**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | Coexistence Assurance Document for 802.15.4s |
| Date Submitted | 28 July, 2016 |
| Source | Shoichi Kitazawa (ATR)  kitazawa@ieee.org |
| Re: | IEEE 802.15.4s Draft Amendment |
| Abstract | Analysis on coexistence of IEEE 802.15.4s with other IEEE 802 systems within the same frequency band |
| Purpose | To address the coexistence capability of IEEE 802.15.4s. |
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# Scope

The IEEE 802.19 Work Group has mandated that new wireless standards developed under IEEE 802 be accompanied by a *Coexistence Assurance* document. In [2], guidelines are provided for how coexistence can be quantified based on predicted packet error rates among IEEE 802 wireless devices. Hence, this coexistence assurance document is provided by the IEEE 802.15.4s Task Group to satisfy the requirements of the IEEE 802.19 Work Group and IEEE 802 Executive Committee.

The IEEE 802.15.4s provides a better use of spectrum resources when operating in the global 2450 MHz band.

This document addresses the coexistence of the IEEE 802.15.4s with other IEEE 802 standards operating in the same frequency bands.

# References

1. S. Shellhammer, “Writing a Coexistence Assurance Document,” IEEE 802.19-09/0001r0, 2009.
2. IEEE Std 802.15.4TM-2015.

# IEEE 802.15.4s amendment overview

This amendment to IEEE Std 802.15.4 defines MAC related functions to enable spectrum resource management.

It specifies the following functions and procedures in order to effectively operate wireless systems that could have heavy interferences within or outside the network:

* spectrum resource measurements and network performance metrics, such as packet error ratio, delay, etc,
* information elements and data structures to capture these measurements,
* procedures for collecting and exchanging spectrum resource measurement information with higher layers or other devices and for Transmit Power Control (TPC).

Amendment 802.15.4s uses the same modulation and the same channel plan as already defined by the IEEE Std 802.15.4-2015.

## Operating frequency bands and Modulation parameters

This amendment makes no changes frequency bands and modulation defined by the IEEE Std 802.15.4-2015.

## Coexistence mechanisms

This amendment added spectrum resource measurement functions and transmit power control functions for efficient spatial re-use of the radio spectrum and minimize the interference based on available coexistence mechanisms in the IEEE Std 802.15.4-2015. The amount of spatial re-use and the reduction of interference is dependent upon implementation.

# Other IEEE 802 standards occupying the same frequency bands

## Interference to other systems

The IEEE 802.15.4s amendment is to define spectrum resource measurement and transmit power control for better use of spectrum resources.

The amount of interference should be reduced but is dependent upon implementation.

## Interference from other systems

The IEEE 802.15.4s amendment specifies spectrum resource measurement functions for the better use of spectrum resources. Any change in interference from other systems would be dependent upon implementation.