

# DIN EN ISO 20339:2017-08 (E)

## Non-destructive testing - Equipment for eddy current examination - Array probe characteristics and verification (ISO 2 0339:2017)

---

<b>Contents</b>	<b>Page</b>
<b>European foreword</b> .....	<b>4</b>
<b>Foreword</b> .....	<b>5</b>
<b>1 Scope</b> .....	<b>6</b>
<b>2 Normative references</b> .....	<b>6</b>
<b>3 Terms and definitions</b> .....	<b>6</b>
<b>4 Probe and interconnecting elements characteristics</b> .....	<b>7</b>
4.1 General characteristics.....	7
4.1.1 Application.....	7
4.1.2 Probe types.....	7
4.1.3 Interconnecting elements.....	7
4.1.4 Physical characteristics.....	7
4.1.5 Safety.....	8
4.1.6 Environmental conditions.....	8
4.2 Electrical characteristics.....	8
4.3 Functional characteristics.....	8
<b>5 Verification</b> .....	<b>9</b>
5.1 Level of verifications.....	9
5.2 Characteristics to be verified.....	9
<b>6 Measurement of electrical and functional characteristics of an array probe</b> .....	<b>10</b>
6.1 Electrical characteristics.....	10
6.1.1 General.....	10
6.1.2 Measurement conditions.....	10
6.1.3 Impedance of coil elements.....	10
6.1.4 Impedance of a pattern.....	10
6.1.5 Channel assignment — Sequencing.....	11
6.1.6 Cross-talk.....	11
6.2 Functional characteristics.....	11
6.2.1 General.....	11
6.2.2 Measurement conditions.....	11
<b>7 Surface array probes</b> .....	<b>13</b>
7.1 Reference blocks.....	13
7.2 Probe motion.....	14
7.3 Reference signal — Normalization.....	14
7.4 Edge effect (measurable in the case of simple geometry, e.g. metal sheets, disks).....	15
7.5 Response to a slot.....	16
7.6 Response to a hole.....	17
7.7 Length of coverage.....	17
7.8 Variation in sensitivity between patterns.....	17
7.9 Minimum slot length for constant probe response.....	18
7.10 Lift-off effect.....	18
7.11 Effect of probe clearance on slot response.....	18
7.12 Effective depth of detection of a sub-surface slot.....	19
7.13 Resolution.....	19
7.14 Defective element or pattern.....	19

<b>8</b>	<b>Coaxial array probes</b> .....	<b>19</b>
8.1	General conditions.....	19
8.2	Reference blocks.....	19
8.3	Reference signal.....	20
8.4	Absence of defective elements.....	22
8.5	Position mark of the probe (mainly for positioning).....	22
8.6	End effect.....	22
8.7	Length of coverage.....	22
8.8	Homogeneity of axial response.....	23
8.9	Eccentricity effect.....	24
8.10	Fill effect.....	24
8.11	Effective depth of penetration.....	24
8.12	Effective depth of detection under ligament.....	24
<b>9</b>	<b>Influence of interconnecting elements</b> .....	<b>24</b>
	<b>Annex A (informative) Simulation of surface probe resolution</b> .....	<b>25</b>