenter stated that this comment has been superceded in part by Comment #636 and for the remaining issue of idle mode, the original commenter proposed adopting IEEE C802.16e-04/538r1, which was then rejected in accordance with the request of the commenter, to permit harmonization with another contribution.

Document under Review: P802.16e/D5   **Ballot Number:** 0000754   **Comment Date**

Comment # 0879   **Comment submitted by:** Mo-Han   Fong   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 129   **Starting Line #** 51   **Fig/Table#**   **Section** 6.3.21

In the current text, with the presence of Paging Controller, MSS service and operational context can be retained while in Idle mode. With such capability, it is an unnecessary overhead incurred if 48-bit MAC ID has to be used by Idle MSS for network re-entry.

Suggested Remedy

Introduce an optional IdleID (e.g., 16 bits) for MSS in Idle Mode.

The serving BS can assign an IdleID to a MSS and include this IdleID in RNG-RSP message. This IdleID can be retained by Paging Controller. This IdleID then can replace MSS MAC address or hashed MAC address in relavent messages.

Resolution of Group   **Decision of Group:** Rejected

Reason for Group's Decision/Resolution

In the suggested remedy, the commenter described a conceptual approach but did not provide specific text to identify the changes would be required in the draft standard to implement the concept.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0881**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 129   **Starting Line #** 51   **Fig/Table#**   **Section** 6.3.21

Enhance Idle mode to support short data burst transmission, targeted for short messaging type of services.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/538 "Support of Short Data Burst Transmission to/from an MSS in Sleep Mode or Idle Mode".

Resolution of Group   **Decision of Group:** **Superceded**

See the resolution of comments #634and #636.

Reason for Group's Decision/Resolution

Althougth the suggested remedy is identical to that of Comment #637, the comment deals with idle mode, the partial resolution of which is contained in Comments #634 and #636.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0882**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 129   **Starting Line #** 60   **Fig/Table#**   **Section** 6.3.21

This is a standard, not marketing material!

Suggested Remedy

Delete lines 60-64

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The text in question is considered beneficial to the propoer understanding of idle mode.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0883**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 130   **Starting Line #** 1   **Fig/Table#**   **Section** 6.3.21

The text on BS paging groups is irrelevant to the MSS Idle Mode as the heading of 6.3.21 idle mode is local to the MSS. The text contains mostly speculation, and speculation should not be included in a standards document.

Suggested Remedy
 Delete text from lines 1 to 53.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The text in question is beneficial to the proper understanding of idle mode.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0894**   **Comment submitted by:** Mo-Han   Fong   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 131   **Starting Line #** 13   **Fig/Table#**   **Section** 6.3.21.1

Since both Idle Mode Timer and Idle Mode System Timer are of the same value, and also Idle Mode Timer is the interval that the MSS should perform location update, it is unclear how MSS and BS synchronize in terms of when to purge the retained MSS service and operational information.

Suggested Remedy

Clarify the text. Add a sentence at the end of the paragraph. The new sentence is:
"If the MSS intends to retain the MSS service and operational information, the MSS should avoid Idle Mode Timer and Idle Mode System Timer expiration, by performing location update operation sufficiently ahead of the time expiration of the Idle Mode Timer and Idle Mode System Timer.

Resolution of Group   **Decision of Group:** **Accepted**

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0908**   **Comment submitted by:**   Darwin   Engwer   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 135   **Starting Line #**   **Fig/Table#**   **Section** 7

2 paragraphs describing the sublayer need to be rewritten, for clarity and consistency, and to fix the terminology.

Suggested Remedy

Briefly, the section should be Security sublayer or something like that (Privacy is inappropriate here, as it was in 802.11, and thus modified to Confidentiality). Furthermore, the first sentence currently reads: Privacy provides subscribers with privacy ...

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

Accept the changes proposed in contribution IEEE C802.16e-05/024r1

Reason for Group's Decision/Resolution

Although the commenter provided no specific text, the accepted contribution fully addresses the commenter's concerns.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0909**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 135   **Starting Line #**   **Fig/Table#**   **Section** 7

Cryptographic transform should not be limited to apply on MPDUs only. There are many advantages to apply cryptographic transform on MSDUs also.

Suggested Remedy

See contribution C802.16e-04_485.doc

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This comment is out of scope of the P802.16e project because it would require a non-backward compatible change to the fixed operation defined in the base standard. In additon, ciphering per MSDU is not efficient for H/W based encryption.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0910**   **Comment submitted by:** Jeff   Mandin   Member   2004-11-04

Comment   Type Technical   **Starting Page #** 135   **Starting Line #**   **Fig/Table#**   **Section** 7

PKM-EAP text requires additional detail.

Suggested Remedy

Re-wordsmith the PKM-EAP text and add state machine descriptions/definitions.

Additionally, the handling of invalid first packet should be changed to be compatible with the Wi-bro definition.

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

Accept the changes proposed in contribution IEEE C802.16e-05/024r1

Reason for Group's Decision/Resolution

Although the commenter provided no specific text, during comment resolution, contribution IEEE 802.16e-05/24r1 was accepted under comments #919 and #965. This contribution addresses the commenter's concerns.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0915**   **Comment submitted by:**   Haixiang   He   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 135   **Starting Line #** 5   **Fig/Table#**   **Section** 7

The usage of "MPDUs" is limiting. An alternative way is to apply cryptographic transforms to MSDU.

Suggested Remedy

Change "MPDUs" to "packet data or traffic".

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This comment is essentially a duplicate of Comment #909, which was rejected for the following reasons:

This comment is out of scope of the 802.16e project because it would require a non-backward compatible change to the fixed operation defined in the base standard. In additon, ciphering per MSDU is not efficient for H/W based encryption.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0917**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 135   **Starting Line #** 14   **Fig/Table#**   **Section** 7

2 paragraphs describing the sublayer need to be rewritten, for clarity and consistency, and more importantly to fix the terminology.

Suggested Remedy

Briefly, the section should be Security sublayer or something like that (Privacy is inappropriate here, as it was in 802.11, and thus modified to Confidentiality). Furthermore, the first sentence currently reads: Privacy provides subscribers with privacy ...

Resolution of Group   **Decision of Group:** **Accepted-Duplicate**

Although the commenter provided no specific text, a remedy is provided in the resolution of Comment # 908.

Reason for Group's Decision/Resolution

This comment is identical to Comment #908

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0919**   **Comment submitted by:** Itzik   Kitroser   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 135   **Starting Line #** 17   **Fig/Table#**   **Section** 7

The entire concept of PKM v2 is implemented very poorly in the standard and seems to be both unclear (when looking on the editorials instructions of section 7) and not well integrated into the current security package

Suggested Remedy

Page 135,
Delete line 17 until line 23 on page 136.
Integrate PKM v2 as an additional security options within the current text.

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

Accept the changes proposed in contribution IEEE C802.16e-05/024r1

Reason for Group's Decision/Resolution

During comment resolution, contribution IEEE C802.16e-05/024r1 which partially addresses this comment was accepted. It does not address the removal of the editorial instructions at the beginning of section 7. The editorial changes in this comment were not adopted since they would require changes to the base standard, which is out of scope of the 802.16e project.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0922**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 137   **Starting Line #** 36   **Fig/Table#**   **Section** 7.1

The usage of "MAC PDU" is limiting.

Suggested Remedy

Change "MAC PDU" to "packet data".

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This comment is essentially a duplicate of Comments #909 and #915, which were rejected for the following reasons:

This comment is out of scope of the P802.16e project because it would require a non-backward compatible change to the fixed operation defined in the base standard. In additon, ciphering per MSDU is not efficient for H/W based encryption.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0934**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 138   **Starting Line #** 7   **Fig/Table#**   **Section** 7.1.1

The usage of "MAC PDU payload" is limiting.

Suggested Remedy

Change "MAC PDU payload" to "packet data".

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This comment is essentially a duplicate of Comments #909, #915 and #922, which were rejected for the following reasons:

This comment is out of scope of the P802.16e project because it would require a non-backward compatible change to the fixed operation defined in the base standard. In additon, ciphering per MSDU is not efficient for H/W based encryption.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0944**   **Comment submitted by:** Darwin   Engwer   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 140   **Starting Line #**   **Fig/Table#** Fig-1   **Section**

Q: Should the EAPlayers be right on top of the "EAP encapsulation" block in the bottom portion of the diagram

Suggested Remedy

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

The answer to the commenters question is "Yes".

Reason for Group's Decision/Resolution

The commenter simply asked a question and provided no suggested remedy, therefore no action is necessitated.

Document under Review: P802.16e/D5   **Ballot Number: 0000754**   **Comment Date**

Comment # 0958   **Comment submitted by:**   Jeff   Mandin   Member   2004-11-04

Comment   Type Technical   **Starting Page #** 141   **Starting Line #**   **Fig/Table#**   **Section** 7,2

PKMv2 does not supply a workable description of a security mechanism.

Suggested Remedy

Add missing functionality to PKMv2 (including key hierarchy and key exchange mechanisms) and add additional text so that its motivations and algorithms are clear.

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

Accept the changes proposed in contribution IEEE C802.16e-05/024r1

Reason for Group's Decision/Resolution

Although the commenter provided no specific text, during comment resolution, contribution IEEE 802.16e-05/24r1 was accepted under comments #919 and #965. This contribution addresses the commenter's concerns.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0964**   **Comment submitted by:** José   Costa   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 142   **Starting Line #** 51   **Fig/Table#**   **Section** 7.2.1.2

Steps 2 and 3 have no description, unless it is meant Steps 6 and 7 which may be mis-numbered. The EAP section is incomplete and in its current state it is very hard to follow.

Suggested Remedy

Provide more details in EAP section.

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

Accept the changes in contribution IEEE C802.16e-05/024r1 with the following modification:

Remove all of Remedy 5.

Reason for Group's Decision/Resolution

The commenter did not provide any specific text for the group to review. However, the commenters concern is addressed by the text in the accepted contribution.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0965**   **Comment submitted by:** Darwin   Engwer   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 142   **Starting Line #** 51   **Fig/Table#**   **Section** 7.2.1.2

Steps 2 and 3 have no description. The EAP section is incomplete. In its current state, it is very hard to follow.

Suggested Remedy

Provide more details in EAP section.

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

Accept the changes proposed in contribution IEEE C802.16e-05/024r1

Reason for Group's Decision/Resolution

Although the commenter provided no specific text, the adopted contribution fully addresses the commenter's concerns.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0969**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 143   **Starting Line #**   **Fig/Table#**   **Section** 7.2.1.2

There is no definition of sequence number of AK

Suggested Remedy

Please define Sequence number of a AK

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter did not provide any specific text.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0970**   **Comment submitted by:**   Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #**   143   **Starting Line #**   **Fig/Table#**   **Section** 7.2.1.2

"EAP-Failure" related steps are missing

Suggested Remedy

Please add steps upon EAP-Failure

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter did not provide any specific text.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **0978**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 143   **Starting Line #** 37   **Fig/Table#**   **Section** 7.2.1.2

Descriptions on how to use cached or handover-transferred MKs are not clear. Especially not clear in terms of 3-way handshakes. It looks like the first message is from MSS to BS using EAP-Establish-Key-Request, not from BS to MSS.

Suggested Remedy

More descriptons are required to complete the solution.

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

Reason for Group's Decision/Resolution

The commenter provided no specific text, however, during comment resolution, this issue was partially addressed by the acceptance of Remedy 3 of contribution IEEE C802.16e-05/024r1.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0979**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment Type Technical, Binding   **Starting Page #** 143   **Starting Line #** 37   **Fig/Table#**   **Section** 7.2.1.2

Text is not clear

Suggested Remedy

Please clarify what is the handover-transferred Master Key and the rule a BS and MSS keep EAP-Master-Key and MKID

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

Contribution 05/24r1 submitted during comment resolution addressed this comment in it's proposed Remedy 5, however, this remedy was not accepted due a lack of consensus.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0984**   **Comment submitted by:**   Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 145   **Starting Line #** 43   **Fig/Table#**   **Section** 7.5.4

Why we need 48-bit AK sequence number, which cause MAC overhead (PKMv1uses 4-bits of AK sequence number)

Suggested Remedy

Reduce the size to 16 or 24 bits to reduce MAC overhead

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The PAK/AK sequence number is actually 64 bits. This value is neccesary to insure adequate security.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0991**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 146   **Starting Line #** 21   **Fig/Table#**   **Section** 7.7

This sub-clause is not complete. I don't fully understand how pre-authentication is used. And there is no reference to Key Hierarchy

Suggested Remedy

More work is required to complete this sub-clause.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter did not propose any specific remedy. During comment resolution, extensive discussion took place on this and other security related issues, however, group consensus could not always be reached on acceptable text.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   Comment Date

Comment # **0994**   **Comment submitted by:** Jun   Li   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 146   **Starting Line #** 38   **Fig/Table#**   **Section** 7.7

[Identical comment submitted by Jun Li and Hang Zhang.]
The Key hierarchy Secition is refered. However, there is no a Section of Key Hierarchy

Suggested Remedy

Please either add the Section of Key Hierarchy or remove section 7.7

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

The Key Hierarchy section has been added as part of the resolution of Comment #913.

Reason for Group's Decision/Resolution

The Key Hierarchy section has been added as part of the resolution of Comment #913, the resolution of which is repeated below:

"Adopt the revised recommendations in IEEE C802.16e-04/217r1 and IEEE C802.16e-04/564".

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0995**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 146   **Starting Line #** 46   **Fig/Table#**   **Section** 7.8

I think this clause needs more work to describe the architecture of MBS to help people to understand the solution better.

Suggested Remedy

Please decribe the architecture of MBS in the standard.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter has provided no specific remedy text, however, during comment resolution, the MBS encryption algorithm was accepted under Comment #2152 which accepted the changes proposed in contribution IEEE C802.16e-05/047r1.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **0999**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 146   **Starting Line #** 52   **Fig/Table#**   **Section** 7.8.1.1

Suggested Remedy

It provides controlled access to authorized SSs by encrypting broadcast or multicast traffic sent from BSs to MSSs.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

It is not clear what the commenter is requesting or why.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1002**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 146   **Starting Line #** 59   **Fig/Table#**   **Section** 7.8.1.1

I don't understand "not bind to any MSS authorization state". I think MSS still needs to the primary network access authorization.

Suggested Remedy

Please explain and provide the descriptions in the standard.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter has provided no specific text, nor has the commenter provided sufficiently detailed information to understand the issue.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1006**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 147   **Starting Line #**   **Fig/Table#**   **Section** 7.8.1.2.1

I think the MAK establishment procedure is very much within the scope of the specification.

Suggested Remedy

Please describe MAK establishment.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter did not provide specific text.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1007**   **Comment submitted by:** Tal   Kaitz   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 147   **Starting Line #**   **Fig/Table#** 309   **Section** 8.4.6.1.2.2
[on behalf of Ran Yaniv]

There are several errors in the FUSC subcarrier allocation tables 309a-c and related text:

1) In table 309a-c - number of pilots in each set is wrong..

2) The number of used subcarriers in FUSC for FFT-512 and FFT-128 (tables 309c and 309d respectively) leads to an assymetric frequency spectrum (Nused including DC subcarrier is even).

3) FFT-512 and FFT-1024: some constant pilots overlap variable pilots when the 6-subcarrier shift is applied on the variable sets, leading to several subcarriers that are not allocated to pilots or data.

