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Re:	IEEE P802.16e/D7 and C802.16e-05/071r3 plus C802.16e-05/096r2
Abstract	This contribution makes corrections for Reduced Private Maps
Purpose	Adopt into P802.16e/D7
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Corrections for Reduced Private Maps

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1   Problem Statement

1) Descriptive text following reduced private map was out-dated and incorrect
2) Definition of zone offset was not clear.
3) There is currently no mechanism to receive a DL H-ARQ ACK indication.

2   Proposed Solution

1) Include all required descriptive text as notes in Tables 308a and 308b and remove descriptive text (editorial)
2) Modify the definition of Zone offset to be more consistent with the rest of the specification. Add an optional private map allocation start time field.
3) Add a DL HARQ ACK bitmap

3   Proposed Text Changes

[Editors Note: The following changes are relative to contribution C802.16e/D7 with changes from two contributions that have not been correctly incorporated:

- **C802.16e-05/071r3 which was accepted at session 35 (comment 2241) and re-accepted at session 36 (comment 3416).**
- **C802.16e-05/096r2 which was accepted at session 36 (comment 3417)**

The text in black incorporates all changes accepted prior to Session 37].

[Modify the text in section 8.4.5.8 as follows:]

8.4.5.8 Optional reduced AAS private maps

Reduced AAS private maps are based upon the compressed map format, however they are specifically designed to support a single unicast IE per map. Their use is identical to compressed private maps, however, fields have been removed that are not require to support a single IE. The reduced AAS private map will be pointed to by a broadcast map or private compressed map which will define the values of several fields that will be constant for the duration of the private map chain. The behavior of the compressed map fields that are not present in the reduced AAS private map are described below:

1) Frame Duration – Acquired by the map that initiated the private map chain. Assumed constant for the duration of the private map chain.
2) Frame Number – Acquired by the map that initiated the private map chain. Counted by the SS for the duration of the private map chain.
3) DCD Count – Optionally included. Only required if DCD count changes
4) Operator ID – Acquired by the map that initiated the private map chain. Assumed constant for the duration of the private map chain.

5) Sector ID – Acquired by the map that initiated the private map chain. Assumed constant for the duration of the private map chain.
6) CID – Only required in first map of private map chain.
7) UCD Count – Optionally included. ~~Only required~~ May be sent in the first UL map of private map chain. If not included, the last received UCD Count shall be used.
8) Allocation Start Time – Optionally defined by Private Map Allocation Start Time which may be sent in the first UL map of private map chain. If not included, the UL subframe start time is assumed to be static and defined by the last received Allocation Start Time in an UL map. ~~UL start time relative to TTG plus an integer number of symbol times.~~

[Modify table 308a as follows:]

Table 308a—Reduced AAS private DL-MAP message format

Syntax	Size	Notes
Reduced_AAS_Private_DL-MAP() {		
Compressed map indicator	3 bits	Set to binary 110 for compressed format
UL-MAP appended	1 bit	1 = reduced UL Private map is appended
Compressed Map Type	2 bits	Shall be set to 0b11 for reduced private map
Multiple IE	1 bit	1 = Multiple IE Mode
Reserved	1 bit	Shall be set to zero
If (Multiple IE) {		
NUM IE	8 bits	~~NUM IE set to 1 if not in multiple IE mode~~
}		
For (ii = 1:NUM IE) {		
Periodicity	2 bits	00 = single command, not periodic, or terminate periodicity. Otherwise, repeat DL and UL allocations once per r frames, where $r = 2^{(n-1)}$, where n is the decimal equivalent of the periodicity field.
CID Included	1 bit	1 = CID included. The CID shall be included in the first compressed private MAP if it was pointed to by a DL-MAP IE with INC_CID == 0 or by a DL-MAP IE with a multicast CID.
DCD Count Included	1 bit	1 = DCD Count included. The DCD count is expected to be the same as in the broadcast map that initiated the private map chain. The DCD count can be included in the private map if it changes.
PHY modification Included	1 bit	1 = included.
Encoding Mode	2 bits	Encoding for DL traffic burst. 00: No H-ARQ. 01: Chase Combing H-ARQ. 10: Incremental Redundancy H-ARQ. 11: Conv. Code Incremental Redundancy
CQICH Control Indicator	1 bit	1 = CQICH control information included.
Separate MCS Enabled	1 bit	Separate coding applied for reduced AAS_Private_MAP and DL data burst
If (Separate MCS Enabled) {		Specifies coding for the next private map in the allocation specified by this private map
Duration	10 bits	Slot duration for reduced AAS Private Map
DIUC	4 bits	Modulation & Coding Level
Repetition Coding Indication	2 bits	00: No repetition. 01: Repetition of 2

