# ISO/IEC 4005-3:2023-03 (E)

## Telecommunications and information exchange between systems - Unmanned aircraft area network ( UAAN) - Part 3: Physical and data link protocols for control communication

## Contents

Page


Foreword ..... v

Introduction ..... vi

1 Scope ..... 1

2 Normative references ..... 1

3 Termsanddefinitions ..... 1

4 Abbreviated terms ..... 1

5 Physical layer ..... 2
5.1 Channel and frame structure for data channel ..... 2
5.1.1 Number of data channels and bandwidth ..... 2
5.1.2 Frame structure ..... 2
5.1.3 Slot transmit time mask ..... 3
5.1.4 Subchannels ..... 3
5.1.5 Initial work resources (IWR) and channel ..... 4
5.1.6 Dedicated slots and dedicated subchannels ..... 5
5.2 Channel and frame structure for tone channel ..... 5
5.2.1 Frame structure and bandwidth ..... 5
5.2.2 Slot transmit power ..... 6
5.2.3 Slot block structure ..... 6
5.2.4 Subslot transmission time mask ..... 8
5.2.5 Subslot signal waveform ..... 8
5.3 Encoding procedure ..... 9
5.4 Physical layer procedure ..... 9
5.4.1 Synchronization ..... 9
5.4.2 Subchannel power ..... 9
5.4.3 Measurements ..... 9
5.4.4 Coexistence operation ..... 9

6 Data link layer ..... 10
6.1 General ..... 10
6.2 Channel mapping and measurements ..... 12
6.2.1 General ..... 12
6.2.2 Mapping of communication resources and subslot sets ..... 12
6.2.3 Interference power calculation ..... 13
6.2.4 Subchannel map ..... 14
6.3 Subchannel negotiation for allocation ..... 14
6.3.1 General ..... 14
6.3.2 Subchannel negotiation using shared channel ..... 19
6.3.3 Subchannel negotiation using dedicated slot ..... 21
6.3.4 Subchannel negotiation using IWR ..... 23
6.4 Resource allocation competition and generated link confirmation ..... 26
6.4.1 General ..... 26
6.4.2 Subchannel resource allocation competition ..... 27
6.4.3 Generated link confirmation ..... 29

6.4.4 Broadcasting control channel information being allocated or occupied ..... 31
6.5 Subchannel occupation and collision management ..... 32
6.5.1 General ..... 32
6.5.2 Subchannel occupation and return ..... 32
6.5.3 Collision tone transmission and collision management ..... 32
6.5.4 Power control in occupation stage ..... 34
6.6 Reallocation ..... 35
6.6.1 General ..... 35
6.6.2 Reallocation decision ..... 35
6.6.3 Subchannel reallocation procedure ..... 38
6.7 Data exchange ..... 39
6.7.1 General ..... 39
6.7.2 Data packet format ..... 39
6.8 Synchronization ..... 43
6.9 Data link layer security ..... 43
6.10 Interface with upper layers ..... 45
6.10.1 General ..... 45
6.10.2 Initialization interface ..... 45
6.10.3 Dynamic interface ..... 51
6.11 Interface with other communication layer ..... 55
6.11.1 General ..... 55
6.11.2 Interface with SC ..... 55
6.11.3 Interface with VC ..... 56

Bibliography ..... 59