Suggested Remedy
Apply the following corrections:

1) Table 309a:
[Apply the following changes to existing table entries:]

VariabeSet #0   ~~12~~ **36**
ConstantSet #0   ~~2~~ **6**   39,~~330~~ **333**,351,645,~~726~~ **729**,850
VariabeSet #1   ~~12~~ **35**
ConstantSet #1   ~~2~~ **5**   261,~~342~~ **345**,~~522~~ **525**,651,848

2) Table 309b:
[Apply the following changes to existing table entries:]

Number of Guard Subcarriers, Left ~~43~~ **42**
Number of Used Subcarriers (Nused)   ~~426~~ **427**
VariabeSet #0   ~~6~~ **18**
ConstantSet #0   ~~1~~ **3**   39, ~~330~~ **333**, 351
VariabeSet #1   ~~6~~ **18**   12,36,60,84,108,132,156,180,204,228,252,276, 300,324,348,372,396, **420**
ConstantSet #1   ~~1~~ **3**   261,~~342~~ **345**, ~~420~~ **117**

3) Table 309c:
[Apply the following changes to existing table entries:]

Number of Guard Subcarriers, Left ~~11~~ **10**
Number of Used Subcarriers (Nused)   ~~106~~ **107**
VariabeSet #0   ~~2~~ **5**
ConstantSet #0   1   ~~N/A~~ **39**

VariabeSet #1   ~~2~~4
ConstantSet #1   ~~1~~0   N/A

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

This comment is superseded by Comment #1341, the resolution of which is repeated below

Accept the changes in contribution IEEE C802.16e-04/410r1

Reason for Group's Decision/Resolution

The accepted contribution makes corrections to the symbol structure in scalable OFDMA modes

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1008**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 147   **Starting Line #** 16   **Fig/Table#**   **Section** 7.8.1.2

This sub-clause needs to be completed.

Suggested Remedy

This sub-clause is an important clause to fully understand MBS. Please complete it.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter has provided no specific text. It is also noted that in the P802.16e/D5 draft, MBS Authorization Key Establishment is specifically stated to be beyond the scope of the P802.16e project.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1010**   **Comment submitted by:** James   Gilb   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 147   **Starting Line #** 25   **Fig/Table#**   **Section** 7.8.1.2.2

The cross refernces (See 7.x.x.x) are missing the subclause numbers.

Suggested Remedy

Provide the correct subclause numbers here and throughout the draft, e.g., search for x.x.

Resolution of Group   **Decision of Group:** **Accepted**

Provide the correct subclause numbers here and throughout the draft, e.g., search for x.x.

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1014**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 147   **Starting Line #** 35   **Fig/Table#**   **Section** 7.8.2.1

Please clarify whether AES-CTR mode is the only algorithm used in MBS service. If it is, reword the sub-clause. If it is not, please add a sentence to clarify.

Suggested Remedy

Please see comment.

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

Accept the changes in contribution IEEE C802.16e-05/047r1

Reason for Group's Decision/Resolution

During comment resolution, updated contribution IEEE C802.16e-05/047r1, which addresses this issue, was submitted for review and accepted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1023**   **Comment submitted by:** José   Costa   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 148   **Starting Line #** 19   **Fig/Table#**   **Section** 7.8.2.2

This sub-clause (7.8.2.2) seems to be out of order and its intent is not clear.

Suggested Remedy

This sub-clause should be re-written and placed in the appropriate clause.

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

This comment is similar to Comment # 964 from the same commenter. The resolution of Comment #964 is repeated below:

Accept the changes in contribution IEEE C802.16e-05/024r1 with the following modification:

Remove all of Remedy 5.

Reason for Group's Decision/Resolution

The commenter did not provide any specific text for the group to review. However, the commenter's concern is addressed by the text in the accepted contribution.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1024**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 148   **Starting Line #** 19   **Fig/Table#**   **Section** 7.8.2.2

This sub-clause is completely out of order and I don't understand the intention.

Suggested Remedy

Please rewrite this sub-clause and place it at the appropriate clause.

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

The resolution of this comment is the same as that of Comment # 964, which is repeated below:

Accept the changes in contribution IEEE C802.16e-05/024r1 with the following modification:

Remove all of Remedy 5.

Reason for Group's Decision/Resolution

This subclause is rewritten by contribution IEEE C802.16e-05/024r1, Remedy 6.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1031**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 150   **Starting Line #** 16   **Fig/Table#**   **Section** 7.9.1.1

It is not clear whether GKEK can be reused or not to protect GTEK. The text looks like to me that the GKEK cannot be re-used. Hence it is not efficient.

Suggested Remedy

Please clarify whether GKEK can be reused or not and make appropriate changes in the standard.

Resolution of Group   **Decision of Group:** **Accepted**

During comment resolution, contribution IEEE C802.16e-05/001r2 was proposed and accepted as follows:

on page 208, line 50, add "When GKEK has been changed, a BS..."

on page 209, line 61, change "A BS distributes updated GTEK by using two Key Update Command messages around the M&B TEK Grace Time, before the already distributed GTEK is expired." to " A BS distributes updated GTEK by using two Key Update Command messages when the GKEK has been changed, or by using one (the second) Key Update Command message otherwise, around the M&B TEK Grace Time, before the already distributed GTEK is expired."

Reason for Group's Decision/Resolution

Originally rejected, during subsequent comment resolution the original commenter proposed a resolution which was accepted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1033**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 151   **Starting Line #** 9   **Fig/Table#**   **Section** 7.9.2

GKEKEK derivation is not described clearly

Suggested Remedy

Please describe in details how GKEKEK is derived from AK. In addition, please explain where is AK from? Is AK=MAK?

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter has provided no specific text for review.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1036**   **Comment submitted by:** Haixiang   He   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 151 **Starting Line #** 23   **Fig/Table#**   **Section** 7.9.2

Key Update Command is not defined in Clause 6.

Suggested Remedy

Please define the packet format of Key Update Command.

Resolution of Group   **Decision of Group:** **Accepted**

The packet format of the Key Update Command is defined within the PKM_RSP message.

Reason for Group's Decision/Resolution

The commenter has provided no specific text, however, during comment resolution, the commenter's request was addressed by contribution IEEE C802.16e-05/024r1.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1038**   **Comment submitted by:** Ron   Murias   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 153   **Starting Line #**   **Fig/Table#**   **Section** 8.3

Section 8.3 is mis-named. This naming convention dates back to 802.16a and is no longer relevant and is creating confusion in the standard and public perception.
In view of the changes included in 802.16d and e with respect to uplink and downlink sub-channelization this section should be renamed from "Wireless MAN-OFDM PHY" to "Wireless MAN OFDMA- 256 PHY".

Suggested Remedy

Rename Section 8.3 from "Wireless MAN-OFDM PHY" to "Wireless MAN OFDMA- 256 PHY".

Resolution of Group   **Decision of Group:** **Rejected**

This comment is similar to Comment #1037.

Reason for Group's Decision/Resolution

Subclauses 8.3 and 8.4 are different PHY specifications. The renaming of subclause 8.3 in the P802.16e Amendment is inconsistent with the organization and technical content of the base standard, IEEE Std 802.16-2004. For example: In subclause 8.3, the sub channelization is optional on both uplink and downlink and is technically distinct from the mandatory subchannelization in subclause 8.4

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1059**   **Comment submitted by:** Naftali   Chayat   Member   2004-11-04

| **Comment Type** Technical, Binding | **Starting Page #** 157 | **Starting Line #** 30 | **Fig/Table#** | **Section** |

Efficient implementation of DL OFDMA with the capability to decode only one burst at a time, as described by the text, calls for the capability to piggyback map elements (both DL and UL) to transmissions directed to the users. This capability is also crucial for efficient operation of AAS systems, in which maps transmitted on broadcast beams will operate at much lower rate or will fail to reach a disadvantaged user.

Suggested Remedy

Define MAC header extesions or other appropriate format to convey map allocations to a station privately. See a related contributon by Ran Yaniv et. al.

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

Accept the changes in contribution IEEE C802.16e-04/565r1

During comment resolution, the text associated with this comment was further modified as follows:

Page 224, lines 6-43, modify as shown:

8.3.6.4 Compressed ~~AAS~~ Private Maps

~~When appearing in a private map message within an AAS zone, or within the DL subchannelzition zone, the standard DL-MAP and UL-MAP formats described in 6.3.2.3.2 and 6.3.2.3.4 may conform to the format presented in the following subclauses.~~ The presennce of the compressed DL-~~AM~~MAP format is indicated by the contents of the most significant two bits of the first data byte. These ~~bytes~~bits overlay the HT and EC bits of a generic MAC header. When these bits are both set to 1 (an invalid combination for a standard header), the compressed DL-MAP format is present. A compressed UL-MAP shall only appear immediately after a compressed DL-MAP. The presence of a compressed UL-MAP is indicated by a bit in the compressed DL-MAP data structure.

A broadcast map, an AAS-DLFP message, a SBCH_DL_MAP_I~~D~~E, or another private map in a previous frame can point to the compressed private map. Other restrictions of compressed private maps include:
• The private map must be the first message in a PHY burst
• Private maps are only allowed to use unicas~~e~~t CID values.
• Private maps may only describe allocations within the AAS portion of the sub-frame~~,~~ or within the DL subchannelzition zone.
• Both UL and DL ~~z~~allocations included in the private map are relative to the next frame.

A ~~m~~modification to the 'Preamble Time Shift' (as defined in 8.3.6.2.7 and 8.3.6.3.7) shall also apply to allocations in subsequent private maps in the private map chain, until modified again or until the end of the private map chain.

The compressed private map is an optional feature that can be negotiated between the SS and BS.

8.3.6.4.1 Compressed DL-MAP

The compressed private DL-MAP format is presneted in Table AAA. The message presents the same information as the standard format with one exception. In place of the DL-MAP's 48-bit Base Station ID, the compressed format provides a subset of the full value. When the compressed format is used, the full 48-bit Base Station ID shall be ~~published~~present in the DCD.

Editorial instructions: Table AAA, line 40 replace

```
    HCS                          |      8 bits
```
with

```
    if !(UL-MAP appended){        |
    HCS                          |      8 bits
    }                            |
```

Page 226,lines9-12, modify as shown:

A HCS value, as defined in 6.3.2.1.1, is appended to the end of the <u>DL_MAP if it is not followed by an UL-MAP</u>~~compressed map(s) data. The HCS is computed across all bytes of the compressed map(s) starting with the byte containing the Compressed map indicator, and including appended UL-MAP, if present~~.

Table BBB, insert the following row after line 45:

```
    HCS                          |      8 bits
```

Page 226, line 58 add:

HCS
A HCS value, as defined in 6.3.2.1.1, is appended to the end of the compressed maps data. The HCS is computed across all bytes of the compressed maps starting with the byte containing the Compressed map indicator.

Reason for Group's Decision/Resolution
During comment resolution, an updated contribution was submitted and accepted with changes

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1079**   **Comment submitted by:** Mika   Kahola   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 158 **Starting Line #** 64   **Fig/Table#**   **Section** 8.3.10.1.2

Seems to be that there are no changes proposed from fixed wireless specification to mobile specification. As a result proposed requirements are too tight for battery powered terminals.

Suggested Remedy

Define reasonable and feasible transmitter constellation error requirements for battery powered mobile terminal.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This comment has been rejected for the following reasons:

1) The commenter has not provided any suggested text
2) The requirements set in the fixed standard IEEE Std 802.16-2004 were based on performance level considerations which carry over to mobile
3) The EVM requirements set in IEEE Std 802.16-2004 are commensurate with industry practice for OFDM such as 802.11a

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1080**   **Comment submitted by:** Mika   Kasslin   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 158   **Starting Line #** 65   **Fig/Table#**   **Section** 8.3.10.1.2

There seem to be no changes at all to EVM requirements set in the base standard. Those figures are reasonable for a mains powered fixed CPE but for a battery powered mobile terminal requirements are too expensive to implement.

Suggested Remedy

Please provide few dB more relax EVM requirements for mobile terminals.

Resolution of Group   **Decision of Group:** **Superceded**

Refer to Comment #1079

Reason for Group's Decision/Resolution

This comment is essentially identical to Comment # 1079, which was rejected for the following reasons:

1) The commenter has not provided any suggested text
2) The requirements set in the fixed standard IEEE Std 802.16-2004 were based on performance level considerations which carry over to mobile
3) The EVM requirements set in IEEE Std 802.16-2004 are commensurate with industry practice for OFDM such as 802.11a

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1083**   **Comment submitted by:** Mo-Han   Fong   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 159   **Starting Line #**   **Fig/Table#**   **Section** 8.4

Need to introduce H-ARQ IE to enable H-ARQ operation by using DL/UL-MAP message.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/545 "New H-ARQ Related IEs for DL/UL-MAP Message ".

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

Accept the changes in contributions IEEE C802.16e-05/023r5 and C802.16e-05/038r1.

Reason for Group's Decision/Resolution

During comment resolution, the original proposed remedy was rejected. However, other contributions which addressed this issue were proposed and adopted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1084**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 159   **Starting Line #**   **Fig/Table#**   **Section** 8.4

Current DL and UL burst allocation scheme incurs unnecessary overhead for deterministic traffic such as UGS, RT-VR.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/544 "Enhanced Resource Allocation for Deterministic Traffic".

Resolution of Group   **Decision of Group:** **Rejected-Duplicate**

Reason for Group's Decision/Resolution

This comment is a duplicate of comment 1082, the resolution of which is repeated below:

The commenter recommended rejection for the following reason:
If the periodic assignment is lost in the DL MAP, there will be a synchronization issue.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1085**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 159 **Starting Line #**   **Fig/Table#**   **Section** 8.4

Current DL and UL MAPs do not support HARQ. Need to introduce new IEs to DL/UL-MAPs to enable HARQ support.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/545 "New H-ARQ Related IEs for DL/UL-MAP Message ".

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

Refer to the resolution of Comment #1083

Reason for Group's Decision/Resolution

The proposed remedy is a duplicate of that proposed in Comment #1083.
Originally rejected, during comment resolution, the resolution of Comment #1083 was further modified as follows:

Adopt the changes in contributoions IEEE C802.16e-04/023r5 and IEEE C802.16e-05/038r1.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1086**   **Comment submitted by:** Mo-Han   Fong   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 159   **Starting Line #**   **Fig/Table#**   **Section** 8.4, 11.4.1

Need to simplify the description of DL access allocation in DL-MAP, to reduce DL burst allocation overhead and improve MAC efficiency.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/542 "DL Traffic Channel Definition and Enhanced DL Resource Allocation for OFDMA PHY".

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

Accept the changes in contribution IEEE C802.16e-04/542r2 "DL Traffic Channel Definition and Enhanced DL Resource Allocation for OFDMA PHY".

Reason for Group's Decision/Resolution

During comment resolution, an updated contribution was submitted for consideration and accepted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1091**   **Comment submitted by:** Itzik   Kitroser   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 159   **Starting Line #** 1   **Fig/Table#**   **Section** 8.4

The current 128 FFT size seems to be a redundant option within the huge amount of options in the standard. No one provided any justification of inclusion of this mode (beside of course the obvious reasons). This mode breakes some of the regular stratures of the other modes (due to the small FFT size) and defines additional implementation requirements without any appearent gain.

Suggested Remedy

Remove the 128 FFT OFDMA mode

Resolution of Group   **Decision of Group:** **Rejected**

Voted 4-13

Reason for Group's Decision/Resolution

This comment was rejected for several reasons, stated below:

1) The 128-FFT option is needed for narrow bandwidth operation.
2) The removal of this FFT size is currently out of scope of the P802.16e project, as this option is explicity mentioned in the PAR notes section.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1092**   **Comment submitted by:** Ronen   Greenberg   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 159   **Starting Line #** 8   **Fig/Table#**   **Section** 8.4.1

FFT size 128 should be removed, as it implies many changes in the standard for this mode only (ranging etc.), no simulation results supporting this mode has been introduced, and it's advantage compared to other modes have not been shown. Moreover it collides with the same profile as the 802.20 (BW, FFTSize, Mobility etc.). Remove all support for FFT size 128 (PHy mode description, MAC support for this FFT size etc.)

