Document under Review: **Ballot Number:** **Comment Date**

Comment # 001 **Submitted by:** Jennifer Longman Other

Comment Type Editorial **Starting Page #** **Starting Line #** **Fig/Table#** **Section**

{forwarded by Roger Marks}

I have reviewed IEEE P802.16a/D5 and find that it meets all conditions of editorial review.

Suggested Remedy

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

adopt for the comments listed below the indicated decisions and resolutions.

Nr.	Decision	Resolution
001	Accepted(-Modified)	
002	Accepted	
003	Accepted-Modified	Change "license exempt" to "license-exempt" and change "licence-exempt" to license-exempt
012	Accepted-Modified	Apply suggested remedy to page 73, line 1
013	Rejected	
020	Accepted	
021	Accepted	
023	Accepted	
026	Superceeded	
028	Accepted	
030	Accepted	
031	Accepted	
032	Accepted	
035	Accepted	
043	Accepted	
044	Accepted	
051	Accepted	
057	Accepted	
071	Accepted	

085 Accepted
086 Accepted
087 Accepted
088 Accepted
099 Accepted
101 Accepted
102 Accepted
108 Accepted-Modified change "a kind of" to "the"
109 Accepted-Modified "At the same time, the"
112 Accepted
120 Accepted
125 Accepted
127 Accepted
128 Accepted-Modified see comment 127
129 Accepted

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # **002** **Submitted by:** Jennifer Longman Other

Comment Type Editorial **Starting Page #** **Starting Line #** **Fig/Table#** **Section**

{forwarded by Roger Marks}

IEEE P802.16a/D5 meets all phases of SCC 10 coordination.

Suggested Remedy

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 003 **Submitted by:** Roger Marks Member

Comment Type Editorial **Starting Page #** **Starting Line #** **Fig/Table#** **Section**

Hyphen is always needed in "license-exempt", but the term is sometimes spelled without it (e.g., in 8.4.2.4 and 8.4.8.1).

Suggested Remedy

Change "license exempt" to "license-exempt" globally.

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

Accepted-Modified Change "license exempt" to "license-exempt" and change "licence-exempt" to license-exempt

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 004 **Submitted by:** Mike Geipel Member

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

The 802.16 standard needs to reflect the current realities of dimished R&D spending. While the technological concepts included in the latest version of the standard is impressive, the odds are slim that a critical mass of companies will commit the level of R&D investment required to realize the current spec into a commercial system. To establish itself as a true industry standard the 802.16 specification must be more than an optimal engineering solution to wireless propagation, it must also achieve a balance with respect to the level of effort required to realize the associate hardware and software.

The history of technology adoption teaches us that technology changes typically occur in incremental steps and that the most deterministic (i.e. low risk) steps are the simple ones. With this simplicity heuristic as our guide, a number of changes are suggested to the current 802.16a/D5-2002 standard in order to match the current realities of R&D investments.

Suggested Remedy

- Make ITU J.83 Annex A or B an optional transmit encoding scheme
- Make adaptive modulation optional.
- The MAC is functionally equivalent to the DOCSIS MAC, why not adopt the DOCSIS MAC and list possible enhancements as options.

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

vote:
0 in favor
21 against

Reason for Group's Decision/Resolution

The Working Group recognizes the economic realities that influence the acceptance of a standard. It believes that it has found the right balance, introducing advanced technology that can be economically developed and deployed. The group does not believe it would benefit the standard to introduce addtional transmit encoding options. It believes that adaptive modulation is essential to the successful operation of a system in the long term.

In order for a standard to be success, it also has to be capable of effective operation in the intended environment. The ITU J.83 PHY (which, by the way, is used in DOCSIS) was designed for FDD *cable* systems, and solves a different set of problems from BWA. Some of the shortcomings of the ITU J.83 PHY and DOCSIS MAC proposal for the 802.16a application are as follows: it

a) is not defined for TDD systems (a functional requirement of 802.16a);
b) does not perform well (has low capacity) in the NLOS slow fading environments typical of 802.16a applications (see BWIF white paper for documented details, since it does use the DOCSIS PHY in comparisons with V-OFDM);
c) does not possess framing/modulation structures that facilitate capacity-improving channel estimation and equalization techniques;
d) does not possess pilot symbols and preambles that enable fast acquisition and re-acquisition when a fade is experienced (note that preambles also facilitate TDD operation);
e) does not enable the operator to implement MAC-based ARQ, and therefore must rely on ARQ from TCP/IP, which greatly reduces capacity over a slow fading channel;
f) does not enable the use of per-user adaptive modulation which greatly improves capacity, since, unlike cable, not all users have the same CINR (both distances and shadowing).
g) Has no mechanism to introduce other BWA capacity enhancing options, including space-time coding, AAS, and MESH.

Document under Review: **Ballot Number:** **Comment Date**

Comment # **005** **Submitted by:** Paul Nikolich Member

Comment Type Technical, Satisfied (was **Starting Page #** **Starting Line #** **Fig/Table#** **Section**

The single carrier physical layer in section 8.3 Wireless MAN-SCa PHY layer does not have a specification for adjacent channel or alternate channel rejection.

Suggested Remedy

Please add specifications for adjacent channel and alternate channel rejection.

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

Use adjacent channel and alternate channel 'interference' spec found in Table 115 (page 259) of 802.16 standard, with the inclusion of entries for BPSK and 256-QAM. For BPSK, subtract 3 dB from the listed QPSK entries for the BPSK. For 256-QAM, add 7 dB to the listed 64-QAM entries. Number this new clause 8.3.4.11.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 006 **Submitted by:** Paul Nikolich Member

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

The MAC protocol relies on a higher layer (TCP/IP) functions like DHCP, UDP, and Time-of-Day services to provide configuration information to the MAC and is specified to be the 'communication channel' between the Base Station and the Subscriber stations (for example in 6.2.15 MAC Management Message tunneling in Mesh Mode).

This causes architectural problems - ideally protocol layer (n) should be independent of protocol layer (n+1). In the case of 802.16a, if the higher layer functionality is not working, then the layer 2 network does not operate correctly.

Suggested Remedy

Restrict node state, MAC messaging and inter-node communications within layer 2 and to not be reliant on any higher layer functionality.

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

Insert on page 6, line 44: Though the MAC specification invokes IP protocols, they are required only as a standard basis for element management rather than MAC operation, since, in all practicality, element management is necessary in this type of network.

Reason for Group's Decision/Resolution

For PMP systems:
The MAC does not really rely on the higher layer protocols. These functions are intended to be a standard way of providing connectivity between the SS and a network management and/or element management system. From the MAC's point of view, the SS could simply respond to the BS with a TFTP-CPLT message and be done with it. The SS would be unmanageable at the NOC level, but you could still authenticate, set up services, transfer data, perform RLC functions, etc. So from a MAC point of view none of the higher layer functions are required. However, they are required as a standard basis for element management (rather than MAC) since, in all practicality, element management is necessary in this type of network.

For mesh systems:
In mesh systems there is need to support transactions that take place between entities separated by multiple hops. This need arises out of the following:
The intermediate nodes neither have access to nor should be trusted with all information necessary to complete all transactions that

currently rely on MAC message tunneling.

Also in 802 the CIDs (the addresses used by the MAC layer) are unique only over a single hop and not known by the BS if separated from a node by more than a single hop. Also 802.16 does not include routing functionality that is necessary for making correct forwarding decisions as this functionality is non-trivial and is already readily available for IP.

The current choice of tunneling the MAC messages over UDP is motivated by the following facts:
1) Tunneling the messages over UDP provides, in conjunction with off the shelf higher layer protocols, a mechanism to deliver the MAC message over multiple hops to the intended recipient.
2) The implementation burden of the current approach is minimal on the devices supporting mesh.
3) The tunneling does not compromise the security of the authentication and authorization transactions.

Document under Review: **Ballot Number:** **Comment Date**

Comment # **007** **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Satisfied (was **Starting Page #** **Starting Line #** **Fig/Table#** **Section**

This concept of having the BS send adjustments in response to a collision is very dangerous. If there is a collision, each SS may actually need an adjustment is different directions. You run the risk of giving an invalid advance such as beyond the extent of the cell, or one that actually translates to a dely. The problem is aggravated if more than one Initial Maintenance opportunity exists (with the potential for more than one collision) in a frame. Additionally, even if there is a safe way to implement this in n OFDM system, it definitely breaks WirelessMAN-SC.

Suggested Remedy

If there is a safe way to implement this for TGa, make that very explicit, and state for which PHYs it is used. Otherwise, delete all changes to section 6.2.9.5.

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

add in 6.2.9.5 a statement limiting the additional functionality to SCa and OFDM PHYs only

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 008 **Submitted by:** Shawn Taylor Member

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

There is a parallel ETSI standard (HIPERMAN) currently being developed which has been based on the 802.16a OFDM /OFDMA modes. This comment is specifically aimed at theOFDM section. ETSI has made some technical improvements to this mode (e.g. sub-channelisation) which were rejected in the last 802.16 meeting without technical reasons. This is unacceptable and contrary to the goal of having a common IEEE/ETSI standard.

Suggested Remedy

Accept HIPERMAN changes to the OFDM mode, unless valid technical reasons exist for this not to happen.

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

Reason for Group's Decision/Resolution

See comment numbers: 11, 165, 166, 173, 174, 176, 180, 196, 197

Document under Review: **Ballot Number:** **Comment Date**

Comment # 009 **Submitted by:** David Trinkwon Member

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

a)IEEE has not received Patent assurances in relation to the Alamouti (STC) option in the Standard therefore this option must be deleted from the Draft Standard.
b) Without the STC option there is no means of achieving realistic non-LOS operation in the licensed bands. non-LOS and Advanced Antenna solutions were considered mandatory requirements at the PAR and FRD stages and during the evaluation of alternative PHY technologies.

Suggested Remedy

i) Either resolve the long-outstanding patent issue or delete all refernces to the Alamouti (STC) technology / option within tyhe draft standard.

ii) If Alamouti / STC is deleted then either add an explanation that non-LOS operation will be difficult to achieve in practice in the licensed bands or include specific PHY details for AAS options within each PHY type in order to support realistic non-LOS operation.

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

Motion: Delete all references to STC from the document
vote: 2 in favor
17 against

Reason for Group's Decision/Resolution

The group followed IEEE patent policy procedures and has no knowledge of the known use of patents regarding the STC option.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 010 **Submitted by:** Lei Wang Member

Comment Type Editorial **Starting Page #** **Starting Line #** **Fig/Table#** **Section**

Mandatory and optional modes are no longer clearly defined throughout the document. For example, page 2 has a nomenclature table using parentheses to define optional modes, but there is very little reference to optional modes in the document. Alamouti space-time coding is not defined as optional.

Suggested Remedy

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 011 **Submitted by:** Lei Wang Member

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

Include subchannelization for OFDM.

Suggested Remedy

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

vote: 9 in favor, 8 against

Reason for Group's Decision/Resolution

Subject of sub-channelization for OFDM was discussed at great length, without reaching technical consensus as to the advantages and disadvantages of this technique. Since sponsor rules require 75% approval ratio for technical changes, there was insufficient support to incorporate this change.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 012 **Submitted by:** Vladimir Yanover Member

Comment Type Editorial **Starting Page #** **Starting Line #** **Fig/Table#** **Section**

Clarification

Suggested Remedy

Replace

"If the SS receives a response containing the frame number in which the RNG-REQ was transmitted, it shall consider the transmission attempt unsuccessful"

with

"If the SS receives a response that contains the frame number in which the RNG-REQ was transmitted, but does not contain its EIU it shall consider the transmission attempt unsuccessful"

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

Apply suggested remedy to page 73, line 1

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 013 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Non-binding **Starting Page #** **Starting Line #** **Fig/Table#** **Section**

Suggested Remedy

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 014 **Submitted by:** Avraham Freedman Member

Comment Type Editorial **Starting Page #** 2 **Starting Line #** 1 **Fig/Table#** **Section** 1.2.2.2

1. The new addition "Channel bandwidths allowed shall be limited to the regulatory provisioned bandwidth divided by any power of 2 no less than 1.25 MHz." is out of place in the scope section. It should be put in the PHY section.
2. Is 1.25MHz correct? The smallest number in the tables (331 and 332) is 1.5 MHz.

Suggested Remedy

Transfer the senetence to section 8.3., 8.4 and 8.5. See subsequent comments

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

Change "no less than 1.25" to "but no less than 1.25".
Move sentence to:
95, line 10
141, line 7,
185, line 7

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 015 **Submitted by:** Roger Marks Member

Comment Type Technical, Satisfied (was **Starting Page #** 2 **Starting Line #** 24 **Fig/Table#** **Section** 1.2.4

Subclause 1.2.4 has many problems. It requires a complete revision.

Aside from simple editorial issues, the main problems are:
-Normative and informative materials are unacceptably mixed up, and some normative material is unnecessarily duplicated from elsewhere in ways that can only lead to confusion.
-This section should not discuss when it is appropriate to "claim compliance". Compliance claims are much more complicated than this; that's why we have begun developing a complete set of compliance documentation for 10-66 GHz.
-Language is used in a sloppy fashion.
-The table is confusing and hard to read.

Suggested Remedy

Replace 1.2.4 with version in IEEE C802.16a-02/85.

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

Replace 1.2.4 with version in IEEE C802.16a-02/85
add 8.4.6/8.5.8 after STC for WirelessHUMAN
change last sentence of IEEE C802.16a-02/85 to "They may in addition comply with 8.5, including the license-exempt requirements detailed in 8.5.15."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 016 **Submitted by:** Anader Benyamin-Seeyar Member

Comment Type Technical, Non-binding **Starting Page #** 2 **Starting Line #** 64 **Fig/Table#** **Section** 1.2.4

There is a contribution (C802.16a-02/83) made on proposing that the draft standard allow simultaneous use of both the existing OFDM and Single Carrier modes; i.e. OFDM in the downlink, and single carrier in the uplink. It briefly discuses the advantages and the implications of this arrangement.

Suggested Remedy

Addition of "a system shall comply to the standard if its downstream complies with the OFDM PHY as described in 8.4 and its upstream with the SCa PHY as described in 8.3. " to Page 2 and line 64.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 017 **Submitted by:** Avraham Freedman Member

Comment Type Editorial **Starting Page #** 3 **Starting Line #** 10 **Fig/Table#** **Section** 1.2.4

License-exempt operation are also detailed in 8.5.15

Suggested Remedy

Change "8.4.11" to 8.4.11 and 8.5.15"

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 018 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Binding **Starting Page #** 3 **Starting Line #** 13 **Fig/Table#** **Section** 1.2.4

I'm still rather unhappy with the entire lack of interoperability and co-existence between the PHYs in the LE bands. There is still no clarification on what an optional PHY is supposed to be, other than that both need to be resident in the hardware/software, which would be a rather pointless requirement.

Suggested text below is the ultimate minimum in co-existence and interoperability that should be specified.

Suggested Remedy

Insert:
A BS shall start up using the mandatory PHY and perform the DRFM measurement before switching to the optional PHY. A SS may start up using the optional PHY, but shall switch to the mandatory mode when no BS employing the optional PHY is detected on any of the targeted channels.

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

A SS may start up using the optional PHY, but shall switch to the mandatory mode when no BS employing the optional PHY is detected on any of the targeted channels.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 019 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 4 **Starting Line #** 56 **Fig/Table#** **Section** 3.66

It should be clear that the Rx/Tx Transition Gap only holds for TDD systems. The same is true for the TTG.

Suggested Remedy

page 4, line 56, after "downlink burst" add "in a TDD physical layer"
page 4, line 64, after "uplink burst" add "in a TDD physical layer"

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

page 4, line 56, after "downlink burst" add "in a TDD or H-FDD transceiver"
page 4, line 64, after "uplink burst" add "in a TDD or H-FDD transceiver"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 020 **Submitted by:** Remi Chayer Member

Comment Type Editorial **Starting Page #** 5 **Starting Line #** 55 **Fig/Table#** **Section** 4.

The definition of the "HUMAN" acronym is not correct. Also "Metropolitan" is mis-spelled.

Suggested Remedy

Change "HUMAN" definition to "High-Speed Unlicensed Metropolitan Area Network".

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

Change "HUMAN" definition to "High-Speed Unlicensed Metropolitan Area Network".

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 021 **Submitted by:** Remi Chayer Member

Comment Type Editorial **Starting Page #** 6 **Starting Line #** 13 **Fig/Table#** **Section** 4.

The definition of "RLAN" is incorrect.

Suggested Remedy

Change the definition to "Radio Local Area Network".

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

Change the definition to "Radio Local Area Network".

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 022 **Submitted by:** Remi Chayer Member

Comment Type Editorial **Starting Page #** 6 **Starting Line #** 25 **Fig/Table#** **Section** 4.

We should avoid forcing the reader to look at more than one acronym to get the full definition of SSTG.

Suggested Remedy

Change the definition of "SSTG" to "subscriber station transition gap".

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

Change the definition of "SSTG" to "subscriber station transition gap".

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 023 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 6 **Starting Line #** 36 **Fig/Table#** **Section** 4

delete superfluous abbreviations

Suggested Remedy

delete CRQS, CEI, DCE, MIMO, SIMO, SISO, MISO from abbreviations
delete MISO on page 171, line 17 and spell out on line 48 in 8.4.6.1 header

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

delete CRQS, CEI, DCE, MIMO, SIMO, SISO, MISO from abbreviations
delete MISO on page 171, line 17 and spell out on line 48 in 8.4.6.1 header

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 024 **Submitted by:** John Barr Member

Comment Type Technical, Binding **Starting Page #** 6 **Starting Line #** 41 **Fig/Table#** **Section** 6

The statement: "Two-way point-to-multipoint and mesh topology wireless networks are good examples of shared media:" does not recognize other more established methods of shared wireless media being used in the licensed exempt bands that P802.16a may operate. This statement has been updated to include "mesh topology" as one of the good examples, but no justifcation for 'good' has been provided.

Suggested Remedy

Change "Two-way point-to-multipoint and mesh topology wireless networks are good examples of shared media:" to "Two-way point-to-multipoint and mesh topology wireless networks are examples for sharing wireless media:" Add this sentence at the end of the paragraph: "Other examples for sharing wireless media include CSMA/CD and TDMA methods used in IEEE 802.11 WLAN and IEEE 802.15 WPAN standards that share some license-exempt bands with an 802.16 system."

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

Change the second sentence of the paragraph ("Two-way point-to-multipoint and mesh topology wireless networks are good examples of shared media: here the media are the space through which the radio waves propagate." to "Two-way point-to-multipoint and mesh topology wireless networks are examples for sharing wireless media. Here the medium is the space through which the radio waves propagate."

Reason for Group's Decision/Resolution

Changing the first sentence, per the comment, is an improvement, since networks are an example of "sharing wireless media" but networks are not "shared media". There is no loss in removing the word "good". At the same time, we should fix the grammar in the second part of the sentence.

Addition of the proposed second sentence is inappropriate. The previous sentence refers to PMP and mesh topologies; this already includes 802.11 and 802.15 systems. The context of the sentence is to illustrate that these *topologies* require sharing a medium. Introducing multiple access methods (CSMA/CD and TDMA) brings up the idea of *how* the medium is shared, which is not the point of the paragraph.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 025 **Submitted by:** Avraham Freedman Member

Comment Type Editorial **Starting Page #** 6 **Starting Line #** 56 **Fig/Table#** **Section** 6.B

The sentence: "In the optional mesh mode, the main difference as compared to the PMP mode described above, is that the channel resources (e.g. the ability to transmit) is shared between the systems on demand basis"
is simply wrong. The channel resources are shared among the systems (SS??) on demand basis in PMP mode as well.

Suggested Remedy

Replace it with
"The main difference between the PMP and the Mesh modes is that in the PMP mode the spectrum resources are re-used on a cellular basis and traffic is routed to each SS via the BS controlling the resources in each cell while in the Mesh mode traffic can be routed directly between two SS's"

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

The main difference between the PMP and optional Mesh modes is that in the PMP mode, traffic only occurs between the BS and SSs, while in the Mesh mode traffic can be routed through other SSs and can occur directly between SSs.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 026 **Submitted by:** John Barr Member

Comment Type Editorial **Starting Page #** 6 **Starting Line #** 58 **Fig/Table#** **Section** 6.B

Editorial, use of 'is' instead of 'are' for plural item.

Suggested Remedy

Change "resources (e.g. the ability to transmit) is shared" to "resources (e.g. the ability to transmit) are shared"

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

Reason for Group's Decision/Resolution

see 026

Document under Review: **Ballot Number:** **Comment Date**

Comment # 027 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 6 **Starting Line #** 58 **Fig/Table#** **Section** 6.B

grammatical error

Suggested Remedy

change "resources (e.g. the ability to transmit) is shared" to "resources (e.g. the ability to transmit) are shared"

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 028 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 6 **Starting Line #** 59 **Fig/Table#** **Section** 6.B

grammatical error

Suggested Remedy

change "done on basis of" to "done on the basis of"

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

change "done on basis of" to "done on the basis of"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 029 **Submitted by:** John Barr Member

Comment Type Technical, Non-binding **Starting Page #** 7 **Starting Line #** 13 **Fig/Table#** **Section** 6.B

In the following paragraph:
"In a mesh system not even the mesh BS can transmit without having to coordinate with other nodes. With distributed scheduling all the nodes including the mesh BS shall coordinate their transmissions in their twohop neighborhood. All the nodes broadcast their schedules (available resources, requests and grants) to all their neighbors. Optionally the schedule may also be established by directed requests and grants between two nodes. There is no difference in the mechanism used in determining the schedule for downlink and uplink. Nodes shall just ensure that the resulting transmissions do not cause collisions with the data and control traffic scheduled."
It is not clear what each node 'shall' do when conforming with the standard.

Suggested Remedy

Replace paragraph with the following"
"All the nodes including the mesh BS shall coordinate their transmissions in their two-hop neighborhood using distributed or centralized scheduling. With distributed scheduling all the nodes broadcast their schedules (available resources, requests and grants) to all their neighbors. Optionally the schedule may also be established by directed requests and grants between two nodes. There is no difference in the mechanism used in determining the schedule for downlink and uplink. Nodes shall ensure that the resulting transmissions do not cause collisions with the data and control traffic scheduled by any other node in the two-hop neighborhood."

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

Using distributed scheduling, all the nodes including the mesh BS shall coordinate their transmissions in their two-hop neighborhood and shall broadcast their schedules (available resources, requests and grants) to all their neighbors. Optionally the schedule may also be established by directed un-coordinated requests and grants between two nodes. Nodes shall ensure that the resulting transmissions do not cause collisions with the data and control traffic scheduled by any other node in the two-hop neighborhood. There is no difference in the mechanism used in determining the schedule for downlink and uplink.

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 030 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 7 Starting Line # 31 Fig/Table# Section 6.B

grammatical error

Suggested Remedy

change "on message by message basis" to "on a message by message basis"

Resolution of Group Decision of Group: Accepted

change "on message by message basis" to "on a message by message basis"

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 031 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 7 Starting Line # 32 Fig/Table# Section 6.B

grammatical error

Suggested Remedy

change "associated to a link" to "associated with a link"

Resolution of Group Decision of Group: Accepted

change "associated to a link" to "associated with a link"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 032 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 7 **Starting Line #** 35 **Fig/Table#** **Section** 6.B

grammatical error

Suggested Remedy

change "associated to each message" to "associated with each message"

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

change "associated to each message" to "associated with each message"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 033 **Submitted by:** John Barr Member

Comment Type Technical, Binding **Starting Page #** 9 **Starting Line #** 20 **Fig/Table#** **Section** 6.1.2.1.1.2

Service flow parameters are introduced for this primitive, but are not defined in the document.

Suggested Remedy

Define all MAC service primitive parameters such as those mentioned as service flow parameters (Target data rate, transmit energy, Estimated packet error rate). These are not found in P802.16.

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

Replace first two with:

Data rate (Mbps) (Data rate associated with the profile for the physical link over which the connection is created.)
Transmit power (dB) (Transmit power at the antenna port for the physical link over which the connection is created.)

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 034 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Non-binding **Starting Page #** 9 **Starting Line #** 22 **Fig/Table#** **Section** 6.1.2.1.1.2

Among the service flow QoS prameters there is "Target data rate for the link in Mbps".
This issue needs further clarification because
1. Data rate depends on demand, so there cannot be "target data rate" in any system. What if demand is zero?
Probably, what should be requested from the system is to supply enough capacity for the transfer of certain amount of data per unit of time - assuming that this mount has been actully demanded.
2. With above update, there is no explicit reference in the standard on a mechanism for QoS policy enforcement
(in PMP system this task is performed by MAC scheduler at BS)

Suggested Remedy

Either add clarification or delete this parameter from the list.

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

Reason for Group's Decision/Resolution

see 033

Document under Review: **Ballot Number:** **Comment Date**

Comment # 035 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 10 **Starting Line #** 24 **Fig/Table#** **Section** 6.1.2.1.3

cut and paste error:
line 24 says .request but line 36 says .indication. The .indication is described in section 6.1.2.1.4, so line 24 must be correct and line 36 incorrect.

Suggested Remedy

on page 10, line 36 change ".indication" to ".request"

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

on page 10, line 36 change ".indication" to ".request"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 036 **Submitted by:** John Barr Member

Comment Type Technical, Binding **Starting Page #** 15 **Starting Line #** 2 **Fig/Table#** **Section** 6.2.1.2

HMAC is not defined.

Suggested Remedy

Define HMAC as an acronym and provide reference for how HMAC is performed for P802.16a.

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

Acronym and reference are already provided in P802.16-2001 (on page 10, line 1 and in 7.5.3 respectively).

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 037 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 15 **Starting Line #** 27 **Fig/Table#** **Section** 6.2.1.2

Based on the original specification, table 1a is more appropriate in the network entry and initialization section.

Suggested Remedy

Move table 1a and a description to the network entry and initialization section.

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

Move table 1a and a description to the network entry and initialization section.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 038 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Satisfied (was **Starting Page #** 17 **Starting Line #** 6 **Fig/Table#** **Section** 6.2.2.1

fix the bit order in the subheader table to be consistent with base document (messed this up in D5 creation)
change the subsequent paragraph consistently

Suggested Remedy

#0 (lsb) Grant Management Subheader
#1 Packing Subheader
#2 Fragmentation Subheader
#3 Extended Packing/Fragmentation Subheader
#4 ARQ Feedback Payload
#5 (msb) Mesh Subheader

~~Three~~ Four types of Subheaders may be present. The per-PDU subheaders (the Mesh subheader, the Fragmentation subheader and the Grant Management subheader) may be inserted in MAC PDUs immediately following the Generic MAC. If both the Fragmentation Subheader and Grant Management Subheader are indicated, the Grant Management Subheader shall come first. If the Mesh Subheader is indicated, it shall preceed all other subheaders.

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

#0 (lsb) Grant Management Subheader
#1 Packing Subheader
#2 Fragmentation Subheader
#3 Extended Packing/Fragmentation Subheader
#4 ARQ Feedback Payload
#5 (msb) Mesh Subheader

~~Three~~ Four types of Subheaders may be present. The per-PDU subheaders (the Mesh subheader, the Fragmentation subheader and the Grant Management subheader) may be inserted in MAC PDUs immediately following the Generic MAC. If both the Fragmentation Subheader and Grant Management Subheader are indicated, the Grant Management Subheader shall come first. If the Mesh Subheader is indicated, it shall preceed all other subheaders.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 039 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Satisfied (was **Starting Page #** 17 **Starting Line #** 9 **Fig/Table#** **Section** 6.2.2.1

Changing, from the approved specification, which bits in the type field indicate the grant management and packing subheaders breaks any 10-66 GHz implementations already underway, without providing any extra benefit.

Additionally, the ARQ bit as listed here disagrees with oage 49, line 11, where it also conflicts with the bit previously used for indicating the packing subheader (unless page 49 uses 0 based little endian bit numbering instead of the table's unconventional 1 based big endian bit numbering).

The table should also be changed to use 0 based bit numbering.

Suggested Remedy

On page 17, line 9 change "#1(msb)" to "#0 (msb)"
On page 17, line 12 change "#2" to "#5 (lsb)"
On page 17, line 16 change "#3" to "#4"
On page 17, line 19 change "#4" to "#3"
On page 17, line 22 change "#5" to "#2"
On page 17, line 26 change "#6 (lsb)" to "#1"

Reorder the rows of the table to be in bit order.

On page 49, line 11 change " bit #5" to "bit #1"

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

On page 49, line 11 change " bit #5" to "bit #1"

Reason for Group's Decision/Resolution

see 038

Document under Review: **Ballot Number:** **Comment Date**

Comment # 040 **Submitted by:** Lei Wang Member

Comment Type Editorial **Starting Page #** 17 **Starting Line #** 35 **Fig/Table#** **Section** 6.2.2.2

Packing subheader is missing.

Suggested Remedy

Insert "the packing subheader" after "the Mesh subheader".

