IEEE 802.15™  
Wireless Specialty Networks (WSNs)

Operations Manual

**Date: November 17, 2022**

**Officers:**

**Clint Powell,**

**WG Chair, IEEE 802.15 WSN WG**

**Email:** [**cpowell@ieee.org**](http://cpowell@ieee.org)

**Phil Beecher,**

**Vice Chair, IEEE 802.15 WSN WG**

**Email:** [**pbeecher@wi-sun.org**](http://pbeecher@wi-sun.org)

**Ann Krieger,**

**Vice Chair, IEEE 802.15 WSN WG**

**Email: annkrieger.dod@gmail.com**

**James Gilb,**

**WG Technical Editor, IEEE 802.15 WSN WG**

**Email:** [**gilb@ieee.org**](mailto:Adrian.stephens@ieee.org)

IEEE Project 802 Wireless PAN Working Group 802.15

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Revision | Revision Date | Notes |
| 0 | 15-10-0235-00-0000 | 17 Jan 2010 | Opman created using 802.11’s Opman as baseline |
| 1 | 15-10-0235-01-000 | 5 May 2010 | Corrections |
| 2 | 15-10-0235-02-000 | 6 May 2010 | Editorial corrections |
| 3 | 15-10-0235-03-000 | 17 May 2010 | Corrections |
| 4 | 15-10-0235-04-000 | 17 May 2010 | Corrections |
| 5 | 15-10-0235-05-000 | 9 Nov 2010 | Corrections |
| 6 | 15-10-0235-06-000 | 22 Feb 2011 | Edits as per comment resolutions |
| 7 | 15-10-0235-07-000 | 14 Mar 2011 | Removed sponsor ballot text |
| 8 | 15-10-0235-08-000 | 16 Mar 2011 | Minor editorial changes |
| 10 | 15-10-0235-12-000 | Nov 2013 | 1. Formation of TEG 2. Section on Standard WG motion templates, BRC re-affirmation and ex-officio voting 3. ANA Request Procedure for other standards development organizatons |
| 11 | 15-10-0235-15 | March 2015 | 1. Change to 30-day announcement period for BRC calls 2. Change wording of BRC duration for clarity 3. Change template for SG motion 4. Updated hyperlinks for P&P |
| 12 | 15-10-0235-16 | January 2016 | 1. Changed TEG to make non-mandatory 2. Deleted call announcement period references, they are stated in 802 WG P&P 3. Modified ANA external organizations to allow consortiums and alliances and added IEEE 802.15.9 value 4. Added reference to 802 WG P&P in voting rights 5. Updated hyperlinks for P&P 6. Corrected motion templates |
| 13 | 15-10-0235-17 | May 2016 | 1. Changed “5C” to “CSD” in 2 places 2. Added: 7.8 SC IETF 3. Added: TGs are authorized to send drafts out for recirculation to 4.1 |
| 14 | 15-10-0235-18 | Sept 2016 | 1. Changed 10.2.4 allowing recirc ballots to count for voting maintenance 2. Changed motion templates to accommodate draft revisions and to add BRC for Sponsor Ballot |
| 15 | 15-10-0235-20 | Nov 2018 | 1. Added TAG, corrected reference hyperlinks, added text stating OM modification process, change WPAN to WSN |
| 16 | 15-10-0235-21 | Jan 2019 | 1. Terminology changes, replace:  * Sponsor with Standards Committee * Sponsor ballot with Standards Association ballot * Ballot Resolution Committee with Comment Resolution Group * BRC with CRG  1. Updated hyperlinks for P&P, 2. Deleted 2 subclauses in clause 11 titled: Number of Sessions Required to Become a Voter, and Membership Flow Diagram |
| 17 | 15-10-0235-23 | July 2019 | 1. Clause 3.10.4: deleted “For an 802.15 WG letter ballot to be considered valid the abstention rate shall be less than 30%.” 2. Clause 10.3: added following text “that is substantially similar to the ballotable draft” 3. Clause 11.2.4: deleted “Note 2: a voter should not vote “abstain” for more than one (1) of the last three (3) mandatory WG letter ballots |
| 18 | 15-10-0235-25 | Jan, 2020 | 1. Added clause 11. Security Expert Group (SEG) |
| 19 | 15-10-0235-26 | Nov, 2020 | 1. Changed officers, added electronic balloting for officers, 2. Deleted WG TAG 3. Added SC THz 4. Added WG ANA Vice Chair |
| 20 | 15-10-0235-27 | March, 2021 | 1. Misc corrigenda 2. Corrected Figure 2 3. Added MAC Commands to ANA 4. Added new vice chairs 5. Officer elections made runoff elections optional |
| 21 | 15-10-0235-28 | July 2021 | 1. Added motions for PAR comment review responses 2. Updated link to Tech Editor document 3. Added TG motions for SA Ballot initiation 4. Misc typos fixed |
| 22 | 15-10-0235-29 | September 2021 | 1. Misc typos fixed 2. Hyperlinks to documents added |
| 23 | 15-10-0235-30 | September 2021-2022 | 1. Changed officers 2. Misc typos fixed 3. Additional SG, TG and WG motions |
| 24 | 15-10-0235-31 | September 2022 | 1. Updated References to latest 802 LMSC operations manual, and policy and procedure |
| 25 | 15-10-0235-32 | November  2022 | 1. Replaced all references to EC with IEEE 802 LMSC 2. Removed option for electronic balloting of officers |
| 26 |  | September 2023 | 1. SCM can submit comments on PARs, CSDs and ICAIDs on behalf of the WG 2. Additional TG template motions (recirculation ballots and comment spreadsheet approval) |

Copyright (c) 2000-2022 by the Institute of Electrical and Electronics Engineers, Inc.   
345 East 47th Street   
New York, NY 10017, USA   
All rights reserved.

Table of Contents

[Table of Contents 3](#_Toc145440056)

[Table of Figures 10](#_Toc145440057)

[Table of Tables 11](#_Toc145440058)

[References 11](#_Toc145440059)

[Acronyms and Abbreviations 11](#_Toc145440060)

[Definitions 12](#_Toc145440061)

[1 Hierarchy 13](#_Toc145440062)

[2 Maintenance of Operations Manual 13](#_Toc145440063)

[3 802.15 Working Group 14](#_Toc145440064)

[3.1 Overview 14](#_Toc145440065)

[3.2 Function 15](#_Toc145440066)

[3.3 Working Group Officers’ Responsibilities 16](#_Toc145440067)

[3.3.1 Working Group Chair 16](#_Toc145440068)

[3.3.2 Working Group Vice Chair(s) 17](#_Toc145440069)

[3.3.3 Working Group Secretary 18](#_Toc145440070)

[3.3.4 Working Group Technical Editor 18](#_Toc145440071)

[3.3.5 Working Group Treasurer 18](#_Toc145440072)

[3.3.6 Liaisons 18](#_Toc145440073)

[3.4 Working Group Officer Election Process 19](#_Toc145440074)

[3.4.1 Plenary meeting elections 19](#_Toc145440075)

[3.5 Working Group Officer Removal 19](#_Toc145440076)

[3.6 WG Chair Advisory Committee 19](#_Toc145440077)

[3.6.1 AC Function 20](#_Toc145440078)

[3.6.2 AC Membership 20](#_Toc145440079)

[3.7 Working Group Sessions 20](#_Toc145440080)

[3.7.1 Plenary Session 20](#_Toc145440081)

[3.7.2 Interim Sessions 21](#_Toc145440082)

[3.7.3 Session Meeting Schedule 22](#_Toc145440083)

[3.7.4 Session Logistics 22](#_Toc145440084)

[3.8 Documentation 23](#_Toc145440085)

[3.8.1 Types 23](#_Toc145440086)

[3.8.2 Format 23](#_Toc145440087)

[3.8.3 Layout 23](#_Toc145440088)

[3.8.4 Submissions 24](#_Toc145440089)

[3.8.5 File naming conventions 24](#_Toc145440090)

[3.9 Motions Modifying Drafts 24](#_Toc145440091)

[3.10 Draft WG Balloting 25](#_Toc145440092)

[3.10.1 Draft Standard Balloting Group 25](#_Toc145440093)

[3.10.2 Draft Standard Balloting Requirements 25](#_Toc145440094)

[3.10.3 Formatting Requirements for Draft Standard and Amendments 26](#_Toc145440095)

[3.10.4 WG ballot voting rules 26](#_Toc145440096)

[3.10.5 Recirculation Ballots 27](#_Toc145440097)

[4 Task Groups 27](#_Toc145440098)

[4.1 Function 27](#_Toc145440099)

[4.2 Task Group Chair 27](#_Toc145440100)

[4.3 Task Group Vice Chair 27](#_Toc145440101)

[4.4 Task Group Secretary 27](#_Toc145440102)

[4.5 Task Group Technical Editor 27](#_Toc145440103)

[4.6 Task Group Membership 28](#_Toc145440104)

[4.6.1 Rights 28](#_Toc145440105)

[4.6.2 Meetings and Participation 28](#_Toc145440106)

[4.6.3 TG Teleconferences 28](#_Toc145440107)

[4.7 Operation of the Task Group 29](#_Toc145440108)

[4.7.1 Task Group Chair's Functions 29](#_Toc145440109)

[4.7.2 Task Group Chair's Responsibilities 29](#_Toc145440110)

[4.7.3 Task Group Chair's Authority 30](#_Toc145440111)

[4.7.4 Task Group Vice Chair Functions 31](#_Toc145440112)

[4.7.5 Voting 31](#_Toc145440113)

[4.8 Deactivation of a Task Group 31](#_Toc145440114)

[5 Comment Resolution Group 31](#_Toc145440115)

[5.1 Overview 31](#_Toc145440116)

[5.2 Formation 31](#_Toc145440117)

[5.3 Duration 32](#_Toc145440118)

[5.4 Comment Resolution Group Chair 32](#_Toc145440119)

[5.5 Comment Resolution Group Operation 32](#_Toc145440120)

[6 Study Groups 33](#_Toc145440121)

[6.1 Function 33](#_Toc145440122)

[6.2 Formation 33](#_Toc145440123)

[6.3 Continuation 33](#_Toc145440124)

[6.4 Study Group Chair 33](#_Toc145440125)

[6.5 Study Group Secretary 34](#_Toc145440126)

[6.6 Study Group Operation 34](#_Toc145440127)

[6.6.1 Study Group Meetings 34](#_Toc145440128)

[6.6.2 Reporting Study Group Status 34](#_Toc145440129)

[6.6.3 Study Group PAR and CSD process 34](#_Toc145440130)

[7 802.15 Standing Committee(s) 34](#_Toc145440131)

[7.1 Function 34](#_Toc145440132)

[7.2 Membership 34](#_Toc145440133)

[7.3 Formation 35](#_Toc145440134)

[7.4 Continuation 35](#_Toc145440135)

[7.5 Standing Committee Operation 35](#_Toc145440136)

[7.5.1 Standing Committee Meetings 35](#_Toc145440137)

[7.5.2 Voting at Standing Committee Meetings 35](#_Toc145440138)

[7.6 Standing Committee Chair 35](#_Toc145440139)

[7.7 Maintenance Standing Committee Operation 35](#_Toc145440140)

[7.7.1 Function 35](#_Toc145440141)

[7.7.2 Operation 36](#_Toc145440142)

[7.8 TeraHertz Standing Committee (SC THz) 36](#_Toc145440143)

[7.8.1 Function 36](#_Toc145440144)

[7.8.2 Operation 37](#_Toc145440145)

[7.9 IETF Liaison Standing Committee (SC IETF) 37](#_Toc145440146)

[7.9.1 Function 37](#_Toc145440147)

[7.9.2 Operation 37](#_Toc145440148)

[8 802.15 Interest Group(s) 37](#_Toc145440149)

[8.1 Function 37](#_Toc145440150)

[8.2 Membership 37](#_Toc145440151)

[8.3 Formation 37](#_Toc145440152)

[8.4 Continuation 37](#_Toc145440153)

[8.5 Interest Group Operation 37](#_Toc145440154)

[8.5.1 Interest Group Meetings 38](#_Toc145440155)

[8.5.2 Voting at Interest Group Meetings 38](#_Toc145440156)

[8.6 Interest Group Chair 38](#_Toc145440157)

[9 Technical Expert Group (TEG) 38](#_Toc145440158)

