

**Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)**

**Submission Title:** comment and resolution about CID 64 and etc.

**Date Submitted:** 9<sup>th</sup> July, 2010

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**Re:** []

**Abstract:** Collect PHY Header related comment to resolve together

**Purpose:** Contribution to IEEE 802.15.7 TG-VLC

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## CID 64 (Subclause 6.4.1.6, page 42, line 9)

### Comment

- DME is missing from Figure 3

### Suggested Remedy

- Modify figure 3 to include DME

### Resolution/instruction to editor

- My suggestion is **Accept**.
- Instruction to editor: insert DME in figure 3.

# CID 155,161 (Subclause 5.6.4, page 15, line 39)

## Comment

- the text states four frame types, and covers five subclauses, but read the rest of the document there are six.
- missing frame types

## Suggested Remedy

- There are too many inconsistencies to provide a solution. Are there two ack frames (one with no payload and one with payload)? As but one example.
- add visibility frame, add dimming, color stabilization

## Resolution/instruction to editor

- My suggestion is **Accept**.
- Instruction to editor: change sentence from “This standard defines four frame structures:” to “This standard defines six frame structures:”
- Insert following sentence at line 38 and 39 in page 15.
- “– A visibility frame, used for showing visibility to user” and “– A color frame, used for intuitively providing information such as device status and channel quality to the user”

## CID 162 (Subclause 5.6.4.1, page 15, line 42)

### Comment

- The entire subclause needs to be deleted because it repeats normative information found in other subclauses. This is supposed to be an overview, not a repeat of the normative figures in the other subclauses

### Suggested Remedy

- Delete Subclause 5.6.4.1 through 5.6.4.5

### Resolution/instruction to editor

- My suggestion is **Reject**.
- Because from 5.6.4.1 to 5.6.4.5 is introduction.

## CID 167 (Subclause 5.6.4.1, page 16, line 3)

### Comment

- This figure is an excellent example of why normative information shall not be repeated in a specification. The PHR is shown as 1 octet in length, yet in Clause 6 it is defined to be 3 octets in length. Because the information is repeated not just once, but in 4 figures, there are now four corrections to make.

### Suggested Remedy

- Delete Figures 13, 14, 15, 16 and 17 as they repeat normative information which will result (and indeed has resulted) in technical errors in the draft.

### Resolution/instruction to editor

- My suggestion is accepted.
- Instruction to editor and Daeho: delete octets and length in figure 13, 14, 15, 16

CID 168 (Subclause 5.6.4.2, page 16, line 44)

CID 171 (Subclause 5.6.4.3, page 17, line 4)

CID 172 (Subclause 5.6.4.4, page 17, line 4)

### Comment

- The sentences "The MAC payload ... form the MAC data frame (i.e., MPDU)." repeat normative information and so need to be deleted. The Figure shows the fields and the correct order.
- The sentences "The MAC acknowledgment ... form the MAC acknowledgment frame (i.e., MPDU)." repeat normative information and so need to be deleted. The Figure shows the fields and the correct order.
- The sentences "The MAC payload ... form the MAC command frame (i.e., MPDU)." repeat normative information and so need to be deleted. The Figure shows the fields and the correct order.

### Suggested Remedy

- Delete the mentioned sentence

### Resolution/instruction to editor

- My suggestion is accepted.
- Instruction to editor : delete sentence in 5.6.4.2, 5.6.4.3 and 5.6.4.4

## CID 169 (Subclause 5.6.4.3, page 17, line 14~24)

### Comment

- The frame format is different from the general packet format in section 6.4.1 page 39.

### Suggested Remedy

- Harmonize the packet format.

### Resolution/instruction to editor

- My suggestion is accepted.
- Figure in page 39 is updated in 448/r1.
- Instruction editor: nothing to do. We harmonized it.

## CID 170 (Subclause 5.6.4.1, page 15, line 42)

### Comment

- The frame format is different from the general packet format in section 6.4.1 page 39.

### Suggested Remedy

- Harmonize the packet format.

### Resolution/instruction to editor

- My suggestion is accepted.
- Figure in page 39 is updated in 448/r1.
- Instruction editor: nothing to do. We harmonized it.



## CID 174 (Subclause 5.6.4.5, page 18, line 1)

### Comment

- This section needs more detailed explanations on the frame. Figure 17 should be redrawn and PHY Header should be renamed.