Suggested Remedy

Resolution of Group   **Decision of Group:** **Superceded**

Refer to Comment # 1091

Reason for Group's Decision/Resolution

This comment is essentially the same as Comment #1091, which was rejected for the following reasons:

This comment was rejected for several reasons, stated below:
1) The 128-FFT option is needed for narrow bandwidth operation.
2) The removal of this FFT size is currently out of scope of the P802.16e project, as this option is explicity mentioned in the PAR notes section.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1093**   **Comment submitted by:** Yonatan   Zvi   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 159   **Starting Line #** 8   **Fig/Table#**   **Section** 8.4.1

Remove FFT size 128, non compatible with other modes in several places in the standard, does not allow and throughput balancing through subcahnnel shifts between sectors, regular synchronization mechanisms (correlators)perform poorly for very low SNR (where data transmission is possible), advantage compared to other modes is not clear at all.

Suggested Remedy

Remove support of FFT 128 - in all section 8.4 and associated MAC messages.

Resolution of Group   **Decision of Group:** **Superceded**

Refer to Comment #1091

Reason for Group's Decision/Resolution

This comment is essentially the same as Comment #1091, which was rejected for the following reasons:

This comment was rejected for several reasons, stated below:
1) The 128-FFT option is needed for narrow bandwidth operation.
2) The removal of this FFT size is currently out of scope of the P802.16e project, as this option is explicity mentioned in the PAR notes section.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**   **Comment Date**

Comment # **1101**   **Comment submitted by:** Yigal   Eliaspur   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 161   **Starting Line #** 13   **Fig/Table#**   **Section** 8.4.4.6

Problems in AAS

The following problems exist and need to be resolved in the definition of the AAS Diversity Map Scan mode:
* In downlink AAS preamble of 1 or 3 symbols in PUSC breaks slot structure (each slot is two symbols). location of pilot and data subcarriers following such preamble is undefined.
* In uplink, AAS preamble breaks tile structure of 3 symbols (unless preamble is 3 symbols long).
* AAS preamble sequence not defined. Using the same sequence of the broadcast preamble may result in false-synchronization of SS-es.
* AAS preamble boosting is defined (implicitly) as same boosting of broadcast preamble (9dB - see 8.4.9.4.3.1), however partial sequences transmitted on subchannels don't have good PAPR needed to support such boosting.
* AAS preamble doesn't pass PRBS (as defined in 8.4.9.4.1) which creates correlation between AAS preambels of different cells, and complicates implementation of the PRBS.
* not defined if pilots are overridden by AAS preamble or not (esp in AMC where pilots are part of subchannel).
* Not defined how pilots are beamformed and AMC (pilots belong to subchannel) and PUSC (pilots are broadcast).
* no definition of what "Beam index" means and what is the expected behavior following beam select message.
* AAS-DLFP usage model is not defined. It is not clear what is the relevance of DLFP and private map messages, and how the SS should filter out messages directed to it (or is it required to try decode all DLFPs, all private maps and all bursts pointed to by all private maps, etc).
* No mechanism to migrate SS between non-AAS and AAS mode (only in system entry).

Suggested Remedy

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

Accept the changes in contribution IEEE C802.16e-04/480r5. See Comment #1313

Reason for Group's Decision/Resolution

The commenter did not propose any specific remedy, however, the contribution adopted under Comment #1313 addresses the issues raised in the comment.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1107**   **Comment submitted by:** Tal   Kaitz   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 161   **Starting Line #** 48   **Fig/Table#**   **Section** 8.4.4.6.3

The definition of the AAS Downlink preamble is not clear.
It is not clear what is the sector number (s= 0~3) and what n signifies.
It is not clear what is the boosting to implied The value of 9dB, as in the frame preamble, is too high. Unlike the frame preamble, this preamble does not provide low PAPR, and all its subcarriers are modulated.

Suggested Remedy

Clarify or replace text

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

Remove lines 37-41 and lines 45-60.

Reason for Group's Decision/Resolution

This clarifies the text.

There are several duplicate extended DIUCs in use throughout section 8.4.5.3. As a result, a total of 18 extended DL IEs are defined while there are only 16 available extended DIUCs.

Suggested Remedy

Define a second layer of extended DIUCs and UIUCs
----

1. Add the following text before the end of section 8.4.5.3.2

In addition, a BS may transmit DIUC=15 with extended DIUC=15 to indicate that the extended IE conforms to the structure shown in table 275a. A station shall ignore an extended IE entry with an extended[2] DIUC value for which the station has no knowledge. In the case of a known extended[2] DIUC value but with a length field longer than expected, the station shall process information up to the known length and ignore the remainder of the IE.

Table 275a — DL-MAP extended[2] IE format

Syntax	Size	Notes
DL_Extended_IE() {		
Extended DIUC	4 bits	Extended DIUC = 0x0F
Length	4 bits	Length in bytes of Unspecified data field plus one
Extended[2] DIUC	8 bits	0x00..0xFF
Unspecified data	variable	
}		

2. Add the following text before the end of section 8.4.5.4.4

In addition, a BS may transmit UIUC=15 with extended UIUC=15 to indicate that the extended IE conforms to the structure shown in table 289a. A station shall ignore an extended IE entry with an extended[2] UIUC value for which the station has no knowledge. In the case of a known extended[2] UIUC value but with a length field longer than expected, the station shall process information up to the known length and ignore the remainder of the IE.

Table 289a — UL-MAP extended[2] IE format

Syntax	Size	Notes

```
UL_Extended_IE() {
Extended UIUC          4 bits              Extended UIUC = 0x0F
Length                 4 bits              Length in bytes of Unspecified data field plus one
Extended² UIUC         8 bits              0x00..0xFF
Unspecified data       variable
}
```

3. *solve duplicate assignment of extended DIUCs by moving IEs with duplicate extended DIUC to use extended² DIUC.*

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

Accept the changes in contribution IEEE C802.16e-05/088.

Reason for Group's Decision/Resolution

This comment was originally rejected, however, during comment resolution, the cited contribution, which corrects and clarifies the extended DIUC and UIUC text, was accepted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1113**   **Comment submitted by:** John   Barr   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 162   **Starting Line #** 23   **Fig/Table#**   **Section** 8.4.5.3.4

[Identical comment submitted by John Barr, Mark Cudak, Lester Eastwood, Colin Frank, Qiang Guo, Scott Migaldi, Nat Natarajan, Huaiyuan Wang.]
The current draft does not allow a base to "beam form" the pilots in non-AAS configurations. Beam formed pilots can provide a significant system capacity gain with virtually no added complexity to the subscriber station. With beam-formed pilots, a base station may pre-code the both the data and pilot with the same complex weights. This weighting is compatible with conventional subscriber implementations since the weights are indistinguishable from the channel response. These pilot pre-coding techniques are applicable to SDMA, Beam Steering, TXAA and MIMO techniques.

Suggested Remedy

Enhance the STC zone to allow for beam formed pilots. Adopt contribution number IEEE C802.16e-04/416.

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

Accept the changes in contribution IEEE C802.16e-04/416r2.
Modify text to substitute "optional FUSC" for "O-FUSC" in the text.

Reason for Group's Decision/Resolution

During comment resolution, an updated contribution was presented and accepted with changes. Vote: 43-7

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   Comment Date

Comment # **1114**   **Comment submitted by:** Richard   Pace   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 162   **Starting Line #** 23   **Fig/Table#**   **Section** 8.4.5.3.4

The draft does not allow a base to "beam form" the pilots in non-AAS configurations. Beam formed pilots can provide a significant system capacity gain with virtually no added complexity to the subscriber station. With beam-formed pilots, a base station may pre-code both the data and pilot with the same complex weights. This weighting is compatible with conventional subscriber implementations since the weights are indistinguishable from the channel response. These pilot pre-coding techniques are applicable to SDMA, Beam Steering, TXAA and MIMO techniques.

Suggested Remedy

Enhance the STC zone to allow for beam formed pilots. Adopt contribution number IEEE C802.16e-04/416.

Resolution of Group   **Decision of Group:** **Accepted-Duplicate**

Reason for Group's Decision/Resolution

This comment is identical to Comment #1113, which was accepted-modified.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1124**   **Comment submitted by:** Oded   Redlich   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 163   **Starting Line #** 36   **Fig/Table#**   **Section** 8.4.5.3.4

inconsistency and incompatibility between original table and the current one Delete field "2/3 antennas select" from table 277a.

Suggested Remedy

Resolution of Group   **Decision of Group:** **Superceded**

Refer to Comment #1123, the resolution of which is repeated below:

Page 163, line 35
Add the following row to the table,
Syntax   size   Notes
==================================
~~reserved~~   ~~2 bits~~   ~~Shall be set to zero~~

Underline the field "2/3 antennas select" row

Reason for Group's Decision/Resolution
Identical comment

The encoding of the bits in the 'STC' field of the DL zone switch IE has been changed in the previous meeting. This change should be reflected in MIMO_DL_Basic_IE and MIMO_DL_Enhanced_IE.

Suggested Remedy
1. [Modify table 281a as follows:]

Matrix_indicator	2	STC matrix (see 8.4.8.1.4)

STC = STC mode indicated in the latest STC_Zone_IE().
Ant23 = '2/3 antennas select' as indicated in the latest STC_Zone_IE().
if (STC == 0b~~00~~**01 and Ant23 == 0**) {
    00 = Matrix A
    01 = Matrix B
    10-11 = Reserved
}
elseif (STC == 0b~~01~~**01 and Ant23 == 1) or (STC == 0b10)** {
    00 = Matrix A
    01 = Matrix B
    10 = Matrix C
    11 = Reserved
}
else {
    00 - 11 = Reserved
}

2. [Modify table 282a as follows:]

Matrix_indicator	2	STC matrix (see 8.4.8.1.4)

STC = STC mode indicated in the latest STC_Zone_IE().
Ant23 = '2/3 antennas select' as indicated in the latest STC_Zone_IE().
if (STC == 0b~~00~~**01 and Ant23 == 0**) {
    00 = Matrix A
    01 = Matrix B
    10-11 = Reserved
}
elseif (STC == 0b~~01~~**01 and Ant23 == 1) or (STC == 0b10)** {
    00 = Matrix A
    01 = Matrix B
    10 = Matrix C

```
                    11 = Reserved
           }


           else {
                    00 - 11 = Reserved
           }
```

Resolution of Group   **Decision of Group:** **Accepted**

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1135**   **Comment submitted by:** John   Barr   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 165   **Starting Line #** 1   **Fig/Table#**   **Section** 8.4.5.3.8

[Identical comment submitted by John Barr, Mark Cudak, Lester Eastwood, Colin Frank, Qiang Guo, Scott Migaldi, Nat Natarajan, Huaiyuan Wang.]
MIMO transmission can greatly increase the capacity of the system especially when combined with receivers implementing successive cancellation. However, the decoded BER performance of successive cancellation receivers is limited by the performance of the stream with the highest mean squared error. The decoded BER performance of a successive cancellation receiver can be greatly improved by applying a different power weighting to each MIMO stream in a frequency-selective communications channel.

Moreover, it is possible to further simply the receiver by predetermining the successive cancellation decoding order. Unequal power weighting on MIMO streams can provide a 5.0 dB improvement in frequency-selective channels over MIMO with equal power on each stream.

Suggested Remedy

Adopt contribution number IEEE C802.16e-04/420

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

During comment resolution, the author of contribution 04/420 withdrew the cited contribution, however the commenters did not withdraw this related comment, therefore the comment resolution group was forced to reject this comment for lack of a proposed remedy.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1157**   **Comment submitted by:** Yigal   Leiba   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 167   **Starting Line #** 48   **Fig/Table#**   **Section** 8.4.5.3.12

This extended IE seems like a duplication of the "Data location in another BS IE"

Suggested Remedy

Remove section 8.4.5.3.12

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This extended IE is not a duplication of the "Data location in another BS IE". The commenter is incorrect.

"DL PUSC Burst Alloaction in Other Segment IE" can be used in stand-alone way, but "Data location in another BS IE" shall be coupled with the normal MAP IE. Moreover, "Data location in another BS IE" does not include DIUC and CID, so it can not provide the same function as "DL PUSC Burst Alloaction in Other Segment IE" does.

In addition, the changes proposed by the commenter are out of scope of the P802.16e project as they would require non-backward compatible changes to the fixed operation defined in the base standard.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **1194**   **Comment submitted by:** Colin   Frank   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 174   **Starting Line #** 31   **Fig/Table#**   **Section** 8.4.5.3.17

The combination of MIMO and macro-diversity is very ill-considered. MIMO
is only effective in high C/I environments, and such an environment is
very unlikely to exist at the cell or sector boundary. C/I is strongly
limited in these regions due both to high path loss, with
the user either at the edge of the cell or in the roll-off region of the
sector antennas, and strong inter-cell or inter-sector interference.
Furthermore, the entire point of MIMO is improve the capacity of
a link with high C/I by exploiting the virtual bandwidth
in the parallel channels of the MIMO channel matrix, rather than by
taking real system bandwidth from away from other users.
Exactly the opposite is described in this solution in which
real system bandwidth is taken away from other users
(because frequency subchannels are allocated for this user at
multiple cells or sectors) and allocated to a user almost certain
to be operating at low C/I. Thus, in this solution, extra real system
bandwidth is allocated to a low C/I user that will almost certainly
be unable to make use of it.

The complexity impact of this proposal on the receiver and on the
system will almost certainly not be justified by the minimal gains --
if any -- achievable in system throughput and performance.

Suggested Remedy

Delete sub clause 8.4.5.3.17.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The scheme in the text does not target improving system throughput, but rather improving link quality at the cell edge by utilizing STC gain as well
as RF combining gain. The complexity at the receiver is not increased due to this technique.

Document under Review: **P802.16e/D5**　　　　**Ballot Number:** **0000754**　　　　　　　　　　**Comment Date**

Comment # **1215**　　　**Comment submitted by:**　Itzik　　　　Kitroser　　　　　　　　Member　　　　2004-11-04

Comment　　　**Type** Technical, Binding　　　**Starting Page #** 177　**Starting Line #** 43　　　**Fig/Table#** 287　**Section** 8.4.5.4.1

The removal of the "No.subchannels" field is not backward compatible!

Suggested Remedy

Leave the "No.subchannel" field in the table.

Resolution of Group　　　　　　**Decision of Group:** **Superceded**

See comment 1217, which restores the "No.subchannels" field.

Reason for Group's Decision/Resolution

Refer to Comment #1217, which restores the "No.subchannels" field.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1216**   **Comment submitted by:** Aviram   Lobel   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 177   **Starting Line #** 43   **Fig/Table#**   **Section** 8.4.5.4.1

Not backward compatible in table 287.

Suggested Remedy

"No Of subchannel" field missing.

Resolution of Group   **Decision of Group:** **Superceded**

Refer to comments #1215, #1217 and #1218

Reason for Group's Decision/Resolution

This comment was satisfied by the resolution of comment 1218, the pertinent portion of which is repeated below:

Put the No. of subchannels row back into the table (i.e. remove strikeout instructions for "No. subchannels" field)

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1217**   **Comment submitted by:** Yigal   Leiba   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 177   **Starting Line #** 43   **Fig/Table#**   **Section** 8.4.5.4.2

'No. subchannels' cannot be deleted because backwards compatibility with 802.16-2004 is to be maintained

Suggested Remedy

Undo the deletion of 'No. subchannels' field

Resolution of Group   **Decision of Group:** **Accepted**

Reason for Group's Decision/Resolution

This comment was satisfied by the resolution of comment 1218, the pertinent portion of which is repeated below:

Put the No. of subchannels row back into the table (i.e. remove strikeout instructions for "No. subchannels" field)

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1221**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 178   **Starting Line #**   **Fig/Table#**   **Section** 8.4.5.4.10.4

The MSS can be assigned multiple CQICHs to support multiple types of feedback or larger amount of feedback that are required for advanced PHY, MIMO operation. The mapping of variety of feedback information to multiple CQICHs has not be addressed.

Suggested Remedy

Adopt the proposed text in contribution C802.16e-04/547 "Enhanced Feedback Method for Enhanced FAST_FEEDBACK channels".

Resolution of Group   **Decision of Group:** **Rejected-Duplicate**

Reason for Group's Decision/Resolution

This is a duplicate of Comment #1220.

