

ISO/IEC 18000-6:2004-08 (E)

Information technology - Radio frequency identification for item management - Part 6: Parameters for air interface communications at 860 MHz to 960 MHz

Contents	Page
Foreword	vi
Introduction	vii
1 Scope	1
2 Conformance	1
2.1 Interrogator conformance and obligations	1
2.2 Tag conformance and obligations	1
2.3 Claiming conformance	2
3 Normative references	2
4 Terms, definitions, symbols and abbreviated terms	2
4.1 Terms and definitions	2
4.2 Symbols	2
4.3 Abbreviated terms	3
5 Overview	4
5.1 General	4
5.2 Parameter tables	5
6 Common elements of the physical layer for types A and B	11
6.1 General	11
6.2 Interrogator power-up waveform	11
6.3 Interrogator power-down	11
6.4 Frequency hopping carrier rise and fall times	12
6.5 FM0 return link	13
6.5.1 FM0 return link general	13
6.5.2 Modulation	13
6.5.3 Data rate	13
6.5.4 Data coding	13
6.5.5 Message format	14
6.5.6 Return preamble	14
6.5.7 Cyclic redundancy check (CRC)	15
7 Type A	17
7.1 Physical layer and data coding	17
7.1.1 PIE (Pulse interval encoding) forward link	17
7.2 Data elements	21
7.2.1 Unique identifier (UID)	21
7.2.2 Sub-UID	22
7.2.3 Application family identifier	22
7.2.4 Data storage format identifier (DSFID)	23
7.3 Protocol elements	23
7.3.1 Tag memory organisation	23
7.3.2 Support of battery-assisted tags	23
7.3.3 Block lock status	24
7.3.4 Tag signature	24
7.4 Protocol description	25
7.4.1 Protocol concept	25

7.4.2	Command format	26
7.4.3	Command flags	26
7.4.4	Round size	27
7.4.5	Command code definition and structure	28
7.4.6	Command classes	28
7.4.7	Command codes and CRC	29
7.4.8	Response format	32
7.4.9	Tag states	34
7.4.10	Collision arbitration	36
7.4.11	General explanation of the collision arbitration mechanism	36
7.5	Timing specifications	37
7.5.1	Timing specifications general	37
7.5.2	Tag state storage	37
7.5.3	Forward link to return link handover	37
7.5.4	Return link to forward link handover	38
7.5.5	Acknowledgement time window	38
7.6	Command format examples	40
7.7	Mandatory commands	40
7.7.1	Mandatory commands general	40
7.7.2	Next_slot	40
7.7.3	Standby_round	41
7.7.4	Reset_to_ready	42
7.7.5	Init_round_all	43
7.8	Optional commands	45
7.8.1	Optional commands general	45
7.8.2	Init_round	46
7.8.3	Close_slot	47
7.8.4	New_round	48
7.8.5	Select (by SUID)	49
7.8.6	Read_blocks	51
7.8.7	Get_system_information	55
7.8.8	Begin_round	58
7.8.9	Write_single_block	60
7.8.10	Write_multiple_blocks	62
7.8.11	Lock_blocks	64
7.8.12	Write_AFI	66
7.8.13	Lock_AFI	68
7.8.14	Write_DSFID command	70
7.8.15	Lock_DSFID	72
7.8.16	Get_blocks_lock_status	74
7.9	Custom commands	77
7.10	Proprietary commands	78
8	Type B	78
8.1	Physical layer and data coding	78
8.1.1	Forward link	78
8.1.2	Return link	80
8.1.3	Protocol concept	80
8.1.4	Command format	81
8.1.5	Response format	83
8.1.6	WAIT	83
8.1.7	Examples of a command packet	83
8.1.8	Communication sequences at packet level	84
8.2	Btree protocol and collision arbitration	85
8.2.1	Definition of data elements, bit and byte ordering	85
8.2.2	Tag memory organisation	86
8.2.3	Block security status	87
8.2.4	Overall protocol description, Btree protocol	87
8.2.5	Collision arbitration	92
8.2.6	Commands	94
8.2.7	Command types	94
8.2.8	Transmission errors	121

Annex A (informative) Cyclic redundancy check (CRC)	122
A.1 Interrogator to tag CRC-5	122
A.2 Interrogator to tag and tag to interrogator CRC-16	123
A.2.1 CRC-16 general	123
A.2.2 CRC calculation examples	125
Annex B (normative) Memory mapping for Type B	128
B.1 Unique identifier (normative)	128
B.1.1 Unique identifier general	128
B.1.2 Unique identifier format	128
B.1.3 Unique identifier according to ANSI 256	128
B.1.4 Remaining system memory	129
Annex C (informative) Tag Memory Map for Type B	133
C.1 Tag memory map	133
Bibliography	134