[9.1 Function 38](#_Toc145440159)

[9.2 Formation 38](#_Toc145440160)

[9.3 Process 39](#_Toc145440161)

[10 Security Expert Group (SEG) 39](#_Toc145440162)

[10.1 Function 39](#_Toc145440163)

[10.1.1 **Cipher Suites** 40](#_Toc145440164)

[10.2 Formation 40](#_Toc145440165)

[10.3 Process for Cipher review 40](#_Toc145440166)

[11 Voting Rights 40](#_Toc145440167)

[11.1 Earning and Losing Voting Rights 41](#_Toc145440168)

[11.2 Voting Rights levels of membership 41](#_Toc145440169)

[11.2.1 Non-Voter 41](#_Toc145440170)

[11.2.2 Aspirant 41](#_Toc145440171)

[11.2.3 Nearly Voter 41](#_Toc145440172)

[11.2.4 Voter 41](#_Toc145440173)

[11.3 Voting Tokens 42](#_Toc145440174)

[12 Active 802.15 WG participant access 42](#_Toc145440175)

[12.1 Email lists 42](#_Toc145440176)

[12.2 Teleconferences (Telecons) 43](#_Toc145440177)

[12.3 Public Document Server 44](#_Toc145440178)

[12.4 Private Members-only Document Server 44](#_Toc145440179)

[13 IEEE 802.15 WG typical Motions 44](#_Toc145440180)

[13.1 SG and PAR Motions 44](#_Toc145440181)

[13.1.1 Study Group Formation 44](#_Toc145440182)

[13.1.2 Study Group extension 44](#_Toc145440183)

[13.1.3 Study Group approval of PAR and CSD 44](#_Toc145440184)

[13.1.4 WG approval of PAR and CSD 45](#_Toc145440185)

[13.1.5 Study Group approval of comment responses for PAR and CSD 45](#_Toc145440186)

[13.1.6 WG approval of comment responses for PAR and CSD 45](#_Toc145440187)

[13.1.7 WG approval to extend a PAR 45](#_Toc145440188)

[13.2 Letter Ballot motions 46](#_Toc145440189)

[13.2.1 Task Group Motions 46](#_Toc145440190)

[13.2.2 Work Group Motions 46](#_Toc145440191)

[13.3 CRG motions 47](#_Toc145440192)

[13.3.1 CRG formation for a WG Letter Ballot 47](#_Toc145440193)

[13.3.2 CRG formation for the Standards Association ballot 47](#_Toc145440194)

[13.4 Standards Association Ballot motions 48](#_Toc145440195)

[13.4.1 Task Group Motions 48](#_Toc145440196)

[13.4.2 Working Group Motions 48](#_Toc145440197)

[13.5 RevCom Submission 49](#_Toc145440198)

[13.5.1 Task Group Motions 49](#_Toc145440199)

[13.5.2 Working Group Motions 49](#_Toc145440200)

[13.6 Futile Motions 49](#_Toc145440201)

[14 IEEE 802.15 WG Assigned Numbers Authority 50](#_Toc145440202)

[14.1 WG ANA Chair 50](#_Toc145440203)

[14.2 WG ANA Vice Chair 50](#_Toc145440204)

[14.3 ANA Document 50](#_Toc145440205)

[14.4 ANA Request Procedure 50](#_Toc145440206)

[14.4.1 ANA Revocation Procedure 51](#_Toc145440207)

[14.4.2 ANA Appeals Procedure 51](#_Toc145440208)

[14.5 ANA Request Procedure for external organizations 51](#_Toc145440209)

[15 Guidelines for 802.15 Secretaries 52](#_Toc145440210)

[15.1 Minutes of Meetings 52](#_Toc145440211)

[15.1.1 Prepare the minutes taking into account the following: 52](#_Toc145440212)

[15.1.2 What minutes should be 52](#_Toc145440213)

[16 Instructions for Technical Editors of IEEE 802.15 WG and Task Groups 53](#_Toc145440214)

Table of Figures

[Figure 1 – Project 802 Organizational Structure 10](#_Toc66431970)

[Figure 2 – 802.15 WG Organizational Structure 11](#_Toc66431971)

[Figure 3 – Typical 802.15 WG meetings during 802 Plenary In-Person Session 17](#_Toc66431972)

[Figure 4 – Typical 802.15 WG Meetings during an In-Person Interim Session 18](#_Toc66431973)

Table of Tables

[Table 1 – File Naming Convention 20](#_Toc66431974)

References

Policies and Procedures

1. [IEEE-SA® Standards Board Bylaws](https://standards.ieee.org/about/policies/bylaws/index.html)   
   <https://standards.ieee.org/about/policies/bylaws/>

1. [IEEE-SA® Standards Board Operations Manual](https://standards.ieee.org/about/policies/opman/index.html)   
   <https://standards.ieee.org/about/policies/sa-opman/>

1. [IEEE 802 LAN/MAN Standards Committee (LMSC) Sponsor Policies and Procedures](http://www.ieee802.org/devdocs.shtml) (LMSC P&P)

1. [IEEE 802 LAN/MAN Standards Committee (LMSC) Operations Manual, (LMSC OM)](http://www.ieee802.org/devdocs.shtml)

1. [IEEE 802 LAN/MAN Standards Committee (LMSC) Working Group Policies and Procedures](http://www.ieee802.org/devdocs.shtml" \o "LMSC WG P&P) (WG P&P)
2. Robert's Rules of Order Newly Revised (Latest Published Edition), by [Henry M. Robert III](http://www.amazon.com/exec/obidos/Author=Robert,%20Henry%20M./103-9605712-7510225) (Editor), [Sarah Corbin Robert](http://www.amazon.com/exec/obidos/Author=Robert,%20Sarah%20Corbin/103-9605712-7510225), and [William J. Evans](http://www.amazon.com/exec/obidos/Author=Evans,%20William%20J./103-9605712-7510225) (Editor), Perseus Publishing, ISBN 0‑7382‑0307‑6.

Other References

1. IEEE Standards Development Process   
   <http://standards.ieee.org/develop/index.html>
2. Overview & Guide to IEEE 802 LMSC   
   <http://www.ieee802.org/IEEE-802-LMSC-OverviewGuide-06-Oct-2016-v2.pdf>
3. Adobe Acrobat Reader for viewing PDF files<https://get.adobe.com/reader/>
4. IEEE Standards Style Manual  
   <https://development.standards.ieee.org/myproject/Public/mytools/draft/styleman.pdf>

Acronyms and Abbreviations

|  |  |
| --- | --- |
| 802 LMSC | Project 802, LAN/MAN standards committee |
| AC | advisory committee |
| AEAD | authenticated encryption with associated data |
| ANA | assigned numbers authority |
| CA | Coexistance Assessment |
| CSD | Criteria for Standards Development |
| CRG | Comment Resolution Group |
| IANA | Internet Assigned Number Authority |
| ICAID | Industry Connections Activity Initiation Document |
| IEC | International Electrotechnical Commission |
| IEEE | Institute of Electrical and Electronic Engineers, Inc. |
| IEEE SA | IEEE Standards Association |
| IG | interest group |
| IPR | intellectual property rights |
| LAN | local area network |
| MAC | media access control |
| NIST | National Institute of Standards and Technology |
| PAN | personal area network |
| PAR | project authorization request |
| PDF | Portable Document Format |
| PHY | physical layer |
| SC | standing committee |
| SDO | Standards Development Organization |
| SEG | security expert group |
| SG | study group |
| TAG | technical advisory group |
| WG | working group |
| WSN | wireless specialty network |

Definitions

|  |  |
| --- | --- |
| Ad hoc meeting | A meeting created to address a specific problem or task, it is neither a Plenary Session nor an Interim Session |
| Five Criteria | Criteria consisting of broad market potential, compatibility, distinct identity, technical feasibility, and economic feasibility as defined by IEEE 802 LMSC (see 12.5 of [rules4]). These criteria are now part of the CSD. |
| Interim Session | Non-plenary session where only some 802 WGs are present. Interim sessions usually occur in January, May, and September |
| Meeting | A formal gathering of participants as per IEEE 802 rules; i.e. with a published agenda, published minutes, etc |
| Plenary Session | Session where all 802 WGs are present. Plenary sessions usually occur in March, July, and November |
| Radio spectrum regulatory bodies | Bodies empowered by authorization from countries to regulate the RF spectrum |
| Session | Sequence of consecutive Work Group meetings starting with the opening plenary meeting and ending with the closing plenary meeting. Typically a session starts on a Monday and ends on a Thursday. |
| Standards-setting bodies | Standards development bodies accredited by IEC or by IEC-accredited standard institutes like ANSI |
| Special Interest Groups (SIGs) | Industry associations with the focus of either developing or promoting specifications |
| Time Slot | Two hour scheduled time block reserved for a WG, TG, SC, SG, or IG meeting |

# Hierarchy

The following documents take precedence over the procedures described in this document in the following order (highest precedence shown first; in case of revisions, the latest approved revision applies):

[New York State Not-for-Profit Corporation Law](http://law.justia.com/newyork/codes/not-for-profit-corporation/)  
[IEEE Certificate of Incorporation](http://www.ieee.org/portal/cms_docs_iportals/iportals/aboutus/whatis/01-05-1993_Certificate_of_Incorporation.pdf)  
[IEEE Constitution](http://www.ieee.org/web/aboutus/whatis/Constitution/index.html)

[IEEE Bylaws](http://www.ieee.org/web/aboutus/whatis/bylaws/index.html)

[IEEE Policies](http://www.ieee.org/web/aboutus/whatis/policies/index.html)

[IEEE Board of Directors Resolutions](http://www.ieee.org/web/aboutus/corporate/board/action.html)   
[IEEE Standards Association Operations Manual](http://standards.ieee.org/sa/sa-om-main.html)

[IEEE-SA Board of Governors Resolutions](http://http:/standards.ieee.org/sa/bog/resolutions.html)   
[IEEE-SA Standards Board Bylaws](http://standards.ieee.org/guides/bylaws/index.html)

[IEEE-SA Standards Board Operations Manual](http://standards.ieee.org/guides/opman/index.html)

[IEEE-SA Standards Board Resolutions](http://standards.ieee.org/board/stdsbd/sasb-resolutions.html)

[IEEE Computer Society (CS) Constitution and Bylaws](http://www2.computer.org/portal/web/volunteercenter/constitution)

[IEEE CS Policies and Procedures, Section 10](http://www2.computer.org/portal/web/volunteercenter/ppm10)

IEEE CS Board of Governors Resolutions

[IEEE CS Standards Activities Board Policies and Procedures](http://www2.computer.org/portal/web/standards/policies) (SAB P&P)

[IEEE Project 802 LAN/MAN Standards Committee (LMSC) Sponsor Policies and Procedures (LMSC P&P)](http://standards.ieee.org/board/aud/LMSC.pdf)

[IEEE 802 LAN/MAN Standards Committee (LMSC) Operations Manual, v13 (LMSC OM)](http://ieee802.org/PNP/2008-08/Draft_LMSC_OM_080817_Clean.pdf)

IEEE Project 802 LAN/MAN Standards Committee (LMSC) Working Group Policies and Procedures (WG P&P)[[1]](#footnote-2)

*Robert’s Rules of Order Newly Revised* (latest edition)is the recommended guide on questions of parliamentary procedure not addressed in these procedures.

# Maintenance of Operations Manual

The Operations Manual (OM) is adopted in conformance with theIEEE 802 LAN/MAN Standards Committee (LMSC) Sponsor Policies and Procedures (LMSC P&P) [rules3].

It is maintained by the IEEE 802.15 WG Vice Chair or a person designated by the IEEE 802.15 WG Chair. The process for modifying the OM is as follows:

* Request to modify is made by any IEEE 802.15 voting member via email to the IEEE 802.15 Vice Chair (or designee) or made verbally in the maintenance standing committee meeting that shall be held in every IEEE 802.15 session.
* The IEEE 802.15 Vice Chair (or designee) shall propose changed text in response to the request to modify.
* The IEEE 802.15 maintenance standing committee shall review the proposed changed text and either approve the text as proposed (or amended) or disapprove the text. If approved, the OM modified with changes marked shall be posted for review by the IEEE 802.15 WG.
* At the closing plenary of an IEEE 802.15 session, the IEEE 802.15 WG Chair shall entertain a motion to the IEEE 802.15 WG to approve the modified OM.
* If the motion to approve carries, the modified IEEE 802.15 OM shall take effect after the session has been adjourned.

