

Project	<b>IEEE 802.16 Broadband Wireless Access Working Group</b> < <a href="http://ieee802.org/16">http://ieee802.org/16</a> >	
Title	<b>IEEE 802.16.3 Session #9 Minutes</b>	
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Re:	IEEE 802.16.3 Session #9 (Denver, Colorado, September 11-15, 2000)	
Abstract	Meeting Minutes	
Purpose	Review and Approval	
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**Minutes of 802.16.3 Session #9**  
**A task group of IEEE 802.16**  
**Denver, Colorado**  
**11-15 September, 2000**

### **Call to order**

Brian Kiernan called the meeting to order at 3:30pm, Monday September 11th.

### **Agenda for the week**

Brian Kiernan introduced the agenda / schedules and meeting locations for the week. The schedule for the week will contain the following major items:

- Functional Requirement Document shall be completed and be ready for adoption. There are about 74 comments to be reviewed on Tuesday Sept 12<sup>th</sup>.
- 13 Contributions on “Evaluation Criteria of Key characteristics” to be reviewed on Wednesday Sept 13<sup>th</sup>.
- On Thursday Sept 14<sup>th</sup>, a Joint meeting shall take place between TG1 and TG3 on selection of MAC.
- Development Plan shall be revised in order to accelerate various development phases.
- Incorporate Ad-Hoc group results on QOS, traffic modeling, etc, into the Functional Requirements Document.

### **Approval of the Minutes from Session #8 for IEEE 802.16.3**

Brian Kiernan asked if anyone had any changes or corrections to the Session #8 minutes (document IEEE 802.16.3-00/10). Without objection, this document was approved.

David Trinkwon presented his report as the IEEE802.16.3 contact at the inauguration of “ETSI BRAN’s FWA below 11 GHz” meeting that took place in Helsinki, on June 30<sup>th</sup>. Demos Kostas gave a related presentation on ETSI BRAN activities for the FWA Sub 11 GHz meeting that took place on August 25<sup>th</sup>. Demos Kostas has been formally selected as a contact point by the ETSI BRAN sub 11 working Group to the IEEE 802.16.3.

**Motion #A**, Anil Balani, 2<sup>nd</sup> by Roger Hammonds, proposed to appoint some one from IEEE 802.16 as a liaison to the ETSI BRAN FWA below 11 GHz task group.

Results: **Motion #A was accepted unanimously, passed.**

Prior to adjournment Jim Carlo responded to some of concerns of IEE 802.16.3 participant’s concerns about the association of IEEE with and BWIF consortium.

The September 11, 2000 session adjourned at 5:15 PM.

### **Call to order**

8:15am, Sept 12, 2000 call to order by Chair Brian Kiernan.

## Functional Requirements – Document Review

The purpose of today's meeting is to review the functional documents requirements. At this time, there are a total of 18 editorial comments which Brian Petry recommended be accepted as a group. By a show of hands, the group decided to trust Brian's judgment to make the editorial changes.

George discussed a proposal for the Classes of Services and Quality of Service.

## Technical Comments

**Motion 1** Demos Kostas comment #3, 2<sup>nd</sup> Carl Bushue – Discussion  
Brian Petry friendly amendment “interfaces, functions” Accepted.

**Motion 1 carries by unanimous voice vote.**

**Motion 2**, Demos Kostas comment #6, 2<sup>nd</sup> David Trinkwon  
Friendly Amendment “physical layers and medium access” accepted as friendly amendment.  
Friendly Amendment eliminate “physical layers and medium” Not accepted

**Motion 2 carries by unanimous voice vote.**

**Motion 3**, Demos Kostas comment #8 2<sup>nd</sup> Anader Benyamin-Seeyar  
Friendly Amendment delete “that suffice for meeting the broad applicability goals set forth by the air interface Five Criteria” Brian Petry – not accepted.

Friendly Amendment – David Trinkwon “as described in 802.16.3 PAR” Anders  
Brian Kiernan Call Question Brian Petry 2<sup>nd</sup>

**Motion 3 carries by unanimous voice vote.**

**Motion 4**, Demos Kostas comment #10 2<sup>nd</sup> David Trinkwon  
Friendly Amendment – Carl Bushue – Keep original sentence as it is and put in a comm. After “fixed” and removing an “or.” And eliminate the word “even”

**Motion 4 Carries with only one person opposed.**

**Motion 5**, David Trinkwon comment #12 2<sup>nd</sup> Anader Benyamin-Seeyar

**Motion 5 Carries with only one person opposed.**

**Motion 6** Brian Kiernan comment #13 2<sup>nd</sup> No second, comment

**Motion 7** Nico van Waes comment #14 to replace Figure 2-1 with a new illustration. 2<sup>nd</sup> by Brian Kiernan.

Friendly Amendment by David Trinkwon to remove this diagram – Not accepted

Friendly Amendment Anders – remove base station controller and diverse routing on the diagram, accepted.

