**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | **<IEEE 802.15 Working Group** **request for external comments**> | |
| Date Submitted | [21 Mar 2013] | |
| Source | [Pat Kinney] [<Kinney Consulting LLC>] [Chicago, IL] | Voice: [+1.847.960.3715] Fax: [+1.847.790.3805] E-mail: [pat.kinney@ieee.org] |
| Re: | [802.15 Plenary Meeting in Orlando, Florida] | |
| Abstract | [IEEE 802.15 Working Group request for external comments] | |
| Purpose | [Official minutes of the Working Group Session] | |
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**Abstract**

The IEEE 802.15 Work Group (WG) is in the process of considering a number of significant changes to the 802.15.4 standard, Low-Rate Wireless Personal Area Networks (LR-WPANs), and is soliciting input from all Standard Development Organizations (SDOs), businesses, and individuals that would be impacted by these changes.  The changes are described in Annex A and summarized here:

1. using a Frame Type ID value as an extension to indicate following bits are new Frame types
2. restructuring Information Element IDs to allow IDs to be assigned to external SDOs
3. changing the order of the Information Element length and type fields.

A compliant device implementing all of the cited changes would not be backwards compatible with IEEE Std. 802.15.4e-2012, i.e. devices compliant to the changed standard using Information Elements would not be interoperable with IEEE 802.15.4e-2012 compliant devices using Information Elements. Since a major purpose of the IEEE Std. 802.15.4 is to ensure an acceptable level of interoperability, the IEEE 802.15 WG considers these changes to be most significant.

Anybody who would be impacted by implementation of noted changes, or not implementing them, is requested to either attend the May IEEE 802.15 meeting, or to submit a document declaring their stance and the changes impact on their business.

**Background**

Several Standards Development Organizations, including European Standards Organization - ETSI, are developing regional or market specific standards based on the important published IEEE 802.15.4 standards, particularly 802.15.4g and 802.15.4e. As for any SDO, ETSI is required to use resources which it can guarantee in the publication of its standards. In particular, resources identifying data structures must be guaranteed to be unique for any SDO published standard to be acceptable in a major marketplace.

Specifically, the use of Frame Type and Information Element Identifiers to distinguish between different data structures provides committees in ETSI (and other SDOs) with the ideal mechanism to build on 802.15.4 standards.

In the case of Frame Type identifiers, the range of values is almost fully used and there is a need to define further Frame Type identifier values to allow ETSI (and any other external SDO) to add major functionality.

Additionally, the Unmanaged address space for Information Elements does not provide the necessary guarantees for ETSI to use this range of identifiers for its data structures.

Finally, over and above that possible by adding Information Element definitions, the definition of the structure of Information Elements in 802.15.4e is contrary to many other standards which use very similar Type-Length-Value structures.

**Proposal**

ETSI TC ERM has respectfully requested that IEEE 802.15 define a mechanism to extend the range of values of the 802.15.4 Frame Type and similarly define a mechanism to allow use of one or more of the extended Frame Type identifier values by an external SDO. TC ERM recognizes the mechanism identified in ANSI/TIA-PN-4957.200 as being a suitable extension of the Frame Type identifier range

ETSI TC ERM also requests that IEEE 802.15 seriously consider how certain ranges of Information Element identifiers may be made available for allocation to external SDOs building their standards on IEEE 802.15.4 published standards.

In both of the cases of Frame Type and Information Element identifier values, the mechanism for allocation and management of the values for use by external SDOs should ensure their uniqueness in all product contexts.

Finally, ETSI TC ERM would like to draw to the attention of the 802.15 Working Group that the definition of the structure of Information Elements in IEEE Std. 802.15.4e-2012 is contrary to many other standards which use very similar Type-Length-Value structures. TC ERM/TG28 members do not see any value in defining a different structure and would highly recommend revision of the 802.15.4e standard to bring it into line with the many other standards using Information Element TLV structures to allow combination of such standards to have a uniform and consistent definition of Information Element structures.

**Request for Input**

Given that ETSI has requested changes to IEEE 802.15 that would not be backward compatible with IEEE Std. 802.15.4e-2012, i.e. devices compliant to the changed standard would not be interoperable with legacy IEEE 802.15.4e-2012 devices, the IEEE 802.15 Work Group wishes to understand how these changes would impact current and future users of the standard and is seeking reports from those who would be impacted by such changes.

**Venue**

The IEEE 802.15 working group's next meeting will be May 12-17, 2013 at the Hilton Waikoloa Village, Big Island, HI, USA. More information as to this meeting can be found at <http://802world.org/plenary/>.  Reports describing a business' stance and impact resulting from these changes may be emailed to [bheile@ieee.org](mailto:bheile@ieee.org) and/or [pat.kinney@ieee.org](mailto:pat.kinney@ieee.org).