In some circumstances minor revisions may be made to the IEEE 802.15 OM without a WG vote. These circumstances are:

a)  Basic layout/formatting or updating reference links that do not change the meaning of any of the text

b)  Correction of spelling and punctuation

c)  Editorial errors resulting from the approved text changes

# 802.15 Working Group

## Overview

The 802.15™ Working Group (WG) is responsible for developing Wireless Speciality Network (WSN) standards under the authority of the IEEE® Project 802 LAN/MAN Standards Committee (802 LMSC). The 802.15 WG is one of several WGs that comprise the Project 802 LAN/MAN Standards Committee.

The IEEE 802 LMSC is the Standards Committee for both Standards Association ballot groups as well as the Standards Development groups. The 802 LMSC includes WGs, Technical Advisory Groups (TAGs), other subgroups (such as standing committees) and, on a temporary basis, PAR Study Groups (SG) to standardize technologies applicable to local and metropolitan area networks as shown in Figure 1.



Figure 1 – Project 802 Organizational Structure

See references [[other1]](#other1) and [[other2]](#other2) for relevant background information on the IEEE standards development process and an introduction to the IEEE 802 LMSC.

## Function

The 802.15 WG's charter is to develop PHY and MAC specifications for WSNs carried out under PARs approved by the IEEE SA Standards Board and assigned to the 802.15 WG by the IEEE 802 LMSC. Since the scope of standards work which comprises 802.15 WG activity is diverse in time, technology, and structure, individual standards activities within 802.15 WG are, at the discretion of the 802.15 WG, carried out by Task Groups (TGs) operating under, and reporting to, the 802.15 WG.

The 802.15 WG is chartered to:

* Maintain and revise the 802.15 standards, amendments, and recommended practices
* Develop new standards when an PAR is approved by IEEE SASB and is assigned to the 802.15 WG by the IEEE 802 LMSC
* Maintain liaisons with other groups within IEEE 802 LMSC, and other relevant standards setting bodies and radio spectrum regulatory bodies

The 802.15 WG activities are administered by the WG Chair who is assisted in this task by members of the WG Chair Advisory Committee (AC); see 3.6.

The structure of 802.15 WG is illustrated in Figure 2.

Figure 2 – 802.15 WG Organizational Structure

## Working Group Officers’ Responsibilities

### Working Group Chair

As stated in the IEEE 802 LMSC WG Policies and Procedures [rules5], the WG Chair is responsible for presiding over WG Plenary sessions.

Responsibilities of the WG Chair include:

1. Before session tasks:

* Submit agenda items for the opening IEEE 802 LMSC meeting (prior to the week before the meeting)
* Attend the opening IEEE 802 LMSC meeting

1. During session tasks:

* Conduct full WG meetings
* Keep IEEE 802 LMSC members informed as early as possible about 802.15 matters requiring approval at the closing IEEE 802 LMSC meeting
* Attend the closing IEEE 802 LMSC meeting, representing and leading 802.15 items of business
* Maintain a roll call voters list
* Decides what is non-technical and what is technical unless explicitly stated this by operations manual or the IEEE 802 LAN/MAN Standards Committee (LMSC) Working Group Policies and Procedures (WG P&P)

1. After session tasks:

* Prepare a WG status report to the IEEE 802 LMSC Recording Secretary within one week after the conclusion of the closing IEEE 802 LMSC meeting. This status report shall include a description of the progress made during the week, as well as plans for further work and future meetings.
* Prepare agenda and venue for next meeting; publish on web site, and email notice to the 802.15 WG Email list
* Manage the preparation of the meeting place as well as the venue for the next interim meeting
* Prepare Standards Association ballot documentation on the IEEE-SA website (the “MyBallot” system), interface with IEEE-SA staff as necessary to conduct ballots, prepare and publish consolidated results. Ensure the Standards Association ballot documentation is accurate, complete and self-explanatory.
* Work with IEEE staff to publish 802.15 Drafts, as directed by the WG
* Respond to inquiries regarding the 802.15 WG
* Work with Task Group (TG) Chairs to prepare meeting agendas and room requirements for next session(s)

### Working Group Vice Chair(s)

Responsibilities of the WG Vice Chair(s) are assigned by the WG Chair and may include the following:

1. Before session tasks:

* Preparation of voters list
* Preparation of updated electronic records of participant status as required by the meeting planner and the IEEE-SA systems according the required schedule
* Populate the electronic attendance system with plan of meetings
  + Update any changes during the session
* Arbitrate any attendee record discrepancies
* PAR reviews

1. During session tasks:

* Be prepared to take over the duties of the WG Chair in the event of temporary or permanent absence
* Be prepared to assume or assign secretary duties when required.
* Between meetings, be prepared to respond to inquiries regarding the committee and keep the WG Chair informed
* Oversee document process
* Attend to any business that might otherwise prevent the WG Chair from orderly conduct of the meetings, such as attending to emergency messages, and inquiries from the meeting planner or hotel staff
* Assist the WG Chair in obtaining an accurate and fair vote count
* Assist the WG Chair during IEEE 802 LMSC meetings held on initial and final days

1. After session tasks:

* Update participants status based on attendance, and inform participants of any change in status
* Post a list of active (i.e., Aspirant, Nearly-Voter or Voter) participants on the 802.15 website
* Prepare WG ballot documentation on the 802.15 website, interface with IEEE-SA staff as necessary to conduct ballots, collect ballot return forms, and prepare consolidated ballot results
* Update web site: meeting arrangements, ballot status
* Update 802.15 Draft documents on the 802.15 members-only web site
* Update 802.15 email list servers

### Working Group Secretary

See Guidelines for 802.15 Secretaries for details on content and form of minutes.

### Working Group Technical Editor

The WG Technical Editor is responsible for:

* Organizing and conducting regular WG technical editor meetings
* Oversee the Draft publication process:
  + Coordinate between the IEEE-SA publication editor and TG Technical Editor
  + Proof read and coordinate changes of documents edited by IEEE staff
  + Advise WG Chair when a Standards Board approved draft is ready for publication

### Working Group Treasurer

The WG Treasurer is responsible for the financial operations of the WG and the WG treasury. Specific responsibilities are listed in IEEE 802 WG P&P [rules5].

### Liaisons

Liaison relationships are established with other groups within 802 LMSC, other relevant standards setting bodies, industry promotional bodies, special interest groups (SIGs), and radio spectrum regulatory bodies (liaison groups). Liaisons shall be recommended by the WG Chair and confirmed by the vote of the WG. Liaisons shall be reconfirmed each year at the July 802 plenary. Liaisons will be granted voting rights upon confirmation of their liaison status in 802.15 and will seek to be granted voting rights in their respective liaison groups.

#### Liaison Roles and Responsibilities:

* Liaisons are responsible for providing updates and status reports to the WG at plenary and interim sessions. If a liaison does not provide this in two consecutive sessions, then the WG Chair may withdraw the liaison responsibility from the concerned individual. The WG Chair recommends a replacement as necessary.
* Liaisons cannot pass on responsibilities, nor have other individuals represent their post without having WG or WG Chair approval.
* Liaisons have the same voting rights, privileges and obligations as 802.15 Voters. Liaisons are given 802.15 WG attendance credit for attending liaison group meetings that are concurrent with 802.15 WG sessions.
* Liaisons shall be empowered to report status of the WG developments to their respective liaison groups, and shall report back to the WG the status of the liaison group at interim and plenary sessions.

## Working Group Officer Election Process

The election of the IEEE 802.15 WG Chair and WG Vice Chairs is held in accordance with the IEEE 802 LMSC P&P [rules5]. The WG Chair shall conduct the election process unless the WG Chair is running for re-election and an alternate candidate also running for election as WG Chair requests that the WG Chair designate one of the WG Vice Chairs as an Acting WG Chair. Should there be only one “slate” of candidates, the WG Chair may choose to ask the WG to affirm the slate of WG officers.

### Plenary meeting elections

1. The nominations for the election shall be made at the WG Opening Plenary meeting.
2. The WG Chair or Acting WG Chair shall open the floor for nominations.
3. The WG Chair or Acting WG Chair shall close nominations after the nominations have been made.
4. Each candidate shall be given a short time (nominally, two minutes) for an introductory statement of acceptance that should nominally contain the candidate’s:
   1. Summary of qualifications
   2. Commitment to participate and accept duties and responsibilities
   3. Vision for the WG
5. The floor shall be opened for discussion (nominally for five to ten minutes total).
   1. The WG Chair or Acting WG Chair should limit the duration of comments and promote open participation, both pros and cons. If only one candidate is nominated, the WG Chair or Acting WG Chair may choose to limit the debate.
6. The discussion shall also occur, with the WG Chair leading the process, for the nomination(s) of the WG Vice Chair(s).
7. At a Plenary meeting, the WG Officers shall conduct the election, count the votes, and notify the WG of the results.
   1. Voting tokens shall be used to cast valid votes during the session.
   2. In order to be elected, any candidate shall receive a simple majority (over 50%) of the votes cast in the election for the respective position.
   3. Should no candidate receive a majority in the election, a runoff election may be held at the WG Closing Plenary meeting. The process shall be similar to the initial election, except that:
      1. New nominations shall not be permitted.
      2. In the runoff election, the nominated candidate having received the fewest votes in the previous election round shall not be an eligible candidate (in case a tie prevents this possibility, all the nominated candidates shall remain eligible).
   4. If the process is inconclusive, another runoff election may be held, as per A7)c.

## Working Group Officer Removal

The rules for the removal of a WG officer are stated in 6.4 of [rules5].

## WG Chair Advisory Committee

The WG Chair Advisory Committee (AC) functions as the coordinating body supporting the WG Chair in formulations of policy and the performance of his duties. The AC has no voting procedures or policies. The intent is to have the 802.15 AC operate in a consultative manner. TheAC may meet during 802.15 interim and plenary sessions and by telecon between sessions as determined by the WG Chair.

Note: During WG sessions, all AC meetings are open to any registered attendee.

### AC Function

The function of the AC is to assist the WG Chair in performing the following tasks:

* Provide procedural and, if necessary, technical guidance to WG, TGs, SGs and SCs as it relates to their charters
* Oversee WG, TG, SG, and Standing Committee (SC) operation to see that it is within the scope of 802.15 WG
* Review TG draft standards proposed for submission to WG letter ballot and offer recommendations, if any, to the WG
* Consider complaints of WG, TG, SG, and SC members and their resolution at the plenary, WG, TG, SG, and SC meetings
* Call meetings, including teleconferences, and issue meeting minutes
* Prepare the WG agenda and materials for the WG plenary meetings
* Determine room allocation requests to the meeting planners for the next session
* Manage any other 802.15 WG logistics

### AC Membership

The membership of the AC is appointed at the discretion of the WG Chair. Typically, the membership of the AC is composed of the following 802.15 WG officers:

* WG Chair
* WG Vice Chair(s)
* WG Secretary
* WG Technical Editor(s)
* WG Treasurer
* WG Parliamentarian
* WG ANA Lead
* TG Chairs
* SG Chairs
* SC Chairs

The Chair of each sub-group that is active at a session should arrange that one of its officers is available at the AC meetings during that session. There is no need for more than one officer of each sub-group to be present.

## Working Group Sessions

### Plenary Session

The 802.15 WG Plenary Sessions are conducted three times a year as part of the 802 LMSC Plenary Sessions (see [rules5]). Typically, the 802.15 WG Opening and Closing plenary meetings are held at each 802 LMSC Plenary Session (see Figure 3). Occasionally there are TG, SG, or SC meetings either during or before the IEEE 802 LMSC opening meeting preceding the Plenary Session.

Note: meetings held before the opening of 802 plenary meeting are treated as ad-hoc meetings.



Figure 3 – Typical 802.15 WG meetings during 802 Plenary In-Person Session

### Interim Sessions

Interim Sessions of the WG, TGs, SGs, and SCs are scheduled by the respective groups no later than the end of the prior Plenary Session. A WG Interim Session is held between IEEE 802 Plenary Sessions (see Figure 4). Additional sessions may be scheduled as needed to conduct business of the WG, TGs, SGs and/or SCs. The date, time, and place (for in-person sessions) of the session(s) shall be approved by the WG and announced at the WG closing plenary meeting and entered in the minutes of the WG session.



