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

Submission Title: [**Comment resolution on sensitivity definition and frame length field**]

Date Submitted: []

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Re: [In response to comment on TG4g FSK draft]

Abstract: [SFF comment resolutions]

Summary

This document provides resolution proposal from SFF on the technical comment below

- CID#4, 39, 326, 231, 315: PSDU length for sensitivity definition

- CID#7: Frame Length Field

CID#4, 39, 326, 231, 315: PSDU length for sensitivity definition

Comment (extract):

- "PSDU length of 1500 octets to validate receiver sensitivity for MRFSK is unnecessary."

Resolution status:

- Assignees of the comments have discussed and agreed to propose the resolution as below:
  - Assignees: Bob Mason, Daniel Popa, Kazu Yasukawa

Proposed Resolution:

- PSDU length for MRFSK PHY = 250 octets.

Back up: Receiver sensitivity definition

Rationale:

- Even though SUN PHYs supports a frame with PSDU length up to 1500 octets, many PHY frames carry payloads of a few tens of octets (e.g., beacon, acknowledgement, MAC command frames)

- Average packet length is a good trade-off between test point that we can use as a performance measure and time to conduct test

- A typical usage scenario of packets with various length is considered (as below), and it conveys average length of 250 octets

	PSDU length [octets]	Ratio [%]
Beacon, ACK, command	40	50
Short data	100	30
Long data	1000	20
Average PSDU length		250 octets

CID#7: Frame Length Field

Comment: Proposed text (from SFF) below is missing;
"In the case of the MRFSK PHY, the Frame Length field shall be formatted with the MSB to be transmitted first."
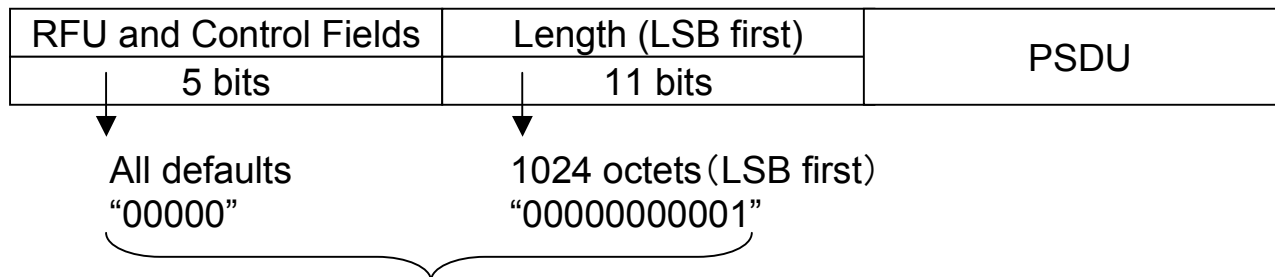
Proposed Resolution:

- add "In the case of the MRFSK PHY, the Frame Length field shall be formatted with the MSB to be transmitted first."
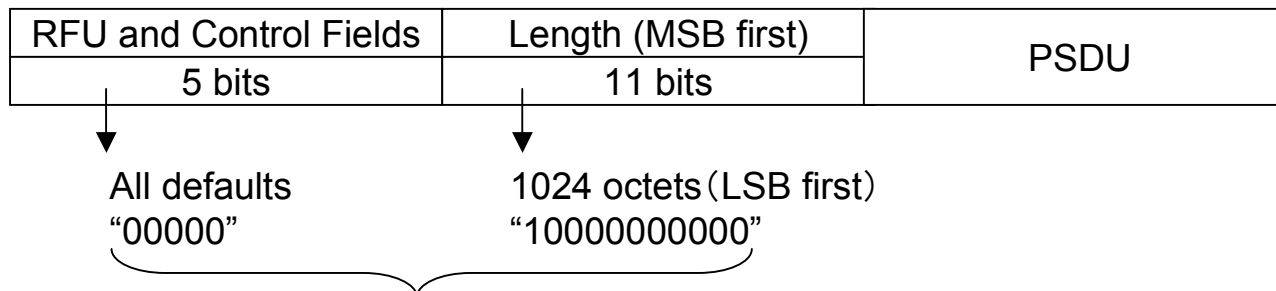
Rationale:

- Average number of consecutive zeros or ones are smaller (next slide)
- PHR will be formatted in octet-wise in practical implementation
    - 11 bit frame length field will be split into 2 octet fields
    - It seems reasonable 3 bits represents more significant bits (in the first octet) and 8 bits represents less significant bits (in the second octet)

Back-up: Frame Length Field

- Currently, PHR scrambling / <u>non-scrambling</u> is possible
- Should avoid transmitting / receiving continuous "0"s or "1"s, which could lead to bit error in FSK modem

RFU and Control Fields	Length (LSB first)	PSDU
5 bits	11 bits	

All defaults   1024 octets（LSB first）
"00000"   "00000000001"

15 bits of continuous "0"s -> should be avoided

RFU and Control Fields	Length (MSB first)	PSDU
5 bits	11 bits	

All defaults   1024 octets（LSB first）
"00000"   "10000000000"

10 bits of continuous "0"s
 -> average # of consecutive zeros will be smaller
   as we do not have PSDU length of 0, …, 4