Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**802.16.3 Functional Requirements Editing Status Following Session #7**
Date Submitted	**2000-06-23**
Source(s)	Brian Petry 3Com 12230 World Trade Dr. San Diego, CA 92128 Voice: 858-674-8533 mailto:brian_petry@3com.com
Re:	At 802.16 Session #7, the 802.16.3 functional requirements task group resolved comments received on IEEE 802.16.3-00/02r1, *Functional Requirements for the 802.16.3 Interoperability Standard* <http://ieee802.org/16/sub11/docs/802163-00_02r1.pdf>. The editor maintains a database of comments received and updates the resolution status of each comment. This contribution is a report of the output Session #7's comment resolution meetings.
Abstract	This contribution contains 2 database reports that are output from MS-Access, one sorted by commentor name so that the commentor can quickly find how his or her comment(s) were resolved, and one by resolution status so that unresolved comments can be easily identified. Since not all comments received prior to Session #7 were resolved at Session #7, this contribution is also input to Session #8, during which outstanding comments should be resolved.
Purpose	802.16 should archive this contribution as a report of comment resolutions at Session #7, and use the report as input to Session #8 comment resolution meetings.
Notice	This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.
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802.16.3 Functional Requirements Editing Status Following Session #7

Brian Petry
3Com

Summary

Prior to Session #7, 151 comments were received. During Session #7, the 802.16.3 task group resolved, or referred to ad-hoc groups, 122 of them, leaving 29 comments unresolved. Meeting for approximately 10.5 hours at Session #7, the task group resolved about 11.5 comments per hour.

The rest of this document contains two sections which are output from MS-Access. The first part is a report of resolution status of each comment, sorted by the commentor's name and the second part is sorted by resolution status. Since MS-Access doesn't leave much flexibility in the report format (headers and footers), you'll have to flip through the pages to find the beginning of the second part. My appologies (on behalf of Microsoft?) for the inconvenience .

Note: Second part begins on Page 24 of this PDF. Click to jump there.

Comments by name/page #/line#

Page/Line: 4 / 11 **Item Number:** 1 **Commentor Name:** Abu-Dayya Adnan **Type:** Technical
Description: **Reason:** **Resolution:** rejected
Replace "from 1 GHz to 10 GHz" with "2 GHz to 11 GHz"
Editor's note: Rejected because change is already there
To be consistent with the PAR.

Notes:

Page/Line: 4 / 17 **Item Number:** 2 **Commentor Name:** Abu-Dayya Adnan **Type:** Technical
Description: **Reason:** **Resolution:** accepted
Replace "NLOS blockage" with "channel characteristics"
A more meaningful metric in link design.

Notes:

Page/Line: 10 / 20 **Item Number:** 3 **Commentor Name:** Abu-Dayya Adnan **Type:** Technical
Description: **Reason:** **Resolution:** rejected
replace "will be a difficult problem for" with "will be a requirement for"
The target markets "residential and small businesses" mandate a non-line-of-sight requirement. Hence, the airlink should be robust in multipath environments.

Notes: withdrawn

Page/Line: 10 / 21 **Item Number:** 4 **Commentor Name:** Abu-Dayya Adnan **Type:** Technical
Description: **Reason:** **Resolution:** accepted
Delete "The 802.16.3 system capacity ...will also be difficult"
Not a very meaningful sentence; serves no purpose.

Notes:

Page/Line: 1 / 4 **Item Number:** 5 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Resolution:** rejected
Change "Broadband Wireless Access (BWA)" to "Wideband Wireless Access (WWA)" all over the document.
To distinguish 802.16.3 activity from 802.16.1

Notes:

Page/Line: 1 / 45 **Item Number:** 6 **Commentor Name:** Freedman Avi **Type:** Editorial
Description: **Reason:** **Resolution:** accepted
Delete comma after "networks"
Grammar

Notes:

Page/Line: 3 / 29 **Item Number:** 7 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Resolution:** rejected
Exchange the paragraph between lines 29 and 35 (starting with "A broadband wireless access" with the next paragraph (between lines 37 and 42, starting with "The target markets to be addressed...)
The definition of the markets is more important than the examples of possible services.

Notes:

Page/Line: 3 / 30 **Item Number:** 8 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Resolution:** rejected
Change "markets" to "services"
The technologies provide services and are not special to markets.

Notes:

Page/Line: 4 / 7 **Item Number:** 9 **Commentor Name:** Freedman Avi **Type:** Editorial
Description: **Reason:** **Resolution:** accepted
Insert space between "802.16.3" and "MAC"
Typo

Notes:

Page/Line: 4 / 11 **Item Number:** 10 **Commentor Name:** Freedman Avi **Type:** Editorial
Description: **Reason:** **Resolution:** accepted
Insert space between "to" and "3.5"
Typo

Notes:

Page/Line: 6 / 1 **Item Number:** 11 **Commentor Name:** Freedman Avi **Type:** Editorial
Description: **Reason:** **Resolution:** conferred to group
Change "A base" to "Base"
Refer to "interfaces"

Notes:

Page/Line: 6 / 11 **Item Number:** 12 **Commentor Name:** Freedman Avi **Type:** Editorial
Description: **Reason:** **Resolution:** conferred to group
Remove space in "comm on"
Typo

Notes:

Page/Line: 6 / 12 **Item Number:** 13 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Resolution:** conferred to group
Add optional Central Control Station and more base station to diagram
The diagram may be adequate for 802.16.1 but it is too simplistic for 802.16.3, where there is hihg influence between stations. A diagram similar to the ETSI TM4 refernce diagram should be used.

Notes:

Page/Line: 7 / 17 **Item Number:** 14 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Resolution:** rejected
Add "mainly" between "be" and "packet".
There is no reason to assume nor to limit voice services to Voice over packets. Other mechanisms may be found to be better.

Notes:

Page/Line: 7 / 18 **Item Number:** 15 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Resolution:** rejected
Change "will be recovered" with "may be recovered"
See above

Notes: withdrawn

Page/Line: 7 / 29 **Item Number:** 16 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Resolution:** unresolved
change "will be provided by VoIP" to "might be provided by VoIP"
See above.

Notes:

Page/Line: 9 / 28 **Item Number:** 17 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Resolution:** rejected
Change "DAVIC" to "DAVIC or other"
No reason to limit the convergence layer to DAVIC.

Notes: Part of figure deleted

Page/Line: 13 / 1 **Item Number:** 19 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Resolution:** unresolved
All reference should be revisitied
Most of the reference are not releavant to 802.16.3

Notes:

Page/Line: 13 / 25 **Item Number:** 18 **Commentor Name:** Freedman Avi **Type:** Editorial
Description: **Reason:** **Resolution:** unresolved
Remove space within "T he"
Typo

Notes:

Page/Line: 1 / 5 **Item Number:** 20 **Commentor Name:** Goldhammer Marianna **Type:** Editorial
Description: **Reason:** **Resolution:** accepted-modified
Insert "data" after "packet"
clarification

Notes:

Page/Line: 3 / 38 **Item Number:** 21 **Commentor Name:** Goldhammer Marianna **Type:** Technical
Description: **Reason:** **Resolution:** rejected
Insert "telecommuters" after "SOHO"
To add this market segment

Notes:

Page/Line: 6 / 0 **Item Number:** 23 **Commentor Name:** Goldhammer Marianna **Type:** Editorial

Description:
Change "voice, data and video" to "data, voice and video"

Reason:
Consistence throughout the document

Resolution: conferred to group

Notes:

Page/Line: 6 / 1 **Item Number:** 22 **Commentor Name:** Goldhammer Marianna **Type:** Editorial

Description:
Change" voice, data and video" to "packet data, voice and in some cases video"

Reason:
Make a correlation between the market size for each service and the order

Resolution: conferred to group

Notes:

Page/Line: 7 / 10 **Item Number:** 24 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Change the phrase starting with "The MAC and PHY protocols" with:"The MAC
and PHY protocols will not have explicit support for each and every service, due to the fact that generic data streams SHALL be used for transport. The MAC and PHY protocols SHALL provide for QoS service specific support. Service specific QoS meaning is very low BER for data services, delay for real time services, etc.

Reason:
Clarification

Resolution: accepted-modified

Notes:

Page/Line: 7 / 32 **Item Number:** 25 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Insert after business). "The required bandwidth is minimized with VoIP, the associated codecs providing a very good compression: 8kb/s for G.729, 6.3kb/s for G.723. The compression result is the increase of the delay.

Reason:
To make clear what is VoIP rate

Resolution: unresolved

Notes:

Page/Line: 7 / 34 **Item Number:** 26 **Commentor Name:** Goldhammer Marianna **Type:** Editorial

Description:
Delete"low"

Reason:
The VoIP delay is not low

Resolution: unresolved

Notes:

Page/Line: 7 / 34 **Item Number:** 27 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Change "MUST" with "SHOULD"

Reason:
The delay amount is depending on many factors, the MAC being only one of them.The delay amount, due to echo cancellers used with VoIP, is not extremly critical.

Resolution: unresolved

Notes:

Page/Line: 7 / 36 **Item Number:** 28 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Insert after the conversation. "The QoS requiremets should take into account the characteristics of the VoIP technology: codec end-to-end delay of 50ms for 10ms frame (G.729), 120ms for 30ms frame (G.723), the possibility to transmit concatenated voice packets, the mandatory use of echo cancellers.

Reason:
Give a feeling of what VoIP delay is

Resolution: unresolved

Notes:

Page/Line: 7 / 39 **Item Number:** 29 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Insert new paragraph with bullet: BER level The MAC and PHY protocols SHOULD provide for a reasonable BER Level for voice services. BER of 10-4 is sufficient for voice services and 10-5 for FAX.

Reason:
Make clear the BER issue

Resolution: unresolved

Notes:

Page/Line: 8 / 6 **Item Number:** 30 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Insert new numbered paragraph: Internet protocol properties
Bullet: Packet length - the IP datagrams are characterized by variable length. The MAC protocols MUST support efficiently variable length packets.
Bullet: Bit Error Rate - the TCP/IP protocol, as known from literature, drops its performance by 90% when the packet error rate reaches 10%. The MAC and PHY protocols MUST provide means for realible data transport, the BER target for cellular deployment SHELL be 10-9, equivalent to the performance of wired networks.

Reason:
important issue

Resolution: rejected

Notes:

Page/Line: 9 / 0 **Item Number:** 31 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Delete right column, avoiding the MAC layer for DAVIC

Reason:
Video is a service that should be supported exactly in the same way as other services

Resolution: accepted

Notes:

Page/Line: 9 / 45 **Item Number:** 32 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Insert: The IEEE 802.16.3 protocol stack SHALL be the same for all the supported services.

Reason:
It is no reason to provide special means to the VIDEO service, which is not the main application and generally the allocated bandwidth size will not permit video service offering

Resolution: accepted

Notes:

Page/Line: 10 / 16 **Item Number:** 35 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Insert paragraph 6.2 Channelization
New paragraph The standardization bodies providing channelization recommendations are ITU-R, CEPT and FCC. The allocated bandwidth per operator varies between 5MHz and 120MHz. In Europe, the typical allocated bandwidth is 14MHz. The operators target a good frequency reuse factor, using 4-6 sectors for Base Stations.The Base Station bandwidth per sector can be between 1.75MHz and 7MHz in in CEPT countries and between 2MHz and 6MHz in MMDS. The MAC and PHY protocols MUST permit the operation with channel spacing per sector of 1.75, 3.5 and 7MHz when using ETSI masks and 2, 3, 5 and 6MHz when using other masks. The typical value for performance analysis SHOULD be 3.5MHz for ETSI mask and 3MHz for MMDS mask.

Reason:
Missing paragraph

Resolution: unresolved

Notes:

Page/Line: 10 / 16 **Item Number:** 36 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Insert paragraph 6.3 Cellular deployment
New paragraph In cellular deployment, due to interference, the system spectral efficiency can be considerably lowered. The PHY and MAC protocols SHOULD permit good frequency reuse factors, providing at least 2bit/s/cell.In order to reduce the interference level, the PHY and MAC protocols MUST permit power control per subscriber up-link and SHOULD permit power control per subscriber down-link. The PHY and MAC protocols SHALL permit real-time changing of power levels, as function of propagation conditions, in order to use the minimum power needed for the target BER.

Reason:
Missing paragraph

Resolution: unresolved

Notes:

Page/Line: 10 / 16 **Item Number:** 34 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Insert paragraph 6 Wireless media characteristics
Sub-paragraph 6.1 Duplex model
Paragraph start The radio regulations permit two access modes: Frequency Division Duplex - FDD and Time Division Duplex - TDD. The MAC and PHY protocol MUST support both FDD and TDD duplex modes. Spectral efficiency is maximized in FDD with full-duplex operation, while in TDD with means to avoid collocation problems and more complex interference scenarios. The PHY and MAC protocols MUST provide for full duplex operation, while preserving the QoS, BER and spectral efficiency requirements for data and voice traffic. The MAC and PHY protocols MUST provide means to resolve the collocation and interference problems in TDD deployment.

Reason:
Missing paragraph

Resolution: unresolved

Notes:

Page/Line: 10 / 30 **Item Number:** 33 **Commentor Name:** Goldhammer Marianna **Type:** Editorial

Description:
Replace "Bandwidth" with "Capacity"

Reason:
Bandwidth is measured in Hz, not bit/s

Resolution: unresolved

Notes:

Page/Line: 12 / 4 **Item Number:** 37 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Delete from row 4 to row 14

Reason:
Telephony will be delivered using VoIP, and the requirements here are relevant only for classic 64kb/s voice.

Resolution: conferred to group

Notes: Not actually deleted, but the paragraphs reworked into the QoS table. Referred to QoS ad-hoc group

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Page/Line: 13 / 21 **Item Number:** 38 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Change from table the 10ms in row 7 to "1/4 of the VoIP codec end-to-end delay"

Reason:
Requirements non consistent with VoIP

Resolution: unresolved

Notes:

Page/Line: 0 / 0 **Item Number:** 48 **Commentor Name:** Jansson Leif **Type:** Editorial

Description:
The section numbering is wrong.

Reason:
Editorial.
Rejected because editor will clean up the requirements summary appendix

Resolution: rejected

Notes:

Page/Line: 0 / 0 **Item Number:** 49 **Commentor Name:** Jansson Leif **Type:** Technical

Description:
Delete R17.

Reason:
This is not requirement on a BWA system.
Rejected because editor will re-work this appendix by scanning the document body to verify all requirements

Resolution: rejected

Notes:

Page/Line: 1 / 4 **Item Number:** 39 **Commentor Name:** Jansson Leif **Type:** Technical

Description:
Replace sentence "The BWA" through "services" with "The BWA system shall support all services (real time and non real time) in a packet oriented manner."