Figure 4 – Typical 802.15 WG Meetings during an In-Person Interim Session

### Session Meeting Schedule

802.15 Interim Sessions and Plenary Sessions start with an opening plenary meeting followed by previously scheduled TG, SG, and/or SC meetings. Midway through the week a mid session plenary meeting may be held. TG, SG, and/or SC meetings continue. For in-person sessions the AC meets typically Sunday evening and Wednesday morning. For electronic sessions, the AC meets the week before the session. A closing plenary meeting is held to close the session. Start times and end times are published at least 30 days in advance. Active 802.15 WG in-person session hours are defined from 8:00 am until 9:30 pm from the beginning of the 802.15 WG opening plenary meeting through the end of the 802.15 WG closing plenary meeting. Meeting hours for electronic sessions vary as to the time zones of the typical participants.

### Session Logistics

#### Attendance

Attendance at WG, TG, SG, and/or SC meetings is recorded electronically. If electronic recording is not possible manual (most likely handwritten) documentation is used for in-person meetings while electronic meetings would use email responses. Each attendee is responsible for recording attendance. The mechanism for recording attendance is described in the opening reports of the WG opening plenary meeting. Each attendee is expected to only sign in for the meeting designation that they are attending in that time slot; time slots are defined as WG meetings as stated in the approved Agenda graphic for the Interim Session or Plenary Session in progress. It is expected that attendees have participated in at least 75% of the designated meetings for which they have signed as attended. Failure to sign in may impact voting rights as per 11. Inability to sign in should be reported to the WG Vice Chair responsible for attendance recording.

##### Meeting Etiquette

During any WG, TG, SG, IG, and SC in-person meetings, cell phones shall be shut off or in the vibrate mode of operation, in order not to interrupt the meeting.

Meetings are run in an orderly fashion, and outbursts or other disruptions during a meeting are not tolerated and may be dealt with as per WG process and procedures stated in [rules5]. Conversations whether on cell phones or with other individuals in a meeting should be moved outside the meeting room. During electronic meetings, mute your microphone if you’re not talking.

When speaking, first announce yourself and your affiliation.

Comments should be directed to the Chair of the meeting in accordance with Robert’s Rules of Order and personal comments directed to individuals should be avoided.

## Documentation

All 802.15 documents are disseminated in electronic format only. Documents are only accepted if they adhere to the policies and procedures spelled out in this subclause.

### Types

The document shall be one of the following types:

* Draft Standards, Amendments, Guidelines, and Corrigenda
* Agenda
* Minutes
* Reports (from a TG, SG, IG, SC or a liaison meeting or a ballot), including financial reports
* Draft positions or statements (WG, TG, SG, IG, or SC level)
* Approved positions or statements (WG, TG, SG, IG, or SC level)
* Submissions (Presentations, Motions, Simulation Results, etc.)

### Format

Documents, with the exception of draft standards, amendments, and corrigenda shall be in the current template as specified by the WG Chair. The templates are located on the 802.15 WG website at: <http://grouper.ieee.org/groups/802/15/pub/Download.html>.

Draft standards, amendments, and corrigenda shall be submitted to IEEE-SA in a format acceptable by the IEEE-SA. Draft standards, amendments, and corrigenda shall be made available to the 802.15 WG in Adobe Acrobat**™** format.

### Layout

The layout of draft standards, amendments, and corrigenda shall be according to the IEEE-SA Style Guide [other4]. All other documents shall be based on the current templates from the IEEE 802.15 website) including the correct document number and revision number.

Documents should have the following layout:

* Paper size: letter (8.5’x11’)
* Margins: top = 0.6’, bottom = 0.5’, inside and outside = 0.75’, gutter of 0.5 and mirror image, headers 0.3’ from edge.
* The header is as follows:
* Times (New) Roman, 14 point, bold, line below
* Left: the month and year of issue
* Right: the text "doc: IEEE 802.15-yy-nnnn-mm", where yy are the last two digits of the year; nnnn are the digits of the document number and the revision number is indicated by the digit(s) m, starting at zero.
* The footer is as follows:
* Times (New) Roman, 12 point, line above
* Left: the text type and status of the document
* Center: "page n", where n is the page number
* Right: Primary Submitter name and company name as point of contact.

### Submissions

All documents presented to the WG, TG, SC, or SG should be on the document server prior to presentation unless the group votes to allow the presentation.

### File naming conventions

The file name shall be as shown in Table 1 below. An example of a good filename that conforms to the naming convention is 15-10-0652-00-0000-Motion-to-form-a-study-group.ppt.

The electronic documentation system automatically generates the prefix part of the filename (i.e. the “**gg-yy-ssss-rr-GGGG”** below) from data entered by a document author, and requires that any uploaded file exactly match this prefix.

Table 1 – File Naming Convention

|  |  |
| --- | --- |
| **gg-yy-ssss-rr-GGGG-HumanName.ext**  **where** | |
| “gg” | Is the 802 group 15 |
| "yy" | Is the last 2 digits of the year the document is presented |
| "ssss" | Is the sequence number of the document |
| “rr” | Is the revision number |
| "GGGG" | Is the group code identifying the WG, TG, SG, or SC to which the document assigned or presented  Examples of group codes:  0000 – WG  000z – TGz  Tvws – TVWS    The electronic documentation system provides a mapping of well-known terms (e.g. TGz) to group code (e.g. 000z). |
| “DescriptiveName” | Is the descriptive name should be as short as possible (please use either a dash or underscore for the coupling letter). Try to avoid adding the TG in the name. |
| ext | The commonly used 3 or 4 letter file extension. |

## Motions Modifying Drafts

Motions modifying drafts may be made at appropriate times during meetings, as determined by the TG Chair. However, complex technical changes to a draft shall be in a submission that has been accepted by document control according to document formats specified in 3.8. The TG Chair determines if a technical change is sufficiently complex to require a submission.

## Draft WG Balloting

A draft shall successfully pass a WG letter ballot before it can be forwarded to the IEEE 802 LMSC for approval for Standards Association ballot (see 11 of [rules5]). All letter ballots shall be conducted by electronic balloting. The policies and procedures governing WG letter ballots, comment resolution and confirmation letter ballots are contained in the Policies and Procedures of IEEE 802 LMSC (see 11 of [rules5]). The duration of a WG ballot as stated in 11 of [rules5], are at least 30 days however for recirculation ballots are at least 15 days.

The following additional requirements are imposed within 802.15 WG.

### Draft Standard Balloting Group

The 802.15 WG ballot pool consists of all 802.15 Voters as of the close of day the ballot distribution was completed, as determined by the WG Chair.

### Draft Standard Balloting Requirements

A draft standard (or amendment or corrigendum) is sent to working group ballot using the procedure described in this subclause.

There is a two-step approval process before a draft can be balloted:

* Approval in a task group
* Approval in the working group

It is the responsibility of the TG to ensure that the draft is ready for balloting, i.e. that it is complete (e.g. no place holders or notes for future action, editing, or clarifications) and of sufficient quality. TGs are encouraged to perform an internal review / comment resolution cycle before bringing a draft to the working group for ballot. Failure to prepare adequately will result in a large number of comments and could result in a failed ballot. It also antagonizes working group voters. The progress of a draft may be accelerated by taking a more cautious route to the initial ballot, resulting in a shorter overall period of comment resolution.

Before a draft is submitted to 802.15 WG letter ballot, it shall meet all the following requirements:

Task Group:

1. Either the draft to be balloted, or the precursor draft to be edited, as appropriate, shall be available on the 802.15 website in the open or members area, and announced on the 802.15 WG reflector
2. If any changes need to be made to this draft before it can be balloted by the WG, the technical changes shall be described in one or more submissions approved by vote in the TG.
3. For an initial ballot (considered to be technical), the TG should approve submittal to WG letter ballot using a motion following the form found in 13.2.1 (this is considered a technical motion):

Working Group:

1. At least four (4) weeks before the draft can be submitted to the WG for letter ballot, preferably much earlier, the draft or precursor draft should be submitted to the WG designated Technical Expert Group (TEG), if a TEG has been established, for review as per 9.
2. The availability of the draft (or precursor draft) shall be announced on the 802.15 WG email reflector and available on the 802.15 document site prior to the meeting slot in which approval of the WG ballot on the draft is considered.
3. Approval of the working group is required to start an 802.15 WG letter ballot, either by motion in a WG meeting or by an electronic ballot. The wording of the approval motion should be in the format of the motion’s guidance in 13.2.2. Before the WG vote, the TEG may state its recommendation of ready for letter ballot or not ready to the WG and, if not ready, to state the minimal changes required to change its recommendation
4. Upon completion of all 802 WG ballot rules, the draft may be submitted to the WG for approval to go to Standards Association ballot via a motion as per the form found in 13.4.

### Formatting Requirements for Draft Standard and Amendments

The draft shall be provided in the current IEEE electronic format (see 4.0 of [other4]). At a minimum this shall be completed prior to the Standards Association ballot. However, it is preferable that the draft be maintained in this format for its entire life.

### WG ballot voting rules

The following rules for a WG ballot are in addition to those specified in IEEE Project 802 LAN/MAN Standards Committee (LMSC) Working Group Policies and Procedures (WG P&P) [rules5].

Upon the WG approving a draft to be letter balloted, the WG officer(s) shall send out an email to all voting members advising the voting membership of the instructions that shall be properly followed for the vote to be considered valid. If a vote is received that is non-compliant to the WG officer’s instructions, the vote shall be considered invalid and the WG officer(s) shall send an email to that voter stating the reason for the invalidation of the vote. All comments shall be submitted in the form required as per the voting instructions.

The ballot shall state the closing time and date. If the ballot has not achieved a 50% return by the specified closing date, the ballot may be extended to close when a 50% return of the balloting group is received. This extension for receipt of a 50% return shall not be longer than 60 days. The last vote received from the Voter before the specified closing date will be the vote counted and comments considered.

The TG shall respond to all comments that are received with valid votes. Comments received after the close of balloting, or that do not accompany a valid vote shall be provided to the TG. The TG shall acknowledge the receipt of these comments to the initiator and take such action the TG deems appropriate.

### Recirculation Ballots

Once the proposed standard has achieved 75% approval, subsequent ballots are referred to as recirculation ballots. For recirculation ballots, commenting is restricted to changed portions of the balloted proposed standard, portions of the proposed standard affected by the changes, or portions of the balloted proposed standard that are the subject of unresolved comments associated with *Do Not Approve* votes. (see 5.4.3.3 of [rules2])

# Task Groups

## Function

The function of the TG is to produce a draft standard, recommended practice, guideline, supplement, or portion of a draft standard. These shall be within the scope of the IEEE LMSC, the charter of the WG and under an approved PAR as established by the IEEE 802 LMSC and approved by the IEEE Standards Board. During a session the Task Group is authorized to release a draft for a recirculation ballot as defined in 3.10.5.

After the publication by the IEEE of the standard, recommended practice or guideline, the function of the TG is complete and its charter expires (see subclause 4.8). It is a function of the 802.15 WG to maintain published 802.15 standards (see 5.0 of [rules5]).

## Task Group Chair

The TG Chair shall be appointed by the WG Chair and confirmed by a TG majority approval.

The TG Chair is required to confirm that the function of secretary is performed for each TG meeting.

## Task Group Vice Chair

TG Vice Chair (an optional position) is appointed by the TG Chair and confirmed by a TG majority.

## Task Group Secretary

The TG Secretary shall be appointed by the TG Chair, who may also act as Secretary. TG meetings are not allowed to function without a secretary.

The minutes of meetings taken by the TG Secretary (or designee) are to be provided to the TG Chair in time to be available to the WG Chair for publication, i.e., within 30 days after the close of the session.

## Task Group Technical Editor

The TG Technical Editor shall be appointed by the TG Chair and confirmed by a TG majority approval.

The TG Technical Editor is responsible for:

* Organizing and maintaining the draft standards for the TG in the format used by the IEEE standards department
* Preparation of technical drafts following the editor’s guidelines in “15 Instructions for Technical Editors of IEEE 802.15 WG and Task Groups”
* Preparation of an update of the draft standard after a session as soon as possible, as directed by the TG
* Proof reading and coordinating changes of documents edited by IEEE staff
* Submission to the TG Chair the following:
* The file of the standard (see [other3])
* A word processing document file in a format that is acceptable by the IEEE standards department (see [other4])

## Task Group Membership

Participants from 802.15 WG make up the TG membership. The TG shall follow the operating policies under the 802.15 WG.