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 041 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 17 **Starting Line #** 42 **Fig/Table#** **Section** 6.2.2.2.1

page 17 through 20 are a waste of paper

Suggested Remedy

replace page 17, line 44 through page 20 line 23 with 6.2.2.2.1 and 6.2.2.2.3 of C80216a-02/84

replace page 47, line 60 "except that ARQ-enabled connections use a three-byte Extended Packing Subheader with an extended FSN" with
"except that ARQ-enabled connections shall set the Extended Type bit (see Table 4) to 1, whereas non-ARQ connections shall set the Extended Type bit to 0."

Delete page 48, sentence on line 7-8 and "Extended" in next sentence

Delete "Extended" everywhere from clause 6.2.3.4.2.1

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

replace page 17, line 44 through page 20 line 23 with 6.2.2.2.1 and 6.2.2.2.3 of C80216a-02/84r1
replace page 47, line 60 "except that ARQ-enabled connections use a three-byte Extended Packing Subheader with an extended FSN" with
"except that ARQ-enabled connections shall set the Extended Type bit (see Table 4) to 1, whereas non-ARQ connections shall set the Extended Type bit to 0."

Delete page 48, sentence on line 7-8 and "Extended" in next sentence

Delete "Extended" everywhere from clause 6.2.3.4.2.1
change Length on packing subheader (in 84r1) to 11 bits

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 042 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 20 **Starting Line #** 29 **Fig/Table#** **Section** 6.2.2.2.4

Current sentence doesn't say too much and is incomplete (cause it can also be send as a standalone management message, according to 6.2.4).
"May" might be a problem here also. I think if that bit is set, then it ought to be "shall be transported."

Suggested Remedy

Replace sentence with:

If ARQ Feedback Payload bit in the MAC Header Type field (see Table 4) is set, the ARQ Feedback Payload shall be transported. If packing is used, it shall be transported as the first packed payload. See 6.2.3.4.3.

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

Replace sentence with:

If ARQ Feedback Payload bit in the MAC Header Type field (see Table 4) is set, the ARQ Feedback Payload shall be transported. If packing is used, it shall be transported as the first packed payload. See 6.2.3.4.3.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 043 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 20 **Starting Line #** 44 **Fig/Table#** 12b **Section** 6.2.2.2.5

the name of the mesh subheader in Table 12b is wrong

Suggested Remedy

change to Mesh Subheader

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

change to Mesh Subheader

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 044 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 21 **Starting Line #** 9 **Fig/Table#** 13a **Section** 6.2.2.3

Numbering and document order don't match. More consistent order makes for easier reading.

Suggested Remedy

move MSH-NCFG to 39, MSH-NENT to 40
Reserved should be 44-255, not 46

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

move MSH-NCFG to 39, MSH-NENT to 40
Reserved should be 44-255, not 46

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 045 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 21 **Starting Line #** 54 **Fig/Table#** **Section** 6.2.2.3.5

Add AAS TLV's (see my comment against page 248 for naming issue)

Suggested Remedy

6.2.2.3.5 Ranging Request (RNG-REQ) message

Insert at end of 6.2.2.3.5:

The following parameter may be included in the RNG-REQ message:

AAS broadcast capability

and add on line 59:

AAS broadcast permission

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

6.2.2.3.5 Ranging Request (RNG-REQ) message

Insert at end of 6.2.2.3.5:

The following parameter may be included in the RNG-REQ message:

AAS broadcast capability

and add on line 59:

AAS broadcast permission

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 046 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Non-binding **Starting Page #** 22 **Starting Line #** 1 **Fig/Table#** **Section** 6.2.2.3.6

It is written

"When Frame Number is included, SS MAC Address shall not appear in the same message."

It is wrong in the case when "regular" (i.e. not "focused") contention procedure was used to submit RNG-REQ because more than one SS can transmit within the same frame, thus there is no way to decide whether specific RNG-RSP is addressed to the given SS.

Suggested Remedy

Replace the mentioned sentence with

"If OFDM focused contention procedure was used to submit RNG-REQ then RNG-RSP shall contain Frame Number and Ranging Opportunity instead of SS MAC Address"

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 047 **Submitted by:** Vladimir Yanover Member

Comment Type Editorial **Starting Page #** 22 **Starting Line #** 3 **Fig/Table#** **Section** 6.2.2.3.6

Term "Frame Opportunity" seems misleading. Exact meaning is "the number of transmission opportunity where the correspondent RNG-REQ message was transmitted"

Suggested Remedy

Change "Frame Opportunity" to "Ranging transmission opportunity"
Make the correspondent changes in the following paragraph and in 11.1.4.6 (Table 127a)

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

change "Frame Opportunity" to "Initial Ranging Opportunity Number"
Make the correspondent changes in the following paragraph and in 11.1.4.6 (Table 127a)

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 048 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 22 **Starting Line #** 9 **Fig/Table#** **Section** 6.2.2.3.6

reduce heavy text redundancy

Suggested Remedy

Replace line 9 through 39 with:

The following WirelessMAN-OFDMA PHY specific parameters shall be included in the RNG-RSP message when a CDMA-based initial ranging message is received, in which case the RNG-RSP shall use the initial ranging CID.

Ranging Code
The received ranging CDMA code.
Ranging Symbol
The OFDM symbol in which the ranging CDMA code was received.
Ranging Subchannel
The Ranging subchannel in which the ranging CDMA code was received.
Ranging Frame Number
The frame number in which the ranging CDMA code was received.

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

Replace line 9 through 39 with:

The following WirelessMAN-OFDMA PHY specific parameters shall be included in the RNG-RSP message when a CDMA-based initial ranging message is received, in which case the RNG-RSP shall use the initial ranging CID.

Ranging Code
The received ranging CDMA code.
Ranging Symbol
The OFDM symbol in which the ranging CDMA code was received.
Ranging Subchannel
The Ranging subchannel in which the ranging CDMA code was received.
Ranging Frame Number
The frame number in which the ranging CDMA code was received.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 049 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 22 **Starting Line #** 51 **Fig/Table#** **Section** 6.2.2.3.7

The MAC version in the REG-REQ would be valuable in the PMP cases as well.

Suggested Remedy

Add the MAC version to the PMP cases of the REG-REQ message.

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

Add the MAC version to the PMP cases of the REG-REQ message.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 050 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 22 **Starting Line #** 60 **Fig/Table#** **Section** 6.2.2.3.7

The IP version is part of the SS Capabilities Encodings already so line 61 makes line 60 redundant .
The same is true for the REG-RSP message on page 23, lines 19 and 20.

Suggested Remedy

Delete page 22, line 60 and page 23, line 19 for consistency with PMP sections.

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

Delete page 22, line 60 and page 23, line 19 for consistency with PMP sections.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 051 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 23 **Starting Line #** 25 **Fig/Table#** **Section** 6.2.2.3.9

missing header

Suggested Remedy

Insert header 6.2.2.3.9 Privacy Key Management (PKM-REQ/PKM-RSP) messages

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

Insert header 6.2.2.3.9 Privacy Key Management (PKM-REQ/PKM-RSP) messages

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 052 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 24 **Starting Line #** 10 **Fig/Table#** **Section** 6.2.2.3.30

The ARQ, AAS, and Mesh messages are only applicable in certain circumstances. It would be nice, from an organizational point of view for these messages to be grouped in three subsections under 6.2.2.3 rather than each message having its own subsection. That would make it easier to make statements about an entire set of messages' applicability.

Suggested Remedy

Make the ARQ unique messages one subsection under 6.2.2.3 with a further indented subsection for each message as is done with the PKM messages.
Do the same with the AAS unique messages.
Do the same with the Mesh unique messages.

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

Combine the Report sections into one. Add that it is only applicable for the PHYs below 11 GHz.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 053 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Non-binding **Starting Page #** 24 **Starting Line #** 11 **Fig/Table#** **Section** 6.2.2.3.30

The sentence
"An SS supporting ARQ shall be able to receive and process the ARQ Feedback message."
does not request from BS ability to receive and process the ARQ Feedback message.

Suggested Remedy

Change the mentioned sentence to

"A BS or an SS supporting ARQ shall be able to receive and process the ARQ Feedback message."

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

A system supporting ARQ shall be able to receive and process the ARQ Feedback message.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 054 **Submitted by:** Lei Wang

Comment Type Technical, Non-binding **Starting Page #** 24 **Starting Line #** 13 **Fig/Table#** **Section** 6.2.2.3.30

Since ARQ can be enabled on DL connction and UL connection, both BS and SS shall be able to receive and process ARQ feedback messages, not just the SS.

Suggested Remedy

change "An SS supporting ARQ ...." to " A BS or an SS supporting ARQ ...."

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 055 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 24 **Starting Line #** 15 **Fig/Table#** **Section** 6.2.2.3.8

It says here that ARQ Feedback Information shall be formatted as a standalone MAC message, it says in 6.2.2.2.4 that it may be transported as packed payload. I remember seeing 6.2.4 that it shall be either standalone or piggybacked (packed) and somewhere else in 6.2.4 that it may be either standalone or piggybacked.

To me, that's rather confusing.

Also, the logic is wrong: (!last) within the loop should be (last). It seems however much cleaner to (at least if I understand the intent) to define the ARQ_Feedback_Payload as a construct in 6.2.3.4.3 and simply embed that in the standalone message or pack it.

Suggested Remedy

Replace 6.2.2.3.30 and 6.2.3.4.3 with the text from C80216a-02/84

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

Replace 6.2.2.3.30 and 6.2.3.4.3 with the text from C80216a-02/84r1

Reason for Group's Decision/Resolution

Document under Review:	Ballot Number:	Comment Date
Comment # 056	Submitted by: Nico van Waes Member	2002/09/04
Comment Type Editorial	Starting Page # 25 Starting Line # 29 Fig/Table# Section 6.2.2.3.32	

grammar/consistency

Suggested Remedy

change "messages" to "message"
Add "This message is applicable to ARQ-enabled connections only." after the header.

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

change "messages" to "message"
Add "This message is applicable to ARQ-enabled connections only." after the header.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 057 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 26 **Starting Line #** 15 **Fig/Table#** **Section** 6.2.2.3.33

consistency

Suggested Remedy

add _Message_Format in both Response names
change "Report Command" to "Report Request"
change "Report" to "Report Response" in the TLV list
change table headers to REP-REQ message format and REP-RSP message format respectively

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

add _Message_Format in both Response names
change "Report Command" to "Report Request"
change "Report" to "Report Response" in the TLV list
change table headers to REP-REQ message format and REP-RSP message format respectively

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 058 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 27 **Starting Line #** 10 **Fig/Table#** **Section** 6.2.2.3.35

Better to dump the parameter table directly in the message format, than in a TLV construction. Since this message is sporadically sent, sending an incomplete TLV set makes no sense (currently this is ambiguous). Sending it as a TLV set costs an additional 10 bytes in space, which could just as well be spared. Current clause text then becomes even more inaccurate and should be replaced as well.

Suggested Remedy

Move all DRFM TLVs directly into the message body.

Replace all text in this clause with:
To facilitate co-existence and spectrum sharing, the BS shall broadcast the DRFM message, which characterizes the radio frequency emission properties of the BS, periodically. The maximum allowed period between two subsequent DRFM messages shall be 2 minutes.
A newly established BS shall monitor its environment for least 2 minutes for DRFM messages from other BSs before initiating its own transmissions.

In the TLV values:
Insert after both degrees (0xB9 to 0x7F: -90 to -1;
0x00 to 0x4A: 0 to 90)
Insert "height of the coverage area" after terrain

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

Delete DRFM from the entire document.
(vote: 11 in favor, 0 against)

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 059 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 28 **Starting Line #** 1 **Fig/Table#** 56g **Section** 6.2.2.3.36

The parameters listed for the MSH-NCFG message in table 56g do not match the list of parameters given in text on page 29. For instance "NetEntry MAC Address Flag" does not appear in the text.

Suggested Remedy

Make certain the text gives a description of all the parameters,

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

move the if(..) statements to the left column
Insert:

Frame Number

A modulo 2^{12} number, which shall be increased by one for every frame.

Network Control Slot Number in frame

See 8.4.11.2.1

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 060 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 33 **Starting Line #** 16 **Fig/Table#** 56k **Section** 6.2.2.3.36.3

Defines scheduling divider for the data subframe, and provides mechanism to define burst profiles (same parameters as for PMP).

Suggested Remedy

Insert

MSH-CSCH-DATA-FRACTION	4 bits	Maximum percentage (value * 6.67) of minislots in the data-subframe allocated to centralized scheduling. The number of minislots is rounded to the nearest whole number of minislots and allocated starting from the beginning of the data subframe. The remainder of the data subframe, as well as any minislots not occupied by the current centralized schedule, may be used for distributed scheduling
BurstProfileCount	4 bits	Number of burst profile definitions. If not set to zero, shall total all defined burst profiles.

Add after "Number of logical channels" "If set to 0, then no MSH-NCFG_Channel_IE() shall be included."
Insert an if(Channels) above MSH-NCFG_Channel_IE()
Insert at end of table

```
for (i=0;i < BurstProfileCount;i++ ) {
    FEC Code Type                8 bits    See Table 125b
    Mandatory Exit Threshold     8 bits    See Table 125b
    Mandatory Entry Threshold    8 bits    See Table 125b
}
```

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

Insert

MSH-CSCH-DATA-FRACTION	4 bits	Maximum percentage (value * 6.67) of minislots in the data-subframe allocated to centralized scheduling. The number of minislots is rounded to the nearest whole number of minislots and allocated starting from the beginning of the data subframe.

		The remainder of the data subframe, as well as any minislots not occupied by the current centralized schedule, may be used for distributed scheduling
BurstProfileCount	4 bits	Number of burst profile definitions. If not set to zero, shall total all defined burst profiles.

Add after "Number of logical channels" "If set to 0, then no MSH-NCFG_Channel_IE() shall be included."
Insert an if(Channels) above MSH-NCFG_Channel_IE()
Insert at end of table

```
for (i=0;i < BurstProfileCount;i++ ) {
    FEC Code Type                   8 bits      See Table 125b
    Mandatory Exit Threshold        8 bits      See Table 125b
    Mandatory Entry Threshold       8 bits      See Table 125b
}
```

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 061 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 33 **Starting Line #** 53 **Fig/Table#** **Section** 6.2.2.3.36.3

consistency

Suggested Remedy

delete MSH-CSCH-slots (redundant with MSH_DSCH_NUM and not used in table anyway)
move the channel re-use text into the following Table 56l
reorder params as listed in Table

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

delete MSH-CSCH-slots (redundant with MSH_DSCH_NUM and not used in table anyway)
move the channel re-use text into the following Table 56l
reorder params as listed in Table

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 062 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 37 **Starting Line #** 1 **Fig/Table#** **Section** 6.2.2.3.37

Consistency with Mesh Subheader and Mesh CID definition.

Suggested Remedy

Replace paragraph with:

When a MSH-NENT message is sent, the Mesh Subheader is set to 0x0000 until the node has been assigned a node ID. In the Mesh CID, the Network ID is set the sponsor's network code or to 0x0000 if not known and the Link ID is set to 0xFF (Broadcast).

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

Replace paragraph with:

When a MSH-NENT message is sent, the Mesh Subheader is set to 0x0000 until the node has been assigned a node ID. In the Mesh CID, the Network ID is set the sponsor's network code or to 0x0000 if not known and the Link ID is set to 0xFF (Broadcast).

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 063 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 42 **Starting Line #** 36 **Fig/Table#** **Section** 6.2.2.3.38.3

grammar/consistency

Suggested Remedy

change bit to bits after Direction
Delete "Neighbor ID" from the param list (not used)

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

change bit to bits after Direction
Delete "Neighbor ID" from the param list (not used)

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 064 **Submitted by:** Marianna Goldhammer Member

Comment Type Technical, Non-binding **Starting Page #** 44 **Starting Line #** 12 **Fig/Table#** **Section** 6.2.2.3.39

The MSH-CSCH message is used to allocate transmission window for the mesh elements. The allocation should be requested/granted in mini-slots, and not in multiples of kb/s. Using Traffic Flow instead mini-slots creates divergence from the basic 802.16 MAC.

Suggested Remedy

Use instead Downlink Flow, Up-link flow and Flow Scale, mini-slot number for air resource allocation.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 065 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 45 **Starting Line #** 18 **Fig/Table#** **Section** 6.2.2.3.39

typos and insertion of Configuration Flag.

Suggested Remedy

change
page 44, line 51, "the same the same",
line 55, "only indicates only" => "indicates only"
Table 56w: Add above reserved (padding till byte boundary is currently erroneous):

Configuration Flag	1	bit	0 = Next schedule control message is MSH-CSCH 1 = Next schedule control message is MSH-CSCF

Configuration Flag

Indicates which centralized scheduling control message type (CSCH or CSCF) will be transmitted next by the Mesh BS. This bit may be set to
aid the nodes in computing the validity of the schedule indicated in the current message (see 6.2.6.7.2).

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

change
page 44, line 51, "the same the same",
line 55, "only indicates only" => "indicates only"
Table 56w: Add above reserved (padding till byte boundary is currently erroneous):

Configuration Flag	1	bit	0 = Next schedule control message is MSH-CSCH 1 = Next schedule control message is MSH-CSCF

Configuration Flag

Indicates which centralized scheduling control message type (CSCH or CSCF) will be transmitted next by the Mesh BS. This bit may be set to
aid the nodes in computing the validity of the schedule indicated in the current message (see 6.2.6.7.2).

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 066 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 45 **Starting Line #** 50 **Fig/Table#** 56w **Section** 6.2.2.3.39

When using only centralized scheduling, the BS may need to know if a sponsorship is in progress, since it would be a substantial waste to provide allocations up the entire scheduling tree for this inherently local traffic.

Suggested Remedy

Change to:
if (Grant /Request Flag == 1)
{
.....
}
else
{
allocation

if all its

Index 0x00,

Sponsor Node	8 bits	index in MSH-CSCF list.
DL Burst Profile	4 bits	
UL Burst Profile	4 bits	

}

Three parameters below shall be set to 0, except by nodes which wishes to reserve an

for the "upper MAC initialization" as specified in 6.2.9.13.3. A node may only set these values

children report these values as 0. The Mesh BS shall in response provide a grant to Node

which shall be reserved for this purpose.

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

Change to:
if (Grant /Request Flag == 1)
{
.....
}
else
{
allocation

Three parameters below shall be set to 0, except by nodes which wishes to reserve an

for the "upper MAC initialization" as specified in 6.2.9.13.3. A node may only set these values if all its

children report these values as 0. The Mesh BS shall in response provide a grant to Node Index 0x00,

which shall be reserved for this purpose.

Sponsor Node	8 bits	index in MSH-CSCF list.
DL Burst Profile	4 bits	
UL Burst Profile	4 bits	

}

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 067 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 46 **Starting Line #** 53 **Fig/Table#** **Section** 6.2.2.3.40

no longer used in message

Suggested Remedy

Delete Hoprange Threshold

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

Delete Hoprange Threshold

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 068 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 47 **Starting Line #** 51 **Fig/Table#** **Section** 6.2.3.4.1.2

Why delete the "Interaction with Fragmentation" heading from the non-ARQ connection section and then add an ARQ enabled connection section which has that paragraph structure. Why not leave well enough alone?

Suggested Remedy

Instead of deleting heading 6.2..3.4.2.1, change it to 6.2.3.4.1.2.1.

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

get rid of the new 6.2.3.4.2.1 header instead

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 069 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 47 **Starting Line #** 61 **Fig/Table#** **Section** 6.2.3.4.2

The statement that the fixed length packing option is not supported by ARQ enabled connections raises some questions:

1) Is ARQ not intended for use with ATM connections?
2) Is ARQ not intended for use in 2-11 GHz systems?
3) Is ATM OK for 2-11 GHz systems, but if ARQ is used, it must be handled as a variable length PDU connection because of the headers involved in implementing ARQ?

Suggested Remedy

Clarify the relationship between ATM and 2-11 GHz systems and clarify the relationship between ATM and ARQ.

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

Add text in red (referenced against base document).

6.2.3.4.1 Packing fixed-length MAC SDUs

For connections that do not use ARQ and are indicated by the fixed-length versus variable-length SDU indicator (11.4.8.15) to carry fixed-length MAC SDUs, the packing procedure described in this subclause may be used. For all other connections, the variable length packing algorithm described in section 6.2.3.4.2 shall be used.

6.2.3.4.2 Packing variable-length MAC SDUs

When a sequence number must be associated with each SDU payload, or when packing variable length SDU connections such as

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 070 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 48 **Starting Line #** 25 **Fig/Table#** 30a **Section** 6.2.3.4.2.1

What is the purpose of Figure 30a? It is completely redundant given that Figures 30b and c immediately follow it.

Suggested Remedy

Delete Figure 30a and the sentence referencing it on line 20.

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

Delete Figure 30a and the sentence referencing it on line 20.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 071 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 48 **Starting Line #** 42 **Fig/Table#** **Section** 6.2.3.4.2.1

typos - missing spaces after punctuation

Suggested Remedy

On page 48, line 42 change "subheaders.Each" to "subheaders. Each"
On page 48, line 58 change "reasons.For" to "reasons.For"
On page 48, line 61 change "re-transmission.Similarily,a" to "re-transmission. Similarily, a"
On page 49, line 5 change "connection.However,policies" to "connection. However, policies"

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

On page 48, line 42 change "subheaders.Each" to "subheaders. Each"
On page 48, line 58 change "reasons.For" to "reasons.For"
On page 48, line 61 change "re-transmission.Similarily,a" to "re-transmission. Similarily, a"
On page 49, line 5 change "connection.However,policies" to "connection. However, policies"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 072 **Submitted by:** Lei Wang

Comment Type Technical, Non-binding **Starting Page #** 48 **Starting Line #** 59 **Fig/Table#** **Section** 6.2.3.4.2.1

Fragmentation is to fragment MAC SDU, not MAC PDU.

Suggested Remedy

Change "PDU" to "SDU"

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

Change "PDU" to "SDU"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 073 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Non-binding **Starting Page #** 51 **Starting Line #** 25 **Fig/Table#** **Section** 6.2.4.2.4

The sentence
"ARQ_RETRY_TIMEOUT is the time interval a transmitter shall wait before requeuing an unacknowledged fragment for retransmission." refers to queueing of a fragment before trasnmission, which is NOT an element of system design covered by the standard. Air Interface standard shall refer only to events that can be observed in the air.

Suggested Remedy

Change the referenced sentence to

"ARQ_RETRY_TIMEOUT is the time interval a transmitter shall wait before retransmission of an unacknowledged fragment "

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

Change the referenced sentence to

"ARQ_RETRY_TIMEOUT is the time interval a transmitter shall wait before retransmission of an unacknowledged fragment "

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 074 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 53 **Starting Line #** 1 **Fig/Table#** **Section** 6.2.4.5.2

I have a little doubt about throwing Discard and Done on one heap, Especially since it requires an ACK-ed ARQ Discard to get from one to the other. Probably cleaner to split them up.

Suggested Remedy

replace Figure 31a with figure from C802.16a-02/84

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

replace Figure 31a with figure from C802.16a-02/84
Reverse the direction of the state arrows between "Outstanding" and "Waiting for retransmission"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 075 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 54 **Starting Line #** 11 **Fig/Table#** **Section** 6.2.4.5.2

consistency/clarity

Suggested Remedy

replace Figure 31b and 31c with Figures in C80216a-02/84

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

replace Figure 31b and 31c with Figures in C80216a-02/84
change 31b on transmitter side and 31c on receiver side: delete top box and add bottom box "End ARQ-Reset"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 076 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Non-binding **Starting Page #** 54 **Starting Line #** 12 **Fig/Table#** 31b **Section** 6.2.4.5.2

See motives in the "suggested remedy" section

Suggested Remedy

1. At the "Receiver" column delete "Disable reception" box; instead add "disable reception" to the content of the top box:
"Issue ARQ Reset Message Type = 00 and disable reception"
It's worth to mention in the text that "disable reception" means discarding all arriving MAC PDUs.

Motive: if we already have recognized problem sufficient to reset the ARQ, then we can do nothing with arriving fragments.

2. Change at the "Transmitter" column
"Discard all SDUs from which one or more fragments has reached the 'discarded' state"
to
"Discard all SDUs from which one or more fragments has been transmitted at least once"

Motive: if we already have recognized problem sufficient to reset the ARQ, then we can do nothing consistent with partially transmitted
fragments. Generally the policy in networks is to avoid duplicate transmissions rather than SDU loss, therefore the right thing to do is to discard all SDUs that have already started transmission.

3. Replace "error" at transmitter side with "request deletion of the connection"

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

Reason for Group's Decision/Resolution

see comment 75

Document under Review: **Ballot Number:** **Comment Date**

Comment # 077 **Submitted by:** Lei Wang

Comment Type Technical, Non-binding **Starting Page #** 55 **Starting Line #** 1 **Fig/Table#** 31c **Section** 6.2.4.5.2

ARQ reset should be a three-part dialog process, as defined in page 25, TGs/D5. However, Figure 31c shows only a two-part dialog, the ARQ reset confirmation message is missing.

Suggested Remedy

add the ARQ reset confirmation message Tx and Rx in Figure 31c.

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

Reason for Group's Decision/Resolution

see comment 075

Document under Review: **Ballot Number:** **Comment Date**

Comment # 078 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Non-binding **Starting Page #** 55 **Starting Line #** 51 **Fig/Table#** **Section** 6.2.4.5.3

It's about the sentence

"ARQ fragment numbers outside the sliding window shall be rejected as out of order."

The following example shows that this rule is wrong. Sippose, the window size is 10. Transmitter sends fragments 0 to 9; they received correctly, but acknowledgment "up to 9" failed during transmission. So transmitter's window is still [0, 9].
The receiver's window is advanced to [10,19] according to the following rule (p. 56):

"The sliding window is maintained such that the ARQ_RX_WINDOW_START variable always points to the lowest numbered ARQ fragment that has not been received or has been received with errors."

Then, after timeout, Transmitter sends again fragments 0 to 9 - all of them are outside the receiver's window and therefore must be discarded!

Suggested Remedy

1. "Change the sentence

"ARQ fragment numbers outside the sliding window shall be rejected as out of order."

to

"ARQ fragment numbers outside the interval

[ARQ_RX_WINDOW_START - ARQ_WINDOW_SIZE, ARQ_RX_WINDOW_START + ARQ_WINDOW_SIZE)

shall be rejected as out of order."

2. Correct Fig. 31d: replace
"FSN in ARQ window range?"

with

"FSN in the interval from ARQ_RX_WINDOW_START - ARQ_WINDOW_SIZE to ARQ_RX_WINDOW_START + ARQ_WINDOW_SIZE?

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # **079** **Submitted by:** Lei Wang

Comment Type Technical, Non-binding **Starting Page #** 56 **Starting Line #** 1 **Fig/Table#** 31b **Section** 6.2.4.5.3

When successfully received an ARQ fragment, ARQ feedbacd should be sent, not RNG-RSP.

Suggested Remedy

change "Send RNG-RSP" to "Send ARQ feedback".

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

replace "RNG-RSP (success)" with "Add FSN to FSN list to be ACK-ed" and make the box square.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 080 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Non-binding **Starting Page #** 56 **Starting Line #** 1 **Fig/Table#** 31d **Section** 6.2.4.5.3

Actually typo

Suggested Remedy

Replace
"Send RNG-RSP (success)"
with
"Mark the fragment number FSN as received and tentatively send an acknowledgement "

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

Reason for Group's Decision/Resolution

see 079

Document under Review: **Ballot Number:** **Comment Date**

Comment # 081 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 56 **Starting Line #** 10 **Fig/Table#** **Section** 6.2.4.5.3

The original figure read "Send ACK", which I screwed up, but it's probably better to write it as suggested here, to avoid the impression that an immediate ACK must be send

Suggested Remedy

replace "RNG-RSP (success)" with "Add FSN to FSN list to be ACK-ed" and make the box square.

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

Reason for Group's Decision/Resolution

see 079

Document under Review:	Ballot Number:	Comment Date

Comment # 082 Submitted by: Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding Starting Page # 58 Starting Line # 35 Fig/Table# Section 6.2.6.5

I'm not sure whether the collision description is accurate.
If multiple SSs use the same code on the same channel during the same opportunity, I'm thinking that the BS might receive this as one signal with multipath (sort of what the intent of the guys at Co-wave is). In that case, the BS will issue an allocation, and all SSs involved will happily try to send their BW request, which will result in a detectable collision at the BS.

If the group agrees that this scenario is possible, consider adopting the rewrite with the piece in square brackets, otherwise without.

Reason for the rewrite is that I think the current text is too fuzzy and that the text for OFDM could be fairly similar to that of OFDMA (see subsequent comment), since the mechanisms are rather similar.