Reason:
Clearly defined requirement that clarifies meaning of the sentence.

Resolution: accepted-modified

Notes:

Page/Line: 3 / 34 **Item Number:** 40 **Commentor Name:** Jansson Leif **Type:** Technical

Description:
Delete lines 34 to 35

Reason:
This is a mixture of access technologies and services.

Resolution: rejected

Notes:

Page/Line: 3 / 36 **Item Number:** 41 **Commentor Name:** Jansson Leif **Type:** Technical

Description:
Add one more competing technology: Fiber

Reason:
To add this market segment.

Resolution: accepted

Notes:

Page/Line: 6 / 29 **Item Number:** 42 **Commentor Name:** Jansson Leif **Type:** Technical
Description:
Delete lines 29 to 32
Reason:
This text is to fluffy.
Resolution: accepted-duplicate

Notes:

Page/Line: 7 / 0 **Item Number:** 50 **Commentor Name:** Jansson Leif **Type:** Technical
Description:
Change to mandatory.
Reason:
This is important for a good BWA system.
Editor's note: Rejected because the change request does not specify what to change
Resolution: rejected

Notes:

Page/Line: 10 / 13 **Item Number:** 43 **Commentor Name:** Jansson Leif **Type:** Editorial
Description:
What is DAV and DAVIC ?
Reason:
Specify.
Editor's note: Rejected because no specific change suggested
Resolution: rejected

Notes:

Page/Line: 10 / 22 **Item Number:** 44 **Commentor Name:** Jansson Leif **Type:** Technical
Description:
Delete "local LOS obstruction"
Reason:
The target performance levels shall be higher.
Resolution: rejected

Notes: text deleted

Page/Line: 11 / 44 **Item Number:** 45 **Commentor Name:** Jansson Leif **Type:** Technical
Description:
Delete the whole sentence "In a telephony network" through "300 ms [15][17][75]"
Reason:
This is not requirement on a BWA system.
Resolution: accepted

Notes:

Page/Line: 12 / 7 **Item Number:** 46 **Commentor Name:** Jansson Leif **Type:** Editorial
Description:
What is "transit delay"?
Reason:
Specify.
Editor's note: Rejected because no specific change suggested
Resolution: rejected

Notes:

Page/Line: 15 / 12 **Item Number:** 47 **Commentor Name:** Jansson Leif **Type:** Editorial
Description:
Replace "face" with "case".
Editor's note: Rejected because "face" is fine
Reason:
Editorial.
Resolution: rejected

Notes:

Page/Line: 0 / 0 **Item Number:** 74 **Commentor Name:** Kasslin Mika **Type:** Editorial
Description:
Delete rows M9, M10 and M12.
Reason:
These statements don't occur in the text.
Editor's note: Rejected because the editor will revise this appendix
Resolution: rejected

Notes:

Page/Line: 1 / 4 **Item Number:** 51 **Commentor Name:** Kasslin Mika **Type:** Technical
Description:
Replace sentence "The BWA" through "services" with "The BWA system shall support all services (real time and non real time) in a packet oriented manner."
Reason:
Clearly defined requirement that clarifies the initial sentence.
Resolution: accepted-duplicate

Notes:

Page/Line: 1 / 11 **Item Number:** 52 **Commentor Name:** Kasslin Mika **Type:** Technical
Description:
Delete lines 11 to 15
Reason:
Contradictory with "MUST comply" in next paragraph. Statement on revisions and changes is obvious and fluff.
Resolution: accepted

Notes:

Page/Line: 3 / 36 **Item Number:** 53 **Commentor Name:** Kasslin Mika **Type:** Technical
Description:
Add fifth competing technology: Native Ethernet
Reason:
To add this market segment.
Resolution: rejected

Notes:

Page/Line: 4 / 11 **Item Number:** 54 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Replace 3.5 with 4.2

Reason:
Fits CEPT recommendations and covers all the bands.

Resolution: accepted-modified

Notes: Next version of document may need to have more precise ranges called-out.

Page/Line: 4 / 13 **Item Number:** 55 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Replace "near line-of-sight" with "non line-of-sight"

Reason:
Non line-of-sight operation is also possible, not restricted to near line-of-sight.

Resolution: accepted-modified

Notes:

Page/Line: 4 / 13 **Item Number:** 56 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Replace "require" with "benefits from"

Reason:
There is no direct need for NLOS operation, though signal attenuation from partial obstructions is still low enough to be technically compensated for (=solution for NLOS operation). This feature improves the system performance.

Resolution: accepted

Notes:

Page/Line: 4 / 19 **Item Number:** 57 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Insert after conditions. "Figure <as inserted below> shows an example deployment configuration. The base station can serve individual buildings, multiple subscribers in multiple buildings (using multiple radio links), or multiple subscribers in a single building by use of a single radio link and further in-building distribution systems. It shows the use of a repeater and route diversity in order to provide coverage in difficult areas.
This does not imply the use of these features in all systems. However it does require the capability to implement them if required, and leave them out if not."

Reason:
This figure displays the typical deployment configuration of HIPERACCESS and is more comprehensive than the currently shown figure, which depicts a specific scenario. This should also be our basis in the interest of convergence of standards

Resolution: conferred to group

Notes: Tabled to submitters to rework the diagram and associated text.

Page/Line: 5 / 0 **Item Number:** 58 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Replace figure 2-1 with figure 4-3 from TR 101 177 V1.1.1 (1998-05) by ETSI/BRAN/HIPERACCESS

Reason:
This figure displays the typical deployment configuration of HIPERACCESS and is more comprehensive than the currently shown figure, which depicts a specific scenario. This should also be our basis in the interest of convergence of standards

Resolution: conferred to group

Notes: tabled; submitters will rework for next round of comments

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Page/Line: 5 / 6 **Item Number:** 59 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete lines 6 to 12: "The base station" through "possible."

Reason:
The antenna solution is the manufacturer's and providers turf, not to be mandated by 802.16.3.

Resolution: accepted-modified

Notes:

Page/Line: 5 / 13 **Item Number:** 60 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete the beginning of the sentence starting with "Since the base" through "oriented". Start the sentence with "Multiple base station radios will likely,".

Reason:
The antenna solution is the manufacturer's and providers turf, not to be mandated by 802.16.3.

Resolution: rejected

Notes: withdrawn

Page/Line: 5 / 23 **Item Number:** 61 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete lines 23 to 26: "Also" through "document."

Reason:
The decision on an IDU/ODU vs. an ODU solution itself is entirely outside the scope of this document.
Editor's note: Rejected because of duplicate comment from Kostas

Resolution: rejected

Notes:

Page/Line: 6 / 0 **Item Number:** 62 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
In Figure 2-2 delete the drawings inside the SS and BS boxes and delete the terms IDU and ODU.

Reason:
The decision on an IDU/ODU vs. an ODU solution itself is entirely outside the scope of this document.

Resolution: conferred to group

Notes:

Page/Line: 6 / 26 **Item Number:** 63 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete lines 26 through 29: "In the" through "contention-oriented bus," and start the sentence with "802.16.3 protocols".

Reason:
This text is both fluff (who cares about similarities) and the poor arbitrary usage of the word channel might be mis-interpreted as implicitly mandating FDD.

Resolution: accepted-duplicate

Notes:

Page/Line: 7 / 15 **Item Number:** 64 **Commentor Name:** Kasslin Mika **Type:** Editorial

Description:
Replace "telephony" with "voice services" throughout the whole section.

Reason:
Consistence throughout the section

Resolution: accepted

Notes:

Page/Line: 7 / 18 **Item Number:** 65 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete lines 18 to 21: "The consumer" through "services)"

Reason:
The statement does not provide any valuable information.

Resolution: unresolved

Notes:

Page/Line: 7 / 25 **Item Number:** 66 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete the entire subsection 3.1.1.1

Reason:
These statements here add nothing but fluff. The requirements for telephony services are sufficiently dealt with in the QoS section. The statement before this subsection already refers there, so there's no need to repeat that here without any hard values.

Resolution: unresolved

Notes:

Page/Line: 9 / 0 **Item Number:** 67 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete both DAVIC and DIGITAL AUTO/VIDEO from the right column in the figure.
Editor's note: Rejected because of duplicate comment from Goldhammer

Reason:
These titles and references are misleading and irrelevant. It is impossible to guarantee services if a parallel Video stream gobbles up bandwidth without consulting the MAC. Digital audio/ video should run on top of the MAC, not alongside.

Resolution: rejected

Notes:

Page/Line: 10 / 6 **Item Number:** 68 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete lines 6 to 8: "Note that" through "layer."
Editor's note: Rejected because of duplicate comment from Kostas

Reason:
ARQ shouldn't be ruled out already in this phase.

Resolution: rejected

Notes:

Page/Line: 10 / 12 **Item Number:** 69 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete " and DAV" in the sentence starting on line 11: "Like the"

Reason:
DAV (Digital Audio/Video?) should run on top of the MAC, any MAC convergence layer does not have to deal with its needs.

Resolution: accepted

Notes:

Page/Line: 11 / 3 **Item Number:** 70 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Replace 99.94% with 99.95%

Reason:
More commonly used value

Resolution: accepted-modified

Notes:

Page/Line: 11 / 5 **Item Number:** 71 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete sentence "Note that" through "a year."

Reason:
Irrelevant information.

Resolution: accepted

Notes:

Page/Line: 11 / 27 **Item Number:** 72 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Insert after "see section)." "In a multicell environment intercell interference can not be neglected as an outage increasing factor."

Reason:
There should be a requirement providing that some level of interference resilience is supported.

Resolution: accepted

Notes:

Page/Line: 12 / 26 **Item Number:** 73 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete bullet points on lines 26 and 27.

Reason:
Implementation issue, leave to manufacturers and providers (range determined by number of sectors and antenna type etc.)

Resolution: accepted-modified

Notes:

Page/Line: 22 / 0 **Item Number:** 75 **Commentor Name:** Kasslin Mika **Type:** Editorial

Description:
Delete the last incomplete sentence "This" through "provisioning"

Reason:
Useless and misleading sentence

Resolution: unresolved

Notes:

Page/Line: 22 / 0 **Item Number:** 76 **Commentor Name:** Kasslin Mika **Type:** Editorial

Description:
Delete "Protocol" till end of text

Reason:
Incomplete and irrelevant sentence

Resolution: unresolved

Notes:

Page/Line: 25 / 0 **Item Number:** 77 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Replace 99.94% with 99.95%

Reason:
Consistency with the text in section 5.4 if the corresponding earlier comment is approved.

Resolution: unresolved

Notes:

Page/Line: 26 / 0 **Item Number:** 78 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete the following bullet points:
¸ "- Radio range (shaped sector radius)"
¸ "- Width of the sector"

Reason:
Consistency with the text in section 5.7 if the corresponding earlier comment is approved.

Resolution: unresolved

Notes:

Page/Line: 1 / 4 **Item Number:** 79 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
The BWA system is intended to support a wide-range of transport capabilities (e.g., frame relay, ATM, IP, and Ethernet 802.11) that in turn can support a wide-range of services (e.g., telephone, data, and video)

Reason:
To explicitly state the reason for this BWA

Resolution: accepted-modified

Notes:

Page/Line: 1 / 4 **Item Number:** 85 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
The BWA system is intended to support a wide-range of transport capabilities (e.g., frame relay, ATM, IP, and Ethernet 802.11) that in turn can support a wide-range of services (e.g., telephone, data, and video)

Reason:
To explicitly state the reason for this BWA

Resolution: accepted-modified

Notes:

Page/Line: 1 / 5 **Item Number:** 80 **Commentor Name:** Kostas Demosthenes **Type:** Editorial

Description:
Deletion of sentence starting at end of this line

Reason:
Sentence is redundant with second Paragraph.

Resolution: rejected

Notes: withdrawn

Page/Line: 1 / 17 **Item Number:** 81 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Change second sentence on this line to read "These functional requirements, with possible future amendments, are to be used to identify the constrains in the development of the 802.16.3 air interface standard. Such terms as SHALL, MUST and SHOULD as used herein are to indicate the relative importance of a requirement."

Reason:
Third Paragraph Second Sentence is not consistent with the Second Paragraph. Second Paragraph states that this document provides "guidelines" and the third Paragraph states that "The requirements with future amendments, are binding"... the air interface standard MUST comply... with the functional requirements".

Resolution: rejected

Notes:

Page/Line: 1 / 46 **Item Number:** 82 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description:
Change sentence to read, "So, "Functional Requirements" describes the 802.16.3 MAC and PHY Layer functions and system parameters that need be specified so that the BWA system can support a wide-range of transport capabilities (e.g., Frame Relay, ATM, and Ethernet 802.11), that in turn can support a wide-range of Services (e.g., telephone, data, and video)
Reason:
To explicitly state the reason for this BWA
Resolution: rejected
Notes: withdrawn

Page/Line: 2 / 17 **Item Number:** 83 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description:
Change sentence to read "The 802.16.3 air interface interoperability SHALL interwork with existing local, metropolitan, and wide area network standards."
Reason:
To more explicitly state the reason for this Air interface interworking capabilities.
In a requirements document the emphasis of being part of a family of standards is misleading.
Resolution: rejected
Notes:

Page/Line: 2 / 18 **Item Number:** 84 **Commentor Name:** Kostas Demosthenes **Type:** Editorial
Description:
As an example, Figure 1 shows how the 802.16.3 PHY and MAC layers relate to some other 802 standards.
Reason:
To Clarify that this is only and example: i.e., the 802.16.3 PHY and MAC will relate to others.
Resolution: rejected
Notes:

Page/Line: 2 / 22 **Item Number:** 86 **Commentor Name:** Kostas Demosthenes **Type:** Editorial
Description:
Change title of Figure 1 to
Figure 1: Relationship between 802.16.3 and other 802 Protocol Standards(...
Reason:
To avoid misunderstanding of the phrase "other Protocol Standards"
Resolution: accepted-modified
Notes: change figure instead

Page/Line: 2 / 24 **Item Number:** 87 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description:
Insert a Figure 0. That depicts the how the 802.16.3 MAC and PHY Layers relate to the supported upper layer protocols (e.g., Frame Relay, ATM, 802.11); i.e., 802.16.3 Protocol Reference Model
Reason:
To explicitly depict the more general application of the PHY and MAC being developed and not just the family.
Resolution: rejected
Notes:

Page/Line: 3 / 36 **Item Number:** 88 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description:
Insert a bullet "Point-to-Point ATM access"
Reason:
To include an important broadband access alternative
Resolution: rejected
Notes: withdrawn

Page/Line: 5 / 22 **Item Number:** 89 **Commentor Name:** Kostas Demosthenes **Type:** Editorial
Description:
The ending of second sentence should read,
"... envisaged, but the 802.16.3 protocols focus on the Air Interface shown in the simplified model of Figure 2.2."
Reason:
Clarify
Resolution: accepted
Notes:

Page/Line: 5 / 23 **Item Number:** 90 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description:
Replace sentence starting on this line, and the sentence following with "Also shown in Figure 2.2 are typical configurations of the Base Station (BS) and the Subscriber Station (SS), that include the functions of "Indoor Units"(IU) and "Outdoor Units" (OU). However, the physical separation and protocols between OU and IU are beyond the scope of this document."
Reason:
Makes meaning clearer
Resolution: accepted
Notes:

Page/Line: 5 / 26 **Item Number:** 91 **Commentor Name:** Kostas Demosthenes **Type:** Editorial
Description:
Change the sentence starting in the middle of this line and the sentence that follows with,

"An additional function to this System Reference Model that should be considered is Security. The BS Network Interface (BNI) and the SS Network Interface (SNI) are also shown."
Reason:
Facilitate reading
Resolution: conferred to group
Notes:

Page/Line: 6 / 4 **Item Number:** 92 **Commentor Name:** Kostas Demosthenes **Type:** Editorial

Description:
Delete
"which are sometimes called interworking functions(IWFs),

Reason:
Incorrect phrase. Interfaces are no interworking functions.