Note: During comment resolution, the Comment #1220 commenter proposed a revised contribution, IEEE C802.16e-04/547r1, which was subsequently rejected at the request of the commenter and Comment #1220 was marked as "satisfied".

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1224**   **Comment submitted by:** Itzik   Kitroser   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 178   **Starting Line #** 36   **Fig/Table#**   **Section** 8.4.5.4.10.4

The current feedback mechanism for MIMO contains 3 different feedback types: 4 bit feedback (inherited from the baseline standard) 5 bit feedback and 6 bit feedback.
This provides too many options while parially overlapping each other, just for the sake of inserting yet another option into the standard.

Suggested Remedy

In sections 8.4.5.4.10.4 to 8.4.5.4.10.8 remove the 5 bits feedback case.

Resolution of Group   **Decision of Group:** **Accepted-Duplicate**

The proposed remedy is a duplicate of the remedy proposed in comment 1227 which was accepted, the resolution of which is repeated below:

Adopt the following editorial changes :

Page 178 line 47,

Each enhanced fast-feedback slot consists of 1 OFDMA slots mapped in a manner similar to the mapping of normal uplink data. An enhanced fast feedback slot uses QPSK modulation on the 48 data sub-carriers it contains, and can carry a data payload of ~~5 bits or~~ 6 bits. Table 296a defines the mapping between the payload bit sequences and the subcarriers modulation.

Page 178, line 53,
delete Table 296a

Page 180, line 1,
~~load bit sequences and the subcarriers modulation.~~

page 180 line 3,

Table 296~~b~~a - FAST_FEEDBACK channel subcarrier modulation ~~with 6 bit~~

page 181 line 1,

Table 296~~b~~a - FAST_FEEDBACK channel subcarrier modulation ~~with 6 bit~~ (continued)

page 182 line 1,

Table 296~~b~~a - FAST_FEEDBACK channel subcarrier modulation ~~with 6 bit~~ (continued)

page 182 line 19,

the mth tile of the nth FAST_FEEDBACK channel are defined in Table 296~~e~~b.

Table 296eb - Orthogonal Modulation Index in FAST_FEEDBACK Channel

page 183 line 45,

The enhanced fast feedback slot includes ~~5 bits or~~ 6 bits of payload data, whose encoding depended on the instruction given in the FAST_FEEDBACK subheader, the CQICH_Control IE(), the CQICH_Alloc_IE(), or through the CQICH_Enhanced_Alloc_IE(). The following sections define these encodings.

page 185 line 4,
Two identical figures exist. One of them should be removed.

page 186 line 6,

~~For the 5-bit payload case, w~~When the FAST_FEEDBACK subheader Feedback Type field is <u>'00' or '01' or '10'</u> '~~11' or at a specific frame indicated in the CQICH_Alloc_IE(), and CQICH_Enhanced_Alloc_IE() (see 8.4.5.4.12.1)~~, the MSS ~~shall~~ <u>may</u> send its selection in terms of MIMO mode (STTD versus SM) or permutation mode on the assigned FAST_FEEDBACK channel <u>using the last 32 codewords</u>. Table 296d shows the encoding of payload bits for the enhanced FAST_FEEDBACK slot ~~with 5 bit payload~~.

page 186 line 42,

~~For 6 bit payload case,~~ MIMO related feedback shall be encoded as is shown in Table 294d.

page 187 line 4,

Table 297 - Encoding of payload bits for MIMO feedback ~~with 6 bit payload~~

Reason for Group's Decision/Resolution
The proposed remedy is a duplicate of the remedy proposed in Comment #1227 which was accepted

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1255**   **Comment submitted by:** Tal   Kaitz   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 188   **Starting Line #**   **Fig/Table#**   **Section** 8.4.5.4.14

[on behalf of Ran Yaniv]

The UL PHY modifier IE is defined for the purpose of allowing to distinct between multiple overlapping AAS preambles in SDMA transmissions. However, the UL allocation method does not allow such overlapping allocations: the starting slot of each allocation IE is the slot following the last slot of the previous allocation IE.

Suggested Remedy

Define a new IE AAS_UL_Basic_IE( ) similar in concept to the MIMO_UL_Basic_IE( ):

Section 8.4.5.4.22 AAS UL Basic IE Format

In the UL-MAP, an AAS-enabled BS may transmit UIUC=15 with the AAS_UL_Basic_IE() to describe uplink allocations assigned to AAS-enabled SSs in an AAS zone. The MIMO mode and preamble parameters indicated in the AAS_UL_Basic_IE() shall only apply to the allocations described in the IE.

An AAS-enabled shall track the slot offset within the UL zone by accumulating duration for each layer independently. For the purpose of tracking the slot offset, an AAS-enabled SS shall regard allocations described by a regular UL-MAP_IE as assigned to the first layer.

Table 300a - AAS UL basic IE format

Syntax	Size	Notes
AAS_UL_Basic_IE() {		
Extended UIUC	4 bits	AAS_BASIC = 0xE
Length	4 bits	variable
Num_Layers	2 bits	
Preamble Type	1 bit	
reserved	1 bit	Shall be set to zero
For (j=0; j<Num_Layers; j++) {		
Layer_Index	2 bits	
CID	16 bits	
UIUC	4 bits	
MIMO_Control	3 bits	0b000: STTD
		0b001: SM
		0b010: Collaborative SM, pilot pattern A
		0b011: Collaborative SM, pilot pattern B
		0b100: Non-MIMO
		0b101-0b111: reserved

Preamble Shift Index	4 bits	
Duration	10 bits	In OFDMA slots (see 8.4.3.1)
reserved	1 bit	Shall be set to zero

}
If (! byte boundary) {

Padding nibble	4 bits	Padding to reach byte boundary

}
}

Num_Layers
This value plus one indicates the number of layers for which allocations are described in this IE.

Preamble Type
The preamble type (either frequency-shifted or time-shifted) to use for the allocations defined in this IE (as defined in section 8.4.5.4.14).

Layer_Index
Index of the layer to be used for transmitting this allocation.

CID
Unicast CID to which the allocation is assigned.

MIMO_Control
MIMO_Control field specifies the MIMO mode of the UL burst.

Preamble Shift Index
Either preamble frequency shift index or preamble time shift index, depending on the 'Preamble Type' field. See section 8.4.5.4.14.

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

Accept the changes proposed in contribution IEEE C802.16e-05/084r4.

Reason for Group's Decision/Resolution

This comment was originally rejected, however, during comment resolution, the harmonized contribution, to which the commenter is a co-author, containing revisions to both the UL and DL AAS IEs, was accepted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1314**   **Comment submitted by:** Naftali   Chayat   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 199   **Starting Line #**   **Fig/Table#**   **Section** 8.4.6

None of the permutations present in OFDMA mode as of now does not exhibit symmetry between DL and UL allocations. Such symmetry is important in AAS systems with TDD, where the chanel estimate learned on the UL can be used for directing the DL beam.

Suggested Remedy

Incorporate the text recommended in contribution 802.16e-04/467 by Ran Yaniv et al.

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

Accept the changes in contribution IEEE C802.16e-04/467r8.

Reason for Group's Decision/Resolution

During comment resolution, the author of the proposed remedy submitted an updated contribution which was ultimately accepted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1315**   **Comment submitted by:** Tal   Kaitz   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 199   **Starting Line #**   **Fig/Table#**   **Section** 8.4.6

[on behalf of Ran Yaniv]

In AAS systems, it is advantageous to use the same subcarriers in the DL and UL for transmission to an SS. This facilitates obtaining the channel response from the UL transmission by taking advantage of channel reciprocity.

Of the permutations currently defined for the DL channel, only the AMC permutation in the AAS mode supports such symmetric allocations along with assigning training pilots to specific user subchannels. However, this permutation lacks frequency diversity and does not provide ample training information for channel tracking of multiple users (SDMA).

A downlink tile-based permutation similar to the existing UL permutations is beneficial.

Suggested Remedy

Adopt contribution C80216e-04/467 ("Symmetric UL/DL diversity permutations for OFDMA PHY").

Resolution of Group   **Decision of Group:** **Superceded**

Superseded by Comment #1314

Reason for Group's Decision/Resolution

This comment is superseded by Comment #1314, which accepted updated contribution IEEE C802.16e-04/467r8.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**

Comment Date

Comment # **1327**   **Comment submitted by:** John   Barr   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 212   **Starting Line #** 28   **Fig/Table#**   **Section** 8.4.6.1.1.1

[Identical comment submitted by John Barr, Mark Cudak, Lester Eastwood, Colin Frank, Qiang Guo, Scott Migaldi, Nat Natarajan, Huaiyuan Wang.] The offset, in symbols, between the optional common sync symbol and the beginning of the frame is variable. A subscriber station making use of the common sync symbol has no simple means of identifying the beginning of the frame without performing an exhaustive search for pre-amble symbol. As a result, it is unclear how the subscriber station benefits from the common sync symbol. With or without the common sync symbol, the subscriber station must perform an exhaustive search to find the beginning of the frame.

Suggested Remedy

Adopt contribution number IEEE C802.16e-04/418

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

Originally rejected, during comment resolution, the author of contribution IEEE C802.16e-04/418 requested the contribution be rejected, however the commenters did not withdraw this related comment, therefore the group was forced to reject this comment for lack of a proposed remedy.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1329**   **Comment submitted by:**   Richard   Pace   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 212   **Starting Line #** 28   **Fig/Table#**   **Section** 8.4.6.1.1.1

The offset, in symbols, between the optional common sync symbol and the beginning of the frame is variable. A subscriber station that uses the common sync symbol has no simple means of identifying the beginning of the frame without performing an exhaustive search for pre-amble symbol. As a result, it is unclear how the subscriber station benefits from the common sync symbol since with or without the common sync symbol, the subscriber station must perform an exhaustive search to find the beginning of the frame.

Suggested Remedy

Adopt contribution number IEEE C802.16e-04/418

Resolution of Group   **Decision of Group:** **Rejected-Duplicate**

This comment is identical to Comment #1327, which was rejected.

Reason for Group's Decision/Resolution

Originally rejected, during comment resolution, the author of contribution IEEE C802.16e-04/418 requested the contribution be rejected, however the commenters did not withdraw this related comment, therefore the group was forced to reject this comment for lack of a proposed remedy.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **1342**   **Comment submitted by:** Yossi   Segal   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 214   **Starting Line #** 3   **Fig/Table#** 308   **Section** 8.4.6.1.2.1

switch left and right guard carriers to align with other modes

Suggested Remedy

switch in tables 308a/b/c and 309a and 311b/c/d and 313a/b the left and right guard carriers, so left side carriers are larger then the right one
tables 308-313 page 19, line 19 add: "index X (counting from 0)" wher X in the FFTSize/2 per appropriate table

Table 308b:
Change parameter "PermutationBase3~~4~~ (for 3~~4~~ subchannels)" change value to "[2 0 1]"
Change parameter "PermutationBase2~~4~~ (for 2~~4~~ subchannels)" change value to "[0 1]"

Table 308a:
Change value of parameter "PermutationBase6" : ~~[3,2,6,4,5,1]~~ [2 1 5 3 4 0]
Change value of parameter "PermutationBase4" : ~~[3,4,2,1]~~ [2 3 1 0]

Resolution of Group   **Decision of Group:** **Accepted**

switch in tables 308a/b/c and 309a and 311b/c/d and 313a/b the left and right guard carriers, so left side carriers are larger then the right one
tables 308-313 page 19, line 19 add: "index X (counting from 0)" wher X in the FFTSize/2 per appropriate table

Table 308b:
Change parameter "PermutationBase3~~4~~ (for 3~~4~~ subchannels)" change value to "[2 0 1]"
Change parameter "PermutationBase2~~4~~ (for 2~~4~~ subchannels)" change value to "[0 1]"

Table 308a:
Change value of parameter "PermutationBase6" : ~~[3,2,6,4,5,1]~~ [2 1 5 3 4 0]
Change value of parameter "PermutationBase4" : ~~[3,4,2,1]~~ [2 3 1 0]

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1357**   **Comment submitted by:** Zion   Hadad   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 219   **Starting Line #**   **Fig/Table#**   **Section** 8.4.6.2

Tables 314 define yet another mode of operation for the AMC, which is not backward compatible with 802.16d, and does not comply with the PAR

Suggested Remedy

Change mode to be backwards compatible.

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

Make the following text change:

Page 13, line 23-24: 'The fourth is the ~~mode selection~~ feedback header used for the MSS to provide its ~~mode selection~~ feedback.'

Page 258, line 43: 'For a MSS which supports the feedback method by using ~~Mode Selection~~ feedback header, …'.

Page 390, table 351a, line 28-29: '... for MSS to initiate <u>feedback on</u> ~~mode selection~~ feedback <u>header</u>.'

Reason for Group's Decision/Resolution

The commenter provided no specific text, however during comment resolution the required text was developed and accepted

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1432**   **Comment submitted by:** Wen   Tong   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 225   **Starting Line #**   **Fig/Table#**   **Section** 8.4.6.2.7.1

In the current standard, UL sounding zone is allocated to CSIT capable MSSs for uplink sounding. Significant overhead is introduced. Propose to combine the uplink channel sounding and CQICH to improve the UL efficiency.

Suggested Remedy
Adopt contribution C80216e-04_514

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The proposal adds unnecessary complexity for virtually no benefit and fails to handle two important cases:

First, the proposed methodology does not support MSSs having more than two antennas.

Second, the proposed methodology does not handle the case where the bandwidth required by the sounding is significantly greater than the bandwidth that would be occupied by the CQICH resources needed for CQICH feedback. If UL sounding is used to provide CSIT to the BS, than only minimal CQICH resources would be required (e.g., for SNR feedback or data rate selection) and the proposed technique would actually be much less efficient than the current sounding methodology in broadband transmissions.

Finally, the pilot re-mapping of the CQICH resources will degrade the detection performance of the CQICH information.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1433**   **Comment submitted by:** Peiying   Zhu   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 225   **Starting Line #**   **Fig/Table#**   **Section** 8.4.6.2.7.1

[Identical comment submitted by Jianglei Ma and Peiying Zhu.]
In the current standard, UL sounding zone is allocated to CSIT capable MSSs for uplink sounding. Significant overhead is introduced. Suggest to find a more efficient way to do uplink channel sounding, for example, to reuse the uplink feedback channels for sounding.

Suggested Remedy
Adopt contribution C80216e-04_514

Resolution of Group   **Decision of Group:** **Rejected-Duplicate**

Reason for Group's Decision/Resolution

This comment is a duplicate of Comment # 1432, the resolution of which is repeated below:

The proposal adds unnecessary complexity for virtually no benefit and fails to handle two important cases:

First, the proposed methodology does not support MSSs having more than two antennas.

Second, the proposed methodology does not handle the case where the bandwidth required by the sounding is significantly greater than the bandwidth that would be occupied by the CQICH resources needed for CQICH feedback. If UL sounding is used to provide CSIT to the BS, then only minimal CQICH resources would be required (e.g., for SNR feedback or data rate selection) and the proposed technique would actually be much less efficient than the current sounding methodology in broadband transmissions.

Finally, the pilot re-mapping of the CQICH resources will degrade the detection performance of the CQICH information

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1445**   **Comment submitted by:** John   Barr   **Member**   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 225   **Starting Line #** 33   **Fig/Table#**   **Section** 8.4.6.2.7

[Identical comment submitted by John Barr, Mark Cudak, Lester Eastwood, Colin Frank, Qiang Guo, Scott Migaldi, Richard Pace, Nat Natarajan, Huaiyuan Wang.]

Section 8.4.6.2.7 of IEEE P802.16e/D5 provides an efficient and flexible means for the BS to estimate the downlink complex channel responses between the BS antennas and an SS, for systems where the channel is reciprocal and the BS antenna/RF system is calibrated.   The number of subcarriers that are estimated is selectable from narrowband all the way up to the entire channel bandwidth.

Since Section 8.4.6.2.7 only covers the case of TDD with calibrated antenna/RF system, it must be modified to enable the same capabilities for the other system configuration scenarios, namely 1) TDD without a calibrated antenna/RF system, and 2) an FDD system where the channel is not reciprocal.