Suggested Remedy

Replace entire clause with:

The WirelessMAN-OFDM PHY supports two contention based BW request mechanisms. The mandatory mechanism allows the SS to send the Bandwidth Request Header as specified in 6.2.6.1 during a REQ Region-Full. Alternatively, the SS may send a Focused Contention Transmission during a REQ Region-Focused . This transmission consists of a, with equal probability selected, Contention Code modulated on a, with equal probability selected, Contention Channel consisting of 4 carriers. Upon detection, the BS shall provide a UL allocation for the SS to transmit a BW request MAC PDU, but instead of indicating a Basic CID, the broadcast CID shall be sent in combination with an OFDM Focused_Contention_IE, which specifies the Contention Channel, Contention Code and Transmit Opportunity which were used by the SS. This allows a SS to determine whether it has been given an allocation by matching these parameters with the parameters it used. See also 8.4.5.3.3.

If the BS does not issue the UL allocation described above, [or the BW request MAC PDU does not result in a subsequent allocation of any bandwidth], the SS shall assume that the Focused Contention Transmission resulted in a collision and follow the contention resolution as specified in 6.2.8.

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

Replace entire clause with:

.

The WirelessMAN-OFDM PHY supports two contention based BW request mechanisms. The mandatory mechanism allows the SS to send the Bandwidth Request Header as specified in 6.2.6.1 during a REQ Region-Full. Alternatively, the SS may send a Focused Contention Transmission during a REQ Region-Focused . This transmission consists of a, with equal probability selected, Contention Code modulated on a, with equal probability selected, Contention Channel consisting of 4 carriers. Upon detection, the BS shall provide a UL allocation for the SS to transmit a BW request MAC PDU, but instead of indicating a Basic CID, the broadcast CID shall be sent in combination with an OFDM Focused_Contention_IE, which specifies the Contention Channel, Contention Code and Transmit Opportunity which were used by the SS. This allows a SS to determine whether it has been given an allocation by matching these parameters with the parameters it used. See also 8.4.5.3.3.

If the BS does not issue the UL allocation described above, or the BW request MAC PDU does not result in a subsequent allocation of any bandwidth, the SS shall assume that the Focused Contention Transmission resulted in a collision and follow the contention resolution as specified in 6.2.8.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 083 **Submitted by:** Vladimir Yanover Member

Comment Type Editorial **Starting Page #** 58 **Starting Line #** 36 **Fig/Table#** **Section** 6.2.6.5

Clarification + correction of wrong reference

Suggested Remedy

Replace

"For systems using the WirelessMAN-OFDM PHY, there are two contention request mechanisms: the bandwidth contention mechanism defined in 6.2.6.1, and the optional focused contention mechanism."

with

"For systems using the WirelessMAN-OFDM PHY, there are two contention-based request mechanisms: the multicast polling defined in 6.2.6.4 , and the optional focused contention mechanism."

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

Reason for Group's Decision/Resolution

Document under Review:	Ballot Number:	Comment Date

Comment # 084 Submitted by: Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding Starting Page # 58 Starting Line # 54 Fig/Table# Section 6.2.6.6

I'm not sure whether the collision description is accurate.
If multiple SSs use the same code on the same channel during the same opportunity, I'm thinking that the BS might receive this as one signal with multipath (sort of what the intent of the guys at Co-wave is). In that case, the BS will issue an allocation, and all SSs involved will happily try to send their BW request, which will result in a detectable collision at the BS.

If the group agrees that this scenario is possible, consider adopting the rewrite with the piece in square brackets, otherwise without.

Reason for the rewrite is that I think the current text is too fuzzy.

In addition to the issue above (which is identical as for OFDM), the current OFDMA text allows the SS to send only data instead of a BW request. If the problem described above is really a problem, then the data transmissions will collide at the BS, with no way for the BS MAC to inform the SSs (which are anonymous). A a result, SSs sending only data cannot participate in contention resolution (i.e. backoff) and may have an enjoyable impact on heavily loaded systems. This may be too far-fetched for any MAC guy to care about, but I just want the group to consider whether this is a problem.

Suggested Remedy

Replace entire clause with:

The OFDMA based PHY supports a single mandatory contention-based BW request mechanism.
As specified in 6.2.10.2, the OFDMA based PHY specifies a Ranging Subchannel and a subset of Ranging codes which shall be used for contention-based BW requests. The SS, upon a need to request for transmission slots, shall select, with equal probability, a Ranging Code from the code subset allocated to BW requests. This Ranging Code shall be modulated onto the Ranging Subchannel and transmitted during the appropriate UL allocation.
Upon detection, the BS shall provide (an implementation dependent) UL allocation for the SS, but instead of indicating a Basic CID, the broadcast CID shall be sent in combination with a CDMA_Allocation_IE, which specifies the transmit region and Ranging Code which were used by the SS. This allows a SS to determine whether it has been given an allocation by matching these parameters with the parameters it used. The SS shall use the allocation to transmit a BW request MAC PDU and/or data.
If the BS does not issue the UL allocation described above, [or the BW request MAC PDU does not result in a subsequent allocation of any bandwidth,] the SS shall assume that the Ranging Code transmission resulted in a collision and follow the contention resolution as specified in 6.2.8.

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

Replace section with:
The OFDMA based PHY supports two mandatory contention based BW request mechanisms. The SS shall either send the Bandwidth Request Header as specified in 6.2.6.1, or use the CDMA based mechanism as specified in the following.
As specified in 6.2.10.2, the OFDMA based PHY specifies a Ranging Subchannel and a subset of Ranging codes which shall be used for contention-based BW requests. The SS, upon a need to request for transmission slots, shall select, with equal probability, a Ranging Code from the code subset allocated to BW requests. This Ranging Code shall be modulated onto the Ranging Subchannel and transmitted during the appropriate UL allocation.
Upon detection, the BS shall provide (an implementation dependent) UL allocation for the SS, but instead of indicating a Basic CID, the broadcast CID shall be sent in combination with a CDMA_Allocation_IE, which specifies the transmit region and Ranging Code which were used by the SS. This allows a SS to determine whether it has been given an allocation by matching these parameters with the parameters it used. The SS shall use the allocation to transmit a BW request MAC PDU and/or data. The SS may only omit the BW request PDU when the BS indicated so in the CDMA_Allocation_IE (see Table 116bp).
If the BS does not issue the UL allocation described above, or the BW request MAC PDU does not result in a subsequent allocation of any bandwidth, the SS shall assume that the Ranging Code transmission resulted in a collision and follow the contention resolution as specified in 6.2.8.

change in Table 116bp, last 4 reserved bits to 3 reserved bits and add:

BW request mandatory	1 bit	1= yes, 0= no	Indicates whether the SS shall include a BW request in the allocation.

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 085 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 58 Starting Line # 65 Fig/Table# Section 6.2.6.6

grammatical error

Suggested Remedy

change "Table 59a describe" to "Table 59a describes"

Resolution of Group Decision of Group: Accepted

change "Table 59a describe" to "Table 59a describes"

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 086 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 59 Starting Line # 31 Fig/Table# 59a Section 6.2.6.6

The box around table 59a should have a bottom.

Suggested Remedy

Put a bottom line on the box surrounding table 59a.

Resolution of Group Decision of Group: Accepted

Put a bottom line on the box surrounding table 59a.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 087 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 59 **Starting Line #** 34 **Fig/Table#** **Section** 6.2.6.6

The first sentence of the paragraph uses poor grammar.

Suggested Remedy

Reword the first sentence something like "When an SS needs to request transmission slots, it may access the air interface without being polled and with reduced collision risk by transmitting a request Code."

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

Reword the first sentence something like "When an SS needs to request transmission slots, it may access the air interface without being polled and with reduced collision risk by transmitting a request Code."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 088 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 59 **Starting Line #** 45 **Fig/Table#** **Section** 6.2.6.6

Gramatical Error

Suggested Remedy

change "to send packet or bandwidth request" to "to send a packet or a bandwidth request"

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

change "to send packet or bandwidth request" to "to send a packet or a bandwidth request"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 089 **Submitted by:** Marianna Goldhammer Member

Comment Type Technical, Non-binding **Starting Page #** 61 **Starting Line #** 2 **Fig/Table#** **Section** 6.2.6.7.2

Intead of being granted with a given number of mini-slots, the SS have to calculate the actual "grant "after scaling all the mesh SS according to their declared flow,modulation,code rate,etc. More commonality should be created between the 802.16 MAC and the Mesh profile, by using mini-slots as "grant "indication.

Suggested Remedy

Use instead Downlink Flow, Up-link flow and Flow Scale, mini-slot number for air resource allocation.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 090 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 62 **Starting Line #** 43 **Fig/Table#** **Section** 6.2.6.7.2

It would be better if variable names like "MinCSForwardingDelay" are not hyphenated across multiple lines of text. This occurs other places in the document as well.

Suggested Remedy

See if there's a way to turn hyphenation off for the variable names.

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

turn hyphenation of for:
MinCSForwardingDelay

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 091 **Submitted by:** Marianna Goldhammer Member

Comment Type Technical, Non-binding **Starting Page #** 63 **Starting Line #** **Fig/Table#** 36c **Section** 6.2.6.7.2

Explain fig. 36c and why the control information has different durations when transmitted by different nodes (node 1 transmits longer than node 2)

Suggested Remedy

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

clarify in figure which direction is upwards and downwards in the tree

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 092 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 63 **Starting Line #** 1 **Fig/Table#** **Section** 6.2.6.72

Boxes [1] and [2] should come in the next control subframe, which isn't shown due to lack of space. Subframe separators don't show when the pdf is printed. Bracket is out of whack.

Suggested Remedy

Replace Figure 36c with Figure from C80216a-02/84

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 093 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 63 **Starting Line #** 35 **Fig/Table#** **Section** 6.2.7.6.2

Even though, the intent is to make certain that SSs have sufficient time to process the DL-MAP and UL-MAP, there needs to be a minimum amount of time guaranteed for such processing so developers can have unambiguous design requirements. Having the processing time available be merely defined as "some MAC-prescribed time in the future" is insufficient. Is the minimum time 5 milliseconds? 200 microseconds? 1 nanosecond? The lack of a minimum number requires the SS to be designed for the case where the number is 0.

Suggested Remedy

Define a minimum time between the reception of the DL-MAP and the time frame it describes. Do the same for the UL-MAP, additionally allowing for round trip delay.

Section 6.2.7.6.3 has the exact same problem.

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

SCa: DL-MAP: One frame duration
SCa: UL-MAP: One frame duration
point bottom arrows in Figure 43a/b to start of next frame
point top arrow in Figure 43a/b one more frame away

make consistent on page 64, line 27-29

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 094 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 63 **Starting Line #** 38 **Fig/Table#** **Section** 6.2.7.6.2

The control portion of the DL is never turbocoded.

Suggested Remedy

Delete text in the parenthesis.

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

Delete text in the parenthesis.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 095 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 65 **Starting Line #** 36 **Fig/Table#** **Section** 6.2.7.6.4.2

grammar/consistency

Suggested Remedy

replace "in which super-frame size of eight frames has been assumed" with "in which **Schedule Frames** = 0x2 (8 frames) has been assumed"
move Figure 43c after this sentence, change n+6 through n+10 to n+7 through n+11
insert "example" after relevance in caption of Figure 43c

replace paragraph "The control portion .... " with
"The network control subframe, which is the control portion of every **Schedule Frames**+1 frames, is reserved for transmission of MSH-NCFG and MSH-NENT packets."
change n+6 through n+10 to n+7 through n+11 and remove the SuperFrame indications in Figure 43d
insert "example" after relevance in caption of Figure 43d

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

replace "in which super-frame size of eight frames has been assumed" with "in which **Schedule Frames** = 0x2 (8 frames) has been assumed"
move Figure 43c after this sentence, change n+6 through n+10 to n+7 through n+11
insert "example" after relevance in caption of Figure 43c

replace paragraph "The control portion .... " with
"The network control subframe, which is the control portion of every **Schedule Frames**+1 frames, is reserved for transmission of MSH-NCFG and MSH-NENT packets."
change n+6 through n+10 to n+7 through n+11 and remove the SuperFrame indications in Figure 43d
insert "example" after relevance in caption of Figure 43d

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 096 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 66 **Starting Line #** 1 **Fig/Table#** **Section** 6.2.7.6.4.3

ValidFrames doesn't exist anymore. This value is computed according to the time it takes to shove the control messages up and down the tree as spec-ed in 6.2.6.7.2. Also the SuperFrame concept has been dropped.

Suggested Remedy

Replace "The MSH-CSCH shall apply to a certain fixed period ValidFrames as indicated in the MSH-CSCF. ValidFrames can be configured during system installation, and can occasionally adapt due to considerations like network size, but shall generally remain static during system operation. This is sketched in Figure 43d." with
"The validity of a MSH-CSCH schedule is computed by each node as specified in 6.2.6.7.2"
change on line 10 "within the HRthreshold hop range " to "listed in the current routing tree (specified by the last MSH-CSCF as modified by the last MSH-CSCH update)"
change n+6 through n+10 to n+7 through n+11 and remove the SuperFrame indications in Figure 43d
insert "example" after relevance in caption of Figure 43d

Replace paragraph "Additionally.... " with
"The network control subframe, which is the control portion of every **Schedule Frames**+1 frames, is reserved for transmission of MSH-NCFG and MSH-NENT packets."
Delete line 51

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

Replace "The MSH-CSCH shall apply to a certain fixed period ValidFrames as indicated in the MSH-CSCF. ValidFrames can be configured during system installation, and can occasionally adapt due to considerations like network size, but shall generally remain static during system operation. This is sketched in Figure 43d." with
"The validity of a MSH-CSCH schedule is computed by each node as specified in 6.2.6.7.2"
change on line 10 "within the HRthreshold hop range " to "listed in the current routing tree (specified by the last MSH-CSCF as modified by the last MSH-CSCH update)"
change n+6 through n+10 to n+7 through n+11 and remove the SuperFrame indications in Figure 43d

insert "example" after relevance in caption of Figure 43d

Replace paragraph "Additionally.... " with
"The network control subframe, which is the control portion of every **Schedule Frames**+1 frames, is reserved for transmission of MSH-NCFG and MSH-NENT packets."
Delete line 51

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # **097** **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 69 **Starting Line #** 55 **Fig/Table#** **Section** 6.2.7.6.4.7

Consistency. The use of the SuperFrame concept was dropped.

Suggested Remedy

change SuperFrameBoundary to NetworkControlSubframeStart

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

change SuperFrameBoundary to NetworkControlSubframeStart

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 098 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 71 **Starting Line #** 4 **Fig/Table#** **Section** 6.2.7.7.5

FDD/TDD support contains nothing that is AAS specific.
If this information is deemed benefitial, it's better to move it to the REP-REQ definition or to the measurement specifications in each PHY.
The last paragraph here does not match the way the REP messages and measurements are defined at the moment as well.

The CEI definition in the DCD channel encodings doesn't make much sense either.
The measurements are defined as keeping a running mean/std over data from DL-MAP messages or from preambles (depending on the PHY used). The SS provides the current values when ordered to using REP-REQ/RSP. There's hence no need for any measurement period.

Suggested Remedy

Delete 6.2.7.7.5 or move (minus last paragraph) to REP-REQ definition or to the measurement specifications in each PHY.
Delete CEI TLV from Table 124 on page 243.

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

Replace the last paragraph with:

Channel state information is obtained by using two MAC control messages: AAS-FDBK-REQ and AAS-FDBK-RSP (see 6.2.2.3.41). The request instructs the SS to measure, the results of which shall be returned in the response after the measurement period has ended. The BS shall provide an UL allocation to enable the SS to transmit this response. Using FDD, the BS shall issue AAS-FDBK-REQ messages. Using TDD, the BS may issue AAS-FDBK messages.

Delete CEI TLV from Table 124 on page 243.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 099 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 71 **Starting Line #** 7 **Fig/Table#** **Section** 6.2.7.7.1

gramatical error

Suggested Remedy

change "these parts" to "those parts"

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

change "these parts" to "those parts"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 100 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 71 **Starting Line #** 14 **Fig/Table#** **Section** 6.2.7.7.2

Second sentence of paragraph assumes a certain specific map entry structure and DIUC/UIUC mapping.

Suggested Remedy

The sentence should be reworded to talk more generically about what is being accomplished. PHY specific details should be moved to the relevant PHY section in chapter 8.

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

delete first paragraph in 6.2.7.7.2

change on line 19: "are" to "shall be"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 101 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 71 **Starting Line #** 44 **Fig/Table#** **Section** 6.2.7.7.4

spelling error

Suggested Remedy

change "ant the BS" to "and the BS"

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

change "ant the BS" to "and the BS"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 102 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 71 **Starting Line #** 51 **Fig/Table#** **Section** 6.2.7.7.4

extra space before period.

Suggested Remedy

Change "procedure ." to "procedure."

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

Change "procedure ." to "procedure."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 103 **Submitted by:** Tal Kaitz

Comment Type Technical, Binding **Starting Page #** 72 **Starting Line #** 10 **Fig/Table#** **Section** 6.2.7.7.5

According to the text:

A. In TDD we may rely on channel reciprocity to get the channel state information.
The channel is indeed reciprocal, but the electronics at both ends may not be. There are no specfications in the standard that indicates what is the required coupling between receive and transmit paths, to insure reciprocity.

B. In FDD we use feed back to get channel state information. However no feeback mechanism were defined.

Suggested Remedy

A. For each of the three PHYs, either add specfications or declare that in TDD mode, AAS is not supported.

B. For each of the three PHYs, either add feedback mechanism or declare that in FDD mode, AAS is not supported.

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

Add the following text to section 6.2.2.3:
"6.2.2.3.41 AAS Channel Feedback Request (AAS-FDBK-REQ)
The AAS Channel Feedback Request message shall be used by a BS or a SS supporting AAS and operating in FDD mode. It may also be used by a BS or a SS supporting AAS and operating in TDD mode. The purpose of this message is to request channel measurement that will help in adjusting the direction of the adaptive array.

Table ? — AAS Channel Feedback Request message format

Syntax	Size	Notes
AAS_Feedback_Request() {		
Management Message Type = 42	8 bits	
Frame number	24 bits	

Number of frames	7 bits	
Data type	1 bit	0 = measure on DL preamble only 1 = measure on DL data (for this SS) only
Number of frequencies to measure	16 bits	The frequency measurement points shall be evenly distributed accross the channel BW such the the first points coicides with the low channel edge, and the last point coicides with the higher channel edge
Transaction index	8 bits	Increase this number by 1 each time the message is sent
}		

6.2.2.3.42 AAS Channel Feedback Response (AAS-FDBK-RSP)

The AAS Channel Feedback Response message shall be used by a BS or a SS supporting AAS and operating in FDD mode. It may also be used by a BS or a SS supporting AAS and operating in TDD mode. This message shall be sent as a response for the AAS-FDBK-REQ message after the indicated measurement period has expired.

Table ? — AAS Channel Feedback Response message format

Syntax	Size	Notes

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 104 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 72 **Starting Line #** 42 **Fig/Table#** **Section** 6.2.7.7.6

grammar and only true for polled BW requests

Suggested Remedy

Note that an AAS-enabled BS is capable of receiving polled bandwidth requests from multiple AAS-enabled SS simultaneously, because multiple beams can be simultaneously formed.

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

Delete sentence

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 105 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 72 **Starting Line #** 53 **Fig/Table#** **Section** 6.2.9

6.2.9.14 doesn't appear to be the correct place for Network entry and initialization for Mesh. The change to Table 62 implies that mesh performs the establichment of IP connectivity in section 6.2.9.10. Other parts of 6.2.9 also appear to be relevant to mesh also. Mesh would appear more integrated and its differences better highlighted and understood if each of the subsections of 6.2.9 individually said how they differ for mesh.

Suggested Remedy

Integrate 6.2.9.14 into the individual subsections of section 6.2.9. For instance, 6.2.9.5 describes how initial ranging works for PMP. It should be here that we learn how mesh systems do it differently.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 106 **Submitted by:** Lei Wang

Comment Type Technical, Non-binding **Starting Page #** 73 **Starting Line #** 5 **Fig/Table#** **Section** 6.2.9.5

neither TG1/D5 nor TGa/D5 has a clear descritption regarding what is EUI (Extended Unique Identifier) and how to use it.

Also, why not just use the 48-bit MAC address as the unique identifier of a unit.

Suggested Remedy

either use 48-bit MAC address or define the EUI clearly.

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

use 48-bit MAC address

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 107 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 74 **Starting Line #** 31 **Fig/Table#** **Section** 6.2.9.5

The funtionality added by figure 51a should be specific to systems below 11Ghz.

Suggested Remedy

Replace "I***nsert elements in Figure 51 as shown in Figure 51a:***"
with:
Insert above 6.2.9.7 header:
For systems operating between 2 and 11 GHz, the BS may in addition respond to undecodable messages in an Initial Maintenance slot as shown in Figure 51a.

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

Replace "I***nsert elements in Figure 51 as shown in Figure 51a:***"
with:
Insert above 6.2.9.7 header:
For systems operating between 2 and 11 GHz, the BS may in addition respond to undecodable messages in an Initial Maintenance slot as shown in Figure 51a.

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 108 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 76 Starting Line # 4 Fig/Table# Section 6.2.9.14.1

What is a "kind of network time"

Suggested Remedy

Use better English fro the second sentence of th paragraph.

Resolution of Group Decision of Group: Accepted-Modified

change "a kind of" to "the"

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 109 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 77 Starting Line # 11 Fig/Table# Section 6.2.9.14.3

grammar

Suggested Remedy

Change "At the same the" to "At the same time"

Resolution of Group Decision of Group: Accepted-Modified

"At the same time, the"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 110 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 78 **Starting Line #** 1 **Fig/Table#** **Section** 6.2.9.14.3

consistency/increased detail

Suggested Remedy

replace Figures 54a and 54b with Figures 54a, 54b, 54c from C80216a-02/84.

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

replace Figures 54a and 54b with Figures 54a, 54b, 54c from C80216a-02/84.

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 111 Submitted by: Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding Starting Page # 80 Starting Line # 45 Fig/Table# Section 6.2.9.14.4

Basic capabilities must be exchanged with all neighbors. This can only be done after a logical link is established.

Suggested Remedy

Change to:
In mesh mode, the basic capabilities shall be negotiated as described in 6.2.9.7 after a logical link has been established between two nodes. The node which requested the logical link (see 6.2) shall act as the SS and initiate the SBC-REQ.

Resolution of Group Decision of Group: Accepted

Change to:
In mesh mode, the basic capabilities shall be negotiated as described in 6.2.9.7 after a logical link has been established between two nodes. The node which requested the logical link (see 6.2) shall act as the SS and initiate the SBC-REQ.

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 112 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 82 Starting Line # 51 Fig/Table# Section 6.2.9.14.8

The reference needs to be resolved.

Suggested Remedy

Make a proper reference to one of the Bibliography entries.

Resolution of Group Decision of Group: Accepted

Make a proper reference to one of the Bibliography entries.

Reason for Group's Decision/Resolution

Document under Review:	Ballot Number:		Comment Date
Comment # 113	Submitted by: Nico van Waes	Member	2002/09/04

Comment Type Editorial Starting Page # 82 Starting Line # 51 Fig/Table# Section 6.2.9.14.8

typo

Suggested Remedy

Fix reference.

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

Reason for Group's Decision/Resolution

Document under Review:	Ballot Number:		Comment Date
Comment # 114	Submitted by: Nico van Waes	Member	2002/09/04

Comment Type Technical, Non-binding Starting Page # 83 Starting Line # 1 Fig/Table# Section 6.2.9.13.10

With mesh, traffic can't be provisioned in this manner. It is done in a connectionless fashion on a packet-by-packet basis (hence the QoS modifiers in the Mesh CID), since it won't scale otherwise.

Suggested Remedy

Replace 6.2.9.13.10 with:
In mesh mode, QoS is provisioned on a packet-by-packet basis using the Mesh CID. The connection-based QoS provisioning using the DSx messages defined in 6.2.13 are hence not used.

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

Replace 6.2.9.14.10 with:
Using mesh, QoS is provisioned on a packet-by-packet basis using the Mesh CID. The connection-based QoS provisioning using the DSx messages defined in 6.2.13 are hence not used.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 115 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 83 **Starting Line #** 3 **Fig/Table#** **Section** 6.2.9.14.10

How does the node know what its provisioned services are? Is there a pre-defined set for all mesh nodes? Was it loaded at the factory? Is there no control and nodes just set up whatever services they want? To this point in network entry and initialization ther has been no information passed to the node that would allow it to know what services to set up.

Suggested Remedy

Explain in the document how the mesh node knows what services to set up.

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

Insert
A mesh node obtains its AuthorizedQoSParamSet during the transfer of operational parameters.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 116 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 83 **Starting Line #** 12 **Fig/Table#** **Section** 6.2.10

The second paragraph of 6.2.10 (in the base doc) is inconsistent with our new SS periodic ranging figure.

Delete second paragraph and update the enumeration as:

Suggested Remedy

Replace first and second paragraph with:

<paragraph as is>

The following summarizes the periodic ranging:

1) Both the BS and the SSs shall use a timer T4 for periodic ranging and set the Initial Ranging timer T3 after a RNG-REQ message has been sent.

2) The periodic ranging shall be conducted periodically at an interval sufficiently shorter than T4 that a map could be missed without the SS timing out.

3) A periodic ranging procedure can be originated by either the BS or the SSs.

- The BS can originate a periodic ranging procedure by sending an unsolicited RNG-RSP with adjustments based on any UL transmission it received from the SS.
- A SS can originates a periodic ranging procedure by sending a RNG-REQ message in an allocation of UL bandwidth or a contention-based initial ranging slot. Upon receiving this RNG-REQ message, the BS shall send a RNG-RSP to the SS.

4) Upon receiving a RNG-RSP message, the SS shall adjust the indicated transmission parameters accordingly and clear timer T3.

5) The SS shall re-initialize its MAC sublayer (and re-register) when T3 expires and the number of RNG-REQ retries has been exceeded

and when the Ranging Status indicates Abort.

In the figure change: the lower "Reset Timer T4" to "Set Timer T3 (if not running)" and add "Yes" and "Success" on the right sight under the decisions.

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

Replace first and second paragraph with:

<paragraph as is>

The following summarizes the periodic ranging:

1) Both the BS and the SSs shall use a timer T4 for periodic ranging and set the Initial Ranging timer T3 after a RNG-REQ message has been sent.
2) The periodic ranging shall be conducted periodically at an interval sufficiently shorter than T4 that a map could be missed without the SS timing out.
3) A periodic ranging procedure can be originated by either the BS or the SSs.
- The BS can originate a periodic ranging procedure by sending an unsolicited RNG-RSP with adjustments based on any UL transmission it received from the SS.
- A SS can originates a periodic ranging procedure by sending a RNG-REQ message in an allocation of UL bandwidth or a contention-based initial ranging slot. Upon receiving this RNG-REQ message, the BS shall send a RNG-RSP to the SS.

4) Upon receiving a RNG-RSP message, the SS shall adjust the indicated transmission parameters accordingly and clear timer T3.
5) The SS shall re-initialize its MAC sublayer (and re-register) when T3 expires and the number of RNG-REQ retries has been exceeded
and when the Ranging Status indicates Abort.
In the figure change: the lower "Reset Timer T4" to "Set Timer T3 (if not running)" and add "Yes" and "Success" on the right sight under the decisions.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 117 **Submitted by:** Lei Wang

Comment Type Editorial **Starting Page #** 83 **Starting Line #** 17 **Fig/Table#** **Section** 6.2.10

connect two terms "maintenance ranging" and "periodic ranging"

Suggested Remedy

change "Periodic ranging is ...." to
"Maintenance ranging, also called as periodic ranging, is ...."

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

Change "Maintenance ranging" to "Periodic ranging" throughout the document.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 118 **Submitted by:** Lei Wang

Comment Type Editorial **Starting Page #** 86 **Starting Line #** 17 **Fig/Table#** fig56 **Section** 6.2.10

duplicated action

Suggested Remedy

remove the box "Reset T4 timer" that is just after "send RNG-REQ in contention slots" box.

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

change lower box to "Set T3 (if not set)"
Also add "yes" and "success" on the right side

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 119 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 87 **Starting Line #** 8 **Fig/Table#** **Section** 6.2.10.2

current text contains meaningless examples, but lacks the appropriate information.

Suggested Remedy

Replace up to 6.2.10.2.1 with:

The WirelessMAN-OFDMA PHY specifies a Ranging Subchannel and a set of special pseudo-noise Ranging Codes. Subsets of codes shall be allocated in the UCD Channel Encoding for Initial Ranging, Periodic Ranging and BW Requests, such that the BS can determine the purpose of the received code by the subset to which the code belongs.
SSs that wish to perform one of the aforementioned operations shall select, with equal probability, one of the codes of the appropriate subset, modulate it onto the Ranging Subchannel and subsequently transmit in a with equal probability selected (pair of) OFDM symbol(s) within the appropriate UL allocation. Details on the modulation and Ranging Codes are specified in 8.5.7.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 120 **Submitted by:** Avraham Freedman Member

Comment Type Editorial **Starting Page #** 87 **Starting Line #** 16 **Fig/Table#** **Section**

Typo

Suggested Remedy

Change:
"all subchannels ....is allocated" to "all subchannels are allocated"

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

Change:
"all subchannels ....is allocated" to "all subchannels are allocated"

Reason for Group's Decision/Resolution

Document under Review:	Ballot Number:	Comment Date

Comment # 121 Submitted by: Nico van Waes Member 2002/09/04

Comment Type Technical, Satisfied (was Starting Page # 88 Starting Line # 40 Fig/Table# Section 6.2.10.2.1

I believe the CDMA based mechanism doesn't work with the indicated flow diagrams. The problem is that a CDMA-based ranging SS is anonymous to the BS. This makes it impossible for the BS to figure out whether timers or counters are expiring for an SS. This mechanism can hence not be used to keep connections alive.