### Rights

The rights of the TG participant that is an Active member of 802.15 (i.e. has an 802.15 membership status of Aspirant, Nearly Voter or Voter) include the following:

* To join the TG email reflector
* To vote at meetings if present providing the participant is qualified under the WG voting policies and procedures.
* To examine all working draft documents during WG Sessions.
* To lodge complaints about TG operation with the WG Chair.

### Meetings and Participation

All TG meetings are open to participants of any status. Attention is however drawn to the registration requirements for those attending 802 Plenary Sessions and Interim Sessions where TG meetings also occur. WG Voter members have the right to participate in decisions. The TG Chair may grant participants who are not an 802.15 WG Voter the privilege of participating in discussions.

A TG will normally meet during the week of the 802.15 WG Session. The WG Chair determines, taking into account the TG status, if a TG meeting is required and assigns timeslots for meeting during the session. Depending on the workload, ad hoc TG meetings can be held between the 802.15 WG Sessions as often as required and as recommended by the TG membership with approval by the WG Chair. A meeting notice and agenda shall be announced at a WG session or distributed on the TG email reflector at least 30 days prior to any meeting. This notice will include as a minimum the date, time, location, host, hotel details, travel details if necessary and a stated purpose. TG meetings that are not part of an 802.15 WG Session do not count towards 802.15 WG voting rights.

### TG Teleconferences

TG teleconferences are task group meetings that are distinct from either interim or plenary sessions. Teleconferences are a means to prepare input for sessions provided that the teleconference date, time, agenda, and arrangements are announced either at the WG session or on the TG email reflector as per the 802 WG P&P [rules5] and that the minutes (agenda, list of attendees, and proceedings) are recorded and disseminated to the TG either as emails to the TG’s reflector or as WG documents within 7 days after the teleconference. TG teleconferences do not count towards 802.15 WG voting rights.

## Operation of the Task Group

The TG's primary responsibility is to produce a draft standard, recommended practice, or guideline in a reasonable amount of time for review and approval by the WG. For amendments and revisions to IEEE 802.15 standards it is expected that the task group thoroughly read and understand the whole standard being modified. Specifically, the task group’s draft document shall maintain the standard’s structure and conventions, adhere to the PAR and CSD, that effort be made to reuse or leverage existing behavior whenever possible, that changes do not “break” existing behaviors, and that backward compatibility is achieved. To ensure that the previous goals are met, the task group shall work with the assigned TEG (9)(if a TEG is assigned) in a proactive manner.

The operation of the TG is governed by this operations manual and IEEE Project 802 LAN/MAN Standards Committee (LMSC) Working Group Policies and Procedures (WG P&P).

### Task Group Chair's Functions

The TG Chair may decide non-technical issues or may put them to a vote of the TG. The TG participants decide technical issues by vote. Unless explicitly stated this by operations manual or the IEEE 802 LAN/MAN Standards Committee (LMSC) Working Group Policies and Procedures (WG P&P), the TG Chair decides what is non-technical and what is technical. Generally, a technical motion is defined as a motion that will materially affect the content of a draft. This is because a draft itself will ultimately be subject to a 75% majority vote at both WG and 802 LMSC ballot.

The TG Chair is responsible for presiding over TG sessions.

The TG Chair shall operate the TG in an unbiased fashion. To maintain impartiality, the TG Chair shall refrain from taking sides in debate on technical motions.

It is the responsibility of the TG Chair to lead the TG in producing a quality draft standard in a timely fashion as specified by the specific PAR.

### Task Group Chair's Responsibilities

The main responsibility of the TG Chair is to ensure the production, and to guide through the approval and publication process, a draft standard, recommended practice or guideline, or revision to an existing document as defined by the relevant PAR. The responsibilities include:

* Issue a notice and agenda for each approved meeting or ad hoc, at least 30 days prior to start.
* Issue a notice and agenda of approved teleconferences by issuing a notice and agenda for each, as per 802 WG P&P [rules5].
* Ensure that there is a Recording Secretary for each meeting.
* Issue meeting minutes and important requested documents to all members. The meeting minutes are to include:
* Next meeting schedule and objectives
* Agenda as revised at the start of the meeting
* Voting record including resolution, mover and seconder, and numeric results
* Maintain liaison with other organizations at the direction of the WG Chair. All liaison and liaison statements shall be approved.
* Work with the WG Chair and Technical Editor to complete the publication process for the draft standard, recommended practice or guideline.

Sufficient detail shall be presented in the meeting minutes to allow a person knowledgeable of the activity, but not present at the discussion, to understand as to what was agreed upon. Minutes shall be distributed within 30 days of the meeting to the attendees of the meeting, all TG participants and all liaison groups.

At each session in which the TG has meetings, the TG Chair shall report as follows:

* The session objectives and previous teleconference(s) summary at the opening plenary meeting
* A status report for the mid-week plenary meeting
* A closing report (in a presentation format) stating achievements, telecon schedule, goals for next meeting

### Task Group Chair's Authority

To carry out the responsibilities cited in 4.7.2, the TG Chair has the authority to:

* Decide which issues are technical and which are non-technical
* Assign and unassign subtasks and task leaders or executors, e.g. secretary, subgroup leader, etc.
* Speak for the TG to the WG
* If the TG Chair determines that the TG is being dominated by a single group or if the TG is unable to progress due to lack of consensus, the TG Chair shall bring this issue to the attention of the WG Chair.  The WG Chair, at his discretion, may bypass TG approval and put the question directly to the WG at large.
* Be representative of the TG during coordination and interaction with IEEE staff

### Task Group Vice Chair Functions

The TG Vice Chair assists the TG Chair in carrying out the TG Chair Functions. The TG Chair may delegate the control of the meeting to the TG Vice Chair when the TG Chair wants to participate in the TG debate. The TG Vice Chair is then responsible to lead the TG.

### Voting

WG Voters are entitled to make motions and vote, subject only to the provision that they believe that they are qualified to vote on the matters before the task group and all participants who believe themselves to be qualified may participate in straw polls.

On a technical motion, a vote is carried by a minimum 75% approval of the sum of those voting "Approve" or "Do Not Approve". On a non-technical motion, a vote is carried by a greater than 50% approval of the sum of those voting "Approve" or "Do Not Approve".

## Deactivation of a Task Group

The 802.15 WG may deactivate a TG it has formed. After the objective of the TG is complete, its charter expires and is deactivated by the WG. If the TG has not completed its work within its allotted period of time, the TG can request to be disbanded by the 802.15 WG or request an extension of time. The TG may request the WG to deactivate the TG prior to the expiration of the PAR. Motion to deactivate a TG requires 75% approval.

# Comment Resolution Group

## Overview

The function of the Comment Resolution Group (CRG) is to resolve the comments resulting from letter or Standards Association ballots of draft documents.

## Formation

A CRG, consisting of 802.15 WG voters, shall be formed by approval of the WG. It is recommended that the relevant task group, i.e. the task group that drafted the document being letter balloted, proposes the membership of the CRG to the WG. In the absence of a WG approved CRG, the relevant task group shall perform the function of the CRG.

It is recommended that in selecting the membership of CRG the task group consider the basic needs of the CRG:

* Capability – the membership must have the technical skills and sufficient committed availability to resolve all comments in a timely manner.
* Balance – no single interest category constitutes a majority of the CRG membership
* Size – the number of members should be sufficient to resolve all comments in a reasonable time frame but not so large as to make it very difficult to attain a quorum during a telecom or an ad hoc meeting. For a telecon or ad hoc meeting a CRG quorum is attained when greater than 50% of the approved CRG members are present. Alternate designates may substitute for an absent CRG member and count towards a quorum, but alternate designates shall also be approved by the WG.
* Voting rights – all CRG members must be 802.15 voting members at the formation of the CRG.

## Duration

A CRG is chartered from the end of the closing meeting of a session (either Interim or Plenary) to the beginning of the starting meeting of the subsequent session (either Interim or Plenary).

## Comment Resolution Group Chair

The CRG Chair shall be appointed by the WG Chair.

Responsibilities of the CRG Chair include:

1. Before meeting tasks:

* Announce the time and place of a CRG meeting along with an agenda for the CRG meeting

1. During meeting tasks:

* Conduct the CRG meeting as per WG rules (see [rules5])
* Confirm that the function of secretary is performed for each CRG meeting. CRG meetings are not allowed to function without a secretary, but the CRG Chair may also act as Secretary.
* Maintain an attendance list for the meeting
* The CRG Chair shall vote only if his or her vote can change the outcome

1. After meeting tasks:

* Review and publish the minutes of the meeting as an 802.15 submission
* Manage the preparation of the future meeting venues
* Ensure that the comment resolution documentation is accurate, complete and self-explanatory
* Respond to inquiries regarding the CRG
* Work with technical editor to modify the draft document in accordance with CRG approved comment resolutions

## Comment Resolution Group Operation

Once a Standards Association ballot is closed the following processes apply:

* + The CRG is subject to IEEE-SA policies on anti-trust and patents
  + The CRG shall publish minutes of its meetings as 802.15 submissions
  + The CRG meets together (either in person, or in telecons, subject to the LMSC WG P&P rules as per [rules5] about notification of such meetings) in order to resolve comments
  + The CRG may vote to approve comment resolutions (75% approval required) during WG sessions, ad hoc meetings, or telecons in which quorum is achieved. Ad hoc meetings and telecons shall be in compliance with the LMSC WG P&P rules [rules5] about notification of such meetings.
  + Only CRG members, the WG Chair or a WG Vice Chair, and the WG technical editor shall be allowed to vote at CRG meetings
  + Once comment resolution is complete (as determined by the CRG Chair) and the modified draft is available, the CRG Chair may start a WG recirculation ballot if the WG has approved the CRG to conduct recirculation ballots

# Study Groups

## Function

The function of a Study Group (SG) is to complete a defined task with specific output and in a specific time frame. Once this task is complete, the function of the SG is complete and its charter expires.

The normal function of a SG is to draft a complete PAR and CSD (see 5.3 of [rules3] and 12.5 of [rules4]) and to gain approval for them from the 802.15 WG. The decision of whether to utilize the 802.15 WG or to establish a new WG, TG, or SC to carry out work items recommended by a SG is made by the IEEE 802 LMSC with advice from the 802.15 WG.

## Formation

An SG is formed when sufficient interest has been identified for a particular area of study within the scope of 802.15 WG. The first step in the process is a call for interest. Any WG member or observer can make this at the 802.15 WG opening plenary meeting. An 802.15 SG can then be initiated by 75% approval of the 802.15 WG and is subject to approval by the IEEE 802 LMSC.

The best time to ask permission to form an SG is at the mid week or closing plenary via a motion.  The mover should be armed with why this needed and not already addressed elsewhere and whether it is an amendment or new standard.  Also indicate the level of interest in terms of likely participation and the name of an SG Chair. If approved, the WG Chair will take it the EC for action at the closing plenary of that session.

During this approval process the IEEE 802 LMSC decides whether a SG is within the scope of 802.15 WG, should be moved to another WG or should be set up as an IEEE 802 LMSC PAR Study Group.

## Continuation

A SG is chartered from a Plenary Session to the subsequent Plenary Session. If it has not completed its work within that time, a request may be made to the WG for an extension to continue until the next Plenary Session. Any request for SG extension, as per 13.1, is voted upon at an 802.15 WG plenary meeting.

## Study Group Chair

The SG Chair shall be appointed by the WG Chair.

The SG Chair is required to confirm that the function of secretary is performed for each SG meeting. SG meetings are not allowed to function without a secretary, but the SG Chair may also act as Secretary.

## Study Group Secretary

The SG Secretary shall be appointed by the SG Chair.

The minutes of meetings taken by the SG Secretary (or designee) are to be provided to the SG Chair in time to be available to the WG Chair for publication, i.e. within 30 days after the close of the session.

## Study Group Operation

SGs follow the operating procedures for TG specified above with the following exceptions detailed below (see 4.3 of [rules4]).

### Study Group Meetings

SG meetings held as part of an 802.15 WG Plenary Sessions or Interim Sessions count towards 802.15 WG voting rights.

