Information Technology - Wireless Beacon-enabled Energy Efficient Mesh network (WiBEEM) for w ireless home network services - Part 2: MAC Layer

Contents

Page

FOREWORD 5
INTRODUCTION 6
1 Scope 7
2 Normative reference 7
3 Terms, definitions and abbreviations 7
3.1 Terms and definitions 7
3.2 Abbreviations 8
3.3 Conventions 9
4 Conformance 10
5 Overview of the WiBEEM technology 10
6 MAC layer specifications 10
6.1 General 10
6.2 MAC layer service specifications 10
6.2.1 Service overview 10
6.2.2 MAC data service 11
6.2.3 MAC management service 17
6.2.4 Association primitives 17
6.2.5 Disassociation primitives 22
6.2.6 Beacon notification primitive 24
6.2.7 Primitives for reading PIB attributes 27
6.2.8 RAP management primitives 28
6.2.9 Primitives for orphan notification 31
6.2.10 Primitives for resetting the MAC layer 34
6.2.11 Primitives for specifying the receiver enable time 35
6.2.12 Primitives for channel scanning 37
6.2.13 Communication status primitive 39
6.2.14 Primitives for writing MAC PIB attributes 41
6.2.15 Primitives for updating the superframe configuration 42
6.2.16 Primitives for synchronising with a WRC 45
6.2.17 Primitives for requesting data from a WRC 47
6.3 MAC frame formats 49
6.3.1 General 49
6.3.2 General MAC frame format 50
6.3.3 Beacon frame format 52
6.3.4 MAC command frame format 52
Bibliography 62

Figure 1 – MAC layer structure 11
Figure 2 – Message sequence chart describing the MAC data service 16
Figure 3 – Message sequence chart for association 22
Figure 4 – Message sequence chart for disassociation 24
Figure 5 – Message sequence chart for RAP allocation initiated by a device 31
Figure 6 – Message sequence chart for RAP deallocation initiated by a device and the WMC 31

Figure 7 – Beacon lost (orphan notification) message sequence chart 33
Figure 8 – Message sequence chart for updating the superframe configuration 45
Figure 9 – Message sequence chart for synchronising to a WRC in a beacon-enabled WPAN 47
Figure 10 – Message sequence chart for requesting data from the WRC 49
Figure 11 – General MAC frame format 50
Figure 12 – Beacon frame format 52

Table 1 – MLDE-DATA.request parameters 12
Table 2 – MLDE-DATA.confirm parameters 13
Table 3 – MLDE-DATA.indication parameters 14
Table 4 – MLDE-ERASE.request parameters 15
Table 5 – MLDE-ERASE.confirm parameters 16
Table 6 – Summary of the primitives accessed through the MLME-SAP 17
Table 7 – MLME-ASSOCIATE.request parameters 18
Table 8 – MLME-ASSOCIATE.indication parameters 19
Table 9 – MLME-ASSOCIATE.response parameters 20
Table 10 – MLME-ASSOCIATE.confirm parameters 21
Table 11 – MLME-DISASSOCIATE.request parameters 22
Table 12 – MLME-DISASSOCIATE.indication parameters 23
Table 13 – MLME-DISASSOCIATE.confirm parameters 24
Table 14 – MLME-BEACON-NOTIFY.indication parameters 25
Table 15 – Elements of mesh descriptor 26
Table 16 – MLME-READ-MIB.request parameters 27
Table 17 – MLME-READ-MIB.confirm parameters 28
Table 18 – MLME- RAP-MANAGEMENT.request parameters 29
Table 19 – MLME-RAP-MANAGEMENT.confirm parameters 29
Table 20 – MLME-RAP-MANAGEMENT.indication parameters 30
Table 21 – MLME-BEACON-LOST.indication parameters 32
Table 22 – MLME-BEACON-LOST.indication parameters 33
Table 23 – MLME-RESET.request parameters 34
Table 24 – MLME-RESET.confirm parameters 35
Table 25 – MLME-RX-ON.request parameters 35
Table 26 – MLME-RX-ON.confirm parameters 36
Table 27 – MLME-SCAN.request parameters 37
Table 28 – MLME-SCAN.confirm parameters 39
Table 29 – MLME-COMM-RESULT.indication parameters 40
Table 30 – MLME-WRITE-MIB.request parameters 41
Table 31 – MLME-WRITE-MIB.confirm parameters 42
Table 32 – MLME-START.request parameters 43
Table 33 – MLME-START.confirm parameters 44
Table 34 – MLME-SYNC.request parameters 45
Table 35 – MLME-SYNC-LOSS.indication parameters 46

Table 36 – MLME-INDIRECT-COMM.request parameters 48
Table 37 – MLME-INDIRECT-COMM.confirm parameters 48
Table 38 – MAC command frame 53
Table 39 – Association request command 53
Table 41 – Association response command 54
Table 42 – Association status field 55
Table 43 – Disassociation notification command format 55
Table 44 – Disassociation reason code 56
Table 45 – Data request command format 57
Table 46 – Mesh ID conflict notification command format 57
Table 47 – Orphan notification command format 58
Table 48 – Beacon request command format 58
Table 49 – Co-ordinator realignment command format 59
Table 50 – CFP request command format 60
Table 51 – CFP characteristics field format 60
Table 52 – Rate reconfiguration request format 60
Table 53 – Data rate 61
Table 54 – Rate reconfiguration request command format 61