Resolution: conferred to group

Notes:

Page/Line: 6 / 22 **Item Number:** 93 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Change sentence to read,
"The Subscriber Stations may identify the bandwidth needed to achieve the required QoS (see section) , but the BS has the "smarts" to allocate bandwidth."

Reason:
Improve English

Resolution: accepted-modified

Notes:

Page/Line: 6 / 26 **Item Number:** 94 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Replace the paragraph starting on this line with

In the downstream direction, within a channel, the network topology is similar to a contentionless broadcast bus, since the transmissions are transmitted by the base station, and more than one Subscribe Station can share a downstream channel. In the upstream direction the topology is similar to a contention-oriented bus, and thus 802.16.3 protocols MUST provide the means to multiplex traffic from multiple SS, resolve contention, and allocate bandwidth in the upstream direction.

Reason:
To simplify reading

Resolution: accepted-modified

Notes: Amended with deletions.

Page/Line: 6 / 34 **Item Number:** 95 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Change paragraph under Section 3 to read,
This section describes some services that an 802.16.3 system SHOULD support.
In what follows both the target markets and their associated bearer services are described.

Reason:
To streamline the meaning. Original paragraph found confusing

Resolution: accepted-modified

Notes:

Page/Line: 7 / 5 **Item Number:** 96 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Replace this paragraph with
"This Section describes typical services supported by an 802.16.3 system. In this document services refer to the services provided by the MAC layer to the layer above it. The term services is also used in this document as an adjective to qualify the type of networks that interface with 802.16.3-based BWA networks(12)(54)."

Reason:
To streamline the meaning. Original paragraph found confusing

Resolution: rejected

Notes:

Page/Line: 7 / 11 **Item Number:** 97 **Commentor Name:** Kostas Demosthenes **Type:** Editorial

Description:
Delete sentence starting on this line

Reason:
Not clear of its meaning

Resolution: accepted

Notes:

Page/Line: 7 / 18 **Item Number:** 98 **Commentor Name:** Kostas Demosthenes **Type:** Editorial

Description:
Delete lines 18 through 24

Reason:
Unnecessary and confusing verbiage

Resolution: accepted-modified

Notes:

Page/Line: 7 / 34 **Item Number:** 99 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
-second bullet, should be modified to read,

"Delay - as apparent to the end user, the amount of delay and delay variation
MUST be kept within acceptable limits. Again the specific amount of delay and delay variation acceptable is based on the QoS sold to the end user."

Reason:
To include delay variation and improve English

Resolution: unresolved

Notes:

Page/Line: 8 / 9 **Item Number:** 100 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Insert before this line Section
"3.1.1.1.1.1 ATM Protocol Services

The 802.16.3 system MUST transport constant bit rate(CBR), non-real-time variable-bit-rate(non-rt VBR), real-time variable-bit-rate(rt VBR) and ABR ATM services."

Reason:
Important MAN based services

Resolution: rejected

Notes:

Page/Line: 8 / 13 **Item Number:** 101 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Delete this sentence

Reason:
No basis given for prejudging now other services' requirements

Resolution: rejected

Notes:

Page/Line: 8 / 16 **Item Number:** 102 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Delete lines 17 through 33 of this Section

Reason:
This is informational text on a specific user or the 802.16.3. PHY and MAC and thus does not belong in this requirements document

Resolution: accepted-modified

Notes:

Page/Line: 10 / 6 **Item Number:** 103 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
sentence beginning on this line should read,

"Note that the function of the MAC layer can include error correction by retransmission, or Automatic Repeat Request(ARQ)."

Reason:
In the below 11GHz bands ARQ should be a MAC requirement as it very effectively meets the
needs of many applications.

Resolution: accepted-modified

Notes:

Page/Line: 10 / 7 **Item Number:** 104 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Delete sentence starting on this line

Reason:
MAC needs to support ARQ

Resolution: accepted-modified

Notes:

Page/Line: 10 / 18 **Item Number:** 105 **Commentor Name:** Kostas Demosthenes **Type:** Editorial

Description:
Sentence should read
"Specifying protocols that can maintain a specified/mandatory performance levels in the face of rapidly changing channel characteristics(e.g., due to multipath) is a problem that the 802.16.3 work group has to consider."

Reason:
Clarification

Resolution: accepted

Notes:

Page/Line: 10 / 28 **Item Number:** 106 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Change sentence to read

"The 802.16.3 protocols SHOULD allow for increases in capacity and performance."

Reason:
Clarification

Resolution: rejected

Notes:

Page/Line: 14 / 20 **Item Number:** 107 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Change Sentence to read
"The 802.16.3 protocols SHALL define a set of parameters to meet the required
QoS parameters for the supported services (e.g., ATM CBR Services and IP) "

Reason:
To include the support of additional services

Resolution: unresolved

Notes:

Page/Line: 14 / 32 **Item Number:** 108 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
The last sentence parenthesis should read
(such as those required for IP- and ATM-based services)

Reason:
To include the support of additional services to IP

Resolution: unresolved

Notes:

Page/Line: 0 / 1 **Item Number:** 109 **Commentor Name:** Petry Brian **Type:** Technical

Description:
Change title to "Functional Requirements for the 802.16.3 Interoperability Standard"; make other changes throughout document as necessary.

Reason:
A simple, meaningful title that won't change as revisions are made and the document is completed.

Resolution: accepted

Notes:

Page/Line: 1 / 4 **Item Number:** 110 **Commentor Name:** Satapathy Durga **Type:** Technical

Description:
The BWA system is intended to provide packet, cell and other transport services.

Reason:
To expand the scope of BWA standard.

Resolution: rejected

Notes:

Page/Line: 6 / 4 **Item Number:** 111 **Commentor Name:** Satapathy Durga **Type:** Editorial

Description:
Replace
"which are sometimes called interworking functions(IWFs),"
by
"and related interworking functions (IWFs),"

Reason:
Need to address both interfaces and any interworking functions.

Resolution: conferred to group

Notes:

Page/Line: 7 / 17 **Item Number:** 112 **Commentor Name:** Satapathy Durga **Type:** Technical

Description:
Change sentence beginning in line 17 to:
"The access transport will be packet based or cell based."

Reason:
See no need to limit transport of voice services to packet based.

Resolution: rejected

Notes:

Page/Line: 7 / 29 **Item Number:** 113 **Commentor Name:** Satapathy Durga **Type:** Editorial

Description:
Delete the sentence
"Voice connectivity will be provided by a VOIP protocol and may involve low rate vocoding."

Reason:
See no need to limit voice services to VOIP.

Resolution: unresolved

Notes:

Page/Line: 8 / 9 **Item Number:** 114 **Commentor Name:** Satapathy Durga **Type:** Editorial

Description:
Insert
"3.1.2 ATM Services

The 802.16.3 system MUST provide efficient transport for CBR, VBR (rt and nrt),
UBR and ABR services."

Reason:
To ensure 802.16.3 standard supports ATM-based BWA solutions.
Editor's note: rejected because of duplicate comment from Kostas

Resolution: rejected

Notes:

Page/Line: 8 / 9 **Item Number:** 115 **Commentor Name:** Satapathy Durga **Type:** Editorial

Description:
Change section number from 3.1.2 to 3.1.3

Reason:
Above insertion
Editor's note: rejected because editor will do cleanup/numbering/etc.

Resolution: rejected

Notes:

Page/Line: 8 / 11 **Item Number:** 116 **Commentor Name:** Satapathy Durga **Type:** Editorial

Description:
Change section number from 3.1.3 to 3.1.4
Editor's note: rejected because editor will do cleanup/numbering/etc.

Reason:
Above insertion

Resolution: rejected

Notes:

Page/Line: 1 / 5 **Item Number:** 117 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Insert after "packet and other services" the words "to individual residential, SME, SOHO and tele-commuter end-user locations.

Reason:
To more fully reflect the purpose of the PAR and to differentiate 802.16.3 from other 802 air interfaces.

Resolution: accepted-modified

Notes:

Page/Line: 1 / 44 **Item Number:** 118 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Replace "at least one subscriber station" with " a large number of end-user locations"

Reason:
This is the defining characteristic of 802.16.3 FWA/BWA solutions.
Also, the word "subscriber" implies a billable public service whereas some end user services will be corporate extranet, VPN or private network extensions, not "billable" in the conventional sense.
Also, the word Station implies a single customer termination whereas most of the likely applications will be multi-line / multi-service.
The air interface delivers an access "pipe" to a location over which services can be delivered to one or more end-user ports or terminal points.

Resolution: rejected

Notes:

Page/Line: 3 / 36 **Item Number:** 119 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Insert new paragraph :

"The critical parameters for serving these markets using wireless access technology is the combination of coverage / capacity factors that affects access cost per user, the deployability, maintainability and product costs associated with the customer premise installation, and the spectrum efficiency / reuse for economically serving the required number of customer locations with a minimum number of base station locations and backhaul routes "

Reason:
To capture the essence of the key challenge for a commercially viable / successful BWA solution for the 802.16.3 target markets.

Resolution: accepted

Notes:

Page/Line: 3 / 38 **Item Number:** 120 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Insert "Telecommuters" between "SOHO" and "small businesses" .
Proposal : To invite contributions on definitions of these terms and associated traffic model assumptions, demographic density / distibution criteria and typical clutter / propagation implications.

Reason:
These have specific traffic / service / revenue characteristics which need to be taken into account when determining the capacity, efficiency, availability and other characteristics of the air interface.

Resolution: rejected

Notes: Proposal accepted (results in call-for-contribution)

Page/Line: 3 / 38 **Item Number:** 121 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
replace second / subsequent sentences with "In accordance with ITU-R definitions,
FWA (and hence BWA) provides access to one or more (public and private) core networks, rather than forming and end-to-end communication system.
802.16.3 systems serve fixed location customers, but who might be geographically
or re-locatable or even nomadic (but not mobile).

Reason:
To align the requirement with established ITU and FWA terminolology / practice.

Resolution: accepted

Notes:

Page/Line: 4 / 8 **Item Number:** 122 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Replace "at least one subscriber station" with " a large number of end-user locations"

Reason:
This is the defining characteristic of 802.16.3 FWA/BWA solutions.
Also, the word "subscriber" implies a billable public service whereas some end user services will be corporate extranet, VPN or private network extensions, not "billable" in the conventional sense. Also, the word Station implies a single customer termination whereas most of the likely applications will be multi-line / multi-service.
The air interface delivers an access "pipe" to a location over which services can be delivered to one or more end-user ports or terminal points.

Resolution: rejected

Notes:

Page/Line: 4 / 17 **Item Number:** 123 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Replace "NLOS" with "Non Line-of-Sight, Near Line-of-Sight and Line-of-Sight

Reason:
The commercial objective (already achieved by some conventional FWA systems)
is Non Line-of-Sight, especially in shorter range urban / cluttered environments.
Near LOS and pure LOS is commercially tolerable / preferable in suburban and rural deployments where range or propagation through foliage is more critical.
The air interface must be able to cope with all three types of deployment, simultaneously if possible.

Resolution: rejected

Notes: withdrawn

Page/Line: 4 / 18 **Item Number:** 124 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Insert "regulatory" in front of "and atmospheric conditions".

Reason:
Regulatory restrictions on bandwidth, power, coexistence, sharing and other licensing criteria can significantly affect the air interface, and can vary from country to country.

Resolution: accepted

Notes:

Page/Line: 5 / 7 **Item Number:** 125 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Insert "or adaptive array (spacial reuse)" between "shaped sector" and "antenna"

Reason:
Spatial reuse will be an important technical; possibility for meeting the challenging spectral efficiency and economic deployablity criteria for 802.16.3 target markets.

Resolution: accepted

Notes:

Page/Line: 5 / 9 **Item Number:** 127 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Replace sentence with " Omnidirectional antenna are often used as an initial (low capacity, low cost) base-station in competitive overlay or rural deployments,
but might be enhanced later to sectored configurations to icrease capacity or range as customer penetration / loadingsor distances dictate. It might also be necessary to reconfigure coverage from a single "Super-cell" to a multi-cell coverage plan at some point in the life of a base station, while minimising the number and cost of customer units wjich need re-pointing or re-installation.

Reason:
802.16.3 deployments are nothing like conventional mobile or LMDS-like coverage / deployment plans, and special measures must be taken to ensure the lowest cost configuration at differing / evolving points in the evolution of the access network and its associated businesses.

Resolution: rejected

Notes: associated text was deleted.

Page/Line: 5 / 10 **Item Number:** 126 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Delete "highly"

Reason:
FWA customer antennae are typically 15 - 30 degree beamwidth to assist with low cost / complexity deployment processes, especially with a esirable capabil;ity for customer installability or technicians with minimal training / skills.

Resolution: rejected

Notes: associated text deleted

Page/Line: 5 / 13 **Item Number:** 128 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Replace "are" with "might be"

Reason:
Omni-Directional and adaptive array antenna confugrations are equally probable
in future FWA/BWA deployments, for economic and deployablity / capacity management reasons.

Resolution: accepted

Notes:

Page/Line: 5 / 14 **Item Number:** 129 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Insert "might" between "and" and "even".

Reason:
This is implementation dependent, and can change.