Such a modification will enable, for all three system configurations:
* Closed-loop downlink SDMA capability – since the BS can steer a beam toward one user while steering a null towards the other on a per-stream basis, SDMA feasibility and performance are greatly enhanced.
* Future-proof MIMO capability – there is no need to pre-define and store codebook matrices at the BS and SS, and the method for determining the antenna weights used by the BS can be upgraded whenever improved methods are developed.
* The ability to accumulate spatial and frequency selective channel characteristics/statistics for multiple SS's at the BS (spatial correlation, delay spread, etc.)
* High efficiency and flexibility

Suggested Remedy

Adopt contribution number IEEE C802.16e-04/422

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

Accept the changes in contributions IEEE C802.16e-04/552r7, C802.16e-04/554r4, C802.16e-04/422r4.

Reason for Group's Decision/Resolution

During comment resolution, the original contribution and others addressing this issue were updated and submitted. These revised contributions were accepted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1495**   **Comment submitted by:** Yigal   Leiba   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 234   **Starting Line #** 7   **Fig/Table#**   **Section** 8.4.6.3

The requirement that 'types, the index of the subchannels in a band is increased along bins and then symbols' is not consistent with 802.16-2004. AMC is mapped like any other permutation.
In addition, this rule has devestating effects in terms of memory required in the MSS for implementation.

Suggested Remedy

Remove the sentence "In all the types, the index of the subchannels in a band is increased along bins and then symbols."
instead add the sentence '
'In all the types, data mapping follows section 8.4.3.4"

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

~~In all the types, the index of the subchannels in a band is increased along bins and then symbols.~~ In all the types, data mapping follows section 8.4.3.4 except for region mapped according to section 6.3.2.3.43. Slots for downlink AMC zone in a region mapped according to section 6.3.2.3.43 are allocated along the subchannel index first within a band. The direction of data mapping for downlink AMC slots shall be frequency first (across bands when multiple bands are allocated).
Slots for uplink AMC zone in a region mapped according to section 6.3.2.3.43 are allocated along the symbol index first within a band. The direction of data mapping for uplink AMC slots shall be frequency first (across bands when multiple bands are allocated).

Reason for Group's Decision/Resolution

The H-ARQ MAP operation necessitates an exception to the proposed change.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1519**   **Comment submitted by:** Yossi   Segal   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 236   **Starting Line #** 36   **Fig/Table#**   **Section** 8.4.8.3

MIMO schemes should be allowed for a modified version of the PUSC as well for PUSC and FUSC in general

Suggested Remedy

Make room of the description:
change numbering of section 8.4.8.3.1 to 8.4.8.3.2.1, 8.4.8.3.2 to 8.4.8.3.2.2,
Page 240 line 39 add: "In optional FUSC zone the index k..."
page 241 line 35 change: "when the AMC permutation zone is chosen, BS may further..."

add section 8.4.8.3.2 STC for the Optional FUSC zone

add sections:

 8.4.8.3.1 STC for PUSC adjacent subcarrier allocation (PUSC-ASCA)
The following defenition will allow defining an adjacent subcarrier allocation per subchannel for the PUSC mode.

8.4.8.3.1.1 Allocation of subcarriers to subchanels
for the symbol structure the same parameters from tables 308 shall be used to define the symbol structure, the same pilot division between
antennas per cluster shall also remain the same as defined in section 8.4.8.1 and 8.4.8.2

allocation of subcarriers to clusters shall be performed in the following manner for:
1) Dividing the subcarriers into physical clusters containing 14 adjunct subcarriers each (starting
from carrier 0), number of clusters are defined in tables 308
2) Allocating clusters to major groups shall be performed by allocating adjacent clusters (starting from cluster 0), number of
cluster per major group could be calculated by 2*Number_Of_Subchannel_per_Major_Group
3) per DL allocation, remove from the clusters associated with the allocation (2 clusters assicitaed per Subchannel)
the pilot carriers from each cluster, take the remaining data subcarriers and using the
same procedure described in 8.4.6.1.2.2.2 (with the parameter Nsubcarrier =24, and PermutationBase taken from table XXX, per
a specific allocation) to partition the subcarriers into subchannels
containing 24 data subcarriers in each symbol.

Table XXX

Number Of Subchannels allocated	PermutationBase
12	[6,9,4,8,10,11,5,2,7,3,1,0]
11	[TBD]
10	[TBD]
9	[TBD]
8	[7,4,0,2,1,5,3,6]
7	[TBD]
6	[2,1,5,3,4,0]

5	[TBD]
4	[2,3,1,0]
3	[2,0,1]
2	[0,1]
1	[0]

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

change numbering of section 8.4.8.3.1 to 8.4.8.3.1.1, 8.4.8.3.2 to 8.4.8.3.1.2,
Add page 236 new section "8.4.8.3.1 Symbol structure for optinal AMC and Optional FUSC"

Change at page 236 line 3: "Three ~~Two~~ optional zones for the downlink, the optional FUSC~~, and the~~ optional AMC and the optional PUSC-ASCA zones, are described in 8.4.6.1.2.3, ~~and~~ 8.4.6.3 and 8.4.6.3.1 , respectively. STC may be used to improve system performance for these zones and an example of transmit diversity (TD) with 2 tx and 1 rx is shown in Figure ~~aaa~~ 232"

page 239 add line 22: "The following defenitions are applicable to modes which support STC for 3 antenna Tx."
Page 240 line 39 add: "In optional FUSC zone the index k..."
page 240 line 49 change: "For all optional ~~both~~ permutation ~~zeros~~ zones using ~~with~~ 4-antenna BS ..."
page 241 line 35 change: "when the optional AMC or optional PUSC-ASCA permutation zones are ~~is~~ chosen, BS may further..."
page 265 line 13 change: "'For AMC and PUSC-ASCA permutations in AAS..'"

add sections:

8.4.8.3.2 Symobl structure for the Optional PUSC-ASCS
Symbol structure is defined in secion 8.4.6.3.1, pilots division between antennas per cluster for the STC/MIMO operation shall follow the division in the PUSC mode as defined in sections 8.4.8.1 and 8.4.8.2. Pilots may optionally be beamformed or precoded.

8.4.6.3.1 Optional permutation for PUSC adjacent subcarrier allocation (PUSC-ASCA)
The following section defines two ways to use an adjacent subcarrier allocaion for the PUSC mode

8.4.6.3.1.1 Allocation using adjacent clusters

The following defenition will allow defining an adjacent subcarrier allocation using adjacent clusters for the PUSC mode.
symbol structure shall use the parameters from tables 308 (as the regular PUSC), the same cluster structure shall be maintained

8.4.6.3.1.1.1 Allocation of subcarriers to subchannels

allocation of subcarriers to subchannels shall be performed in the following manner:
1) Dividing the subcarriers into physical clusters each containing 14 adjacent subcarriers (starting from data subcarrier 0), number of clusters are defined in tables 308
2) clusters to be used for a specific DL allocation shall be the first 2*(Allocated Subchannels) after the first 2*(SubchannelOffset)
3) Concatenate the clusters into blocks using the rules from table YYY

— n: number of allocated subchannels
— k: floor (n / 12)

— m: n modulo 12

Table YYY

Number of subchannels	clusters concatenated
n <= 12	1 block of 2*n clusters
n = 12*k	k blocks of 24 clusters
n > 12, n!=12*k	(k-1) blocks of 24 clusters 1 block of 2*ceil((m+12)/2) clusters 1 block of 2*floor((m+12)/2) clusters

3) per block, remove from the clusters associated with the section the pilot carriers, take the remaining data subcarriers and using the same procedure described in 8.4.6.1.2.2.2 (with the parameter Nsubcarriers =24, PermutationBase taken from table XXX and Cell_Id as defined in message PUSC_Directed_MIMO_Alloc_IE) partition the subcarriers into subchannels containing 24 data subcarriers in each OFDMA symbol.

Table XXX

Number Of Clusters in the section	PermutationBase
24	[6,9,4,8,10,11,5,2,7,3,1,0]
22	[6,9,2,8,10,5,0,4,3,1,7]
20	[6,4,1,2,9,3,5,8,7,0]
18	[7,4,0,2,1,5,3,8,6]
16	[7,4,0,2,1,5,3,6]
14	[2,1,5,3,4,6,0]
12	[2,1,5,3,4,0]
10	[4,2,3,1,0]
8	[2,3,1,0]
6	[2,0,1]
4	[0,1]
2	[0]

8.4.6.3.1.2 Allocation using distributed clusters
The following defenition will allow defining an adjacent subcarrier allocation using distributed clusters for the PUSC mode.
symbol structure shall use the parameters from tables 308 (as the regular PUSC), the same cluster structure shall be maintained

8.4.6.3.1.2.1 Allocation of subcarriers to subchannels

1) Dividing the subcarriers into 120 physical clusters containing 14 adjunct subcarriers each (starting
from carrier 0)
2) Renumbering the physical clusters into logical clusters using the following formula:

LogicalCluster = RenumberingSequence((PhysicalCluster+13*IDcell) mod 120)
3) Dividing the clusters into 6 major groups (number of clusters per Major group is set using paraemters from tables 308)
4) Allocating carriers to subchannel in each major group depends on the specific allocation performed. per major group determine the number of clusters which are to be used in the specifc allocation (clusters to be used for a specific DL allocation shall be the first 2*(Allocated Subchannels) after the first 2*(SubchannelOffset)), determine the number of clusters to be used in every major group.

per major group (which includes allocated clusters) remove from the associated clusters the pilot carriers, take the remaining data subcarriers and using the same procedure described in 8.4.6.1.2.2.2 (with the parameter Nsubcarriers =24, PermutationBase taken from table XXX and Cell_Id as defined in message PUSC_Directed_MIMO_Alloc_IE) partition the subcarriers into subchannels containing 24 data subcarriers in each OFDMA symbol.

Reason for Group's Decision/Resolution

Additional modifications were proposed as updates by the original commenter.
Initial vote: 39-16 (fails)
Roll call vote: 67 in favor, 20 against, 4 abstain (passes)

The definition of 3 antennas STC is not clear. It is not clear how the 3x4 matrices map to two OFDMA symbols and two subcarriers.
Also it not clear what is a 'logical -data-subcarrier_number_for_first_tone_of-code' and how it is related to the Bin structure defined in 8.4.6.3.

Suggested Remedy
Clarify or delete

Resolution of Group　　　　　**Decision of Group:** **Accepted-Modified**
Accept the changes proposed in contribution IEEE C802.16e-04/557r5

Reason for Group's Decision/Resolution
The accepted contribution clarifies the text referred to in the comment.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **1533**   **Comment submitted by:** Nico   van Waes   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 240   **Starting Line #**   **Fig/Table#**   **Section** 8.4.8.3.5

[Identical comment submitted by Nico van Waes and Victor Stolpman.]
In 8.4.8.3.5 of the spec the STC transmission schemes for rate 1 does not allow
antenna permutation, which can provide extra diversity gain at no additional
complexity.

Suggested Remedy

Adopt text in contribution C80216e-04/475

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

 Accept the changes proposed in contribution IEEE C802.16e-04/475r1

Reason for Group's Decision/Resolution

During comment resolution, the commenter submitted an updated contribution.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1534**   **Comment submitted by:** Nico   van Waes   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 240   **Starting Line #**   **Fig/Table#**   **Section** 8.4.8.3.5

[Identical comment submitted by Nico van Waes and Victor Stolpman.]
In 8.4.8.3.5 of the spec the STC transmission schemes for rate 2 does not allow
antenna permutation, which can provide extra diversity gain at no additional
complexity.

Suggested Remedy

Adopt text in contribution C80216e-04/476

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

Accept the changes proposed in contribution IEEE C802.16e-05/009 with the following modification:

The choice of subscript k to determine the matrix Bk should be defined as follow;
Bk; k=mod(floor((logical_data_sub_carrier_number_for_first_tone_of_code-1)/2),6)+1

Reason for Group's Decision/Resolution

During comment resolution contribution IEEE C802.16e-05/009 was proposed as an update to contribution IEEE C802.16e-04/476.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **1541**   **Comment submitted by:** Jianglei   Ma   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 242   **Starting Line #**   **Fig/Table#**   **Section** 8.4.8.3.6

[Identical comment submitted by Jianglei Ma and Peiying Zhu.]
SVD is an optimum scheme for closed loop MIMO operation when the number of transmit antennas is larger than the number of receiver antennas. Direct feedback of V matrix is not possible due to the large number of feedback payload required. Propose to use Given rotation to reduce the feedback overhead to enable SVD type of closed loop MIMO operation.

Suggested Remedy

Adopt text in contribution C80216e-04_516

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

During comment resolution, the commenter asked for this comment to be rejected. An updated version of this contribution was resubmitted later for review. The commenter who submitted the updated version of the contribution also asked to have it rejected.

Therefore this comment is rejected due to lack of specific text.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1542**   **Comment submitted by:** Jianglei   Ma   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 242   **Starting Line #**   **Fig/Table#**   **Section** 8.4.8.3.6

[Identical comment submitted by Jianglei Ma, Peiying Zhu, and Wen Tong.]
The FAST_FEEDBACK channel uses single antenna transmission even when MSS is UL MIMO capable. Suggest to enable trasnmit diversity for FAST_FEEDBACK channel for MIMO capable MSS to save the MSS power or increase feedback channel payload.

Suggested Remedy

Adopt text in contribution C80216e-04_518

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

During comment resolution, the commenter asked for this comment to be rejected. During comment resolution, an upated contribution, IEEE C802.16e-04/518r2 was resubmitted for adoption and was rejected: Vote (7-11)

Reason : We agree that the current CQICH design is not very efficient, however, this is one of several proposals that conflict with each other. it also only provides a "band-aid" approach to the problem. A more systematic and comprehensive redesign of the CQI channels is needed to resolve its inefficiencies. The proposed remedy also incurs receiver complexity and change of CQICH slot in optional-PUSC.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **1543**   **Comment submitted by:** Jianglei   Ma   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 242   **Starting Line #**   **Fig/Table#**   **Section** 8.4.8.3.6

[Identical comment submitted by Jianglei Ma and Peiying Zhu.]
The current stadard provideds a mechanism to directly feedback quanitized channel coefficients/weights, which consumes large UL feedback bandwidth. The proposed schemes use differential modulation to reduce the feedback overhead.

Suggested Remedy

Adopt text in contribution C80216e-04_517

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

During comment resolution, the commenter asked for this comment to be rejected.   Therefore this comment is rejected due to a lack of specific text.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1546**   **Comment submitted by:** Wen   Tong   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 242   **Starting Line #**   **Fig/Table#**   **Section** 8.4.8.3.6

Unitary matrix weighted closed loop MIMO operation is a good candidate when the number of transmit antennas is larger than the number of receiver antennas. Direct feedback of unitary matrix is not possible due to the large number of feedback payload required. Propose to use differential Givens rotation to reduce the feedback overhead and computational complexity to enable unitary matrix weighted closed loop MIMO operation.

Suggested Remedy

Adopt text in contribution C80216e-04_516

Resolution of Group   **Decision of Group:** **Rejected-Duplicate**

Reason for Group's Decision/Resolution

The proposed remedy is identical to the proposed remedy in Comment #1541, which was rejected for the following reason:

During comment resolution, the commenter asked for this comment to be rejected. An updated version of this contribution was resubmitted later for review. The commenter who submitted the updated version of the contribution also asked to have it rejected.

Therefore this comment is rejected due to lack of specific text.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1547**   **Comment submitted by:** Wen   Tong   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 242   **Starting Line #**   **Fig/Table#**   **Section** 8.4.8.3.6

The current standard provides a mechanism to directly feedback quantized MIMO channel coefficients/weights, which consumes large UL feedback bandwidth. The proposed simple employs differential modulation approach to reduce the feedback overhead.