Motion to Amend David Trinkwon 2<sup>nd</sup> by Brian Petry to remove both diagrams.

Carl Bushue calls the question 2<sup>nd</sup> by Anders. Carries by unanimous voice vote.

Vote on Motion to Amend Vote 3-9, Motion to Amend fails.

**Motion 7 Carries 13-1**

**Motion 8** Nico van Waes comment #14 2<sup>nd</sup> Anader Benyamin-Seeyar – text portion and not the graphic.

**Motion 8 carries**

**Motion 9** Nico van Waes comment #15 2<sup>nd</sup> Anader Benyamin-Seeyar

Friendly amendment to take out non line of sight

Friendly amendment to replace non line of sight – not accepted by the 2<sup>nd</sup>.

**Motion 9 5-11 fails.**

**Motion 10** David Trinkwon comment #19 2<sup>nd</sup> Marianne Goldhammer

Friendly Amendment Demos Kostas – take out “hypothetical” and add “reference”

Friendly Amendment Brian Petry – change “reference” back to “hypothetical.”

Friendly Amendment – remove “reference”

**Motion 10 fails 2-4.**

**Motion 11** Demos Kostas (WCA Engineering comment) comment #22, 2<sup>nd</sup> by Anader Benyamin-Seeyar

**Motion 11 carries 14-0**

**Motion 12** Demos Kostas (WCA Engineering comment) comment #24, 2<sup>nd</sup> by Anader Benyamin-Seeyar

**Motion 12** Carries Voice vote with only one opposition.

**Motion 13** David Trinkwon Comment #25, 2<sup>nd</sup> Brian Petry.

**Motion 13 fails 2-9.**

**Motion 14** David Trinkwon comment #26 2<sup>nd</sup> Jacob Jorgenson

Friendly Amendment Add term “resources” rather than “bandwidth.”

Call the Question – Nico van Waes Vote 4-8, fails

Friendly Amendment Anader Benyamin-Seeyar - Change “identify” to “request”, Accepted

**Motion to Amend #14** Demos Kostas – to delete the entire paragraph 2<sup>nd</sup> Brian Kiernan.

Friendly Amendment – Brian Petry to add a portion of the paragraph back

Call the question – Brian Kiernan – Pass unanimous voice vote.

**Motion to Amend #14 Carries**

**Motion 14 carries by unanimous voice vote.**

Comment #31, editorial comment and is now changed.

**Motion 15** Demos Kostas (On behalf of WCA Engineering) comment #33 and #34, 2<sup>nd</sup> Anader Benyamin-Seeyar

Friendly Amendment – Brian Petry “Higher layer services” to “higher layer service requirements”

**Motion 15 carries 14-0.**

**Motion 16** David Trinkwon comment #36 2<sup>nd</sup> Anader Benyamin-Seeyar

**Motion 16 carries Vote unanimous voice vote**

**Motion 17** Brian Petry (On behalf of Moshe Ran) comment #37 2<sup>nd</sup> Nico van Waes

**Motion to amend #17** – David Trinkwon, 2<sup>nd</sup> Anader Benjamin-Seeyar - Eliminate entire paragraph.

Friendly Amendment – David Trinkwon 2<sup>nd</sup> Anader Benjamin-Seeyar – change “provide” to “support”, eliminate “up to 10 Mbps”

Call the question – unanimous

**Motion to amend #17 carries 13-1**

**Motion 17 carries 11-1**

**Motion 18** Demos Kostas comment #38 2<sup>nd</sup> Marianne Goldhammer

Comment retracted by Demos Kostas

**Motion 19** Marianne Goldhammer comment #39, to add a number of headers under spectral efficiency, 2<sup>nd</sup> by David Trinkwon

**Motion 19A** to Amend Brian Petry 2<sup>nd</sup> Anader Benyamin-Seeyar, to divide all of the headers and consider each heading as a separate motion.  
Motion carries 9-0

**Motion 19B** to add “5.3 spectral efficiency”

**Motion to Amend 19B** – Marianne Goldhammer, 2<sup>nd</sup> by David Trinkwon to review the header and text together.  
Motion to Amend 19B carries 8-0

**Motion to Amend 19B** - Demos Kostas, 2<sup>nd</sup> by Brian Petry to remove the text under spectral efficiency.

Motion to Amend 19B fails 2-9

Friendly amendment by Randall Schwartz accepted by Marianne but not by David to insert a new sentence “ the interoperability standard SHALL specify spectral efficiency as expressed in bits per second per Hz, transported by the MAC layer, to measure the effective capacity through available spectrum. Not accepted  
Motion 19B with various amendments - carries 6-2-4

**Motion 19C** Section on “Cell Size”

Friendly amendment to change “cell size” to “propagation delay” Accepted by Marianne and David.

