**IEEE P802.15**

**Wireless Personal Area Networks**

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| Title | **TG4aa Coexistence Document** | |
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| Abstract | Analysis on coexistence of 802.15.4aa with other 802 systems within the same spectrum bands. | |
| Purpose | To address the coexistence capability of 802.15.4aa. | |
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# Introduction

TG4aa introduces operating modes to 802.15.4 supporting higher data rates in the 920MHz band. These new operating modes use GFSK modulation, which is one of the existing modulation methods. The higher data rates have the effect of increasing the signal bandwidth from the GFSK operating modes specified in 802.15.4 for the 920MHz band. The regulation governing the 920MHz band[B1] specify stringent requirements on devices to ensure efficient and equitable shared usage of the band. The regulation specifies a channel plan which also allows aggregation of channels, hence permitting varying signal bandwidths. It additionally specifies parameters for listen before talk, maximum transmit power levels and transmit duty cycle limits. The TG4g coexistence assurance document[B2], and P802.19 draft[B3] already provide a comprehensive analysis for coexistence in all bands, including 920MHz band. TG4aa adds no functionality, channel access requirements, or modulations beyond those used in 802.15.4.

# Bibliography

[B1] ARIB STD-T108, 920MHz-BAND TELEMETER, TELECONTROL AND DATA TRANSMISSION RADIO EQUIPMENT, (<http://www.arib.or.jp/english/html/overview/doc/5-STD-T108v1_3-E1.pdf>).

[B2] TG4g coexistence assurance document, (<https://mentor.ieee.org/802.15/dcn/10/15-10-0668-05-004g-tg4g-coexistence-assurance-document-first-draft.pdf>).

[B3] P802.19/D0.07,Draft Recommended Practice for Local and Metropolitan Area Networks – Part 19:Coexistence Methods for 802.11 and 802.15.4 based systems operating in the Sub-1GHz Frequency Bands



# Overview

## Overview of IEEE802.15.4aa

## Regulatory Information

## Overview of Coexistence Mechanism in 802.15.4aa

# Dissimilar IEEE802 Systems Sharaing the Same Frequency Bands with 802.15.4aa

## Coexisting Systems in 920MHz Bands

# Coexsistence Scenarios and Analysis

## PHY Modes in the 802.15.4aa PHY Modes

## Performance of the 802.15.4aa PHY Modes

### AWGN Channel

### Erasure Channel

### LPWAN Interference Channel

## Interference Modeling for Dissimilar System Analysis

## 802.15.4 Coexistence Performance

## 802.11ah Coexistence Performance

### Victim 802.11ah

### Victim 802.15.4aa

# Interference Mitigation and Avoidance Techniques

# Conclusions