Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Corrections for CINR measurement**
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Re:	Recirculation of P802.16 REVe/D6
Abstract	Clarifications on CINR measurement
Purpose	Adoption of suggested changes into P802.16e/D6
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Introduction

In the current spec. the CINR report is carried with REP-RSP MAC message or fast feedback channel (CQICH). However, there are still some ambiguities regarding the frequency reuse factor, whether the loading is reflected on the estimate or not. In this contribution, we propose the clarification to get rid of such ambiguities for fast feedback channel.

Motivations

1. ~~In the current spec., various permutation schemes that possibly use different frequency reuse factor can be placed within a frame. However, the current reporting scheme only says to report the CINR of the preamble and does not provide how to indicate the reuse factor.~~
2. In the corrigenda, the definition of the REP-RSP for band AMC is modified for the CINR report correction. It is necessary to modify the 5 band report REP-RSP for band AMC TLV.

Suggested Remedies

1. ~~We modify the CQICH IEs to indicate reporting the CINR estimate from the preamble for the different frequency reuse factors or band AMC differential CINR.~~
   ~~A. Because the reporting of CINR for Band AMC is related with REP-REQ/RSP, there is no specific indication to report the CINR for Band AMC.~~
2. We propose to modify the 5 band report REP-RSP for band AMC TLV as the suggested text.

Suggested Text changes-1

[Add the following entries to all tables listed below, immediately following the 'Duration' entry:
Table 285n ("DL HARQ Chase sub-burst IE format")
Table 285o ("DL HARQ IR CTC sub-burst IE format")
Table 285p ("DL HARQ IR CC sub-burst IE format")
Table 302a ("CQICH Enhanced allocation IE format")

Syntax	Size	Notes
…		
CINR type included	1 bit	
If (CINR type included=1){		
CINR type	1 bit	0: CINR measurement from preamble 1: CINR measurement from permutation zones
If (CINR type=0) {		CINR measurement from preamble
Report type	2 bits	The report type of CINR estimate measured from preamble 0b00 Frequency reuse factor=1 configuration. 0b01 Frequency reuse factor=3 configuration. 0b00 Band AMC differential report b010-111 – Reserved.
}		
else {		CINR measurement from permutation zones
Zone type	3 bits	The type of zone over which CINR is to be reported 0b 000 PUSC with 'use all SC = 0' 0b 001 PUSC with 'use all SC = 1' 0b 010 FUSC 0b 011 Optional FUSC 0b 100 Band AMC differential report 0b 100 Safety Channel region 0b 101 AAS zone 0b 110-111 Reserved
Zone PRBS_ID	2 bits	The PRBS_ID of the zone over which CINR is to be reported
If (Zone type == PUSC with 'use all SC = 1') {		
PUSC Major group config indication	1 bit	If '0' then CINR report may refer to any subchannel in the PUSC zone.
If (Major group config indication == 1) {		
PUSC Major group bitmap	6 bits	Reported CINR shall only be estimated for the subchannels of PUSC major groups for which the corresponding bit is set. Bit #*k* refers to major group *k*.

~~}~~		
~~}~~		
~~}~~		
~~}~~		
~~Averaging parameter included~~	~~1 bit~~	
~~If (Averaging parameter included == 1) {~~		
~~Averaging parameter~~	~~4 bits~~	~~Averaging parameter α_{avg} used for deriving CINR estimates reported through CQICH.~~
~~}~~		

~~[Add the following text at the end of field description for each table]~~

~~**CINR type included**~~

~~Indicates whether an update to the CQI configuration exists in the IE. A value of '0' indicates that the SS shall perform CINR measurements using the latest received CQI configuration.~~

~~**CINR type**~~

~~Indicates where the CQI report shall be measured. SS can measure the estimation of the CINR from the preamble ('0') or the permutation zone indicated ('1').~~

~~**Averaging parameter included**~~

~~Indicate whether the averaging parameter α_{avg} is exists in the IE. A value of '0' indicates that the SS shall perform CINR measurements using the latest received averaging parameter.~~

Suggested Text changes-1 (option-1: preserve the sounding related TLV)

11.11 REP-REQ management message encodings

[Delete the following text in 11.11 on page 512]

[Change third row in the second table in 11.11 as indicated]

Name	Type	Length	Value
Channel Type request	1.~~1~~3	1	00 = Normal subchannel, 01 = Band AMC Channel, 10 = Safety Channel, 11 = ~~*Reserved*~~Sounding

[Add the table as follows at page 512 line 5, in 11.11]

Sounding channel CINR type request	1.5	1	Bit #0=1: Report the estimation of CINR measured for sounding zone. Bit #1~7: Reserved (shall be set to zero)

11.12 REP-RSP management message encodings

[Delete the following text in 11.11 on page 512]

[Change the third table in 11.12 as indicated:]