#### Voting at Study Group Meetings

Any participant attending a SG meeting may participate in SG discussions, make motions and vote on all motions (including recommending approval of a PAR and CSD). A vote is carried by 75% of those present voting “Approve” or “Disapprove.”

#### Study Group Attendance List

Since SGs may have participants who are not part of the parent WG, a separate attendance list shall be maintained for the meetings of the SG and will be submitted as a document to the WG Vice Chair.

### Reporting Study Group Status

The progress of the SG is presented at the closing IEEE 802 LMSC meeting of each IEEE 802 plenary meeting by the WG Chair.

### Study Group PAR and CSD process

For the SG to progress to a TG it must draft a PAR and CSD for approval by the WG and EC, additionally the PAR must be approved by IEEE-SA NesCom. Before the PAR and CSD can be considered by the WG these documents must be approved by the SG.

[CSD template may be found at https://www.ieee802.org/devdocs.shtml]

# 802.15 Standing Committee(s)

## Function

The function of an 802.15 Standing Committee (SC) is to perform a specific function as defined by the WG Chair.

## Membership

Participants from 802.15 WG make up the SC membership.

## Formation

The WG Chair has the power to appoint SCs when enough interest has been identified for a particular area of study within the scope of 802.15 WG. To determine that sufficient interest has been identified, the formation of the SC shall be ratified by a simple majority of the WG.

## Continuation

SCs are constituted to perform a specific function and remain in existence until the specific function is no longer required at the WG Chair’s discretion.

## Standing Committee Operation

SCs follow the operating procedures for Task Groups with the following exceptions:

### Standing Committee Meetings

Attendance at SC meetings held as part of an 802.15 WG session counts towards 802.15 WG voting rights.

### Voting at Standing Committee Meetings

A WG voter attending a SC meeting may participate in SC discussions; make motions and vote on all motions.

## Standing Committee Chair

The Standing Committee Chair is appointed by the WG Chair and is affirmed by the WG majority approval.

## Maintenance Standing Committee Operation

### Function

The maintenance standing committee has the following defined functions:

#### Capture and Resolution of issues with approved standards

The Maintenance Standing Committee (SCmaintenance) is chartered to capture issues such as corrigenda, requests for clarification for approved standards and the 802.15 Operations Manual.  Submissions to this committee shall only be for standards that have been approved by the IEEE SA.

#### Revision of Standards

The Maintenance Standing Committee (SCmaintenance) may also be chartered to host the effort to revise standards.  Revisions include all approved amendments and corrigenda to the standard along with resolutions to issues captured as per 7.7.2.1

#### Maintenance of the Operations Manual

The Maintenance Standing Committee (SCmaintenance) shall maintain the operations manual (this document). All proposed changes to the operations manual shall be approved by the Working Group.

#### 802 LMSC PAR, CSD and ICAID Review

The Maintenance Standing Committee (SCmaintenance) shall act on behalf of the 802.15 Working Group in the preparation and submission of comments for PARs, CSDs and ICAIDs from 802 LMSC Working Groups.

### Operation

The following processes for both functions of the maintenance standing committee are described below.

#### Maintenance Request

Valid maintenance requests shall include all of following requested information:

* Name
* Date
* Affiliation
* Email
* Document Information
* Document Title (include revision/year)
* Clause Number
* Issues, Concerns, or Questions
* Proposed Change(s)
* Impact on Existing Equipment

The above information shall be sent to the Standing Committee Chair and Standing Committee Vice Chair of SCmaintenance. Requests received before each 802.15 session may be addressed at that session. Document [15-12-0367](https://mentor.ieee.org/802.15/documents?is_dcn=367&is_group=0mag&is_year=2012) contains a database of completed and outstanding maintenance activities.

## TeraHertz Standing Committee (SC THz)

### Function

The standing committee THz has three defined functions:

1) follow the developments of THz communications

2) follow the and provide input to the regulatory framework for THz Communications in close cooperation IEEE 802.18 WG

3) Trigger the start of projects to amend existing and develop new standards for THz Communications

### Operation

The SC THz shall meet at least two times a year during at least two plenary or during one plenary and one interim session and discuss relevant ongoing THz activities and formulate any messages intended to be sent to the IEEE 802.18 WG. No messages to the IEEE 802.18 WG may be sent without approval of the IEEE 802.15 WG.

## IETF Liaison Standing Committee (SC IETF)

### Function

The SC IETF is an informal liaison of IEEE 802.15 with IETF with two functions.

1. To provide information about standards and ongoing activities within IEEE 802.15 to IETF, and to provide information on relevant IETF activities to the IEEE 802.15.
2. To coordinate joint IEEE 802.15 & IETF efforts to implement system and device architectures and interfaces to support an application space.

### Operation

The SC IETF shall meet at least once during every session and discuss relevant ongoing IETF activities and formulate any messages intended to be sent to the IETF. No messages to the IETF may be sent without approval of the IEEE 802.15 WG.

# 802.15 Interest Group(s)

## Function

The function of the 802.15 Interest Group (IG) is to provide a forum for specific applications or technologies.

## Membership

Participants from 802.15 WG make up the IG membership.

## Formation

The WG Chair has the power to appoint IGs when enough interest has been identified for a particular area of study within the scope of 802.15 WG. To determine that sufficient interest has been identified, the formation of the IG shall be ratified by a simple majority of the WG.

## Continuation

IGs are constituted to perform a specific function and remain in existence until the specific function is no longer required at the WG Chair’s discretion.

## Interest Group Operation

IGs follow the operating procedures for TGs specified in clause 4 with the following exceptions:

### Interest Group Meetings

Attendance at IG meetings held as part of an 802.15 WG session counts towards 802.15 WG voting rights.

### Voting at Interest Group Meetings

Any person attending an IG meeting may participate in IG discussions; make motions and vote on all motions.

## Interest Group Chair

The Interest Group Chair is appointed by the WG Chair.

# Technical Expert Group (TEG)

## Function

Amendments and revisions to IEEE 802.15 standards need to both maintain the standard’s structure and conventions, and adhere to the PAR and CSD (e.g., stay within scope, one solution to one problem). Development of the amendment/revision shall reuse or leverage existing behavior whenever possible, ensure that changes do not “break” existing behaviors, and maintain backward compatibility.

While the responsibility for these goals is the pertinent task group, in an effort to assist task groups in achieving these objectives, the 802.15 WG has created TEGs as a technical advisory resource for task groups, and to advise the WG on each draft’s performance to the above goals. Although it is not mandatory for a specific TEG to be created, it is envisioned that there will be multiple TEGs with each TEG focused upon one standard, this will allow the selection of TEG members with extensive experience in a standard. Specifically, the TEG’s purpose is to:

1. evaluate the impact that an amendment or revision will have to the standard (e.g., 802.15.4, 802.15.6, 802.15.7, etc.)
2. be easily available to the task group for advice during the development of the draft (e.g., during each session, during conference calls, as well as ad hocs)
3. report to the task group and 802.15 WG on how effectively these objectives have been met and make a recommendation to the WG as to the readiness of the draft for letter ballot from the point of view of how well these objectives have been achieved including any issues the TEG might have with the draft.

## Formation

The composition of each TEG may be up to four WG members that are recognized as being competent and available to review the MAC, PHY, and security aspects of changes to a standard. The decision to form each TEG is made by the WG Chair. The members of the TEG shall be appointed by the WG Chair, subject to affirmation by the WG. Since each TEG is envisioned to last years, each TEG member needs to be available/accessible beyond the life of one task group. Changes to each TEG membership shall be made by the WG Chair subject to affirmation by the WG.

## Process

As stated in 9.1, the TEG should be involved in every aspect of each task group such as:

* from task group’s start, mentoring the task group on key aspects of the standard
* during baseline proposal presentations and selection by advising the proposer(s) and answering questions from the task group members
* during the drafting of the standard amendment/revision answering questions and advising the task group of the impact of their additional behavior.
* during the review of the draft within the task group, advising on problems and comments
* during the WG letter ballot, advising the task group and CRG on issues, concerns, and comment resolution affecting the draft
* during the Standards Association ballot, advising the task group and CRG on issues, concerns, and comment resolution affecting the draft

Ideally the TEG should begin reviewing the draft as soon as an initial version is available. The earlier issues are identified the easier they are to fix and allow for improvements to schedule by reducing redundant work. At a minimum, it is critical that the TEG have the opportunity to review the draft (or a precursor draft that is substantially similar to the ballotable draft) at least four weeks before the task group requests the WG to start a WG letter ballot. The TEG will advise the task group of all issues that the TEG has found with the draft, to which the Task Group may agree or disagree. For those areas where the Task Group agrees, it should implement those changes before submitting the draft to Letter Ballot.  Where the Task Groups disagrees, it should prepare a rebuttal package as part of its request to the WG to start Letter Ballot. Based on all this, the TEG will announce its recommendation to the WG whether it believes the draft is ready for ballot based on how well it meets the stated objectives, and if not ready what would the minimal changes be required to change the TEG’s recommendation. The WG has the final say and may agree or disagree with the recommendation and may instruct the Task Group to do additional work.

# Security Expert Group (SEG)

## Function

The Security Expert Group (SEG):

* reviews security matters required for, or relevant to, 802.15 standards, at each level of the PHY and MAC.
* will make a recommendation to the WG and/or TG, of a path to specify the security components of the standard.
* will endeavor to ensure that the proposed work or specification follows international trends and best practices on security as determined and provided by recognized institutions like National Institute of Standards and Technologies (NIST) or equivalent international bodies.
* SEG is tasked with handling requests for inclusion of additional cipher suites into 802.15 standards.

### **Cipher Suites**

The cipher suites should be sourced from the Internet Assigned Number Authority (IANA) authenticated encryption with associated data (AEAD) registry (<https://www.iana.org/assignments/aead-parameters/aead-parameters.xhtml>). The algorithm description, such as shown in the aforementioned IANA registry example, shall be described in a posted document. Additionally, the posted document shall describe the adaptation of the new cipher suite for the designated 802.15 standard. Finally, the document or a separate posted document should be included with example frames and the resulting encryption using the new cipher suite. Annex B and Annex C in IEEE Std 802.15.4-2020 illustrate the intention of this requirement.

## Formation

The composition of the SEG may be up to four WG members that are recognized as being competent and available to review the documents describing the security components of the specific 802.15 standard and up to the final specification. The SEG will pay special attention to aspects of cipher suite additions. The members of the SEG shall be appointed by the WG Chair, subject to affirmation by the WG. Changes to each SEG membership shall be made by the WG Chair subject to affirmation by the WG.

## Process for Cipher review

As stated in 10.1, the SEG should be involved in requests for new cipher suite additions performing the following steps:

* Reviewing the cipher suite addition versus the IANA AEAD algorithms
* Reviewing the posted description of the cipher suite adaptation to the specified standard
* Reviewing the posted example(s)
* Ensuring a unique cipher suite algorithm identifier assignment in the IEEE 802.15 ANA with references to the posted algorithm description and examples

# Voting Rights

Voting rights are defined in the LMSC P&P [rules5] and stated here for reference only. Voting rights are achieved by attending 802.15 WG Interim Sessions and Plenary Sessions. All participants represent themselves as individuals.

A participant belongs to one of four levels of membership: Non-Voter, Aspirant, Nearly Voter, and Voter. These are described in 11.2

All participants can vote in SG, SC, and IG meetings. Only Voters have the right to make motions, second motions and vote during WG and TG meetings. However, the WG and TG Chairs may permit all participants to participate in straw polls, discussions and debates.

It is the responsibility of all participants to make the WG Chair and the WG Vice Chair aware of any changes to their contact information for the purpose of maintaining the IEEE 802.15 voting membership database.

## Earning and Losing Voting Rights

A participant may earn voting rights by properly attending 802.15 WG Interim Sessions and Plenary Sessions.

A “properly attended session” is an 802.15 WG Interim Session or Plenary Session at which the participant has done the following:

* Recorded their contact details and affiliation
* Recorded attendance for 75% of the meeting slots (these are indicated as such on the session graphic in the WG agenda)
* Registered for the session and paid any required meeting fee

## Voting Rights levels of membership

The levels of attaining voting rights are the following:

### Non-Voter

A Non-Voter is a participant who has recorded their contact details and affiliation and is described by one or more of the following:

* Is attending a session for the first time
* Never gained any other participant status (i.e. attends some meeting slots, but never enough to “properly attend” a session)
* Gained some other status, but lost it

A Non-Voter who properly attends a session becomes an Aspirant member at the end of that session.

### Aspirant

An Aspirant has properly attended 1 of 4 consecutive Plenary Sessions (a single Interim Session may be substituted for a Plenary Session). An Aspirant becomes a Nearly Voter at the close of the second properly attended Plenary Session (a single Interim Session may be substituted for a Plenary Session).

Failure to properly attend 1 of 4 consecutive Plenary Sessions (a single Interim Session may be substituted for a plenary) shall result in the Aspirant becoming a Non-Voter.

### Nearly Voter

A Nearly Voter has properly attended 2 of 4 consecutive Plenary Sessions.

Failure to properly attend 2 of 4 consecutive Plenary Sessions (a single Interim Session may be substituted for a Plenary Session) shall result in the Nearly Voter becoming an Aspirant.

### Voter

At the next attended Plenary Session, a Nearly Voter will become a Voter provided that he or she has:

* Recorded his or her contact details and affiliation
* Recorded attendance for at least one 802.15 meeting slot at that Plenary Session
* Registered for the session and paid any required meeting fee.

A Nearly Voter’s badge will contain an 802.15 voting token at the start of the next attended Plenary Session.

Note: a nearly voter’s badge will not contain an 802.15 voting token at the start of an Interim Session, because voting status is only gained at the start of Plenary Sessions.

A Voter will remain a Voter provided:

* The Voter continues to properly attend 2 of 4 consecutive Plenary Sessions (a single interim Session may be substituted for a Plenary Session), and
* The Voter responds to two (2) out of the last three (3) consecutive mandatory WG letter ballots where a valid response is received in the initial mandatory WG letter ballot or any of its subsequent recirculation ballots
  + Note 1: A voter’s status will not be evaluated until the completion of the WG letter ballot series

If the voting rights are removed for any reason, the participant’s voting status becomes Non-Voter, membership is re-established as if the person were a new candidate member.

## Voting Tokens

Voting Tokens are printed on the participant’s name badge for in-person meetings and are used to vote on motions during WG and TG meetings, unless a roll call vote is requested by a WG voter or directed by the WG Chair. Voting tokens are added for Nearly Voters only at Plenary Sessions. Voting tokens are valid for the duration of the session in progress. If a Voter loses his or her voting token (name badge) during the session, he or she shall report it to the WG Chair or WG Vice Chair to obtain a replacement from the meeting organizers.

# Active 802.15 WG participant access

An Active 802.15 WG participant is a participant with status Aspirant, Nearly Voter, Voter, or a Non-Voter who is a member of an active 802.15 WG balloting pool.

## Email lists

The WG maintains an email list on which all meetings and ballots are announced, and which is used for discussion of matters relevant to all 802.15 participants ([stds-802-wpan@listserv.ieee.org](https://d.docs.live.net/Users/patrickkinney/MyDocuments/IEEE/802.15/Op%20Manual/stds-802-wpan@listserv.ieee.org)). In addition, a separate list is provided for each active subgroup.

Any Active 802.15 WG participant is entitled to be a member of any of these email lists. The 802.15 website provides links to allow an Active 802.15 WG participant to manage this access. An Active 802.15 WG participant that desires access to the IEEE 802.15 WG email reflector(s) may submit a request for such access using the web-based IEEE 802.15 reflector request <http://grouper.ieee.org/groups/802/15/pub/Subscribe.html>.

Postings to any of these lists are restricted to list members, i.e., only a member of a list (identified by email address) can post to that list. Emails sent to the IEEE 802 reflectors cannot have any disclaimers (restrictive notices) such as those used by many companies on their outgoing email since the IEEE 802 policy (see below) does not allow these disclaimers.

***The following is a copy of the 802 Policy regarding restrictive notices and is listed here for reference only; please refer to*** [***http://grouper.ieee.org/groups/802/3/reflector\_policy.html***](http://grouper.ieee.org/groups/802/3/reflector_policy.html) ***for the most current policy:***

*IEEE 802 operates in an open manner. To that end, no material submitted to IEEE 802, or any of its sub-groups, will be accepted or considered if that material contains any statement that places any burden on the recipient(s) with respect to confidentiality or copyright. This policy specifically includes e-mail.*

*Any material that has such a "Confidentiality Disclaimer" on it is not acceptable. The purpose of such a disclaimer is to transfer some level of responsibility to the recipient for deciding whether or not it is appropriate to disclose, use, disseminate, copy, post or otherwise distribute, the material.*

*IEEE 802 accepts no such responsibility. The most effective way for 802 to decline any such responsibility is to not accept material with such a disclaimer.*

*Correspondence with 802 groups will not be confidential. It is very likely that any such correspondence (in addition to being discussed in open meetings) will be posted in the open portion of our web site and thus will be disclosed, disseminated and distributed. Anyone who wishes to correspond with an 802 group shall understand and accept this as a condition of sending us any documentation. Inclusion of any restrictive notice is contrary to, and negates, any indication of acceptance of the IEEE 802 policy of openness.*

*Copyrighted works may be accepted as submissions for inclusions in drafts only with an appropriate release. Copyrighted works may be referenced in drafts and presentations if they are available on reasonable and non-discriminatory terms.*

The WG also maintains a read-only reflector, to which all emails to the main WG list are copied. Anyone can join this list. Members of this list cannot post to the list.

## Teleconferences (Telecons)

TG (and subgroup) Telecons operate under the rules described in this 802.15 OM.

The agenda shall include a summary review of the relevant antitrust and patent P&P. Minutes shall be recorded and must either be posted to the 802.15 document server or the group’s reflector archive.

TG (and subgroup) telecons are not permitted to make formal motions, with the exception of CRGs as per 5.5.

Telecons are generally announced during the closing 802.15 meeting and cover the period from end of the current session to the next session. Any changes to the telecon schedule after the closing plenary meeting shall be approved by the TG Chair and made by announcement to the relevant group’s reflector.

Details of 802.15 telecons are posted on the 802.15 website. Anybody may attend 802.15 telecons.

## Public Document Server

The 802.15 public documents are kept on the IEEE mentor system [https://mentor.ieee.org/802.15/documents](https://mentor.ieee.org/802.11/documents). Anybody may read these documents, however only Active 802.15 WG participants may post documents on the 802.15 document server.

## Private Members-only Document Server

Access to drafts and related documentation is provided on the private area of the 802.15 website <http://grouper.ieee.org/groups/802/15/private/members_area.html>. Voters and participants who are part of an active WG ballot pool are entitled to access the private area.

Credentials will be emailed to new Voters after the session in which they become a Voter. These credentials are typically updated once a year.

Local fileserver access to drafts is provided to all attendees at an 802.15 Plenary Session or Interim Session.

# IEEE 802.15 WG typical Motions

## SG and PAR Motions

### Study Group Formation

Motion: *that the 802.15 Working Group seeks approval from the IEEE 802 LMSC to form a study group in 802.15 to develop the PAR and CSD documents for “Proposed SG Name” and additionally authorize the 802.15 WG Chair to make any necessary changes to these docs required to support the submission.*

### Study Group extension

*Motion: that the 802.15 Working Group seeks approval from the IEEE 802 LMSC to extend the study group in 802.15 to develop the PAR and CSD documents for “Proposed SG Name”*

### Study Group approval of PAR and CSD

The following motion format should be used to advance the PAR and CSD to the WG:

*Request that the PAR and CSD contained in documents [insert PAR doc number] and [insert CSD doc number, respectively*, *be approved for submission to the WG for its approval and that the EC be requested to forward the PAR to NesCom*

Note to SG Chair – ensure that, CSD is based on the latest CSD document https://www.ieee802.org/devdocs.shtml

### WG approval of PAR and CSD

The motion used by the SG Chair to solicit WG approval (since SG Chair will be representing SG, no second is needed) should be in the following form:

WG Motion: *move that the PAR and CSD contained in documents [insert PAR doc number] and [insert CSD doc number], respectively, be approved by the IEEE 802.15 WG and that the EC be requested to forward the PAR to NesCom*. *The 802.15 working group chair and technical editor are authorized to make additional modifications to the PAR and CSD as needed to reflect EC discussion at its closing meeting.*

Note to WG Chair – ensure that CSD is based on the latest CSD document <https://www.ieee802.org/devdocs.shtml> or you’ll suffer the consequences at the closing LMSC meeting.

### Study Group approval of comment responses for PAR and CSD

The following motion format should be used to approve responses received from 802 WGs:

*Request that the responses to received PAR and CSD review comments contained in document [doc # here] be approved for submission to the WG for its approval. The 802.15 working group chair and technical editor are authorized to make additional modifications to the responses as needed.*

### WG approval of comment responses for PAR and CSD

The motion used by the SG Chair to solicit WG approval (since SG Chair will be representing SG, no second is needed) should be in the following form:

*Request that the responses to received PAR and CSD review comments contained in document [doc # here] be approved for submission to the EC. The 802.15 working group chair and technical editor are authorized to make additional modifications to the responses as needed.*

### WG approval to extend a PAR

*MOTION: “802.15 WG requests that the IEEE 802 LMSC forward the [project name here] PAR extension documentation contained in [document number here] to NesCom.”*

## Letter Ballot motions

Note: In the following motions, if there is no CA document, the (highlighted) text detailing the CA document information may be omitted.

### Task Group Motions

#### Draft is completed and ready for letter ballot

*Move that TG? formally request that the 802.15 WG start a WG Letter Ballot requesting approval of CA document [insert CA doc number] and document P802-15-yz\_Dxy and to forward document P802-15-yz\_Dxy, to Standards Association ballot*

#### Draft needs to be edited prior to letter ballot

*Move that TG? formally request that the 802.15 WG start a WG Letter Ballot requesting approval of CA document [insert CA doc number] and document P802-15-yz\_Dxy (as edited in accordance with the instructions in document 15-yy-ssss-rr-GGGG) and to forward document P802-15-yz\_Dxy, as edited in accordance with the instructions in document 15-yy-ssss-rr-GGGG, and CA document [insert CA doc number] to Standards Association ballot pending the completion and inclusion of the edits in the draft.*

#### Draft is complete and ready for recirculation

*Move that TG? formally request that 802.15 WG start a WG recirculation requesting approval of CA document [insert CA doc number] and document P802-15-yz\_Dxy and to forward document P802-15-yz\_Dxy, to Standards Association ballot*

#### Draft needs to be edited prior to recirculation

*Move that TG? formally request that 802.15 WG start a WG Letter Ballot requesting approval of CA document [insert CA doc number] and document P802-15-yz\_Dxy (as edited in accordance with the instructions in document 15-yy-ssss-rr-GGGG) and to forward document P802-15-yz\_Dxy, as edited in accordance with the instructions in document 15-yy-ssss-rr-GGGG, and CA document [insert CA doc number] to Standards Association ballot pending the completion and inclusion of the edits in the draft.*

#### Approval of comment resolutions

*TG? Approves comment resolutions in document 15-yy-ssss-rr-GGGG*

### Work Group Motions

#### Draft is completed and ready for letter ballot

*Move that 802.15 WG start a WG Letter Ballot requesting approval of CA document [insert CA doc number] and document P802-15-yz\_Dxy and to forward document P802-15-yz\_Dxy, to Standards Association ballot*

#### Draft needs to be edited prior to letter ballot

*Move that 802.15 WG start a WG Letter Ballot requesting approval of CA document [insert CA doc number] and document P802-15-yz\_Dxy (as edited in accordance with the instructions in document 15-yy-ssss-rr-GGGG) and to forward document P802-15-yz\_Dxy, as edited in accordance with the instructions in document 15-yy-ssss-rr-GGGG, and CA document [insert CA doc number] to Standards Association ballot pending the completion and inclusion of the edits in the draft.*

#### Draft is complete and ready for recirculation

*Move that 802.15 WG start a WG recirculation requesting approval of CA document [insert CA doc number] and document P802-15-yz\_Dxy and to forward document P802-15-yz\_Dxy, to Standards Association ballot*

#### Draft needs to be edited prior to recirculation

*Move that 802.15 WG start a WG Letter Ballot requesting approval of CA document [insert CA doc number] and document P802-15-yz\_Dxy (as edited in accordance with the instructions in document 15-yy-ssss-rr-GGGG) and to forward document P802-15-yz\_Dxy, as edited in accordance with the instructions in document 15-yy-ssss-rr-GGGG, and CA document [insert CA doc number] to Standards Association ballot pending the completion and inclusion of the edits in the draft.*

## CRG motions

### CRG formation for a WG Letter Ballot

*Move that 802.15 WG approve the formation of a Comment Resolution Group (CRG) for the WG balloting of the P802.15.XY\_Dxy with the following membership: Person 1(Chair), Person 2, Person 3, Person 4, and Person 5. The 802.15.XY CRG is authorized to approve comment resolutions, edit the draft according to the comment resolutions, and to approve the start of recirculation ballots of the revised draft on behalf of the 802.15 WG. Comment resolution on recirculation ballots between sessions will be conducted via reflector email and via teleconferences announced to the reflector as per the LMSC 802 WG P&P.*

### CRG formation for the Standards Association ballot

*Move that 802.15 WG approve the formation of a Comment Resolution Group (CRG) for the Standards Association balloting of the P802.15.XY\_Dxy with the following membership: Person 1(Chair), Person 2, Person 3, Person 4, and Person 5. The 802.15.XY CRG is authorized to approve comment resolutions, edit the draft according to the comment resolutions, and to approve the start of recirculation ballots of the revised draft on behalf of the 802.15 WG. Comment resolution on recirculation ballots between sessions will be conducted via reflector email and via teleconferences announced to the reflector as per the LMSC 802 WG P&P.*

## Standards Association Ballot motions

Note: In the following motions, if there is no CSD and/or CA document, the (highlighted) text detailing the CSD and/or CA document information may be omitted.

