

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

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

---

<b>Contents</b>		<b>Page</b>
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

<b>9</b>	<b>400 MHz to 1000 MHz UHF RFID-systems .....</b>	<b>14</b>
<b>9.1</b>	<b>Introduction .....</b>	<b>14</b>
<b>9.2</b>	<b>Operating principle .....</b>	<b>15</b>
<b>9.3</b>	<b>Typical tags .....</b>	<b>17</b>
<b>9.3.1</b>	<b>Regulations .....</b>	<b>17</b>
<b>9.3.2</b>	<b>Performance .....</b>	<b>19</b>
<b>10</b>	<b>RFID system and bar code system .....</b>	<b>24</b>
<b>10.1</b>	<b>Sorting systems using bar code labels .....</b>	<b>24</b>
<b>10.2</b>	<b>Sorting system using RFID tags .....</b>	<b>25</b>
<b>11</b>	<b>Proposals for individual application .....</b>	<b>25</b>
<b>11.1</b>	<b>Application: returnable plastic containers .....</b>	<b>25</b>
<b>11.2</b>	<b>Typical parameter for application .....</b>	<b>26</b>
<b>12</b>	<b>Conclusions .....</b>	<b>26</b>
	<b>Annex A (informative) AIM / SC 31 Survey .....</b>	<b>27</b>
	<b>Annex B (informative) ANSI MH 10/SC 8 Survey .....</b>	<b>32</b>
	<b>Annex C (informative) ARP Questionnaire Responses .....</b>	<b>36</b>
	<b>Annex D (informative) ANSI MH 10/SC 8 Questionnaire Responses .....</b>	<b>38</b>
	<b>Annex E (informative) Example of plastic returnable container in Japan .....</b>	<b>44</b>
	<b>Annex F (informative) Dortmund Study .....</b>	<b>45</b>
<b>F.1</b>	<b>Retailer's Responses to Questionnaire .....</b>	<b>45</b>
<b>F.2</b>	<b>Retailers' Requirements to Transponder Systems .....</b>	<b>47</b>
<b>F.3</b>	<b>Manufacturer's Responses to Questionnaires .....</b>	<b>49</b>
<b>F.4</b>	<b>Logistics Service Provider's Responses to Questionnaires .....</b>	<b>52</b>
<b>F.5</b>	<b>Logistic Service Providers' Requirements to Transponder Systems .....</b>	<b>53</b>
	<b>Annex G (informative) JEIDA Study Report .....</b>	<b>56</b>
	<b>Bibliography .....</b>	<b>89</b>