Resolution: accepted

Notes:

Page/Line: 6 / 12 **Item Number:** 130 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Amend Figure 2-2 to show :

a) Local Power within the SS box, supplying the IDU and ODU.
b) Multiple ODU's per IDU at the BS

c) Remote IDU's from the BS IDU. These Remote units / antenna would be located
away from the BS site to improve coverage / economics in range or capacity limited deployments.

d) The BS IDU might not be l;ocated at the BS - it might be at another location (which might be the same as the public switch / router)

e) The switch / router might not be public - it might be a private / corporate edge device which might, or might not have public network gateways / connections
behind it.

Reason:
To reflect economic / service characetristics of the 802.16.3 target markets and existing FWA practice / experience in many countries.

Resolution: conferred to group

Notes:

Page/Line: 6 / 26 **Item Number:** 131 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
a) Delete "within a channel" (Line 26) and "more than one subscriber could share a downstrean channel" (Lines 27,28)

b) Delete "if subscriber stations share a channel" (Lines 28,29)

c) Change "bandwidth" to "capacity" (Line 31)

Reason:
In FWA/BWA for the 802.16.3 target markets, customer units are always in contention for capacity / bandwidth (not channels in the frequency or radio sense). Not all downstream methods are "broadcast" - beamforming techniques can address individual customers for improved simultaaneous frequency reuse within the same cell.

Resolution: accepted-modified

Notes:

Page/Line: 7 / 21 **Item Number:** 132 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Change to "(supporting FAX and analog modem services)"

Reason:
Customers will continue to have / use analog modems over any presented "voice" port / circuit. The air interface might need to dynamically allocate approporiate resources to accommodate the modem transmissions at up to V.90 rates.

Resolution: rejected

Notes: text deleted

Page/Line: 8 / 10 **Item Number:** 133 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Add "including always on, ad hoc and on-demand communication in either or both
directions "

Reason:
This ha simportant connotations for non-circuit oriented concentrated air interface access systems, and will be increasing important to support alerts, telemetry and appliance / control functions in residential and small business environments.

Resolution: accepted-modified

Notes:

Page/Line: 9 / 21 **Item Number:** 134 **Commentor Name:** Trinkwon David **Type:** Editorial

Description:
Figure 4-1 : Change "Auto / Video" to "Audio / Video"

Change "DAVIC" to "DAV TC"

Reason:
Typo

Resolution: rejected

Notes: part of figure deleted

Page/Line: 10 / 3 **Item Number:** 135 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Replace "In the downstrean direction ? more than one subscriber station" with

"Since customer units will contend for capacity to/from one or more base stations,

Reason:
To reflect the deployment, capacity management and economic characteristics for the 802.16.3 target markets.

Resolution: accepted

Notes:

Page/Line: 10 / 26 **Item Number:** 136 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Add "in particular, the activities being carried out within the Joint Rapporteur Group (JRG) 8A/9B (with references etc)

Reason:
To draw specific attention to this important group.

Resolution: accepted-modified

Notes:

Page/Line: 10 / 31 **Item Number:** 144 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Change "2 to 10Mb/s" to "up to 5Mb/s in either or both directions"

Reason:
PAR used 2-10Mb/s to denote the aggregate (shared) channel rate. This part of the FRD refers to the capacity delivered to an individual residential or SME customer location, and is meant to be comparable to DSL or cable modems in realistic wireline deployments

Resolution: accepted-modified

Notes:

Page/Line: 10 / 32 **Item Number:** 137 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Change "subscriber station" to "residential or SME customer location"

Reason:
Clarification

Resolution: rejected

Notes:

Page/Line: 11 / 21 **Item Number:** 138 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Change "foliage" to "reflections and foliage"

Reason:
Completeness

Resolution: accepted

Notes:

Page/Line: 11 / 35 **Item Number:** 139 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
BER should be changed from 10e-9 to 10e-6 or 10e-7 in accordance with ITU FWA recs (see JRG8a/9B inputs)

Reason:
10e-9 is typical; for feeder links and trunk facilities for T1-T3 CBR pipes. It is not typical / necessary / economic for distribution / access connections to residential; / SME customers, or packet-based links / services.

Resolution: accepted-modified

Notes: significant debate

Page/Line: 12 / 13 **Item Number:** 145 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Change jitter specification to 20mS

Reason:
More realistic requirement for certain forms of implementation.

Resolution: conferred to group

Notes: Referred to QoS group

Page/Line: 12 / 23 **Item Number:** 140 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Delete 'channel"

Reason:
802.16.3 links might not be "channel" oriented (e.g OFDM or CDMA)

Resolution: accepted

Notes:

Page/Line: 12 / 26 **Item Number:** 141 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Replace Bullets with :

Bullet : Radio Range, width of sector(s) and/or adaptive array parameters
Bullet : Upstream / downstream link and user rates / asymmetry/ dynamics
Bullet : Types of Duplex (FDD, TDD, Paired TDD)
Bullet : Types of Modulation / Multiple Access (DS,SS etc, TDMA, CDMA, FDMA,
SDMA or combinations)

Reason:
To differentiate from traditional 802.16.1 concepts and embrace traditional plus emerging FWA practices / experiences.

Resolution: rejected

Notes:

Page/Line: 13 / 21 **Item Number:** 146 **Commentor Name:** Trinkwon David **Type:** Technical

Description:

In Table 1 :

a) All one-way delays should be 20ms

b) Delete circuit-based parameters - rest of FRD stipulates packet based (and maybe cell based) services only.

c) Change BER 10 - 8 on last line to 10 - 6

d) Add note that MOS refers to 4.5 scale (not 5.0 scale)

Reason:
More realistic requirements.
Editor's note: (d) rejected because no specific change specified

Resolution: rejected

Notes:

Page/Line: 15 / 3 **Item Number:** 147 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Replace "CMIP/CMIS" with SNMP/CORBA

Reason:
More appropriate for Access networks / environments, especially for residential and SME markets

Resolution: unresolved

Notes:

Page/Line: 15 / 15 **Item Number:** 142 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
This needs further elaboration / discussion / contribution. Power control loops are probably fundamental for most FWA / customer unit applications and it must
not be possible to exceed a maximum permitted power level. Also, if a SU is "shut down" it must be possible to re-enable it (without visiting the customer location) to diagnose and fix / dispatch etc. There are also functions necessary
to handle Primary / secondary power conditions, software downloads/ upgrades,
perfotmance and error statistics, and to re-ptogram the allowed base station / channel lists for a given SU - or all Sus in a given area / subset of criteria.

Reason:
Expand the requirement to better match the needs of the 802.16.3 target markets.

Resolution: unresolved

Notes:

Page/Line: 15 / 27 **Item Number:** 143 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Resolution:** unresolved
Needs further expansion / contribution to handle installation, service suspend/resume, relocation, geolocation and anti-cloning processes.
To better match the needs for the 802.16.3 target markets.

Notes:

Page/Line: 17 / 8 **Item Number:** 148 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Resolution:** unresolved
Delete 2nd, 3rd and 4th bullets relating to 802 conformance.
Not relevant / practicable for FWA/BWA applications for residential and SME markets.

Notes:

Page/Line: 2 / 7 **Item Number:** 149 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** rejected
Replace "service" by "service capabilities" in lines 7 and 8 (two places)
To generalize the field of application of the 802.16.3 systems. We need to focus on services capabilities so
that operators may build services according to their own market requirements.
Editor's note: Rejected because the change could not be located

Notes:

Page/Line: 2 / 10 **Item Number:** 150 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** accepted-modified
Replace "802.16.3 systems provide" by "802.16.3 systems will be able to provide"
Grammar

Notes:

Page/Line: 2 / 15 **Item Number:** 151 **Commentor Name:** Wachira Muya **Type:** Technical
Description: **Reason:** **Resolution:** rejected
Add a new sentence: "As far as possible, these should be common across the 802.16 systems"
Commonality improves efficiency.
**Editor's note: OK to use "SHOULD?"

Notes:

Page/Line: 3 / 30 **Item Number:** 152 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** accepted
Replace "similar to wired broadband access technologies such as.." by "similar to those of certain
wired access technologies such as..".
It is the markets that are similar

Notes:

Page/Line: 3 / 42 **Item Number:** 153 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** accepted
Replace "fixed position customers" by "fixed position customer stations"
To improve the text

Notes:

Page/Line: 4 / 7 **Item Number:** 154 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** rejected
Replace "in section, an 802.16.3" with "in section 1.1, an 802.16.3"

Other missing section numbers on page 5 line 27 (see section 8); page 6 line 23 (see section 6);
page 7 line 2 (section 2), line 24 (Section 6) page 9 (in section 3.1); page 11 line 3 (see section
5.5), line 27 (section 5.7); page 12 line 15 (section 6.2); page 13 (section 3?)
Missing section numbers.
Editor's note: Editor will verify section numbering, etc.

Notes:

Page/Line: 4 / 22 **Item Number:** 155 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** accepted-modified
Replace "the standard *in* more generally applicable...1 GHz to 10 GHz" with "the standard
is more generally applicable... 2 GHz to 11 GHz"
Correct typo and maintain consistency on the upper frequency limit.

Notes: Sentence was deleted.

Page/Line: 4 / 23 **Item Number:** 156 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** accepted-modified
Replace "The standard is" with "Equipment based on this standard is". Clarification.

Notes:

Page/Line: 4 / 24 **Item Number:** 157 **Commentor Name:** Wachira Muya **Type:** Technical
Description: **Reason:** **Resolution:** rejected
Replace "require near line-of-sight (NLOS)" by "will be required to support both line-of-sight (LOS)
and non line-of-sight" (NLOS)" To permit universal applicability of the standard.

Notes:

Page/Line: 4 / 26 **Item Number:** 158 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** accepted
Replace "systems" with "system" Grammar.

Notes:

Page/Line: 5 / 4 **Item Number:** 159 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** rejected
Replace "concern for" by "the interest of" To improve the text
Editor's note: Rejected because text is fine

Notes:

Page/Line: 5 / 5 **Item Number:** 160 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** accepted
Replace "subscribers" by "subscriber stations" To be consistent. The system consists of stations.

Notes:

Page/Line: 5 / 7 **Item Number:** 161 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** rejected
Instead of "radiating" would "transmitting" or "emitting" be more appropriate here? To use a better term
Editor's note: Rejected because no specific change specified

Notes:

Page/Line: 5 / 12 **Item Number:** 162 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** rejected
Replace "possible" by "supported" To be precise.

Notes: associated text was deleted

Page/Line: 5 / 23 **Item Number:** 163 **Commentor Name:** Wachira Muya **Type:** Technical
Description: **Reason:** **Resolution:** accepted-modified
Remove the sentence starting on line 23, and also the following sentence. From a standards perspective, there is no need to differentiate between outdoor and indoor units. That is an
implementation issue. At the subscriber end, the antenna could even be indoors, and at the BTS end,
everything except the antenna might be indoors.

Notes: The whole section was temporarily deleted, with comments during next round expected to re-work the section contents.

Page/Line: 5 / 27 **Item Number:** 164 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** rejected
Replace "(see section)." With "(see section 8)." Missing section number.
Rejected. Editor will clean up section references

Notes:

Page/Line: 6 / 1 **Item Number:** 165 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Resolution:** conferred to group
Replace "residential networks" by "residential (customer premises) networks" To further clarify.

Notes:

Page/Line: 6 / 8 **Item Number:** 166 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
Replace "(see section)." With "(see section 3)."

Reason:
Missing section number.
Editor's note: Editor will clean up section references

Resolution: rejected

Notes:

Page/Line: 6 / 12 **Item Number:** 167 **Commentor Name:** Wachira Muya **Type:** Technical

Description:
In the figure, remove the reference to IDU and ODU.

Reason:
From a standards perspective, there is no need to differentiate between outdoor and indoor units. That is an implementation issue.

Resolution: conferred to group

Notes:

Page/Line: 6 / 33 **Item Number:** 169 **Commentor Name:** Wachira Muya **Type:** Technical

Description:
Propose to replace this section by:

Section 3: Service Capabilities

An 802.16.3 system SHALL support fixed wireless access to IP networks at bit rates of up to 10
Mbit/s. Voice services will be carried as "voice over IP."

Reason:
To generalize the field of application of the 802.16.3 systems. We need to focus on services capabilities so that operators may build services according to their own market requirements.

Resolution: rejected

Notes:

Page/Line: 6 / 35 **Item Number:** 168 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
delete "bearer"

Reason:
The section on bearer services from original document was deleted.

Resolution: accepted-modified

Notes:

Page/Line: 10 / 31 **Item Number:** 170 **Commentor Name:** Wachira Muya **Type:** Technical

Description:
Replace "provide the peak capacity from 2-10 Mbps " to "provide the capacity from 1-10 Mbps "

Reason:
To accommodate the narrower channel bandwidths that might be required to work into realistic frequency re-use plans in areas where spectrum is limited, e.g. MMDS operators with only a few channels, 3.5 GHz band where 802.16.3 system must share 25 MHz with legacy circuit-switched FWA systems.

Resolution: accepted-modified

Notes: first part accepted/modified; 2nd part covered by another edit

---

Page/Line: 10 / 33 **Item Number:** 171 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
Replace "delivered bandwidth " to "delivered capacity"

Reason:
Capacity is the correct term for bits/sec.
Editor's note: Rejected because of duplicate comment from Goldhammer

Resolution: rejected

Notes:

Page/Line: 11 / 33 **Item Number:** 172 **Commentor Name:** Wachira Muya **Type:** Technical

Description:
Replace "from about 99.9 To 99.94% " with "from about 99.9 To 99.99% "

Reason:
To be consistent with market requirements and technology capabilities.

Resolution: accepted-duplicate

Notes:

Page/Line: 13 / 21 **Item Number:** 173 **Commentor Name:** Wachira Muya **Type:** Technical

Description:
In Table 1 column 4 row 7 replace "10 ms " with "100 ms "

Reason:
Delay of 10 ms for packet-oriented connections is too short. VoIP can tolerate up to about 150 ms delay, as long as frame error rate is below about 1%.

Resolution: unresolved

Notes:

Page/Line: 17 / 0 **Item Number:** 179 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
Insert "Techniques for" before "Separation"

Reason:
To indicate that TDD is not the separation itself as implied in the draft text.
Rejected because editor will revise the requirements appendices

Resolution: rejected

Notes:

Page/Line: 17 / 0 **Item Number:** 175 **Commentor Name:** Wachira Muya **Type:** Technical

Description:
Once the revision of the main text is complete, Tables 2 to 4 should be revised to correspond with
the changes made in the document.

