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MB <sup>1</sup>	Clause No./ Sub clause No./ Annex (e.g. 3.1)	Paragraph/ Figure/Table/ Note (e.g. Table 1)	Type of comment <sup>2</sup>	Comment (justification for change) by the MB	Proposed change by the MB	Proposed Editors Disposition
FR1	ISO/IEC 7816-1: ISO/IEC 14443: ISO/IEC 10373-1: ISO/IEC 10373-6:	§ 4.2.7 § 4.3.7 § 5.2 § 5	te	<p>Make consistent the ESD requirements described in:</p> <p>ISO/IEC 7816-1: § 4.2.7 ISO/IEC 14443: § 4.3.7 ISO/IEC 10373-1: § 5.2 ISO/IEC 10373-6: § 5</p> <p><b>Method / Model</b></p> <p>The MIL STD 883 method 3015.7 specification referred in ISO 10373-3 is the most widely ESD method used in the electronics components – This method is based on HBM model (Human Body Model), meaning a discharge circuit of 100pF capacitance and 1500 ohms serial resistance</p> <p>If the ESD test is to simulate the discharge of an holder (charged by walking on a carpet in a dry atmosphere), on any item connected to the ground potential (via an electronic terminal) this model of impedance must be also used for contact less cards – then in ISO 1373-6</p> <p><b>Sanction</b></p> <p>The threshold voltage required in the specifications is: 2000 V for contact cards – 10373-1 6000 V for contact less cards – 10373-6</p> <p><u>Contact cards</u>: The usual level of protection of the electronic components used in smart cards is 4kV With this kind of protection, the percentage of cards failed</p>	<ul style="list-style-type: none"> <li>• <a href="#">ISO 10373-1</a></li> </ul> <p>§ 4.2.7: replace 2000V by 4000V</p> <ul style="list-style-type: none"> <li>• <a href="#">ISO 10373-6</a></li> </ul> <p><a href="#">Proposal 1</a></p> <p>§ 5. Static electricity test: Keep preliminary text and figure 1 unchanged</p> <p>5.1 Apparatus: remove reference to IEC 61000-4-2 and refer to MIL STD 883 G method 3015-7 figure 3015-1</p> <p>5.1 a: Main specifications of the ESD generator:</p> <ul style="list-style-type: none"> <li>• Energy storage capacitance: 100 pF +/- 10%</li> <li>• Discharge resistance: 1500 ohms +/- 1%</li> <li>• Charging resistance: 10E06 to 10E07 ohms</li> <li>• Rise time: less than 10 ns</li> </ul> <p>5.1.b: Selected specifications from the optional items:</p> <ul style="list-style-type: none"> <li>• Type of equipment: table top equipment</li> <li>• Discharge method: direct and contact discharge to the equipment under test</li> <li>• Discharge electrode of the ESD generator: round tip probe of 8mm diameter (to avoid breaking the surface</li> </ul>	

1 MB = Member body (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by \*\*)

2 Type of comment: ge = general te = technical ed = editorial – For technical comments, please indicate whether your comment is a MAJOR or MINOR technical comment.

NOTE Columns 1, 2, 4, 5 and 6 are compulsory.

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				<p>in the field for ESD reasons is not measurable – Then it is reasonable to consider this protection level as adapted to the field conditions</p> <p><u>Contact less cards:</u> The different materials used in the method described in ISO 10373-6 are:</p> <p>Isolating support: 0.5 mm thick -</p> <p>Card: chosen thickness 0.8 mm</p> <p>The threshold voltage of the materials under test in this example is:</p> <p>45 to 50 kV/mm for PVC, 20 to 25 kV/mm for ABS, 17kV for PET ...</p> <p>1.3mm of this material leads to a min 22 kV level for having the risk is to get a breakdown voltage</p> <p>To compare to 4kV for the same holder handling the contact card</p> <p><b>Proposal:</b></p> <p>In order to standardize the same level of ESD discharge on contact cards and contact less cards, it is proposed to use:</p> <ul style="list-style-type: none"> <li>MIL STD 883 G and its HBM discharge impedance as the common method (properly described in ISO 10373-1)</li> <li>4kV voltage level as sanction to pass</li> </ul>	<p>label layer of card)</p> <ul style="list-style-type: none"> <li>5.2 Procedure: unchanged</li> <li>5.3 Report: unchanged</li> </ul> <p><b>Proposal 2</b></p> <p>Remove the test – The dielectric characteristics of the plastic material used in contact less cards protect against this threshold voltage by design</p> <p><b>ISO 7816-1</b></p> <p>§4.2.7 Static electricity</p> <p>The integrated circuit shall not be damaged in normal use by a person charged with static electricity.</p> <p>The performance of the card shall not be degraded by exposure to a static discharge between any contact and ground of a voltage of 4000 V through a resistance of 1500 ohms from a capacitor of 100pF</p> <p><b>ISO 14443-1</b></p> <p>§4.3.7 Static electricity</p> <p>The PICC shall continue to operate as intended after testing in accordance with the test methods described in ISO/IEC 10373 where the test voltage is 4kV</p>	

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