Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Corrections on some TLVs in UCD and DCD for OFDMA**
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Re:	IEEE P802.16e/D11.
Abstract	This presentation corrects some TLVs in UCD and DCD of 16e for consistency with Cor1.
Purpose	Review and adoption of the proposed text change into IEEE P802.16e/D12.
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1 **Corrections on some TLVs in UCD and DCD for OFDMA**

2

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10 **1. Problem Statements**

11

12 In 802.16e/D11, 11.3.1 UCD channel encodings, Table 349 is titled "UCD channel encodings". The original title for the table is 13 "UCD common channel encodings" in IEEE 802.16-2004. Also, there is no "PHY scope" column in the original table 349 in IEEE 14 802.16-2004. Type 7, 'HO_ranging_start' and Type 8, 'HO_ranging_end' are common encodings for SCa, OFDM, and OFDMA. So, 15 we may leave them with a note below the table 'SCa, OFDM, OFDMA (mobile only)'. However, Type 9, 'Initial ranging backoff 16 start', Type 10, 'initial ranging backoff end', Type 11, 'Bandwidth request backoff start', Type 12, 'Bandwidth request backoff end', 17 Type 13, 'Uplink burst profile for multiple FEC types', and Type 175, 'Normalized C/N override2' are all OFDMA specific channel 18 encodings and hence they should be moved to table 353.

19

20 Type 175, 'Normalized C/N override2' has conflicting has conflicting type number with 'Normalized C/N override'. So, we need to 21 change the type number from 175 to 177.

22

23 In 802.16e/D11, 11.3.1 UCD channel encodings, Table 353a UCD PHY-specific channel encodings WirelessMAN-OFDMA, the 24 editorial instruction on page 534, line 19 says, '*[Insert the following rows to Table 353:]*' when many of the TLV items in Table 353a 25 already exist in Table 353 in 802.16-2004 and/or Cor1/D5. This would, in effect, create duplicate lines in the Table.

26

27 In the same Table, 'Start of ranging codes Group', Type 155 in the Table was not changed to reflect changes to Section 8.4.7.3 in 28 16e/D11 and a description line added in Cor1/D5.

29

30 In the same Table, 'Permutation base', Type 156, 'UL allocated subchannels bitmap', Type 157, 'Optional permutation UL Allocated 31 subchannels bitmap', Type 158, and 'HARQ ACK delay for UL burst', Type 171 are copied into 16e/D11 here with no change from 32 802.16-2004, and fail to reflect changes made in Cor1/D5.

33

34 In the same Table, 'Band AMC Allocation Threshold', Type 159, 'Band AMC Release Threshold', Type 160, 'Band AMC Allocation 35 Timer', Type 161, 'Band AMC Release Timer', Type 162, 'Band Status Reporting MAX Period', Type 163, and 'Band AMC Retry 36 Timer', Type 164 all are copied from 802.16-2004, no changes in Cor1/D5, changes in 16e/D11 but with no editorial markup 37 indicating the changes.

38

39 In the same Table, 'Initial ranging codes', Type 150, 'Periodic ranging codes', Type 151, 'Bandwidth request codes', Type 152, 40 'Periodic ranging backoff start', Type 153, 'Periodic ranging backoff end', Type 154, 'Safety Channel Allocation Threshold', Type 41 165, 'Safety Channel Release Threshold', Type 166, 'Safety Channel Allocation Timer', Type 167, 'Safety Channel Release Timer', 42 Type 168, 'Bin Status Reporting MAX Period', Type 169, 'Safety Channel Retry Timer', Type 170, and 'Band AMC Entry Average 43 CINR', Type 185 all are inappropriately copied into this Table either from 802.16-2004 or Cor1/D5 (according to the Editorial 44 instruction in 16e/D11, to be inserted into Table 353 again) in 16e/D11 without any change whatsoever.

45

46 In 802.16e/D11, 11.4.1 DCD, Table 358 – DCD channel encodings, Type 30 – 'DL allocated subchannel bitmap for optional AMC 47 permutation' does not reflect changes from Cor1 (Type 22, 'DL AMC allocated physical bands bitmap' is added in Cor1 for the same 48 purpose and with clear text). We need to remove the TLV type 30 from the Table 358 and add the TLV type 20 to the Table 358 with 49 some additional text to clarify it includes AMC in HARQ MAP and Normal MAP.

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53 In the same Table 358, Type 148, 'MAC version' is duplicated without any change from IEEE 802.16-2004.

