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Re:	Call for Technical Proposals regarding IEEE project P802.16j
Abstract	In this contribution, we propose MAC messages between MMR-BS and RS for Access-uplink closed loop power control.
Purpose	Adoption of the proposed text and tables
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Access-uplink closed loop power control by MMR-BS or RS in MMR system

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1. Motivation

When Access-UL closed loop power control was working in MMR system, Who control the MS's transmission power level. The answer can be MMR-BS (MMR_BS-controlled Access-UL power control mode) or RS (RS-controlled Access-UL power control mode). In MMR_BS-controlled Access-UL power control mode, MMR-BS must know the measurement information of Access-UL but MMR-BS cannot measure Access-UL. Otherwise, in RS-controlled Access-UL power control mode, RS can know MS's transmission power adjust value by measurement information of Access-UL but RS cannot transfer this power adjust value to MS because RS cannot allocate resource for MS.

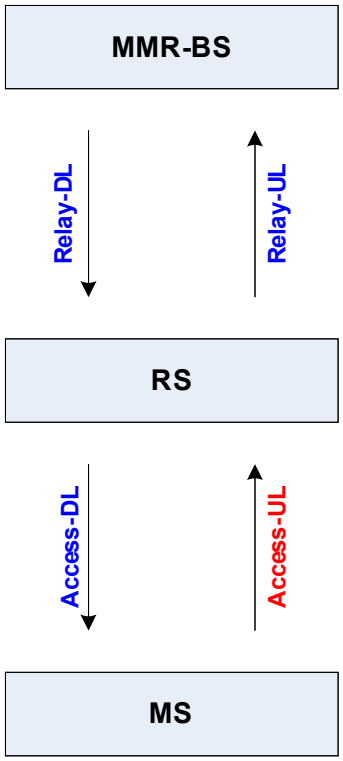


Figure 1. Links for 2-hop MMR system

2. Suggested Remedy

In MMR_BS-controlled Access-UL power control mode (MODE-A), If RS transfered the power adjust value to MMR-BS via a newly created MAC message, MMR-BS could know it. And In RS-controlled Access-UL power control mode (MODE-B), RS request to MMR-BS whether Access-UL power control mode is MODE-A or MODE-B. If MMR-BS decided MODE-B, MMR-BS should inform Access_UL power control mode to RS and allocate resource for legacy power control message (Fast Power Control message) and RS confirm "MODE-B" and modify the power adjust value in the legacy "Fast Power Control" message. And finally RS can transfer the power adjust value to MS via legacy message. The following Fig. 2 shows the detailed Access-UL closed loop power control flow.