**Annex A**

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| **Title:** | Standards for Smart Energy and the Smart Grid |
| Date: | 18 Dec. 2012 |
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| **From** (source): | ETSI TC ERM |
| Contact(s): | Chairman Dr. Gabrielle Owen ([gabrielle.owen@agentschaptelecom.nl](mailto:gabrielle.owen@agentschaptelecom.nl)) |
| **To:** | IEEE 802.15.4 IEEE 802.15.4 Chairman Dr. Bob Heile ( bheile@ieee.org) |
| **Copy to:** | ETSI ERM-TG28 Chairman Mr. Enrico Tosato |
|  | |

Dear Dr. Heile,

ETSI TC ERM recognises the importance of the work done by the IEEE 802.15 Working Group in the generation of foundational standards for Smart Energy and the Smart Grid.

The 802.15.4g standard published this year extends to the Smart Energy domain the solid foundation that 802.15.4 has established over the last decade as a very important WPAN standard. New facilities in IEEE 802.15.4e add functionality essential to WPAN technology applied to the energy supply, distribution and retail sectors. 802.15.4 standards are also important components of the M2M infrastructure leading to the Internet of Things.

In publishing these important standards, TC ERM would like to congratulate you and the efforts of your 802.15 Working Group.

As you may be aware, several Standards Development Organisations, including European Standards Organisation - ETSI, are developing regional or market specific standards based on the important published IEEE 802.15.4 standards, particularly 802.15.4g and 802.15.4e.

TC ERM (Task Group 28 – Generic Short Range Devices) proceeds with the development of ETSI specifications on Smart Metering Wireless Access Protocol (Draft ETSI TS 102 887-1 and -2). The main reference documents in our work are your standards mentioned above.

We have identified certain aspects (given in the Annex of this Liaison Statement), which we would like to bring to your attention and to request that the IEEE 802.15 Working Group consider in the maintenance and further enhancement of your 802.15.4 family of standards.

TC ERM looks forward to a favourable reception of these requests and to the continued positive relationship between IEEE and ETSI within the framework of the recently re-confirmed ETSI – IEEE Cooperation agreement.

Best regards,

Dr. Gabrielle Owen, ETSI TC ERM Chairman

# Details of ETSI TC ERM request for maintenance of IEEE 802.15.4

ETSI TC ERM would like to bring to your attention and to request that the IEEE 802.15 Working Group consider in the maintenance and further enhancement of your 802.15.4 family of standards.

Firstly, as for any SDO, ETSI needs to use resources which it can guarantee in the publication of its standards. In particular, resources identifying data structures must be guaranteed to be unique for any SDO published standard to be acceptable in a major marketplace.

**Frame Type and Information Element Identifiers**

The use of Frame Type and Information Element Identifiers to distinguish between different data structures provides committees in ETSI (and other SDOs) with the ideal mechanism to build on 802.15.4 standards. However, the Unmanaged address space for Information Elements does not provide the necessary guarantees for ETSI to use this range of identifiers for its data structures. In the case of Frame Type identifiers, the range of values is almost fully used and there is a need to define further Frame Type identifier values to allow ETSI (and any other external SDO) to add major functionality over and above that possible by adding Information Element definitions.

ETSI TC ERM respectfully requests IEEE 802.15 to seriously consider how certain ranges of Information Element identifiers may be made available for allocation to external SDOs building their standards on IEEE 802.15.4 published standards.

TC ERM also requests that IEEE 802.15 define a mechanism to extend the range of values of the 802.15.4 Frame Type and similarly defines a mechanism to allow use of one or more of the extended Frame Type identifier values by an external SDO. TC ERM recognises the mechanism identified in ANSI/TIA-PN-4957.200 as being a suitable extension of the Frame Type identifier range.

In both of the cases of Frame Type and Information Element identifier values, the mechanism for allocation and management of the values for use by external SDOs should ensure their uniqueness in all product contexts.

**Definition of the structure of Information Elements**

Secondly, TC ERM would like to draw to the attention of the 802.15 Working Group that the definition of the structure of Information Elements in 802.15.4e is contrary to many other standards which use very similar Type-Length-Value structures. TC ERM/TG28 members do not see any value in defining a different structure and would highly recommend revision of the 802.15.4e standard to bring it into line with the many other standards using Information Element TLV structures to allow combination of such standards to have a uniform and consistent definition of Information Element structures.