### Task Group Motions

#### Conditional submittal

*Motion: Move that TG? formally request that 802.15 reviews and approves the CSD [insert the CSD doc number], and the CA document [insert CA doc number]; and requests conditional approval from the EC to submit P802.15.XY-Dxy (or current revision) to Standards Association ballot.*

#### Unconditional submittal

*Motion: Move that TG? formally request that 802.15 reviews and approves the CSD [insert the CSD doc number], and the CA document [insert CA doc number]; and requests unconditional approval from the EC to submit P802.15.XY\_Dxy to Standards Association ballot.*

#### Draft is complete and ready for recirculation

*Motion: Move that TG? formally requests that 802.15 WG start a Standards Association Recirculation Ballot of CA document [insert CA doc number] and document P802.15.XY-Dxy.*

#### Draft needs to be edited prior to recirculation

*Motion: Move that TG? formally requests that 802.15 WG start a Standards Association Recirculation Ballot of CA document [insert CA doc number] and document P802.15.XY-Dxy (as edited in accordance with the instructions in document 15-yy-ssss-rr-GGGG) pending the completion and inclusion of the edits in the draft.*

#### Approval of comment resolutions

*TG? Approves comment resolutions in document 15-yy-ssss-rr-GGGG*

### Working Group Motions

#### Conditional submittal

*Motion: 802.15 has reviewed and approves the CSD [insert the CSD doc number], and the CA document [insert CA doc number]; and requests conditional approval from the EC to submit P802.15.XY-Dxy (or current revision) to Standards Association ballot.*

#### Unconditional submittal

*Motion: 802.15 has reviewed and approves the CSD [insert the CSD doc number], and the CA document [insert CA doc number]; and requests unconditional approval from the EC to submit P802.15.XY-Dxy to Standards Association ballot.*

#### Draft is complete and ready for recirculation

*Motion: Move that 802.15 WG start a Standards Association Recirculation Ballot of CA document [insert CA doc number] and document P802.15.XY-Dxy.*

#### Draft needs to be edited prior to recirculation

*Motion: Move that 802.15 WG start a Standards Association Recirculation Ballot of CA document [insert CA doc number] and document P802.15.XY-Dxy (as edited in accordance with the instructions in document 15-yy-ssss-rr-GGGG) pending the completion and inclusion of the edits in the draft.*

## RevCom Submission

### Task Group Motions

#### Unconditional submittal

*Motion: that TG? requests that 802.15 WG reviews and approves the CSD [insert doc number for appropriate CSD] and requests unconditional approval from the IEEE 802 LMSC to submit [insert PAR project number]-Dyz to RevCom.*

#### Conditional submittal

*Motion: that TG? requests that 802.15 WG reviews and approves the CSD [insert doc number for appropriate CSD] and requests conditional approval from the IEEE 802 LMSC to submit [insert PAR project number]-Dyz (or current revision) to RevCom.*

### Working Group Motions

#### Unconditional submittal

*Motion: that 802.15 WG has reviewed and approves the CSD [insert doc number for appropriate CSD] and requests unconditional approval from the IEEE 802 LMSC to submit [insert PAR project number]-Dyz to RevCom.*

#### Conditional submittal

*Motion: that 802.15 WG has reviewed and approves the CSD [insert doc number for appropriate CSD] and requests conditional approval from the IEEE 802 LMSC to submit [insert PAR project number]-Dyz (or current revision) to RevCom.*

## Futile Motions

*Motion: to request the IEEE802 Wireless group treasury to fund refreshments at the closing plenary moved by* [[*?*](https://d.docs.live.net/8e59e9d451c39ba5/IEEE802/2022-11/squirrel)*,*](http://squirrel) *seconded by ?*

*Upon neither sober discussion nor intelligible objection, the motion carries*

# IEEE 802.15 WG Assigned Numbers Authority

The objective of the Assigned Numbers Authority (ANA) is to conserve and allocate identifier values in the IEEE 802.15 standards and approved amendments. Such identifiers are called Managed Resources.

## WG ANA Chair

The WG ANA Chair shall be appointed by the WG Chair. The WG ANA Chair shall be responsible for approving and maintaining a central repository of Managed Resource values in a document as defined in subclause 14.5.

## WG ANA Vice Chair

The WG ANA Vice Chair shall be appointed by the WG Chair. The WG ANA Vice Chair shall be responsible for affirming the need and appropriateness of the request for a managed resource value. The WG ANA Vice Chair shall propose the specific Managed Resource value(s) as per the request in a document as defined in subclause 14.5 and/or 14.5.

## ANA Document

A document containing the Managed Resource values ([15-13-0257](https://mentor.ieee.org/802.15/documents?is_dcn=257&is_group=0000&is_year=2013)) shall be made available on the server during Interim Sessions and Plenary Sessions and posted on the IEEE 802.15 WG website. Any updates shall be posted on the IEEE 802.15 WG website within 15 days following the close of the 802.15 WG Interim Session or Plenary Session.

## ANA Request Procedure

A request for a Managed Resource for new identifier values shall be made by using the following procedure:

1. A draft amendment or standard that has been approved by the WG or a TG and that requires allocation of values from the ANA shall contain placeholders for such numbers using the sequence <ANA>, and should not presume any particular value will be assigned.
2. The TG Chair or technical editor shall prepare requests for each such <ANA> flag using the forms provided by the ANA and documented in the ANA database document.
3. The ANA shall circulate the requests and tentative assignments to the 802.15 editor's reflector and ask TG editors to check for any conflict.  Typically the requests are generated following a session.  The ANA should respond to the request within one week.  The ANA shall reject any request that is not properly formed, i.e., does not supply all information required by the ANA form.  The last item of any resource will never be assigned and will always automatically be designated as “escape bit/number”.
4. After a period of 1 week has elapsed and no conflict has been reported, the assignments are confirmed and the ANA shall upload an updated database document and notify the WG reflector.

### ANA Revocation Procedure

The TG that has previously requested a Managed Resource may request revocation of that Managed Resource value, however the request must be approved by a motion in the TG or WG.

### ANA Appeals Procedure

An appeal of an assignment of a Managed Resource value may be made by a Voter by following the appeal procedure described in the WG P&P [rules5].

## ANA Request Procedure for external organizations

A limited number of numbers may be assigned to allow external organizations (i.e. non 802.15 groups) to extend the use of IEEE 802.15.

Only the following categories of IDs may be assigned for IEEE Std 802.15.4

1. Frame Extension ID
2. Header Information Element (IE) Element ID
3. Payload IE Group ID
4. Nested IE of type short Sub-ID
5. Nested IE of type long Sub-ID
6. MAC Commands

Only the following categories of IDs may be assigned for IEEE 802.15.9:

1. Multiplex ID

Only one number shall be assigned to an external organization (e.g an SDO or an open alliance/consortium) from an ID category. The external organization is responsible to create a method for sub-typing that would prevent the need for an additional ID.

To request an ID, the external organization shall send an official request to the IEEE 802.15 WG Chair that includes, at a minimum, the following information:

1. The name of the external organization and its accreditation
2. The reason for the request
3. The ID categories that are requested
4. A description of the protocol format that shows that there is sufficient subtype capability withstand enhancement by the originator without the need for the assignment of a further ID in the future.
5. A statement that the external organization understands that only one ID number will be issued to the external organization in an ID category and that the external organization is responsible to create a method for sub-typing the ID to prevent the need for additional requests in the future.

If the request from the SDO contains the required information, the IEEE 802.15 WG Chair shall appoint a committee of experts to review the request. The WG ANA lead shall be the Chair of the committee and the WG 802.15 Chair is an ex-officio member. The committee should decide on the request within three months of the request. This is to allow the consideration of the request at an interim or plenary session.

The committee shall refuse the request if:

1. The external organization is not an accredited SDO or an open alliance/consortium.
2. The external organization has already been assigned a number in a requested ID category.
3. The external organization has not adequately described a subtyping method to prevent the need for the external organization request a further ID in the future.
4. There is a technical reason why a number cannot be allocated.

If the committee approves the request, the WG ANA lead will assign a number for the requested ID categories and update the ANA database document. The assignment of the number should also be submitted for inclusion in the next revision of the standard.

# Guidelines for 802.15 Secretaries

## Minutes of Meetings

Minutes should be taken at every meeting, preferably by a secretary. The subclause 14.1.2 states what minutes should include. What minutes should not be is a detailed, blow-by-blow inclusion of every speaker’s words. Many minutes are far too detailed, and in so being they are a deterrent to their usefulness to many readers (who simply won’t want to be bothered with trying to get through pages and pages of minutes). Minutes should also include a separate list of action items as assigned by the Chair. The Chair should use action items to make certain that the work is delegated among various committee members, relieving the burden on only a few committee members. Placing a time deadline on action items is also useful, as it will help the committee members to prioritize this work.

### Prepare the minutes taking into account the following:

* + Use the template for documents
  + Make sure the Chair of the group can deliver the minutes to the 802.15 WG Chair within 30 days after closure of the meeting
  + Make the style of motions such that they are easily identifiable
  + Number the motions
  + Make a hierarchy of motions by indentation
  + Refer for attendance list and future meeting plan to the Full Working Group minutes.
  + Adhere to the following outline of the IEEE Standards Companion:

### What minutes should be

Minutes should be short—don’t include every detail in your meetings. After all, they’re called minutes, not hours.

What should be in minutes?

1. Name of Group
2. Date and location of meeting
3. Officer presiding, including the name of the secretary who wrote the minutes
4. Attendance (TG and SC may refer to the WG minutes, while SG and IG shall collect attendance list and publish with the minutes. The attendance list will include the name of the meeting attendee. No contact or affiliation information is to be published in the minutes as per the 802 LMSC policies and procedures.)
5. Call to order, Chair’s remarks.
6. Approval of minutes of previous minutes.
7. Approval of agenda
8. Review of Policies and Procedures of IEEE
9. Technical Topics
   1. Brief summary of discussion, pros and cons, and conclusions
   2. Motions and actions items with name and due date
   3. Copies or document numbers of handouts/presentations
   4. Do not include names, except for movers and seconders of motions unless a roll call vote is ordered.
10. Subcommittee reports
11. Next meeting (if different than next WG meeting)—date and location

# Instructions for Technical Editors of IEEE 802.15 WG and Task Groups

The 802.15 TG Technical Editors shall use the following documents (latest revision) as guidelines for developing and maintaining technical drafts for IEEE 802.15 standards and amendments.

a.     IEEE Standards Style Manual ([other4])

b.     802.15 WG Technical Editors instructions (document: [15-10-0324](https://mentor.ieee.org/802.15/documents?is_dcn=324&is_group=0000&is_year=2010))

1. IEEE 802 LMSC rules documents can be found at https://www.ieee802.org/devdocs.shtml [↑](#footnote-ref-2)