Document under Review: P802.16-2004/Cor1/D1 **Ballot Number:** 17 **Comment Date**

Comment # 049 **Comment submitted by:** David Castelow

Comment Type Technical, Binding **Starting Page #** 26 **Starting Line #** 63 **Fig/Table#** **Section** 6.3.9.5

The Corrigendum document does not contain the accepted resolution of comment 80216maint-04/010#614, dealing with Initial Ranging.

Suggested Remedy

Review and adopt contribution C80216maint-05/009r4.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

Review and adopt contribution C80216maint-05/009r4.

Reason for Group's Decision/Resolution

Group's Notes

Group's Action Items

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

Last sentence of the ninth paragraph was not in the official version of 802.16-2004 and it was underlined to indicate it's a new sentence. We could not identify where it came from.

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 **Ballot Number:** 17 **Comment Date**

Comment # 104 **Comment submitted by:** Torsten Fahldieck

Comment Type Technical, Binding **Starting Page #** 44 **Starting Line #** 9 **Fig/Table#** **Section** 8.3.12

In section 8.3.12 "Frequency and timing requirements" of IEEE802.16-2004 it is stated that the symbol clock frequency of the subscriber station (SS) "shall be synchronized and locked to the BS with a tolerance of maximum 2% of the subcarrier spacing". The wording here is ambiguous.

Suggested Remedy

Adopt the text changes proposed in contribution C80216maint-05_010r2.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

Reason for Group's Decision/Resolution

Author requested to reject the comment on the grounds that the solution is not technically compelete

Group's Notes

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Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 Ballot Number: 17 Comment Date

Comment # 135 Comment submitted by: Lalit Kotecha

Comment Type Technical, Binding Starting Page # 59 Starting Line # 3 Fig/Table# Section 8.4.4.7

Suggested Remedy

Deletion of this section is not acceptable. It deteriorates specificatins by removing an imporatant part of standard using Advanced Antenna system - beamforming method.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

Reason for Group's Decision/Resolution

When the group decided on the deletion of section 8.4.4.7, the group's feeling was that the section is erroneous, does not comply with the rest of the spec and is incomplete.

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 **Ballot Number:** 17 **Comment Date**

Comment # 141 **Comment submitted by:** Ran Yaniv

Comment Type Technical, Binding **Starting Page #** 60 **Starting Line #** 42 **Fig/Table#** **Section** 8.4.5.3

In OFDMA, a DL zone contains multiple bursts whose absolute location (symbol, subchannel) is described in the DL-MAP_IEs. Currently, the text does not limit the possibility to specify consecutive DL-MAP_IEs which define bursts that overlap, or partially overlap in time.

There is merit to preserve the option of burst overlap, but with appropriate limitations so that this does not introduce additional complexity.

Suggested Remedy

[Add the following text before the end of section 8.4.5.3]

DL-MAP_IEs that appear consecutively in the DL-MAP may assign overlapping allocations under the following restrictions:

- **Allocations shall not partially overlap.**
- **All DL-MAP_IEs describing overlapping allocations shall include a CID.**
- **An SS is only required to decode the first allocation assigned to it from among multiple overlapping allocations.**

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

Reason for Group's Decision/Resolution

Author requested to reject the comment on the grounds that the solution is not technically compelete

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 **Ballot Number:** 17 **Comment Date**

Comment # 147 **Comment submitted by:** Ran Yaniv

Comment Type Technical, Binding **Starting Page #** 64 **Starting Line #** 11 **Fig/Table#** **Section** 8.4.5.3.4

In OFDMA, the DL subframe is comprised of multiple zones. Each zone is signaled using a zone-switch IE, which specifies, among other properties, the OFDMA symbol number from which the zone starts. Currently, the text does not limit the possibility to specify multiple zone switch IEs that define zones that overlap, or partially overlap in time.

There is however logic to preserve the option of overlapping zones, but with appropriate limitations so that this does not introduce additional complexity.

Suggested Remedy

[Add the following text before the end of section 8.4.5.3.4]

DL zones may overlap one another under the following restrictions:
- Zones shall not partially overlap.
- At most one zone may overlap another zone.
- All DL-MAP IEs describing bursts in overlapping zones shall include a CID.
- In any given frame, the BS shall not allocate bursts for any specific SS in more than one of the overlapping zones. This includes both unicasts and multicasts.