Friendly amendment to change this section to “5.4” – not accepted by David

**Motion to Amend 19C** by Brian Petry, 2<sup>nd</sup> by Jose Costa “Cell Size” to rename it a section “5.4 Propagation Delay”

Friendly amendment to change Propagation delay to 5.4 and then Spectral Efficiency to 5.4 accepted  
Motion to Amend 19 C carries 10-0

**Motion 19C** carries 11-0 to keep the current test in section 5.3

**Motion 19D** For Multirate Support

Friendly amendment by Brian Petry to change it to “Multirate Support” to “Per-Subscriber Rate Adaptation” plus the text was modified as described in the new version. Accepted

**Motion carries 12-0 19D as specified**

**Motion 19E** “Interference Minimization”

Friendly Amendment – John Wiss to remove the comments on “burst” mode from the paragraph. Accepted.

Friendly Amendment – David Trinkwon to eliminate the 2<sup>nd</sup> sentence

Call the question Mura Wachira - 2<sup>nd</sup> by Anader Benyamin-Seeyar, unanimous voice vote

**Motion 19E fails 6-12**

**Motion 19F** Packetized Voice

Friendly Amendment Bob Ward to change the name to “Packet Concatenation” Not accepted.

Friendly amendment to change the title to “Payload Efficiency” Accepted

Friendly amendment Anader Benyamin-Seeyar to remove the last sentence – not accepted

Call the question Eric, 2<sup>nd</sup> Anader Benyamin-Seeyar

**Motion 19F fails 4-13**

**Motion 19G** Support for VAD and IP header compression

Call the question Brian Petry, Vote all in favor except for one person.

**Motion 19G Fails 2-12**

**Motion 19H** Requests for bandwidth and retransmissions

**Motion 19H fails 4-9** and section is not added.

**Motion 20** by David Trinkwon comment #40 2<sup>nd</sup> by Niko van Waes  
 Friendly amendment by Brian Petry to remove the last sentence. Not accepted.  
 Call the question by Demos Kostas, 2<sup>nd</sup> by David Trinkwon – all in favor.  
**Motion 20 carries 14-0**

**Motion 21** Demos Kostas (For Reza Arefi and WCA) comment #41, 2<sup>nd</sup> by Brian Kiernan.  
 Friendly amendment by Brian Petry to keep “better-than” in the paragraph.  
 Friendly amendment by Brian Kiernan to add “as a minimum” not accepted  
 Friendly amendment by Demos Kostas add “so that they can meet their exceed their maximum effort rate requirement” accepted  
 Call question – David Trinkwon 2<sup>nd</sup> by Nico van Waes  
**Motion 21 fails 1-9**

**Motion 22** Moshe Ran comment #43, 2<sup>nd</sup> Roger Hammons.  
 Call the question David Trinkwon – vote 8-0  
**Motion 22 fails 1-10.**

**Motion 23** Demos Kostas comment #44 no second, motion fails.

**Motion 24** Moshe Ran comment #45, fails due to no second.

**Motion 25** Demos Kostas (From WCA) comment #46, 2<sup>nd</sup> Anader Benyamin-Seeyar

**Motion 26** Demos Kostas comment #47, Anader Benyamin-Seeyar  
**Motion 26 carries 12-0**

Demos Kostas withdraws comment #48

**Motion 27** Demos Kostas (From WCA) comment #49 Anader Benyamin-Seeyar  
**Motion 27 fails 4-5**

Brian Kiernan adjourned meeting at 5:00pm.

## Call to order

Brian Kiernan called the meeting to order at 8:10am, Wednesday, September 13<sup>th</sup>. The group continued to review comments on the Functional Requirements Document.

