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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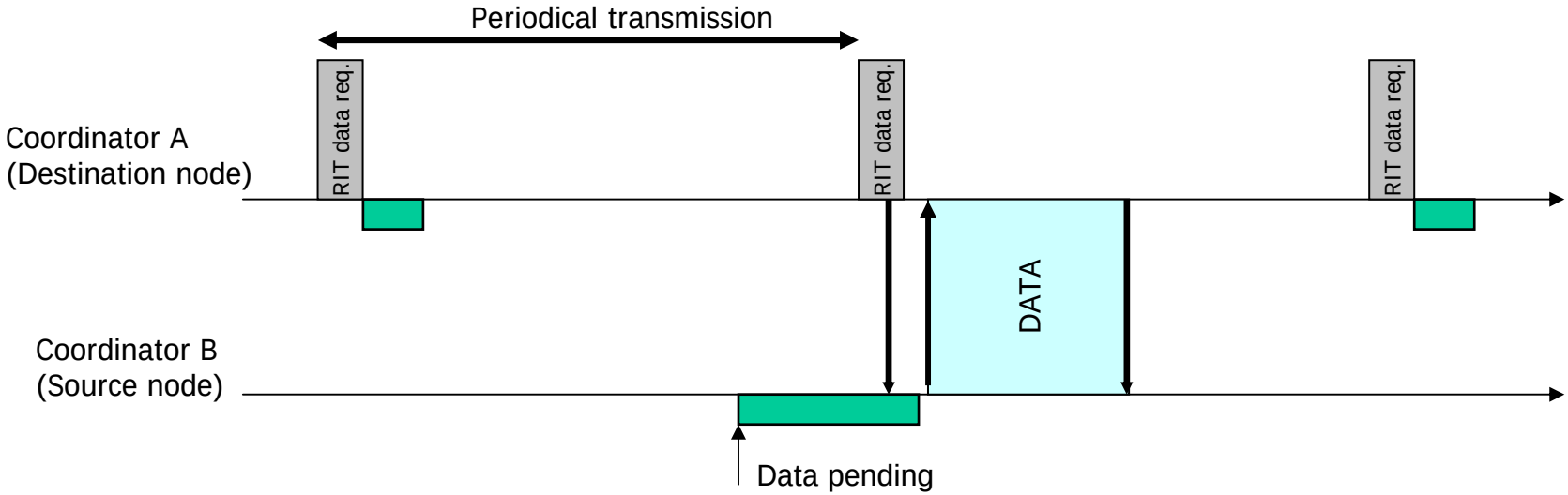
Re: [In response to TG4g Call for Proposals]
Abstract: [Proposal of PHY and MAC for low-power consumption SUN]

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 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)

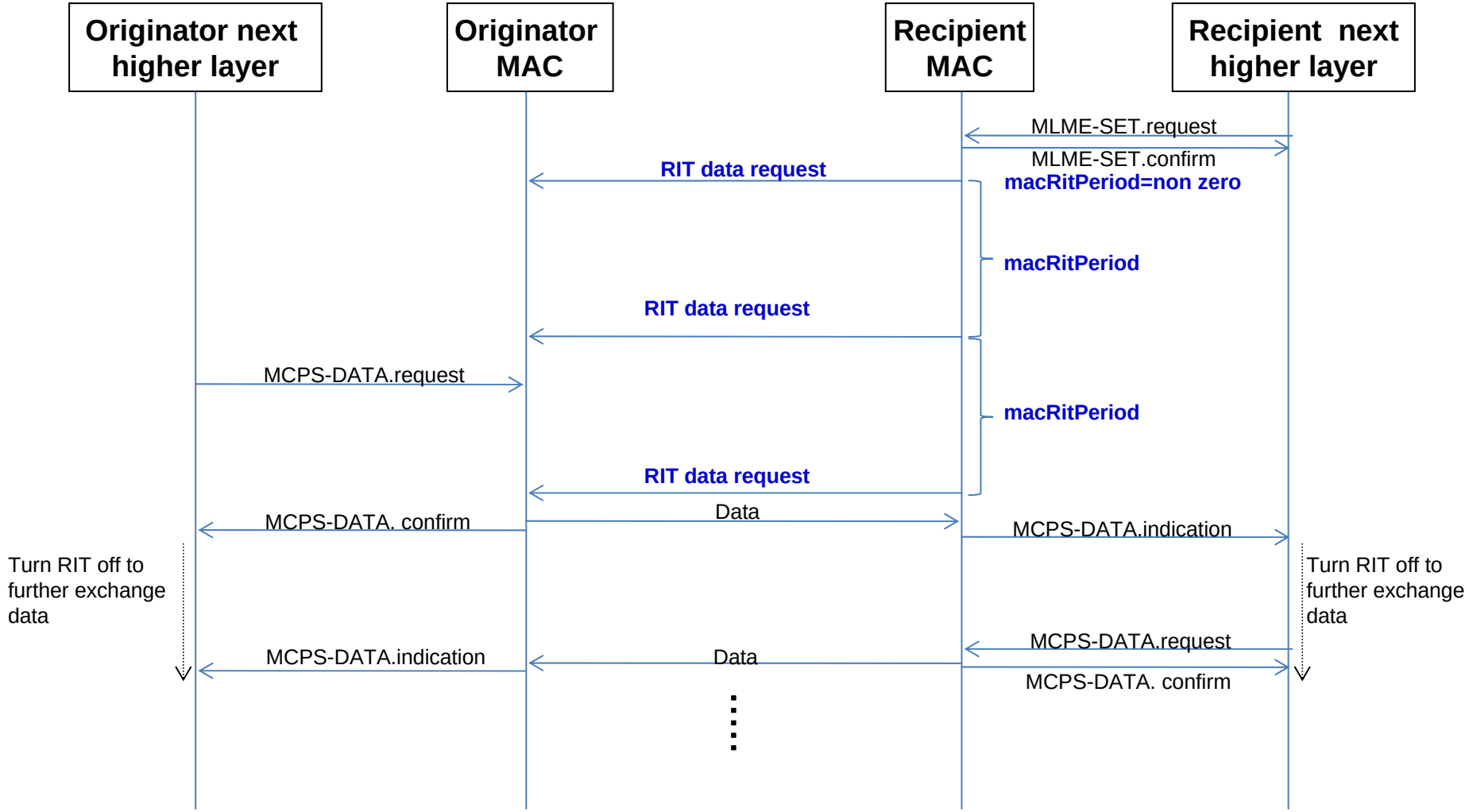
RIT data request command format

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	0x000000 -0xffffff	The interval (in unit periods) for periodical transmission of RIT data request command in RIT mode. The unit period is aBaseSuperframeDuration. 0 means RIT is off	0
macRitDataWait-Period		Integer	0x00 – 0xff	The maximum time (in unit period) to wait for Data frame after transmission of RIT data request command frame in RIT mode.The unit period is aBaseSuperframeDuration.	0
macRitTxWaitTime		Integer	macRit-Period - 0xffffff	The maximum time (in unit periods) that a transaction is stored by a device in RIT mode.The unit period is aBaseSurperframeDuration.	0

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