

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

Submission Title: [Low energy MAC for non-beacon enabled PAN]

Date Submitted: []

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Re: [In response to TG4g Call for Proposals]

Abstract: [Proposal of PHY and MAC for low-power consumption SUN]

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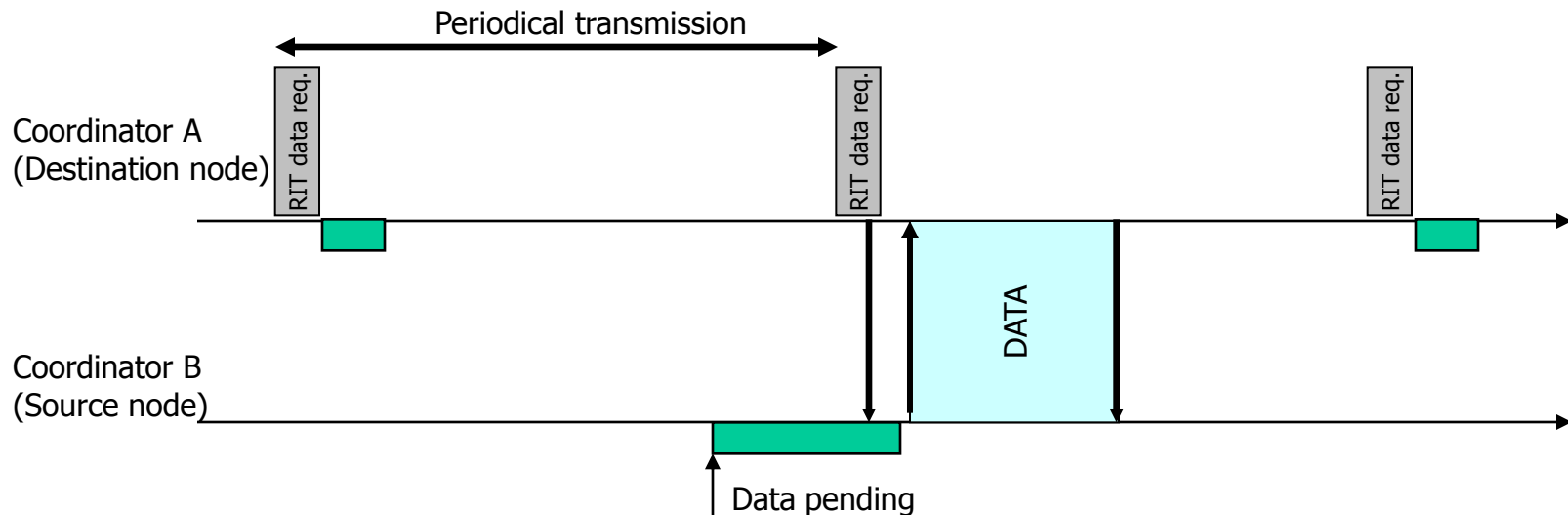
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Summary of required change proposal

- Addition of **Receiver Initiated Transmission (RIT)** as an alternative low-energy MAC in non beacon-enabled PAN for low duty cycle, low traffic load application with limited consecutive radio emission time by regional regulation
- Addition of one optional **MAC command frame** to support RIT
- Addition of three optional **MAC PIB attributes** to support RIT
- Addition of **one MAC sublayer primitive** to better support RIT

Revision (1/5): Receiver Initiated Transmission

- 7.5. MAC functional specification –
add Receiver Initiated Transmission (RIT)



- All nodes periodically wake up, transmit RIT data request command, go into receive mode for a short period of time and go back to sleep, asynchronously
- When the transmission request is generated from higher layer, it enables the receiver and waits for RIT data request command from the destination device
- Upon reception of a RIT data request command, the source node establishes a link with the destination node and transmits Data

Revision (2/5): “RIT data request” command

- Addition of a new MAC command in 7.3 MAC command frames
- RIT data request command (RIT mode only)
 - The RIT data request command allows a device to notify its alive state to neighboring devices in the RIT mode.
 - This command shall only be sent during the RIT mode (macRitPeriod : non zero value).
 - Only FFD supporting RIT shall be capable of transmitting and receiving this command.

octets: (see 7.2.2.4) 1	1
MHR fields	Command Frame Identifier (see Table 82)