**Motion 28** Demos Kostas comment #52, motion fails due to no 2<sup>nd</sup>.

**Motion 29** Demos Kostas comment #54 and #55, 2<sup>nd</sup> Reza  
 Friendly Amendment David Trinkwon to keep the first sentence. Accepted.  
**Motion 29 carries 8-0.**

**Motion 30** Anader Benyamin-Seeyar (For Moshe Ran) comment #56 (1<sup>st</sup> portion), 2<sup>nd</sup> Demos Kostas.  
**Motion 30 carries 11-0**

**Motion 31** Demos Kostas comment #58, Anader Benyamin-Seeyar  
 Friendly Amendment David Trinkwon to change a few words.

**Motion 31 carries 12-0**

**Motion 32** Demos Kostas to remove the word “full” 2<sup>nd</sup> by Anader Benyamin-Seeyar  
Friendly Amendment change “full duplex” to “bi-directional.”

Call the question Anader Benyamin-Seeyar Vote unanimous voice.

**Motion 32 carries 10-0.**

**Motion 33** Moshe Ran comment #56 (second part), motion fails due to no 2<sup>nd</sup>.

**Motion 34** Reza Arefi comment #59, 2<sup>nd</sup> Demos Kostas.

Friendly amendment David Trinkwon to change to “should” from “must.” Accepted.

Friendly amendment to change the slash to an “and”

Call the question Anader Benyamin-Seeyar - Unanimous Voice vote.

**Motion 34 carries 6-4.**

**Motion 35** Reza Arefi comment #60, 2<sup>nd</sup> Demos Kostas.

Friendly Amendment to change “shall” to “should”

Call the Question Anader Benyamin-Seeyar – Unanimous Voice vote

**Motion 35 carries 8-1**

Comment #61 by Demos Kostas was withdrawn.

**Motion 36** David Trinkwon comment #67, 2<sup>nd</sup> Anader Benyamin-Seeyar.

Friendly amendment by Demos Kostas – editorial “capabilities are”

**Motion 36 carries 9-0.**

**Motion 37** Reza Arefi comment #62, 2<sup>nd</sup> Demos Kostas.

**Motion 37 carries 6-0**

Demos Kostas withdrew comment #63.

**Motion 38** David Trinkwon comment #64, 2<sup>nd</sup> Nico van Waes.

**Motion 38 carries 12-0.**

**Motion 39** Reza Arefi comment #65, 2<sup>nd</sup> Demos Kostas.

**Motion 39 carries 9-0.**

Demos Kostas withdraws comment #66 because it overlapped with comment #66.

David Trinkwon’s comment #67 was accepted earlier.

**Motion 40** Reza Arefi comment #68, 2<sup>nd</sup> Demos Kostas.

Friendly Amendment Demos Kostas – minor edits. Accepted.

**Motion 40 carries 9-0.**

Demos Kostas withdraws comment #69 and #70.

**Motion 41** Reza Arefi comment # 71, 2<sup>nd</sup> Demos Kostas.

Friendly amendment by Demos Kostas to reverse 2<sup>nd</sup> and 3<sup>rd</sup> bullets in this section.

**Motion 41 carries 8-0.**

**Motion 42** Demos Kostas comment #72, 2<sup>nd</sup> Roger Hammonds.

Friendly Amendment by Roger Hammonds to delete “subscriber”

**Motion 42 carries 9-0.**

**Motion 43** Demos Kostas comment #73, 2<sup>nd</sup> Brian Petry.

Friendly Amendment by Jose Costa to change “strong” to “suitable.”

**Motion 43 carries 11-0**

## Quality of Service Section of Functional Requirements Document

The QoS Ad Hoc group completed some input into this section.

**Motion 44** David Trinkwon to take all of the output of the ad hoc meeting into this section to be incorporated into the functional requirements document, 2<sup>nd</sup> Anader Benyamin-Seeyar.

Friendly Amendment – David Trinkwon – changing “prioritization” to “resources” in all sections to make it consistent with other changes to the document.

Friendly Amendment – Roger Hammonds – make separate paragraph regard a connection-oriented service.

Call the Question - Anader Benyamin-Seeyar , 2<sup>nd</sup> Roger Hammonds.

**Motion 44 carries 9-1**

**Motion 45** Demos Kostas, 2<sup>nd</sup> by David Trinkwon, to make minor edits to deleting a line in the document

**Motion 45 carries 8-0.**

**Motion 46** Anader Benyamin-Seeyar to change PDU’s to “time slots,” 2<sup>nd</sup> Roger Hammonds.

**Motion 46 fails 1-7.** Changes are not made.

**Motion 47** Marianne Goldhammer 2<sup>nd</sup> David Trinkwon - to delete a paragraph

**Motion 47 fails 3-8.**

**Motion 48** Marianne Goldhammer to make some edits to the Table 1 to change the standard quality Telephone from 20ms – 40ms delay in the QoS section, 2<sup>nd</sup> by Chett Shear.

