IEEE P802.15
Wireless Personal Area Networks

Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)
Title	Resolution for acknowledgement frame related comments
Date Submitted	[09 July, 2010]
Source	[Jaeseung Son, Samsung Electronics] E-mail:[js1007.son@samsung.com]
Re:	
Abstract	Resolution for acknowledgement frame related comments
Purpose	[TG 7 received about acknowledgement frame related comments in LB. This document is the response about acknowledgement frame]
Notice	This document has been prepared to assist the IEEE P802.15. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.
Release	The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15.

7.2.2.2 Acknowledgment frame format

The acknowledgment frame shall be formatted as illustrated in Acknowledgment frame format.

Octets: 2	1	variable	2
Frame Control	Sequence Number	B-ACK frame payload (Optional)	FCS
MHR		MAC Payload	MFR

Figure 72–   **Figure 72—Acknowledgment frame format**

The order of the fields of the acknowledgment frame shall conform to the order of the general MAC frame as illustrated in figure 62. Sequence number is defined in 7.2.2.1.1.

In B-ACK frames, the DestAddr field is set to the SrcAddr of the frame that requested the B-ACK. The B-ACK frame acknowledges correct or incorrect receipt of the previous sequence of frames and provides information for the transmission of the next sequence of frames as described in Acknowledgment frame format. The B-ACK frame payload is defined in B-ACK frame payload.

octets: 2	1	1	2	0-n
Buffer Size	Frame Count	Reserved	Sequence Control	Frame Bitmap

Figure 73—B-ACK frame payload

The Buffer Size field specifies the maximum number of octets in the sum of the frame payloads of all frames in the next B-ACK sequence. The Frame Count field specifies the maximum number of frames in the next B-ACK sequence. The Sequence Control and Frame Bitmap fields together specify an acknowledgment window of MSDU fragments and their reception status. The Sequence Control field specifies the Sequence Number and Fragment Number that start the acknowledgment window.

bits: b15-b14	b13-b3	b2-b0
Reserved	Sequence Number	Fragment Number

Figure 74—B-ACK frame bitmap

The Frame Bitmap field varies in length. A zero-length Frame Bitmap field indicates an acknowledgement window of length zero. Otherwise, the least-significant octet of the Frame Bitmap field corresponds to the MSDU indicated by the Sequence Control field, and each bit of the octet corresponds to a fragment of that MSDU. The least-significant bit in each octet corresponds to the first fragment and successive bits correspond to successive fragments. Successive octets present in the Frame Bitmap field correspond to successive MSDUs, and each bit corresponds to a fragment of the MSDU. The acknowledgement window ends at fragment seven of the MSDU that corresponds to the most-significant octet in the Frame Bitmap. For all bits within the Frame Bitmap, a value of ONE

indicates that the corresponding fragment was received in either the current sequence or an earlier one. A value of ZERO indicates that the corresponding fragment was not received in the current sequence (although it may have been received in an earlier one). Bits of the least-significant octet of the Frame Bitmap field corresponding to fragments prior to the start of the acknowledgement window are undefined. Frames with a Sequence Number earlier than the Sequence Number indicated in the Sequence Control field were not received in the last B-ACK sequence. Such frames were previously received or are no longer expected.

The block ACK is applicable to the packed data type. The bitmap and sequence number is repeated for every frame in the burst mode (multiple frames) .

The order of the fields of the acknowledgment frame shall conform to the order of the general MAC frame as illustrated.

7.2.2.2.1 Acknowledgment frame MHR fields

The MHR for an acknowledgment frame shall contain only the Frame Control field and the Sequence Number field.

In the Frame Control field, the Frame Type subfield shall contain the value that indicates an acknowledgment frame, as shown in Table 67. If the acknowledgment frame is being sent in response to a received data request command, the device sending the acknowledgment frame shall determine whether it has data pending for the recipient. If the device can determine this before sending the acknowledgment frame (see 7.6.6.4.2), it shall set the Frame Pending subfield according to whether there is pending data. Otherwise, the Frame Pending subfield shall be set to one. If the acknowledgment frame is being sent in response to either a data frame or another type of MAC command frame, the device shall set the Frame Pending subfield to zero. All other subfields shall be set to zero and ignored on reception.

The Sequence Number field shall contain the value of the sequence number received in the frame for which the acknowledgment is to be sent.