A way to solve this would be to specify that an RNG-RSP:Ranging Status = Success be followed by a regular UL data burst allocation using the CDMA allocation IE. In other words, the BS would issue a bandwidth request response following the RNG-RSP so it can identify the SS by whatever it sends in the allocated bandwidth. Not very elogant, but it works. Another option is to use the CDMA mechanism only for initial ranging and BW requests.

On the other hand, if the flow diagrams are considered not applicable and it does work some other way, then this ought to be very clearly stated and the proper diagrams should be added.

If it is not a problem and it works with the current flow diagrams contrary to my thinking, then the diagrams need to updated to reflect that no RNG-REQ's are send for OFDMA. This can be done by adding a simply footnote in the proper places. Also the entire description needs to be scrapped since it duplicates the common ranging text in a very poor manner. A few additional sentences suffice for accurate description.

Suggested Remedy

Solve the problem outlined above (if it is a problem).

If it is not a problem, then:
Add a footnote in the applicable places in "RNG-REQ" in the BS substate diagram and in the SS diagram which reads "When complying with the WirelessMAN-OFDMA PHY, a CDMA ranging code shall be sent in accordance with clause 6.2.10.2 instead of the indicated RNG-REQ."
replace the entire 6.2.10.2.1 with (see next comment for suggested replacement text of the rest of this subclause):
Instead of the transmission of RNG-REQ messages, a SS shall transmit an appropriate Ranging Code during Ranging when using the WirelessMAN-OFDMA PHY. The BS shall, whenever it sends a RNG-RSP message, include the WirelessMAN-OFDMA PHY specific TLVs as specified in 6.2.2.3.6, which allows the SS to identify messages by specifying the ranging region and Ranging Code the SS transmitted in.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # **122** **Submitted by:** Lei Wang

Comment Type Technical, Non-binding **Starting Page #** 89 **Starting Line #** 1 **Fig/Table#** F59c **Section** 6.2.10.2

OFDMA ranging procedure does not use the SS's acual CIDs, how does the AP keep track of periodic ranging for each SS.

Suggested Remedy

insert the following sentence in page 88 line 63:

With the OFDMA ranging mechanism, the periodic ranging timer is contolled by the SS, not the BS.

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

insert the following sentence in page 88 line 63:

With the OFDMA ranging mechanism, the periodic ranging timer is contolled by the SS, not the BS.

Itzik to provide updated figures (or new figures) for 55a/b and 56 (where needed)

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 123 **Submitted by:** John Barr Member

Comment Type Technical, Binding **Starting Page #** 90 **Starting Line #** **Fig/Table#** **Section** 6.2.14

The use of only "primary users" to determine when a channel should not be used does not prevent a P802.16a BS or SS from interferring with a currently operating IEEE 802 wireless system using that same channel. P802.16a should follow recommendations for allowing multiple IEEE 802 wireless systems to operate on separate channels in license-exempt bands.

The informative text in appendix B provides a good analysis of possible interference with existing IEEE 802 wireless systems, but mistakenly makes the assumption that P802.16a deployments will not interfere with other IEEE 802 wireless systems in the license-exempt bands since the only outdoor usage would be for public hot spots. However, there is a growing acceptance of 802.11b/a/g wireless systems for home usage, some of which will be extended to 'backyard' areas around a home for the convenience of the homeowner. The lack of a mechanism within P802.16a to mitigate interference with home IEEE 802 wireless systems must be corrected before this becomes an official IEEE standard.

Suggested Remedy

Modify text in 6.2.14 to include IEEE 802 wireless systems as users of channels to be avoided as stated for primary users. Also update to ensure that avoidance of operating IEEE 802 wireless systems includes those operating in the 2.4 GHz license-exempt band.

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

vote: in favor 0
against 20

Reason for Group's Decision/Resolution

802.16's approach is in line with the approach taken by the other wireless groups with 802.
Within this context, primary user refers to a regulatory designation, regardless of technology.
Requiring the detection of any 802 compliant wireless system, current and future, would be prohibitive.
The specified DFS mechanism is frequency independent.
This issue would be different if all license-exempt systems required DFS (as in the CEPT RLAN bands), but given that other 802 standards do not mandate DFS, placing the entire burden on MAN systems is unreasonable.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 124 **Submitted by:** John Barr Member

Comment Type Technical, Binding **Starting Page #** 90 **Starting Line #** 10 **Fig/Table#** **Section** 6.2.14.2

The definition of "primary user" used in this document does not promote the coexistence of P802.16a with other IEEE 802 standards that may also be operating in the license-exempt bands. The statement "A BS or SS shall not use a channel that it knows contains primary users or has not been tested recently for the presence of primary users." does not prevent a BS or SS from establishing operation on a channel already being used by another IEEE 802 wireless system (e.g., 802.11b/a/g or 802.15.1/3/4).

Suggested Remedy

Change "A BS or SS shall not use a channel that it knows contains primary users or has not been tested recently for the presence of primary users." to "A BS or SS shall not use a channel that it knows contains primary users or other IEEE 802 wireless systems, or has not been tested recently for the presence of primary users or other IEEE 802 wireless systems."

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

Reason for Group's Decision/Resolution

see comment 123

Document under Review: Ballot Number: Comment Date

Comment # 125 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 91 Starting Line # 18 Fig/Table# Section 6.2.14.6

grammar

Suggested Remedy

Change "request for a" to "request a"

Resolution of Group Decision of Group: Accepted

Change "request for a" to "request a"

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 126 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 92 Starting Line # 63 Fig/Table# Section 6.2.15?

Heading numbers 6.A and 6.B don't exist.

Suggested Remedy

delete lines 63-64.

Resolution of Group Decision of Group: Rejected

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 127 **Submitted by:** John Lepore Member

Comment Type Editorial **Starting Page #** 93 **Starting Line #** 27 **Fig/Table#** **Section** 7.2.2.2

Line reads "The Neighbor to a key request ... "

Suggested Remedy

Change to "The Neighbor replies to a key request ... "

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

Change to "The Neighbor replies to a key request ... "

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 128 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 93 **Starting Line #** 27 **Fig/Table#** **Section** 7.2.2.2

This paragraph is not even a sentence.

Suggested Remedy

Turn lines 27-28 into a sentence so we can evaluate what is being said.

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

Reason for Group's Decision/Resolution

see comment 127

Document under Review: **Ballot Number:** **Comment Date**

Comment # 129 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 93 **Starting Line #** 36 **Fig/Table#** **Section** 7.2.2.2

grammar

Suggested Remedy

change "life of it predecessor" to "life of its predecessor"

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

change "life of it predecessor" to "life of its predecessor"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 130 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 93 **Starting Line #** 51 **Fig/Table#** **Section** 7.4.1.6

grammar

Suggested Remedy

Fix the sentence, I'm not certain what is trying to be said here so I can't suggest a change.

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

When re-authorizing with the network, the re-authorizing node shall tunnel the authorization messages as shown in Figure 96a over UDP.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 131 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 93 **Starting Line #** 62 **Fig/Table#** **Section** 7.4.2.4

Where are "younger" and "older" nodes defined?

Suggested Remedy

Explicitly define younger and older nodes - maybe in section 3.

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

change on page 93, line 61: "the initiator (younger) Node" with "the Node that initiated the TEK exchange"
delete on page 94, line 4: "older"
change on page 94, line 7: "shall be able to decrypt traffic from the Neighbor's ..."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 132 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 94 **Starting Line #** 26 **Fig/Table#** **Section** 7.5.4

The change suggested on lines 29-32 really happens in a subsection of 7.5.4.

Suggested Remedy

On line 26 change the heading to "7.5.4.3 HMAC Authentication Keys"

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

Insert header 7.5.4.3 HMAC Authentication Keys

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 133 **Submitted by:** Avraham Freedman Member

Comment Type Editorial **Starting Page #** 95 **Starting Line #** 10 **Fig/Table#** **Section** 8.3

The targeted frequency bands section was (rightfully) transferred to the appendix, but a reference is missing from the text itself.

Suggested Remedy

Change line 10 to read:
The WirelessMAN-SCa PHY is based on single carrier technology and designed for NLOS operation in the licensed bands within the range of 2-11 GHz f~~requency bands~~ (per 1.2.4), as specified in appendix B.1. Channel bandwidths allowed shall be limited to the regulatory provisioned bandwidth divided by any power of 2 no less than 1.25 MHz.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 134 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 95 **Starting Line #** 35 **Fig/Table#** **Section** 8.3.1

grammar

Suggested Remedy

change "shall then multiplexed" to "shall then be multiplexed"

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

change "shall then multiplexed" to "shall then be multiplexed"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 135 **Submitted by:** Remi Chayer Member

Comment Type Editorial **Starting Page #** 95 **Starting Line #** ? **Fig/Table#** **Section** 8.3

Lack of consistency in the description.

Suggested Remedy

Line 16 should read "Time Division Multiple Access (TDMA) uplink (UL)" Line 17 should read "Time Division Multiplexed (TDM) downlink (DL)

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

replace with:
TDMA UL
TDM DL

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 136 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 97 **Starting Line #** 57 **Fig/Table#** **Section** 8.3.1.2.1.2

This information is more appropriately communicated during basic capability negotiation (SBC messages).

Suggested Remedy

change "initial maintenance" to "basic capability negotiation"

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

change "initial maintenance" to "basic capability negotiation"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 137 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 107 **Starting Line #** 6 **Fig/Table#** **Section** 8.3.1.2.2

space missing

Suggested Remedy

change "256-QAM).Support" to "256-QAM). Support"

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

change "256-QAM).Support" to "256-QAM). Support"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 138 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 107 **Starting Line #** 7 **Fig/Table#** **Section** 8.3.1.2.2

The last sentence of the paragraph is rationalization that doen't need to be in a spec.

Suggested Remedy

Delete the last sentence of the paragraph.

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

change one but last sentence in paragraph to: No-FEC operation is mandatory for QPSK but optional for other modulation methods". (add space before sentence)
delete last sentence

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 139 Submitted by: Remi Chayer Member

Comment Type Editorial Starting Page # 108 Starting Line # 51 Fig/Table# Section 8.3.1.2.3

Mis-spelling of a word

Suggested Remedy

Change "paramters" to "parameters".

Resolution of Group Decision of Group: Accepted

Change "paramters" to "parameters".

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 140 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 110 Starting Line # 19 Fig/Table# Section 8.3.1.2.3

Capitalization

Suggested Remedy

Change "the next" to "The next"

Resolution of Group Decision of Group: Accepted

Change "the next" to "The next"
take out ", and" and capitalize "The"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 141 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 116 **Starting Line #** 7 **Fig/Table#** **Section** 8.3.1.3.1.3

grammar

Suggested Remedy

change "shall not covered" to "shall not be covered"

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

change "shall not covered" to "shall not be covered"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 142 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 116 **Starting Line #** 44 **Fig/Table#** **Section** 8.3.1.3.1.5

grammar

Suggested Remedy

Change "shall always the" to "shall always be the"

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

Change "shall always the" to "shall always be the"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 143 **Submitted by:** Roger Marks Member

Comment Type Technical, Satisfied (was **Starting Page #** 118 **Starting Line #** 29 **Fig/Table#** **Section** 8.3.1.4.1

The sentence "For H-FDD terminals, scheduling rules should avoid Tx and Rx activity of the same terminal, including the TTG and RTG gap time." is:
-erroneous, since it doesn't limit itself to simultaneous Tx and Rx activity
-weak, since it says "should" instead of shall
-irrelevant, since the issue is already covered in the MAC section, where it belongs
{The MAC reads "If half-duplex subscriber stations are used, the bandwidth controller shall not allocate uplink bandwidth for a half-duplex subscriber station at the same time that it is expected to receive data on the downlink channel." This sentence should be clarified to specifically protect the gaps. I will submit a comment in the 802.16c Sponsor Ballot to do so.}

Suggested Remedy

Likewise, delete "(for H-FDD terminals, scheduling rules should avoid Tx and Rx activity of the same terminal within the TTG and RTG gap time)." at the following two locations
-8.4.3.8 (p. 159, line 35)
-8.5.4.2 (p. 189, line 30)

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

page 118, line 29: delete sentence
Likewise, delete "(for H-FDD terminals, scheduling rules should avoid Tx and Rx activity of the same terminal within the TTG and RTG gap time)." at the following two locations
-8.4.3.8 (p. 159, line 35)
-8.5.4.2 (p. 189, line 30)

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 144 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Binding **Starting Page #** 118 **Starting Line #** 35 **Fig/Table#** **Section** 8.3.1.4.1.1

There are several problems in 8.3.1.4.1.1, including:
Definition of a UL-frame is non-existent in the document. Also imposing a constant framing on the UL in the FDD case makes no sense as it reduces capacity to no avail.
It would be beneficial if the convolutional code to be used would be more clearly specified. Now the only requirements are that the rate is 1/2 and that the code terminates at Xfch symbols. With no restricitions on Xfch and the code the chances of building interoperable equipment is non-existent.
The definition of the FCH as a message is incorrect. There is no clear defintion what it shall/may contain and it should not be called a header. It seems to consist of some kind of PHY level messages followed by a couple of MAC messages.
The sentence starting 'The first Xfch ...." on line 50 is totally incomprehensible.
There is no clear relation defined between Xfch and the RS codeword in which the Xfch 'symbols' should be contained. What symbols are meant (QPSK, RS)?. What happens if the so called FCH doesn't fit a singel RS codeword?

Page 119 line 50 and 51 mention a 'Fixed header sequence' and a PHY sync which is undefined (the example figure suggests that 0x7F might be one of many valid values) and the PHY sync seems entirely redundant with the PHY synchronization field of the DL-MAP message.

Page 119 line 53 mentions that the DL-MAP indicates the DL bursts of a future MAC frame. This requirement is in contradiction with the existense of the Allocation Start time in the DL-MAP message. There are no requirements on the values on the allocation start time other than this rather stringent requirement in an informative sentence (thus being no requirement at all!).0

In figure 128u the blowup of the DL-MAP message is incorrect. Also the figure contains acronyms (e.g. PL) that are neither defined in the text nor the figure.

Suggested Remedy

Rewrite section so that it makes sense.
Remove the PHY sync field as it only contributes overhead.
Delete the mysterious header or embed in the burst preamble if it is truely necessary. At a minimum define it!

Delete incorrect and unecessary portions of figure 128u.

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

1. (To make Figures terminology more consistent with ones in the OFDM section):
In Figure 128u and 128v, relabel all appearances of "DL MAC frame" as "DL sub-frame". Also, relabel all appearances of "UL MAC frame" as "UL sub-frame" in these figures.

2. (In the spirit of suggestion 1 above), replace "entire DL frame" at the end of line 39 with "entire DL sub-frame". Replace "and UL frames" on line 46 with "and UL sub-frames". Replace "DL MAC frame" on line 60 of page 119 with "DL sub-frame". If you find any other instances where "frame" is used without a prefix of "sub-", replace it with "sub-frame".

3. Modify sentence containing:

" ... Frame Control Header (FCH), which is a broadcast message which governs the operation of DL and UL frames. "

to be:

"Frame Control Header (FCH), a broadcast payload containing MAPs and other information that govern the operation of DL and UL transmissions." If you don't like "FCH" tell me what it should be called. You use it in the OFDM context (see Figure 128an, page 160), and it serves the same purpose here as there. In fact, it's used in many of the MAC-oriented subclauses that follow this (SCa) clause.

4. Eliminate the PHY sync and 0x7F header elements from text and Figure 128u and 128v, since the PHY Sync has been pulled into the DL-MAP and the 0x7F may no longer be necessary. (The 0x7F was originally intended to differentiate the broadcast MAPs following a preamble from other data following a preamble when there are multiple DL bursts, each with preambles, within a DL subframe.)

5. In Figure 128u, you drew the MAP breakout over DL PL1 (downlink payload 1). You could put it over the FCH, but I'd recommend removing breakout above the FCH completely.

6. If you don't do 5, at the very least eliminate the breakout for the DL MAP in Figures 128u and 128v, because that level of detail is unnecessary, and is difficult to convey without a sizable amount of descriptive text. The IEs found in the DL-MAP specific clause(s) do an adequate job of conveying the DL-MAP structure.

7. Replace the paragraph that begins:

"A FCH shall use the Concatenated FEC with rate 1/2 inner code and QPSK, and shall not use byte-interleaving ..."

with

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 145 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 119 **Starting Line #** 2 **Fig/Table#** 128u **Section** 8.3.1.4.1.1

The breakout of the DL MAP doesn't agree with table 116t

Suggested Remedy

Fix which ever is wrong.

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

Reason for Group's Decision/Resolution

see 144

Document under Review: **Ballot Number:** **Comment Date**

Comment # 146 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 119 **Starting Line #** 10 **Fig/Table#** 128u **Section** 8.3.1.4.1.1

What is the fixed header 0x7F for? It provides no extra information. The DL-MAP message would start with 0x00, so its not part of it. If it's needed for better synchronization, the preamble should be expanded instead, since that's it's purpose.

Suggested Remedy

remove the header 0x7F, revisiting the preamble if necessary.

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

Reason for Group's Decision/Resolution

see 144

Document under Review: **Ballot Number:** **Comment Date**

Comment # 147 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 119 **Starting Line #** 10 **Fig/Table#** 128u **Section** 8.3.1.4.1.1

The PHY Sync field is part of the DL-MAP, but the figure shows them separate.

Suggested Remedy

delete PHY sync from the figure or show it properly embedded in the DL-MAP.

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

Reason for Group's Decision/Resolution

see 144

Document under Review: **Ballot Number:** **Comment Date**

Comment # 148 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 119 **Starting Line #** 13 **Fig/Table#** 128u **Section** 8.3.1.4.1.1

The breakout of the FCH as described in lines 51-53 is shown in the figure as being contained in DL PL 1

Suggested Remedy

Move the breakout of the FCH to be correctly aligned with the FCH.

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

Reason for Group's Decision/Resolution

see 144

Document under Review: **Ballot Number:** **Comment Date**

Comment # 149 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 120 **Starting Line #** 45 **Fig/Table#** **Section** 8.3.1.4.1.2

grammar

Suggested Remedy

change "are mandated suppress" to "are mandated to suppress"

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

change "are mandated suppress" to "are mandated to suppress"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 150 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Binding **Starting Page #** 121 **Starting Line #** 52 **Fig/Table#** **Section** 8.3.1.4.2

The definition of the FCH as a message is incorrect. There is no clear defintion what it shall/may contain and it should not be called a header. It seems to consist of some kind of PHY level messages followed by a couple of MAC messages.

Figure 128v mention a mysterious 'Fixed header sequence' and a PHY sync, which is undefined (the example figure suggests that 0x7F might be one of many valid values) and the PHY sync seems entirely redundant with the PHY synchronization field of the DL-MAP message.

Suggested Remedy

Specify the structure of the TDD DL frame, e.g. coding, RS block size etc.
Delete the redundant PHY sync field.

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

Follow suggestions found in comment #144.

To make resolutions in #144 consistent with the text here for TDD (and also to fix a few grammar problems), make the following editorial changes:

p 121, line 60, change "MAC frame" to "frame".
p. 121, line 61, "shared MAC frame" to "shared frame"
p. 121, line 62, "shared MAC frame" to "shared frame"
p. 121, line 62, "directed by the UL-MAP and DL-MAP" to "directed by the Frame Control Header (FCH)"
p. 121, line 65, "containing the Frame Control Header." to "containing the FCH."
p. 122, line 1, "When more than one bursts are to be transmitted within a single DL MAC sub-frame," to "When more than one burst is to be transmitted within a single DL sub-frame,"
p. 122, line 14, Form a new paragraph beginning with the sentence "After the RTG,"
p. 122, line 14, replace "the SS receivers" with "SS receivers"

Reason for Group's Decision/Resolution

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 151 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 122 **Starting Line #** 30 **Fig/Table#** 128v **Section** 8.3.1.4.2

What is the fixed header 0x7F for? It provides no extra information. The DL-MAP message would start with 0x00, so its not part of it. If it's needed for better synchronization, the preamble should be expanded instead, since that's it's purpose.

Suggested Remedy

remove the header 0x7F, revisiting the preamble if necessary.

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

Reason for Group's Decision/Resolution

see 144

Document under Review: **Ballot Number:** **Comment Date**

Comment # 152 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 122 **Starting Line #** 30 **Fig/Table#** 128v **Section** 8.3.1.4.2

The PHY Sync field is part of the DL-MAP, but the figure shows them separate.

Suggested Remedy

delete PHY sync from the figure or show it properly embedded in the DL-MAP.

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

Reason for Group's Decision/Resolution

see 144

Document under Review: Ballot Number: Comment Date

Comment # 153 Submitted by: Kenneth Stanwood Member

Comment Type Technical, Non-binding Starting Page # 122 Starting Line # 36 Fig/Table# 128v Section 8.3.1.4.2

The breakout of the DL MAP doesn't agree with table 116t.

Suggested Remedy

Fix which ever is wrong.

Resolution of Group Decision of Group: Accepted-Duplicate

Reason for Group's Decision/Resolution

see 144

Document under Review: Ballot Number: Comment Date

Comment # 154 Submitted by: Remi Chayer Member

Comment Type Editorial Starting Page # 127 Starting Line # ? Fig/Table# Section 8.3.1.4.5.2

For clarity reason, we should not split a table when it can fit on a single page.

Suggested Remedy

Put Table 116u on a single page

Resolution of Group Decision of Group: Accepted

Put Table 116u on a single page

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 155 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 128 Starting Line # 32 Fig/Table# Section 8.3.1.4.5.2

Missing punctuation

Suggested Remedy

Add a period at the end of the paragraph.

Resolution of Group Decision of Group: Accepted

Add a period at the end of the paragraph.

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 156 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 129 Starting Line # 35 Fig/Table# Section 8.3.1.4.5.3

punctuation

Suggested Remedy

change "S.S" to "SS."

Resolution of Group Decision of Group: Accepted

change "S.S" to "SS."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 157 **Submitted by:** Jonathan Labs

Comment Type Technical, Non-binding **Starting Page #** 132 **Starting Line #** 35 **Fig/Table#** **Section** 8.4.2.1

As in section 8.5.2.3, one additional primitive parameter should be Nfft.

Suggested Remedy

Add the following line:
"-- Nfft. This is the number of points in the FFT, if an FFT is used in the implementation.The OFDM PHY defines this value to be equal to 256."

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

Add the following line:
"-- Nfft. This is the number of points in the FFT, if an FFT is used in the implementation."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 158 **Submitted by:** Avraham Freedman Member

Comment Type Editorial **Starting Page #** 141 **Starting Line #** 6 **Fig/Table#** **Section** 8.4.1

The targeted frequency bands section was (rightfully) transferred to the appendix, but now they are missing from the text itself.

Suggested Remedy

Change the first sentence to read:
The WirelessMAN-OFDM PHY is based on OFDM modulation and designed for NLOS operation in the 2-11 GHz frequency bands per 1.2.4, as specified in appendix B.1. Channel bandwidths allowed shall be limited to the regulatory provisioned bandwidth divided by any power of 2 no less than 1.25 MHz.

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

add "(such as those listed in B.1)" after "2 and 11 GHz" in 1.2.4 (two times)

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 159 **Submitted by:** Jonathan Labs

Comment Type Editorial **Starting Page #** 142 **Starting Line #** 34 **Fig/Table#** **Section** 8.4.2.1

Incorrect references.

Suggested Remedy

p. 142, line 34: Change "8.3.2.2.4" to "8.4.2.4".
p. 144, line 40: Change "Table" to "Figure".
p. 158, line 40: Change "Figure 128as" to "Figure 128am".
p. 162, line 26: Change "Figure 128ai" to "Table 116am".
p. 179, line 32: Change "Table" to "Figure".
p. 194, line 7: Change "Table 116am" to "Table 116bi".
p. 194, line 32: Change "Table 116am" to "Table 116bi".
p. 200, line 63: Change "8.4.2.3" to "8.5.2.5".
p. 223, line 51: Change "8.4.3.4.2" to "8.5.9.4.3".

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

p. 142, line 34: Change "8.3.2.2.4" to "8.4.2.4".
p. 144, line 40: Change "Table" to "Figure".
p. 158, line 40: Change "Figure 128as" to "Figure 128am".
p. 162, line 26: Change "Figure 128ai" to "Table 116am".
p. 179, line 32: Change "Table" to "Figure".
p. 194, line 7: Change "Table 116am" to "Table 116bi".
p. 194, line 32: Change "Table 116am" to "Table 116bi".
p. 200, line 63: Change "8.4.2.3" to "8.5.2.5".
p. 223, line 51: Change "8.4.3.4.2" to "8.5.9.4.3".

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 160 **Submitted by:** Jonathan Labs

Comment Type Technical, Non-binding **Starting Page #** 142 **Starting Line #** 43 **Fig/Table#** **Section** 8.4.2.2

The formulat for carrier spacing is incorrect.

Suggested Remedy

The formula for carrier spacing is

delta F = Fs/Nfft

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

The formula for carrier spacing is

delta F = Fs/Nfft

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 161 **Submitted by:** Ron Murias Other

Comment Type Editorial **Starting Page #** 142 **Starting Line #** 44 **Fig/Table#** **Section**

{forwarded by Roger Marks}

"N used" is not defined in the primitive or derived parameter lists.

Suggested Remedy

Define N used as either a primitive or derived parameter.

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

Define N used as either a primitive or derived parameter.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 162 **Submitted by:** Marianna Goldhammer Member

Comment Type Technical, Binding **Starting Page #** 143 **Starting Line #** **Fig/Table#** **Section** 8.4.3.

Enhance the OFDM 256FFT mode with sub-channelization, to improve both link-budget and granularity and align with BRAN-HM.

Suggested Remedy

Supporting subchannelization requires the following: changes

a. Divide the channel into subchannels.

b. Change the UL map to support Subchannelization. The approach here was proposed by Nico and is similar to that of HiperMAN. A new Subchannelization_IE is defined. This element defines a region in the UL for which subchannelization is employed. The element also defines how many subchannelization UL map elements are to follow.

c. Change the FEC mechanism to CC only for subchannelization. No change when subchannelization is not employed. The motivation is that CC code work better for small block sizes than CC+RS.

a. Divide the channel into subchannels

page 143:

"

When subchannelization is employed, the channel is dived into subchannels as shon in table 116ab:

table 116ab

Subchannel number:	Allocated frequency offset indices of carriers
1:	{-100,…,-89},{-50,...,-39},{1,...13},{51,...,63}
2:	{-88,…,-76},{-38,...,-26},{14,...,25},{64,...,75}
3:	{-75,…,-64},{-25,...,-14},{26,...,38},{76,...,88}
4:	{-63,…,-51},{-13,...,-1},{39,...,50},{89,...,100}

"

b. Change the UL map

Add section 8.4.4.3.5 UL MAP Subchannelization information element

Within a frame, the BS may allocate a portion of the UL allocations to sub-channelized traffic. The UL_subchannelization_IE implicitly indicates the start of the allocation and explicitly indicates the Duration and the Number of allocations. A SS not capable of subchannelization shall skip the number of allocation times 7 nibbles that follow, and resume interpreting the UL-MAP afterwards with the start of the next allocation Duration OFDM symbols after the last allocation ended.

Table 116az-OFDM UL subchannelization IE Format

```
Subchannelization_IE() {
      extended UIUC          4 bits          subchannelization = 0x03
      Duration               12 bits         Cumulative duration of the allocations
      Number of allocations  12 bits          Number of sub-channelized allocations following this IE
}
….
```

A SS capable of sub-channelization shall decode the sub-channelized allocations, whereby the 12 bit Duration field in non-sub-channelized UL-MAP messages is replaced by a 3 bit Subchannel Index field and 5 bit Duration field as shown in Table 116at. A sub-channelized allocation shall start when all previous allocations to all allocated sub-channels have terminated.

In table 116at replace the 'Duration' row with:

"

```
else If (BS supports subchannelization and UIUC = 1,2 ,5:13) {
Subchannel Index          3 bits
0x0  Reserved
0x1  Sub-channel 1
0x2  Sub-channel 2
0x3  Sub-channel 3
0x4  Sub-channel 4
0x5  Sub-channel 1 and 3
0x6  Sub-channel 2 and 4
0x7  Reserved


Duration                5 bits
}
else
    Duration            12 bits
```

}

"

Add

"

"If several consecutive allocations are granted to the same SS on same subchannels and UIUC values, then the SS shall use all allocations for sending a single PHY burst"

c. add CC only

Add to Table 116ab 1/2, 10, 1,1,X1Y1

When sub-channelization is active (see 8.4.4.3.5), the FEC shall bypass the RS encoder and use the Overall Coding Rate as indicated in Table 116ac as CC Code Rate. The Uncoded Block Size and Coded Block size may be computed by dividing the values listed in Table 116ac by 4 and 2 for 1 and 2 sub-channel allocations respectively.

