**IEEE P802.15**

**Wireless Personal Area Networks**

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Draft IG Low Power Wide Area Report

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# Abstract

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# 1 Introduction

# 2 Technical Characteristics of Low Power Wide Area Networks

# 3 Potential Use-Cases for Low Power Wide Area Networks

This section will list the identified use cases and their technical requirements given in document <https://mentor.ieee.org/802.15/dcn/16/15-16-0770-03-lpwa-lpwa-use-cases.xlsx>

# 4 Frequency Regulation and Channel Models

## 4.1 Frequency Regulation

This subsection will summarize the restrictions of the frequency regulation wrt. LPWAN

## 4.2 Propagation Models for LPWAN

This subsection will summarize the discussed channel models for LPWAN given in document <https://mentor.ieee.org/802.15/dcn/17/15-17-0036-01-lpwa-proposal-for-lpwan-channel-models.pptx>

## 4.3 Number of Active Users

This subsection will summarize the number of active users according to document

<https://mentor.ieee.org/802.15/dcn/17/15-17-0035-00-lpwa-number-of-active-interfering-users.pptx>

## 4.4 Interference Channel Model

This subsection will summarize the sub-GHz interference model according to document <https://mentor.ieee.org/802.15/dcn/17/15-17-0037-01-lpwa-proposal-for-sub-ghz-interference-model.pptx>

# 5 Performance Evaluation Criteria

This section will describe criteria, how the suitability of the different candidate technologies can be compared

# 6 Analysis of Existing IEEE Standards / Candidate Technologies

## 6.1 Suitability of Existing IEEE Standards

This sub-section will show the suitability of existing IEEE Standards wrt. the identified use-cases

This will be given in a tabelized form, details will be in the annex

Standards to be analyzed will be IEEE 802.11 (focus on ah), and IEEE 802.15.4

## 6.2 Suitability of Candidate Technologies

This sub-section will show the suitability of candidate technologies (e.g. modulation schemes) wrt. the identified use-cases

This will be given in a tabelized form, details will be in the annex

The following modulation techniques may be evaluated: Narrow-band single carrier, OFDM, DSSS, Frequency Chirp Spread Spectrum, Frequency Hopping Spread Spectrum, …

The following forward error correction techniques may be evaluated: No FEC, convolutional code, Reed Solomon, LDPC, Turbo, Polar Codes, …

The following channel access techniques may be evaluated: (Slotted) ALOHA, CSMA/CA, Coordinated Beacon, …

Privacy/Encryption techniques

# 7 Recommendation for Future IEEE Activities

This section will give recommendation for possible future activities, the following sub-sections have to be adjusted to reflect this recommendation

## 7.1 Purpose of a new IEEE Standard

## 7.2 Need for a new IEEE Standard

## 7.3 5C Requirements

This sub-section lists the 5C requirements as requested in the CSD document, only required if positive recommendation for future work

### 7.3.1 Broad Market Potential

### 7.3.2 Compatibility

### 7.3.3 Distinct Identity

### 7.3.4 Technical Feasibility

### 7.3.5 Economic Feasibility

# Annex

# Literature