Suggested Remedy

Adopt text in contribution C80216e-04_517

Resolution of Group   **Decision of Group:** **Rejected-Duplicate**

Reason for Group's Decision/Resolution

The proposed remedy is identical to the proposed remedy in Comment #1543, which was rejected for the following reason:

During comment resolution, the commenter asked for this comment to be rejected.
Therefore this comment was rejected due to lack of specific text.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1550**   **Comment submitted by:** Tal   Kaitz   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 242   **Starting Line #** 29   **Fig/Table#**   **Section** 8.4.8.3.6

It is not clear how the weight coefficients w are mapped to fast-feedback message. Section 8.4.5.4.10.2 and its enhanced counterpart 8.4.5.4.10.6 only define the physical mapping of a single coefficient. It is not clear how to map a matrix of coefficients.

Suggested Remedy

Clarify. It is worth clarifying also for the vector w case. (8.4.8.3.5 etc.)

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

Accept the changes proposed in contribution IEEE C802.16e-04/552r7, subcaluse 8.4.5.4.10.6

Reason for Group's Decision/Resolution

The accepted contribution clarifies the text cited in the comment.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**

Comment Date

Comment # **1561**   **Comment submitted by:** Colin   Frank   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 245   **Starting Line #** 4   **Fig/Table#**   **Section** 8.4.8.5

The OFDMA MIMO midamble defined for the 2 antenna and 3 antenna cases is likely to interfere with subscriber synchronization due to an unfortunate choice for structure. The structure of the MIMO midamble for the 3 antenna case is identical to the structure used for the OFDMA preamble. A subscriber station taking advantage of the structure to aid synchronization, as intended by design, will likely detect the 3 antenna MIMO midamble as a potential preamble symbol. The falsing on the 3 antenna MIMO midamble will likely delay and possibly prevent the subscriber station from detecting the desired preamble. A similar problem is caused by the structure of the 2 antenna MIMO midamble which is identical to the common sync symbol.

There are two potential remedies to this problem

1) Remove the MIMO midamble from the specification as the structure hinders basic system performance. This is an unfortunate choice since MIMO is a desirable system feature.
2) Revise the MIMO the midamble to use alternate forms of multiplexing other than decimation. For example, Steiner's encoding using cyclic time shifts would be a logical alternative.

Suggested Remedy

Until an alternate solution is drafted, the only alternative is to remove the MIMO midamble support for the 2 and 3 antenna case.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The problem raised in the comment does not exist. There is no 3 antenna structure for the midamble, structures only exist for 2 and 4 antennas. For a 2 antenna structure, both antennas transmit on different subcarrier sets, so the combined signal does not have a repetition structure such as in the common sync channel. Therefore, there is no impact to either preamble or common sync operations.

It is also not clear whether such midamble to preamble interference is a significant issue. The MS doesn't need to fully rely on the periodic structure of the preamble/SYNC symbol for synchronization. Substantially more analysis and simulation results need to be presented in order to justify the proposed remedy.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **1582**   **Comment submitted by:** Nico   van Waes   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 259   **Starting Line #**   **Fig/Table#**   **Section** 8.4.8.9

[Identical comment submitted by Nico van Waes and Victor Stolpman.]
In Table 314m, the STC subpacket combining is defined for the 4 transmit antenna case. However, it only includes the case where the initial transmission is of spatial rate of 4 symbols/channel use (spatial multiplexing, matrix C).

Suggested Remedy

Adopt text in contribution C80216e-04/477, in which the method currently in the spec is extended to allow the case where the initial transmission has a spatial rate of 2 symbols/channel use.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This contribution needs more clarification. It is not clear how the second packet is combined with the first packet.
It is also not shown in the document that the proposed scheme is the optimal given the channel condition; for example, the gain is acheived in PER regions that a SS would not normally operate in.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1583**   **Comment submitted by:** Colin   Frank   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 259   **Starting Line #** 25   **Fig/Table#**   **Section** 8.4.8.9

The STC subpacket combining technique has little value. The encoding suggests that first transmission is MIMO and if the first transmission should fail, then second transmission is encoded in such a way that the combination of the first and second transmission appears to be Alamouti. The premise behind this approach is that the channel will remain unchanged between the first and subsequent transmission. In a mobile system this is highly unlikely. As result, there will be no added benefit beyond regular HARQ combining. Therefore, STC subpacket combining technique adds unnecessary complexity at the subscriber station and should be removed from the specification.

Suggested Remedy
Delete section 8.4.8.9

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution
The subpacket combining works quite well in some scenarios and shouldn't be deleted.

The original contribution for sub-packet combining showed significant gain in the low mobility case using an Alamouti decoder and this was independently verified by several subsequent contributions. STC subpacket combining also provides spatial diversity, even if the channel changes between transmissions. For example, in the high mobility case, one can use a zero forcing or MMSE type of decoder to obtain the sub-packet combining gain. These receiver approaches do not require the channel to be constant between multiple retransmissions.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1589**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 260   **Starting Line #** 8   **Fig/Table#**   **Section** 8.4.9

CTC IR has poor performance or error floor for some block sizes (e.g., 120 byte info size all code rates floor about 1e-3)

Suggested Remedy

Fix the turbo code.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter has provided no specific text, however, proposed text was submitted under Comment #1593 (contribution IEEE C802.16e-04/484r2), as well as later comments and contributions (IEEE C802.16e-04/484r4, -05/007r1 and others). During comment resolution, consensus on an acceptable method to fix the turbo code without breaking backwards compatibilty with the base standard could not be reached.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1590**   **Comment submitted by:** David   Castelow   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 260   **Starting Line #** 10   **Fig/Table#** 254a   **Section** 8.4.9.1

As defined, the randomiser seed may be all zeros: not a good idea.

DAC45

Suggested Remedy

Page 260, line 20, Make initializer for B5 = 1.

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

This comment was originally rejected. As a result of further comment resolution, it was accepted modified as follows:

Page 362, line 49, Make initializer ([MSB] 0 1 1 0 1 1 1 0 0 0 1 0 1 0 1 [LSB])

Reason for Group's Decision/Resolution

During comment resolution, a different solution was developed and accepted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1594**   **Comment submitted by:** Brian   Johnson   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 261   **Starting Line #**   **Fig/Table#**   **Section** 8.4.9.2.3.1

[Identical comment submitted by Brian Johnson and Geng Wu.]
Information block sizes/ rate set should be extended to include block sizes covered in the proposal for optional LDPC codes (Clause 8.4.9.2.5).

Suggested Remedy
Define interleaver parameters for the extended set.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution
The commenter provided no specific text, however a proposed resolution was provided in contribution IEEE C802.16e-04/484r4. The comment resolution group rejected that contribution as being out of scope of the P802.16e project because it would require a non-backward compatible change to the fixed operation defined in the base standard.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1597**   **Comment submitted by:** Maximilian   Riegel   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 261   **Starting Line #**   **Fig/Table#**   **Section** 8.4.9.2.5

Low Density Parity Check Code needs to be fixed, due to

- not enough information to implement LDPC code

- the advantage in comparison to turbo codes already specified in 802.16-2004 is not clear.

There is no need to provide for LDPC if there are hardly any benefits.

Suggested Remedy

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

Originally rejected, this comment is satisfied by the resolution of Comment #1604, which is repeated below:

Accept the changes in harmonized contributions IEEE C802.16e-05/066r3 and IEEE C802.16e-04/526r1.

Reason for Group's Decision/Resolution

These contributions contain all the information necessary to implement LDPC

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1599**   **Comment submitted by:** John   Barr   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 261   **Starting Line #** 1   **Fig/Table#**   **Section** 8.4.9.2.1.2

[Identical comment submitted by John Barr, Mark Cudak, Lester Eastwood, Colin Frank, Qiang Guo, Scott Migaldi, Nat Natarajan, Huaiyuan Wang.]
Contributions IEEE C802.16e-04/136r2 and IEEE C802.16e-04/246r3 in Seoul enabling a generic chase H-ARQ for all LDPC coding modes and incremental redundancy for convolutional coding. However, the editing instructions were applied incorrectly and the current specification is inconsistent. Generic chase H-ARQ is critical feature for the system and should be enabled as specified.

Suggested Remedy

Reapply the changes a specified in contributions IEEE C802.16e-04/136r2 and IEEE C802.16e-04/246r3.

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

Accept the changes in contribution IEEE C802.16e-05/046

Reason for Group's Decision/Resolution

During comment resolution, Contribution IEEE C802.16e-05/046 was proposed and accepted as a remedy for this comment.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1600**   **Comment submitted by:** Richard   Pace   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 261   **Starting Line #** 1   **Fig/Table#**   **Section** 8.4.9.2.1.2

Contributions IEEE C802.16e-04/136r2 and IEEE C802.16e-04/246r3 in Seoul enable a generic chase H-ARQ for all LDPC coding modes and incremental redundancy for convolutional coding. However, the editing instructions were applied incorrectly and the current specification is inconsistent. Generic chase H-ARQ is a critical feature for the system and should be enabled as specified.

Suggested Remedy

Reapply the changes as specified in contributions IEEE C802.16e-04/136r2 and IEEE C802.16e-04/246r3.

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

Accept the changes proposed in contribution IEEE C802.16e-05/046

Reason for Group's Decision/Resolution

Originally incorrectly superseded, during comment resolution, a modified contribution providing the same remedy was submitted and accepted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1604**   **Comment submitted by:** Aik   Chindapol   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 261   **Starting Line #** 44   **Fig/Table#**   **Section** 8.4.9.2.5

There is not enough information in this section to implement the LDPC mode. For example, entries in the expanded matrix H are not defined. The method of encoding is ambiguous.

It is even unclear why the LDPC is needed in addition of the mandatory FEC mode (convolutional code) and three other optional FEC modes (Block Turbo Code, Convolutional Turbo Code and Zero-tailed convolutional code).

Suggested Remedy

If there is no clear advantage of LDPC over others FEC modes such as CTC, this section should be removed.
Otherwise, all necessary information needed to implement LDPC must be specified.

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

Accept the changes in harmonized contributions IEEE C802.16e-05/066r3 and IEEE C802.16e-04/526r1.

Reason for Group's Decision/Resolution

These contributions contain all the information necessary to implement LDPC

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1605**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 261   **Starting Line #** 44   **Fig/Table#**   **Section** 8.4.9.2.5

LDPC codes can provide significant capacity gain. Unfortunately, the LDPC text is incomplete.

Suggested Remedy

Adopt the contribution number IEEE C802.16e-04/526 which is an output from the LDPC collaboration group

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

Accept the changes in harmonized contributions IEEE C802.16e-04/526r1 and IEEE C802.16e-05/066r3.

Reason for Group's Decision/Resolution

This comment is essentially the same as Comments #1604 and #1606. Originally accepted, during comment resolution updated LDPC contributions, IEEE C802.16e-04/526r1 and IEEE C802.16e-05/066r3, were submitted and accepted.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1606**   **Comment submitted by:** Zion   Hadad   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 261   **Starting Line #** 44   **Fig/Table#**   **Section** 8.4.9.2.5

Complete the missing specifications of the LDPC defenition

Suggested Remedy

adopt contribution C80216e-04_361 (latest version), for the missing specifications of the LDPC defenition

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

Originally rejected, this comment is satisfied by the resolution of Comment #1604, which is repeated below:

Accept the changes in harmonized contributions IEEE C802.16e-05/066r3 and IEEE C802.16e-04/526r1.

Reason for Group's Decision/Resolution

These contributions contain all the information necessary to implement LDPC

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **1616**   **Comment submitted by:** Yossi   Segal   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 265   **Starting Line #** 15   **Fig/Table#**   **Section** 8.4.9.4.3

Define the PUSC/AMC possibilty for gain increase in the DL, this will clarify the possible relationship between zones and allow the same amount of power to be outputed for any zone

Suggested Remedy

When not all subcarriers have been allocated for transmission in the DL, a Specific DL zone could be boosted by up to a factor set by maximum of Used_Subcarriers/Actual_Transmitted _Subcarriers

where:
Used_Subcarriers = All possible modulated subcarriers
Actual_Transmitted _Subcarriers = Actual subcarriers transmitted in the zone per the OFDMA symbol including the most subcarriers

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter proposes a concept, but provided no specific text changes.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1621**   **Comment submitted by:**   Mark   Cudak   Member   2004-11-04

Comment   Type   **Starting Page #** 267   **Starting Line #** 47   **Fig/Table#**   **Section** 8.4.9.6

An additional PHY layer CRC covering the H-ARQ packet is required to determine whether H-ARQ combining was successful.

Suggested Remedy

[Append the following text to section 8.4.9.6 Chase Combining HARQ]

When H-ARQ is applied to a packet, error detection is provided on the H-ARQ packet through a Cyclic Redundancy Check (CRC).

The size of the CRC is 16 bits. CRC 16-CCITT, as defined in ITU-T Recommendation X.25, shall be included at the end of the HARQ packet.

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

During comment resolution, this comment was satisfied by the resolution of identical Comment #2297 from the same commenter, who indicated that Comment #2297 was "technically satisfied". The resolution of Comment #2297 is repeated below:

[Append the following text to section 8.4.9.6 Chase Combining HARQ]

When H-ARQ is applied to a packet, error detection is provided on the H-ARQ packet through a Cyclic Redundancy Check (CRC).

The size of the CRC is 16 bits. CRC 16-CCITT, as defined in ITU-T Recommendation X.25, shall be included at the end of the HARQ packet and ~~before~~after the padding bits.

Reason for Group's Decision/Resolution

This comment was satisfied by the resolution of identical Comment #2297 from the same commenter, who indicated that Comment #2297 was "satisfied". However, the commenter has not stated whether or not this identical comment has been satisfied.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1625**   **Comment submitted by:**   Mika   Kasslin   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 270   **Starting Line #** 13   **Fig/Table#**   **Section** 8.4.12.1

There seems to be no changes to transmit power level control requirements which means that even a mobile terminal should meet the relative accuracy of +/- 0.5 dB. This is somewhat too tight requirement to be met with a reasonable cost implementation.

Suggested Remedy

Relax requirements at leats to +/- 1 dB for a MSS.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter has not provided any analysis showing the potential implementation cost savings achieved by changing the requirement from +/- 0.5 dB to +/- 1dB. Without such analysis, the group is unwilling to relax the stated value, feeling that a +/- 0.5 dB accuracy is attainable at a reasonable cost.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1626**   **Comment submitted by:** Mika   Kahola   Member   2004-11-04

Comment   Type Technical   **Starting Page #** 270   **Starting Line #** 24   **Fig/Table#**   **Section** 8.4.12.3

Seems to be that there are no changes proposed from fixed wireless specification to mobile specification. As a result proposed requirements are too tight for battery powered terminals.

Suggested Remedy

Provide reasonable EWM requirements that can be met in battery powered implementation.

Resolution of Group   **Decision of Group:** **Rejected-Duplicate**

Although it pertains to a different section of the document, this comment is essentially the same as comments #1079 and #1080

Reason for Group's Decision/Resolution

Although it pertains to a different section of the document, this comment is essentially the same as comments #1079 and #1080 which were rejected for the following reasons:

1) The commenter has not provided any suggested text
2) The requirements set in the fixed standard IEEE Std 802.16-2004 were based on performance level considerations which carry over to mobile
3) The EVM requirements set in IEEE Std 802.16-2004 are commensurate with industry practice for OFDM such as 802.11a

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1627**   **Comment submitted by:**   Mika   Kasslin   Member   2004-11-04

Comment   Type Technical   **Starting Page #** 270   **Starting Line #** 24   **Fig/Table#**   **Section** 8.4.12.3

EVM requirements inherited from the base standard are too tight for a mobile terminal. Such requirements are impractical for a reasonable size terminal.

Suggested Remedy

Relax EVM requirements for all the burst types.