Friendly amendment Bakri Aboukarr to change the BER to  $10^{-6}$  from  $10^{-4}$ . Accepted.

Motion to Amend 48 Roger Hammonds to vote on each number in the table separately 2<sup>nd</sup> Brian Kiernan

Motion to Amend 48 carries 11-0.

Motion 48 Portion to change BER from  $10^{-6}$  to  $10^{-4}$ .

Vote Motion 48 4-4, chair votes against the motion.

Motion 48 portion to change the delay time from 20ms to 40 ms

Vote Motion 48 carries 12-0.

**Motion 49** Anader Benyamin-Seeyar to add “The maximum access delay given in Table 1 is for systems without echo cancellation capability,” 2<sup>nd</sup> Demos Kostas.

**Motion 49 fails 4-7.**

**Motion 50** Marianne Goldhammer to change the BER for Time Critical Packet Services from  $10^{-6}$  to  $10^{-9}$ , 2<sup>nd</sup> Demos Kostas.

Motion 51 fails 4-8.

**Motion 51** Marianne Goldhammer to change add Assured Forwarding to the Table 1, value depends on the type of service.

Motion 51 fails 1-4.

**Motion 52** Brian Petry to change the value n/a under non-time critical services to 500 ms. 2<sup>nd</sup>  
Call the Question – Brian Kiernan  
Motion 52 fails 1-9

The meeting adjourned at 12:30pm.

## **Call to order**

Brian Kiernan called the meeting to order at 1:30pm, Wednesday September 13<sup>th</sup>.

The agenda for the afternoon meeting is to review various technical submissions to help develop a list of evaluation criteria that will be used to generate the standard.

The following contributions were presented to Task Group 3.

### **Contribution 802.13.c-00/13 Modulation and Equalization Criteria for 2-11 GHz Fixed Broadband Wireless Systems**

Presented by David Falconer

### **Contribution 802.16.3c-00/14 - Evaluation criteria for multiple access techniques**

Presented by Anader Benyamin-Seeyar

### **Contribution 802.16.3c-00/17 - Evaluation Criteria for RF Propagation and Diversity Techniques**

Presented by Anader Benyamin-Seeyar

### **Contribution 802.16.3c-00/18r1 - Evaluation Criteria for Modulation Techniques**

Presented by Anader Benyamin-Seeyar

### **Contribution 802.16.3c-00/19 - Evaluation Criteria for Duplex Techniques**

Presented by Anader Benyamin-Seeyar

### **Contribution 802.16.3c-00/20 - Evaluation Criteria for Frame Structure, Timing and Synchronization Schemes**

Presented by Anader Benyamin-Seeyar

### **Contribution 802.16.3c-00/21 - Evaluation Criteria for FEC Coding and Interleaving Techniques**

Presented by Anader Benyamin-Seeyar

### **Contribution 802.16.3c-00/16 - Selection Criteria pertinent to Modulation, Equalization, Coding for the for 2-11 GHz Fixed Broadband Wireless Systems**

Presented by Robert M. Ward, Jr.

**Contribution 802.16c-00/22 – Evaluation criteria for 802.16.3 PHY**

Presented by Marianne Goldhammer (Developed by Tal Kaitz)

Comments – the PHY model presented here is applicable for wireless LAN systems. AT&T and Sprint have developed a new model for fixed broadband wireless and these may be submitted as contributions at a later date.

**Contribution 802.16c-00/23 Comparison of QPSK/QAM OFDM and Spread Spectrum for the 2-11 GHz PMP BWAS**

Presented by Martin Sellers.

The presentation recommends single carrier over OFDM at this time. Many people had comments support OFDM for this kind of solution but Brian Kiernan deferred these discussions to a later date.

**Contribution 802.16c-00/24 Evaluation Criteria for Duplex Schemes, RF Propagation Characteristic and Diversity Techniques**

Presented by Chris Tappenden

Summary by Brian Kiernan. There are a few things missing from the presentations. The group needs to develop a number of different models, one to compare different modulation schemes, another for traffic models and finally a channel model.

A number people had comments and the group would like to have a call for contributions on channel models. At this time, there will also be a call for contributions on PHY models for the next Plenary in Tampa Bay.

Brian asked if the group would like to have complete PHY proposals or establish the evaluation criteria first.

