

# ISO/IEC/IEEE 8802-15-6:2017-10 (E)

## Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 15-6: Wireless body area network

---

### Contents

- 1. Overview ..... 1
  - 1.1 Scope ..... 1
  - 1.2 Purpose ..... 1
  
- 2. Normative references..... 2
  
- 3. Definitions, acronyms, and abbreviations ..... 2
  - 3.1 Definitions ..... 2
  - 3.2 Special terms..... 7
  - 3.3 Acronyms and abbreviations ..... 7
  
- 4. General framework elements..... 10
  - 4.1 General ..... 10
  - 4.2 Network topology ..... 10
  - 4.3 Reference model ..... 11
  - 4.4 Time base..... 12
  - 4.5 MAC and security state diagrams ..... 12
  - 4.6 Security paradigm..... 15
  
- 5. MAC frame formats ..... 16
  - 5.1 Conventions ..... 16
  - 5.2 General format ..... 17
  - 5.3 Management type frames..... 27
  - 5.4 Control type frames ..... 55
  - 5.5 Data type frames ..... 60
  - 5.6 MAC/PHY Capability fields..... 61
  - 5.7 Information elements ..... 65
  
- 6. MAC functions ..... 77
  - 6.1 General ..... 77
  - 6.2 Frame processing ..... 78
  - 6.3 Access classification and division ..... 88
  - 6.4 BAN creation/operation and node connection/disconnection ..... 90
  - 6.5 Random access ..... 92
  - 6.6 Improvised access and unscheduled access ..... 98
  - 6.7 Scheduled access and scheduled-polling access ..... 107
  - 6.8 Access continuation, termination, and timeout ..... 110
  - 6.9 MICS band communication ..... 116
  - 6.10 Two-hop star topology extension ..... 121
  - 6.11 Clock synchronization and guard time provisioning ..... 132
  - 6.12 Power management..... 140
  - 6.13 Coexistence and interference mitigation..... 142
  - 6.14 MAC/PHY capability handling/interaction and Application Specific IE usage ..... 147
  - 6.15 MAC sublayer parameters ..... 148
  
- 7. Security services ..... 151
  - 7.1 Security association and disassociation ..... 151
  - 7.2 PTK creation and GTK distribution..... 163
  - 7.3 Message security..... 165
  - 7.4 Optional cipher functions ..... 172

8. Narrowband PHY specification .....	172
8.1 Data-rate-dependent parameters .....	173
8.2 PLCP preamble.....	176
8.3 PLCP header .....	178
8.4 PSDU .....	181
8.5 Constellation mapping .....	185
8.6 General requirements.....	187
8.7 PHY layer timing.....	188
8.8 Transmitter specifications.....	190
8.9 Receiver specifications .....	194
9. Ultra wideband PHY specification .....	196
9.1 Definition of hubs and devices .....	196
9.2 Modes of operation .....	197
9.3 Rules for use of modes and options .....	197
9.4 Pulse shape option .....	198
9.5 UWB PHY frame format .....	198
9.6 PSDU construction .....	198
9.7 PHR construction.....	201
9.8 Synchronization header .....	204
9.9 IR-UWB symbol structure .....	206
9.10 UWB modulations .....	209
9.11 IR-UWB PSDU timing parameters.....	215
9.12 Operating frequency bands .....	217
9.13 Transmit spectral mask .....	218
9.14 IR-UWB pulse shapes.....	219
9.15 Type II hybrid ARQ mechanism .....	224
9.16 FM-UWB.....	228
9.17 General UWB PHY requirements.....	231
9.18 General radio specifications .....	232
10. Human body communications PHY specification .....	235
10.1 General .....	235
10.2 HBC packet structure.....	235
10.3 HBC transmitter.....	236
10.4 PLCP Preamble.....	237
10.5 Start frame delimiter and rate indicator .....	239
10.6 PHY Header.....	242
10.7 PSDU .....	244
10.8 Transmitter specifications.....	247
10.9 Receiver specifications .....	248
10.10 General requirements.....	248
10.11 PHY layer timing.....	249
Annex A (informative) Bibliography .....	250
Annex B (informative) Coexistence applicability guide .....	251
Annex C (informative) Ultra wideband.....	252
Annex D (informative) Features of human body communication .....	256