

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

Submission Title: [Comments on preamble length and PHR for LECIM FSK PHY]

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Re: [802.15.TG4k]

Abstract: This contribution is prepared to discuss about preamble length and PHR for LECIM FSK PHY.

Purpose:

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Outline

- The goal of this document is to discuss about preamble length and PHR for FSK PHY in preliminary draft 089/r2.

Preamble Length

- Preamble field in draft 089/r2

The Preamble field shall contain *phyLECIMFSKPreableLength* (as defined in 9.3) multiples of the 8-bit sequence "01010101."

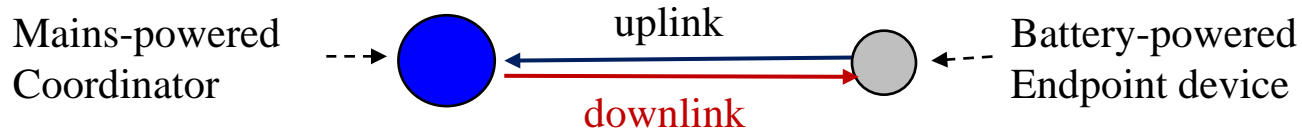
Given the asymmetric nature of LECIM networks, greater capabilities of coordinators and low energy end devices, the range of preamble length is 0 to 100 octets. High functioning coordinators may need little or no preamble to synchronize, which reduces the transmit times of battery devices. A maximum preamble length of 100 is sufficient for the radios in end devices to synchronize for transmission.

- Comment

- The range of preamble length: 0-100 octet
- According to draft, end devices should also have capability to synchronize with no preamble, which makes it difficult to implement low-power end devices

Preamble Length

- Uplink
 - High functioning coordinator can synchronize with little or no preamble
 - End device can save transmit power by reducing preamble length
- Downlink
 - End device needs several octets of preamble to synchronize with limited resources
 - Coordinator's preamble length should not be zero



Preamble Length

- Suggestion
 - Asymmetric range of preamble length is desirable
 - For example
 - 0-100 octet for end devices
 - 4-100 octet for coordinator

PHR

- PHR tables in preliminary draft 089/r2

Bit string index	0	1-7
Bit mapping	0	L_6-L_0
Field name	PHR Length	Frame Length

Figure 69—PHR for 127 octet packet

Bit string index	0	1-4	1-11
Bit mapping	1	R_3-R_0	$L_{10}-L_0$
Field name	PHR Length	Reserved	Frame Length

Figure 70—PHR for 2047 octet packet

- Comment
 - PHR error in 2047 octet packet entails significant power consumption to recover the wrong PSDU
 - Parity field is required to stop non-necessary PSDU recovery

PHR

- Suggestion
 - Reserved bits for 2047 octet packet can be used as parity
 - For example: R_3 in PHR \rightarrow odd parity

Conclusion

- Preamble length
 - Asymmetric range of preamble length

- PHR for 2047 octet packet
 - Parity field should be included
 - Reserved bits can be used