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

See comment 011

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 163 **Submitted by:** Jonathan Labs

Comment Type Technical, Non-binding **Starting Page #** 143 **Starting Line #** 4 **Fig/Table#** **Section** 8.4.2.3

There are errors in equation 15. The sum over the sub-carriers is not from -Nused to Nused, but from -Nused/2 to Nused/2. Also, there should only be one value of t in the first exponential term.

Suggested Remedy

Change the argument of the first exponential term to j*2*pi*fc*t and change the sum to be from -Nused/2 to Nused/2.

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

Change the argument of the first exponential term to j*2*pi*fc*t and change the sum to be from -Nused/2 to Nused/2.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 164 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 143 **Starting Line #** 4 **Fig/Table#** **Section** 8.4.2.3

The equation is numbered (15). Some equations are numbered in the spec and some aren't. It should be consistent.

Suggested Remedy

Either number all equations in the spec (preferable), or remove all equation numbers.

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

number equations:
page 29, line 53 and 58
page 30, line 18
page 39, line 32
page 44, line 60
page 52, line 34
page 67, line 23
page 94, line 31
page 97, line 12
page 131, line 32 and 52
page 132, line 55
page 133, line 1, 9, 18, 45, 53 and 62
page 134, line 5, 12, 26 and 35
page 145, line 20
page 157, line 28 and 44
page 173, line 36, 46, 54 and 62
page 174, line 28, 38, 46 and 60
page 175, line 2
page 177, line 63
page 179, line 24
page 201, line 30
page 213, line 7
page 227, line 10, 19, 20, 28 and 36
page 228, line 7, 17, 24, 38 and 46
page 231, line 62

page 233, line 20 (if not deleted)
page 237, either reword to sentences or number (inconsistent)
page 238, either reword to sentences or number (inconsistent)
page 276, line 61
page 278, line 55
page 280, line 59
page 281, line 25

Request TGc/TGc1 to number equation in
7.5.4.2.3
7.5.4.3

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 165 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Binding **Starting Page #** 143 **Starting Line #** 47 **Fig/Table#** **Section** 8.4.2.4

resolve the granularity issue for OFDM

According to a CAIDA (cooperative association of internet data analysis) study, 50% of IP packets are 44 bytes or less. Of course a significant portion of these can be packed, but for certain applications (such as voice streams) and residential deployments where single application usage doesn't provide very efficient packing, a good portion of this 50% will simply require a seperate allocation.

44 bytes of data result in an allocation need between 0.5 and 2 OFDM symbols depending on the burst profile. Given that the preamble requires 1 OFDM symbol, we're talking between 33% and 200% overhead for such an allocation. Providing optional UL sub-channelization allows for an simple and efficient interoperable method to transport this type of packet.

The loss of coding gain from doing CC-only over short allocations is 1 dB at most, which is insignificant with regard to any normal fading margin. No attempt is made to save a few bucks on the power amp by allowing sub-channelization only. This results in a complexity increase which is neglegible. The entire spec changes are less than 20 lines as shown below, which should lay to rest the pathetic claims made during the last session that it would be hard to specify in the time remaining before publishing the amendment.

Suggested Remedy

Replace Duration in Table 116at with:

if (Sub-channelization[a])

Subchannel Index	3 bits	0x1 Sub-channel 1 0x5 Sub-channel 1 and 3 0x2 Sub-channel 2 0x6 Sub-channel 2 and 4 0x3 Sub-channel 3 0x0 Reserved 0x4 Sub-channel 4 0x7 Reserved
Duration	5 bits	

else

Duration	12 bits

[a]When sub-channelization is active (see 8.4.4.3.5), only UIUC's 5 through 13 shall be used.

Add to Table 116ab 1/2, 10, 1,1,X_1 Y_1

Add to Table 116aa Subchannel number: Allocated frequency 1:{-100,...,-89},{-50,...,-39},{1,...,13},{51,...63}
offset indices of carriers 2:{-88,...,-76},{-38,...,-26},{14,...,25},{64,...,75}
3:{-75,...,-64},{-25,...,-14},{26,...,38},{76,...,88}

4:{-63,...,-51},{-13,...,-1},{39,...,50},{89,...,100}

Add underneath Table 116ac:
When sub-channelization is active (see 8.4.4.3.5), the FEC shall bypass the RS encoder and use the Overall Coding Rate as indicated in Table 116ac as CC Code Rate. The Uncoded Block Size and Coded Block size may be computed by dividing the values listed in Table 116ac by 4 and 2 for 1 and 2 sub-channel allocations respectively.

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

Reason for Group's Decision/Resolution

See comment 011.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 166 **Submitted by:** Tal Kaitz

Comment Type Technical, Binding **Starting Page #** 143 **Starting Line #** 55 **Fig/Table#** **Section** 8.4.2.3

The 256 OFDM system can be greatly improved by adding an optional sub-channelization support in the UL.
Sub-channelization has the following advantages:
a. It reduces data granularity.
b. It reduces overheads due to preambles.
c. It allows power concentration in increased link budget in the UL.

The reduction in data granularity and preamble overheads is mostly noted for short packets, which are a major part of the IP traffic. Power concentration can be allow to reduce the transmit power of the SS, thereby allowing the use of smaller and cheaper power amplifiers.

Sub-channelization was already adopted into the ETSI-BRAN HiperMAN standard for the 256FFT OFDM mode.

In order to achieve an efficient system, and to increase harmonization with the HiperMAN standard, sub-channelization should be adopted in 802.16a.

Suggested Remedy

Supporting subchannelization requires the following: changes
a. Divide the channel into subchannels.
b. Change the UL map to support Subchannelization. The approach here was proposed by Nico and is similar to that of HiperMAN. A new Subchannelization_IE is defined. This element defines a region in the UL for which subchannelization is employed. The element also defines how many subchannelization UL map elements are to follow.
c. Change the FEC mechanism to CC only for subchannelization. No change when subchannelization is not employed. The motivation is that CC code work better for small block sizes than CC+RS.

a. Divide the channel into subchannels

page 143:
"
When subchannelization is employed, the channel is dived into subchannels as shon in table 116ab:

table 116ab

Subchannel number:	Allocated frequency offset indices of carriers
1:	{-100,…,-89},{-50,...,-39},{1,...13},{51,...,63}
2:	{-88,…,-76},{-38,...,-26},{14,...,25},{64,...,75}
3:	{-75,…,-64},{-25,...,-14},{26,...,38},{76,...,88}
4:	{-63,…,-51},{-13,...,-1},{39,...,50},{89,...,100}

"

b. Change the UL map

Add section 8.4.4.3.5 UL MAP Subchannelization information element

Within a frame, the BS may allocate a portion of the UL allocations to sub-channelized traffic. The UL_subchannelization_IE implicitly indicates the start of the allocation and explicitly indicates the Duration and the Number of allocations. A SS not capable of subchannelization shall skip the number of allocation times 7 nibbles that follow, and resume interpreting the UL-MAP afterwards with the start of the next allocation Duration OFDM symbols after the last allocation ended.

Table 116az-OFDM UL subchannelization IE Format

Subchannelization_IE() {		
extended UIUC	4 bits	subchannelization = 0x03
Duration	12 bits	Cumulative duration of the allocations
Number of allocations	12 bits	Number of sub-channelized allocations following this IE

}

….

A SS capable of sub-channelization shall decode the sub-channelized allocations, whereby the 12 bit Duration field in non-sub-channelized UL-MAP messages is replaced by a 3 bit Subchannel Index field and 5 bit Duration field as shown in Table 116at. A sub-channelized allocation shall start when all previous allocations to all allocated sub-channels have terminated.

In table 116at replace the 'Duration' row with:

"

else If (BS supports subchannelization and UIUC = 1,2 ,5:13) {

Subchannel Index 3 bits

0x0 Reserved
0x1 Sub-channel 1
0x2 Sub-channel 2
0x3 Sub-channel 3
0x4 Sub-channel 4
0x5 Sub-channel 1 and 3
0x6 Sub-channel 2 and 4
0x7 Reserved

Duration 5 bits
}
else
Duration 12 bits

}

"
Add
"
"If several consecutive allocations are granted to the same SS on same subchannels and UIUC values, then the SS shall use all allocations for sending a single PHY burst"

c. add CC only:

Add to Table 116ab 1/2, 10, 1,1,X1Y1

When sub-channelization is active (see 8.4.4.3.5), the FEC shall bypass the RS encoder and use the Overall Coding Rate as indicated in Table 116ac as CC Code Rate. The Uncoded Block Size and Coded Block size may be computed by dividing the values listed in Table 116ac by 4 and 2 for 1 and 2 sub-channel allocations respectively.

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

Reason for Group's Decision/Resolution

See comment 011

Document under Review: **Ballot Number:** **Comment Date**

Comment # 167 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Binding **Starting Page #** 143 **Starting Line #** 56 **Fig/Table#** **Section** 8.4.3

The 256 OFDM system can be greatly improved by adding an optional sub-channelization support in the UL.
Sub-channelization has the following advantages:
a. It reduces data granularity.
b. It reduces overheads due to preambles.
c. It allows power concentration in increased link budget in the UL.

The reduction in data granularity and preamble overheads is mostly noted for short packets, which are a major part of the IP traffic. Power concentration can be allow to reduce the transmit power of the SS, thereby allowing the use of smaller and cheaper power amplifiers.

Sub-channelization was already adopted into the ETSI-BRAN HiperMAN standard for the 256FFT OFDM mode.

In order to achieve an efficient system, and to increase harmonization with the HiperMAN standard, sub-channelization should be adopted in 802.16a.

Suggested Remedy

Supporting subchannelization requires the following: changes
a. Divide the channel into subchannels.
b. Change the UL map to support Subchannelization. The approach here was proposed by Nico and is similar to that of HiperMAN. A new Subchannelization_IE is defined. This element defines a region in the UL for which subchannelization is employed. The element also defines how many subchannelization UL map elements are to follow.
c. Change the FEC mechanism to CC only for subchannelization. No change when subchannelization is not employed. The motivation is that CC code work better for small block sizes than CC+RS.

a. Divide the channel into subchannels

page 143:
"
When subchannelization is employed, the channel is dived into subchannels as shon in table 116ab:
table 116ab

Subchannel number: Allocated frequency offset indices of carriers
1: {-100,…,-89},{-50,...,-39},{1,...13},{51,...,63}
2: {-88,…,-76},{-38,...,-26},{14,...,25},{64,...,75}
3: {-75,…,-64},{-25,...,-14},{26,...,38},{76,...,88}
4: {-63,…,-51},{-13,...,-1},{39,...,50},{89,...,100}
"

b. Change the UL map

Add section 8.4.4.3.5 UL MAP Subchannelization information element

Within a frame, the BS may allocate a portion of the UL allocations to sub-channelized traffic. The UL_subchannelization_IE implicitly indicates the start of the allocation and explicitly indicates the Duration and the Number of allocations. A SS not capable of subchannelization shall skip the number of allocation times 7 nibbles that follow, and resume interpreting the UL-MAP afterwards with the start of the next allocation Duration OFDM symbols after the last allocation ended.

Table 116az-OFDM UL subchannelization IE Format

Subchannelization_IE() {
extended UIUC 4 bits subchannelization = 0x03
Duration 12 bits Cumulative duration of the allocations
Number of allocations 12 bits Number of sub-channelized allocations following this IE
}
….

A SS capable of sub-channelization shall decode the sub-channelized allocations, whereby the 12 bit Duration field in non-sub-channelized UL-MAP messages is replaced by a 3 bit Subchannel Index field and 5 bit Duration field as shown in Table 116at. A sub-channelized allocation shall start when all previous allocations to all allocated sub-channels have terminated.

In table 116at replace the 'Duration' row with:
"
else If (BS supports subchannelization and UIUC = 1,2 ,5:13) {
Subchannel Index 3 bits
0x0 Reserved

0x1 Sub-channel 1
0x2 Sub-channel 2
0x3 Sub-channel 3
0x4 Sub-channel 4
0x5 Sub-channel 1 and 3
0x6 Sub-channel 2 and 4
0x7 Reserved

Duration 5 bits
}
else
Duration 12 bits

}

"
Add
"
"If several consecutive allocations are granted to the same SS on same subchannels and UIUC values, then the SS shall use all allocations for sending a single PHY burst"

c. add CC only

Add to Table 116ab 1/2, 10, 1,1,X1Y1

When sub-channelization is active (see 8.4.4.3.5), the FEC shall bypass the RS encoder and use the Overall Coding Rate as indicated in Table 116ac as CC Code Rate. The Uncoded Block Size and Coded Block size may be computed by dividing the values listed in Table 116ac by 4 and 2 for 1 and 2 sub-channel allocations respectively.

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

Reason for Group's Decision/Resolution

See comment 011

Document under Review: **Ballot Number:** **Comment Date**

Comment # 168 **Submitted by:** Lei Wang Member

Comment Type Editorial **Starting Page #** 143 **Starting Line #** 58 **Fig/Table#** **Section**

Use "scrambling" or "randomization" throughout. The first few paragraphs use "randomization" exclusively, and the last two paragraphs use "scrambling" exclusively.

Suggested Remedy

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

Use randomization throughout

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 169 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 144 **Starting Line #** 1 **Fig/Table#** **Section** 8.4.3.1

Most of the rest of the spec uses a preceeding "0x" to denote a hex number.

Suggested Remedy

change "FFx" to "0xFF"

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

change "FFx" to "0xFF"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 170 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 144 **Starting Line #** 5 **Fig/Table#** **Section** 8.4.3.1

I don't really see why we would all of a sudden re-initialize after 1250 bytes. Nothing special happens with the PRBS output as far as I can see after 1250 bytes.
Re-initializing after 1250 bytes requires an additional counter and taking care of the additional clock-cycle delay of re-initialization.

Suggested Remedy

Unless there is a good reason I fail to see, delete the "or for .." part of this sentence.
Otherwise, it must be specified more clearly what the 1250-byte (and multipes) UL initialization vector is.

Also, Figure 128ad says Minislot offset, but all allocations are in OFDM symbols these days. Prolly ought to be changed.

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

delete the "or for .." part of this sentence.
in Figure 128ad, change "minislot offset" to "OFDM symbol number"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 171 **Submitted by:** Jonathan Labs

Comment Type Editorial **Starting Page #** 144 **Starting Line #** 34 **Fig/Table#** **Section** 8.4.3.1

Misspellings and punctuation.

Suggested Remedy

p. 144, line 34 Change "bit" to "bits".
p. 144, line 62 Change "pass" to "passing".
p. 155, line 12 Change "PRPS" to "PRBS"
p. 158, line 20 Place a period after "mandatory coding scheme"

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

p. 144, line 34 Change "bit" to "bits".
p. 144, line 62 Change "pass" to "passing".
p. 155, line 12 Change "PRPS" to "PRBS"
p. 158, line 20 Place a period after "mandatory coding scheme"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 172 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 144 **Starting Line #** 39 **Fig/Table#** **Section** 8.4.3.1

error in reference

Suggested Remedy

Change "Table 128ad" to "Figure 128ad"

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 173 **Submitted by:** Marianna Goldhammer Member

Comment Type Technical, Binding **Starting Page #** 144 **Starting Line #** 56 **Fig/Table#** **Section** 8.4.3.2

Trelis termination should be "zero tailing". The reason is implementation simplicity and alignment with BRAN-HM.

Suggested Remedy

Change:

page 144/line 62 to "The encoding is performed by … and then passing it through a zero biting convoultional encoder"

page 146/line 28:

" The encoding is performed by first passing the data through a Reed-Solomon encoder and then passing it through a convolutional encoder. Trellis termination is performed by adding 8 zero data bits at the end of the burst. The last Reed-Solomon block is shortened to (n-1, k-1), where n,and, k are the RS code parameters given in Table 116ac.
Note that a burst may span several Reed -Solomon blocks but only one octet of zero termination bits."

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

vote: 12 in favor
6 against

Reason for Group's Decision/Resolution

Subject of zero-tailing for OFDM was discussed, without reaching technical consensus as to the advantages and disadvantages of this technique. Since sponsor rules require 75% approval ratio for technical changes, there was insufficient support to incorporate this change.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 174 **Submitted by:** Tal Kaitz

Comment Type Technical, Binding **Starting Page #** 144 **Starting Line #** 56 **Fig/Table#** **Section** 8.4.3.2

The mode of trellis termination should be changed from 'tail biting' to 'zero tail'.

Tail biting allows trellis termination without the use of additional termination bits. This is performed by operating the decoder in a cyclic fashion over the received data. This allows the merge of all candidate paths to the correct initial/final state, without explicit knowledge. This elegant technique comes at a significant implementation complexity:

a. At the transmitter, the encoder in initialized with last data bits in the block. Thus some form of buffering is required.
b. At the receiver, the received metrics needs to be stored so they can cyclically played through the decoder.
c. Lastly and most importantly, the decoder performs extra operations to overcome the unknown initial/final state. This is typically the twice the backtrack length, a typical number being ~100 bits, for high QAM constellations in severe multipath. A coded block length contains up to 108*8bits. Therefore there is a 23% increase in the number of decoding operations.

Zero termination on the other hand requires the addition of at least 6 zero bits to the whole allocation. This results in a small capacity loss. (about 0.25% for an average IP packet)

Suggested Remedy

Change:

pg 144/line 62 to "The encoding is performed by … and then passing it through a zero biting convoultional encoder"

pg 146/line 28:

" The encoding is performed by first passing the data through a Reed-Solomon encoder and then passing it through a convolutional encoder. Trellis termination is performed by adding 8 zero data bits at the end of the burst. The last Reed-Solomon block is shortened to (n-1, k-1), where n,and, k are the RS code parameters given in Table 116ac.
Note that a burst may span several Reed -Solomon blocks but only one octet of zero termination bits."

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

Reason for Group's Decision/Resolution

see comment 173

Document under Review: **Ballot Number:** **Comment Date**

Comment # 175 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 144 **Starting Line #** 56 **Fig/Table#** **Section** 8.4.3.2

Suggested Remedy

insert "and CTC"

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

insert "and CTC"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 176 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Binding **Starting Page #** 144 **Starting Line #** 56 **Fig/Table#** **Section** 8.4.3.2

The mode of trellis termination should be changed from 'tail biting' to 'zero tail'.

Tail biting comes at a significant implementation complexity:

Suggested Remedy

Change the paragraph starting at page 144, line 62 to:
"The encoding is performed by … and then passing it through a zero biting convoultional encoder"

Change the paragraph starting at page 146, line 28 to:

" The data is passing through a Reed-Solomon encoder and then a convolutional encoder. Trellis termination is performed by adding 8 zero data bits at the end of the burst. The last Reed-Solomon block is shortened to (n-1, k-1), where n,and, k are the RS code parameters specified in Table 116ac. "

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

see comment 173

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 177 **Submitted by:** Jonathan Labs

Comment Type Editorial **Starting Page #** 144 **Starting Line #** 57 **Fig/Table#** **Section** 8.4.3.2

There are two optional codes.

Suggested Remedy

Change the sentence
"Support of BTC is optional."
to
"Support of either BTC or CTC is optional."

Same thing for p. 212, line 52, section 8.5.9.2.

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

Change the sentence
"Support of BTC is optional."
to
"Support of either BTC or CTC is optional."

Same thing for p. 212, line 52, section 8.5.9.2.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 178 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 145 **Starting Line #** 12 **Fig/Table#** **Section** 8.4.3.2.1

K and T are followed by hyphens, but N is not.

Suggested Remedy

Make the list consistent.

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

delete hyphens

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 179 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Binding **Starting Page #** 146 **Starting Line #** 28 **Fig/Table#** **Section** 8.4.3.2.1

According to a CAIDA (cooperative association of internet data analysis) study, 50% of IP packets are 44 bytes or less, 18% are 552 or 572 bytes, 18% are 1500 bytes, and the remaining 14% percent falls inbetween. Assuming the remaining 14% is 300 bytes on average, the overhead of zero-tailing would be a whopping 1/(0.5*44+0.18*562+0.18*1500+0.14*300+4) = 0.23%. (This compared to my previous 0.33% estimate). Any packing of small packets, or filling of vacant bytes in an OFDM symbol with maintenance data would make this number even lower. The advantages and disadvantages of zero-tailing vs tail-biting are hence:

comparative advantages of zero-tailing:
* 25 to 50% decrease in required clocking speed
* less energy consumption (important for going mobile)
* less heat dissipation (reduces mechanical cost, also crucial for packaging when going mobile)
* less complex implementation

comparative disadvantages of zero-tailing:
* 0.23% or less increase in overhead
* Runcom needs to change its chip

Suggested Remedy

Change paragraph to:

The encoding is performed by first passing the data in block format through the RS encoder and then passing it through a convolutional encoder. Eight tail bits are introduced at the end of each allocation. In the RS encoder, the redundant bits are sent before the input bits, keeping the tail bits at the end of the allocation.

Also, change on page 144, line 63, "tail biting" to "zero-terminating"

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

see comment 173

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 180 **Submitted by:** Lei Wang Member

Comment Type Technical, Binding **Starting Page #** 146 **Starting Line #** 30 **Fig/Table#** **Section**

Use zero tailing instead of tail-biting.

Suggested Remedy

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

Reason for Group's Decision/Resolution

see comment 173

Document under Review: **Ballot Number:** **Comment Date**

Comment # 181 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 146 **Starting Line #** 37 **Fig/Table#** **Section** 8.4.3.2.1

punctuation - extra colon

Suggested Remedy

Change "implemented.:" to "implemented."

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

Change "implemented.:" to "implemented."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 182 **Submitted by:** Shawn Taylor Member

Comment Type Technical, Satisfied (was **Starting Page #** 147 **Starting Line #** **Fig/Table#** **Section**

There are currently 2 optional Turbo coding modes (Block and Convolutional). Given their similar performance, I see no reason why the standard should have options for both.

Suggested Remedy

Choose one of the optional Turbo modes to be the ONLY optional Turbo mode.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 183 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 150 **Starting Line #** 53 **Fig/Table#** **Section** 8.4.3.2.3.1

QPSK-2/3 was not part of the CTC material approved during the last session.
I've overlooked this during implementation.

The performance difference between 1/2 and 3/4 is too small to insert another level anyway.

Suggested Remedy

Delete QPSK-2/3 row

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 184 **Submitted by:** Ron Murias Other

Comment Type Technical, Non-binding **Starting Page #** 154 **Starting Line #** 38 **Fig/Table#** **Section**

{forwarded by Roger Marks}

Section on the PRBS for pilots is not necessary as we're using fixed pilots.

Suggested Remedy

Remove the PRBS for the pilot symbols and agree on a fixed set of values for the pilot symbols.

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

Reason for Group's Decision/Resolution

see comment 185

Document under Review: **Ballot Number:** **Comment Date**

Comment # 185 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Binding **Starting Page #** 154 **Starting Line #** 61 **Fig/Table#** **Section** 8.4.3.4.2

We're basically running the PRBS to figure out values that are static. That's rather a waste of energy and clock-cycles for each OFDM symbol.
Replacement text below describes the static implementation (unless my computations are off, the logical result is the same).
Lastly, there seemed to be a '0' missing in the DL result sequence.

Suggested Remedy

Replace sentence and lines 1-20 on page 155 with:
The value of the pilot modulation for OFDM symbol k, relative to the beginning of the frame, shall be derived from w_k. The initialization sequences that shall be used on the DL and UL are shown in Figure 128aj. On the DL, this shall result in the sequence 11111111111000000000110... where the 3rd 1, i.e. w_3=1, shall be used in the first OFDM DL symbol following the frame preamble.
For each pilot (indicated by frequency offset index), the BPSK modulation shall be derived as follows:

DL	UL
$c_{-84}=2(\blacksquare - w_k)$	$c_{-84}=2(\blacksquare - w_k)$
$c_{-60}=2(\blacksquare - \text{NOT}(w_k))$	$c_{-60}=2(\blacksquare - \text{NOT}(w_k))$
$c_{-36}=2(\blacksquare - w_k)$	$c_{-36}=2(\blacksquare - w_k$
$c_{-12}=2(\blacksquare - \text{NOT}(w_k))$	$c_{-12}=2(\blacksquare - \text{NOT}(w_k))$
$c_{12}=2(\blacksquare - \text{NOT}(w_k))$	$c_{12}=2(\blacksquare - w_k)$
$c_{36}=2(\blacksquare - \text{NOT}(w_k))$	$c_{36}=2(\blacksquare - w_k)$
$c_{60}=2(\blacksquare - w_k)$	$c_{60}=2(\blacksquare - w_k)$
$c_{84}=2(\blacksquare - w_k)$	$c_{84}=2(\blacksquare - w_k)$

Note: Implement with "overline" instead of "NOT"

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

Replace sentence and lines 1-20 on page 155 with:
The value of the pilot modulation for OFDM symbol k, relative to the beginning of the frame, shall be derived from w_k. The initialization sequences that shall be used on the DL and UL are shown in Figure 128aj. On the DL, this shall result in the sequence 11111111111000000000110... where the 3rd 1, i.e. w_3=1, shall be used in the first OFDM DL symbol following the frame preamble.
For each pilot (indicated by frequency offset index), the BPSK modulation shall be derived as follows:

DL	UL
$c_{-84}=2(\text{apple} - w_k)$	$c_{-84}=2(\text{apple} - w_k)$
$c_{-60}=2(\text{apple} - \text{NOT}(w_k))$	$c_{-60}=2(\text{apple} - \text{NOT}(w_k))$
$c_{-36}=2(\text{apple} - w_k)$	$c_{-36}=2(\text{apple} - w_k$
$c_{-12}=2(\text{apple} - \text{NOT}(w_k))$	$c_{-12}=2(\text{apple} - \text{NOT}(w_k))$
$c_{12}=2(\text{apple} - \text{NOT}(w_k))$	$c_{12}=2(\text{apple} - w_k)$
$c_{36}=2(\text{apple} - \text{NOT}(w_k))$	$c_{36}=2(\text{apple} - w_k)$
$c_{60}=2(\text{apple} - w_k)$	$c_{60}=2(\text{apple} - w_k)$
$c_{84}=2(\text{apple} - w_k)$	$c_{84}=2(\text{apple} - w_k)$

Note: Implement with "overline" instead of "NOT"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 186 **Submitted by:** Ron Murias Other

Comment Type Technical, Non-binding **Starting Page #** 156 **Starting Line #** 21 **Fig/Table#** **Section**

{forwarded by Roger Marks}
{see also Comment 316}
Example OFDM UL Frame is incorrect. For example, the interleaved section is based on the D1 draft PRBS interleaver rather than the current 802.11 based interleaver.

Suggested Remedy

Re-generate the example coding sections based on the current PHY configuration.

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

Qam=4
RateID=1
DLUL=1
CCRate=0.833
RS=40,36,2
UBSize=36
CBSize=48
Slot Offset=14
IUC=7

Test Data
45 29 C4 79 AD 0F 55 28 AD 87 B5 76 1A 9C 80 50 45 1B 9F D9 2A 88 95 EB AE B5 2E 03 4F 09 14 69 58 0A 5D F5

Scrambled Data
D5 0E A4 AA EF E4 DB 51 88 91 6B 00 DF AA 1E E7 02 A8 0E 70 4F 7F C9 D8 66 1D 9D F0 E7 20 E4 9D 7A 32 91 67

Reed-Solomon Encoded Data
D5 0E A4 AA EF E4 DB 51 88 91 6B 00 DF AA 1E E7 02 A8 0E 70 4F 7F C9 D8 66 1D 9D F0 E7 20 E4 9D 7A 32 91 67 61 37 B9 20

Convolutionally Coded Data
29 CB 69 26 CD B5 96 21 10 D2 43 85 FE 83 8B B0 DC 67 85 A9 E0 C5 A8 C9 99 D1 3D 8B F8 D1 EE 7A 3B C2 4C 08 31 3A B4
39 03 5D FB 3F 1C 1D 0E E0

Interleaved Data
33 FB 14 66 A3 44 C2 37 B4 1A 8E B6 E3 9F C7 32 C5 53 17 01 8D E5 4C AC AF 7E 81 88 BB 89 71 C1 35 29 0B 3E 80 55 7E 64
A0 0E CA 85 A4 B6 FE 1E

Carrier Mapped Data (Index: I Q) x 1/sqrt(2)
-100:1 1, -99:-1 -1, -98:1 1, -97:-1 -1, -96:-1 -1, -95:-1 -1, -94:-1 1, -93:-1 -1, -92:1 1, -91:1 -1,
-90:1 -1, -89:1 1, -88:1 -1, -87:-1 1, -86:1 -1, -85:-1 1, -84:-1.4 0, -83:-1 1, -82:-1 1, -81:1 1,
-80:-1 -1, -79:1 -1, -78:1 1, -77:1 -1, -76:1 1, -75:-1 -1, -74:1 1, -73:1 1, -72:-1 1, -71:1 1,
-70:-1 -1, -69:1 -1, -68:-1 -1, -67:-1 1, -66:-1 -1, -65:1 -1, -64:1 1, -63:1 1, -62:1 -1, -61:-1 1,
-60:-1.4 0, -59:-1 1, -58:-1 1, -57:1 1, -56:-1 -1, -55:-1 1, -54:-1 1, -53:-1 -1, -52:1 -1, -51:-1 1,
-50:-1 -1, -49:-1 1, -48:1 1, -47:-1 -1, -46:-1 1, -45:1 -1, -44:-1 -1, -43:-1 -1, -42:-1 -1, -41:1 1,
-40:1 -1, -39:-1 -1, -38:1 1, -37:-1 -1, -36:1.4 0, -35:1 1, -34:-1 1, -33:-1 -1, -32:1 1, -31:1 -1,
-30:1 -1, -29:1 -1, -28:1 -1, -27:1 1, -26:-1 -1, -25:1 1, -24:1 -1, -23:1 -1, -22:-1 -1, -21:1 1,
-20:1 1, -19:1 1, -18:1 -1, -17:-1 1, -16:1 1, -15:-1 -1, -14:1 -1, -13:-1 -1, -12:1.4 0, -11:-1 1,

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 187 **Submitted by:** Roger Marks Member

Comment Type Editorial **Starting Page #** 156 **Starting Line #** 53 **Fig/Table#** **Section** 8.4.3.6

The heading structure is faulty: the following subclauses do NOT belong under the heading "Channel Coding":

Preamble structure and modulation
Duplexing modes
PMP Frame structure
Frame duration codes

Suggested Remedy

Move these subclauses to more appropriate locations., or rename "Channel Coding" to something more general.