General feeling is that we should focus on channel models and integrated evaluation criteria on the PHY rather than looking at complete PHY proposals.

Roger Marks made a comment that the 802.16.1 task group asked for an abstract and table of contents as an outline of their proposals rather than a complete proposal. There were numerous PHY and MAC proposals and this allowed the group to consolidate the various proposals at a rapid rate.

Jose Costa – there is strong market pressure to release a standard in this space. We want quality but if it is not finished soon, then it will be useless.

Joe would like to get a look ahead as soon as possible at full proposals

Roger Markets – supports Jose in balancing quality vs. speed. Current development plan has a compressed time between evaluation criteria and selecting the appropriate proposals.

**Motion 53** by Brian Kiernan - We revise the development plan such that we solicit preliminary PHY proposals earlier than envisioned in the plan, 2<sup>nd</sup> Demos Kostas.

Question called – unanimous vote.

**Motion 53 carries 15-4-3.**

Meeting adjourned at 4:50pm.

## Call to order

Brian Kiernan called the meeting to order at 7:45pm, Wednesday September 13<sup>th</sup>.

Continued the review of the Functional Requirements Document.

**Motion 54** David Trinkwon to make an editorial note to define terminology and all of the info in parenthesis above. And delete the reference to make the call traffic models ad treat it under the “evaluation criteria” activities rather than this FRD, 2<sup>nd</sup> Nico van Waes. This was under section 1.2.

**Motion 54 carries 6-0.**

Section 7.2 Parameters.

**Motion 55** Demos Kostas comment on section 7.2, no 2<sup>nd</sup>, motion fails.

A number of editorial edits were made in section 7.1. Section 7 is now complete.

**Motion 56** Nico van Waes – to remove section 3.1.1, 2<sup>nd</sup> by Brian Petry.

**Motion 56 carries 9-0.**

David Trinkwon retracts his comment on jitter spec in section 5.6.

Meeting adjourned at 9:30pm.

## Call to order

Brian Kiernan called the meeting to order at 8:10am, Thursday September 14<sup>th</sup>.

## Review of WirelessHUMAN draft PAR

Durga Satapathy, chairman of the WirelessHUMAN Study Group, reviewed their draft par with TG3.

### Comments on Scope of Proposed Project

Under the Scope of Proposed project, Brian Petry mentioned that mesh networks should be removed from the scope because it will considerably delay completion of the standard.

The WirelessHUMAN group recommends OFDM as a PHY layer because of work done by 802.11 and HIPERLAN/2 PHY on OFDM. The statement in the PAR is “an effort will be made to utilize or modify applicable elements primarily from 802.16.1 and 802.16.3 and 802.11a and HIPERLAN/2 PHY.” Roger Marks feels that this is too vague and will take a significant amount of time to complete. In addition, Marianne Goldhammer stated that she doesn’t understand why they are considering 802.16.1 MAC and recommends that they only look at the 802.16.3 MAC. David Trinkwon recommends that 802.16.3 should be the prime candidate for the MAC. Another person mentioned that coexistence with 802.11 should be incorporated into the group as well.

## Comments on the Draft 5 Criteria

Marianne Goldhammer brought up the fact that channelization is another reason to have a different specification than 802.11. Since 802.11 supports 20 MHz channels, this will be difficult to roll out for cellular deployments. Demos Kostas stated that one of the distinct differences between 802.11 and WirelessHUMAN has to do with the fact that WirelessHUMAN supports fixed rather than mobile operation.

Roger Hammonds is concerned that it looks like the group is not really considering strongly considering 802.16.3 as a basis for the specification since this is much closer to the requirements than 802.11.

Roger Marks expressed concern is that this project might get bogged down and take a long time to complete. The group should consider a timeline and plan in the PAR. The current completion date is Mar 2002.

## Criteria for reviewing PHY proposals

**Motion 57** Anader Benyamin-Seeyar to establish an ad hoc group to establish a criteria for reviewing PHY proposals primarily via email completed before the next TG3 meeting in November, 2<sup>nd</sup> by Bob Ward.

**Motion 57 carries 13-0.**

The first meeting of the ad hoc should be sometime this afternoon and TG3 would like to see input from the group this afternoon. Primary consideration should be given to current contributions but is not limited to them.

## Contribution 802.16.3c-00/27 – Proposed System Characteristics – Relative Deployment Costs

Presented by David Trinkwon

## Vocabulary of Terms

Jose Costa leading the ad hoc vocabulary group, met earlier this morning to discuss some new definitions. The focus is on new definitions:

The group worked to complete all of the definitions in this section by today.