[move text on page 13, lines 53-55 to its appropriate place (page 12 before line 24), and modify it as follows:]

For all PHYs other than OFDMA, t~~T~~he DL-MAP_IEs in the DL-MAP shall be ordered in ~~the~~ increasing order of the transmission start time of the relevant PHY burst. **For OFDMA PHY, all DL-MAP_IEs describing PHY bursts within a single zone shall be ordered in the DL-MAP in increasing order of the transmission start time of the relevant PHY burst.** The transmission start time is conveyed by the contents of the DL_MAP_IE in a manner which is PHY dependant.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

Reason for Group's Decision/Resolution

Motion to rule the comment in scope by Shlomo Ovadia, Pieter-Paul Giesberts

In favor: 6
Against: 9
Abstain: 0

Fails

Author requested to reject the comment on the grounds that the solution is not technically compelete

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 **Ballot Number:** 17 **Comment Date**

Comment # 172 **Comment submitted by:** Torsten Fahldieck

Comment Type Technical, Binding **Starting Page #** 90 **Starting Line #** 17 **Fig/Table#** 307 **Section** 8.4.5.7

Feedback from the subscriber stations is essential for successful operation of AAS systems. Thereby phase feedback plays an important role, especially in FDD systems where it has a twofold use. On one hand it can be used for re-calibration of the BS antenna array due to changes in environmental conditions such as temperature, on the other hand it allows to respond to differences in the multipath propagation conditions for Tx and Rx frequency bands.
The importance of the AAS-FBCK-REQ/RSP messages is underlined in section 6.3.7.6.5 of IEEE 802.16-2004 by stating 'Using FDD, the BS shall isuue AAS-FBCK-REQ messages. Using TDD the BS may issue AAS-FBCK messages'.

However, the current defintion of the AAS-FBCK-REQ/RSP message bodies is ambigous in a threefold manner:
1. The frequency measurement resolution is only properly defined for the DL preamble. In case of a measurement on the DL data of an individual SS, the current definition is very likely to point to subcarriers, that do not belong to the allocation of the SS addressed by the AAS-FBCK-REQ/RSP message. Especially for small allocations, covering only one or 2 subchannels, a finer granularity of the frequency measurement resolution is required.
2. It is not clear whether the measurement for a value of '1' of the 'Measurement Data Type' field should extend over the whole bursts for the addressed subscriber station, including eventually present AAS preambles, or not.
3. For the frequency measurement points, the definition of the measurement values to be reported is ambiguous - presumably for each frequency measurement point the average over the measurement period indicated by Frame Number and Number of Frames has to be reported.

Corrections and clarifications are suggested to address the above ambiguities.

Suggested Remedy

On page 90, starting at line 17 add the following text:

Change table 307 as indicated:

Table 307 - OFDMA AAS Feedback Request message body

Syntax	Size	Notes
OFDMA-AAS-FBCK-REQ_Message_Body(){		
Frame Number	8 bits	
Number of Frames	7 bits	
Meaurement Data Type	1 bit	0=measure on downlink preamble

Measurement Data Type	1 bit	0=measure on downlink preamble only 1=measure on downlink data (for this SS) only
Feedback Request Counter	3 bits	

Frequency Measurement Resolution	2 bits	if Measurement Data Type = 0 {
		0b00 = 32 subcarriers
		0b01 = 64 subcarriers
		0b10 = 128 subcarriers
		0b11 = 256 subcarriers
		}
		if Measurement Data Type = 1 {
		0b00 = 1 subcarrier
		0b01 = 4 subcarriers
		0b10 = 8 subcarriers
		0b11 = 16 subcarriers
		}

reserved	3 bits	Shall be set to zero
}		

Add a description of the 'Measurement Data Type' field below table 307 as indicated:

Measurement Data Type
Indicates the type of data on which the measurement is carried out. If the 'Measurement Data Type' field entry is set to '1' the measurement is carried out over all DL bursts for this SS during the period, that is indicated by Frame Number and Number of Frames. The measurement thereby extends over the DL bursts as a whole, including AAS DL preambles.

Change the description of the 'Frequency Measurement Resolution' field below table 307 as indicated:

Frequency Measurement Resolution
Indicates the frequency measurement points to report on. Meaurement points shall be on the frequencies corresponding to the negative subcarrier offset indices $-N_{used}/2 + n$ times the indicated subcarrier resolution and corresponding to the positive subcarrier indices $N_{used}/2 - n$ * times the indicated subcarrier resolution where n is a positive integer. In case of measurement on the downlink data (value '1' of the 'Measurement Data Type' field) only the frequencies occurring in the allocations of the addressed SS shall be reported.

Change the description of the 'Re(Frequency_value[i] and Im(Frequency_value[i])' field below table 308 as indicated:

Re(Frequency_value[i] and Im(Frequency_value[i])
The real (Re) and imaginary (Im) part of the mean measured complex amplitude on the frequency measurement point (low to high frequency) in signed integer fixed point format ([+-][2bits].[5bits]).