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

Change to

8.4.4 PMP frame structure
8.4.4.1 Duplexing modes
8.4.4.2 DL Frame Prefix
8.4.5 Frame duration codes

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 188 **Submitted by:** Roger Marks Member

Comment Type Technical, Satisfied (was **Starting Page #** 157 **Starting Line #** 52 **Fig/Table#** **Section** 8.4.3.7

This section has a lot of problems.

In the first paragraph ("To provision bi-directional operation in licensed bands, the PHY shall support FDD, H-FDD or TDD. In license-exempt bands only TDD shall be supported."), H-FDD should not be called out as a duplexing option, since it isn't one. In particular, it is erroneous to say that people have the choice of supporting "FDD" or "H-FDD". That's not how it works.

The second paragraph is a waste of bits. It says nothing normative. We are better off without it.

Suggested Remedy

Change content of 8.4.3.7 to:

"In licensed bands, the duplexing method shall be either FDD or TDD. In license-exempt bands, the duplexing method shall be TDD."

Make the same change in 8.5.4.1 (page 189, lines 5-15)

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

replace 8.4.3.7 with:
In licensed bands, the duplexing method shall be either FDD or TDD. FDD SSs may be Half Duplex FDD (H-FDD). In license-exempt bands, the duplexing method shall be TDD.

Make the same change in 8.5.4.1 (page 189, lines 5-15)

Add in 8.3.1.4: FDD SSs may be Half Duplex FDD (H-FDD).

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 189 **Submitted by:** Heinz Lycklama Other 2002/08/30

Comment Type Technical, Non-binding **Starting Page #** 157 **Starting Line #** 54 **Fig/Table#** **Section** 8.4.3.7

{forwarded by Roger Marks}
The 802.16a standard needs to support both FDD and TDD for the UNII License-Exempt bands. Support of FDD is necessary to make it possible to use both the 5.25 GHz and the 5.725 GHz bands using the same equipment. Chipsets exist today that support FDD in both Licensed and License-Exempt bands. Interference problems can be solved by use of appropriate mitigation techniques. See IEEE 802.16a Contribution C802.16a-02/71 for details.

Suggested Remedy

Change the first paragraph of Section 8.4.3.7 to read:
To provision bi-directional operation, the PHY shall support FDD, H-FDD or TDD.

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

vote: 5 in favor
14 against

Reason for Group's Decision/Resolution

The ballot resolution committee treated this comment as if it were a Technical Binding Comment in deference to the preferences of the contributor, though not a member of the sponsor ballot group.
FDD introduces additional interference considerations for license-exempt bands for which there is no appropriate DFS or other mitigation mechanism currently defined in this standard.
Adding FDD to license-exempt bands will severely complicate, if not totally prevent, co-existence with 802.11a.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 190 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 157 **Starting Line #** 54 **Fig/Table#** **Section** 8.4.3.7

H-FDD is not a duplexing mode.

Suggested Remedy

Replace sentence starting on line 6 with:
In licensed bands either TDD or FDD shall be used. In license-exempt bands only TDD is shall be used. SSs supporting FDD may be half-duplex (H-FDD SSs).

Same on page 189, line 6.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 191 **Submitted by:** Lei Wang Member

Comment Type Technical, Binding **Starting Page #** 157 **Starting Line #** 54 **Fig/Table#** **Section**

Remove OFDMA as an optional mode for the unlicensed band. The complexities of interoperability with the mandatory mode still have not been addressed.

Suggested Remedy

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

vote: 6 in favor
9 against

Reason for Group's Decision/Resolution

There is no requirement for interoperability with the mandatory mode, and hence no associated complexity.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 192 **Submitted by:** Jonathan Labs

Comment Type Technical, Non-binding **Starting Page #** 158 **Starting Line #** 43 **Fig/Table#** **Section** 8.4.3.8

In a PMP system, the base station should not be listening for a DL burst. It listens for UL bursts.

Suggested Remedy

Change
"DL burst"
to
"UL burst"

The same correction should be done on p. 189, line 25.

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

Change
"DL burst"
to
"UL burst"

The same correction should be done on p. 189, line 25.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 193 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 159 **Starting Line #** 37 **Fig/Table#** **Section** 8.4.3.8

Not allowing a DL allocation after a UL allocation for an H-FDD ternimal implies that this PHY has no re-synch mechanism within a DL subframe such as the mechanism in WirelessMAN-SC. This has capacity/delay implications for H-FDD terminals that users of this PHY need to be aware of. If all terminals are half duplex, the capacity/delay implications on the system can be high.

Suggested Remedy

Explicitly state the potential capacity/delay restriction put on H-FDD terminals.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 194 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 161 **Starting Line #** 5 **Fig/Table#** 116 **Section** 8.4.3.8.1

The DL Frame Prefix looks a lot like a DL-MAP entry. Why is this extra field needed?

Suggested Remedy

Replace with a DL-MAP entry.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 195 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical (was Editorial) **Starting Page #** 161 **Starting Line #** 34 **Fig/Table#** **Section** 8.4.3.9

header level change make it more consistent (one subheader isn't allowed by IEEE also)

Suggested Remedy

change 8.4.3.9 to 8.4.3.8.2

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

Insert FDC in the mesh NCFG descriptor, since it seems to be missing.

Reason for Group's Decision/Resolution

see also comment 187.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 196 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Binding **Starting Page #** 161 **Starting Line #** 43 **Fig/Table#** 116 **Section** 8.4.3.9

There are too many frame durations, and some of the defined values are absurd.
Achieving higher efficience requires long frame durations.

Suggested Remedy

Eliminate codes 1,2,3,5,7,8,10 for PMP
Eliminate codes 1,2,3,5,7,9,10 for Mesh
Add code 17 for PMP and 12 for Mesh

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

Reason for Group's Decision/Resolution

Retain flexibility

Document under Review: **Ballot Number:** **Comment Date**

Comment # 197 **Submitted by:** Lei Wang

Comment Type Technical, Binding **Starting Page #** 161 **Starting Line #** 51 **Fig/Table#** 116 **Section** 8.4.3.9

OFDM max frame length shall be extended to 20ms.

Suggested Remedy

change the last two rows of Table 116am to

7-21	(N-1)	round((N-1)/Ts)*Ts	N-1	round((N-1)/Ts)*Ts
22-255	Reserved		Reserved	

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

Subject of max. frame length for OFDM was discussed at great length, without reaching technical consensus as to the advantages and disadvantages. Since sponsor rules require 75% approval ratio for technical changes, there was insufficient support to incorporate this change.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 198 **Submitted by:** Jonathan Labs

Comment Type Editorial **Starting Page #** 162 **Starting Line #** 27 **Fig/Table#** **Section** 8.4.4.1

It would be good to give a definition of "Frame number."

Suggested Remedy

Insert a definition of "Frame number". Perhaps what was used in section 8.5.5.1?

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

Reason for Group's Decision/Resolution

see 240

Document under Review: **Ballot Number:** **Comment Date**

Comment # 199 **Submitted by:** Lei Wang

Comment Type Technical, Non-binding **Starting Page #** 163 **Starting Line #** 1 **Fig/Table#** **Section** 8.4.4

If there is an Allocation_Start_Time field in DL-MAP PHY synchronization , why not use it to define the DL allocation start time?

Suggested Remedy

change "relative to the start of the first symbol ....." to
"relative to the allocation start time defined by the Allocation_Start_Time field in the DL-MAP PHY synchronization."

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

change "relative to the start of the first symbol ....." to
"relative to the allocation start time defined by the Allocation_Start_Time field in the DL-MAP PHY synchronization."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 200 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 164 **Starting Line #** 39 **Fig/Table#** 116 **Section** 8.4.4.2.4

This IE format is results in a non-byte aligned map. Other map IE formats pad to achieve byte alignment when added to the DIUC. This one should, too.

Suggested Remedy

Add a row with "Reserved" in the syntax column and "4 bits" in the Size column.

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

Delete the Offset line

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 201 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 166 **Starting Line #** 45 **Fig/Table#** **Section** 8.4.4.3.2

consistency with UL-MAP_IE

Suggested Remedy

Change "Offset" to "Duration"

Also consider Offset on line 54, page 167.
Basically, it's not needed, because it's a zero-duration allocation and the start is determined by the end of the preceeding allocation.
This would mean we can also get rid of Reserved.

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

Change "Offset" to "Duration"

Delete Offset and Reserved on line 54, page 167.

Same on page 163, line 51-54

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 202 **Submitted by:** Lei Wang

Comment Type Technical, Non-binding **Starting Page #** 166 **Starting Line #** 45 **Fig/Table#** 116 **Section**

offset is an extra field in UL-MAP forcused contention IE, since it is implied in the UL-MAP.

Suggested Remedy

remove the offset field in Table 116av.

also, in Table 116at, change the size of Focused_contention_IE() from 28bits to 16bits.

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

Specify in the focused contention text that you can send BW request or BW request + data

add in 8.4.4.3.2:
Duration
Length of the allocation in OFDM symbols.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 203 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Binding **Starting Page #** 167 **Starting Line #** 60 **Fig/Table#** **Section** 8.4.4.3.5

Regardless of whether sub-channelization gets adopted or not, if we are interested in interoperability beyond paying lip-service to it, it would be necessary to provide a UL IE to ensure that a .16a SS doen't get confused when the HIPERMAN device uses sub-channelization allocations in the UL.

If sub-channelization is adopted, then adopt text below including the pieces between [ ], but not those between { }.
If sub-channelization is not adopted, then adopt the text below including the pieces between { }, but not those between [ ].
(Either way will satisfy my comment.)

Suggested Remedy

8.4.4.3.5 UL-MAP Subchannelization IE Format

[Within a frame, the BS may allocate a portion of the UL allocations to sub-channelized traffic.]{The UL subchannelization_IE shall not be inserted in the UL-MAP by a WirelessMAN compliant BS, but a WirelessMAN compliant SS shall be capable of interpreting this message.}
The UL Subchannelization_IE implicitly indicates the start of the allocation and explicitly indicates the **Duration** and the **Number of Allocations**. A SS [not capable of sub-channelization] shall skip the next **Number of Allocations** times 7 bytes in the UL-MAP and resume interpreting the UL-MAP afterwards with the start of the next allocation **Duration** OFDM symbols after the last allocation ended.

Table 116az-OFDM UL subchannelization IE Format

Subchannelization_IE() {		
extended UIUC	4 bits	subchannelization = 0x03
Duration	12 bits	Cumulative duration of the allocations
Number of allocations	12 bits	Number of sub-channelized allocations following this IE
}		

[A SS capable of sub-channelization shall decode the sub-channelized allocations, whereby the 12 bit **Duration** field in non-sub-channelized UL-MAP messages is replaced by a 3 bit **Subchannel Index** field and 5 bit **Duration** field as shown in Table 116at. A sub-channelized allocation shall start when all previous allocations to all allocated sub-channels have terminated.]

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

vote: 10 in favor
9 against

Reason for Group's Decision/Resolution

The incorporation of this comment still does not result in interoperable PHYs.

The comment was discussed. Since sponsor rules require 75% approval ratio for technical changes, there was insufficient support to incorporate this change.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 204 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 168 **Starting Line #** 3 **Fig/Table#** **Section** 8.4.5.1

8.4.5.1 and 8.4.5.1.1 is a very good section that is equally applicable to all PHYs, including WirelessMAN-SC. I would like to see this network synchronization recommendation section moved to be the first section of chapter 8, and apply to all PHYs.

Suggested Remedy

Make 8.4.5.1.1 section 8.2 and renumber the and renumber sections 8.2-8.5 accordingly.

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

Refer this paragraph over to TGc for inclusion in subclause 8.2.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 205 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 168 **Starting Line #** 25 **Fig/Table#** **Section** 8.4.5.2

grammar

Suggested Remedy

change "and second transmission" to "and secondly, transmission"

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

change "and second transmission" to "and secondly, transmission"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 206 **Submitted by:** Tal Kaitz

Comment Type Technical, Binding **Starting Page #** 168 **Starting Line #** 39 **Fig/Table#** **Section** 8.4.5.2

The burst profiles of initial ranging and bandwidth requests is not explictly defined for OFDM.

Suggested Remedy

Add:
pg 168/39
"Initial bandwith requets transmissions shall consist of a long premable and one OFDM symbol using QPSK rate 1/2"

Add pg168/61
" In a REQ-Full each .... and one OFDM symbol, using QPSK rate 1/2"

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

Add:
pg 168/39
"Initial ranging transmissions shall consist of a long preamble and one OFDM symbol using QPSK rate 1/2."

Add pg168/61
" In a REQ-Full each .... and one OFDM symbol, using QPSK rate 1/2."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 207 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 168 **Starting Line #** 43 **Fig/Table#** **Section** 8.4.5.2

Clarification of the previously discussed cell radius vs. initial maintenance duration confusion issue.

Suggested Remedy

Change sentence beginning 'For all duplexing....' to
'Regardless of duplexing type, the appropriate duration of the Intial Maintenance slot used for initial system access depends on the intended cell radius. '

Idem page 189, line 48

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

Change sentence beginning 'For all duplexing....' to
'Regardless of duplexing type, the appropriate duration of the Intial Maintenance slot used for initial system access depends on the intended cell radius. '

Idem page 189, line 48

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 208 **Submitted by:** Marianna Goldhammer Member

Comment Type Technical, Binding **Starting Page #** 168 **Starting Line #** 53 **Fig/Table#** **Section** 8.4.5.2

There are advantages for using only a sub-channel, instead all all carriers, for initial ranging, with systems supporting sub-channelization.
For a sub-channelization enabled system, there may be SS that can work in up-link only in sub-channelized mode, due to link budget limitations. When transmitting delay sensitive traffic, the ranging can be done of one of the sub-channels, and the time-sensitive transmission can work on other sub-channels.

Suggested Remedy

Add in page 168/line 62:
"The initial ranging interval can be allocated to SSs which use subchannelization. In this case the BS allocates an UL interval using the procedure of 8.4.4.3.5 and an UIUC code of 1."

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

Reason for Group's Decision/Resolution

See comment 011

Document under Review: **Ballot Number:** **Comment Date**

Comment # 209 **Submitted by:** Marianna Goldhammer Member

Comment Type Technical, Binding **Starting Page #** 168 **Starting Line #** 62 **Fig/Table#** **Section** 8.4.5.3

To gain the full benefits of subchannelization, the system needs to optionally support subchannelized transmissions in the REQ-region-full.

Suggested Remedy

Add in page 168/line 62:
"REQ-region Full interval can be allocated to SSs which use subchannelization. In this case the BS allocates an UL interval using the procedure of 8.4.4.3.5 and an UIUC code of 2"

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

Reason for Group's Decision/Resolution

See comment 011

Document under Review: **Ballot Number:** **Comment Date**

Comment # 210 **Submitted by:** Marianna Goldhammer Member

Comment Type Technical, Binding **Starting Page #** 168 **Starting Line #** 62 **Fig/Table#** **Section** 8.4.5.3.

For systems using sub-channelization, the optional use of the "Focused BW request" will improve the system spectral efficiency.

Suggested Remedy

Use the proposal made by Marc Engels,IMEC, in BRAN-HM. Make the follwing modifications:
Add in page 169/line 22:
"If the BS support the subchannelization mode, the first N contention codes have to be used by SSs that require the use of subchannelization. The values of N is transmitted in the UCD channel encoding TLV messages. The default value of N is 0."

Add in page 240/ Table 122 the following entry
"
Name= Subchannelization focused contention code"
Type=18
Length=1
Value= Number of contention codes used by SSs that use subchannelization. Default value 0. Possible values 0-7
PHY scope = OFDM

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

Reason for Group's Decision/Resolution

See comment 011

Document under Review: **Ballot Number:** **Comment Date**

Comment # 211 **Submitted by:** Tal Kaitz

Comment Type Technical, Binding **Starting Page #** 168 **Starting Line #** 62 **Fig/Table#** **Section** 8.4.5.2

To gain the full benefits of subchannelization, the system needs to optionally support subchannelized transmissions in the initial ranging interval.

Suggested Remedy

Suggested remedy:

Add in pg 168/line 62:
"The initial ranging interval can be allocated to SSs which use subchannelization. In this case the BS allocates an UL interval using the procedure of 8.4.4.3.5 and an UIUC code of 1."

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

Reason for Group's Decision/Resolution

See comment 011

Document under Review: **Ballot Number:** **Comment Date**

Comment # 212 **Submitted by:** Tal Kaitz

Comment Type Technical, Binding **Starting Page #** 168 **Starting Line #** 62 **Fig/Table#** **Section** 8.4.5.3

To gain the full benefits of subchannelization, the system needs to optionally support subchannelized transmissions in the REQ-region-full.

Suggested Remedy

Add in pg 168/line 62:
"REQ-region Full interval can be allocated to SSs which use subchannelization. In this case the BS allocates an UL interval using the procedure of 8.4.4.3.5 and an UIUC code of 2"

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

Reason for Group's Decision/Resolution

See comment 011

Document under Review: **Ballot Number:** **Comment Date**

Comment # 213 **Submitted by:** Tal Kaitz

Comment Type Technical, Binding **Starting Page #** 168 **Starting Line #** 62 **Fig/Table#** **Section** 8.4.5.3

The system needs to optionally support Focused Bandwidth requests using subchannelization. By itself the focused contention mechanism is inherently subchannelized. However once a BS successfully decoded a focused contention request, it needs to know whether to allocate a subchannelized or a non- subchannelized transmit opportunity.

The following suggested solution was proposed by Marc Engels from IMEC for the HiperMAN. The set of contention codes is split in two. The first N codes are used by SSs that required subchannelized BW requests. The rest of the codes are used for non-subchannelized BW requests. The parameter N is configurable.

Suggested Remedy

Add in:
page 169/line 22:
"If the BS support the subchannelization mode, the first N contention codes have to be used by SSs that require the use of subchannelization. The values of N is transmitted in the UCD channel encoding TLV messages. The default value of N is 0."

Add in page 240/ Table 122 the following entry
"
Name= Subchannelization focused contention code"
Type=18
Length=1
Value= Number of contention codes used by SSs that use subchannelization. Default value 0. Possible values 0-7
PHY scope = OFDM

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

See comment 011

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 214 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Binding **Starting Page #** 168 **Starting Line #** 62 **Fig/Table#** **Section** 8.4.5.3

To gain full benefits from the subchannelization, the system needs to support the REQ-region-full functionality in subchannelized region.

Suggested Remedy

Add at page 168, line 62:

"REQ-region Full interval can be allocated to SSs which are able to use subchannelization. In this case the BS allocates an UL interval using the procedure specified in 8.4.4.3.5 and an UIUC = 2"

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

See comment 011

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 215 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Binding **Starting Page #** 168 **Starting Line #** 62 **Fig/Table#** **Section** 8.4.5.3

The system needs to support Focused Bandwidth requests in the subchannelization region.
After a BS successfully decoded a focused contention request, it needs to know whether to allocate a subchannelized or a non-subchannelized transmit opportunity.
The following solution was suggested by Marc Engels from IMEC for the HiperMAN. The set of contention codes is split in two. The first N codes are used by SSs that required subchannelized BW requests. The rest of the codes are used for non-subchannelized BW requests. The parameter N is configurable.

Suggested Remedy

Add at the page 169, line 22:
"If the BS supports subchannelization, the first N contention codes shall be used by those SSs that are able to use the subchannelization. The value of N is transmitted at the UCD channel (TLV encoded). The default is N = 0."

Add at the page 240, Table 122 one more entry"
"Name= Subchannelization focused contention code
Type=18
Length=1
Value= Number of contention codes used by those SSs that are able to use the subchannelization. Possible values 0-7, default = 0
PHY scope = OFDM"

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

Reason for Group's Decision/Resolution

See comment 011

Document under Review: **Ballot Number:** **Comment Date**

Comment # 216 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 169 **Starting Line #** 7 **Fig/Table#** **Section** 8.4.5.3

grammar

Suggested Remedy

Change "Then SS" to "The SS"

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

Change "Then SS" to "The SS"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 217 **Submitted by:** Lei Wang

Comment Type Technical, Non-binding **Starting Page #** 170 **Starting Line #** 35 **Fig/Table#** **Section** 8.4.5.3.2

REQ region-focused bandwidth requesting mechanism should be described clearly.

Suggested Remedy

insert the following text in line 35 page 170:

The REQ Region-Focused bandwidth requesting mechanism consists of two phases. The Phase-1 is that an SS requesting bandwidth sends a signal to the BS in the UL interval of REQ Region Focused identified by UIUC=3. One REQ Region Focused UL interval with UIUC=3 shall be two OFDM symbols. The Phase-1 bandwidth requesting signal transmission is described in this section. The Phase-2 is that the SS requesting bandwidth sends a bandwidth request MAC header as defined in 6.2.2.1.2 to the BS in the UL interval allocated to the SS with UICU=4 and Focused_contention IE as defined in Table 116av, where the SS is identified by the transmit opportunity index, contention channel index, and contention code index, which are the parameters that the SS used to send the phase-1 bandwidth requesting signal in the previous frame. The Phase-2 UL interval with UIUC=4 shall consists of a short preamble and shall have the Duration indicated in the OFDM_Focused_Contention_IE, and shall use the most robust mandatory burst profile.

Make Full-Req have a short preamble and change "network entry" in the preamble section to "Initial ranging".

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

insert the following text in line 35 page 170:

The REQ Region-Focused bandwidth requesting mechanism consists of two phases. The Phase-1 is that an SS requesting bandwidth sends a signal to the BS in the UL interval of REQ Region Focused identified by UIUC=3. One REQ Region Focused UL interval with UIUC=3 shall be two OFDM symbols. The Phase-1 bandwidth requesting signal transmission is described in this section. The Phase-2 is that the SS requesting bandwidth sends a bandwidth request MAC header as defined in 6.2.2.1.2 to the BS in the UL interval allocated to the SS with UICU=4 and Focused_contention IE as defined in Table 116av, where the SS is identified by the transmit opportunity index, contention channel index, and contention code index, which are the parameters that the SS used to send the phase-1 bandwidth requesting signal in the previous frame. The Phase-2 UL interval with UIUC=4 shall consists of a short preamble and shall have the Duration indicated in the OFDM_Focused_Contention_IE, and shall use the most robust mandatory burst profile.

Make Full-Req have a short preamble and change "network entry" in the preamble section to "Initial ranging".

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 218 **Submitted by:** Lei Wang Member

Comment Type Editorial **Starting Page #** 171 **Starting Line #** 11 **Fig/Table#** **Section**

Specify that Alamouti is optional.

Suggested Remedy

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

add "(optional)" in title

Change "Alamouti's scheme [B26] is" to: "STC (see for example [B26]) is optionally" in first sentence
change "Alamouti" to "STC" everywhere

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 219 **Submitted by:** Avraham Freedman Member

Comment Type Editorial **Starting Page #** 171 **Starting Line #** 61 **Fig/Table#** **Section** 8.4.6.2

The channel coefficients, h_0 and h_1 are in general vectors, being a function of frequency (or time). The text is not clear about that.

Suggested Remedy

Change "values" to "vector values"

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

Change "values" to "vector values"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 220 **Submitted by:** Roger Marks Member

Comment Type Editorial **Starting Page #** 179 **Starting Line #** 23 **Fig/Table#** **Section** 8.4.11.1.1

Equation and first paragraph of subclause need editorial improvement. {see also comment regarding Page 233, Line 20}

In second paragraph, "Table 128aq" should be "Fig. 128aq".

Suggested Remedy

In line 32, change "Table 128aq" to "Fig. 128aq".

Change lines 23-30 to:

The channel center frequency shall follow the formula:

Channel center frequency (MHz) = 5000 + 5 n_{ch},

where n_{ch} = 0,1,...199. This definition provides an 8-bit unique numbering system for all channels, with 5 MHz spacing, from 5 GHz to 6 GHz. This provides flexibility to define channelization sets for current and future regulatory domains. The set of allowed channel numbers is defined in Table 116bf for two regulatory domains. The support of any individual band in the table is not mandatory, but all channels within a band shall be supported.

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

In line 32, change "Table 128aq" to "Fig. 128aq".

Change lines 23-30 to:

The channel center frequency shall follow the formula:

Channel center frequency (MHz) = 5000 + 5 n_{ch},

where n_{ch} = 0,1,...199. This definition provides an 8-bit unique numbering system for all channels, with 5 MHz spacing, from 5 GHz to 6 GHz. This provides flexibility to define channelization sets for current and future regulatory domains. The set of allowed channel numbers is defined in Table 116bf for two regulatory domains. The support of any individual band in the table is not mandatory, but all channels within a band shall be supported.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 221 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 181 **Starting Line #** 42 **Fig/Table#** **Section** 8.4.11.1.3

It would be quite helpful to have a receiver rejection mask for the LE bands.

Suggested Remedy

Insert 8.4.11.1.3 from C802.16a-02/84

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 222 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 184 **Starting Line #** 1 **Fig/Table#** **Section** 8.4.11.2.2

Superfluous blank page.

Suggested Remedy

Eliminate the blank page 184.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 223 **Submitted by:** Avraham Freedman Member

Comment Type Editorial **Starting Page #** 185 **Starting Line #** 6 **Fig/Table#** **Section** 8.5.1

The targeted frequency bands section was (rightfully) transferred to the appendix, but now they are missing from the text itself.

Suggested Remedy

Change the first sentence to read:
The WirelessMAN-OFDMA ([B24]) PHY , based on OFDM modulation and designed for NLOS operation in the 2-11 GHz frequency bands per 1.2.4, as specified in appendix B.1. Channel bandwidths allowed shall be limited to the regulatory provisioned bandwidth divided by any power of 2 no less than 1.25 MHz.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 224 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 185 **Starting Line #** 19 **Fig/Table#** **Section** 8.5.2.1

typos

Suggested Remedy

remove dash (line 21), remove space before one but last period and replace 's' on line 20 with T_g us
on line 40, the equation (same as page 141, line 38) is missing

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

remove dash (line 21), remove space before one but last period and replace 's' on line 20 with T_g us
on line 40, the equation (same as page 141, line 38) is missing

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 225 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 185 **Starting Line #** 20 **Fig/Table#** **Section** 8.5.2.1

punctuation

Suggested Remedy

Change "tones.-The" to "tones. The"

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

Change "tones.-The" to "tones. The"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 226 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 185 **Starting Line #** 21 **Fig/Table#** **Section** 8.5.2.1

Extra space

Suggested Remedy

Change "time . Figure" to "time. Figure"

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

insert T_s.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 227 **Submitted by:** Jonathan Labs

Comment Type Editorial **Starting Page #** 185 **Starting Line #** 55 **Fig/Table#** **Section** 8.5.2.2

Sentence is awkward.

Suggested Remedy

Change
"An OFDM symbol (see Figure 128ab) is made up from carriers, the number of which of determines the FFT size used."

to

"An OFDMA symbol (see Figure 128ab) is made up of carriers, the number of which determines the FFT size used."