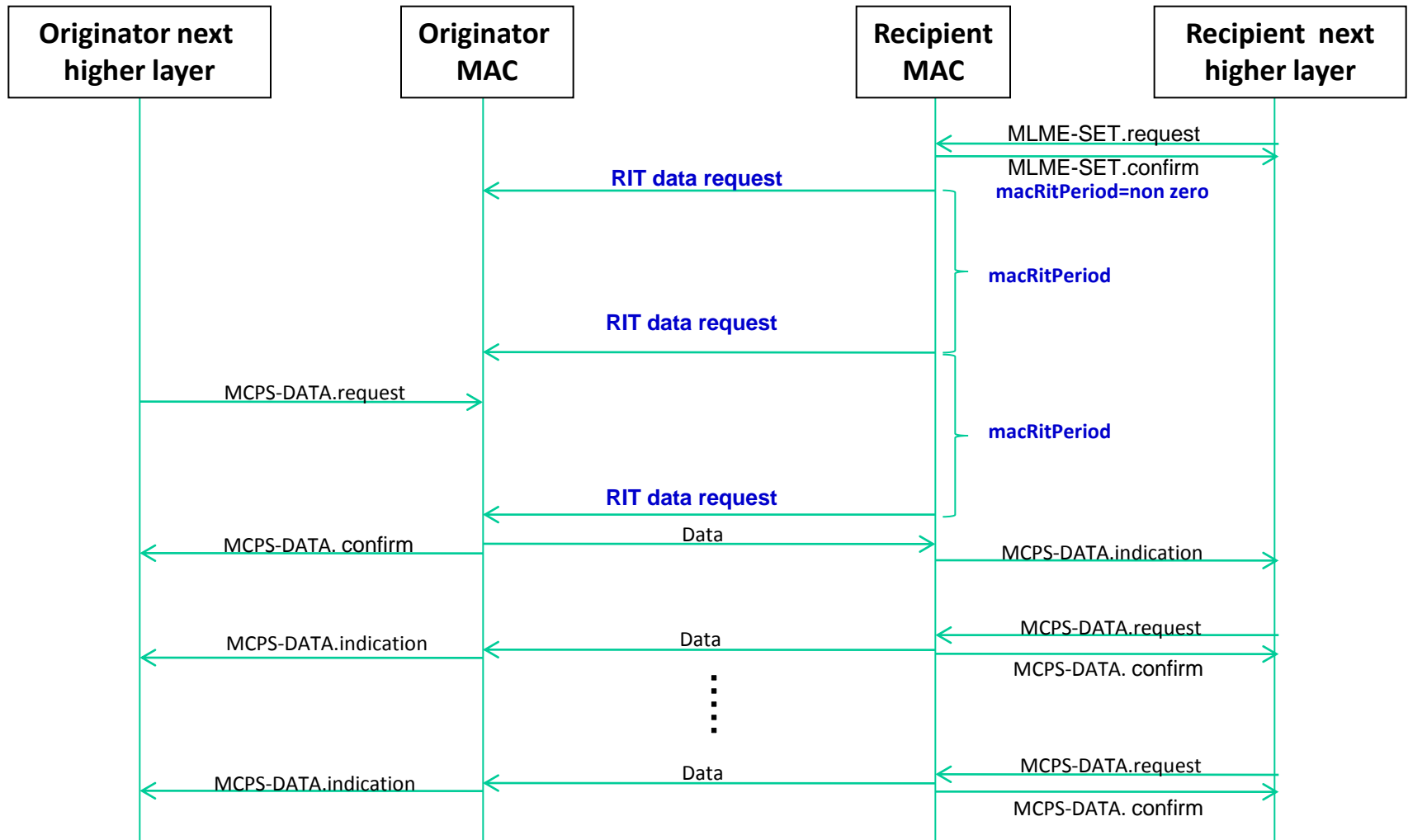
RIT data request command format

Revision(3/5): MAC PIB attribute

- The following row will be inserted in the bottom of Table 86

Attribute	Identifier	Type	Range	Description	Default
macRitPeriod		Integer	0x0000 – 0xffff	The interval (in unit periods) for periodical transmission of alive notification command in the RIT mode. The unit period is aBaseSuperframeDuration. 0 means RIT mode is off	0
macRitDataWait-Period		Integer	0 ... 127	The maximum time to wait for Data frame after transmission of RIT data request command frame or data frame in the RIT mode in unit periods. The unit period is aBaseSuperframeDuration.	0
macRitTxWaitIndex		Integer	1 ... 4	In RIT mode, device having data pending shall wait for at most macRitPeriod * macRitTxWaitIndex (in unit periods). The unit period is aBaseSuperframeDuration.	1

Revision(4/5): Message sequence chart



Revision(5/5): Notification of frame error

In RIT mode, FCS error in a received frame may be notified to the next higher layer by a proposed primitive