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

On page 90, starting at line 17 add the following text:

Change table 307 as indicated:

Table 307 - OFDMA AAS Feedback Request message body

Syntax	Size	Notes
OFDMA-AAS-FBCK-REQ_Message_Body(){		
Frame Number	8 bits	
Number of Frames	7 bits	
Meaurement Data Type	1 bit	0=measure on downlink preamble only 1=measure on downlink data (for this SS) only
Feedback Request Counter	3 bits	

Frequency Measurement Resolution	2 bits	if Measurement Data Type = 0 {
		0b00 = 32 subcarriers
		0b01 = 64 subcarriers
		0b10 = 128 subcarriers
		0b11 = 256 subcarriers
		}
		if Measurement Data Type = 1 {
		0b00 = 1 subcarrier
		0b01 = 4 subcarriers
		0b10 = 8 subcarriers

		0bit = 16 subcarriers }
reserved	3 bits	Shall be set to zero
}		

Add a description of the 'Measurement Data Type' field below table 307 as indicated:

Measurement Data Type

Reason for Group's Decision/Resolution

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 **Ballot Number:** 17 **Comment Date**

Comment # 173 **Comment submitted by:** Ran Yaniv

Comment Type Technical, Binding **Starting Page #** 91 **Starting Line #** **Fig/Table#** **Section** 8.4.6.1.2.1

A well-designed permutation should minimize the hit ratio between any two subchannels. However, the hit ratio of PUSC in reuse 1/3 configuration is such that a single subchannel in one cell may be hit by the same subchannel in the neighbor cell in as many as 38% of its tones.

Additional problems with PUSC permutation:

The standard deviation of the hit count on a subchannel is high and itself varies widely between different subchannels and IDcell pairs.
The number of different permutation sequences is restricted to 8 due to the size of the odd major groups.

Suggested Remedy

Adopt contribution 802.16maint-05/083 ("Hit Ratio Problems with PUSC Permutation").

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

Resolution of Group **Decision of Group:** **Out of Scope**

Reason for Group's Decision/Resolution

Motion to rule the comment in scope by Tal Kaitz seconded by Shlomo Ovadia
Vote:
In favour: 12
Against: 28
Abstain: 1
Fails

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 **Ballot Number:** 17 **Comment Date**

Comment # 175 **Comment submitted by:** Ran Yaniv

Comment Type Technical, Binding **Starting Page #** 92 **Starting Line #** 17 **Fig/Table#** **Section** 8.4.6.1.2.1.1

Several changes to the PUSC permutation IDcell values were adopted in session #35 as a result of contribution maint-04/72r3. As a result, the IDcell for the outer permutation in the first DL zone is now 0 and for the inner permutation it is now specified by the preamble IDcell.

The accepted solution is not satisfactory in the sense that it forces a reuse-3 deployment on the first zone, while the standard is clearly built to support unplanned frequency reuse-1 in other zones (FUSC, PUSC with 'use all SC', optional FUSC). The need to plan the deployment for the first zone takes most of the sting about of the standard's support for reuse-1.

A possible solution is to have the outer permutation in the first zone behave differently based on the LSB of the preamble IDcell. For example:
IDcell of outer permutation for 1st DL zone = 0 if LSB = 0;
IDcell of outer permutation for 1st DL zone = preamble IDcell (as is the case for zones with 'use all SC=1') if LSB = 1

Suggested Remedy

clarify the support for reuse-1 on the first DL zone:

[modify the text on page 92, lines 17-20 as follows:]

In the first PUSC zone of the downlink (first downlink zone)**,** the default used DL_PermBase is **equal to** 0 **when the LSB of the preamble IDcell is 0, and is equal to the preamble IDcell when the LSB is 1**. When the 'Use all SC indicator=0' in the STC_DL_Zone_IE(), DL_PermBase is replaced with 0. For All other cases DL_PermBase parameter in the STC_DL_Zone_IE() shall be used.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

Resolution of Group **Decision of Group:** **Out of Scope**

Reason for Group's Decision/Resolution

Motion to rule the comment in scope by Tal Kaitz, seconded by Ran Yaniv
Vote:
In favor: 10
Against: 12
Abstain: 1
Fails

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 **Ballot Number:** 17 **Comment Date**

Comment # 179 **Comment submitted by:** Ran Yaniv

Comment Type Technical, Binding **Starting Page #** 93 **Starting Line #** 38 **Fig/Table#** **Section** 8.4.6.1.2.2.2

The in-slot subcarrier rotations in both DL-PUSC and UL-PUSC permutations are clearly not suited for repetition codes. When repetition occurs over time, repeated bits are placed on the same subcarrier rather than on different subcarriers. As a result, repetition does not combat the fading properties of the channel.

This problem occurs with DL-PUSC and with UL-PUSC when the subchannel rotation scheme is not applied (optional UL PUSC, AAS mode).