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

"An OFDMA symbol is made up of carriers, the number of which determines the FFT size used."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 228 **Submitted by:** Avraham Freedman Member

Comment Type Editorial **Starting Page #** 186 **Starting Line #** 1 **Fig/Table#** **Section** 8.5.2.2

Typo

Suggested Remedy

Change "devided" to "divided"'

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

Change "devided" to "divided"'

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 229 **Submitted by:** Jonathan Labs

Comment Type Editorial **Starting Page #** 186 **Starting Line #** 1 **Fig/Table#** **Section** 8.5.2.2

Misspellings and punctuation.

Suggested Remedy

p 186, line 1 Change "devided" to "divided"
p 186, line 3 Change "serveral" to "several"
p. 192, line 60 Append a period at the end of the sentence.
p. 193, line 13 Change "an positive integer." to "a positive integer."
p. 223, line 35 Change "PBRS" to "PRBS"

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

p 186, line 1 Change "devided" to "divided"
p 186, line 3 Change "serveral" to "several"
p. 192, line 60 Append a period at the end of the sentence.
p. 193, line 13 Change "an positive integer." to "a positive integer."
p. 223, line 35 Change "PBRS" to "PRBS"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 230 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 186 **Starting Line #** 38 **Fig/Table#** **Section** 8.5.2.3

The vlaues shown should be a requirement.

Suggested Remedy

Change "are" to "shall be"

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

Change "are" to "shall be"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 231 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 186 **Starting Line #** 42 **Fig/Table#** **Section** 8.5.2.3

missing space

Suggested Remedy

Change "implementation.The" to "implementation. The"

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

Change "implementation.The" to "implementation. The"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 232 **Submitted by:** Naftali Chayat Member

Comment Type Technical, Binding **Starting Page #** 186 **Starting Line #** 46 **Fig/Table#** **Section** 8.5.2.3

In OFDMA mode 2K is the only FFT size, irrespective of channel width. While it is convenient from a chip vendor's perspective, it makes little physical sense. For example, for 1.75 MHz channel (2 Msample/sec) symbol's duration is 1 millisecond, subcarrier spacing is 1 KHz. This values place a heavy toll both on the oscillator quality needed and on processing latency. Multipath duration does not depend on channel width. Phase noise spectrum in oscillators neither. This means that the design constant should be subcarrier spacing rather than FFT size.

There is a need to define a scalable OFDM/A layer in which there is a small selection of possible subcarrier spacings. The adaptation to channel width is then defined by how many slots of 53 subcarriers there are. For example, the AAS mode of subcarrier allocation lends itself to such extension immediately. Implementation-wise, such approach allows using same crystal oscillators (=sampling rates, carrier frequency steps) in multiple applications.

Suggested Remedy

The suggested remedy is to introduce a scalable extension to te OFDM mode and delete the OFDMA mode as it currently defined. An OFDM based downlink with subchannelized uplink achieves excellent performance while gaining in simplicity, especially on the CPE side where it is needed most (little buffering, one ECC decoding stream).

) Extend the OFDM part to contain 256, 512, 1024, 2048 FFT sizes, so that the 256 mode coincides with the current OFDM mode. 2) Introduce upstream subchannelization with 4, 8, 16, 32 subchannels, respectively. 3) maintain uniform ECC structure across all parameter sets 4) recommend a small set of reasonable FFT interval durations, e.g. 64 usec mandatory, 128 and 256 usec optional for ETSI-regulated channel widths. 5) Define AAS and STC extensions using the defined subchannelization structure.

The details of this approach are easily filled in once the approach is adopted. A more detailed text will be prepared towards the September meeting.

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

vote: 0 in favor
15 against

Reason for Group's Decision/Resolution

All of the items contained in this comment have been extensively discussed both in this and prior meetings and have been rejected for various technical reasons. No new compelling technical rationale has been provided to justify these changes

for various technical reasons. No new compelling technical rationale has been provided to justify these changes.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 233 **Submitted by:** Avraham Freedman Member

Comment Type Editorial **Starting Page #** 187 **Starting Line #** 3 **Fig/Table#** **Section** 8.5.2.5

Typo

Suggested Remedy

Change "Eq. 26specifies" to "Eq.26 specifies"

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

Change "Eq. 26specifies" to "Eq.26 specifies"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 234 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 187 **Starting Line #** 3 **Fig/Table#** **Section** 8.5.2.5

missing space

Suggested Remedy

Change "Eq. 26specifies" to "Eq. 26 specifies"

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

Change "Eq. 26specifies" to "Eq. 26 specifies"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 235 **Submitted by:** Jonathan Labs

Comment Type Technical, Non-binding **Starting Page #** 187 **Starting Line #** 10 **Fig/Table#** **Section** 8.5.2.5

There is an error in the argument to the first exponential term in equation 26. There should be only one value of t, not two.

Suggested Remedy

Change the argument to j*2*pi*fc*t.

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

Change the argument to j*2*pi*fc*t.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 236 **Submitted by:** Naftali Chayat Member

Comment Type Technical, Binding **Starting Page #** 188 **Starting Line #** 12 **Fig/Table#** **Section** 8.5.3.2

The arrangement of coding into quanta each occupying 3 OFDM symbols in time puts a penalty on decoding latency and on buffering requirements, especially when combined with the large FFT size and correspondingly long duration of each OFDM symbol.

The time domain regularity is not exploited for scheduling anyway, since there are numerous features (preambles on uplink, space-time-coding) which do not come in chunks of 3 symbols.

In order to take advantage of the improved flexibility, use zero tailed convolutional code across the whole allocation, and a RS code with large block size (this has positive impact on code performance as well).

Suggested Remedy

Tha allocations shall be rectangular allocations of size No_subchannels*No_OFDM_symbols, where No_subchannels and No_OFDM_symbols are integers.%%The coding order shall be in a frequency-first ordering in order to utilize the improved timing granularity. Replace the tail-biting convolutional coding with zero-tail convolutional code across the whole Data Region. Encode the data with a Reed-Solomon code across the whole Data Region in a manner similar to that implemented in SCa (reuse large chunks of text for the description of RS)

Change the text to:

1) Segment the data into blocks sized to fit into the allocated Data Regions according to the region size, modulation and coding.
2) Each FEC block spans one OFDMA subchannel in the subchannel axis and three OFDM symbols in the time axis (see Figure 128aw). After FEC encoding and interleaving the data is segmented into modulation blocks. Map the modulation blocks such that the lowest numbered FEC block occupies the lowest numbered subchannel in the lowest numbered OFDM symbol.
3) Continue the mapping such that the OFDMA subchannel index is increased for each modulation block mapped. When the edge of the Data Region is reached, continue the mapping from the lowest numbered OFDMA subchannel in the next OFDM symbol.

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

vote on frequency first ordering: 2 in favor, 7 against
vote on RS encoding across the whole data region: 2 in favor, 4 against

Reason for Group's Decision/Resolution

The proposed changes:
1. Complicate the decoding process of OFDMA considerably, because if a user gets two subchannels for instance, and the FEC block size is 3 symbols, the FEC blocks will somtimes be in parallel, ans somtimes in series, thus requiring much more HW.
2. Does not improve latency considerably, because latency is mostly caused due to the UL scheduling and request process, and not by the PHY
3. Will be impossible in the UL, due to the fact that the BS would have to buffer users up to the point their data transmission is over and then decode it, while in a block encoding every block code is independent and could be decoded by itself, enabling a parallel processing of all users
4. Using 3 blocks in parallel on the frequency axis reduces the processing gain by 5 dB.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 237 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 189 **Starting Line #** 20 **Fig/Table#** 128 **Section** 8.5.4.2

The text "multiples of three" disagrees with the last UL burst shown in Figure 128ax.

Suggested Remedy

Assuming that the text is correct, correct the last UL burst in Figure 128ax to be a multiple of 3 OFDMA symbols.

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

Delete figure 128ax.

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 238 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 192 Starting Line # 53 Fig/Table# Section 8.5.4.4

grammar

Suggested Remedy

Change "duration listed" to "duration is listed"

Resolution of Group Decision of Group: Accepted

Change "duration listed" to "duration is listed"

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 239 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 192 Starting Line # 60 Fig/Table# Section 8.5.4.4

missing period

Suggested Remedy

Change "Table 116bi" to Table 116bi."

Resolution of Group Decision of Group: Accepted-Duplicate

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 240 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 194 **Starting Line #** 8 **Fig/Table#** **Section** 8.5.5.1

'The frame number is incremented by 1 each frame and eventually wraps around to zero'. sort of implies that once the counter has wrapped around it remains at zero for all eternity.

Suggested Remedy

Change to:
'The frame number is incremented by 1 MOD 2^24 each frame.'

While we're at it, also insert this under Frame Number on page 162, line 27

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

Change to:
'The frame number is incremented by 1 MOD 2^24 each frame.'

While we're at it, also insert this under Frame Number on page 162, line 27

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 241 **Submitted by:** Lei Wang

Comment Type Technical, Non-binding **Starting Page #** 195 **Starting Line #** 38 **Fig/Table#** **Section** 8.5.5.2

The allocation start time should be used as the reference of the DL allocation offset, otherwise, remove the allocation start time field in the DL-MAP.

Suggested Remedy

change "measured in OFDM symbols from the start of the MAC frame" to
"measured in OFDM symbols from the allocation start time specified by the Allocation_Start_time field in the DL-MAP."

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

change "measured in OFDM symbols from the start of the MAC frame" to
"measured in OFDM symbols from the allocation start time specified by the Allocation_Start_time field in the DL-MAP."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 242 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 196 **Starting Line #** 53 **Fig/Table#** **Section** 8.5.5.3

missing space

Suggested Remedy

Change "burst.The" to "burst. The"

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

Change "burst.The" to "burst. The"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 243 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 197 **Starting Line #** 2 **Fig/Table#** **Section** 8.5.5.3

missing period

Suggested Remedy

Change "Table 116bn" to "Table 116bn."

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

Change "Table 116bn" to "Table 116bn."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 244 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 198 **Starting Line #** 2 **Fig/Table#** **Section** 8.5.5.3

missing space

Suggested Remedy

Change "duration.The" to "duration. The"

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

Change "duration.The" to "duration. The"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 245 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 198 **Starting Line #** 21 **Fig/Table#** 116 **Section** 8.5.5.3.1

probably should be both BW request and periodic ranging, since there's no UIUC for periodic ranging

Suggested Remedy

change to 11 BW request, Periodic Ranging

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

change to 11 BW request, Periodic Ranging

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 246 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 200 **Starting Line #** 32 **Fig/Table#** 116 **Section** 8.5.5.3.4

The IE in table 116br is missing the 4 reserved bits necessary to make byte alignment when combined with the UIUC.

Suggested Remedy

At line 42 add a row to table 116br with syntax "Reserved" and size "4 bits"

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

At line 42 add a row to table 116br with syntax "Reserved" and size "4 bits"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 247 **Submitted by:** Avraham Freedman Member

Comment Type Editorial **Starting Page #** 202 **Starting Line #** 56 **Fig/Table#** **Section** 8.5.6.1.2

The ID_{cell} is actually defined twice, in this line and in line 11 p. 203

Suggested Remedy

Delete the sentence.
Change line 11 p. 203 to read:
" ID_{cell} = a positive 5 bit integer assigned by the MAC to identify this particular base-station ~~cell~~ sector"

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

Delete the sentence.
Change line 11 p. 203 to read:
" ID_{cell} = a positive 5 bit integer assigned by the MAC to identify this particular base-station ~~cell~~ sector"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 248 **Submitted by:** Naftali Chayat Member

Comment Type Technical, Binding **Starting Page #** 204 **Starting Line #** 41 **Fig/Table#** **Section** 8.5.6.2

The statement that pilots are shifter by L locations and the example contradict the statement in the following paragraph, e.g. the shift for L=5 accorting to line 41 is from 0 to 5, while acording to line 44 it is from 0 to 10.

Suggested Remedy

Choose and remove ambiguity.

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

replace lines 37 through 44 with:

The variable-location pilots location changes in each symbol, repeating every 13 symbols, according to L_k where k = 0 to12. The sequence L_k is given by L_k = {0,2,4,6,8,10,12,1,3,5,7,9,11}. The first symbol (in which k=0) is produced after the all-pilot symbols (preamble), which consist of permuted carriers modulated according to 8.5.6.1. For k=0 the variable location pilots are positioned at indices: 0,13,27,40. For other k values these locations change by adding L_k to each index. For example, for k=9, L_k=5, and the variable pilots location are: 5,18, 32, 45.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 249 **Submitted by:** Naftali Chayat Member

Comment Type Editorial **Starting Page #** 207 **Starting Line #** 4 **Fig/Table#** **Section** 8.5.6.3

In table 116bu the title is wrong

Suggested Remedy

Change title to "OFDMA UL carrier allocations in AAS mode"

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

change to:
OFDMA AAS optional carrier allocations

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 250 **Submitted by:** Naftali Chayat Member

Comment Type Technical, Binding **Starting Page #** 207 **Starting Line #** 35 **Fig/Table#** **Section** 8.5.6.3

In table 118bu the "PermutationBase0" is meaningless, since no permutations are used in AAS mode.

Suggested Remedy

Delete line from the table.

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

Delete PermutationBase0 from table 116bu.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 251 **Submitted by:** Avraham Freedman Member

Comment Type Editorial **Starting Page #** 210 **Starting Line #** 39 **Fig/Table#** **Section** 8.5.8.2

The channel coefficients, h_0 and h_1 are in general vectors, being a function of frequency (or time). The text is not clear about that.

Suggested Remedy

Change "values" to "vector values"

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

Change "values" to "vector values"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 252 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 211 **Starting Line #** 44 **Fig/Table#** **Section** 8.5.9.1

Throughout the spec, 0x has been used to denote hex values.

Suggested Remedy

Change "FFx" to "0xFF"

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

Change "FFx" to "0xFF"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 253 **Submitted by:** Marianna Goldhammer Member

Comment Type Technical, Binding **Starting Page #** 212 **Starting Line #** 50 **Fig/Table#** **Section** 8.5.9.2.

Trellis termination should be changed from 'tail biting' to 'zero tail'. The reason is implementation simplicity .

Suggested Remedy

Change:

page 214/line 62 to "The encoding is performed by … and then passing it through a zero biting convoultional encoder"

page 146/line 23:

" The encoding is performed by first passing the data through a Reed-Solomon encoder and then passing it through a convolutional encoder. Trellis termination is performed by adding 8 zero data bits at the end of the burst. The last Reed-Solomon block is shortened to (n-1, k-1), where n,and, k are the RS code parameters given in Table 116bw.
Note that a burst may span several Reed -Solomon blocks but only one octet of zero termination bits."

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 254 **Submitted by:** Tal Kaitz

Comment Type Technical, Binding **Starting Page #** 212 **Starting Line #** 50 **Fig/Table#** **Section** 8.5.9.2

The mode of trellis termination should be changed from 'tail biting' to 'zero tail'.

Tail biting allows trellis termination without the use of additional termination bits. This is performed by operating the decoder in a cyclic fashion over the received data. This allows the merge of all candidate paths to the correct initial/final state, without explicit knowledge. This elegant technique comes at a significant implementation complexity:

d. At the transmitter, the encoder in initialized with last data bits in the block. Thus some form of buffering is required.
e. At the receiver, the received metrics needs to be stored so they can cyclically played through the decoder.
f. Lastly and most importantly, the decoder performs extra operations to overcome the unknown initial/final state. This is typically the twice the backtrack length, a typical number being ~100 bits, for high QAM constellations in severe multipath. A coded block length contains up to 108*8bits. Therefore there is a 23% increase in the number of decoding operations.

Zero termination on the other hand requires the addition of at least 6 zero bits to the whole allocation. This results in a small capacity loss. (about 0.25% for an average IP packet)

Suggested Remedy

Change:

pg 214/line 23 to

" The encoding is performed by first passing the data through a Reed-Solomon encoder and then passing it through a convolutional encoder. Trellis termination is performed by adding 8 zero data bits at the end of the burst. The last Reed-Solomon block is shortened to (n-1, k-1), where n,and, k are the RS code parameters given in Table 116bw.
Note that a burst may span several Reed -Solomon blocks but only one octet of zero termination bits."

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 255 **Submitted by:** Vladimir Yanover Member

Comment Type Technical, Binding **Starting Page #** 212 **Starting Line #** 50 **Fig/Table#** **Section** 8.5.9.2

The mode of trellis termination should be changed from 'tail biting' to 'zero tail'.

Tail biting comes at a significant implementation complexity:

Suggested Remedy

Change the paragraph starting at page 214, line 23 to:

" The encoding is performed by passing a Reed-Solomon encoder and then a convolutional encoder. Trellis termination is performed by adding 8 zero data bits at the end of the block. The last Reed-Solomon block is shortened to (n-1, k-1), where n,and, k are the RS code parameters given in Table 116bw. A burst may span several Reed -Solomon blocks"

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 256 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 212 **Starting Line #** 63 **Fig/Table#** **Section** 8.5.9.2.1

N is not followed by a hyphen, but K and T are.

Suggested Remedy

Make it consistent.

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

Delete hyphens

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 257 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 220 **Starting Line #** 53 **Fig/Table#** **Section** 8.5.9.3

punctuation

Suggested Remedy

change "mapping and d" to "mapping, and d"

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

change "mapping and d" to "mapping, and d"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 258 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 222 **Starting Line #** 40 **Fig/Table#** **Section** 8.5.9.4.2

missing period

Suggested Remedy

change "operation" to "operation."

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

change "operation" to "operation."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 259 **Submitted by:** Jonathan Labs

Comment Type Technical, Non-binding **Starting Page #** 223 **Starting Line #** 49 **Fig/Table#** **Section** 8.5.9.4.3.1

The structure of the OFDMA Preamble for the downlink is somewhat unclear. If I understand section 8.5.9.4.3.1 correctly, the OFDMA DL preamble is defined by the way the first three symbols have their pilot tones modulated. Unlike the OFDM mode, not all carriers in the first symbols of a burst are pilot tones; there is data information (e.g. the DL MAP) on most of the carriers. If I study Figure 128ax, however, I'm led to believe that the DL preamble is made up of only pilot carriers. The DL MAP is sent in the symbols following the preambles.

If the preamble is in fact just data symbols with only the pilot tones modulated in a different manner, it would seem to me that channel estimation will be much more difficult when using OFDMA in a TDD system. With the DL bursting, sometimes with short bursts, there will be limited pilot information for channel estimation.

The uplink preamble apparently is made of all pilot tones (as per p. 204, line 38).

Suggested Remedy

Clarify the structure of the DL preamble. At least one symbol should be made of all pilot tones.

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

Add on page 201, line 54: There is no all-pilot preamble in the DL.

Reason for Group's Decision/Resolution

Figure 128ax is corrected per comment 237.

In OFDMA 'the preamble is in fact just data symbols with only the pilot tones modulated in a different manner' . This works fine because the number of pilots in each and every symbol (about 10%) is enough to estimate channels with multipath that is about 5% of the frame duration. This means that in the majority of cases the channel can be estimated for each OFDMA symbol, without relying on history.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 260 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 225 **Starting Line #** 36 **Fig/Table#** **Section** 8.5.10.1

As stated in a previous comment, this section should be made common to all PHYs.

Suggested Remedy

Move before section 8.2.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 261 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 227 **Starting Line #** 44 **Fig/Table#** **Section** 8.5.11.3

missing period

Suggested Remedy

Change "messages" to "messages."

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

Change "messages" to "messages."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 262 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 233 **Starting Line #** 14 **Fig/Table#** **Section** 8.5.15

Given that the LE applicability is optional, it would be sufficient to simply refer here to 8.4.11.1, instead of verbatim repeating everything.

Suggested Remedy

Replace entire contents of 8.5.15 with "See 8.4.11.1."

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 263 **Submitted by:** Roger Marks Member

Comment Type Editorial **Starting Page #** 233 **Starting Line #** 20 **Fig/Table#** **Section** 8.5.15.1.1

Equation and first paragraph of subclause need editorial improvement.
{same as on Page 179, Line 23}

Suggested Remedy

Change lines 20-27 to:

Channelization
The channel center frequency shall follow the formula:

Channel center frequency (MHz) = 5000 + 5 n_{ch},

where n_{ch} = 0,1,...199. This definition provides an 8-bit unique numbering system for all channels, with 5 MHz spacing, from 5 GHz to 6 GHz. This provides flexibility to define channelization sets for current and future regulatory domains. The set of allowed channel numbers is defined in Table 116ck for two regulatory domains. The support of any individual band in the table is not mandatory, but all channels within a band shall be supported.

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

Change lines 20-27 to:

Channelization
The channel center frequency shall follow the formula:

Channel center frequency (MHz) = 5000 + 5 n_{ch},

where n_{ch} = 0,1,...199. This definition provides an 8-bit unique numbering system for all channels, with 5 MHz spacing, from 5 GHz to 6 GHz. This provides flexibility to define channelization sets for current and future regulatory domains. The set of allowed channel numbers is defined in Table 116ck for two regulatory domains. The support of any individual band in the table is not mandatory, but all channels within a band shall be supported.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 264 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 236 **Starting Line #** 1 **Fig/Table#** **Section** 8.5.15.1.2

blank page

Suggested Remedy

remove blank page 236

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 265 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 237 **Starting Line #** 2 **Fig/Table#** **Section** 10.1

Completeness

Suggested Remedy

Insert:

Insert rows shown in Table 118a into Table 118:

Table 118a- Parameters and constants

System	Name	Time Reference	min	default	max
SS, BS	T17	Wait for ARQ-Reset			1 s
mesh node	T18	Network Entry: Detect network	1 s		
mesh node	T19	Network Entry: Accumulate MSH-NCFG messages		120s	
mesh node	T20	Network Entry: Wait for MSH-NENT / MSH-NCFG		1s	

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

Insert:

Insert rows shown in Table 118a into Table 118:

Table 118a- Parameters and constants

System	Name	Time Reference	min	default	max
SS, BS	T17	Wait for ARQ-Reset			1 s
mesh node	T18	Network Entry: Detect network	1 s		
mesh node	T19	Network Entry: Accumulate MSH-NCFG messages		120s	
mesh node	T20	Network Entry: Wait for MSH-NENT / MSH-NCFG		1s	

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 266 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 237 **Starting Line #** 56 **Fig/Table#** **Section** 10.3.3.2

punctuation

Suggested Remedy

change "as:." to "as:"

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

change "as:." to "as:"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 267 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Satisfied (was **Starting Page #** 238 **Starting Line #** 27 **Fig/Table#** 121 **Section** 10.4

The primary management CIDs disappeared. This is probably just an editing error because the Padding CID was added to and old version of the table, but this breaks WirelessMAN-SC systems.

Suggested Remedy

Add the primary management CIDs back into this table (see the published spec.)

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

change:

Primary Management CIDs	m+1—2m
Transport CIDs and Secondary Management CIDs	2m+1—0xFEFF

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 268 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 238 **Starting Line #** 36 **Fig/Table#** **Section** 10.4

We seem to have deleted the Primary Management CIDs (also those for use above 10 GHz).
Is that intentional?

Suggested Remedy

Correct if needed.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 269 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 239 **Starting Line #** 21 **Fig/Table#** **Section**

not described below

Suggested Remedy

replace "described below" with "see 6.2.2.3.3

page 243, line 15: replace "described below" with 6.2.2.3.1

also, replace "initial" with "periodic" for Types 15 and 16

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

replace "described below" with "see 6.2.2.3.3

page 243, line 15: replace "described below" with 6.2.2.3.1

also, replace "initial" with "periodic" for Types 15 and 16

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 270 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 239 **Starting Line #** 26 **Fig/Table#** 122 **Section** 11.1.1.1

The Frequency parameter doesn't apply to WirelessMAN-SC (it is assumed known).

Suggested Remedy

In the PHY scope column of the Frequency row, change "All" to "All except SC"

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

In the PHY scope column of the Frequency row, change "All" to "All except SC"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 271 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 240 **Starting Line #** 7 **Fig/Table#** 122 **Section** 11.1.1.1

The format of the value entry for Roll-off factor is inconstent.

Suggested Remedy

Change the value entry for the roll-off factor row to:

0=0.15,
1=0.25,
2=0.35,
3=0.18,
4-255 Reserved

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

change to
0=0.15,
1=0.25
2=0.35 (SC only),
3=0.18 (SCa only)
4-255 Reserved

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 272 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 240 **Starting Line #** 15 **Fig/Table#** 122 **Section** 11.1.1.1

The Channel width parameter does not apply to WirelessMAN-SC (it is assumed known).

Suggested Remedy

Change the PHY scope entry for the Channel Width row from "All" to "All except SC"

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

Change the PHY scope entry for the Channel Width row from "All" to "All except SC"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 273 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 243 **Starting Line #** 33 **Fig/Table#** 124 **Section** 11.1.2.1

The TTG and RTG parameters do not apply to WirelessMAN-SC (it is implied in the maps).

Suggested Remedy

Change the PHY scope entry for the TTG and RTG rows from "All" to "All except SC"

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

Change the PHY scope entry for the TTG and RTG rows from "All" to "All except SC"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 274 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 248 **Starting Line #** 16 **Fig/Table#** 127 **Section** 11.1.4

I seem to have accidentally deleted Types 12,13,14 from P802.16a/D4.

Type 16 is a duplicate of Type 6, listed in Table 127
Type 22 belongs in RNG-REQ, cause it is sent by the SS. Naming style for Type 21 and 22 are not very consistent with other names

Suggested Remedy

Re-insert Types 12,13,14 from P802.16a/D4
Delete "Variable Length" from Type 15
Delete Type 16
remove [a] from Type 15 (and from Type 12,13,14)
modify type 21

AAS broadcast permission	21	1	0= SS may issue ~~in~~ contention-based BW requests 1= SS shall not issue contention-based BW requests

create new RNG-REQ Table with

Name	Type	Length	Value
AAS broadcast capability	4	1	0 = SS can receive broadcast messages. 1 = SS cannot receive broadcast messages.

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

Delete "Variable Length" from Type 15
Delete Type 16
remove [a] from Type 15 (and from Type 12,13,14)
modify type 21

AAS broadcast permission	21	1	0= SS may issue contention-based BW requests 1= SS shall not issue contention-based BW requests

create new RNG-REQ Table with

Name	Type	Length	Value
AAS broadcast capability	4	1	0 = SS can receive broadcast messages. 1 = SS cannot receive broadcast messages.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 275 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding **Starting Page #** 248 **Starting Line #** 18 **Fig/Table#** 127a **Section** 11.1.4

To me, having four seperate TLV's for values that are always transmitted together is a simple waste of bandwidth.
It's just as effective and more efficient to specify a 5 byte TLV which encompasses all these parameters.

On a different note, why do we have these 4 TLV's anyway? The BS responds with a Focused_Contention_IE in the UL map to a focused contention attempt. RNG-RSP never enters into this equation.

Suggested Remedy

Either delete Types 17 through 20 or

replace type 17 through 20 with:

Name	Type	Length	Value
BW request locator	17	5	1 byte: The LSB of the request Frame Number. 2 bytes: Transmit Opportunity Index 1 byte: Contention Channel 1 byte: Contention Code See also 8.4.5.1

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

delete Types 17 through 20

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 276 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 248 **Starting Line #** 59 **Fig/Table#** **Section** 11.1.4.6

11.1.4.6 should be a replacement of the table in section 11.4.6, not an insertion as 11.1.4.6.

Suggested Remedy

Change the editing instructions to "Replace the table in section 11.4.6 with:" and move it under the headin on line 1 of page 249.

On page 249, line 1, change the heading number to 11.4.6.

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

Change to 11.4.1.6, and move accordingly

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 277 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 249 **Starting Line #** 5 **Fig/Table#** **Section** 11.1.4.6

The Type column is too narrow and so the word type won't fit. The same problem occurs in the following 5 tables, also.

Suggested Remedy

Widen the type column of this table and the following 5 so the word type fits correctly.

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

Widen the type column of this table and the following 5 so the word type fits correctly.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 278 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 251 **Starting Line #** 40 **Fig/Table#** **Section** 11.2

consistency

Suggested Remedy

change to 11.2 PKM message encodings

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

change to 11.2 PKM message encodings

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 279 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 252 **Starting Line #** 27 **Fig/Table#** **Section** 11.3.8

The type fileds in sections 11.3.8 and 11.3.9 are already used in section 11.3.7.

Keep in mind that to this point, type values 5, 9, 10, 11, 19, 20, 21, 24, 25, 27, and43 are already used in the original spec.

Suggested Remedy

Change the type filed in section 11.3.8 to "23".
Change the type field in section 11.3.9 to "18".

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

Change the type filed in section 11.3.8 to "23".
Change the type field in section 11.3.9 to "18".

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 280 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 260 **Starting Line #** 12 **Fig/Table#** **Section** 11.4.1.2.9

This TLV is still a sub-type of type 5.12.

Suggested Remedy

Change the type valuse from "5.1.2.2" to "5.12.28"

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

Change the type value from "5.1.2.2" to "5.12.28"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 281 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 260 **Starting Line #** 32 **Fig/Table#** **Section** 11.4.1.2.10

This TLV is still a sub-type of type 5.12.