1

2. Remedy

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[11.3.1 UCD channel encodings]

5

1. **Page (line): 531 (39) -534(18) :** *replace the existing text, including Editorial markup, and Tables, and replace Editorial instructions with:*

8

[Insert the following rows to Table 349:]

10

11

Table 349 UCD common channel encodings

Name	Type (1 byte)	Length	Value
HO_ranging_start*	7	1	Initial backoff window size for MS performing initial ranging during handover process, expressed as a power of 2. Range: 0-15 (the highest order bits shall be unused and set to 0).
HO_ranging_end*	8	1	Final backoff window size for MS performing initial ranging during handover process, expressed as a power of 2. Range: 0-15 (the highest order bits shall be unused and set to 0).

12   ***SCa, OFDM, OFDMA (mobile only)***

13

2. **Pages (line): 534(19) – 537(57),** *replace the existing text, including Editorial markup, and Tables, and replace Editorial instructions with:*

16

[Change Table 353 as indicated:]

18

19

Table 353 UCD PHY-specific channel encodings WirelessMAN-OFDMA

Name	Type (1 byte)	Length	Value
Start of ranging codes group	155	1	Indicates the starting number, S, of the group of codes used for this uplink. If not specified, the default value shall be set to zero. All the ranging codes used on this uplink will be between S and ((S+O+N+M+L) mod 256). Where, N is the number of initial-ranging codes M is the number of periodic-ranging codes L is the number of bandwidth-request codes O is the number of handover-ranging codes The range of values is $0 \le S \le 255$.
Band AMC Allocation Threshold	159	1	dB unit threshold of the maximum of the standard deviations of the individual bands CINR measurements over time to trigger mode transition from normal subchannel to Band AMC
Band AMC Release Threshold	160	1	dB unit threshold of the maximum of the standard deviations of the individual bands CINR measurements over time to trigger mode transition from Band AMC to normal subchannel
Band AMC Allocation Timer	161	1	Frame unit Minimum required number of frames to measure the average and standard deviation for the event of Band AMC triggering
Band AMC Release Timer	162	1	Frame unit Minimum required number of frames to measure the average and standard deviation for the event triggering from Band AMC to normal subchannel
Band Status Reporting MAX Period	163	1	Frame unit Maximum period between refreshing the Band CINR measurement by the unsolicited REP-RSP

Band AMC Retry Timer	164	1	Frame unit Backoff timer between consecutive mode transitions from normal subchannel to Band AMC when the previous request is failed

20
21 *[Insert the following rows to Table 353:]*
22
23

Table 353 UCD PHY-specific channel encodings WirelessMAN-OFDMA

Name	Type (1 byte)	Length	Value
Normalized C/N override 2	177	8	Bit#0~7: It shall be interpreted as signed integer in dB. It orresponds to the normalized C/N value in the first line (counting except for header cell of table) Bit#8~63: This is a list of numbers, where each number is encoded by one nibble, and interpreted as a signed integer. The nibbles correspond in order to the list define by Table 334, starting from the second line (counting except for the header cell of table), such that the LS nibble of the first byte corresponds to the second line in the table. The number encoded by each nibble represents the difference in normalized C/N relative to the previous line in the table.
UpperBound$_{AAS\_PREAMBLE}$	186	1	Signed in units of 0.25 dB
LowerBound$_{AAS\_PREAMBLE}$	187	1	Signed in units of 0.25 dB
Allow AAS Beam Select Messages	188	1	Boolean to indicate whether unsolicited AAS Beam Select messages (see 6.3.2.3.41) should be sent by the MS. The default value is 1, with possible values of 0-1: 0 — MS should not send AAS Beam Select Messages 1 — MS may send AAS Beam Select Messages
Use CQICH indication flag	189	1	The N MSB values of this field represents the N-bit payload value on the Fast Feedback channel reserved as indication flag for MS to initiate feedback on the Feedback header, where N is the number of payload bits used for S/N measurement feedback on the Fast Feedback channel. The value shall not be set to all zeros.
MS-specific up power offset adjustment step	190	1	Unsigned in units of 0.01 dB
MS-specific down power offset adjustment step	191	1	Unsigned in units of 0.01 dB
Minimum level of power offset adjustment	192	1	Signed in units of 0.1 dB
Maximum level of power offset adjustment	193	1	Signed in units of 0.1 dB
Handover Ranging Codes	194	1	Number of handover ranging CDMA codes. Possible values are 0-255.
Initial ranging interval	195	1	Number of frames between initial ranging interval allocation.