Suggested Remedy

change PUSC so that in-slot rotation takes both time and frequency into account:

1) [modify the text on page 569, lines 59-61of 802.16-REVd/D5 as follows:]

s is the index number of a subchannel, from the set [0...Nsubchannels-1]
t is the index number of the slot-duration within the zone; the first slot-duration has index 0
nk = (k + 13 · **(**s **+ t)**) mod Nsubcarriers

2) [modify the text on page 573, lines 21-29 of 802.16-REVd/D5 as follows:]

subcarrier(n, s) = (n + 13 · **(**s **+ t)**)modNsubcarriers

where

n is a running index 0…47
s is the subchannel number.
t is the index number of the slot-duration within the zone; the first slot-duration has index 0
Nsubcarriers is the number of subcarriers per subchannel.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

Resolution of Group **Decision of Group:** **Out of Scope**

Reason for Group's Decision/Resolution

Reason for Group's Decision/Resolution

Motion to rule the comment in scope by Ran Yaniv, seconded by Tal Kaitz
Vote:
In favor: 8
Against: 10
Abstain: 2
Fails

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 **Ballot Number:** 17 **Comment Date**

Comment # 198 **Comment submitted by:** Ran Yaniv

Comment Type Technical, Binding **Starting Page #** 101 **Starting Line #** **Fig/Table#** 8.4.8 **Section** 8.4.8

The STC section (8.4.8) in document 802.16-2004 is amibiguous and lends itself to numerous interpretations.

Suggested Remedy

Adopt contribution C802.16_05/01r2 which tries to clarify this section.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

Reason for Group's Decision/Resolution

The author requested the comment to be rejected on the grounds of thechnically incomplete.

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 **Ballot Number:** 17 **Comment Date**

Comment # 231 **Comment submitted by:** Ran Yaniv

Comment Type Technical, Binding **Starting Page #** 119 **Starting Line #** **Fig/Table#** **Section** 8.4.11.3

The section on CINR and RSSI reporting contains several problems:

1. The text does not specify to what the CINR measurement relates.
2. The text states that CINR is measured on "messages". It is not clear to which "messages" the text refers.
3. It is not clear whether the averaging factor alpha applies to measurements reported through CQICH.
4. CINR estimates derived for CQICH should be kept distinct from reports triggered by REP-REQ/RSP.

etc.

Suggested Remedy

Adopt contribution 802.16maint-05/082 ("Corrections to CINR and RSSI measurements in OFDMA PHY")

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

The author requested to reject the comment on the grounds of lack of harmonization

Reason for Group's Decision/Resolution

Group's Notes

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Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 **Ballot Number:** 17 **Comment Date**

Comment # 239 **Comment submitted by:** Tal Kaitz

Comment Type Technical, Binding **Starting Page #** 119 **Starting Line #** 42 **Fig/Table#** **Section** 8.4.13.1

There are several problems with the section on receiver sensitivity:

-The receiver sensitivity values given in section 802.16-2004 section 8.4.13.1 permit a very high implementation loss. Such a high implementation loss will prevent the system from operating in a reuse -1 deployment.

- Table 337 which was used to derive the sensitivity values, is based on Eb/No values. These values are the same regardless of the code rate. As an example, both QPSK rate 1/2 and 3/4 use the same Eb/No values.

-It is desirable to specifications the sensitivity of BST and SS separately

-The symbol structure on which to perform the measurement is not specified.

- The repetition rate is not taken into account

Suggested Remedy

Add the following text in Cor1/D1

8.4.13.1 Receiver sensitivity

The BER shall be 10^-6 or less at the power levels ~~shown in table 336~~ determined below.

[Replace the beginning in table 337 and ending with the table 338]

The receiver minimum level sensitivity are derived according to the following equation

Prx,min= (S/N)min +10*log10(R)+ 10*log10(Nused+Npilot*(1-PilotBoost))-10*log10(Tb)+ ImpLoss+ NF

where:
(S/N)min - the minimum required signal to noise as given in table 337 below/
R - repetition rate
Nused -Number of used subcarriers
Npilot -average number of pilots per OFDMA symbols
PilotBoost - the boosting of the pilots relative to the data subcarrier, in linear units
Tb -usefull symbol time in seconds as defined in 8.4.2.4,
ImpLoss - Implementation loss
NF - Noise figure.

Table 337 minimum S/N values

Modulation	Coding Rate	(S/N)min [dB]
QPSK	1/2	5dB
QPSK	3/4	6.5dB
QAM16	1/2	11dB
QAM16	3/4	14dB
QAM64	2/3	17.5dB
QAM64	3/4	19dB

For UL reception the minimum receiver sensitivity shall be determined by setting ImpLoss=2dB and NF=4dB. For R>2 ImpLoss=3dB.
For DL reception the minimum receiver sensitivity shall be determined by setting ImpLoss=3dB and NF=4dB. For R>2 ImpLoss=4dB.