Suggested Remedy

Change the type value from "5.1.2.3" to "5.12.29"

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

Change the type value from "5.1.2.3" to "5.12.29"

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 282 Submitted by: Kenneth Stanwood Member

Comment Type Technical, Non-binding Starting Page # 260 Starting Line # 43 Fig/Table# Section 11.4.4

Earlier in the document, the MAC version is added to the REG-RSP, but not the DCD.

Suggested Remedy

Change "DCD" to "Registration Response"

Resolution of Group Decision of Group: Accepted-Modified

put MAC Version in the DCD
change sentence to:
Encodings are as defined for the Registration Request, Registration Response and DCD, including MAC version

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 283 Submitted by: Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding Starting Page # 260 Starting Line # 43 Fig/Table# Section 11.4.4

I'm not sure what this sentence means.
There is no MAC Version defined for the DCD, only for REG-REQ.

Suggested Remedy

Please clarify

Resolution of Group Decision of Group: Superceded

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 284 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 261 **Starting Line #** 55 **Fig/Table#** **Section** 11.4.8.18.1

The type field [24/25].15 is already used by the service flow scheduling type TLV in section 11.4.8.11.

Suggested Remedy

Change the type filed of the second row from "[24/25].15" to "[24/25].22"

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

Change the type filed of the second row from "[24/25].15" to "[24/25].22"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 285 **Submitted by:** Nico van Waes Member 2002/09/04

Comment Type Editorial **Starting Page #** 262 **Starting Line #** 63 **Fig/Table#** **Section** 11.4.8.18.7

consistency

Suggested Remedy

change to :
0 = Infinite
1-655350 (10 us granularity)

same on page 263 line 30

change page 263, line 57 to ".22"

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 286 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 263 **Starting Line #** 13 **Fig/Table#** **Section** 11.4.8.19

Does unrestricted really mean unrestricted or is there a practical cap that makes sense? Reception requires adequate buffer space, having a practical limit makes sense.

Suggested Remedy

Add a practical cap to the meaning of "unrestricted".

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

line 13, change "wishes no restrictions" to "desires the maximum value"
delete line 5: "Valid ..."
delete "unrestricted" from table
Reserved 0-31
change 2041 to 2040

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 287 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 263 **Starting Line #** 14 **Fig/Table#** **Section** 11.4.8.19

missing period

Suggested Remedy

Change "in force" to "in force."

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

Change "in force" to "in force."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 288 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 263 **Starting Line #** 15 **Fig/Table#** **Section** 11.4.8.19

This parameter doesnot apply to fixed length SDU services.

Suggested Remedy

Add a sentence stating "This parameter does not apply to fixed length SDU services (i.e., ATM)."

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

Add a sentence stating "This parameter does not apply to fixed length SDU services (i.e., ATM)."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 289 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 263 **Starting Line #** 20 **Fig/Table#** **Section** 11.4.8.19

The type value [24/25].21 is already used by the ARQ_RX_PURGE_TIMEOUT TLV in section 11.4.8.18.7.

Suggested Remedy

Change the type value from "[24/25].21" to "[24/25].23".

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

Change the type value from "[24/25].21" to "[24/25].23".

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 290 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 263 **Starting Line #** 23 **Fig/Table#** **Section** 11.4.8.19

Not all values are covered by th evalue field.

Suggested Remedy

Add the line "2042-65535 reserved" to the value field.

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

Add the line "2042-65535 reserved" to the value field.

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 291 Submitted by: Nico van Waes Member 2002/09/04

Comment Type Technical, Non-binding Starting Page # 264 Starting Line # 16 Fig/Table# Section 12.2

see explanation in previous comments for DSA
DCC simply doesn't exist

Suggested Remedy

move the DSA messages to the not used list
Also delete the DCC messages

Resolution of Group Decision of Group: Accepted

move the DSA messages to the not used list
Also delete the DCC messages

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 292 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 264 Starting Line # 23 Fig/Table# Section 12.2

typo

Suggested Remedy

Change "REQ-RSP" to "REG-RSP"

Resolution of Group Decision of Group: Accepted

Change "REQ-RSP" to "REG-RSP"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 293 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 264 **Starting Line #** 37 **Fig/Table#** **Section** 12.2

My impression is that the SBC, TFTP, and RES mesages are required for all PMP variants.

Suggested Remedy

Move all messages in the mandatory/optional list except ARQ-feedback up to the mandatory to implement list.

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

Move all messages in the mandatory/optional list except ARQ-feedback up to the mandatory to implement list.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 294 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 265 **Starting Line #** 7 **Fig/Table#** **Section** 12.2

DSC-RSP is not in any of the lists.

Suggested Remedy

Add DSC-RSP to the list.

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

Add DSC-RSP to the list.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 295 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 265 **Starting Line #** 9 **Fig/Table#** **Section** 12.2

I can see mesh wanting to be simpler and not implement the DSC protocol, but it seems like the DSD protocol would be required of any system other than one with a predefined, static set of services for every node. I don't think mesh implies this limitation.

Suggested Remedy

Add DSD-REQ to the mandatory list on page 264, and move DSD-RSP to th emandatory list on page 264.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 296 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 265 **Starting Line #** 15 **Fig/Table#** **Section** 12.2

I can't find DCC-REQ, DCC-RSP, CFS-REQ, CFS-RSP in the amendment or the original spec.

Suggested Remedy

Double check the lists of messages to be certain all messages in the spec are accounted for, and any messages that are listed really exist.

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

Double check the lists of messages to be certain all messages in the spec are accounted for, and any messages that are listed really exist. (delete DCC-REQ, DCC-RSP, CFS-REQ, CFS-RSP)

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 297 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 266 **Starting Line #** 1 **Fig/Table#** **Section** 12.2

blank page

Suggested Remedy

delete page 266

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 298 **Submitted by:** Roger Marks Member

Comment Type Editorial **Starting Page #** 267 **Starting Line #** 40 **Fig/Table#** **Section** A

Typos in title of journal; need to change "selected" to "select"; capitalize and italicize properly also.

Suggested Remedy

Change title to "*IEEE Journal on Select Areas in Communications*"
Change "VOL." to "Vol."

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

Change title to "*IEEE Journal on Select Areas in Communications*"
Change "VOL." to "Vol."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 299 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 269 **Starting Line #** 9 **Fig/Table#** **Section** B.1

Table B.1 is referenced as Table 1. This incomplete reference numbering appears throughout the appendix for both tables and figures.

Suggested Remedy

Correct the table and figure references in the appendix.

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

Correct the table and figure references in the appendix.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 300 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 270 **Starting Line #** 6 **Fig/Table#** **Section** B.2.1

grammar

Suggested Remedy

change "mechanisms is identified" to "mechanisms are identified"

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

change "mechanisms is identified" to "mechanisms are identified"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 301 **Submitted by:** John Barr Member

Comment Type Editorial **Starting Page #** 271 **Starting Line #** 1 **Fig/Table#** **Section** B.2.2

Spacing error

Suggested Remedy

Change "ashort" to "a short"

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

Change "ashort" to "a short"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 302 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 271 **Starting Line #** 1 **Fig/Table#** **Section** B.2.2

missing space

Suggested Remedy

change "ashort" to "a short"

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

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 303 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 279 Starting Line # 37 Fig/Table# Section B.2.3.1

spelling

Suggested Remedy

change "centery" to "center"

Resolution of Group Decision of Group: Accepted

change "centery" to "center"

Reason for Group's Decision/Resolution

Document under Review: Ballot Number: Comment Date

Comment # 304 Submitted by: Kenneth Stanwood Member

Comment Type Editorial Starting Page # 282 Starting Line # 52 Fig/Table# Section B.2.4.1.2

punctuation

Suggested Remedy

change "show that using" to "show that, using"

Resolution of Group Decision of Group: Accepted

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 305 **Submitted by:** Kenneth Stanwood Member

Comment Type Technical, Non-binding **Starting Page #** 285 **Starting Line #** 6 **Fig/Table#** **Section** B.2.4.2.1.1

In what country does a "typical" home have a "concrete ceiling and stone tile roofing"? I'm concerned that this interference analysis is not valid in a large part of the world, particularly the US and Canada.

Suggested Remedy

Verify that the analysis is valid for a true "typical" house.

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

change in line 3: "to" to "on"
easy way out: change it to "a typical (European) home"

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 306 **Submitted by:** Kenneth Stanwood Member

Comment Type Editorial **Starting Page #** 304 **Starting Line #** 49 **Fig/Table#** **Section** B.3.1

The references to tables 286 to 292 should be to atbles B.28 to B.33 although this is one fewer tables.

Suggested Remedy

Correct the references.

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

Correct the references.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 307 **Submitted by:** Brian Banister Other

Comment Type Technical, Non-binding **Starting Page #** 110 **Starting Line #** 24 **Fig/Table#** **Section** 8.3.1.2.3

{late; forwarded by Roger Marks}

Suggested Remedy

Current text has the BTC using pragmatic mapping for the higher order constellations. This should be changed to use pragmatic mapping.
Current text:
This bit stream shall be sent to a symbol mapper which uses a Gray map depicted in Table 174 for BPSK and QPSK, and the pragmatic maps depicted in Table 175 and Table 176 for 16-QAM, 64-QAM, and 256-QAM.
Change to:
This bit stream shall be sent to a symbol mapper which uses a Gray map depicted in Table 174 for BPSK, QPSK, and 16-QAM, and the Gray maps depicted in Table 177 and Table 178 for 64-QAM, and 256-QAM.

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

Current text:
This bit stream shall be sent to a symbol mapper which uses a Gray map depicted in Table 174 for BPSK and QPSK, and the pragmatic maps depicted in Table 175 and Table 176 for 16-QAM, 64-QAM, and 256-QAM.
Change to:
This bit stream shall be sent to a symbol mapper which uses a Gray map depicted in Table 174 for BPSK, QPSK, and 16-QAM, and the Gray maps depicted in Table 177 and Table 178 for 64-QAM, and 256-QAM.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 308 **Submitted by:** Brian Banister Other

Comment Type Editorial **Starting Page #** 110 **Starting Line #** 35 **Fig/Table#** **Section** 8.3.1.2.3

{late; forwarded by Roger Marks}

Suggested Remedy

Change:
The code selection bank that most closely matches the desired code rate and performance should be chosen as the active code bank.
to:
The code selection bank that most closely matches the desired performance should be chosen as the active code bank.

This wording is more consistent with the proposed changes to Table 197.

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

Change:
The code selection bank that most closely matches the desired code rate and performance should be chosen as the active code bank.
to:
The code selection bank that most closely matches the desired performance should be chosen as the active code bank.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 309 **Submitted by:** Brian Banister Other

Comment Type Editorial **Starting Page #** 111 **Starting Line #** 1 **Fig/Table#** 197 **Section** 8.3.1.2.3

{late; forwarded by Roger Marks}

Suggested Remedy

1.) Swap banks 2 and 3 so that the banks are in order of decreasing rate / increasing strength.
2.) Replace the bank rate label with PP, HP, and HH (P=Parity, H=Hamming)

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

Swap banks 2 and 3 so that the banks are in order of decreasing rate / increasing strength.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 310 **Submitted by:** Brian Edmonston

Comment Type Technical, Non-binding **Starting Page #** 114 **Starting Line #** 8 **Fig/Table#** **Section**

{late; forwarded by Roger Marks}
The CTC mapping calls for the I channel to receive the first set of input bits. This is the opposite of the manditory mode.

Suggested Remedy

Change "and the I channel is fed first" to and the "Q channel is fed first"

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 311 **Submitted by:** Brian Banister Other

Comment Type Technical, Non-binding **Starting Page #** 149 **Starting Line #** 22 **Fig/Table#** 219 **Section** 8.4.3.2.2

{late; forwarded by Roger Marks}

Suggested Remedy

Replace:
QPSK 35 48 ~3/4 1.5 (8,7)(64,57) Ix=1, Iy=9, B=1
With
QPSK 35 48 ~3/4 1.5 (32,26)(16,15) Ix=0, Iy=4, B=0

Also, Replace:
64 QAM 92 144 ~2/3 3.8 (64,57)(32,26) Ix=16, Iy=8, B=0
with
64 QAM 96 144 ~2/3 4.0 (64,63)(32,26) Ix=3, Iy=13, B=7

The latter pairs provide superior performance for the SUI4 channel.

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

Replace:
QPSK 35 48 ~3/4 1.5 (8,7)(64,57) Ix=1, Iy=9, B=1
With
QPSK 35 48 ~3/4 1.5 (32,26)(16,15) Ix=0, Iy=4, B=0

Also, Replace:
64 QAM 92 144 ~2/3 3.8 (64,57)(32,26) Ix=16, Iy=8, B=0
with
64 QAM 96 144 ~2/3 4.0 (64,63)(32,26) Ix=3, Iy=13, B=7

The latter pairs provide superior performance for the SUI4 channel.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 312 **Submitted by:** Neil Shipp Other 2002-09-06

Comment Type Technical, Non-binding **Starting Page #** 153 **Starting Line #** **Fig/Table#** **Section** 8.4.3.4

{late; forwarded by Roger Marks}
Somewhere in this section it needs to state which FFT carrier the 1st bit out of the interleaver maps to.
I assume that the MSBs of the first byte out of the interleaver will map to FFT carrier index -100.

Suggested Remedy

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

page 153, line 23, add: The first bit out of the interleaver shall map to b_0 in the constellation.

page 154, line 33, add: The first symbol out of the data constellation mapping shall be modulated onto frequency offset index $-N_{used}/2$.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 313 **Submitted by:** Hui-Ling Lou Other 2002-09-10

Comment Type Editorial **Starting Page #** 154 **Starting Line #** 1 **Fig/Table#** **Section** 8.4.3.4.1

{late; forwarded by Roger Marks}
The mapping of the constellation-mapped data to the subcarriers is not explicitely defined.
It is also unclear how the Interleaved Data (Hex) 7A 09 4F EC... in Section 8.4.3.5 ("Example of OFDM UL RS-CC Encoding") is mapped to Carrier Mapping -100: 1, -1, -99: -1 -1, -98 -1, -1, -97: -1 -1, etc.

Suggested Remedy

Please clarify.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 314 **Submitted by:** Neil Shipp Other 2002-09-06

Comment Type Technical, Non-binding **Starting Page #** 154 **Starting Line #** 1 **Fig/Table#** **Section** 8.4.3.4.

{late; forwarded by Roger Marks}
The mappings need to explicitly show which is the MSB or LSB. I believe b0 is the LSB to make the mappings match those of 802.16-2001. However there are many other examples in the spec where the lowest index bit is stated as the MSB so I think there is significant ambiguity.

Suggested Remedy

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

verify for consistency to the following byte structure: msb lsb
7 6 5 4 3 2 1 0

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 315 **Submitted by:** Hui-Ling Lou Member 2002-09-10

Comment Type Editorial **Starting Page #** 155 **Starting Line #** 1 **Fig/Table#** **Section** 8.4.3.4.2

{late; forwarded by Roger Marks}

`where w_l is constructed in the same way as w_k, and is initialized on the first symbol of each frame':

It is unclear how w_l is constructed. If it's identical to W_k, then (w_k XOR w_l) will always be zero.

From the example given in the following paragraph, the Pilot carriers modulation formula (22) is a function of w_k and not (w_k XOR w_l).

Suggested Remedy

Please clarify.

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 316 **Submitted by:** Neil Shipp Other 2002-09-06

Comment Type Technical, Non-binding **Starting Page #** 156 **Starting Line #** 21 **Fig/Table#** **Section** 8.4.3.5

{late; forwarded by Roger Marks}
{see also Comment 186}
The interleaved data example is wrong. I believe it should be: "33 FB 14 66 A3 44 C2 37 B4 1A 8E B6 E3 9F C7 32 C5 53 17 01 8D E5 4C AC AF 7E 81 88 BB 89 71 C1 35 29 0B 3E 80 55 7E 64 A0 0E CA 85 A4 B6 FE 1E"

... and of course that means the Carrier Mapping example is wrong too. I can provide the data for this if you can confirm my assumptions in points 1 and 2 [Comments 307 and 308] are correct.

Suggested Remedy

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

Reason for Group's Decision/Resolution

see comment 186

Document under Review: **Ballot Number:** **Comment Date**

Comment # 317 **Submitted by:** Brian Edmonston

Comment Type Technical, Non-binding **Starting Page #** 112 **Starting Line #** 3 **Fig/Table#** **Section**

The way to handle frames that are less than 32 bytes in the CTC mode is not specified.

Suggested Remedy

At the end of the first paragraph of section 8.3.1.2.4.1, add the sentence "Zero padding should be used for block sizes less than 32 bytes."

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

At the end of the first paragraph of section 8.3.1.2.4.1, add the sentence "Zero padding should be used for block sizes less than 32 bytes."

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 318 **Submitted by:** David Trinkwon

Comment Type Technical, Non-binding **Starting Page #** 206 **Starting Line #** 37 **Fig/Table#** **Section**

I'm still rather unhappy with the entire lack of interoperability and co-existence between the PHYs. There is still no clarification on what an optional PHY is supposed to be, other than that both need to be resident in the hardware/software, which would be a rather pointless requirement.

Suggested Remedy

Change Page 206 Lines 37 - 40 to :

A BS using the AAS option may change from the distributed carrier permutation to the adjacent carrier permutation when changing from non-AAS to AAS-enabled traffic. After this change, the BS shall only transmit/receive AAS-enabled traffic using the selected permutation until the end of the frame, at which point it shall return to the mandatory distributed carrier permutation for the non-AAS traffic..
Where there is only AAS traffic served by the BS then the BS can operate in its selected AAS distributed or adjacent carrier permutation continuously for the AAS traffic.

A SS may start up using the AAS option, but shall switch to the mandatory non-AAS mode if no BS supporting the AAS option is detected. An AAS SS shall be capable of supporting both the distributed and adjacent carrier permutations, as specified by the BS.

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

Reason for Group's Decision/Resolution

The sought changes conflict with requirements elsewhere in the document, do not improve interoperability, since there are no identified interoperability issues with the specified AAS definition, and would result in a regression of interoperability as well as an increase in mandated complexity.

The first proposed sentence is both a typical self-fulfilling prophecy as well as unsupported by the message sets as defined. Once a BS is allowed to simply skip the currently mandatory broadcast part of the frame at its own discretion, it becomes impossible for any non-AAS enabled subscriber to detect the network, synchronize to it, and initiate initial ranging. In addition, as the definition of "being synchronized" to the BS is defined by the capability of decoding the DL broadcast, allowing the absence of the DL broadcast would result in any SS that miraculously managed to establish connections with the BS to loose synchronization, forcing the SS to redo the initial synchronization and initial ranging ad nausea. The message set as defined allows the BS to establish, both in the DL and UL, subframes by issuing the appropriate AAS information element in the map to indicate the start of this subframe. The end of this

subframes by issuing the appropriate AAS information element in the map to indicate the start of this subframe. The end of this subframe is implicitly defined by the end-of-frame boundary, due to the need for a pre-established initial ranging opportunity, as some AAS devices may not have sufficient link-budget to decode the MAPs and learn the varying initial ranging opportunities as provisioned for non-AAS devices. Therefore, there exists no mechanism to allow an AAS-enabled BS to establish an AAS sub-frame that extends over many end-of-frame boundaries as the suggested remedy seeks. Considering the above, the sentence proposed is hence not an improvement in interoperability, but on the contrary, a prescription for disabling interoperability for non-AAS SSs versus an AAS-enabled BS.

The second sentence suggested results in an increase in contention and is also inconsistent with other requirements within the draft amendment. The draft amendment requires that any AAS SS that is capable of decoding the DL broadcast MAPs shall initiate initial ranging in accordance with the procedure for non AAS SSs. The suggested sentence, allowing any SS to start up in AAS mode, and hence perform initial ranging in the manner specified for AAS SSs out of broadcast range, would directly contradict this requirement. The problem that occurs with AAS-enabled SSs out of broadcast range, in contrast to AAS-enabled SSs within broadcast range, is that they may be not be able to detect which of the carrier permutation methods is used by the BS for the AAS subframe. As such, the wrong choice of carrier permutation method results in interference to all sub-channels within the tail portion of the frame. This will not only cause interference in the initial ranging sub-channel (which is manageable due to the required back-off procedures), but also to data bursts being transmitted in all other subchannels. The current required initial ranging (and hence system startup) for AAS-enabled SSs within broadcast range avoids this interference, as the carrier permutation method is indicated in the MAPs. Since the current requirements specify both a initial ranging mechanism for AAS-enabled SSs within broadcast range and a fall-back method for AAS-enabled SSs outside broadcast range, allowing SSs to start up in AAS-mode and hence allows the use the less efficient fall-back method regardless of range hence would not reduce the (perceived, though unmotivated) lack of interoperability.

The last sentence proposed does not change interoperability as well. Since a single mandatory carrier permutation is defined, all SSs are by definition capable of using it and hence by definition capable of using it to enter the network (irrespective of whether the SS is AAS-enabled. Making the optional permutation mandatory hence does not result in a reduction of (perceived, though unmotivated) lack of interoperability. It only adds more mandatory implementation complexity, without any benefit.

Document under Review: **Ballot Number:** **Comment Date**

Comment # 319 **Submitted by:** Brian Eidson

Comment Type Technical, Non-binding **Starting Page #** 112 **Starting Line #** 13 **Fig/Table#** **Section** 8.3.1.4.1

The maximum interleaver size for the CTC is too large.

Suggested Remedy

Replace "1024" with "256"

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

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 320 **Submitted by:** Brian Eidson

Comment Type Technical, Non-binding **Starting Page #** 112 **Starting Line #** 13 **Fig/Table#** **Section** 8.3.2.1.4.1

The mechansim to handle frame sizes larger than 2048 simply using the largest block and fractional final block will lead to bad performance for the fractional block---since turbo code performance decreases with block (interleaver) size.

Suggested Remedy

Add statement at line 13
For allocations larger than N =256 (256 bytes), the allocation size is divided by 2048 and rounded to the next highest integer to determine the number of interleaver blocks, *B*, and the interleaver size for each block shall be the *allocation size/B*.

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

Add statement at line 13
For allocations larger than N =256 (256 bytes), the allocation size is divided by 2048 and rounded to the next highest integer to determine the number of interleaver blocks, N_B, and the interleaver size for each block shall be the *allocation size/*N_B.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 321 **Submitted by:** Brian Banister

Comment Type Technical, Non-binding **Starting Page #** 111 **Starting Line #** 48 **Fig/Table#** **Section** 8.3.1.2.3

1.) Missing y subscript on k_y on lines 48,49
2.) Equation 3 is wrong, and does not match what was voted upon. In addition, what was agreed upon last time also has a slight error, which is why this is listed as Technical rather than Editorial.

Suggested Remedy

1.) Add y subscripts
2.) Modify equation 3 to read:
arg_i [min { (kx-floor((i+1)/2))*(ky-floor(i/2)) - K } >= 0], 0 <= i < 2 ky - 1
3.) In bank 3 (the middle rate bank), it is necessary to swap the entries of the row and column component codes to:

row cd	col cd	Base BTC
(64,63)	(64,57)	(4096,3591)
(32,31)	(32,26)	(1024,806)
(16,15)	(16,11)	(256, 165)
(8,7)	(8,4)	(64,28)

This change is needed to allow the possibility of a single byte packet when using this code bank.

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

1.) Add y subscripts
2.) Modify equation 3 to read:
arg_i [min { (kx-floor((i+1)/2))*(ky-floor(i/2)) - K } >= 0], 0 <= i < 2 ky - 1
3.) In bank 3 (the middle rate bank), it is necessary to swap the entries of the row and column component codes to:

row cd	col cd	Base BTC
(64,63)	(64,57)	(4096,3591)
(32,31)	(32,26)	(1024,806)
(16,15)	(16,11)	(256, 165)
(8,7)	(8,4)	(64,28)

This change is needed to allow the possibility of a single byte packet when using this code bank.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 322 **Submitted by:** Brian Banister

Comment Type Editorial **Starting Page #** 110 **Starting Line #** 30 **Fig/Table#** **Section** 8.3.1.2.3

grammar

Suggested Remedy

Its values ranges -> Its value ranges

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

Its values ranges -> Its value ranges

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 323 **Submitted by:** Brian Banister

Comment Type Technical, Non-binding **Starting Page #** 111 **Starting Line #** 48 **Fig/Table#** **Section** 8.3.1.2.3

The present method for handling SC packets with more information bits than may fit into a single block presents the potential for blocks as short as 1 byte to be encoded. This results in blocks within a packet being protected with varying levels of protection.

Suggested Remedy

By forcing all of the blocks for a given packet to be (approximately) the same size, we can assure uniform protection of all blocks in the packet. This results in a slight increase in the robustness of the packet.

Change:

Should K exceed the largest information block length available in the code selection bank, then the base BTC with the largest information block is selected. From the K total information bits, blocks of kx x ky bits are then encoded until the remaining number of bits is less than kx x ky. The parameter K is then set to equal the remaining number of information bits, and step 2 is performed unless K equals 0.

to

Should K exceed the largest information block length available in the code selection bank, the K information bits shall be split accross Nblocks = ceil(K / (8 * maxInfoBlock)), where maxInfoBlock is the number of information bytes in the largest BTC in the code selection bank. The first Nblocks - 1 blocks shall encode
ceil(K / 8 / Nblocks) bytes. The final block shall encode the remaining (K/8) - (Nblocks-1)*ceil(K/8/Nblocks) bytes. Each of the Nblocks blocks is encoded according to step 2, substituting for K the number of information bits assigned to that block. Shortening of the BTC may be required for all Nblocks blocks. The code selection bank shall remain unchanged for the duration of the Nblocks blocks.

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

Change:

Should K exceed the largest information block length available in the code selection bank, then the base BTC with the largest information block is selected. From the K total information bits, blocks of kx x ky bits are then encoded until the remaining number of bits is less than kx x ky. The parameter K is then set to equal the remaining number of information bits, and step 2 is performed unless K equals 0.

.

to

Should K exceed the largest information block length available in the code selection bank, the K information bits shall be split accross Nblocks = ceil(K / (8 * maxInfoBlock)), where maxInfoBlock is the number of information bytes in the largest BTC in the code selection bank. The first Nblocks - 1 blocks shall encode
ceil(K / 8 / Nblocks) bytes. The final block shall encode the remaining (K/8) - (Nblocks-1)*ceil(K/8/Nblocks) bytes. Each of the Nblocks blocks is encoded according to step 2, substituting for K the number of information bits assigned to that block. Shortening of the BTC may be required for all Nblocks blocks. The code selection bank shall remain unchanged for the duration of the Nblocks blocks.

Reason for Group's Decision/Resolution

Document under Review: **Ballot Number:** **Comment Date**

Comment # 324 **Submitted by:** Itzik Kitroser

Comment Type Technical, Non-binding **Starting Page #** 196 **Starting Line #** 47 **Fig/Table#** **Section**

Seems that Alamouti STC IE is missing for the OFDMA mode
Also, seems that there some overlooked problems in the OFDM Alamouti description

Suggested Remedy

Insert the following section

8.5.5.2.3 23 DL-MAP Alamouti STC IE format
In the DL-MAP, an STC enabled BS (see 8.5.8) may transmit DIUC=15 with the STC_IE() to indicate that the subsequent allocations shall be STC encoded. No preceding DL allocations shall be STC encoded and all subsequent DL allocations until the end of the frame shall be STC encoded.

Table Xxx—OFDMA STC Information Element format

Syntax	Size	Notes
STC_Information_element() {		
extended DIUC	4 bits	STC = 0x01
OFDMA Symbol Offset	12 bits	
}		

The duration of the DIUC=15 STC_IE() allocation shall be zero. From the start of the frame up to this allocation, only one antenna shall be used. The transmission in this allocation will be as specified in 8.5.8.2. After this allocation, the BS shall transmit from both its antennas until the end of the frame.

On page 172 line 14:
remove the sentance:
"In the transmission frame, variable location pilots are kept identical for two symbols and L is constant for the duration of two symbols (see 8.5.6.1 for definition of L)."

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

Insert the following section

8.5.5.2.3 23 DL-MAP Alamouti STC IE format
In the DL-MAP, an STC enabled BS (see 8.5.8) may transmit DIUC=15 with the STC_IE() to indicate that the subsequent allocations shall be STC encoded. No preceding DL allocations shall be STC encoded and all subsequent DL allocations until the end of the frame shall be STC encoded.

Table Xxx—OFDMA STC Information Element format

Syntax	Size	Notes
STC_Information_element() {		
extended DIUC	4 bits	STC = 0x01
OFDMA Symbol Offset	12 bits	
}		

The duration of the DIUC=15 STC_IE() allocation shall be zero. From the start of the frame up to this allocation, only one antenna shall be used. The transmission in this allocation will be as specified in 8.5.8.2. After this allocation, the BS shall transmit from both its antennas until the end of the frame.

On page 172 line 14:
remove the sentance:
"In the transmission frame, variable location pilots are kept identical for two symbols and L is constant for the duration of two symbols (see 8.5.6.1 for definition of L)."

Reason for Group's Decision/Resolution