Tx Power Report	196	3	Bit#0~3: Tx_Power_Report_Threshold, It is unsigned integer and shall be read in dB scale. When 0b111 it means infinite. Bit#4~7: It is unsigned integer whose value is d. Its value d shall be interpreted as Tx_Power_Report_Interval =2^d. When 0b111 it means infinite. Bit#8~11: α_{p_avg} in multiples of 1/16 (range [1/16,16/16]) Bit#12~15: Tx_Power_Report_Threshold, It is unsigned integer and shall be read in dB scale. When 0b111 it means infinite. It shall be used when CQICH is allocated to the SS. Bit#16~19: It is unsigned integer whose value is d. Its value d shall be interpreted as Tx_Power_Report_Interval =2^d. When 0b111 it means infinite. It shall be used when CQICH is allocated to the SS. Bit#20~24: α_{p_avg} in multiples of 1/16 (range [1/16,16/16]), It shall be used when CQICH is allocated to the SS.
Normalized C/N for Channel Sounding	197	1	Signed integer for the required C/N (dB) for Channel Sounding. This value shall override C/N for the channel sounding in Table 334a.
Initial_ranging_backoff_start	198	1	Initial backoff window size for initial ranging contention, expressed as a power of 2. Values of n range 0-15 (the highest order bits shall be unused and set to 0) This TLV shall be used in NBR-ADV message only to represent corresponding values that appear in UCD message fields.
Initial_ranging_backoff_end	199	1	Final backoff window size for initial ranging contention, expressed as a power of 2. Values of n range 0-15 (the highest order bits shall be unused and set to 0) This TLV shall be used in NBR-ADV message only to represent corresponding values that appear in UCD message fields.
Bandwidth_request_backoff_start	201	1	Initial backoff window size for contention BW requests, expressed as a power of 2. Values of n range 0-15 (the highest order bits shall be unused and set to 0). This TLV shall be used in NBR-ADV message only to represent corresponding values that appear in UCD message fields.
Bandwidth_request_backoff_end	202	1	Final backoff window size for contention BW requests, expressed as a power of 2. Values of n range 0-15 (the highest order bits shall be unused and set to 0). This TLV shall be used in NBR-ADV message only to represent corresponding values that appear in UCD message fields.
Uplink_burst_profile for multiple FEC types	203	1	May appear more than once (see 6.3.2.3.3 and 8.4.5.5). The length is the number of bytes in the overall object, including embedded TLV items.

[11.4.1 DCD channel encodings]

1. Pages (line): 540(5619), – 54137(5748), Remove following TLVs from Table 358]

Name	Type (1 byte)	Length	Value	PHY Scope
DL allocated subchannel bitmap for optional AMC permutation	30	6	This is a bitmap describing the bands allocated to the segment in the DL, when using the optional AMC permutation (see 8.4.6.3). The LSB of the first byte shall correspond to band 0. For any bit that is not set, the corresponding band shall not be used by the MS on that segment.	-
MAC version	148	1	See 11.1.3	All

2. ***Pages (line): 540(56), Add following TLV to Table 358***

Name	Type (1 byte)	Length	Value	PHY Scope
DL AMC allocated physical bands bitmap	22	6	A bitmap describing the physical bands allocated to the segment in the DL, when allocating AMC subchannels through the HARQ MAP, or through the Normal MAP, or for Band-AMC CINR reports. The LSB of the first byte shall correspond to band 0. For any bit that is not set, the corresponding band shall not be used by the SS on that segment. When this TLV is not present, BS may allocate any physical bands to a SS	OFDMA

3. ***Re-arrange the Table 358 so that Type numbers are in increasing order.***

3. References

[1]　IEEE Std 802.16-2004, "IEEE Standard for Local and metropolitan area networks Part 16: Air Interface for Fixed Broadband Wireless Access Systems," Oct. 2004.

[2]　IEEE P802.16-Cor1/D5, "Corrigendum to IEEE Standard for Local and Metropolitan Area Networks - Part 16: Air Interface for Fixed Broadband Wireless Access Systems," Sep. 2005.

[3]　IEEE P802.16e/D11, "Draft Amendment to IEEE Standard for Local and Metropolitan Area Networks Part 16: Air Interface for Fixed and Mobile Broadband Wireless Access Systems —Amendment for Physical and Medium Access Control Layers for Combined Fixed and Mobile Operation in Licensed Bands," Sep. 2005.