Reason:
Consistency with the text in section 1 to 9.
Rejected because editor will revise the requirements appendices

Resolution: rejected

Notes:

Page/Line: 17 / 0 **Item Number:** 177 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
Replace "according to negotiated user requirements" with "according to dynamically negotiated
user requirements and/or network availability"

Reason:
To introduce the concept of dynamism in the definition and also indicate that network availability
could also trigger/cause/impact this variability.
Rejected because editor will revise the requirements appendices

Resolution: rejected

Notes:

Page/Line: 17 / 0 **Item Number:** 178 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
Insert "Techniques for" before "Separation"

Reason:
To indicate that FDD is not the separation itself as implied in the draft text.
Rejected because editor will revise the requirements appendices

Resolution: rejected

Notes:

Page/Line: 17 / 21 **Item Number:** 176 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
Replace the term "bandwidth " with " capacity"

Reason:
Referring to capacity as "bandwith" is colloquial usage, and we should use the correct terms - bandwidth
expressed in Hz and capacity in bit/s or bps.

Resolution: unresolved

Notes:

Page/Line: 17 / 22 **Item Number:** 174 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
The Appendices should be numbered
A. Requirements Summary
A.1 Mandatory
A.2 Recommended (R)
A.3 Optional (O)
B. Vocabulary of Terms
B.1 Definitions
B.2 Acronyms and Abbreviations
Appropriate page numbering should be used.

Reason:
Ease of reference.
Rejected because editor will clean up numbering and references

Resolution: rejected

Notes:

Comments by status/page #/line#

Page/Line: 0 / 1 **Item Number:** 109 **Commentor Name:** Petry Brian **Type:** Technical
Description: **Reason:** **Status:** accepted
Change title to "Functional Requirements for the 802.16.3 Interoperability Standard"; make other changes throughout document as necessary.
A simple, meaningful title that won't change as revisions are made and the document is completed.

Notes:

Page/Line: 1 / 11 **Item Number:** 52 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** accepted
Delete lines 11 to 15
Contradictory with "MUST comply" in next paragraph. Statement on revisions and changes is obvious and fluff.

Notes:

Page/Line: 1 / 45 **Item Number:** 6 **Commentor Name:** Freedman Avi **Type:** Editorial
Description: **Reason:** **Status:** accepted
Delete comma after "networks"
Grammar

Notes:

Page/Line: 3 / 30 **Item Number:** 152 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** accepted
Replace "similar to wired broadband access technologies such as.." by "similar to those of certain
wired access technologies such as..".
It is the markets that are similar

Notes:

Page/Line: 3 / 36 **Item Number:** 119 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** accepted
Insert new paragraph :

"The critical parameters for serving these markets using wireless access technology is the combination of coverage / capacity factors that affects access cost per user, the deployability, maintainability and product costs associated with the customer premise installation, and the spectrum efficiency / reuse for economically serving the required number of customer locations with a minimum number of base station locations and backhaul routes "
To capture the essence of the key challenge for a commercially viable / successful BWA solution for the 802.16.3 target markets.

Notes:

Page/Line: 3 / 36 **Item Number:** 41 **Commentor Name:** Jansson Leif **Type:** Technical
Description: **Reason:** **Status:** accepted
Add one more competing technology: Fiber
To add this market segment.

Notes:

Page/Line: 3 / 38 **Item Number:** 121 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** accepted
replace second / subsequent sentences with "In accordance with ITU-R definitions,
FWA (and hence BWA) provides access to one or more (public and private) core networks, rather than forming and end-to-end communication system.
802.16.3 systems serve fixed location customers, but who might be geographically
or re-locatable or even nomadic (but not mobile).
To align the requirement with established ITU and FWA terminolology / practice.

Notes:

Page/Line: 3 / 42 **Item Number:** 153 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** accepted
Replace "fixed position customers" by "fixed position customer stations"
To improve the text

Notes:

Page/Line: 4 / 7 **Item Number:** 9 **Commentor Name:** Freedman Avi **Type:** Editorial
Description: **Reason:** **Status:** accepted
Insert space between "802.16.3" and "MAC"
Typo

Notes:

Page/Line: 4 / 11 **Item Number:** 10 **Commentor Name:** Freedman Avi **Type:** Editorial
Description: **Reason:** **Status:** accepted
Insert space between "to" and "3.5"
Typo

Notes:

Page/Line: 4 / 13 **Item Number:** 56 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** accepted
Replace "require" with "benefits from"
There is no direct need for NLOS operation, though signal attenuation from partial obstructions is still low enough to be technically compensated for (=solution for NLOS operation). This feature improves the system performance.

Notes:

Page/Line: 4 / 17 **Item Number:** 2 **Commentor Name:** Abu-Dayya Adnan **Type:** Technical
Description: **Reason:** **Status:** accepted
Replace "NLOS blockage" with "channel characteristics"
A more meaningful metric in link design.

Notes:

Page/Line: 4 / 18 **Item Number:** 124 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** accepted
Insert "regulatory" in front of "and atmospheric conditions".
Regulatory restrictions on bandwidth, power, coexistence, sharing and other licensing criteria can significantly affect the air interface, and can vary from country to country.

Notes:

Page/Line: 4 / 26 **Item Number:** 158 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** accepted
Replace "systems" with "system"
Grammar.

Notes:

Page/Line: 5 / 5 **Item Number:** 160 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** accepted
Replace "subscribers" by "subscriber stations"
To be consistent. The system consists of stations.

Notes:

Page/Line: 5 / 7 **Item Number:** 125 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** accepted
Insert "or adaptive array (spacial reuse)" between "shaped sector" and "antenna"
Spatial reuse will be an important technical; possibility for meeting the challenging spectral efficiency and economic deployablity criteria for 802.16.3 target markets.

Notes:

Page/Line: 5 / 13 **Item Number:** 128 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** accepted
Replace "are" with "might be"
Omni-Directional and adaptive array antenna confugrations are equally probable
in future FWA/BWA deployments, for economic and deployablity / capacity management reasons.

Notes:

Page/Line: 5 / 14 **Item Number:** 129 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** accepted
Insert "might" between "and" and "even".
This is implementation dependent, and can change.

Notes:

Page/Line: 5 / 22 **Item Number:** 89 **Commentor Name:** Kostas Demosthenes **Type:** Editorial
Description: **Reason:** **Status:** accepted
The ending of second sentence should read,
"... envisaged, but the 802.16.3 protocols focus on the Air Interface shown in the simplified model of Figure 2.2."
Clarify

Notes:

Page/Line: 5 / 23 **Item Number:** 90 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** accepted
Replace sentence starting on this line, and the sentence following with "Also shown in Figure 2.2 are typical configurations of the Base Station (BS) and the Subscriber Station (SS), that include the functions of "Indoor Units"(IU) and "Outdoor Units" (OU). However, the physical separation and protocols between OU and IU are beyond the scope of this document."
Makes meaning clearer

Notes:

Page/Line: 7 / 11 **Item Number:** 97 **Commentor Name:** Kostas Demosthenes **Type:** Editorial
Description: **Reason:** **Status:** accepted
Delete sentence starting on this line
Not clear of its meaning

Notes:

Page/Line: 7 / 15 **Item Number:** 64 **Commentor Name:** Kasslin Mika **Type:** Editorial
Description: **Reason:** **Status:** accepted
Replace "telephony" with "voice services" throughout the whole section.
Consistence throughout the section

Notes:

Page/Line: 9 / 0 **Item Number:** 31 **Commentor Name:** Goldhammer Marianna **Type:** Technical
Description: **Reason:** **Status:** accepted
Delete right column, avoiding the MAC layer for DAVIC
Video is a service that should be supported exactly in the same way as other services

Notes:

Page/Line: 9 / 45 **Item Number:** 32 **Commentor Name:** Goldhammer Marianna **Type:** Technical
Description: **Reason:** **Status:** accepted
Insert: The IEEE 802.16.3 protocol stack SHALL be the same for all the supported services.
It is no reason to provide special means to the VIDEO service, which is not the main application and generally the allocated bandwidth size will not permit video service offering

Notes:

Page/Line: 10 / 3 **Item Number:** 135 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** accepted
Replace "In the downstrean direction ? more than one subscriber station" with

"Since customer units will contend for capacity to/from one or more base stations,
To reflect the deployment, capacity management and economic characteristics for the 802.16.3 target markets.

Notes:

Page/Line: 10 / 12 **Item Number:** 69 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** accepted
Delete " and DAV" in the sentence starting on line 11: "Like the"
DAV (Digital Audio/Video?) should run on top of the MAC, any MAC convergence layer does not have to deal with its needs.

Notes:

Page/Line: 10 / 18 **Item Number:** 105 **Commentor Name:** Kostas Demosthenes **Type:** Editorial
Description: **Reason:** **Status:** accepted
Sentence should read "Specifying protocols that can maintain a specified/mandatory performance levels in the face of rapidly changing channel characteristics(e.g., due to multipath) is a problem that the 802.16.3 work group has to consider."
Clarification

Notes:

Page/Line: 10 / 21 **Item Number:** 4 **Commentor Name:** Abu-Dayya Adnan **Type:** Technical
Description: **Reason:** **Status:** accepted
Delete "The 802.16.3 system capacity ...will also be difficult"
Not a very meaningful sentence; serves no purpose.

Notes:

Page/Line: 11 / 5 **Item Number:** 71 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** accepted
Delete sentence "Note that" through "a year."
Irrelevant information.

Notes:

Page/Line: 11 / 21 **Item Number:** 138 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** accepted
Change "foliage" to "reflections and foliage"
Completeness

Notes:

Page/Line: 11 / 27 **Item Number:** 72 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** accepted
Insert after "see section)." "In a multicell environment intercell interference can not be neglected as an outage increasing factor."
There should be a requirement providing that some level of interference resilience is supported.

Notes:

Page/Line: 11 / 44 **Item Number:** 45 **Commentor Name:** Jansson Leif **Type:** Technical
Description: **Reason:** **Status:** accepted
Delete the whole sentence "In a telephony network" through "300 ms [15][17][75]"
This is not requirement on a BWA system.

Notes:

Page/Line: 12 / 23 **Item Number:** 140 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** accepted
Delete 'channel"
802.16.3 links might not be "channel" oriented (e.g OFDM or CDMA)

Notes:

Page/Line: 1 / 4 **Item Number:** 51 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** accepted-duplicate
Replace sentence "The BWA" through "services" with "The BWA system shall support all services (real time and non real time) in a packet oriented manner."
Clearly defined requirement that clarifies the initial sentence.

Notes:

Page/Line: 6 / 26 **Item Number:** 63 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** accepted-duplicate
Delete lines 26 through 29: "In the" through "contention-oriented bus," and start the sentence with "802.16.3 protocols".
This text is both fluff (who cares about similarities) and the poor arbitrary usage of the word channel might be mis-interpreted as implicitly mandating FDD.

Notes:

Page/Line: 6 / 29 **Item Number:** 42 **Commentor Name:** Jansson Leif **Type:** Technical
Description: **Reason:** **Status:** accepted-duplicate
Delete lines 29 to 32
This text is to fluffy.

Notes:

Page/Line: 11 / 33 **Item Number:** 172 **Commentor Name:** Wachira Muya **Type:** Technical
Description: **Reason:** **Status:** accepted-duplicate
Replace "from about 99.9 To 99.94% " with "from about 99.9 To 99.99% "
To be consistent with market requirements and technology capabilities.

Notes:

Page/Line: 1 / 4 **Item Number:** 79 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
The BWA system is intended to support a wide-range of transport capabilities (e.g., frame relay, ATM, IP, and Ethernet 802.11) that in turn can support a wide-range of services (e.g., telephone, data, and video)
To explicitly state the reason for this BWA

Notes:

Page/Line: 1 / 4 **Item Number:** 39 **Commentor Name:** Jansson Leif **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
Replace sentence "The BWA" through "services" with "The BWA system shall support all services (real time and non real time) in a packet oriented manner."
Clearly defined requirement that clarifies meaning of the sentence.

Notes:

Page/Line: 1 / 4 **Item Number:** 85 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
The BWA system is intended to support a wide-range of transport capabilities (e.g., frame relay, ATM, IP, and Ethernet 802.11) that in turn can support a wide-range of services (e.g., telephone, data, and video)
To explicitly state the reason for this BWA

Notes:

Page/Line: 1 / 5 **Item Number:** 20 **Commentor Name:** Goldhammer Marianna **Type:** Editorial
Description: **Reason:** **Status:** accepted-modified
Insert "data" after "packet"
clarification

Notes:

Page/Line: 1 / 5 **Item Number:** 117 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
Insert after "packet and other services" the words "to individual residential, SME, SOHO and tele-commuter end-user locations.
To more fully reflect the purpose of the PAR and to differentiate 802.16.3 from other 802 air interfaces.

Notes:

Page/Line: 2 / 10 **Item Number:** 150 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** accepted-modified
Replace "802.16.3 systems provide" by "802.16.3 systems will be able to provide"
Grammar

Notes:

Page/Line: 2 / 22 **Item Number:** 86 **Commentor Name:** Kostas Demosthenes **Type:** Editorial
Description: **Reason:** **Status:** accepted-modified
Change title of Figure 1 to
Figure 1: Relationship between 802.16.3 and other 802 Protocol Standards(...
To avoid misunderstanding of the phrase "other Protocol Standards"

Notes: change figure instead

Page/Line: 4 / 11 **Item Number:** 54 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
Replace 3.5 with 4.2
Fits CEPT recommendations and covers all the bands.

Notes: Next version of document may need to have more precise ranges called-out.

Page/Line: 4 / 13 **Item Number:** 55 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
Replace "near line-of-sight" with "non line-of-sight"
Non line-of-sight operation is also possible, not restricted to near line-of-sight.

Notes:

Page/Line: 4 / 22 **Item Number:** 155 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** accepted-modified
Replace "the standard *in* more generally applicable...1 GHz to 10 GHz" with "the standard
is more generally applicable... 2 GHz to 11 GHz"
Correct typo and maintain consistency on the upper frequency limit.

Notes: Sentence was deleted.

Page/Line: 4 / 23 **Item Number:** 156 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** accepted-modified
Replace "The standard is" with "Equipment based on this standard is".
Clarification.

Notes:

Page/Line: 5 / 6 **Item Number:** 59 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
Delete lines 6 to 12: "The base station" through "possible."
The antenna solution is the manufacturer's and providers turf, not to be mandated by 802.16.3.

Notes:

Page/Line: 5 / 23 **Item Number:** 163 **Commentor Name:** Wachira Muya **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
Remove the sentence starting on line 23, and also the following sentence.
From a standards perspective, there is no need to differentiate between outdoor and indoor units. That is an
implementation issue. At the subscriber end, the antenna could even be indoors, and at the BTS end,
everything except the antenna might be indoors.

Notes: The whole section was temporarily deleted, with comments during next round expected to re-work the section contents.