## MAC Contributions

### Contribution 802.16.3c-00/15 – TG3 Functional Requirements vs. TG1 Air Interface draft standard - MAC

Presented by Marianna Goldhammer

Conclusions for TG3 for the MAC

- Group can adopt the existing 802.16.1 and design a different MAC for 802.16.3
- Change the existing MAC proposal to be suitable for both 802.16.1 and 802.16.3

Brian Petry is in favor of the second option, ideally the two MAC should be the same. The TG1 MAC is now more IP centric. TG1 now needs to look at more efficient handling of IP that should match well with TG3.

Walt – Three things have been added into the MAC to make TG3 happy.

- Pulling out direct references to QAM.
- There are three different frame lengths allowed but two are not defined.
- Right now the group has specified that a system is using ARQ but with no information on how ARQ is implemented.

Brian Petry stated that if this group does not use the TG1 MAC, Brian recommends that we pull out of 802.16 and concede to a different standards committee.

Nico van Waes presented some information to the group. Identified requirements for the TG3 MAC.

**Motion 58** Nico van Waes, 2<sup>nd</sup> by Brian Petry, as follows:

- Tentatively adopt the TG1 MAC as the TG3 MAC
- Suspend TG3 MAC development, pending 802.16 adoption of the TG1 MAC
- Engage in the TG1 MAC process to ensure TG3 MAC needs are addressed
- Make a final decision on adopting the TG1 MAC as TG3 MAC after adoption by the 802.16 working group

#### **Discussion**

Chet Shirali – does not agree with the first statement

David Trinkwon – implies that we will not call for MAC proposals

Brian Petry – Would like stronger language relative to weaker

Friendly amendment - Jose Costa to change “tentatively” to considered in first bullet. Not accepted

**Motion to Amend #59** Marianne Goldhammer, 2<sup>nd</sup> Chet Shirali

- Split the TG1/TG3 MAC development process
- TG3 will take the current TG1 MAC as a proposed draft
- TG3 will start modifying the MAC according to the TG3 FRD in TG3

Brian Kiernan overruled this Motion to Amend stating that this is an entirely new motion.

**Motion to Amend #59** – Demos Kostas to change “suspend” to “continue” 2<sup>nd</sup> by David Trinkwon, not accepted

#### **Discussion**

Brian Petry stated that this should shorten the MAC development process.

Demos Kostas prefers “continue” so TG3 is not tied to TG1.

**Friendly Amendment** by David Trinkwon “Tentatively adopt the TG1 MAC as the proposed draft TG3 MAC,” and “Continue TG3 MAC development on the above basis.” Accepted.

#### **Discussion**

Brian Petry – Accept motion as currently worded

Marianne Goldhammer – First two bullets are the same as her motion to amend.

**Friendly Amendment** by Demos Kostas to eliminate the last bullet. 2<sup>nd</sup> accepts this

#### **Discussion**

Brian Kiernan stated that this group intended to use the TG1 MAC and if the group develops an entirely new MAC, then the group needs to form a separate working group.

Brian Petry striking the last bullet eliminates an “out” clause for us to make a decision after TG1 MAC is complete.

David Trinkwon addressed Brian’s last comment

**Friendly Amendment** David Trinkwon – to change the last bullet to “Defer the final decision on adopting the TG1 MAC as TG3 MAC”

**Discussion**

Marianne Goldhammer would like more clarification on what it means to “engage” in the third bullet from Brian Petry.

Brian Petry stated that “engage” is a loose term that is vague to allow us to determine what we need to do. George Fishel – Doesn’t like the third bullet because George feels we should be actively involved in modifying the TG1 MAC.

Brian Kiernan – This statement is not true and TG1 is changing its MAC to accommodate TG3.

David Trinkwon – We are not locked into TG1, if it falls apart we can do our own work.

**Friendly Amendment** – Zion Hadad to change the words “Tentatively adopt” to “modify,” no 2<sup>nd</sup>.

**Friendly Amendment** – Anader proposed the word “involve TG3” instead of “engage,” no 2<sup>nd</sup>.

**Motion to Amend #59** carries 6-3.

The amended motion is as follows:

- Tentative adopt the current TG1 MAC as the proposed draft TG3 MAC
  - Continue TG3 MAC development on the above basis
  - Engage in the TG1 MAC process to ensure TG3 MAC needs are address
  - Defer a final decision on adopting the TG1 MAC as TG3 MAC after adoption by the 802.16 working group
- Motion #59** Fails 4-8.

**Motion #60** Marianne Goldhammer – I move that TG3 MAC shall be developed based on the following:

- Split the TG1/TG3 MAC development process
  - TG3 will take the current TG1 MAC as a proposed draft
  - TG3 will start modifying the MAC according to the TG3 FRD in TG3
- , 2<sup>nd</sup> David Trinkwon

**Discussion**

Nico van Waes speaks against the motion. A plan to move on a different MAC from TG1 to TG3 that it is an illusion that both groups will have the same MAC.

Roger Marks – Some people misunderstand of the process. Standards go through the working group. The key is with the working group accepts the document letter ballot. It needs to pass at a 75% level but 802 will not accept this unless it is almost unanimous.

Zion Hadad – He is concerned that there are too many difference between the two MACs that this will delay TG1 completion.

Chet Shirali – The vote for TG1 MAC is for TG1 requirements

Demos Kostas – Feels TG3 needs will be subservient to TG1 and likes Marianne’s proposal.

Brian Petry – Speaking against this motion for two reasons: 1. TG3 has a certain amount of control to keep 802.16 to forward any standard that doesn’t meet TG3 goals. 2. The procedure Marianne proposes assumes that we will have some kind of resolution between TG3 and TG1 and managing this process is extremely difficult.

Marianne Goldhammer – Question for Roger. This is a different working group with 3 different PARs. Due to the fact that we have different PARs, we can have different PHYs.

Roger Marks- The .3 PAR there is a reference to the 802.16.1 MAC.

**Motion #60** carries 14-5.

### **Contribution 802.16.3c-00/15 – TG3 Functional Requirements vs. TG1 Air Interface draft standard – MAC**

The group used the above contribution as a basis to determine what TG1 needs to accommodate in the MAC for TG3.

The group edited this document for submission to the working group plenary on Friday.

**Motion 61** by Brian Kiernan to review document 802.16.3-00/13 at the evening joint meeting with TG1 and TG3 2<sup>nd</sup> Demos Kostas

**Motion 61 carries 13-0**

### **Liaison to ETSI BRAN Sub 11 GHz**

There are two names in nomination: Demos Kostas and Chet Shirali.

Vote: 0 for Demos Kostas, 5 for Chet Shirali, 7 abstentions.

### **PHY Criterion Discussion**

Anader Benyamin-Seeyar led an adhoc group to develop the following PHY criterion.

- Channel spectrum efficiency
- Simplicity of implementation
- SS cost optimization
- BS cost optimization
- Spectrum resource flexibility
- System service flexibility
- Protocol interfacing complexity
- Reference System gain
- Robustness to interference
- Robustness to channel impairments
- Robustness to radio impairments

Most of the general discussion was positive regarding this guideline.

Brian if this list is good enough, then we can go out with a contribution for PHY proposals and then listen to various proposals.

Brian proposes that the TG3 put out a call for contributions for PHY proposals.

**Motion 62** Brian Kiernan moves that TG3 issue a call for contributions for preliminary PHY proposals, 2<sup>nd</sup> by Demos Kostas.

**Motion 62 carries 12-0.**

In addition, there will be a call for contributions for traffic and deployment models and RF propagation models.

**Motion 63** by YYY to adopt the FRD and give the authority to Brian Petry to make final edits to the document. 2<sup>nd</sup> by Demos Kostas.

**Motion 63 carries 11-0.**

Friday morning called to order by Brian Kiernan at 08:00 AM.

Discussion of the MAC

Motion by Marianna Goldhammer

I move that the 802.16 MAC shall be developed based on the following:

1. That the 802.16 MAC development will be done in a number of phases.
2. TG1 is in charge for providing the first version of the MAC
3. TG3 will take the TG1 input and will enhance it with the TG3 requirements
4. Etc

The Chair requested that the motion be deferred for now but that the text will be used as a basis for discussion. This was agreed to by the motioner. Open discussions ensued on how to handle the MAC. These resulted in a new proposed motion:

That the 802.16.3 Chair carry the following motion forward to the Working Group :

Moved that the 802.16 working group:

Establish a common 802.16 MAC

Require each 802.16 Task Group to define its mandatory and optional sub-sets of the common MAC

Shall ensure backward compatibility and maintenance of the common MAC

Shall strive to ensure forward compatibility of the common MAC

Straw pole 8 to 15 to table the discussion failed

**Motion 64** So moved by Marianna Goldhammer

**Motion 64 carried 7-3**

George Fishel moved to adjourn

Marianna Goldhammer seconded

Adjourned at 9:50 by Brian Kiernan