# DIN EN 12668-2:2010-06 (E)

## Non-destructive testing - Characterization and verification of ultrasonic examination equipment - Part 2: Probes

## Contents

Page


Foreword ..... 4

1 Scope ..... 5

2 Normative references ..... 5

3 Terms and definitions ..... 5

4 General requirements for compliance ..... 7

5 Technical specification for probes ..... 7

6 Test equipment ..... 11
6.1 Electronic equipment ..... 11
6.2 Test blocks and other equipment ..... 11

7 Performance requirements for probes ..... 14
7.1 Physical aspects ..... 14
7.1.1 Method ..... 14
7.1.2 Acceptance criterion ..... 14
7.2 Radio frequency pulse shape ..... 14
7.2.1 Method ..... 14
7.2.2 Acceptance criterion ..... 14
7.3 Pulse spectrum and bandwidth ..... 14
7.3.1 Method ..... 14
7.3.2 Acceptance criteria ..... 15
7.4 Relative pulse-echo sensitivity ..... 15
7.4.1 Method ..... 15
7.4.2 Acceptance criterion ..... 15
7.5 Distance-amplitude curve ..... 15
7.5.1 Method ..... 15
7.5.2 Acceptance criterion ..... 16
7.6 Electrical impedance ..... 17
7.6.1 Method ..... 17
7.6.2 Acceptance criteria ..... 17
7.7 Beam parameters for immersion probes ..... 17
7.7.1 General ..... 17
7.7.2 Beam profile - measurements performed directly on the beam ..... 18
7.7.3 Beam profile - measurements made using an automated scanning system ..... 20
7.8 Beam parameters for contact, straight-beam, single transducer probes ..... 21
7.8.1 General ..... 21
7.8.2 Beam divergence and side lobes ..... 22
7.8.3 Squint angle and offset ..... 23
7.8.4 Focal distance (near field length) ..... 23
7.8.5 Focal width ..... 24
7.8.6 Focal length ..... 24
7.9 Beam parameters for contact angle-beam single transducer probes ..... 25
7.9.1 General ..... 25
7.9.2 Index point ..... 25
7.9.3 Beam angle and beam divergence ..... 25
7.9.4 Squint angle and offset ..... 26

7.9.5 Focal distance (near field length) ..... 27
7.9.6 Focal width ..... 28
7.9.7 Focal length ..... 28
7.10 Beam parameters for contact, straight beam, dual-element probes ..... 29
7.10.1 General ..... 29
7.10.2 Cross talk ..... 29
7.10.3 Distance to sensitivity maximum (focal distance) ..... 29
7.10.4 Axial sensitivity range (focal length) ..... 29
7.10.5 Lateral sensitivity range (focal width) ..... 30
7.11 Beam parameters for contact angle beam, dual-element probes ..... 30
7.11.1 General ..... 30
7.11.2 Cross talk ..... 31
7.11.3 Index point ..... 31
7.11.4 Beam angle and profiles ..... 31
7.11.5 Distance to sensitivity maximum (focal distance) ..... 32
7.11.6 Axial sensitivity range (focal length) ..... 32
7.11.7 Lateral sensitivity range (focal width) ..... 32

Annex A (normative) Calculation of near field length of non-focusing probes ..... 45

A.1 General ..... 45
A.2 Straight beam probes ..... 45
A.3 Angle beam probes ..... 46

Annex B (informative) Calibration block for angle-beam probes ..... 48

Bibliography ..... 52