DIN EN ISO 20270:2023-12 (E)

Acoustics - Characterization of sources of structure-borne sound and vibration - Indirect measurement of blocked forces (ISO 20270:2019)

Contents

Page

European foreword ... **3**

Foreword ... **4**

Introduction ... **5**

1 Scope ... **7**

2 Normative references ... **7**

3 Terms and definitions ... **7**

4 Selection of degrees of freedom (DOFs) ... **12**
4.1 General ... 12
4.2 Source receiver interface ... 13
4.3 Contact DOFs ... 13
4.4 Indicator DOFs ... 13
4.4.1 General ... 13
4.4.2 All indicator DOFs at contact area ... 14
4.4.3 No indicator DOF at contact area ... 14
4.4.4 Some indicator DOFs at contact area ... 14
4.5 Validation DOFs ... 14

5 Test arrangement ... 14
5.1 General ... 14
5.2 Representativeness of the receiver ... 14
5.3 Design of test receiver ... 15
5.4 Avoidance of secondary noise sources ... 15

6 Measuring equipment ... **16**
6.1 General ... 16
6.2 Multi-channel analyser ... 16
6.3 Vibration sensors ... 16
6.4 Means of excitation ... 16

7 Test procedure ... **16**
7.1 General ... 16
7.2 Operational test ... 18
7.3 Frequency response function (FRF) test ... 18
7.3.1 General ... 18
7.3.2 Direct FRF measurement ... 18
7.3.3 Reciprocal FRF measurement ... 18
7.4 Preliminary test with artificial excitation ... 19

8 Analysis procedure ... **19**

9 Uncertainties and validation ... **20**
9.1 General ... 20
9.2 On-board validation ... 21
9.3 Preliminary validation using artificial excitation ... 21

10 Test report ... **21**

Annex A (informative) **Example of a test report: Electric rear axle drive in a passenger car; transfer path analysis (TPA) and estimation of blocked forces in situ according to ISO 20270:2019** ... **23**

Annex B (informative) **Tests for validity of measurement data** ... **30**

Annex C (informative) **Case studies** ... **32**

Annex D (informative) **Criteria for selection of indicator and validation DOFs** ... **37**

Annex E (informative) **Prediction of sound and vibration** ... **41**

Bibliography ... **43**