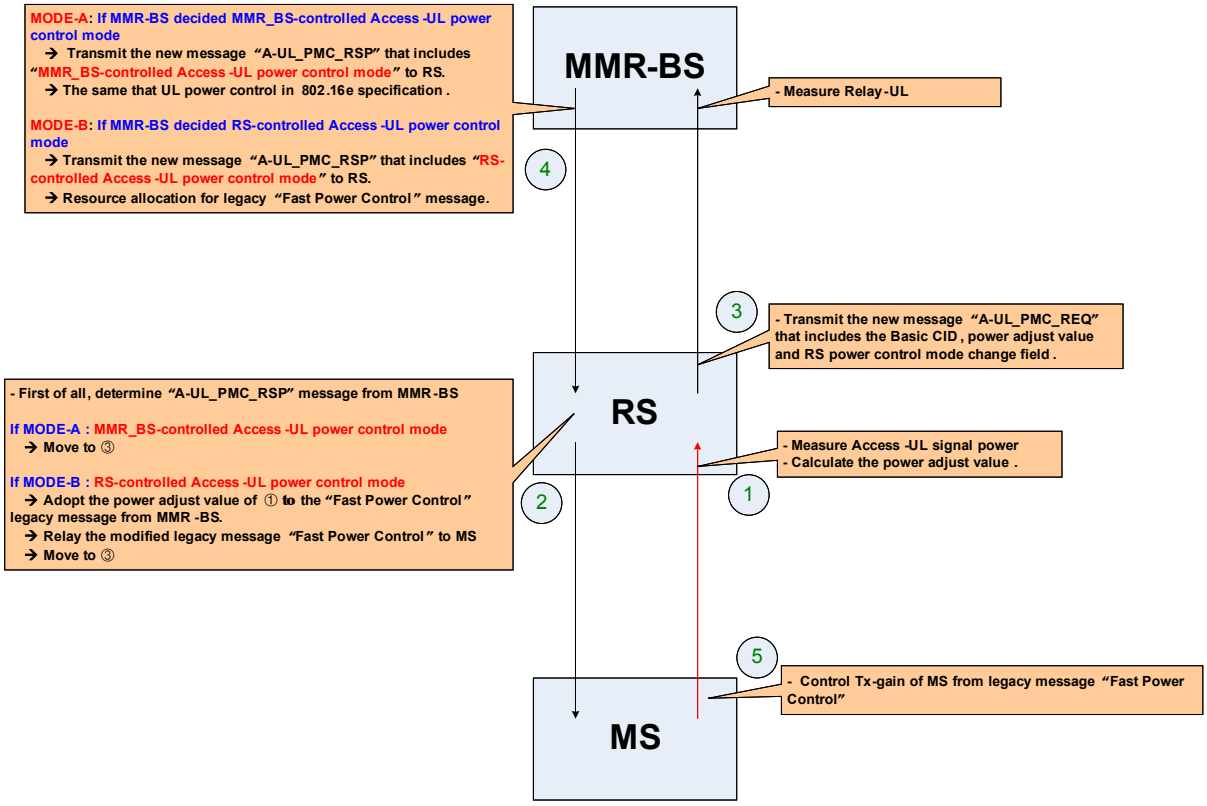
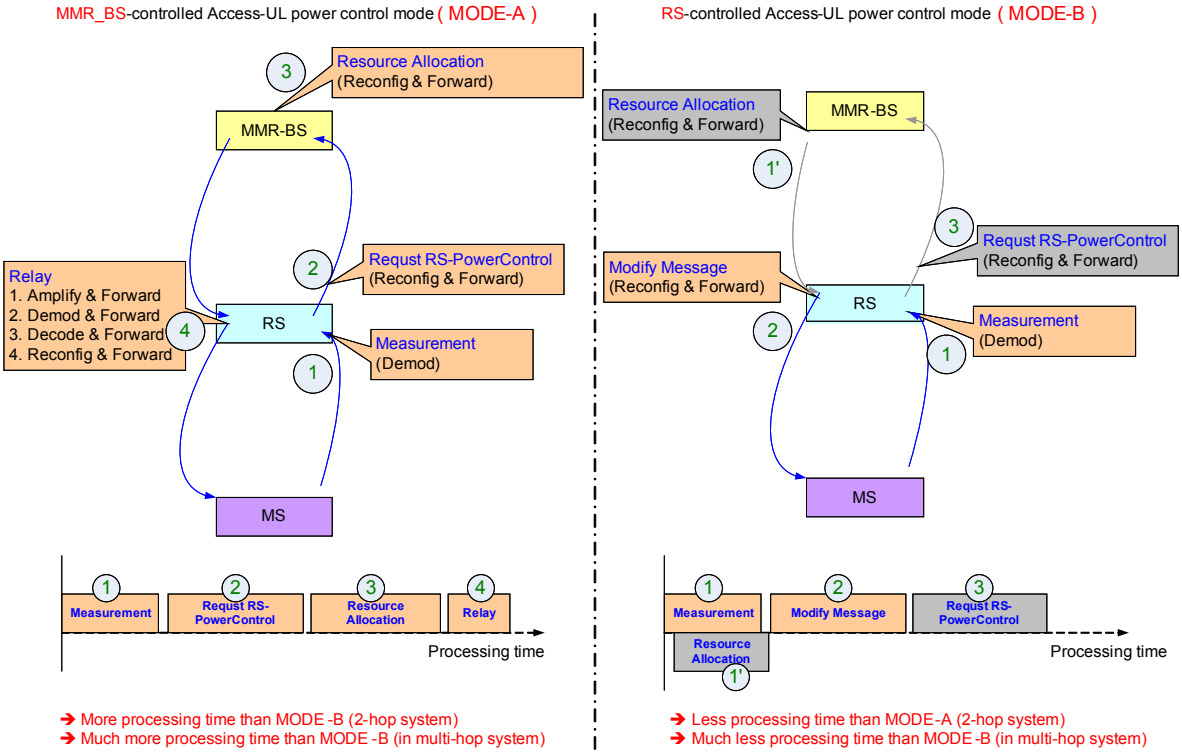