Resolution of Group   **Decision of Group:** **Rejected-Duplicate**

Reason for Group's Decision/Resolution

Same comment as Comment #1626 and similar to Comments #1079 and #1080

Document under Review: P802.16e/D5   **Ballot Number:** 0000754   **Comment Date**

Comment # 1632   **Comment submitted by:** Yigal   Eliaspur   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 273   **Starting Line #** 1   **Fig/Table#** 340   **Section** 10.1

Update timers' values for mobility

Some of the timers' values currently exist in the standard need to be updated for the mobility case, most of them are from Table 340.
Example: DCD/UCD Interval, Contention Ranging Retries,T9 etc.

Other timers are missing and need to be defined to have better network entry performance.

Suggested Remedy

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

Define the default value of T3 timer in table 340a as (= 50msec)

Reason for Group's Decision/Resolution

During comment resolution, consensus was reached on the default value for T3.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1640**   **Comment submitted by:** David   Castelow   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 274   **Starting Line #** 48   **Fig/Table#** 343   **Section**

Remove the explicit mention of Multicast CIDs. There is no need to distinguish these from other Transport CIDs and certainly the limit of 95 is too small.

Note also that if this change is rejected, the change in line 45 to the CID range will need highlighting as a change.
DAC50

Suggested Remedy
Delete Page 274, lines 48 and 49.
As this is the only change in the table, delete the table in its entirety.
Delete Page 274, lines 33-62.
Then, as the comment following the table is orphaned, add at Page 274, line 63:
[Add at the end of section 10.4:]

If it is felt necessary, adjust the text at page 274, line 64 to the effect
that it includes Multicast CIDs.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution
There is a need for an idle MS to distinguish Multicast CIDs from normal Transport CIDs for purposes of power savings and traffic management.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1643**   **Comment submitted by:** Jonathan   Labs   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 277   **Starting Line #** 1   **Fig/Table#**   **Section** 11

Blanks, X's and nn's are not valid values for Type in a TLV.

Suggested Remedy

Specify type values for:

--p. 278, line 8: OMAC Tuple definition
--p. 278, line 47: DCD_settings
--p. 278, line 57: UCD_settings
--p. 280, line 18: Allow AAS Beam Select Messages
--p. 280, line 27: Use CQICH indication flag
--p. 280, line 32: MSS-specific power offset adjustment step

and the many others throughout section 11...

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

No specific text was provided by the commenter.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1707**   **Comment submitted by:** Yigal   Eliaspur   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 285   **Starting Line #** 5   **Fig/Table#** 365   **Section** 11.6

Optimizing authorization phase during Handover

In order to achieve good mobility performance, the HO process should be as short as possible.
One of the main time-consuming phases in the network (re)entry is the authorization and key exchange phase.

Suggested Remedy

Please adopt contribution no. C80216e-04_505.doc

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The approach proposed in this contribution provides the same functionality as the current approach, at the cost of wasted bandwidth.

Note that contribution IEEE C802.16e-05/24r1, Remedy 5, also proposed a solution to this problem, however, during comment resolution, there was no consensus on acceptable text for Remedy 5 and it was specifically excluded from acceptance.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1726**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 287   **Starting Line #** 26   **Fig/Table#**   **Section** 11.7.8

AAS capable mobiles may be configured with different numbers of transmit and receive antennas. This configuration must be communicated to the base station so that the appropriate AAS modes may be employed.

Suggested Remedy

Adopt contribution IEEE C802.16e-04/536

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This comment is considered out of scope of the P802.16e project as it requires a non-backward compatible change to the fixed operation defined in the base standard.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **1771**   **Comment submitted by:** Lei   Wang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 292   **Starting Line #** 19   **Fig/Table#**   **Section**

H-ARQ is an optional feature for OFDMA PHY only. Well, the section 11.8.3.6.2 is about OFDM SS demodulator, where H-ARQ shall not be there.

Suggested Remedy

1. delete "bit #6 ..."
2. change the last line to "bit #6 to #7, reserved".

Resolution of Group   **Decision of Group:** **Accepted**

1. delete "bit #6 ..."
2. change the last line to "bit #6 to #7, reserved".

Reason for Group's Decision/Resolution

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1774**   **Comment submitted by:** Yigal   Eliaspur   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 292   **Starting Line #** 44   **Fig/Table#**   **Section** 11.8.3.7.2

Capability negotiation for AAS

The AAS capability bit doesn't provide the granularity to support various AAS schemes. There can be very basic schemes that are suitable for beamforming, however capability bit of "Diversity map scan" method encompasses, together with the basic scheme, some complex and advanced AAS features that were added on top of the basic features.

Suggested Remedy

Adopt contribution C80216e-04_502

Resolution of Group   **Decision of Group:** **Rejected**

Vote: 35-24

Reason for Group's Decision/Resolution

The proposed remedy is out of scope of the P802.16e project because it would require a non-backward compatible change to the fixed operation defined in the base standard. The remedy also segments the AAS features into many non-interoperable features.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1775**   **Comment submitted by:** Yigal   Eliaspur   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 292   **Starting Line #** 44   **Fig/Table#**   **Section** 6.3.2.2

Fast feedback response times

The handling of fast-feedback as defined in 802.16REVd/D5 using fast feedback subheader is in some senses more demanding than handling of UL-MAP: The UL-MAP appears as the first burst in the DL subframe, however for fast feedback subheader, it can appear anywhere in the frame, can appear on any of the SS-s CIDs and may also be encrypted (being a subheader). It seems that this message is wrongly located as a subheader (subheaders are used in higher layers in the MAC such as frag/pack and may be handled off-line), and poses strict turnaround requirements on those layers, that otherwise would not be required.

This requirement is especially strong for mobile SS, which regularly handle smaller amounts of data than fixed SS, and therefore may have slower processing per burst.

We propose to delay the response to next-next frame. Note that in spite of the word "fast" the main target of this mechanism is to provide a bandwidth efficient way of reporting downlink CINR to the BS, and the response time of 1 frame is not necessary. Note that correct CINR measurement may take multiple frames (for good accuracy and averaging of temporary effects).

Suggested Remedy

Adopt changes from C80216e-04_458 (Fast feedback response times)

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This comment is out of scope of the P802.16e project because it would require a non-backward compatible change to the fixed operation defined in the base standard.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **1789**   **Comment submitted by:** Yigal   Eliaspur   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 294   **Starting Line #** 19   **Fig/Table#**   **Section** 11.8.3.7.7

<u>Fast Feedback Request message</u>

The motivation is to define additional way to signal an MSS about an uplink FFB allocation.
The advantages of the proposed technique are:
1.Signaling an MSS about FFB request by the BS when no DL data is available. In that case the FFB sub header cannot be used as it does not have any payload to be piggyback on.
2.Multiple FFB indication to multiple MSSs in the same payload - with an adaptive burst profile capability (no need to stick to the DL MAP burst descriptor).
3.Header is not encrypted and hence can give better response time to meet the processing time requirements.

Suggested Remedy

Please adopt contribution no. C80216e-04_500.doc

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The proposed solution is incomplete, for example; When the MSS receives the proposed MAC message, the MSS knows only the allocation offset and feedback type. It is also not clear what the MSS is supposed to measure, the preamble or packet data?

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1799**   **Comment submitted by:** Hang   Zhang   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 300   **Starting Line #**   **Fig/Table#**   **Section** 7.5.1.2.3

This is a comment for 16d. In Figure 137 - Construction of Ai, there is field called C. The definition of this field is not clear. Whether it is the same as the length field of GMH, or is different? If it is different from the length field of GMH, how can the receive decript the payload?

Suggested Remedy

Please clarify

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

As stated in the comment, this comment addresses the base standard. As such it is out of scope of the P802.16e project.

Document under Review:	**P802.16e/D5**			Ballot Number:	**0000754**			Comment Date

Comment # **1803**   **Comment submitted by:** Yigal   Eliaspur   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 301   **Starting Line #** 1   **Fig/Table#**   **Section** 11.13.18.10

ARQ for UGS Service Flows in 802.16e

UGS has been defined in order to support real-time service flows that generate fixed size data packets on a periodic basis, for example E1/T1 or Voice Over IP (VoIP) without silence suppression. As such, UGS service flows cannot request bandwidth. This presents a major problem if ARQ is enabled for such a service flow. First, an SS does not have the necessary bandwidth needed to send ARQ feedbacks to the BS. Second, an SS does not have the necessary bandwidth needed to send retransmissions. This problem is serious as the SS cannot even indicate this to the BS, nor can it ask for the needed bandwidth. Moreover, bandwidth request mechanisms incur a certain delay which might be unreasonable given the demands of UGS service flows. The Slip Indicator (SI) bit mechanism defined is unsuitable for these cases as it does not indicate how much bandwidth is desired.

Suggested Remedy

Please adopt contribution no. C80216e-04_501.doc

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The stated issue is application specific (VOIP) and the proposed method is a unique implementation specific to that application. The current text already provides an adequate means to allocate bandwidth for UGS service.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1816**   **Comment submitted by:** Yigal   Eliaspur   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 303 **Starting Line #** 1   **Fig/Table#**   **Section** 11.13.19.3.4

Packet Classification Action

The proposal is to define a new classifier TLV which defines an action associate with a Classifier rule.
In particular the proposal defines a new drop action to be used by the MSS and or by the BS to identified and discard specific types of SDUs.

Suggested Remedy
[Add the following to the end of section 11.13.19.3.4]

11.13.19.3.4.xx Classifier Action Rule
The value of this field specifies an action associate with the classifier rule.
If this classification action rule exists, its action shell be applied on the packets that match this classifier rule.

```
-------------------------------------------------------------------------------
|       type        |        length        |       value
-------------------------------------------------------------------------------
|   [145/146].cst.3.xx   |          1          |      see below
-------------------------------------------------------------------------------
```

bit 0:
0 = none.
1 = Discard packet

bit 1-7:
Reserved.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution
This comment is out of scope of the 802.16e project because it would require a non-backward compatible change to the fixed operation defined in the base standard.
Also note that a packet that matches no classifiers will be dropped, so that this functionality is currently possible.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1850**   **Comment submitted by:** Lai King Anna   Tee   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 311 **Starting Line #**   **Fig/Table#**   **Section**

The system profiles supported by the current 802.16-2004 may not be sufficient to support the deployment of mobile systems based on the current draft for 802.16e.

Suggested Remedy

Adopt additional system profiles to ensure interoperability between equipment built by different vendors, and accommodate the spectrum allocation plans in various countries globally. Perhaps some of these can be included as part of the 802.16 corrigendum.

Resolution of Group   **Decision of Group:** **Rejected-Duplicate**

This comment is similar to comments #1851, #1859, #1861, #1864, all of which requested that profiles be added to the standard.

Reason for Group's Decision/Resolution

Although the commenter provided no specific text, during comment resolution additional profiles were considered by the group. However during comment resolution, consensus could not be reached on acceptable text. This comment is similar to comments #1851, #1859, #1861, #1864, all of which requested profiles be added to the standard, but none of which provided text.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**   **Comment Date**

Comment # **1851**   **Comment submitted by:** Carl   Eklund   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 311   **Starting Line #**   **Fig/Table#**   **Section** 12

There are no system profiles defined for mobile operation.
The current transmitter EVM requirements defined for the fixed OFDMA SS are not realistic for a MSS. The MSS power amplifier efficiency becomes too low when trying to meet the higher order modulations. For 16 QAM in .16 the efficiency is comparable to 64 QAM in .11 due to constellation error requirements.

Suggested Remedy

Add a system profile
Make 16 QAM optional for a MSS in the uplink.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

During comment resolution, the working group did consider additional profiles. However, consensus could not be reached on acceptable text.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1855**   **Comment submitted by:** Joseph   Cleveland   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 311   **Starting Line #** 4   **Fig/Table#**   **Section** 12.3

The System Profiles do not appear to support a 5 MHz channel bandwidth. A number of RF bands allow 5 MHz channel spacing.

Suggested Remedy

Include a section for 1.25 MHz spacing that recognizes that 5 MHz channel is a possible configuration.

Resolution of Group   **Decision of Group:** **Rejected-Duplicate**

This comment is similar to comments #1850, #1851, #1859, #1861, #1864, all of which requested that profiles be added to the standard.

Reason for Group's Decision/Resolution

Although the commenter provided no specific text, during comment resolution additional profiles were considered by the group. However during comment resolution, consensus could not be reached on acceptable text. This comment is similar to comments #1850, #1851, #1859, #1861, #1864, all of which requested profiles be added to the standard, but none of which provided text.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1858**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 311   **Starting Line #** 25   **Fig/Table#**   **Section** 12.4

Many alternatives for authentication and security are enabled by the standards. However, none of these are addressed in the OFDMA PHY profiles.

Suggested Remedy

A set of security profiles defining the algorithms and options employed for authentication should be added to the standard.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

Although the commenter provided no specific text, the working group did consider additional profiles. However, during comment resolution, consensus on acceptable text could not be reached

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1859**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 311   **Starting Line #** 25   **Fig/Table#**   **Section** 12.4.2

The 802.16e has enhance the MAC layer significantly with support for handoff, sleep mode, idle mode etc. However, the profiles have not been updated to reflect this new functionality. Profiles should exist calling out the minimum mobility functions in order to build interoperable systems

Suggested Remedy

The MAC profiles should be updated to address the new MAC layer profiles so that interoperable mobile equipment may be constructed.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

Although the commenter provided no specific text, additional profiles were considered by the group during comment resolution. However, consensus could not be reached on acceptable text.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1860**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 311   **Starting Line #** 25   **Fig/Table#**   **Section** 12.4.3

In July 2004, the United States Federal Communication Commission restructured the 2495-2690 MHz creating allocations for the Broadband Radio Service (BRS). The BRS allocates licensed spectrum in blocks of 6 and 16.5 MHz. The current specification through reference to IEEE 802.16-2004 only defines licensed bands of 1.25, 3.5, 7, 8.75, 14, 17.5 and 28 MHz.   None of these allocations are appropriate for the blocks allocated.

Suggested Remedy

It is proposed that 802.16e include license profiles appropriate for the BRS band. The working group should consider license bands of 5, 10 and 15 MHz

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

Although the commenter provided no specific text, additional profiles were considered by the group. However during comment resolution, consensus could not be reached on acceptable text.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1861**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 311   **Starting Line #** 25   **Fig/Table#**   **Section** 12.4.3

The 802.16e OFDMA PHY has added considerable functionality to support mobility. Features, such as MIMO, feedback modification, new FFT sizes have been added. However, the OFDMA profiles have not been updated since IEEE 802.16-2004. Updated OFDMA profiles should exist calling out the minimum mobility functions in order to build interoperable systems for various new features.

Suggested Remedy

The OFDMA PHY profiles should be updated to address the new features of the PHY.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

Although the commenter provided no specific text, the working group did consider additional profiles. However during comment resolution, consensus on acceptable text could not be reached

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1864**   **Comment submitted by:** Mark   Cudak   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 311   **Starting Line #** 25   **Fig/Table#**   **Section** 12.4.4

The current specification incorporates through reference only the RF profiles in IEEE 802.16-2004. These profiles do not address a channelization plan for the Broadband Radio Service (BRS) in the United States.

Suggested Remedy

A set of RF profiles appropriate for the BRS in the U.S.A should be added to the specification.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This comment is virtually identical to Comment #1860 from the same commenter. Although the commenter provided no specific text, additional profiles were considered by the group. However during comment resolution, consensus could not be reached on acceptable text.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **1867**   **Comment submitted by:** James   Gilb   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 319   **Starting Line #**   **Fig/Table#**   **Section** C

[Page 319-332; various lines]
The following commands are in the figure, but not the document: HO-notification-*, HO-pre-*. Are they defined in 802.16-2004?

Suggested Remedy

If they are not defined in 802.16-2004, these need to be replaced with the actual command name that is passed over the air.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

These messages are backbone messages which are not passed over the air. Appendix C is purely informative text. It is expected that these messages will be defined further in P802.16g.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1874**   **Comment submitted by:** James   Gilb   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 332   **Starting Line #** vario   **Fig/Table#**   **Section** C

The MSC references 2 commands, I-am-host-of and MSS-info-req, that do not appear in this document or in 802.16-2001, are they defined in 802.16-2004?