Page/Line: 6 / 22 **Item Number:** 93 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
Change sentence to read,
"The Subscriber Stations may identify the bandwidth needed to achieve the required QoS (see section) , but the BS has the "smarts" to allocate bandwidth."
Improve English

Notes:

Page/Line: 6 / 26 **Item Number:** 131 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
a) Delete "within a channel" (Line 26) and "more than one subscriber could share a downstrean channel" (Lines 27,28)

b) Delete "if subscriber stations share a channel" (Lines 28,29)

c) Change "bandwidth" to "capacity" (Line 31)

In FWA/BWA for the 802.16.3 target markets, customer units are always in contention for capacity / bandwidth (not channels in the frequency or radio sense). Not all downstream methods are "broadcast" - beamforming techniques can address individual customers for improved simultaaneous frequency reuse within the same cell.

Notes:

Page/Line: 6 / 26 **Item Number:** 94 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
Replace the paragraph starting on this line with

In the downstream direction, within a channel, the network topology is similar to a contentionless broadcast bus, since the transmissions are transmitted by the base station, and more than one Subscribe Station can share a downstream channel. In the upstream direction the topology is similar to a contention-oriented bus, and thus 802.16.3 protocols MUST provide the means to multiplex traffic from multiple SS, resolve contention, and allocate bandwidth in the upstream direction.

To simplify reading

Notes: Amended with deletions.

Page/Line: 6 / 34 **Item Number:** 95 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
Change paragraph under Section 3 to read,
This section describes some services that an 802.16.3 system SHOULD support.
In what follows both the target markets and their associated bearer services are described.

To streamline the meaning. Original paragraph found confusing

Notes:

Page/Line: 6 / 35 **Item Number:** 168 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** accepted-modified
delete "bearer"

The section on bearer services from original document was deleted.

Notes:

Page/Line: 7 / 10 **Item Number:** 24 **Commentor Name:** Goldhammer Marianna **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
Change the phrase starting with "The MAC and PHY protocols" with:"The MAC
and PHY protocols will not have explicit support for each and every service, due to the fact that generic data streams SHALL be used for transport. The MAC and PHY protocols SHALL provide for QoS service specific support. Service specific QoS meaning is very low BER for data services, delay for real time services, etc.

Clarification

Notes:

Page/Line: 7 / 18 **Item Number:** 98 **Commentor Name:** Kostas Demosthenes **Type:** Editorial
Description: **Reason:** **Status:** accepted-modified
Delete lines 18 through 24

Unnecessary and confusing verbiage

Notes:

Page/Line: 8 / 10 **Item Number:** 133 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** accepted-modified
Add "including always on, ad hoc and on-demand communication in either or both
directions "

This ha simportant connotations for non-circuit oriented concentrated air interface access systems, and will be increasing important to support alerts, telemetry and appliance / control functions in residential and small business environments.

Notes:

Page/Line: 8 / 16 **Item Number:** 102 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Delete lines 17 through 33 of this Section

Reason:
This is informational text on a specific user or the 802.16.3. PHY and MAC and thus does not belong in this requirements document

Status: accepted-modified

Notes:

Page/Line: 10 / 6 **Item Number:** 103 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
sentence beginning on this line should read,

"Note that the function of the MAC layer can include error correction by retransmission, or Automatic Repeat Request(ARQ)."

Reason:
In the below 11GHz bands ARQ should be a MAC requirement as it very effectively meets the
needs of many applications.

Status: accepted-modified

Notes:

Page/Line: 10 / 7 **Item Number:** 104 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Delete sentence starting on this line

Reason:
MAC needs to support ARQ

Status: accepted-modified

Notes:

Page/Line: 10 / 26 **Item Number:** 136 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Add "in particular, the activities being carried out within the Joint Rapporteur Group (JRG) 8A/9B (with references etc)

Reason:
To draw specific attention to this important group.

Status: accepted-modified

Notes:

Page/Line: 10 / 31 **Item Number:** 170 **Commentor Name:** Wachira Muya **Type:** Technical

Description:
Replace "provide the peak capacity from 2-10 Mbps " to "provide the capacity from 1-10 Mbps "

Reason:
To accommodate the narrower channel bandwidths that might be required to work into realistic frequency
re-use plans in areas where spectrum is limited, e.g. MMDS operators with only a few channels, 3.5 GHz
band where 802.16.3 system must share 25 MHz with legacy circuit-switched FWA systems.

Status: accepted-modified

Notes: first part accepted/modified; 2nd part covered by another edit

---

Page/Line: 10 / 31 **Item Number:** 144 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Change "2 to 10Mb/s" to "up to 5Mb/s in either or both directions"

Reason:
PAR used 2-10Mb/s to denote the aggregate (shared) channel rate. This part of the FRD refers to the capacity delivered to an individual residential or SME customer location, and is meant to be comparable to DSL or cable modems in realistic wireline deployments

Status: accepted-modified

Notes:

Page/Line: 11 / 3 **Item Number:** 70 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Replace 99.94% with 99.95%

Reason:
More commonly used value

Status: accepted-modified

Notes:

Page/Line: 11 / 35 **Item Number:** 139 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
BER should be changed from 10e-9 to 10e-6 or 10e-7 in accordance with ITU FWA recs (see JRG8a/9B inputs)

Reason:
10e-9 is typical; for feeder links and trunk facilities for T1-T3 CBR pipes. It is not typical / necessary / economic for distribution / access connections to residential; / SME customers, or packet-based links / services.

Status: accepted-modified

Notes: significant debate

Page/Line: 12 / 26 **Item Number:** 73 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete bullet points on lines 26 and 27.

Reason:
Implementation issue, leave to manufacturers and providers
(range determined by number of sectors and antenna type etc.)

Status: accepted-modified

Notes:

Page/Line: 4 / 19 **Item Number:** 57 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Insert after conditions. "Figure <as inserted below> shows an example deployment configuration. The base station can serve individual buildings, multiple subscribers in multiple buildings (using multiple radio links), or multiple subscribers in a single building by use of a single radio link and further in-building distribution systems. It shows the use of a repeater and route diversity in order to provide coverage in difficult areas.
This does not imply the use of these features in all systems. However it does require the capability to implement them if required, and leave them out if not."

Reason:
This figure displays the typical deployment configuration of HIPERACCESS and is more comprehensive than the currently shown figure, which depicts a specific scenario. This should also be our basis in the interest of convergence of standards

Status: conferred to group

Notes: Tabled to submitters to rework the diagram and associated text.

Page/Line: 5 / 0 **Item Number:** 58 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Replace figure 2-1 with figure 4-3 from TR 101 177 V1.1.1 (1998-05) by ETSI/BRAN/HIPERACCESS

Reason:
This figure displays the typical deployment configuration of HIPERACCESS and is more comprehensive than the currently shown figure, which depicts a specific scenario. This should also be our basis in the interest of convergence of standards

Status: conferred to group

Notes: tabled; submitters will rework for next round of comments

---

Page/Line: 5 / 26 **Item Number:** 91 **Commentor Name:** Kostas Demosthenes **Type:** Editorial

Description:
Change the sentence starting in the middle of this line and the sentence that follows with,

"An additional function to this System Reference Model that should be considered is Security. The BS Network Interface (BNI) and the SS Network Interface (SNI) are also shown."

Reason:
Facilitate reading

Status: conferred to group

Notes:

Page/Line: 6 / 0 **Item Number:** 23 **Commentor Name:** Goldhammer Marianna **Type:** Editorial

Description:
Change "voice, data and video" to "data, voice and video"

Reason:
Consistence throughout the document

Status: conferred to group

Notes:

Page/Line: 6 / 0 **Item Number:** 62 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
In Figure 2-2 delete the drawings inside the SS and BS boxes and delete the terms IDU and ODU.

Reason:
The decision on an IDU/ODU vs. an ODU solution itself is entirely outside the scope of this document.

Status: conferred to group

Notes:

Page/Line: 6 / 1 **Item Number:** 165 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
Replace "residential networks" by "residential (customer premises) networks"

Reason:
To further clarify.

Status: conferred to group

Notes:

Page/Line: 6 / 1 **Item Number:** 22 **Commentor Name:** Goldhammer Marianna **Type:** Editorial

Description:
Change" voice, data and video" to "packet data, voice and in some cases video"

Reason:
Make a correlation between the market size for each service and the order

Status: conferred to group

Notes:

Page/Line: 6 / 1 **Item Number:** 11 **Commentor Name:** Freedman Avi **Type:** Editorial

Description:
Change "A base" to "Base"

Reason:
Refer to "interfaces"

Status: conferred to group

Notes:

Page/Line: 6 / 4 **Item Number:** 92 **Commentor Name:** Kostas Demosthenes **Type:** Editorial

Description:
Delete
"which are sometimes called interworking functions(IWFs),

Reason:
Incorrect phrase. Interfaces are no interworking functions.

Status: conferred to group

Notes:

Page/Line: 6 / 4 **Item Number:** 111 **Commentor Name:** Satapathy Durga **Type:** Editorial
Description:
Replace
"which are sometimes called interworking functions(IWFs),"
by
"and related interworking functions (IWFs),"
Reason:
Need to address both interfaces and any interworking functions.
Status: conferred to group

Notes:

Page/Line: 6 / 11 **Item Number:** 12 **Commentor Name:** Freedman Avi **Type:** Editorial
Description:
Remove space in "comm on"
Reason:
Typo
Status: conferred to group

Notes:

Page/Line: 6 / 12 **Item Number:** 167 **Commentor Name:** Wachira Muya **Type:** Technical
Description:
In the figure, remove the reference to IDU and ODU.
Reason:
From a standards perspective, there is no need to differentiate between outdoor and indoor units. That is an implementation issue.
Status: conferred to group

Notes:

Page/Line: 6 / 12 **Item Number:** 13 **Commentor Name:** Freedman Avi **Type:** Technical
Description:
Add optional Central Control Station and more base station to diagram
Reason:
The diagram may be adequate for 802.16.1 but it is too simplistic for 802.16.3, where there is hihg influence between stations. A diagram similar to the ETSI TM4 refernce diagram should be used.
Status: conferred to group

Notes:

Page/Line: 6 / 12 **Item Number:** 130 **Commentor Name:** Trinkwon David **Type:** Technical
Description:
Amend Figure 2-2 to show :

a) Local Power within the SS box, supplying the IDU and ODU.
b) Multiple ODU's per IDU at the BS

c) Remote IDU's from the BS IDU. These Remote units / antenna would be located
away from the BS site to improve coverage / economics in range or capacity limited deployments.

d) The BS IDU might not be l;ocated at the BS - it might be at another location (which might be the same as the public switch / router)

e) The switch / router might not be public - it might be a private / corporate edge device which might, or might not have public network gateways / connections
behind it.

Reason:
To reflect economic / service characetristics of the 802.16.3 target markets and existing FWA practice / experience in many countries.
Status: conferred to group

Notes:

Page/Line: 12 / 4 **Item Number:** 37 **Commentor Name:** Goldhammer Marianna **Type:** Technical
Description:
Delete from row 4 to row 14
Reason:
Telephony will be delivered using VoIP, and the requirements here are relevant only for classic 64kb/s voice.
Status: conferred to group

Notes: Not actually deleted, but the paragraphs reworked into the QoS table. Referred to QoS ad-hoc group

---

Page/Line: 12 / 13 **Item Number:** 145 **Commentor Name:** Trinkwon David **Type:** Technical
Description:
Change jitter specification to 20mS
Reason:
More realistic requirement for certain forms of implementation.
Status: conferred to group

Notes: Referred to QoS group

Page/Line: 0 / 0 **Item Number:** 49 **Commentor Name:** Jansson Leif **Type:** Technical
Description:
Delete R17.
Reason:
This is not requirement on a BWA system.
Rejected because editor will re-work this appendix by scanning the document body to verify all requirements
Status: rejected

Notes:

Page/Line: 0 / 0 **Item Number:** 48 **Commentor Name:** Jansson Leif **Type:** Editorial
Description: **Reason:** **Status:** rejected
The section numbering is wrong.
Editorial.
Rejected because editor will clean up the requirements summary appendix

Notes:

Page/Line: 0 / 0 **Item Number:** 74 **Commentor Name:** Kasslin Mika **Type:** Editorial
Description: **Reason:** **Status:** rejected
Delete rows M9, M10 and M12.
These statements don't occur in the text.
Editor's note: Rejected because the editor will revise this appendix

Notes:

Page/Line: 1 / 4 **Item Number:** 5 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Status:** rejected
Change "Broadband Wireless Access (BWA)" to "Wideband Wireless Access (WWA)" all over the document.
To distinguish 802.16.3 activity from 802.16.1

Notes:

Page/Line: 1 / 4 **Item Number:** 110 **Commentor Name:** Satapathy Durga **Type:** Technical
Description: **Reason:** **Status:** rejected
The BWA system is intended to provide packet, cell and other transport services.
To expand the scope of BWA standard.

Notes:

Page/Line: 1 / 5 **Item Number:** 80 **Commentor Name:** Kostas Demosthenes **Type:** Editorial
Description: **Reason:** **Status:** rejected
Deletion of sentence starting at end of this line
Sentence is redundant with second Paragraph.

Notes: withdrawn

Page/Line: 1 / 17 **Item Number:** 81 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** rejected
Change second sentence on this line to read "These functional requirements, with possible future amendments, are to be used to identify the constrains in the development of the 802.16.3 air interface standard. Such terms as SHALL, MUST and SHOULD as used herein are to indicate the relative importance of a requirement."
Third Paragraph Second Sentence is not consistent with the Second Paragraph. Second Paragraph states that this document provides "guidelines" and the third Paragraph states that "The requirements with future amendments, are binding"... the air interface standard MUST comply... with the functional requirements".

Notes:

Page/Line: 1 / 44 **Item Number:** 118 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** rejected
Replace "at least one subscriber station" with " a large number of end-user locations"
This is the defining characteristic of 802.16.3 FWA/BWA solutions.
Also, the word "subscriber" implies a billable public service whereas some end user services will be corporate extranet, VPN or private network extensions, not "billable" in the conventional sense.
Also, the word Station implies a single customer termination whereas most of the likely applications will be multi-line / multi-service.
The air interface delivers an access "pipe" to a location over which services can be delivered to one or more end-user ports or terminal points.

Notes:

Page/Line: 1 / 46 **Item Number:** 82 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** rejected
Change sentence to read, "So, "Functional Requirements" describes the 802.16.3 MAC and PHY Layer functions and system parameters that need be specified so that the BWA system can support a wide-range of transport capabilities (e.g., Frame Relay, ATM, and Ethernet 802.11), that in turn can support a wide-range of Services (e.g., telephone, data, and video)
To explicitly state the reason for this BWA

Notes: withdrawn

Page/Line: 2 / 7 **Item Number:** 149 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** rejected
Replace "service" by "service capabilities" in lines 7 and 8 (two places)
To generalize the field of application of the 802.16.3 systems. We need to focus on services capabilities so
that operators may build services according to their own market requirements.
Editor's note: Rejected because the change could not be located

Notes:

Page/Line: 2 / 15 **Item Number:** 151 **Commentor Name:** Wachira Muya **Type:** Technical
Description: **Reason:** **Status:** rejected
Add a new sentence: "As far as possible, these should be common across the 802.16 systems"
Commonality improves efficiency.
**Editor's note: OK to use "SHOULD?"

