**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | Proposed change in MIMO Array training feedback command in the MAC section | |
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| Re: | 15-15-0967-04-003e-consolidated-comments.xls | |
| Abstract | Provides a proposed change in MIMO Array training feedback command in the MAC section, currently after 7.5.9.5. | |
| Purpose | To be used by the technical editor to apply the necessary changes to the draft. | |
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We propose to insert a subsection to describe the array training feedback command, in the MAC section, after 7.5.9.5 in current version. Proposed text is shown in the following page. In addition Array training feedback command should be added in Table 50a

**7.5.9.6 Array training feedback**

Array training feedback command is used to notify the successful reception of the last Array training command. This is sent from PPC to DEV. The Array training feedback command shall be formatted as illustrated in Figure \*-\*.

List of successfully received training commands indicates what numbers of Array training commands area successfully received by the PPC.

The RSSI report field indicates the RSSI value of each received Array training command signal at the PPC.

|  |  |  |  |
| --- | --- | --- | --- |
| **Octets: 2** | **2** | **L1** | **L2** |
| Command type | Length | List of successfully received training commands | RSSI report |

**Figure \*-\*—Array training feedback command format**

Here L1 is equal to ceil(*Nar*/8).

List of successfully received training commands is shown in Figure \*-\*.

This field length is integral multiplication of octets, padding the last block with zeros if necessary.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bits: b0** | **b1** | **…** | **b(*N****ar***)-1** | **0-7** |
| Reception status for Array training command #1 | Reception status for Array training command #2 |  | Reception status for Array training command #*Nar* | 0 padding |

**Figure \*-\*— Successfully received training commands field**

RSSI report is optional, and is as shown in Figure \*-\*.

|  |  |  |  |
| --- | --- | --- | --- |
| **Octets: 1** | **1** | **…** | **1** |
| RSSI of Array training command #1 | RSSI of Array training command #2 | … | RSSI of Array training command #*Nar* |

**Figure\*-\* — RSSI report field**

Values in the RSSI of Array training command field are area shown in table x. The resolution of this field is 1dB and therefore has a range of -71 ~ -10 dBm.

**Table x— Valid Number of RSSI of Array training command field value**

|  |  |
| --- | --- |
| **Value** | **RSSI of the Array training command [dBm] or reception status** |
| 0x00 | Not received |
| 0x01 | -71 |
| … | … |
| 0x3F | -10 |
| 0x40-0xFF | Reserved |

**7.5 MAC command types**

***Change the subclause as follows***

The MAC command types are listed in Table 50 and Table 50a and are described in the following subclauses. If the column labeled “Associated” in Table 50 and Table50a is marked with an “X” then that command shall only be sent by a DEV that is associated in PNPP~~the piconet~~. For the case of a piconet, if the column labeled “Secure membership (if required)” in Table 50 is marked with an “X” and secure membership is required for the piconet, then that command shall only be sent by a DEV that has established secure membership with the PNC in the piconet.

For the case of a piconet, because a neighbor PNC is not a member of the piconet, it sends only non-secure commands. The PNC or destination DEV shall ignore any command from a DEV that is not allowed to be sent as indicated in Table 50. The PNC or destination DEV shall transmit an Imm-ACK following reception of the frame if the ACK Policy field is set to Imm-ACK.

For peer-to-peer communications, if the DEV has established a secure relationship with a peer DEV, and the “Secure membership (if required)” column is marked with an “X”, that command shall be sent to the peer DEV with a secure command using the key specified in Table 62.

***Change the title of Table 50 and insert Table 50a as follows:***

**Table 50—Command types for piconet**

**Table 50a— Command types for HRCP**

|  |  |  |  |
| --- | --- | --- | --- |
| Command type  hex value  b15-b0 | Command name | Subclause | Associated |
| 0x0000 | Association request | 7.5.1a.1 |  |
| 0x0001 | Association response | 7.5.1a.2 | X |
| 0x0002 | Disassociation request | 7.5.1a.3 | X |
| 0x0003 | Request key | 7.5.2.1 | X |
| 0x0004 | Request key response | 7.5.2.2 | X |
| 0x0005-0x000D | Reserved | - | - |
| 0x000E | Probe request for HRCP | 7.5.4.5a | X |
| 0x000F | Probe Response for HRCP | 7.5.4.6a | X |
| 0x0010-0x0017 | Reserved | - | - |
| 0x0018 | Transmit power change | 7.5.7.5 | X |
| 0x0019 | Array training | 7.5.9.5 | X |
| 0x001A | Array training feedback | 7.5.9.6 | X |
| 0x001B-0x001D | Reserved | - | - |
| 0x001E-0x00FF | Reserved |  |  |
| 0x0100-0xFFFF | Vendor specific | 7.5.9.2 | X |