

# ISO/IEC 14543-3-11:2016-02 (E)

## Information technology - Home electronic system (HES) - Part 3-11: Frequency Modulated Wireless Short-Packet (FMWSP) protocol optimised for energy harvesting - Architecture and lower layer protocols

---

### CONTENTS

- FOREWORD.....4
- INTRODUCTION.....5
- 1 Scope.....7
- 2 Normative references.....7
- 3 Terms, definitions and abbreviations .....8
  - 3.1 Terms and definitions .....8
  - 3.2 Abbreviations .....12
- 4 Conformance.....12
- 5 Architecture.....13
  - 5.1 Generic protocol description .....13
    - 5.1.1 Overview .....13
    - 5.1.2 Physical layer .....13
    - 5.1.3 Data link layer.....13
    - 5.1.4 Network layer.....14
    - 5.1.5 Transport layer .....14
    - 5.1.6 Session layer .....14
    - 5.1.7 Presentation layer .....14
    - 5.1.8 Application layer .....14
  - 5.2 Data unit description .....14
- 6 Layer 1 – Physical layer.....14
  - 6.1 Overview.....14
  - 6.2 General description .....14
  - 6.3 Physical specifications for a FMWSP transmitter.....16
  - 6.4 Physical specifications for a FMWSP receiver.....17
  - 6.5 Packet structure .....17
  - 6.6 Relationship between a packet and a telegram .....18
- 7 Layer 2 – Data link layer .....19
  - 7.1 Overview.....19
  - 7.2 Structure of a telegram of length less than 8 B.....19
  - 7.3 Structure of a telegram length of more than 7 B .....20
  - 7.4 Data integrity .....22
- 8 Layer 3 – Network layer.....23
  - 8.1 Overview.....23
  - 8.2 Media access .....23
    - 8.2.1 General .....23
    - 8.2.2 Listen before talk .....23
    - 8.2.3 Random access .....23
  - 8.3 Repeater.....24
- Annex A (informative) Examples of how to evaluate the hash value.....25
- Bibliography .....26

Figure 1 – Illustration of a frequency modulated signal and various associated physical parameters .....	15
Figure 2 – The packet structure for the FMWSP protocol .....	18
Figure 3 – Relationship between a packet and a telegram.....	19
Figure 4 – Structure of a telegram length of less than 8 B .....	19
Figure 5 – Structure of a telegram length of more than 7 B .....	20
Figure A.1 – C code program .....	25
Table 1 – The FMWSP protocol stack structure (OSI) .....	13
Table 2 – Requirements for a FMWSP transmitter .....	17
Table 3 – Requirements for a FMWSP receiver .....	17
Table 4 – Packet field values of the FMWSP protocol .....	18
Table 5 – Field values and meaning of a telegram with less than 8 B of length .....	19
Table 6 – Header (HDR) description.....	21
Table 7 – Extended header (EXHDR) description.....	22
Table 8 – Extended telegram type (ETELTYP) description .....	22