Notes:

Page/Line: 2 / 17 **Item Number:** 83 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** rejected
Change sentence to read "The 802.16.3 air interface interoperability SHALL interwork with existing local, metropolitan, and wide area network standards."
To more explicitly state the reason for this Air interface interworking capabilities.
In a requirements document the emphasis of being part of a family of standards is misleading.

Notes:

Page/Line: 2 / 18 **Item Number:** 84 **Commentor Name:** Kostas Demosthenes **Type:** Editorial
Description: **Reason:** **Status:** rejected
As an example, Figure 1 shows how the 802.16.3 PHY and MAC layers relate to some other 802 standards.
To Clarify that this is only and example: i.e., the 802.16.3 PHY and MAC will relate to others.

Notes:

Page/Line: 2 / 24 **Item Number:** 87 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** rejected
Insert a Figure 0. That depicts the how the 802.16.3 MAC and PHY Layers relate to the supported upper layer protocols (e.g., Frame Relay, ATM, 802.11); i.e., 802.16.3 Protocol Reference Model
To explicitly depict the more general application of the PHY and MAC being developed and not just the family.

Notes:

Page/Line: 3 / 29 **Item Number:** 7 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Status:** rejected
Exchange the paragraph between lines 29 and 35 (starting with "A broadband wireless access" with the next paragraph (between lines 37 and 42, starting with "The target markets to be addressed...)
The definition of the markets is more important than the examples of possible services.

Notes:

Page/Line: 3 / 30 **Item Number:** 8 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Status:** rejected
Change "markets" to "services"
The technologies provide services and are not special to markets.

Notes:

Page/Line: 3 / 34 **Item Number:** 40 **Commentor Name:** Jansson Leif **Type:** Technical
Description: **Reason:** **Status:** rejected
Delete lines 34 to 35
This is a mixture of access technologies and services.

Notes:

Page/Line: 3 / 36 **Item Number:** 53 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** rejected
Add fifth competing technology: Native Ethernet
To add this market segment.

Notes:

Page/Line: 3 / 36 **Item Number:** 88 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** rejected
Insert a bullet "Point-to-Point ATM access"
To include an important broadband access alternative

Notes: withdrawn

Page/Line: 3 / 38 **Item Number:** 21 **Commentor Name:** Goldhammer Marianna **Type:** Technical
Description: **Reason:** **Status:** rejected
Insert "telecommuters" after "SOHO"
To add this market segment

Notes:

Page/Line: 3 / 38 **Item Number:** 120 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** rejected
Insert "Telecommuters" between "SOHO" and "small businesses" .
Proposal : To invite contributions on definitions of these terms and associated traffic model assumptions, demographic density / distibution criteria and typical clutter / propagation implications.

These have specific traffic / service / revenue characteristics which need to be taken into account when determining the capacity, efficiency, availability and other characteristics of the air interface.

Notes: Proposal accepted (results in call-for-contribution)

Page/Line: 4 / 7 **Item Number:** 154 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** rejected
Replace "in section, an 802.16.3" with "in section 1.1, an 802.16.3"

Other missing section numbers on page 5 line 27 (see section 8); page 6 line 23 (see section 6);
page 7 line 2 (section 2), line 24 (Section 6) page 9 (in section 3.1); page 11 line 3 (see section
5.5), line 27 (section 5.7); page 12 line 15 (section 6.2); page 13 (section 3?)

Missing section numbers.
Editor's note: Editor will verify section numbering, etc.

Notes:

Page/Line: 4 / 8 **Item Number:** 122 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** rejected
Replace "at least one subscriber station" with " a large number of end-user locations"

This is the defining characteristic of 802.16.3 FWA/BWA solutions. Also, the word "subscriber" implies a billable public service whereas some end user services will be corporate extranet, VPN or private network extensions, not "billable" in the conventional sense. Also, the word Station implies a single customer termination whereas most of the likely applications will be multi-line / multi-service.
The air interface delivers an access "pipe" to a location over which services can be delivered to one or more end-user ports or terminal points.

Notes:

Page/Line: 4 / 11 **Item Number:** 1 **Commentor Name:** Abu-Dayya Adnan **Type:** Technical
Description: **Reason:** **Status:** rejected
Replace "from 1 GHz to 10 GHz" with "2 GHz to 11 GHz"
Editor's note: Rejected because change is already there

To be consistent with the PAR.

Notes:

Page/Line: 4 / 17 **Item Number:** 123 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** rejected
Replace "NLOS" with "Non Line-of-Sight, Near Line-of-Sight and Line-of-Sight

The commercial objective (already achieved by some conventional FWA systems)
is Non Line-of-Sight, especially in shorter range urban / cluttered environments.
Near LOS and pure LOS is commercially tolerable / preferable in suburban and rural deployments where range or propagation through foliage is more critical.
The air interface must be able to cope with all three types of deployment, simultaneously if possible.

Notes: withdrawn

Page/Line: 4 / 24 **Item Number:** 157 **Commentor Name:** Wachira Muya **Type:** Technical
Description: **Reason:** **Status:** rejected
Replace "require near line-of-sight (NLOS)" by "will be required to support both line-of-sight (LOS)
and non line-of-sight" (NLOS)"

To permit universal applicability of the standard.

Notes:

Page/Line: 5 / 4 **Item Number:** 159 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** rejected
Replace "concern for" by "the interest of"
Editor's note: Rejected because text is fine

To improve the text

Notes:

Page/Line: 5 / 7 **Item Number:** 161 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
Instead of "radiating" would "transmitting" or "emitting" be more appropriate here?

Reason:
To use a better term
Editor's note: Rejected because no specific change specified

Status: rejected

Notes:

Page/Line: 5 / 9 **Item Number:** 127 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Replace sentence with " Omnidirectional antenna are often used as an initial (low capacity, low cost) base-station in competitive overlay or rural deployments,
but might be enhanced later to sectored configurations to icrease capacity or range as customer penetration / loadingsor distances dictate. It might also be necessary to reconfigure coverage from a single "Super-cell" to a multi-cell coverage plan at some point in the life of a base station, while minimising the number and cost of customer units wjich need re-pointing or re-installation.

Reason:
802.16.3 deployments are nothing like conventional mobile or LMDS-like coverage / deployment plans, and special measures must be taken to ensure the lowest cost configuration at differing / evolving points in the evolution of the access network and its associated businesses.

Status: rejected

Notes: associated text was deleted.

Page/Line: 5 / 10 **Item Number:** 126 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Delete "highly"

Reason:
FWA customer antennae are typically 15 - 30 degree beamwidth to assist with low cost / complexity deployment processes, especially with a esirable capabil;ity for customer installability or technicians with minimal training / skills.

Status: rejected

Notes: associated text deleted

Page/Line: 5 / 12 **Item Number:** 162 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
Replace "possible" by "supported"

Reason:
To be precise.

Status: rejected

Notes: associated text was deleted

Page/Line: 5 / 13 **Item Number:** 60 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete the beginning of the sentence starting with "Since the base" through "oriented". Start the sentence with "Multiple base station radios will likely,".

Reason:
The antenna solution is the manufacturer's and providers turf, not to be mandated by 802.16.3.

Status: rejected

Notes: withdrawn

Page/Line: 5 / 23 **Item Number:** 61 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete lines 23 to 26: "Also" through "document."

Reason:
The decision on an IDU/ODU vs. an ODU solution itself is entirely outside the scope of this document.
Editor's note: Rejected because of duplicate comment from Kostas

Status: rejected

Notes:

Page/Line: 5 / 27 **Item Number:** 164 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
Replace "(see section)." With "(see section 8)."

Reason:
Missing section number.
Rejected. Editor will clean up section references

Status: rejected

Notes:

Page/Line: 6 / 8 **Item Number:** 166 **Commentor Name:** Wachira Muya **Type:** Editorial

Description:
Replace "(see section)." With "(see section 3)."

Reason:
Missing section number.
Editor's note: Editor will clean up section references

Status: rejected

Notes:

Page/Line: 6 / 33 **Item Number:** 169 **Commentor Name:** Wachira Muya **Type:** Technical

Description:
Propose to replace this section by:

Section 3: Service Capabilities

An 802.16.3 system SHALL support fixed wireless access to IP networks at bit rates of up to 10
Mbit/s. Voice services will be carried as "voice over IP."

Reason:
To generalize the field of application of the 802.16.3 systems. We need to focus on services capabilities so
that operators may build services according to their own market requirements.

Status: rejected

Notes:

Page/Line: 7 / 0 **Item Number:** 50 **Commentor Name:** Jansson Leif **Type:** Technical

Description:
Change to mandatory.

Reason:
This is important for a good BWA system.
Editor's note: Rejected because the change request does not specify what to change

Status: rejected

Notes:

Page/Line: 7 / 5 **Item Number:** 96 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
Replace this paragraph with
"This Section describes typical services supported by an 802.16.3 system. In this document services refer to the services provided by the MAC layer to the layer above it. The term services is also used in this document as an adjective to qualify the type of networks that interface with 802.16.3-based BWA networks(12)(54)."

Reason:
To streamline the meaning. Original paragraph found confusing

Status: rejected

Notes:

Page/Line: 7 / 17 **Item Number:** 112 **Commentor Name:** Satapathy Durga **Type:** Technical

Description:
Change sentence beginning in line 17 to:
"The access transport will be packet based or cell based."

Reason:
See no need to limit transport of voice services to packet based.

Status: rejected

Notes:

Page/Line: 7 / 17 **Item Number:** 14 **Commentor Name:** Freedman Avi **Type:** Technical

Description:
Add "mainly" between "be" and "packet".

Reason:
There is no reason to assume nor to limit voice services to Voice over packets. Other mechanisms may be found to be better.

Status: rejected

Notes:

Page/Line: 7 / 18 **Item Number:** 15 **Commentor Name:** Freedman Avi **Type:** Technical

Description:
Change "will be recovered" with "may be recovered"

Reason:
See above

Status: rejected

Notes: withdrawn

Page/Line: 7 / 21 **Item Number:** 132 **Commentor Name:** Trinkwon David **Type:** Technical

Description:
Change to "(supporting FAX and analog modem services)"

Reason:
Customers will continue to have / use analog modems over any presented "voice" port / circuit. The air interface might need to dynamically allocate approporiate resources to accommodate the modem transmissions at up to V.90 rates.

Status: rejected

Notes: text deleted

Page/Line: 8 / 6 **Item Number:** 30 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Insert new numbered paragraph: Internet protocol properties
Bullet: Packet length - the IP datagrams are characterized by variable length. The MAC protocols MUST support efficiently variable length packets.
Bullet: Bit Error Rate - the TCP/IP protocol, as known from literature, drops its performance by 90% when the packet error rate reaches 10%. The MAC and PHY protocols MUST provide means for realible data transport, the BER target for cellular deployment SHELL be 10-9, equivalent to the performance of wired networks.

Reason:
important issue

Status: rejected

Notes:

Page/Line: 8 / 9 **Item Number:** 115 **Commentor Name:** Satapathy Durga **Type:** Editorial
Description: **Reason:** **Status:** rejected
Change section number from 3.1.2 to 3.1.3
Above insertion
Editor's note: rejected because editor will do cleanup/numbering/etc.

Notes:

Page/Line: 8 / 9 **Item Number:** 114 **Commentor Name:** Satapathy Durga **Type:** Editorial
Description: **Reason:** **Status:** rejected
Insert
"3.1.2 ATM Services

The 802.16.3 system MUST provide efficient transport for CBR, VBR (rt and nrt),
UBR and ABR services."
To ensure 802.16.3 standard supports ATM-based BWA solutions.
Editor's note: rejected because of duplicate comment from Kostas

Notes:

Page/Line: 8 / 9 **Item Number:** 100 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** rejected
Insert before this line Section
"3.1.1.1.1.1 ATM Protocol Services

The 802.16.3 system MUST transport constant bit rate(CBR), non-real-time variable-bit-rate(non-rt VBR), real-time variable-bit-rate(rt VBR) and ABR ATM services."
Important MAN based services

Notes:

Page/Line: 8 / 11 **Item Number:** 116 **Commentor Name:** Satapathy Durga **Type:** Editorial
Description: **Reason:** **Status:** rejected
Change section number from 3.1.3 to 3.1.4
Editor's note: rejected because editor will do cleanup/numbering/etc.
Above insertion

Notes:

Page/Line: 8 / 13 **Item Number:** 101 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** rejected
Delete this sentence
No basis given for prejudging now other services' requirements

Notes:

Page/Line: 9 / 0 **Item Number:** 67 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** rejected
Delete both DAVIC and DIGITAL AUTO/VIDEO from the right column in the figure.
Editor's note: Rejected because of duplicate comment from Goldhammer
These titles and references are misleading and irrelevant.
It is impossible to guarantee services if a parallel Video stream gobbles up bandwidth without consulting the MAC. Digital audio/ video should run on top of the MAC, not alongside.

Notes:

Page/Line: 9 / 21 **Item Number:** 134 **Commentor Name:** Trinkwon David **Type:** Editorial
Description: **Reason:** **Status:** rejected
Figure 4-1 : Change "Auto / Video" to "Audio / Video"
Typo

Change "DAVIC" to "DAV TC"

Notes: part of figure deleted

Page/Line: 9 / 28 **Item Number:** 17 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Status:** rejected
Change "DAVIC" to "DAVIC or other"
No reason to limit the convergence layer to DAVIC.

Notes: Part of figure deleted

Page/Line: 10 / 6 **Item Number:** 68 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** rejected
Delete lines 6 to 8: "Note that" through "layer."
Editor's note: Rejected because of duplicate comment from Kostas
ARQ shouldn't be ruled out already in this phase.

Notes:

Page/Line: 10 / 13 **Item Number:** 43 **Commentor Name:** Jansson Leif **Type:** Editorial
Description: **Reason:** **Status:** rejected
What is DAV and DAVIC ?
Specify.
Editor's note: Rejected because no specific change suggested

Notes:

Page/Line: 10 / 20 **Item Number:** 3 **Commentor Name:** Abu-Dayya Adnan **Type:** Technical
Description: **Reason:** **Status:** rejected
replace "will be a difficult problem for" with "will be a requirement for"
The target markets "residential and small businesses" mandate a non-line-of-sight requirement. Hence, the airlink should be robust in multipath environments.

