

ISO/IEC 18000-2:2009-10 (E)

Information technology - Radio frequency identification for item management - Part 2: Parameters for air interface communications below 135 kHz

Contents	Page
Foreword	vi
Introduction	vii
1 Scope	1
2 Conformance	1
2.1 RF emissions general population	2
2.2 RF emissions and susceptibility health care setting	2
3 Normative references	2
4 Terms and definitions	2
5 Symbols and abbreviated terms	4
5.1 Symbols	4
5.2 Abbreviated terms	5
6 Physical layer	6
6.1 Type A (FDX)	6
6.1.1 Power transfer	6
6.1.2 Frequency	6
6.1.3 Communication signal interface interrogator to tag	6
6.1.4 Communication signal interface tag to interrogator	9
6.1.5 General Protocol Timing Specifications	10
6.2 Type B (HDX)	12
6.2.1 Power transfer	12
6.2.2 Communication signal interface interrogator to tag	12
6.2.3 Communication Signal Interface tag to interrogator	15
6.2.4 General protocol Timing Specification	17
6.3 Physical and Media Access Control (MAC) Parameters	19
6.3.1 Interrogator to tag link	19
6.3.2 Tag to interrogator link	21
6.3.3 Protocol parameters	24
6.3.4 Anti-collision parameters	25
7 Transmission Protocol	26
7.1 Basic elements	26
7.2 IC Identifier and Unique Item Identifier (UII)	26
7.3 Request format	27
7.4 Response format	27
7.5 Request flags	28
7.5.1 AFI flag	29
7.5.2 NOS flag	29
7.5.3 SEL flag and ADR flag	29
7.5.4 CRCT flag	30
7.5.5 PEXT flag	30
7.6 Error flag	30
7.7 Error handling	31
7.8 Block security status	32
7.9 Start of frame pattern (SOF)	32

7.9.1	Interrogator request	32
7.9.2	Tag response	32
7.10	End of frame pattern (EOF)	32
7.10.1	Interrogator request	32
7.10.2	Tag response	32
7.11	CRC	32
7.12	Application family identifier (AFI)	33
7.13	Data storage format identifier (DSFID)	36
 8		
8.1	User memory organisation	36
8.2	User memory organisation (Page 0)	36
8.2	Extended User memory organisation (Page 1)	36
 9		
9.1	Tag states	37
9.1	RF-Off State	37
9.2	Ready State	37
9.3	Quiet State	37
9.4	Selected state	38
9.5	State diagram	38
 10		
10.1	Anti-collision	39
10.1	Request parameters	39
10.2	Request processing by the tag	39
10.3	Explanation of anti-collision sequences	42
10.3.1	Anti-collision sequence with 1 slot	42
10.3.2	Anti-collision sequence with 16 slots	42
10.3.3	Mixed population with tags of type A and B	44
11	Commands	44
11.1	Command classification	44
11.1.1	General	44
11.1.2	Mandatory commands	45
11.1.3	Optional commands	45
11.1.4	Custom commands	45
11.1.5	Proprietary commands	45
11.2	Command code structure	45
11.3	Command list	46
11.4	Mandatory commands	47
11.4.1	INVENTORY	47
11.4.2	READ UII	47
11.4.3	READ MULTIPLE BLOCKS	48
11.4.4	STAY QUIET	48
11.4.5	WRITE SINGLE BLOCK	49
11.4.6	LOCK BLOCK	49
11.5	Optional commands	50
11.5.1	READ SINGLE BLOCK	50
11.5.2	READ SINGLE BLOCK WITH SECURITY STATUS	50
11.5.3	READ MULTIPLE BLOCKS WITH SECURITY STATUS	51
11.5.4	WRITE MULTIPLE BLOCKS	51
11.5.5	GET SYSTEM INFORMATION	52
11.5.6	SELECT	53
11.5.7	RESET TO READY	54
11.5.8	WRITE SYSTEM DATA	54
11.5.9	LOCK SYSTEM DATA	55
11.5.10	READ EXTENDED MULTIPLE BLOCKS	56
11.5.11	WRITE EXTENDED MULTIPLE BLOCK	56
11.5.12	LOCK EXTENDED BLOCK	57
11.5.13	Optional command execution in Inventory mode	58
11.6	Custom commands	59
11.7	Proprietary commands	59
 Annex A (informative) CRC Check for Error Detection	60	

A.1	Description	60
A.2	CRC check source code example	61
Annex B (informative) Description of a typical anti-collision sequence with tags of types A and B ...		62
Annex C (informative) Optional anti-collision mechanism		63
C.1	Introduction	63
C.2	Description	63
C.3	Physical layer for the Multi-read command	63
C.3.1	Power transfer	64
C.3.2	Frequency	64
C.3.3	Interrogator to tag	64
C.3.4	Tag to interrogator	64
C.3.5	Parameters for optional Multi-read command	65
C.4	Multi-read command	68
C.4.1	Multi-read request format	68
C.4.2	Request flags	69
C.5	Anti-collision mechanism	70
C.5.1	Acknowledgement by the interrogator	70
C.5.2	Acknowledgement by the tag	70
C.5.3	Timing	70
C.5.4	Explanation of an anti-collision sequence	71
C.6	Protocol and anti-collision Parameters	76
C.6.1	Protocol Parameters	76
C.6.2	Anti-collision Protocol	78
Bibliography		79