Suggested Remedy

If they are not defined in 802.16-2004, these need to be replaced with the actual command name that is passed over the air.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

These messages are backbone messages which are not passed over the air. Appendix C is purely informative text. It is expected that these messages will be defined further in P802.16g.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1902**   **Comment submitted by:** James   Gilb   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 339   **Starting Line #** 14   **Fig/Table#**   **Section** E

This annex has empty subclauses, e.g., E.1.1

Suggested Remedy

Either delete the subclause or provide the missing information for all of the empty subclauses.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This comment was rejected due to the comment's lack of specific text for the empty subclauses, however, it is recognized that such text is needed and it is currently under development by members of the working group.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1930**   **Comment submitted by:** Tal   Kaitz   Member   2004-11-04

Comment   Type Technical, Binding   **Starting Page #** 501   **Starting Line #**   **Fig/Table#**   **Section** 8.4.4

[on behalf of Ran Yaniv]

In the current IEEE P802.16-2004 specification, a frame contains a single DL-MAP and UL-MAP, each transmitted at a single rate. This constraint leads to large map overheads, especially in AA (Adaptive Antenna) systems where the single broadcast map must be transmitted at a very robust rate in order to bridge the gap between AAS transmissions and broadcast transmissions.

Multiple broadcast maps at varying rates can aid to reduce the resulting map overheads.

Suggested Remedy

Adopt contribution C80216e-04/468 ("Multiple Broadcast Maps for OFDMA PHY").

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

Accept the changes proposed in contribution IEEE C802.16e-05/023r5

Reason for Group's Decision/Resolution

During comment resolution, contribution IEEE C802.16e-05/023r5 was proposed and accepted. The commenter (Ran Yaniv), who had submitted a revised contribution, IEEE C802.16e-04/468r3, withdrew his comment and the associated contribution.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1937**   **Comment submitted by:** Jianglei   Ma   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 599   **Starting Line #**   **Fig/Table#** 323   **Section** 8.4.9.2.3.1

In the current standard, the channel contatenation for FEC is specified based on single antenna case. For MIMO with spatial multiplexing, it is not clear whther it shall follow the same concatennation rule. If it does, then not all required block sizes are defined in the standard.

Suggested Remedy

Suggest to add the required block sizes or define new rule such that FEC segmentation is based on exisiting FEC block size.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This comment is rejected due to lack of specific text.   During comment resolution contribution IEEE C802.16e-05/082r1 was submitted as a proposed resolution to this comment. That contribution was rejected as out of scope of the 802.16e project due to issues with backward compatibility to the fixed operation defined in the base standard.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1940**   **Comment submitted by:** Yossi   Segal   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 621   **Starting Line #** 35   **Fig/Table#**   **Section** 8.4.9.4.4

Fix example, as it is wrong

Suggested Remedy

Replace with a correct example.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

This comment is out of scope of the P802.16e project. The example cited is from the IEEE Std 802.16-2004 base document and cannot be changed by P802.16e.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1945**   **Comment submitted by:** Jonathan   Labs   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 865   **Starting Line #** 65   **Fig/Table#**   **Section**

I do not like the way the acronym MSS has been used to replace SS in text that has been pulled from the base document. For example, comparing Table 55--Action Codes and Actions in the P802.16-REVd/D5 (p. 78, line 42) with Table 55a in P802.16e/D5 (p. 29, line 20), one can see that the 'SS' acronym has been replaced by the 'MSS' acronym in the description of the Actions. Such a change tells me that those Action Codes now only apply to mobile SS's and not SS's in general, whether they are fixed or mobile.

(On a side note, the definition of Action Code 0x00 is being redefined in 16e, which I think breaks backward compatibility.)

Suggested Remedy

Throughout the document, use 'SS' when the function can apply to both fixed and mobile SS's and use 'MSS' when the function only applies to mobile SS's.

Resolution of Group   **Decision of Group:** **Superceded**

This comment has been superseded by Comment #71.

Reason for Group's Decision/Resolution

This comment has been superseded by Comment #71 which changes the usage of MSS and SS.

Document under Review: **P802.16e/D5**

Ballot Number: **0000754**

Comment Date

Comment # **1954**   **Comment submitted by:** Brian   Johnson   Member   2004-11-04

Comment **Type** Technical, Binding   **Starting Page #** 999   **Starting Line #**   **Fig/Table#**   **Section**

The interleaver parameters for the H-ARQ applications (Table 325) for block sizes 120 bytes and up should be redefined. Current definitions are based on a sub-optimum generic interleaver design that exhibits performance inconsistencies

Suggested Remedy

Re-define the interleaver parameters for more consistent performance.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

Although no text was provided with this comment, proposed text was submitted under Comment #1593 (contribution IEEE C802.16e-04/484r2), as well as later comments and contributions (C802.16e-04/484r4, -C802.16e-05//007r1 and others). During comment resolution, consensus could not be reached on an acceptable method to fix the turbo code as requested without requiring a non-backward compatible change to the fixed operation defined in the base standard.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1955**   **Comment submitted by:** Mika   Kasslin   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 999   **Starting Line #**   **Fig/Table#**   **Section**

Draft does not provide any (good) power save methods which could be used together with real-time services (especially UGS). Sleep-mode as defined in 6.3.19 is not very efficient since it requires the MSS to return to normal mode to receive/transmit data. Such a power save facility is missing, which allows periodic transmissions as per commonly agreed service parameters without exiting a kind of sleep-mode.

Suggested Remedy

Provide a kind of sleep-mode which can be used easily and effectivley in combination with e.g. real-time services with some periodicity in transmissions.

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

Accept the changes as defined in the resolution of Comment #634, which are repeated below:

Resolution of Comment # 636 provides the following resolution for sleep mode only:

A(1). Accept the changes in contribution IEEE C802.16e-04/459r2.

A.(2)
   Accept the changes in contribution IEEE C802.16e-05/28r2 with the following change:
   Change table 13b "Generic Downlink Sleep ~~Header~~Subheader"

B .
   [Page 19, line 44]: MOB_SLP-~~D~~ULC_Message_Format()
   [Page 20, line 36]: MOB_SLP-~~U~~DLC_Message_Format()
   [Page 20, line 7]: Encoded as ~~000~~101b
   [Page 21, line 4]: Encoded as ~~100~~000b

C .
   Modify the MOB_SLP-REQ message in Table 106a, as follows :
     1. Delete 'N_Sleep_CID' in the Table 106a, page 68, line 11.
     2. Move 'HMAC Tuple' from line 17 to line 21 before the last parenthesis.

   Remove N_Sleep_CID from table 106a, change the "For" loop on line 13 to replace "N_Sleep_CID" to "Number of Sleep CIDs"

D.
   1. Insert a new row,'Number_of_Classes', in tables 106a (line 21), and 106b (line 12), as follows:

Syntax	Size	Notes
MOB_SLP-RSP_Message_Format() {		
Management message type = 51	8 bits	
Number_of_Classes	8 bits	Number of Power Saving Classes

```
for (i=0;i<Number_of_Classes;i++) {
```

E.
   [In 6.3.19.2 Power Saving Classes of type 1, page 124, line 51, add the text as follows.]

For definition and/or activation of one or several Power Saving Classes of Type 1 the MSS shall send MOB_SLP-REQ; the BS shall respond with an MOB-SLP_RSP message. The MSS may retransmit MOB-SLP-REQ message if it does not receive the MOB-SLP-RSP message within the T30 timer.

   [In 6.3.19.3 Power Saving Classes of type 2, page 126, line 1, modify the text as follows.]

Power Saving Classes of this type are defined/activated/deactivated by MOB_SLPREQ/MOB_SLP-RSP transaction. The MSS may retransmit MOB-SLP-REQ message if it does not receive the MOB-SLP-RSP message within the T30 timer.

   [In 6.3.19.4 Power Saving Classes of type 3, page 126, line 19, modify the text as follows.]

Power Saving Classes of this type are defined/activated by MOB_SLP-REQ/MOB_SLP-RSP transaction. The MSS may retransmit MOB-SLP-REQ message if it does not receive the MOB-SLP-RSP message within the T30 timer.

F.
   section 6.3.19.1 of IEEE C802.16e-04/459r2 , Figure NNN should be Figure 130a.
   section 6.3.20.2 , Figure 0a should be Figure 130b.
   section 6.3.20.2.1, Figure 0b should be Figure 130c.
   section 6.3.20.5, Figure 0c should be Figure 130d.
   section 6.3.20.5, Figure 0d should be Figure 130e.
   section 6.3.20.2.6.2.2, Table 131 looks more like a figure (Figure 130f) (and if not then it should be Table 131a).

Reason for Group's Decision/Resolution

Although the commenter provided no suggested text for the group to review, during comment resolution , contribution IEEE 802.16e-04/459r2 was accepted under Comment #634 and #636. This contribution provides the requested remedy.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1956**   **Comment submitted by:** Jun   Li   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 999   **Starting Line #**   **Fig/Table#**   **Section**

The current FAST FEEDBACK channel does not exploit spatial diversity for MIMO capable users. This is not very efficient. MIMO operation requires more feedback overhead than SISO. Suggest to exploit the spatial diversity for Fast feedback channel to reduce the feedback overhead.

Suggested Remedy

Feedback channel should be transmitted in STTD format to increase the feedback paylode.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution

The commenter did not provide any specific text

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1959**   **Comment submitted by:** Jeff   Mandin   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 999   **Starting Line #**   **Fig/Table#**   **Section**

The MBS Mechanism is not compatible with the Convergence Sublayer defined in 802.16-2004.   Specifically, SDUs that traverse the CS will not be transmitted with the inter-BS synchronization required for MBS.

The CS definition must be extended so that there is a mode that is compatible with MBS service.

Suggested Remedy
Extend CS definition so that there is a mode that facilitates synchronization necessary for MBS service.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution
The commenter has not provided any suggested text.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1960**   **Comment submitted by:** Jeff   Mandin   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 999   **Starting Line #**   **Fig/Table#**   **Section**

Robust Header Compression (ROHC) is a mechanism that is essential in order to offer realtime data services at appropriate bandwidth requirements.

It's highly desirable that 802.16 provide hooks for supporting flexible ROHC mechanisms

Suggested Remedy

Define an appropriate scheme in the CS for supporting some kind of ROHC

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

This comment is essentially the same as Comment #567, which had the following resolution:

Accept the text changes proposed in contribution IEEE C802.16e-04/523r1.

In subsequent comment resolution, this text was further modified as follows:

[Change the table in section11.13.19.1 as following]

Type	Length	Value	Scope
[145/146]28	1	0: No CS	
		1: Packet, IPv4	
		2: Packet, IPv6	
		3: Packet, 802.3/Ethernet	
		4: Packet, 802.1Q VLAN	
		5: Packet, IPv4 over 802.3/Ethernet	
		6: Packet, IPv6 over 802.3/Ethernet	
		7: Packet, IPv4 over 802.1Q VLAN	
		8: Packet, IPv6 over 802.1Q VLAN	
		9: ATM	
		10: Packet, IPv4 with Header Compression (ROHC)	
		11: Packet, IPv4 with Header Compression (ECRTP)	
		12: Packet, IPv6 with Header Compression (ROHC)	
		13: Packet, IPv6 with Header Compression (ECRTP)	
		14: Packet, IPv4 over 802.3/Ethernet with Header Compression (ROHC)	
		15: Packet, IPv4 over 802.3/Ethernet with Header Compression (ECRTP)	
		16: Packet, IPv6 over 802.3/Ethernet with Header Compression(ROHC)	
		17: Packet, IPv6 over 802.3/Ethernet with Header Compression (ECRTP)	
		18: Packet, IPv4 over 802.1Q VLAN with Header Compression (ROHC)	
		19: Packet, IPv4 over 802.1Q VLAN with Header Compression (ECRTP)	
		20: Packet, IPv6 over 802.1Q VLAN with Header Compression (ROHC)	
		21: Packet, IPv6 over 802.1Q VLAN with Header Compression (ECRTP)	

22~255: reserved

                                         DSx-REQ

[Change and insert the table in section11.13.19.2 as indicated:]

11.13.19.2 CS parameter encoding rules

cst   C S
108   Packet, IPv4 with Header Compression (ROHC)
109   Packet, IPv4 with Header Compression (ECRTP)
110   Packet, IPv6 with Header Compression (ROHC)
111   Packet, IPv6 with Header Compression (ECRTP)
112   Packet, IPv4 over 802.3/Ethernet with Header Compression (ROHC)
113   Packet, IPv4 over 802.3/Ethernet with Header Compression (ECRTP)
114   Packet, IPv6 over 802.3/Ethernet with Header Compression (ROHC)
115   Packet, IPv6 over 802.3/Ethernet with Header Compression (ECRTP)
116   Packet, IPv4 over 802.1Q VLAN with Header Compression (ROHC)
117   Packet, IPv4 over 802.1Q VLAN with Header Compression (ECRTP)
118   Packet, IPv64 over 802.1Q VLAN with Header Compression (ROHC)
119   Packet, IPv64 over 802.1Q VLAN with Header Compression (ECRTP)

Reason for Group's Decision/Resolution
The cited contribution provides the requested remedy.

Document under Review: P802.16e/D5   **Ballot Number:** 0000754   **Comment Date**

Comment # 1965   **Comment submitted by:** Wen   Tong   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 999   **Starting Line #**   **Fig/Table#**   **Section**

[Identical comment submitted by Jianglei Ma, Wen Tong, and Peiying Zhu.]
For frequency reuse 1 network, C/I can be very lower than -10dB. The channel estimation will be very unreliable under this condition. Code repetition does not help if the channel estimation is not reliable, this is true especially for MIMO case. In this proposal, we propose to include optional differential STC to extend the network coverage.

Suggested Remedy

Adopt text in contribution C80216e-04_520

Resolution of Group   **Decision of Group:** Rejected

Reason for Group's Decision/Resolution

This original contribution was rejected. During comment resolution an updated contribution, IEEE C802.16e-04/520r2, was submitted and subsequently replaced by the commenter with contribution IEEE C802.16e-04/559r2, which was rejected for the following reasons:

1) From the point of view of overall system throughput, it is better to schedule MSS's which are in low SNR to another subchannel or symbol.
2) Additional simulations are needed to address more varied scenarios in order to technically justify the proposal.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1967**   **Comment submitted by:**   Geng   Wu   Member   2004-11-04

Comment   **Type** Technical, Binding   **Starting Page #** 999   **Starting Line #**   **Fig/Table#**   **Section**

Maximum FEC block size is too small to get sufficient coding gain, especially for CTC case. Suggest to add some larger block sizes.

Suggested Remedy
Add larger FEC block sizes.

Resolution of Group   **Decision of Group:** **Rejected**

Reason for Group's Decision/Resolution
The commenter provided no specific text, however, one proposed remedy was provided in contribution IEEE C802.16e-04/484r4. That contribution was rejected as being out of scope because it would require a non-backward compatible change to the fixed operation defined by the base standard.

Document under Review: **P802.16e/D5**   **Ballot Number:** **0000754**   **Comment Date**

Comment # **1973**   **Comment submitted by:** Titus   Lo   Member   2004-11-04

Comment   **Type** Technical   **Starting Page #** 999   **Starting Line #**   **Fig/Table#**   **Section** 6.3.10.3

In TGe Draft Document IEEE 802.16e-D5, direct and indirect statements about the CDMA handover ranging process can be found in different places. For example, in section 8.4.7.3, it is stated that the CDMA handover ranging code and the CDMA initial ranging code should be selected from two different code domains. In Section 8.7.3.1 it is implied in that the CDMA handover ranging process may follow the CDMA initial ranging process. However, there is no clear, coherent, and explicit definition for the CDMA handover ranging process. Such lack of clarity causes uncertainty and confusion about the process.

Suggested Remedy

Adopt contribution C80216e-04_472.pdf

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

Accept the changes in contribution IEEE C802.16e-04/472r1.

Reason for Group's Decision/Resolution

During comment resolution, an updated contribution was submitted and accepted.