**IEEE P802.15**

**Wireless Personal Area Networks**

|  |  |
| --- | --- |
| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | **Proposed Resolutions for Metric Comments CID #373, 374, 375, 376, 377, 378, 379, 380, R195, R196** |
| Date Submitted | 17 August 2015 |
| Source | [Charlie Perkins], [Futurewei], [2330 Central Expressway,Santa Clara,CA 95050] | Voice: [+1-408-330-4596]Fax: [+1-408-330-5088]E-mail: [charliep@computer.org] |
| Re: | 802.15.10 Consolidated Comment Entry Form, CID #373, 374, 375, 376, 377, 378, 379, 380, R195, R196 |
| Abstract | Provides a proposed resolution to CID #373, 374, 375, 376, 377, 378, 379, 380, R195, R196 |
| Purpose | To be used by the technical editor to apply the necessary changes to the draft to resolve CID #373, 374, 375, 376, 377, 378, 379, 380, R195, R196 |
| 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. |

**Comments #373, 374, 375, 376, 377, 378, 379, 380, R195, R196**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CID | Name | Page | Sub-clause | Line # | Comment | Proposed Change |
| 373 | Noriyuki Sato | 58 | 6.2.2.10 | 32 | Using SINR as LQM is not good idea since PQM is calculated by adding LQMs. | Consider using dB and make it integer type and some normalize to represent SINR metric. |
| 374 | Tero Kivinen | 58 | 6.2.2.10 | 38 | This table has several items which says that the type of the Metric value and threshold is Float, but it does not specify how the Float is encoded in the 4-octet field. In 15.4 we do not specify the format for Float when sent over the air. As this sends them in the IE the format needs to be specified. | Specify format of the Floats. |
| 375 | Billy Verso | 58 | 6.2.2.10 | 38 | SINR is not defined anywhere | Define SINR, and describe what it is and how it is used. |
| 376 | Kiyoshi Fukui | 58 | 6.2.2.10 | 38 | Need a definition of an unit to be represented in. Maybe, dB is appropriate. If an unit is dB, the type of SINR metric should be Integer. | Refine the SINR definition. |
| 377 | Billy Verso | 58 | 6.2.2.10 | 40 | ETX Expected transmission count is not described anywhere. | Describe what it is and how it is used. |
| 378 | Kiyoshi Fukui | 58 | 6.2.2.10 | 40 | Precision of ETX value is not an integer. It should be represented in more precise unit. | Define the more precise unit. |
| 379 | Kiyoshi Fukui | 58 | 6.2.2.10 | 43 | Type of ETT value should be Integer. If more precise time than millisecond is needed, an unit to be represented in should be more precise. | Confirm the necessary precision of ETT value and correct it if necessary. |
| 380 | Noriyuki Sato | 58 | 6.2.2.10 | 43 | Better to define this metric as integer. | Consider |
| R195 | Charlie Perkins | 58 | 6.2.2.10 | 43 | Why "float"? | A 2 octet integer would likely be more than sufficient. |
| R196 | Charlie Perkins | 58 | 6.2.2.10 | 48 | A single vendor-specific extension may not be enough | Create 8-bit subtype as first field and a registry for vendor extensions. High-order bit of subtype == 1, means that subtype field is 16 bits long. |

**Resolution: AiP**

**CIDs 373, 375, and 376:** The utility of SINR as a metric is unclear, since it is not an additive metric on multi-link routes. The term should be deleted from the draft.

* ***Delete SINR from Table 11 and renumber the other Metric IDs***

**CID 374**: Floating point format is not defined in the document. Add a normative reference to IEEE 754.

* ***Add a new normative reference in Section 2 as follows:***

[IEEE 754] IEEE Standard for Floating-Point Arithmetic," *IEEE Std 754-2008* , vol., no., pp.1,70, Aug. 29

* ***Add citation in Table 11 wherever “Float” appears as a data type.***

**CID 377**: The definition for ETX is unclear.

* ***Add a new Section 5.2.2.1:***

**5.2.2.1 ETX link metric**

The ETX metric of a link is the estimated average number of transmissions required to successfully send a packet (each packet smaller than MTU) over that link, until an acknowledgement is received. The ETX metric is additive; in other words, the ETX metric of a path is the sum of the ETX metrics for each link on the path.

**CID 378**: The units of measurement for ETX should have much finer granularity.

* ***Insert the following text at the end of the description for ETX in Table 11:***

“, measured in units of .001”

**CIDs 379, 380, and R195.** The unit of measurement for ETT is milliseconds, and the numerical representation for the unit should be a 16 bit (unsigned) integer, allowing for ETT up to over a minute. Although the meaning of ETT might be more precisely conveyed by the name “Expected Delivery Time”, the acronym ETT is already well-known in the literature and so it should be kept.

* ***Modify the Type field for ETT in Table 11 to be Integer instead of Float. Modify the length field to be 2 instead of 4.***

**CID R196**: A single Metric ID allocation in Table 11 for Vendor-Specific may be insufficient. Utilize the next octet as a subtype field.

* ***Renumber the type of the Vendor specific Metric ID to be 15, so that it is preceded by all other allocated Metric IDs.***

As illustrated in Figure xxx,

* ***Insert the following text as the description for Vendor specific in Table 11:***

“The Subtype field identifies the exact subtype of vendor-specific Metric. If the most significant bit of the first octet of the subtype is ‘0’, then the subtype field is 7 bits long, otherwise the subtype field is 15 bits long. The length of the metric is determined by this 7 or 15 bit subtype field.”

* ***Insert the following figure to illustrate the description for Vendor specific subtype:***



Figure xxx – Format of the vendor specific PQM