		10: Repetition of 4 11: Repetition of 6
}		
If (CID Included) {		
CID	16 bits	Must be a unicast CID
}		
If (CQICH Control Indicator == 1) {		
Allocation Index	6 bits	CQICH Sub-channel index within Fast-feedback region marked with UIUC = 0
Report Period	3 bits	Reporting period indicator (in frames)
Frame offset	3 bits	Start frame offset for initial reporting
Report Duration	4 bits	Reporting duration indicator
CQI Measurement Type	2 bits	0b00 – CINR measurement based upon DL allocation 0b01 – CINR measurement based upon DL frame preamble 0b10 – reserved 0b11 – reserved
Reserved	2 bits	
}		
If (DCD Count Included) {		
DCD Count	8 bits	Matches the value of the configuration change count of the DCD, which describes the downlink burst profiles that apply to this map.
}		
If (PHY modification Included) {		
Preamble Select	1 bit	0 = Frequency shifted preamble 1 = Time shifted preamble
Preamble Shift Index	4 bits	Updated preamble shift index to be used starting with the frame specified by the Frame Offset.
Pilot Pattern Modifier	1 bit	0: Not applied, 1: Applied
Pilot Pattern Index	2 bits	00 – Pilot Pattern #A 01 – Pilot Pattern #B 10 – Pilot Pattern #C 11 – Pilot Pattern #D
}		
DL Frame Offset	3 bits	Defines the frame in which the burst is located. A value of zero indicates an allocation in the subsequent frame.
If (current zone permutation is FUSC or O-FUSC) {		
Zone symbol offset	8 bits	The offset of the OFDMA symbol in which the zone containing the burst starts, measured in OFDMA symbols from beginning of the downlink frame referred to by the Frame Offset.
}		
OFDMA Symbol Offset	8 bits	Starting symbol offset referenced to DL preamble of the downlink frame specified by the Frame Offset
If (current zone permutation is AMC, TUSC1 or TUSC2) {		AMC (2 x 3 type), TUSC1 and TUSC2 all have triple symbol slot lengths
Subchannel offset	8 bits	
No. OFDMA triple symbol	5 bits	Number of OFDMA symbols is given in multiples of 3 symbols

No. subchannels	6 bits	
}		
Else {		
Subchannel offset	6 bits	
No. OFDMA Symbols	7 bits	
No. subchannels	6 bits	
}		
DIUC/N$_{EP}$	4 bits	DIUC for Encoding Mode 00, 01, 11 N$_{EP}$ for Encoding Mode 10
If (H-ARQ Enabled) {		Encoding Mode 01, 10, 11
DL HARQ ACK bitmap	1 bit	HARQ ACK for previous UL burst.
ACK Allocation Index	6 bits	ACK channel index within H-ARQ ACK region
ACID	4 bits	H-ARQ channel ID
AI_SN	1 bit	H-ARQ Seq. Number Indicator
~~Reserved~~	~~1 bits~~	
If (IR Type) {		Incremental Redundancy
N$_{SCH}$	4 bits	Applied for Encoding Mode 10
SPID	2 bits	Applied for Encoding Mode 10 and 11
Reserved	2 bits	
}		
}		
Repetition Coding Indication	2 bits	Applied for Encoding Modes 00 and 01 only 0b00 – No repetition coding 0b01 – Repetition coding of 2 used 0b10 – Repetition coding of 4 used 0b11 – Repetition coding of 6 used
If (UL-MAP appended) {		
Reduced_AAS_Private_UL-MAP()	Variable	
}		
Reserved	3 bits	
} (end NUM IE loop)		
Nibble Padding	0/4	Padding depends upon H-ARQ options.
CRC-16	16 bits	
}		

[Remove all descriptive text following table 308a]

[Add the following text following table 308a:]

A CRC 16-CCITT, as defined in ITU-T Recommendation X.25, shall be included at the end of each reduced private map. The CRC is computed across all bytes of the reduced map, including the appended UL map if included, starting with the byte containing the 'compressed map indicator' through the last byte of the map including padding.

[Modify Table 308b as follows:]

Table 308b— Reduced AAS private UL-MAP message format

Syntax	Size	Notes
Reduced_AAS_Private_UL-MAP() {		
AAS zone configuration Included	1 bit	1 = AAS zone configuration included. AAS configuration should be included in the first UL map of a private map chain to

		define the UL AAS Zone.
AAS zone position Included	1 bit	1 = AAS zone position included. AAS zone position should be included in the first UL map of a private map chain to define the UL AAS Zone and any time the UL AAS zone is changed.
UL MAP Information ~~UCD Count~~ **Included**	1 bit	1 = UL Map Information is included (UCD Count and Private Map Allocation Start Time). These fields should be included in the first allocation of a private map chain.
PHY modification Included	1 bit	1 = Preamble shift index included.
Power Control Included	1 bit	1 = Power control value included
Include Feedback Header	2 bits	0b00 = No feedback 0b01 = MSS shall transmit a CINR feedback header (type 0b1011) based upon the DL allocation 0b10 = MSS shall transmit a CINR feedback header (type 0b1011) based upon the DL frame preamble 0b11 = Reserved
Encoding Mode	2 bits	Encoding for UL traffic burst 00: No H-ARQ 01: Chase Combing H-ARQ 10: Incremental Redundancy H-ARQ 11: Conv. Code Incremental Redundancy
if (AAS Zone Config Included) {		
Permutation	2 bits	0b00 = PUSC permutation 0b01 = Optional PUSC permutation 0b10 = AMC permutation 0b11 = Reserved
UL_PermBase	7 bits	
Preamble Indication	2 bits	0b00 - 0 symbols 0b01 - 1 symbols 0b10 - 2 symbols 0b11 - 3 symbols
Padding	5 bits	
}		
if (AAS Zone Position Included) {		
Zone Symbol Offset	8 bits	The symbol offset of the UL AAS Zone referenced to the start of the UL subframe in the frame specified by the UL frame offset. ~~This is referenced to the DL preamble of the frame pointed to by the UL frame offset, and consists of an integer symbol offset specified here, as well as the addition of the TTG known from DCD messages. If TTG is not present in the DCD (for FDD) it is assumed to be zero. This is referenced to the 'Allocation Start Time' field in the UL-MAP.~~
Zone Length	8 bits	The duration of the UL AAS Zone, specified in number of OFDMA symbols.
}		

if (~~UCD Count~~ UL MAP Information Included) {		
UCD Count	8 bits	Matches the value of the configuration change count of the UCD, which describes the uplink burst profiles that apply to this map.
Private Map Allocation Start Time	32 bits	Defines the start of the UL subframe relative to the start of the frame pointed to by the UL frame offset. This is defined in units of PS, and restricted to be less than Tf.
}		
if (PHY modification Included) {		
Preamble Select	1 bit	0 = Frequency shifted preamble 1 = Time shifted preamble
Preamble Shift Index	4 bits	Updated preamble index to be used starting the with the frame specified by the Frame Offset
Pilot Pattern Modifier	1 bit	0: Not applied, 1: Applied
Pilot Pattern Index	2 bits	00 – Pilot Pattern #A 01 – Pilot Pattern #B 10 – Pilot Pattern #C 11 – Pilot Pattern #D
}		
if (Power Control Included) {		
Power Control	8 bits	Signed integer in 0.25 dB units
}		
UL Frame Offset	3 bits	Defines the frame in which the burst is located. A value of zero indicates an allocation in the subsequent frame.
Slot Offset	12 bits	The offset to the starting location of the uplink burst from the beginning of the UL AAS zone in slots.
Duration	10 bits	The duration of the UL burst, specified in slots
UIUC/N$_{EP}$	4 bits	UIUC for Encoding Mode 00, 01, 11 N$_{EP}$ for Encoding Mode 10
If (H-ARQ Enabled) {		Encoding Mode 01, 10, 11
ACID	4 bits	H-ARQ channel ID
AI_SN	1 bit	H-ARQ Seq. Number Indicator
Reserved	3 bits	
If (IR Type) {		Incremental Redundancy
N$_{SCH}$	4 bits	Applied for Encoding Mode 10
SPID	2 bits	Applied for Encoding Mode 10 and 11
Reserved	2 bits	
}		
}		
Repetition Coding Indication	2	Applied for Encoding Mode 00 and 01 0b00: No repetition 0b01: Repetition of 2 0b10: Repetition of 4 0b11: Repetition of 6
}		

[Remove all descriptive text following table 308b]