### Suggested Remedy

- Need to put more explanation on this section and a new figure for Figure 17.

### Resolution/instruction to editor

- My suggestion is accept.
- Instruction editor: add following sentence at line 13 page 18.
- Visibility frame is used for sending the visibility pattern for a fixed period of time, supporting features such as flicker mitigation, continuous visibility, device discovery, color stabilization and power savings to the receiver. The in-band visibility pattern can help with device discovery. The visibility pattern is uncoded as shown in Figure 101 (Section 7.5). The header for the visibility frame is sent at the lowest data rate corresponding to the currently negotiated clock rate.

## CID 343 (Subclause 6.4.1, page 39)

### Comment

- Delete CSK PPDU

### Suggested Remedy

- There should only be one PPDU format with definable fields. Modify the PPDU format in general so it also supports CSK without defining an explicit PPDU just for CSK.

### Resolution/instruction to editor

- My suggestion is **accept**.
- Figure 21 and 22 are updated.
- Instruction editor: Please replace 6.4 PPDU with document 448/r1

## CID 367b (Subclause 6.4.1, page 39)

### Comment

- Come up with a different name for the field Preamble pattern as you are re-using the term preamble for both the combination of the fast locking pattern and the preamble pattern.

### Suggested Remedy

- Perhaps "data recovery pattern" or similar?

### Resolution/instruction to editor

- We already solved in CC.
- Refer slide 35 in 383r4.
- My suggestion is **accept**.
- Instruction editor: Refer slide 35 in 383r4

## CID 404 (Subclause 6.5.1, page 45, line 17 to 26)

### Comment

- The Value entries in Table 24 (PHY constants) are not consistent with the previously defined packet format / are unrealistic.

### Suggested Remedy

- Please define appropriate PHY constants.

### Resolution/instruction to editor

- We already solved in CID 372.
- My suggestion is **accept**.
- Instruction editor: make sure table 24 (PHY constants) uses max sizes that are precise (i.e. 65535 instead 64 kB).

## CID 525 (Subclause 6.9.4.1, page 60, line 21)

### Comment

- ED is stated, but there is no ED in scanning

### Suggested Remedy

- Unknown

### Resolution/instruction to editor

- Based on CID 534, the committee agree with deleting E D in that sentence.
- accept in principle.
- Instruction editor: delete the ED

## CID 527 (Subclause 6.9.4.1, page 60, line 20~32)

### Comment

- What are the CQI values to be measured and reported

### Suggested Remedy

- Define the CQI values to be measured and reported, number of bits used for each value etc.

### Resolution/instruction to editor

- My suggestion is **accept**.
- It is already defined in 7.2.3.3 Color Quality Indicator IE.

CID 531 (Subclause 6.9.4.1, page 60, line 28)

CID 536 (Subclause 6.9.4.1, page 60, line 29)

## Comment

- (SY) "A single CQI value set consists of band plan ID and corresponding CQI value as shown below." I don't see anything below
- There appears to be something missing in the text

## Suggested Remedy

- Fix
- "... CQI value as shown below." (But there is nothing actually there ... so what is missing).

## Resolution/instruction to editor

- My suggestion is **accept**.
- Instruction editor: replace "below" with "in table 77" at line 29

## CID 609 (Subclause 7.1.11.1.2, page 113, line 31)

### Comment

- CHANNEL\_ACCESS\_FAILURE and NO\_ACK are described here but not part of Table 58

### Suggested Remedy

- Add to TABLE 58

### Resolution/instruction to editor

- 7.1.11.1.2 is related with MLME-COMM-STATUS.indication and table 58 is MLME-SET.confirm parameters.
- And CHANNEL\_ACCESS\_FAILURE and NO\_ACK is already in table 56.
- My suggestion is **Reject**.



## CID 646 (Subclause 7.2.1.1.1, page 132, line 1-20)

### Comment

- IEEE 802.15.4 has huge problems with the number of remaining reserved frame types – there are not enough, and it is difficult to provide extensibility for future extensions. So, do not assign too few frame types as well.

### Suggested Remedy

- make the Frame Type subfield (at least) 4 bits long.

### Resolution/instruction to editor

- My suggestion is **Reject**.
- There is already 3 bits reserved for extending frame format.