Figure 2. Access-UL closed loop power control flow

And Fig. 3 shows Access-UL closed loop power control flow and the processing time comparison between MODE-A and MODE-B.



3. Proposed Text Changes

[insert the text after 6.3.2.3.61:]

6.3.2.3.62(??) Access-UL power control mode change request (A-UL_PMC_REQ) message

The decision of the Access-UL power control mode change between MMR_BS-controlled Access-UL power control mode and RS-controlled Access-UL power control mode is done at MMR-BS and the decision is indicated by the A-UL_PMC_RSP MAC message. Before the first A-UL_PMC_RSP message from MMR-BS, the default Access-UL power control mode shall be the MMR_BS-controlled Access-UL power control mode scheme.

Table ???. A-UL_PMC_REQ message Format

Syntax	Size	Notes
A-UL_PMC_REQ format{		
Management Message Type = (? 66)	8 bits	Type = ? 66
Number of stations	8 bits	
for (i=0;i<Number of stations;i++) {		
Basic CID	16 bits	
Power adjust	8 bits	
Access-UL power control mode change	1 bit	0: MMR_BS-controlled Access-UL power control mode. 1: RS-controlled Access-UL power control mode.
Confirmation	1 bit	0: Request 1: Confirmation
Reserved	6 bits	Shall be set to zero
}		
}		

CID shall be the basic CID of connected MS with RS. RS shall generate the A-UL_PMC_REQ message including the following parameters:

Number of stations
Number of CID and Power Adjust tuples contained in this message.

Basic CID
Basic connection identifier associated with the SS.

Power Adjust
Signed integer, which expresses the change in power level (in multiples of 0.25 dB) that the SS shall apply to its current transmission power.

Access-UL power control mode change
0: MMR_BS-controlled Access-UL power control mode.
1: RS-controlled Access-UL power control mode.

Confirmation
0: RS requests to change the Access-UL power control mode.
1: RS confirms the receipt of A-UL_PMC_RSP from MMR-BS.

6.3.2.3.63(??) Access-UL power control mode change response (A-UL_PMC_RSP) message

A-UL_PMC_RSP is sent from MMR-BS as a confirmation of RS's intention of MS's uplink power control change with A-UL_PMC_REQ message.

Table ???. A-UL_PMC_RSP message Format

Syntax	Size	Notes
A-UL_PMC_RSP format{	-	
Management Message Type = (? 67)	8 bits	Type = (? 67)
Number of stations	8 bits	
for (i=0;i<Number of stations;i++) {		
Basic CID	16 bits	
Access-UL power control mode change	1 bit	0: MMR_BS-controlled power control mode. 1: RS-controlled power control mode.
Start frame	6 bits	6 LSBs of frame number when the indicated RS power control mo is activated. When it is same with the current frame number, the mode change shall be applied from the current frame.
Reserved	1 bits	Shall be set to zero
}		
}	-	

CID shall be the basic CID of connected MS with RS. RS shall generate the A-UL_PMC_REQ message including the following parameters:

Number of stations
Number of CID and Power Adjust tuples contained in this message.

Basic CID
Basic connection identifier associated with the SS.

Access-UL power control mode change
0: MMR_BS-controlled Access-UL power control mode.
1: RS-controlled Access-UL power control mode.

Start frame
6 LSBs of frame number when the indicated Access-UL power control mode is activated. When it is same with the current frame number, the mode change shall be applied from the current frame.