

# ISO/IEC 14443-2:2016-07 (E)

## Identification cards - Contactless integrated circuit cards - Proximity cards - Part 2: Radio frequency power and signal interface

---

<b>Contents</b>		<b>Page</b>
Foreword .....		iv
Introduction .....		v
1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	1
4	Symbols and abbreviated terms .....	2
5	General considerations .....	4
5.1	Initial dialogue .....	4
5.2	Compliance .....	4
5.2.1	PICC compliance .....	4
5.2.2	PCD compliance .....	4
6	Power transfer .....	5
6.1	Frequency .....	5
6.2	Operating field strength .....	5
7	Signal interface .....	7
8	Communication signal interface Type A .....	8
8.1	Communication PCD to PICC .....	8
8.1.1	Bit rate .....	8
8.1.2	Modulation .....	9
8.1.3	Bit representation and coding .....	16
8.2	Communication PICC to PCD .....	17
8.2.1	Bit rate .....	17
8.2.2	Load modulation .....	17
8.2.3	Subcarrier .....	21
8.2.4	Subcarrier modulation .....	21
8.2.5	Bit representation and coding .....	22
9	Communication signal interface Type B .....	22
9.1	Communication PCD to PICC .....	22
9.1.1	Bit rate .....	22
9.1.2	Modulation .....	23
9.1.3	Bit representation and coding .....	31
9.2	Communication PICC to PCD .....	31
9.2.1	Bit rate .....	31
9.2.2	Load modulation .....	31
9.2.3	Subcarrier .....	31
9.2.4	Subcarrier modulation .....	31
9.2.5	Bit representation and coding .....	31
10	Electromagnetic disturbance levels .....	32
10.1	PCD limits .....	32
10.2	PICC limits .....	32

<b>Annex A (normative) Bit rates of <math>3f_c/4</math>, <math>f_c</math>, <math>3f_c/2</math> and <math>2f_c</math> from PCD to PICC .....</b>	<b>34</b>
<b>Annex B (informative) Complex envelope and constellation diagram .....</b>	<b>42</b>
<b>Annex C (informative) Inter Symbol Interference .....</b>	<b>43</b>