ISO/IEC TR 18001:2004-10 (E)

Information technology - Radio frequency identification for item management - Application requirements profiles

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms and definitions 1

4 Symbols and abbreviated terms 1

5 ARP survey and questionnaire 2
5.1 AIM Survey 2
5.1.1 Application selection 2
5.1.2 Tag characteristics 2
5.1.3 Application characteristics 2
5.2 ANSI MH 10/SC 8 3
5.3 Dortmund University 3

6 ARP survey results and its analysis 3
6.1 Classification of application 3
6.2 Operating range 4
6.3 Memory size 5
6.4 Initial work for the first target application 5
6.4.1 Memory size < 128 byte 6
6.4.2 128 byte < memory size < 1 kbyte 6

7 Technical subjects for standardization (Common items for applications) 6
7.1 The variation of operating range 6
7.1.1 Influence of tag orientation 7
7.1.2 Influence of overlap of inductive tags 7
7.1.3 Influence of metallic materials 8
7.2 Determining the access time of RFID tags 9
7.3 Detecting and reading numerous tags from significant distances 10

8 2,45 GHz RFID tags 11
8.1 Variation of operating range 11
8.1.1 Influence of tag orientation 11
8.1.2 Influence of overlap of tags 12
8.1.3 Influence of metallic materials 12
8.1.4 Influence of R/W vs. R/O 12
8.2 Determining the access time of RFID tags 12
8.2.1 General 12
8.2.2 Influence of multiple interrogator operation 12
8.2.3 Influence of substitution errors 13
8.3 Indirect parameters 13
8.3.1 Security 13
8.3.2 Emission 13
8.3.3 Lithium cells 14

9 400 MHz to 1000 MHz UHF RFID-systems 14
9.1 Introduction 14
9.2 Operating principle 15
9.3 Typical tags 17
9.3.1 Regulations 17
9.3.2 Performance 19

10 RFID system and bar code system 24
10.1 Sorting systems using bar code labels 24
10.2 Sorting system using RFID tags 25

11 Proposals for individual application 25
11.1 Application: returnable plastic containers 25
11.2 Typical parameter for application 26

12 Conclusions 26

Annex A (informative) AIM / SC 31 Survey 27

Annex B (informative) ANSI MH 10/SC 8 Survey 32

Annex C (informative) ARP Questionnaire Responses 36

Annex D (informative) ANSI MH 10/SC 8 Questionnaire Responses 38

Annex E (informative) Example of plastic returnable container in Japan 44

Annex F (informative) Dortmund Study 45

F.1 Retailer's Responses to Questionnaire 45
F.2 Retailers' Requirements to Transponder Systems 47
F.3 Manufacturer's Responses to Questionnaires 49
F.4 Logistics Service Provider's Responses to Questionnaires 52
F.5 Logistic Service Providers' Requirements to Transponder Systems 53

Annex G (informative) JEIDA Study Report 56

Bibliography 89