REP-REQ Channel Type request	Name	Type	Length	Value
Channel Type = 00	Normal subchannel Report (CQI value)	~~2.41~~ 2.4	1	~~First 5 bits for the CINR measurement report and the rest for don't care~~ 5 MSBs for CINR measurement
Channel Type = 01	Band AMC Report (CQI value)	~~2.52~~ 2.5	~~54~~	First 12 bits for the band indicating bit-map and next 25 bits for CINR mea-surement (5 bits per each band)
Channel Type = 10	Safety Channel Report (CQI value)	~~2.63~~ 2.6	~~65~~	~~The first 20 bits for the reported bin indices and the next 20 bits for CINR reports (5 bits for each bin)~~ The first 23 bits for the reported bin indices and the next 25 bits for CINR measurement (5 bits for each band)
Channel Type = 11	Sounding Report	~~2.4~~ 2.7	1	Average SINR. 8 bits in the same format used in 8.4.10.3

[Insert the following text at the end of 11.12:]

For the type 2.4, 2.5, 2.6, the following 5 bit, CINR measurement encoding shall be used:

[Add the tables as follows at page 512, line 23 in 11.12]

REP-REQ Zone-specific CINR Type request	Name	Type	Length	Value
Bit #4 = 1	Band AMC zone	2.8	5	CINR estimate for Band AMC zone with PRBS_ID indicated by 'CINR type request' bits #8-9. First 12 bits for the band indicating bitmap and Next 25 bits for CINR reports (5 bits per each band). Bit #37: Report type: 0 - CINR estimate from the pilot subcarrier, 1- CINR estimate from the data subcarrier. Bit#38-39: reserved.

REP-REQ Preamble CINR type request	Name	Type	Length	Value
Bit #2 = 1	The estimation of CINR measured from preamble for Band AMC zone.	3.4	5	The estimation of CINR measured from preamble for band AMC subchannel. First 12 bits for the band indicating bitmap and Next 25 bits for CINR reports (5 bits per each band). Bit#37-39: reserved.

REP-REQ Sounding channel CINR type request	Name	Type	Length	Value
Bit #0 = 1	Sounding report	4.1	1	Average SINR. 8 bits in the same format used in 8.4.10.3

For the type 2.x, 3.x, 4.x, the following 5 bits, CINR measurement shall be used:

[Move the equation from page 513 line 3~9 to page 512 line 57]

Suggested Text changes-2 (option-2: remove the sounding related TLV)

11.11 REP-REQ management message encodings

[Delete the following text in 11.11 on page 512]

[Change third row in the second table in 11.11 as indicated]

Name	Type	Length	Value
Channel Type request	1.~~1~~3	1	00 = Normal subchannel, 01 = Band AMC Channel, 10 = Safety Channel, 11 = ~~*Reserved*~~Sounding

11.12 REP-RSP management message encodings

[Delete the following text in 11.11 on page 512]

[Change the third table in 11.12 as indicated:]

REP-REQ Channel Type request	Name	Type	Length	Value
Channel Type = 00	Normal subchannel Report (CQI value)	~~2.41~~ 2.4	1	~~First 5 bits for the CINR measurement report and the rest for don't care~~ 5 MSBs for CINR measurement
Channel Type = 01	Band AMC Report (CQI value)	~~2.52~~ 2.5	~~54~~	First 12 bits for the band indicating bit-map and next 25 bits for CINR mea-surement (5 bits per each band)
Channel Type = 10	Safety Channel Report (CQI value)	~~2.63~~ 2.6	~~65~~	~~The first 20 bits for the reported bin indices and the next 20 bits for CINR reports (5 bits for each bin)~~ The first 23 bits for the reported bin indices and the next 25 bits for CINR measurement (5 bits for each band)
Channel Type = 11	Sounding Report	~~2.4~~ 2.7	1	Average SINR. 8 bits in the same format used in 8.4.10.3

[Insert the following text at the end of 11.12:]

For the type 2.4, 2.5, 2.6, the following 5 bit, CINR measurement encoding shall be used:

[Add the tables as follows at page 512, line 23 in 11.12]

REP-REQ Zone-specific CINR Type request	Name	Type	Length	Value
Bit #4 = 1	Band AMC zone	2.8	5	CINR estimate for Band AMC zone with PRBS_ID indicated by 'CINR type request' bits #8-9. First 12 bits for the band indicating bitmap and Next 25 bits for CINR reports (5 bits per each band). Bit #37: Report type: 0 - CINR estimate from the pilot subcarrier, 1- CINR estimate from the data subcarrier. Bit#38-39: reserved.

REP-REQ Preamble CINR type request	Name	Type	Length	Value
Bit #2 = 1	The estimation of CINR measured from preamble for Band AMC zone.	3.4	5	The estimation of CINR measured from preamble for band AMC subchannel. First 12 bits for the band indicating bitmap and Next 25 bits for CINR reports (5 bits per each band). Bit#37-39: reserved.

For the type 2.x, and 3.x, the following 5 bits, CINR measurement shall be used:

[Move the equation from page 513 line 3~9 to page 512 line 57]