Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Comments on the Discussion Base on Draft PAR & Five Criteria Document**
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Re:	IEEE802.16mmr-05/025.pdf
Abstract	This document provides comments on the reference document which are intended to improve the readability and also resolve some technical issues.
Purpose	Discussion and approval of comments.
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Comments on the Discussion Base on Draft PAR & Five Criteria Document

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1. Introduction

In response to the recent call for comments [1], this document provides some comments that are intended to resolve a number of technical and editorial related issues in the draft PAR and five criteria [2] created as a result of a motion at the last MMR study group meeting number 40 in Vancouver [3].

2. Comments

Number	**Page**	**Section**	**Type**
1	4	13	Technical
Comment	Explicitly state that MMR techniques are enabled between a (one) base station and a number of mobile stations.		
Modification	This document provides enhancements to IEEE Std. 802.16 by employing mobile multi-hop relay techniques between a base station and subscriber mobile stations, and the subscriber mobile station operating according to the existing standard shall be capable of operating with mobile multi-hop relay enabled base station with no modification and with an relay station with little or no modification.		

Number	**Page**	**Section**	**Type**
2	4	13	Technical
Comment	The number of MMR-BS and RS that an MS shall operate with is ambiguous. Explicitly state that a MS will be able to operate with more than one MMR enabled BS and also more than one RS.		
Modification	This document provides enhancements to IEEE Std. 802.16 by employing mobile multi-hop relay techniques between base station and subscriber mobile station, the subscriber mobile station operating according to the existing standard shall be capable of operating with mobile multi-hop relay enabled base stations with no modification and with ~~an~~ relay stations with little or no modification.		

Number	**Page**	**Section**	**Type**
3	4	13	Editorial
Comment	"Subscriber mobile station" is not correct terminology. We have either "mobile station" or "subscriber station".		
Modification	Change all occurrences of "subscriber mobile station" to "mobile station".		

Number	**Page**	**Section**	**Type**
4	4	13	Editorial
Comment	The paragraph is one very long sentence		
Modification	This document provides enhancements to IEEE Std. 802.16 by employing mobile multi-hop relay techniques between base station and subscriber mobile station~~, and t~~. The subscriber mobile station operating according to the existing standard shall be capable of operating with mobile multi-hop relay enabled base station with no modification and with an relay station with little or no modification.		

Number	Page	Section	Type
5	5	15	Editorial
Comment	Grammatical issue with use of "Those" in the last sentence.		
Modification	Make either of the following changes: ~~Those~~ These advantages will expand the market opportunity for Broadband Wireless Access. OR ~~Those~~ This will expand the market opportunity for Broadband Wireless Access.		

Number	Page	Section	Type
6	6	17	Editorial
Comment	Some grammatical errors and a spelling error in point (a).		
Modification	(a) The existing IEEE 802.16-2004 has an optional Mesh mode in which traffic can be routed through other subscriber stations and it can also occur directly between subscriber stations. However, there is ~~N~~no mobility support and the mode is incompatible with the ma~~e~~ndatory point-to-multipoint (PMP) mode		

Number	Page	Section	Type
7	6	17	Editorial
Comment	Missing an "is" after "this amendment ..."		
Modification	(b) IEEE 802.11s project is currently developing an extension to the IEEE 802.11 MAC for providing an IEEE 802.11 Extended Service Set (ESS) Mesh. While the IEEE 802.11 standard addresses primarily short range WLAN applications, this amendment is specifically directed toward longer-range wireless point to multipoint MAN systems with mobile multi-hop relay function.		

Number	Page	Section	Type
8	9	PAR: Broad Market Potential	Technical
Comment	IEEE802.16 is more likely to compete than take the place of xDSL, Cable, etc. technologies.		
Modification	"a) IEEE802.16 wireless standard~~,~~ will compete with, and provide similar services to, ~~take place of~~ xDSL, Cable, T1 ~~level services~~ and fiber optic broadband technologies ..."		

Number	Page	Section	Type
9	9	PAR: Broad Market Potential	Editorial
Comment	Second sentence of (a) does not read well.		
Modification	"... It ~~Also the one with mobility support~~ will also provide wireless access at a higher data ..."		

Number	Page	Section	Type
10	9	PAR: Broad Market Potential	Editorial
Comment	Improve the readability of the last sentence in point (c).		
Modification	"c) ... Thus, an MMR system is a more cost effective solution to accommodat~~e~~ing many mobile subscribers, ~~and~~ establishing ~~the~~ wide area coverage and providing~~the~~ higher data rates."		

Number	Page	Section	Type
11	12	PAR: Technical Feasibility	Editorial
Comment	Suggestion that 802.11s is a relay system when previously it has been referred to as mesh. Also 802.11s is still under development.		

Modification	"a) One purpose of some wireless relay or mesh systems such as IEEE 802.11 TGs, which is ~~are already~~ being developed, is to extend coverage areas..."

Number	**Page**	**Section**	**Type**
12	12	PAR: Technical Feasibility	Editorial
Comment	Grammar error in point (a).		
Modification	"a) ... Furthermore, the performance of wireless relay systems hashave been examined ..."		

Number	**Page**	**Section**	**Type**
13	14	PAR: Economic Feasibility	Editorial
Comment	Improve the readability of point (b)		
Modification	b) MMR technology ~~enable to~~ provides a more cost effective solution to extending a service area than deploying more base stations because relay stations will be of lower cost than base stations due to its lesser complexity ~~than base station~~ and it does not need the communication cabling cost for itself		

Number	**Page**	**Section**	**Type**
14	14	PAR: Economic Feasibility	Editorial
Comment	The use of "communication cabling" is ambiguous.		
Modification	Change all instances of "communication cabling" to "backhaul communication cabling".		

3. Recommendation

It is recommended that all the comments listed in Section 2 are discussed and the proposed modifications are approved in the MMR SG session #41 so that a final version of the PAR and five criteria can be formed ready for consideration by the EC at the Denver Plenary session.

4. References

[1] M. Nohara, “Call for Comments and Contributions: IEEE 802.16’s Study Group on Mobile Multi-hop Relay”, IEEE802.16mmr-05/026.pdf, 16 December 2005.
[2] M. Nohara, “Discussion based for 802.16 Mobile Multi-hop Relay Study Group Draft PAR and Five Criteria”, IEEE802.16mmr-05/025.pdf, 16 December 2005.
[3] M. Nohara & J.J. Son, “Session #40 802.16 Mobile Multihop Relay Meeting Minutes”, IEEE 802.16mmr-05/024.pdf, 16 December 2005.