Notes: withdrawn

Page/Line: 10 / 22 **Item Number:** 44 **Commentor Name:** Jansson Leif **Type:** Technical
Description: **Reason:** **Status:** rejected
Delete "local LOS obstruction"
The target performance levels shall be higher.

Notes: text deleted

Page/Line: 10 / 28 **Item Number:** 106 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** rejected
Change sentence to read
Clarification

"The 802.16.3 protocols SHOULD allow for increases in capacity and performance."

Notes:

Page/Line: 10 / 32 **Item Number:** 137 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** rejected
Change "subscriber station" to "residential or SME customer location"
Clarification

Notes:

Page/Line: 10 / 33 **Item Number:** 171 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** rejected
Replace "delivered bandwidth " to "delivered capacity"
Capacity is the correct term for bits/sec.
Editor's note: Rejected because of duplicate comment from Goldhammer

Notes:

Page/Line: 12 / 7 **Item Number:** 46 **Commentor Name:** Jansson Leif **Type:** Editorial
Description: **Reason:** **Status:** rejected
What is "transit delay"?
Specify.
Editor's note: Rejected because no specific change suggested

Notes:

Page/Line: 12 / 26 **Item Number:** 141 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** rejected
Replace Bullets with :
To differentiate from traditional 802.16.1 concepts and embrace traditional plus emerging FWA practices / experiences.

Bullet : Radio Range, width of sector(s) and/or adaptive array parameters
Bullet : Upstream / downstream link and user rates / asymmetry/ dynamics
Bullet : Types of Duplex (FDD, TDD, Paired TDD)
Bullet : Types of Modulation / Multiple Access (DS,SS etc, TDMA, CDMA, FDMA,
SDMA or combinations)

Notes:

Page/Line: 13 / 21 **Item Number:** 146 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** rejected
More realistic requirements.
Editor's note: (d) rejected because no specific change specified

In Table 1 :

a) All one-way delays should be 20ms

b) Delete circuit-based parameters - rest of FRD stipulates packet based (and maybe cell based) services only.

c) Change BER 10 - 8 on last line to 10 - 6

d) Add note that MOS refers to 4.5 scale (not 5.0 scale)

Notes:

Page/Line: 15 / 12 **Item Number:** 47 **Commentor Name:** Jansson Leif **Type:** Editorial
Description: **Reason:** **Status:** rejected
Replace "face" with "case".
Editorial.
Editor's note: Rejected because "face" is fine

Notes:

Page/Line: 17 / 0 **Item Number:** 177 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** rejected
Replace "according to negotiated user requirements" with "according to dynamically negotiated
user requirements and/or network availability"
To introduce the concept of dynamism in the definition and also indicate that network availability
could also trigger/cause/impact this variability.
Rejected because editor will revise the requirements appendices

Notes:

Page/Line: 17 / 0 **Item Number:** 175 **Commentor Name:** Wachira Muya **Type:** Technical
Description: **Reason:** **Status:** rejected
Once the revision of the main text is complete, Tables 2 to 4 should be revised to correspond with
the changes made in the document.
Consistency with the text in section 1 to 9.
Rejected because editor will revise the requirements appendices

Notes:

Page/Line: 17 / 0 **Item Number:** 179 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** rejected
Insert "Techniques for" before "Separation"
To indicate that TDD is not the separation itself as implied in the draft text.
Rejected because editor will revise the requirements appendices

Notes:

Page/Line: 17 / 0 **Item Number:** 178 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** rejected
Insert "Techniques for" before "Separation"
To indicate that FDD is not the separation itself as implied in the draft text.
Rejected because editor will revise the requirements appendices

Notes:

Page/Line: 17 / 22 **Item Number:** 174 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** rejected
The Appendices should be numbered
A. Requirements Summary
A.1 Mandatory
A.2 Recommended (R)
A.3 Optional (O)
B. Vocabulary of Terms
B.1 Definitions
B.2 Acronyms and Abbreviations
Appropriate page numbering should be used.
Ease of reference.
Rejected because editor will clean up numbering and references

Notes:

Page/Line: 7 / 18 **Item Number:** 65 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete lines 18 to 21: "The consumer" through "services)"

Reason:
The statement does not provide any valuable information.

Status: unresolved

Notes:

Page/Line: 7 / 25 **Item Number:** 66 **Commentor Name:** Kasslin Mika **Type:** Technical

Description:
Delete the entire subsection 3.1.1.1

Reason:
These statements here add nothing but fluff. The requirements for telephony services are sufficiently dealt with in the QoS section. The statement before this subsection already refers there, so there's no need to repeat that here without any hard values.

Status: unresolved

Notes:

Page/Line: 7 / 29 **Item Number:** 16 **Commentor Name:** Freedman Avi **Type:** Technical

Description:
change "will be provided by VoIP" to "might be provided by VoIP"

Reason:
See above.

Status: unresolved

Notes:

Page/Line: 7 / 29 **Item Number:** 113 **Commentor Name:** Satapathy Durga **Type:** Editorial

Description:
Delete the sentence
"Voice connectivity will be provided by a VOIP protocol and may involve low rate vocoding."

Reason:
See no need to limit voice services to VOIP.

Status: unresolved

Notes:

Page/Line: 7 / 32 **Item Number:** 25 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Insert after business). "The required bandwidth is minimized with VoIP, the associated codecs providing a very good compression: 8kb/s for G.729, 6.3kb/s for G.723. The compression result is the increase of the delay.

Reason:
To make clear what is VoIP rate

Status: unresolved

Notes:

Page/Line: 7 / 34 **Item Number:** 27 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Change "MUST" with "SHOULD"

Reason:
The delay amount is depending on many factors, the MAC being only one of them.The delay amount, due to echo cancellers used with VoIP, is not extremly critical.

Status: unresolved

Notes:

Page/Line: 7 / 34 **Item Number:** 26 **Commentor Name:** Goldhammer Marianna **Type:** Editorial

Description:
Delete"low"

Reason:
The VoIP delay is not low

Status: unresolved

Notes:

Page/Line: 7 / 34 **Item Number:** 99 **Commentor Name:** Kostas Demosthenes **Type:** Technical

Description:
-second bullet, should be modified to read,

"Delay - as apparent to the end user, the amount of delay and delay variation
MUST be kept within acceptable limits. Again the specific amount of delay and delay variation acceptable is based on the QoS sold to the end user."

Reason:
To include delay variation and improve English

Status: unresolved

Notes:

Page/Line: 7 / 36 **Item Number:** 28 **Commentor Name:** Goldhammer Marianna **Type:** Technical

Description:
Insert after the conversation. "The QoS requiremets should take into account the characteristics of the VoIP technology: codec end-to-end delay of 50ms for 10ms frame (G.729), 120ms for 30ms frame (G.723), the possibility to transmit concatenated voice packets, the mandatory use of echo cancellers.

Reason:
Give a feeling of what VoIP delay is

Status: unresolved

Notes:

Page/Line: 7 / 39 **Item Number:** 29 **Commentor Name:** Goldhammer Marianna **Type:** Technical
Description: **Reason:** **Status:** unresolved
Insert new paragraph with bullet: BER level The MAC and PHY protocols SHOULD provide for a reasonable BER Level for voice services. BER of 10-4 is sufficient for voice services and 10-5 for FAX.

Make clear the BER issue

Notes:

Page/Line: 10 / 16 **Item Number:** 34 **Commentor Name:** Goldhammer Marianna **Type:** Technical
Description: **Reason:** **Status:** unresolved
Insert paragraph 6 Wireless media characteristics
Sub-paragraph 6.1 Duplex model
Paragraph start The radio regulations permit two access modes: Frequency Division Duplex - FDD and Time Division Duplex - TDD. The MAC and PHY protocol MUST support both FDD and TDD duplex modes. Spectral efficiency is maximized in FDD with full-duplex operation, while in TDD with means to avoid collocation problems and more complex interference scenarios. The PHY and MAC protocols MUST provide for full duplex operation, while preserving the QoS, BER and spectral efficiency requirements for data and voice traffic. The MAC and PHY protocols MUST provide means to resolve the collocation and interference problems in TDD deployment.

Missing paragraph

Notes:

Page/Line: 10 / 16 **Item Number:** 35 **Commentor Name:** Goldhammer Marianna **Type:** Technical
Description: **Reason:** **Status:** unresolved
Insert paragraph 6.2 Channelization
New paragraph The standardization bodies providing channelization recommendations are ITU-R, CEPT and FCC. The allocated bandwidth per operator varies between 5MHz and 120MHz. In Europe, the typical allocated bandwidth is 14MHz. The operators target a good frequency reuse factor, using 4-6 sectors for Base Stations.The Base Station bandwidth per sector can be between 1.75MHz and 7MHz in in CEPT countries and between 2MHz and 6MHz in MMDS. The MAC and PHY protocols MUST permit the operation with channel spacing per sector of 1.75, 3.5 and 7MHz when using ETSI masks and 2, 3, 5 and 6MHz when using other masks. The typical value for performance analysis SHOULD be 3.5MHz for ETSI mask and 3MHz for MMDS mask.

Missing paragraph

Notes:

Page/Line: 10 / 16 **Item Number:** 36 **Commentor Name:** Goldhammer Marianna **Type:** Technical
Description: **Reason:** **Status:** unresolved
Insert paragraph 6.3 Cellular deployment
New paragraph In cellular deployment, due to interference, the system spectral efficiency can be considerably lowered. The PHY and MAC protocols SHOULD permit good frequency reuse factors, providing at least 2bit/s/cell.In order to reduce the interference level, the PHY and MAC protocols MUST permit power control per subscriber up-link and SHOULD permit power control per subscriber down-link. The PHY and MAC protocols SHALL permit real-time changing of power levels, as function of propagation conditions, in order to use the minimum power needed for the target BER.

Missing paragraph

Notes:

Page/Line: 10 / 30 **Item Number:** 33 **Commentor Name:** Goldhammer Marianna **Type:** Editorial
Description: **Reason:** **Status:** unresolved
Replace "Bandwidth" with "Capacity"

Bandwidth is measured in Hz, not bit/s

Notes:

Page/Line: 13 / 1 **Item Number:** 19 **Commentor Name:** Freedman Avi **Type:** Technical
Description: **Reason:** **Status:** unresolved
All reference should be revisitied

Most of the reference are not releavant to 802.16.3

Notes:

Page/Line: 13 / 21 **Item Number:** 173 **Commentor Name:** Wachira Muya **Type:** Technical
Description: **Reason:** **Status:** unresolved
In Table 1 column 4 row 7 replace "10 ms " with "100 ms "
Delay of 10 ms for packet-oriented connections is too short. VoIP can tolerate up to about 150 ms delay, as
long as frame error rate is below about 1%.

Notes:

Page/Line: 13 / 21 **Item Number:** 38 **Commentor Name:** Goldhammer Marianna **Type:** Technical
Description: **Reason:** **Status:** unresolved
Change from table the 10ms in row 7 to "1/4 of the VoIP codec end-to-end delay"
Requirements non consistent with VoIP

Notes:

Page/Line: 13 / 25 **Item Number:** 18 **Commentor Name:** Freedman Avi **Type:** Editorial
Description: **Reason:** **Status:** unresolved
Remove space within "T he"
Typo

Notes:

Page/Line: 14 / 20 **Item Number:** 107 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** unresolved
Change Sentence to read
"The 802.16.3 protocols SHALL define a set of parameters to meet the required
QoS parameters for the supported services (e.g., ATM CBR Services and IP) "
To include the support of additional services

Notes:

Page/Line: 14 / 32 **Item Number:** 108 **Commentor Name:** Kostas Demosthenes **Type:** Technical
Description: **Reason:** **Status:** unresolved
The last sentence parenthesis should read
(such as those required for IP- and ATM-based services)
To include the support of additional services to IP

Notes:

Page/Line: 15 / 3 **Item Number:** 147 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** unresolved
Replace "CMIP/CMIS" with SNMP/CORBA
More appropriate for Access networks / environments, especially for residential and SME markets

Notes:

Page/Line: 15 / 15 **Item Number:** 142 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** unresolved
This needs further elaboration / discussion / contribution. Power control loops are probably fundamental for most FWA / customer unit applications and it must
not be possible to exceed a maximum permitted power level. Also, if a SU is "shut down" it must be possible to re-enable it (without visiting the customer location) to diagnose and fix / dispatch etc. There are also functions necessary
to handle Primary / secondary power conditions, software downloads/ upgrades,
perfotmance and error statistics, and to re-ptogram the allowed base station / channel lists for a given SU - or all Sus in a given area / subset of criteria.
Expand the requirement to better match the needs of the 802.16.3 target markets.

Notes:

Page/Line: 15 / 27 **Item Number:** 143 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** unresolved
Needs further expansion / contribution to handle installation, service suspend/resume, relocation, geolocation and anti-cloning processes.
To better match the needs for the 802.16.3 target markets.

Notes:

Page/Line: 17 / 8 **Item Number:** 148 **Commentor Name:** Trinkwon David **Type:** Technical
Description: **Reason:** **Status:** unresolved
Delete 2nd, 3rd and 4th bullets relating to 802 conformance.
Not relevant / practicable for FWA/BWA applications for residential and SME markets.

Notes:

Page/Line: 17 / 21 **Item Number:** 176 **Commentor Name:** Wachira Muya **Type:** Editorial
Description: **Reason:** **Status:** unresolved
Replace the term "bandwidth " with " capacity"
Referring to capacity as "bandwith" is colloquial usage, and we should use the correct terms - bandwidth
expressed in Hz and capacity in bit/s or bps.

Notes:

Page/Line: 22 / 0 **Item Number:** 75 **Commentor Name:** Kasslin Mika **Type:** Editorial
Description: **Reason:** **Status:** unresolved
Delete the last incomplete sentence "This" through "provisioning"
Useless and misleading sentence

Notes:

Page/Line: 22 / 0 **Item Number:** 76 **Commentor Name:** Kasslin Mika **Type:** Editorial
Description: **Reason:** **Status:** unresolved
Delete "Protocol" till end of text
Incomplete and irrelevant sentence

Notes:

Page/Line: 25 / 0 **Item Number:** 77 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** unresolved
Replace 99.94% with 99.95%
Consistency with the text in section 5.4 if the corresponding earlier comment is approved.

Notes:

Page/Line: 26 / 0 **Item Number:** 78 **Commentor Name:** Kasslin Mika **Type:** Technical
Description: **Reason:** **Status:** unresolved
Delete the following bullet points:
¸ "- Radio range (shaped sector radius)"
¸ "- Width of the sector"
Consistency with the text in section 5.7 if the corresponding earlier comment is approved.

Notes: