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Re:	IEEE P802.16-REVe/D4		
Abstract	This contribution introduces enhancements/corrections for support of AAS in the OFDMA PHY.		
Purpose	Adopt into P802.16e/D4.		
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Enhancements/Corrections for AAS in OFDMA PHY

1 Problems with the current AAS definition

The definition of AAS diversity-map scan contains ambiguities and contradictions that need to be resolved:

1. The mapping between beam index in the AAS-DLFP and the preamble time/frequency shift value *K*, referred to in section 8.4.4.6.3, is not defined.

2. The number of bits allocated to the AAS-DLFP is 98 bits, while at most 96 bits can fit into the AAS-DLFP slot without adding another symbol.

3. The definitions of the “Downlink_preamble_config" and “Uplink_preamble_config” fields in the AAS-DLFP need to be clarified. The AAS preamble structure also needs clarification.

4. The “Preamble select” field in the AAS-DLFP indicates only frequency or time-shifted preambles. It does not currently specify which of the two possible time-shifted preamble definitions should be used.

5. The length of the PHYMOD_DL_IE is also not consistent depending on the value of the Preamble Modifier Type field.

6. The initial ranging allocation in the AAS-DLFP is insufficient to specify the allocation to subscribers which cannot detect the Allocation Start Time (starting time of the UL frame) in the UL-MAP.

7. There is an assumption in the current design that the permutation used for the AAS-DLFP is the same as the permutation for the AAS UL Zone in any given frame. This restriction can be relaxed if the permutation of the AAS UL Zone is carried in the AAS-DLFP message.

8. The downlink AAS IEs defined in tables 276 and 291 include entries that specify the first and last bins in the AMC AAS zone. These are redundant since the AAS DL and UL zones are a time partition of the frame and occupy all available subchannels.

9. The OFDMA uplink and downlink AAS IEs (sections 8.4.5.3.11, 8.4.5.4.14) specify whether an AAS preamble should be transmitted prior to AAS bursts. However, only a ‘presence’ field exists, without specifying the preamble length. Furthermore, the preamble length defined in the AAS-DLFP should be the same

as that defined in the AAS IEs since the preamble configuration in the AAS IE applies to all bursts following this 'AAS zone switch' in frame.

10. AAS operation will rely on private UL and DL-MAPSs (Section 6.3.7.6). The current definition of the UL-MAP IE specifies only duration, and so AAS subscribers who cannot detect the broadcast UL-MAP will not know the absolute location of any UL BW allocation given in a private UL-MAP.

11. The location of the AAS Diversity Map zone needs to be clarified.

12. The frame period to which AAS-DLFP allocations can reference must be clarified.

13. The reference for several AAS-related message subfields should be clarified (i.e. "symbol offset" is from what point).

14. It is not clear that the randomizer should have a seed of 0 for application to the AAS-DLFP. This is necessary to enable soft combining of the multiple AAS-DLFP repetitions when the AAS-DLFP content is constant across repetitions.

15. The AAS_Comp_DL_IE does not indicate the repetition for the referenced allocation.

16. The 'subchannel offset' field of the initial ranging allocation IE in the AAS-DLFP has 6 bits. This does not span the complete set of subchannels in UL PUSC (70 subchannels, and 6 bits can only span 64 subchannels).

2 Outline of proposed solution

The following changes are proposed. Specific text changes are presented in the next section.

1. Clarify the initial ranging specification of the initial ranging/compressed UL allocations that are defined in the DLFP, so that AAS subscribers know that these allocations are referenced to the start of the DL frame, and not the Allocation Start Time. Specify that in the case of such allocations, transmission shall start TTG time after the specified integer symbol offset (BS's TTG is known to the SS through DCD messages).

2. The AAS-DLFP should be reorganized to reduce its size to less than 96 bits. This can be achieved by:
   - Reducing the number of bits used for the beam index to 4 bits
   - Reducing the initial ranging allocation IE size to 25 bits.
   - Reducing the number of bits used for the AAS_Comp_DL_IE to 49.

- Introducing 1 bit that specifies the compressed allocation IE type (UL/DL).
- Introducing 2 bits that describes the permutation of the AAS UL zone.
- Introducing 2 reserve bits

3. The AAS beam index should determine the preamble shift *only* for the AAS preamble that is prepended to the allocation pointed to by the compressed DL IE. This should be clear in the text.

4. Clarify that the randomizer should have a seed of 0 for transmission of the AAS-DLFP.

5. The mapping of AAS beam index to preamble time shift should be clear. For example: take the 4 LSBs of the beam index to specify the time/frequency shift index as used in tables 284 and 300.

6. The preamble length specified by the downlink_preamble_config field should be limited to an integer number of slot durations for the DL PUSC permutation. Further, this field determines the preamble duration for the allocation pointed to by the DL Comp IE in the DLFP, and must be consistent with the preamble lengths described in the extended DIUC AAS_DL_IE and extended UIUC AAS_UL_IE messages.

7. Correct equation (100) to specify time shift.

8. Clarify text on preambles in 8.4.4.6.3-4.

9. Remove the ‘first bin index’ and ‘last bin index’ entries in the AAS DL and UL IEs.

10. Specify and clarify the preamble structure and duration in the UL and DL AAS IE sections (8.4.5.3.3 – 8.4.5.4.6).

11. Introduce block allocation in the normal UL map for only the AAS UL zone.

12. Modify the PHYMOD_UL_IE and PHYMOD_DL_IE to have only a single possible time shift implementation (i.e. restricted to integer sample time shift).

13. The location of the AAS Diversity Map zone is clarified.

14. AAS-DLFP refers to the allocations in the next frame.

15. The reference for several AAS-related message subfields has been clarified.

16. Increase ‘subchannel offset’ field in the ranging_allocation_IE from 6 to 7 bits.

3 Proposed Text Changes

Section 8.4.4.6.1:

[Modify section 8.4.4.6.1 as follows]

8.4.4.6.1 AAS frame structure

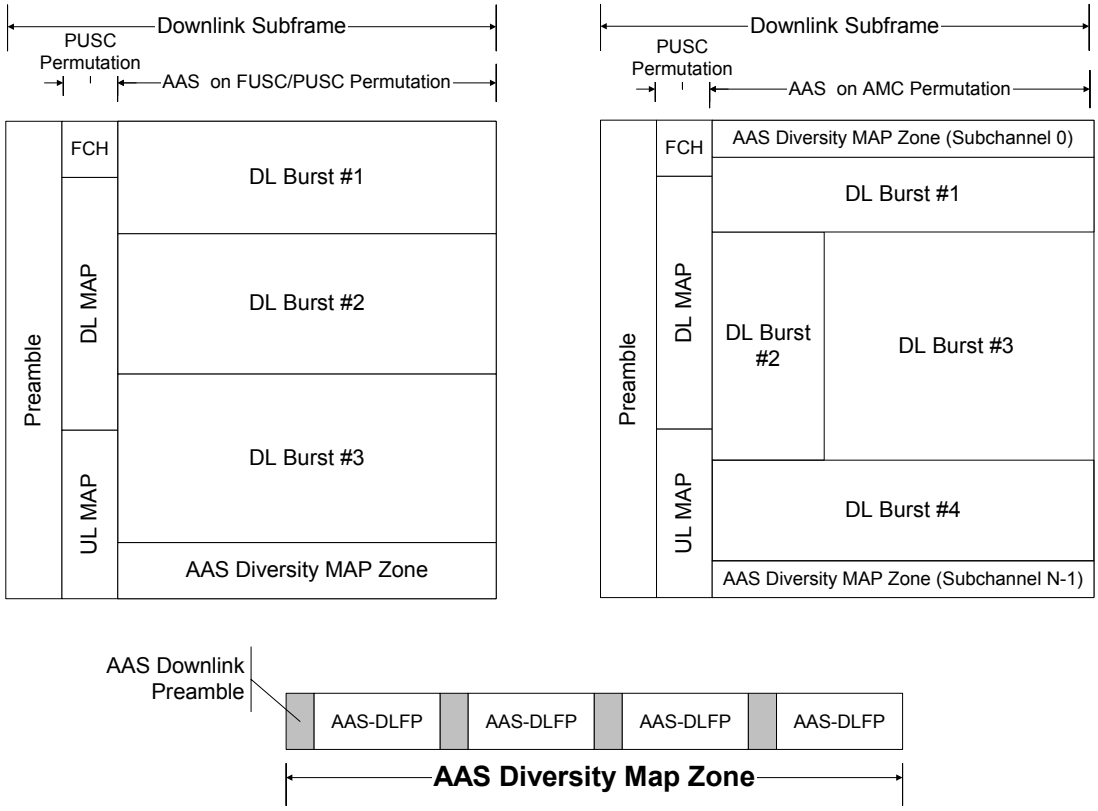
The AAS DL Zone begins on a symbol boundary and consists of all subchannels until the beginning of the UL subframe for TDD or until the end of the frame for FDD. The two highest numbered subchannels of the AAS DL Zone ~~frame may be dedicated at the discretion of~~ are dedicated by the BS for the AAS Diversity-Map Zone in the PUSC, FUSC and optional FUSC permutation. For the PUSC permutation, it is assumed that all AAS subscribers can decode the FCH in order to know the Used Subchannel Bitmap. In the AMC permutation, the ~~4th and (N-4)th~~ first and last subchannels ~~of the total N subchannels~~ of the AAS DL Zone ~~frame may be dedicated at the discretion of~~ are dedicated by the BS for the AAS Diversity-Map Zone. For AMC permutation, each subchannel for the AAS diversity MAP consists of 3 bins by 2 symbols. When these subchannels are used for this purpose, they shall not be otherwise allocated in ~~the normal~~ DL-MAP messages. ~~and shall be used only on the AAS portion of the DL sub-frame.~~ These sub-channels will be used to transmit the AAS-DLFP() whose physical construction is shown in Figure 223.

It is assumed that all AAS subscribers will be able to determine the cellID used in the selection of the DL preamble at the beginning of the DL frame. The same cellID will be used for the AAS DL Zone. The UL_IDcell for the AAS UL Zone is that provided in the UCD message. For AAS subscribers that cannot detect the AAS_DL_IE transmitted in the DL-MAP which specifies the boundaries and permutation of the AAS DL Zone, they must search over the possible permutations (PUSC/FUSC/AMC) and starting symbol to detect the AAS-DLFP. The permutation for the AAS UL Zone is specified by a field in the AAS-DLFP.

In general, the Allocation Start Time field is restricted to a value that is between one and two frame periods. In any UL-MAP message that contains AAS-UL-zone allocations, this field shall have a value that is restricted to one frame period plus an integer number of symbols plus the TTG value. The AAS SS shall start transmission TTG time after this symbol offset, where the value of TTG is known from the latest received DCD message.

In private UL map messages that contain only AAS-UL-zone allocations, it shall be possible to specify an Allocation Start time that is larger than two frame periods. In this case, the Allocation Start Time field shall be restricted such that its offset relative to the start of the referenced frame is an integer frame period plus TTG.

[Replace figure 224 with the following]



Section 8.4.4.6.2:

[Modify Section 8.4.4.6.2 as follows:]

8.4.4.6.2 AAS-DLFP Format

The purpose of the AAS-DLFP is to provide a robust transmission of the required base station parameters to enable SS initial ranging, as well as SS paging and access allocation. This is achieved through using a highly robust form of modulation and coding (namely QPSK-1/2 rate with 2 repetitions). The start of an AAS-DLFP is marked by an AAS DL preamble. The AAS-DLFPs transmitted within the AAS Diversity Map Zone may, but need not, carry the same information. Different beams may be used within the AAS Diversity Map Zone, however each AAS Downlink Preamble and associated AAS-DLFP must be transmitted on the same beam.

The AAS-DLFP supports the ability to transmit a MAP IE that carries either a compressed DL-MAP or compressed UL-MAP. This allocation message can point to a broadcast DL-MAP that is beamformed or can be used to "page" a specific SS who cannot receive the normal DL-MAP. Once the initial allocations are provided to the user, private DL-MAPs and UL-MAPs can be sent on a beamformed transmission to the user at the highest modulation and ~~lowest~~ highest coding rate that can be supported by the link. Private DL-MAPs and UL-MAPs transmitted in the AAS DL zone may only reference allocations in the AAS DL and UL Zones respectively. As such, the UL_MAP_IE will always use the block subchannel-by-symbol mode for specifying BW allocations. The AAS-DLFP also has an uplink initial ranging allocation for AAS subscribers. The AAS-DLFP is not randomized.

The contents of the AAS-DLFP() payload is described by Table 267.

[Replace table 267-268 with the following tables:]

Syntax	Size	Notes
AAS-DLFP() {		
AAS beam index	4 ~~6~~ bits	This index is the index referred to by the AAS_Beam_Select message (see section 6.3.2.3.41).
Preamble select	1 bit	0 - Frequency shifted preamble 1 - Time shifted preamble
Uplink preamble_config	2 bits	00 - 0 symbols 01 - 1 symbols 10 - 2 symbols 11 - 3 symbols
Downlink preamble_config	2 bits	00 - 0 symbols 01 - 1 symbols 10 - 2 symbols 11 - 3 symbols
AAS_UL_Zone_Permutation	2 bits	0b00 = PUSC permutation 0b01 = Optional PUSC permutation 0b10 = adjacent-subcarrier permutation 0b11 = Reserved
Comp_IE_type	1 bit	0 – UL IE 1 – DL IE
AAS_ Ranging_Allocation_IE()	25 ~~28~~ bits	
If (Comp_IE_type == 0) {		
AAS_Comp_UL_IE()	49 bits	
} else {		
AAS_Comp_DL_IE()	49 ~~50~~ bits	
}		
Reserved	2 bits	Set to zero
HCS	8 bits	
}		

Syntax	Size	Notes
AAS_Ranging__Allocation_IE() {		
OFDMA symbol offset	8 bits	The offset to the starting location of the ranging allocation is referenced to the DL preamble of the subsequent frame, 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.
Subchannel offset	7 ~~6~~ bits	
No of OFDMA symbols	4 ~~7~~ bits	
No of subchannels	4 ~~6~~ bits	
Ranging method	2 bits	00 – Initial ranging over two symbols 01 – Initial Ranging over four symbols

		10 – BW request/periodic ranging over one symbol 11 – BW request/periodic ranging over three symbols
}		

Syntax	**Size**	**Notes**
AAS_Comp_UL_IE() {		
CID	16 bits	
UIUC	4 bits	Only UIUC =1-11 or 15 can be specified. Specify UIUC=15 to indicate the well known modulation of QPSK, encoded with the mandatory CC at rate ½.
OFDMA symbol offset	8 bits	The offset to the starting location of the uplink allocation is referenced to the DL preamble of the subsequent frame, 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.
Subchannel offset	6 bits	
No of OFDMA symbols	7 bits	
No of subchannels	6 bits	
Repetition coding indication	2 bits	0b00 - No repetition coding 0b01 - Repetition coding of 2 used 0b10 - Repetition coding of 4 used 0b11 - Repetition coding of 6 used
}		

Syntax	**Size**	**Notes**
AAS_Comp_DL_IE() {		
CID	16 bits	
DIUC	4 bits	Specify DIUC=15 to indicate the well known modulation of QPSK, encoded with the mandatory CC at rate ½.
OFDMA symbol offset	8 bits	Referenced to the DL frame start preamble of the next frame.
Subchannel offset	6 bits	
No of OFDMA symbols	7 bits	
No of subchannels	6 bits	
~~Boosting~~	~~3 bits~~	~~As specified in 8.4.5.3~~
Repetition Coding Indication	2 bits	As specified in 8.4.5.3
}		

Section 8.4.4.6.3 – 8.4.4.6.4:

[Replace section 8.4.4.6.3 – 8.4.4.6.4 with the following section:]

8.4.4.6.3 AAS Preamble

The AAS-DLFP is preceded by an AAS downlink preamble of one symbol duration. All other bursts within the AAS DL and UL zones have preambles whose duration are specified by the "Uplink_preamble_config" and "Downlink_preamble_config" fields of the AAS_DLFP respectively. These fields will be consistent with the same fields of the AAS_DL_IE and AAS_UL_IE. In the case the AAS DL Zone is using the PUSC permuation, the "Downlink_preamble_config" shall always be set to an integer number of slot durations (i.e. 0 or 2 symbols). The structure of the preambles are as specified in sections 8.4.5.3.3 and 8.4.5.4.6 for the downlink and uplink, respectively. The AAS preamble number, *K*, is derived from the AAS beam index carried by the AAS_DLFP() by taking the 4 LSBs of the beam index. When using the cyclic time / frequency shifted preamble defined in 8.4.5.3.11 and 8.4.5.4.14, beams which use the same subchannels at the same time instance shall be configured to use a different AAS preamble number (*K*).

[Introduce a new section after 8.4.4.6.3.]

8.4.4.6.4 AAS Network Entry Procedure

The AAS network entry involves the following procedure:

- The AAS-SS synchronizes frame timing and frequency to the frame-start DL preamble.
- For AAS-SS at cell edge, which cannot decode the FCH or broadcast DL-MAP and UL-MAP messages, they will search for the AAS-DLFP on the AAS Diversity Map Zone. This search will need to span the possible subchannel permutations.
- The AAS-SS may receive necessary messages such as the DCD and UCD pointed to by allocations made from the AAS-DLFP using the broadcast CID. These messages can be transmitted using beam-pattern diversity to increase the link budget .
- Once the AAS-SS decodes the DCD and UCD it should perform initial ranging on the interval pointed to by the best-received AAS-DLFP.
- The AAS-SS may receive a ranging response message through a DL-MAP allocation pointed to by an AAS-DLFP with the broadcast CID. Transmit spatial weights optimized for the AAS-SS may be used for this AAS-DLFP and DL-MAP transmission.
- The AAS-SS may receive initial downlink allocations through a DL-MAP allocation pointed to by the AAS-DLFP with either broadcast CID or specific CID.
- Subsequent allocations can be managed with private DL-MAP and UL-MAP allocations.

Section 8.4.5.3.3:

[Modify text in page 525 lines 24-33:]

Within a frame, the switch from non-AAS to AAS-enabled traffic is marked by using the extended DIUC = 15 with the AAS_DL_IE() to indicate that the subsequent allocations, until the start of the first UL-MAP allocation using TDD, and until the end of the frame using FDD, shall be for AAS traffic. When used, the CID in the DL-MAP_IE() shall be set to the broadcast CID. All allocations in the DL-MAP following the AAS_DL_IE will be for allocations in the AAS DL Zone. All DL bursts in the AAS portion of the frame may be preceded by ~~a~~ an AAS preamble based on the ~~indication~~ "Downlink_preamble_config" field in the AAS_DL_IE(). ~~The preamble is defined in 8.4.6.1.1, and shall be selected to have the same segment number as the DL frame preamble, and the cell ID shall equal to *(DL-Preamble IDcell + 16) mod 32*. The preamble shall exist only on those sub-channels used by the DL burst.~~ A basic AAS preamble is formed by taking a subset of the preamble sequence as defined in section 8.4.6.1.1 for the same segment number as in

the DL frame preamble, and the cell ID equal to *(DL-Preamble IDcell + 16) mod 32*. This subset shall correspond to the subcarriers used by the burst's subchannels. In the AMC allocation, the basic AAS preamble occupies 9 subcarriers in each bin of the subchannels. The number of symbols occupied by the preamble is set by the 'Downlink preamble_config' field in the AAS_DL_IE(). The AAS preamble is formed by copying the basic preamble onto the consecutive preamble symbols. The AAS preamble shall be placed, for each subchannel, starting from the first OFDMA symbol for that subchannel that belongs to the burst.

[Remove the entries 'first bin index' and 'last bin index' from table 276]

[Modify the 'Preamble indication' entry in table 276:]

Syntax	Size	Notes
~~Preamble indication~~ Downlink preamble_config	2 bits	~~0b00 = No preamble~~ ~~0b01 = Preamble used~~ ~~0b10 – 0b11 = Reserved~~ 00 - 0 symbols 01 - 1 symbols 10 - 2 symbols 11 - 3 symbols

Section 8.4.5.3.11:

[Replace equation (100) with the following equation]

$$s(t) = \mathrm{Re}\left\{ e^{j2\pi f_c t} \sum_{m=-(Nused-1)/2}^{(Nused-1)/2} c_m \times e^{j2\pi m\Delta f\left(t - T_g - K/F_s\right)} \right\} \qquad (100)$$

[Replace Table 284 with the following:]

Table 284—OFDMA DL-MAP Physical Modifier IE format

PHY_MOD_DL_IE() {		
Extended DIUC	4 bits	PHYMOD = 0x08
Length	4 bits	Length = 0x03
Preamble Modifier Type	1 bit	0 – Randomized preamble 1 – Cyclically shifted Preamble
if (Preamble Modifier Type == 0) {		
Preamble Frequency Shift Index	4bits	Indicates the value of K in equation (101)
} else {		
Preamble Time Shift Index	4 bits	Derived from the value of *K* in equation (100) as follows: Preamble Time Shift Index = *K mod* 14 (PUSC) = *K mod* 9 (AMC)

		For PUSC, 0 – 0 sample cyclic shift 1 – Nfft/14 sample cyclic shift …. 13 – Nfft/14*13 sample cyclic shift 14-15 – reserved For AMC permutation, 0 – 0 sample cyclic shift 1 – Nfft/9 sample cyclic shift …. 8 – Nfft/9*8 sample cyclic shift 9-15 – reserved
}		
Reserved	3 bits	
}		

Section 8.4.5.4.6:

[Modify text in page538 lines 25-31:]

Within a frame, the switch from non-AAS to AAS-enabled traffic is marked by using the extended UIUC = 15 with the AAS_UL_IE() to indicate that the subsequent allocation until the end of the frame shall be for AAS traffic. When used, the CID in the UL-MAP_IE() shall be set to the broadcast CID. All allocations in the UL-MAP following the AAS_UL_IE will be for allocations in the AAS UL Zone. All UL bursts in the AAS portion of the frame may be preceded by ~~a~~ an AAS preamble based on the ~~indication~~ "Uplink_preamble_config" field in the AAS_UL_IE(). The basic AAS preamble is formed by taking a subset of the appropriate preamble sequence as defined in section 8.4.6.1.1 using the UL_IDcell transmitted in the UCD and the same segment number as used for the DL frame preamble. This subset shall correspond to the subcarriers used by the burst's subchannels. In the AMC allocation, the basic AAS preamble occupies 9 subcarriers in each bin of the subchannels. The number of symbols occupied by the preamble is set by the 'Uplink preamble_config' field in the AAS_UL_IE(). The AAS preamble is formed by copying the basic preamble onto the consecutive preamble symbols. The AAS preamble shall be placed, for each subchannel, starting from the first OFDMA symbol for that subchannel that belongs to the burst. ~~The preamble is defined in section 8.4.9.4.3.1~~

[Remove the entries 'first bin index' and 'last bin index' from table 291]

[Modify the 'Preamble indication' entry in table 291:]

Syntax	**Size**	**Notes**
~~Preamble indication~~ Uplink preamble_config	2 bits	~~0b00 = No preamble~~ ~~0b01 = Preamble used~~ ~~0b10 – 0b11 = Reserved~~ 00 - 0 symbols 01 - 1 symbols 10 - 2 symbols 11 - 3 symbols

Section 8.4.5.4.14:

[Replace Table 284 with the following:]

Table 300—OFDMA UL-MAP Physical Modifier IE format

PHY_MOD_UL_IE() {		
Extended UIUC	4 bits	PHYMOD = 0x05
Length	4 bits	Length = 0x03
Preamble Modifier Type	1 bit	0 – Randomized preamble 1 – Cyclically shifted Preamble
if (Preamble Modifier Type == 0) {		
Preamble Frequency Shift Index	4bits	Indicates the value of *K* in equation (101)
} else {		
Preamble Time Shift Index	4 bits	Derived from the value of *K* in equation (100) as follows: Preamble Time Shift Index = *K mod* 4 (PUSC) = *K mod* 3 (Opt-PUSC) = *K mod* 9 (AMC) For PUSC, 0 – 0 sample cyclic shift 1 – Nfft/4 sample cyclic shift …. 3 – Nfft/4*3 sample cyclic shift 4-15 – reserved For optional PUSC, 0 – 0 sample cyclic shift 1 – Nfft/3 sample cyclic shift 2 – Nfft/3*2 sample cyclic shift 3-15 – reserved For AMC permutation, 0 – 0 sample cyclic shift 1 – Nfft/9 sample cyclic shift …. 8 – Nfft/9*8 sample cyclic shift 9-15 – reserved
}		
Reserved	3 bits	
}		

[Modify text in page 533(lines 61-65) & 534 (lines 1-10):]

8.4.5.4 UL-MAP IE format

The OFDMA UL-MAP IE defines uplink bandwidth allocations. Uplink bandwidth allocations are specified either as block allocations (subchannel by symbol) with an absolute offset, or as an allocation with duration in slots, the starting position for which is determined considering the prior allocations appearing in the UL-MAP. Block allocations are used for ranging and BW request allocations, PAPR/Safety zone allocations and all allocations in the AAS UL Zone. If an OFDMA UL-MAP IE with UIUC=12 or UIUC=13 exists, they must be always allocated first.

For the first OFDMA UL-MAP IE with UIUC other than 12 or 13, the allocation shall start at the lowest numbered non-allocated subchannel on the first non-allocated OFDMA symbol defined by the allocation start time field of the UL-MAP message which are not allocated with UIUC=12 or UIUC=13 (See Table 217 for an example). These IEs shall represent the number of slots provided for the allocation. Each allocation IE shall start immediately following the previous allocation and shall advance in the time domain. If the end of the UL frame has been reached, the allocation shall continue at the next subchannel at first OFDMA symbol (define by the allocation start time field) which is not allocated with UIUC=12 or UIUC=13. The exception to this allocation scheme is for allocations in the AAS UL Zone, which will be specified with a block subchannel-by-symbol definition.

The CID represents the assignment of the IE to either a unicast, multicast, or broadcast address. A UIUC shall be used to define the type of uplink access and the burst type associated with that access. A Burst Descriptor shall be specified in the UCD for each UIUC to be used in the UL-MAP. The format of the UL-MAP IE is defined in Table 285.

[Modify Table 285 in Page 534 as follows:]

Table 285—OFDMA UL-MAP IE format

Syntax	Size	Notes
UL-MAP_IE() {		
CID	16 bits	
UIUC	4 bits	
if (UIUC == 12) {		
OFDMA Symbol offset	8 bits	
Subchannel offset	7 bits	
No. OFDMA Symbols	7 bits	
No. Subchannels	7 bits	
Ranging Method	2 bits	0b00 - Initial Ranging over two symbols 0b01 - Initial Ranging over four symbols 0b10 - BW Request/Periodic Ranging over one symbol 0b11 - BW Request/Periodic Ranging over three symbols
reserved	1 bit	Shall be set to zero
} else if (UIUC == 13) {		
PAPR_Reduction_and_Safety_Zone_Allocation_IE() {	32 bits	

else if (UIUC == 14) {		
CDMA_Allocation_IE()	32 bits	
else if (UIUC == 15) {		
Extended UIUC dependent IE	Variable	See clauses following 8.4.5.4.3
} else {		
if (not AAS UL Zone){		Allocations that appear following the AAS_UL_IE, or appear in UL-MAPs received in the AAS DL Zone reference BW allocations in the AAS UL Zone. All other allocations are not in the AAS zone and receive a duration-only specification for their BW allocation.
Duration	10 bits	In OFDMA slots (see 8.4.3.1)
Repetition coding indication	2 bits	0b00 - No repetition coding 0b01 - Repetition coding of 2 used 0b10 - Repetition coding of 4 used 0b11 - Repetition coding of 6 used
}else{		BW allocations for the AAS UL Zone receive a block subchannel-by-symbol specification.
OFDMA symbol offset	10 bits	
Subchannel offset	6 bits	
No of OFDMA symbols	8 bits	
No of subchannels	6 bits	
Repetition coding	2 bits	0b00 - No repetition coding 0b01 - Repetition coding of 2 used 0b10 - Repetition coding of 4 used 0b11 - Repetition coding of 6 used
}		
Padding nibble, if needed	4 bits	Completing to nearest byte, shall be set to 0.
}		