## CID 722 (Subclause 7.4.2, page 163)

### Comment

- (TR) §7.4.2, p. 163, l. 40–44: The phrase “where 6 represents ...” seems to be a remnant of the corresponding clause of the IEEE 802.15.4–2006 specification (where the PPDU has size 6 octets, viz. preamble: 4 octets; SHR: 1 octet; length: 1 octet). With 802.15v1c, the PHY header has variable size and contains more octets than with 802.15.4–2006. Suggested remedy: Correct the formula accordingly.

### Suggested Remedy

- Correct the formula accordingly.

### Resolution/instruction to editor

# CID 722

ackWaitDuration is sum of backoffperiod, turnaround time and time taken to transmit ack packet

$$\text{macAckWaitDuration} = \quad (25)$$

$$aUnitBackoffPeriod + aTurnaroundTime + \text{phySHRDuration} + \lceil 6 \cdot \text{phySymbolsPerOctet} \rceil$$

where

6 represents the number of PHY header octets plus the number of PSDU octets in an acknowledgment frame.

# CID 722 (Subclause 7.4.2, page 163)

## ❖ IEEE 802.15.4

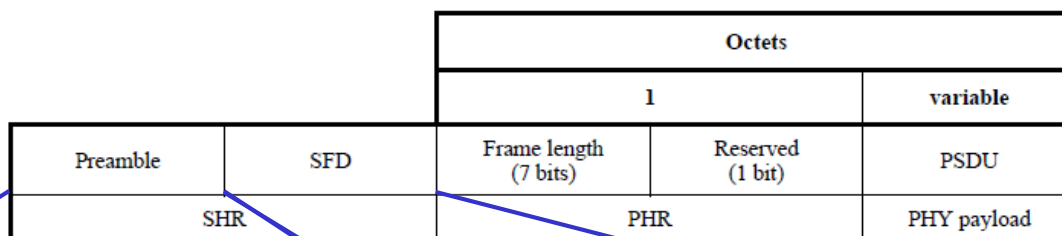


Table 19—Preamble field length

PHY	Length		Duration (uS)
868–868.6 MHz BPSK	4 octets	32 symbols	1600
902–928 MHz BPSK	4 octets	32 symbols	800
868–868.6 MHz ASK	3 octets	2 symbols	160
902–928 MHz ASK	3.75 octets	6 symbols	120
868–868.6 MHz O-QPSK	4 octets	8 symbols	320
902–928 MHz O-QPSK	4 octets	8 symbols	128
2400–2483.5 MHz O-QPSK	4 octets	8 symbols	128

Table 20—SFD field length

PHY	Length	
868–868.6 MHz BPSK	1 octet	8 symbols
902–928 MHz BPSK	1 octet	8 symbols
868–868.6 MHz ASK	2.5 octets	1 symbol
902–928 MHz ASK	0.625 octets	1 symbol
868–868.6 MHz O-QPSK	1 octet	2 symbols
902–928 MHz O-QPSK	1 octet	2 symbols
2400–2483.5 MHz O-QPSK	1 octet	2 symbols

# CID 722 (Subclause 7.4.2, page 163)

- ❖ IEEE 802.15.7
  - Preamble
    - ◆ Fast locking pattern: 64 bit
    - ◆ Topology dependent pattern: 15 bit
  - PHY header
    - ◆ Burst mode : 1 bit
    - ◆ Channel number : 3 bit
    - ◆ MCS ID : 6 bit
    - ◆ Length of PSDU : 16 bit
    - ◆ Reserved fields : 6 bit
    - ◆ HCS : 16 bit
  - Channel estimation field
    - ◆ 8 bit
  - Total
    - ◆ PHY type 1,2 : 127 bit (7.875 octets)
    - ◆ PHY type 3 : 135 bit (8.875 octets)
  - Ack MAC payload size
    - ◆ 5 octets

# New calculation CID 722

$$\text{AckWaitTime} = \text{backoff period} + \text{turnaround time} + \text{clock period} * \text{numSymAckFrame}$$

- Where numSymAckFrame is the number of bits in the acknowledgement frame. numSymAckFrame = 12.875\*8 for PHY I & II and 13.875\*8 for PHY III. For B-ACK mode, the AckWaitTime would be larger, depending on the number of acknowledgements in the b-ack mode as explained in 7.2.2.2. The clock period is obtained via the optical rates specified in Tables 2 and 3.

## Instruction to editor

- Replace formula with above equation and supporting text

# CID 716, 717, 718, 721, 722a,

Instruction to  
editor

- Resolved via CID 722