[Add in the test conditions, page 628]
- CC FEC is enabled
- PUSC mode is applied in Both UL and DL
- Repetition rate R of in the range of R=1, 2,4, and 6.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

Reason for Group's Decision/Resolution

The author requests the comment to be rejected due to lack of harmonization

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 Ballot Number: 17 Comment Date

Comment # 240 Comment submitted by: Tal Kaitz

Comment Type Technical, Binding Starting Page # 119 Starting Line # 42 Fig/Table# Section 8.4.13

The standard lacks specifications on the required receiver dynamic range in time and frequency domain

Suggested Remedy

Add specifications

Proposed Resolution Recommendation: Recommendation by

Reason for Recommendation

Resolution of Group Decision of Group: Rejected

Reason for Group's Decision/Resolution

Lack of specific text

Group's Notes

Group's Action Items

Editor's Notes Editor's Actions

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D1 **Ballot Number:** 17 **Comment Date**

Comment # 241 **Comment submitted by:** Torsten Fahldieck

Comment Type Technical, Binding **Starting Page #** 119 **Starting Line #** 45 **Fig/Table#** **Section** 8.4.14.1

In in section 8.4.14.1 "Center frequency and symbol clock frequency tolerance" of 802.16-2004 it is stated that the symbol clock frequency of the subscriber station (SS) "shall be synchronized to the BS with a tolerance of maximum 2% of the subcarrier spacing". This specification is misleading.

Suggested Remedy

Adopt the changes according contribution C80216maint-05_011r2.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

Adopt the changes according contribution C80216maint-05_011r4

Reason for Group's Decision/Resolution

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D2 **Ballot Number:** 17a **Comment Date**

Comment # 004 **Comment submitted by:** Jing Wang 2005-04-22

Comment Type Technical, Binding **Starting Page #** **Starting Line #** **Fig/Table#** **Section** 8.4.4.2

In the current standard how pilot tones are modulated using the PRBS generation is not specified. For example, is PRBS assigned in physical or logical numbering? It is not clear, in PUSC mode, whether PRBS is assigned to only specific segments or all the sub-carriers, including DC.

Suggested Remedy

One solution is to apply PRBS to all the sub-carriers, starting from first used one, in physical number ordering. Alternatively,
in the downlink, for PUSC, FUSC, AMC, and optional FUSC permutation, pilot tones are logically renumbered freqeuncy-domain first (starting from the lowest numbered subcarrier) then time (starting from the lowest numbered OFDMA symbol). In PUSC only pilot tones of clusters assigned to the specific segments are logically sequenced and pilot tones are not subject to cluster renumbering. After pilot tones are logically sequenced, the PRBS sequence described in 8.4.9.4.1 are mapped to the pilot tones.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

On page 144, line 48, append the sentence:

"A new value shall be generated by the PRBS for every subcarrier up to the highest numbered usable subcarrier, in order of physical subcarriers, including the DC subcarrier and usable subcarriers that are not allocated."

Reason for Group's Decision/Resolution

Group's Notes

Defered until 4:30 pm

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D2 Ballot Number: 17a Comment Date

Comment # 019 Comment submitted by: David Castelow 2005-04-22

Comment Type Technical, Binding Starting Page # 13 Starting Line # 25 Fig/Table# Section 6.3.2.3

Rejection of comment 13 means ambiguity remains.

(a) the 802.1Q standard in force when .16-2004 was published was .1Q-2003, so there are at very least editorial corrections to be made.

The draft document is incomplete because it does not deal with the following problem.
The definition of the contents of the 802.3/Ethernet PDU are ambiguous because of the definitions of frames in 802.3.
In 802.3 there is a definition of an entire frame. This includes the inter-frame gap, the preamble at the beginning and the FCS at the end. However there is no definition in that standard of an entity that includes the necessary components (e.g. source and destination MAC address) and does not include these extraneous items. Therefore 802.16 needs to be explicit about what data is included.

See contribution C80216maint-05/075r5 for further supporting argument and technical changes.

Suggested Remedy

Adopt contribution C80216maint-05/075r5.

Also fix references to current version of 802.1Q (2003, not 1998).
Replace page 8, line 14, with the following:
5.2.5 IEEE Std 802.1Q~~-1998~~2003 virtual local area network (VLAN) specific part
This CS shall be employed when IEEE Std 802.1Q~~-1998~~2003 tagged VLAN frames are to be carried over the IEEE Std 802.16 network.

Page 8, line 16, modify as follows:
5.2.5.1 IEEE Std 802.1Q~~-1998~~2003 VLAN CS PDU format

Page 8, line 21, modify as follows:
The format of the IEEE Std 802.1Q~~-1998~~2003 VLAN CS PDU shall be as shown in Figure 14 (when header suppression is enabled at the connection but not applied to the CS PDU) or Figure 15 (with header suppression). In the case PHS is not enabled, PHSI field shall be omitted.

Replace Page 9, line 1 to line 8 with the following:
5.2.5.2 IEEE Std 802.1Q~~-1998~~2003 CS classifiers
The following parameters are relevant for IEEE Std 802.1Q~~-1998~~2003 CS classifiers:
~~LC~~IEEE Std 802.3/Ethernet header classification parameters-zero or more of the~~LLC~~IEEE Std 802.3/Ethernet header classification parameters (Destination MAC address, source MAC address, Ethertype/SAP).

IEEE Std 802.1D~~-1998~~2003Parameters-zero or more of the IEEE classification parameters (IEEE Std 802.1D~~-1998~~2003 Priority Range, IEEE Std 802.1Q~~-1998~~2003VLAN ID).
For IP over IEEE Std 802.1Q~~-1998~~2003 VLAN, IP headers may be included in classification. In this case, the IP classification parameters

For IP over IEEE Std 802.1Q-1998/2003 VLAN, IP headers may be included in classification. In this case, the IP classification parameters (11.13.19.3.4.2-11.13.19.3.4.7) are allowed.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

Resolution of Group **Decision of Group:** **Withdrawn**

Reason for Group's Decision/Resolution

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D2 **Ballot Number:** 17a **Comment Date**

Comment # 026 **Comment submitted by:** Jing Wang 2005-04-22

Comment Type Technical, Binding **Starting Page #** 20 **Starting Line #** **Fig/Table#** **Section** 6.3.2.3.20

Since 6.3.10.1 is no longer applicable for OFDMA PHY, should this message still be supported for OFDMA PHY

Suggested Remedy

Add sentence to the first pharagraph:" This message is not applicable for OFDMA PHY" and also add the same sentence for section 6.3.2.3.21

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

On page 20, line 47, insert the following:
"***Add the following sentence at the beginning of the section***:
This mechanism is not applicable to OFDMA PHY."

On page 20, line 65, insert the following:
"6.3.2.3.21 Downlink Burst Profile Change Response (DBPC-RSP) message

Add the following sentence at the beginning of the section:
This mechanism is not applicable to OFDMA PHY."

Reason for Group's Decision/Resolution

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D2 **Ballot Number:** 17a **Comment Date**

Comment # 105 **Comment submitted by:** Tal Kaitz 2005-04-22

Comment Type Technical, Binding **Starting Page #** 119 **Starting Line #** 42 **Fig/Table#** **Section** 8.4.13.1

There are several problems with the section on receiver sensitivity:

-The receiver sensitivity values given in section 802.16-2004 section 8.4.13.1 permit a very high implementation loss. Such a high implementation loss will prevent the system from operating in a reuse -1 deployment.

- Table 337 which was used to derive the sensitivity values, is based on Eb/No values. These values are the same regardless of the code rate. As an example, both QPSK rate 1/2 and 3/4 use the same Eb/No values.

-It is desirable to specificy the sensitivity of BST and SS separately

-The symbol structure on which to perform the measurement is not specified.

- The repetition rate is not taken into account

Suggested Remedy

Add the following text in Cor1/D2

8.4.13.1 Receiver sensitivity

The BER shall be 10^-6 or less at the power levels ~~shown in table 336~~ determined below:

[Replace the text beginning at table 337 and ending at table 338]

The receiver minimum sensitivity levels are derived according to the following equation:

Prx,min= (S/N)min -10*log10(R)+ 10*log10(Nused+Npilot*(1-PilotBoost))-10*log10(Tb)+ ImpLoss+ NF+N0

where:
Prx,min -The minimum sensitivity level in dBm.
(S/N)min - the minimum required signal to noise as given in table 337 below, in dB.
R - The repetition rate used in the transmission.
Nused -Number of used subcarriers.
Npilot -Average number of pilots per OFDMA symbol.
PilotBoost - The boosting of the pilots power relative to the data subcarrier, in linear units. (E.g. for a boosting of 2.5 dB PilotBoost=1.78).
Tb -Useful symbol time as defined in 8.4.2.4, in seconds.
ImpLoss - Implementation loss.
NF - Receiver noise figure, in dB.
N0 - The thermal noise spectral density at the measurement temperature, in dBm/Hz

No The thermal noise spectral density at the measurement temperature, in dBm/Hz.

Table 337 minimum S/N values

Modulation	Coding Rate	(S/N)min [dB]
QPSK	1/2	6
QPSK	3/4	8.1
QAM16	1/2	11.5
QAM16	3/4	14.5
QAM64	2/3	19
QAM64	3/4	20.3

For UL reception the minimum receiver sensitivity shall be determined by setting ImpLoss=2dB and NF=5dB. For R>2 ImpLoss=3dB.
For DL reception the minimum receiver sensitivity shall be determined by setting ImpLoss=3dB and NF=5dB. For R>2 ImpLoss=4dB.

[Add in the test conditions, page 628]
- CC FEC is enabled
- PUSC mode is applied in Both UL and DL
- Repetition rate R of in the range of R=1, 2,4, and 6.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

Reason for Group's Decision/Resolution

The author's representative requested the comment to be rejected due to lack of harmonization

Group's Notes

Defered by Thursday 14:00

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D2 **Ballot Number:** 17a **Comment Date**

Comment # 106 **Comment submitted by:** Ran Yaniv 2005-04-22

Comment Type Technical, Binding **Starting Page #** 119 **Starting Line #** 42 **Fig/Table#** **Section** 8.4.13.1

There are several problems with the section on receiver sensitivity:

-The receiver sensitivity values given in section 802.16-2004 section 8.4.13.1 permit a very high implementation loss. Such a high implementation loss will prevent the system from operating in a reuse -1 deployment.

- Table 337 which was used to derive the sensitivity values, is based on Eb/No values. These values are the same regardless of the code rate. As an example, both QPSK rate 1/2 and 3/4 use the same Eb/No values.

-It is desirable to specifications the sensitivity of BST and SS separately

-The symbol structure on which to perform the measurement is not specified.

- The repetition rate is not taken into account

Suggested Remedy

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

By comment# 105

Reason for Group's Decision/Resolution

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D2 **Ballot Number:** 17a **Comment Date**

Comment # 117 **Comment submitted by:** Tal Kaitz 2005-04-22

Comment Type Technical, Binding **Starting Page #** 128 **Starting Line #** **Fig/Table#** **Section** 8.4.7

As shown in contribution 802.16maint-05/094, the performance of the ranging codes in noise limited conditions is not satisfactory.

Suggested Remedy

Adopt the changes recommended in 802.16maint-05/094

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

Motion to rule the comment as out of scope, by Zion Hadad, seconded by Frank Draper:
In favor: 15
Against: 8
Fails

Vote to accept the comment:
In favor: 3
Against: 16
Fails

Reason for Group's Decision/Resolution

The group belives that the contribution is an improvement and thus out of scope of the project, in addition, the suggestions in the contribution might not provide improvement in an interference limited scenarios.

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D2 **Ballot Number:** 17a **Comment Date**

Comment # 118 **Comment submitted by:** Ran Yaniv 2005-04-22

Comment Type Technical, Binding **Starting Page #** 128 **Starting Line #** **Fig/Table#** **Section** 8.4.7

802.16-2004 defines an initial ranging scheme that is based on transmitting either one or two CDMA codes over 6 subchannels (8 with optional PUSC).

However, these schemes do not work when the deployment consists of a multiple-antenna BS (a supported configuration of 802.16-2004) and a power limited SS that requires either repetition or mini-subchannels for its operation. In such scenarios, the code misdetection rate goes as high as 25% misdetection rate for a 1% false alarm rate. With a single-antenna BS, detection performance is only marginal.

These results are obtained under unrealistically optimistic assumptions: time offset is perfectly known, a single code hypothesis, and that there is no contention on the ranging slot.

Suggested Remedy

Consider and adopt contribution C802.16maint-05/094.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

By comment #117

Reason for Group's Decision/Resolution

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D2 **Ballot Number:** 17a **Comment Date**

Comment # 124 **Comment submitted by:** Sean Cai 2005-04-22

Comment Type Technical, Binding **Starting Page #** 130 **Starting Line #** 17-2 **Fig/Table#** **Section** 8.4.7.3

In the ranging codes initial clock count should not be multiple of 144 to avoid wrap around. The original 120 was fine.

Suggested Remedy

In the ranging codes initial clock counter formula, the 120 should not be changed to 144.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

Reason for Group's Decision/Resolution

The author requests the comment to be rejected due to lack of harmonization

Group's Notes

Defered until Thursday 08:00

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D2 **Ballot Number:** 17a **Comment Date**

Comment # 157 **Comment submitted by:** Ran Yaniv 2005-04-22

Comment Type Technical, Binding **Starting Page #** 150 **Starting Line #** **Fig/Table#** **Section** 8.4.11.3

The section on CINR reporting contains several problems:

1. The text does not specify to what the CINR measurement relates.
2. The text states that CINR is measured on "messages". It is not clear to which "messages" the text refers.
3. It is not clear whether the averaging factor alpha applies to measurements reported through CQICH.
4. CINR estimates derived for CQICH should be kept distinct from reports triggered by REP-REQ/RSP.

etc.

Suggested Remedy

Adopt contribution 802.16maint-05/082r1.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

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

Reason for Group's Decision/Resolution

The author requested the comment to be rejected due to lack of harmonization

Group's Notes

Defer until Wednesday morning and tie to Comment #18.

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D2 **Ballot Number:** 17a **Comment Date**

Comment # 174 **Comment submitted by:** Ran Yaniv 2005-04-22

Comment Type Technical, Binding **Starting Page #** 161 **Starting Line #** **Fig/Table#** 353 **Section** 11.3.1

The methods exist for contention-based periodic ranging and bandwidth request: CDMA and non-CDMA.

For non-CDMA bandwidth request/ranging, the transmission opportunity size within the contention allocation (as defined in 6.3.8.1) is not defined. This is needed in OFDMA (as it is needed in other PHYs), since a contention allocation may consist of multiple transmission opportunities (TOs).

Suggested Remedy

Add the following fields to the end of table 353:

Bandwidth Request opportunity size	XXX	1	Number of slots allocated to each non-CDMA bandwidth request transmit opportunity
Contention ranging request burst size	YYY	1	Size (in slots) of PHY bursts that an SS shall use to transmit a RNG-REQ message in a contention ranging request opportunity.

Proposed Resolution **Recommendation:** **Recommendation by**

Since the regions for transmitting either BW request, or RNG-REQ on non contention is explicitly allocated by the BS, the proposed TLVs seem meaningless

Reason for Recommendation

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

Reason for Group's Decision/Resolution

The author requested the comment to be rejected due to lack of harmonization

Group's Notes

Defered until Thursday

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items

Document under Review: P802.16-2004/Cor1/D2 **Ballot Number:** 17a **Comment Date**

Comment # 180 **Comment submitted by:** Ran Yaniv 2005-04-22

Comment Type Technical, Binding **Starting Page #** 163 **Starting Line #** **Fig/Table#** 358 **Section** 11.4.1

Contribution maint-04/72r3, which was accepted during session #35, clarifies the values of 'IDcell' used for the two equations that define the PUSC permutation (cluster permutation and eq. (111), aka 'inner permutation'). The clarification states that for zones with indicator 'use all SC=1', the DL_PermBase value specified in the zone_switch_IE is the one used for both the inner and cluster permutations of PUSC (same DL_PermBase value for both).

I object to the accepted solution since it adds an unneeded restriction to the system. For zones with 'use all SC=1', a separate PermBase value should be used for inner/cluster permutations of PUSC without any additional complexity.
This has merit because it can be shown that PUSC permutation hit-ratio properties depend on the DL_PermBase value used; hence better optimization of hit-ratio can be achieved by selecting distinct PermBase values for the different components of the permutation

Suggested Remedy

[Add the following field to table 358 (DCD channel encodings):]

DL_ClusterPermBase	**21**	**1**	**Value used in the clustering renumbering formula described in section 8.4.6.1.2.1.1, for PUSC zones for which the indicator 'use all SC' = 1.**	**OFDMA**

[modify text on page 92, lines 16-21]

LogicalCluster = RenumberingSequence((PhysicalCluster+13*~~IDcell~~~~DL_PermBase~~ **DL_ClusterPermBase**) mod 120)
~~In the first PUSC zone of the downlink (first downlink zone), the default used IDcell is 0.~~ In the first PUSC zone of the downlink (first downlink zone) the default used DL_**Cluster**PermBase is 0. When the 'Use all SC indicator=0' in the STC_DL_Zone_IE(), DL_**Cluster**PermBase is replaced with 0. For All other cases **DL_ClusterPermBase parameter transmitted in the DCD message shall be used, or, if the parameter was not transmitted in a DCD message, the** DL_PermBase parameter in the STC_DL_Zone_IE() shall be used.

Proposed Resolution **Recommendation:** **Recommendation by**

Reason for Recommendation

[Add the following field to table 358 (DCD channel encodings):]

DL_ClusterPermBase	**21**	**1**	**Value used in the clustering renumbering formula**

described in section 8.4.6.1.2.1.1, for PUSC zones for which the indicator 'use all SC' = 1.

[modify text on page 92, lines 16-21]

LogicalCluster = RenumberingSequence((PhysicalCluster+13*~~IDcell~~~~DL_PermBase~~ **DL_ClusterPermBase**) mod 120)
~~In the first PUSC zone of the downlink (first downlink zone), the default used IDcell is 0.~~ In the first PUSC zone of the downlink (first downlink zone) the default used DL_**Cluster**PermBase is 0. When the 'Use all SC indicator=0' in the STC_DL_Zone_IE(), DL_**Cluster**PermBase is replaced with 0. For All other cases **DL_ClusterPermBase parameter transmitted in the DCD message shall be used, or, if the parameter was not transmitted in a DCD message, the** DL_PermBase parameter in the STC_DL_Zone_IE() shall be used.

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

Reason for Group's Decision/Resolution

Vote to accept the comment:
In favor: 2
Against: 4
Fails

Reason:
Use of the same permutation is to enable macro-diversity multicast/broadcast services when 'use all SC=1'

Group's Notes

Group's Action Items

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

Editor's Questions and Concerns

Editor's Action Items