

ISO 7626-5:2019-12 (E)

Mechanical vibration and shock - Experimental determination of mechanical mobility - Part 5: Measurements using impact excitation with an exciter which is not attached to the structure

| Contents | | Page |
|-----------------------|--|-------------|
| Foreword | | iv |
| Introduction | | v |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms and definitions | 1 |
| 4 | General characteristics of impact measurements | 2 |
| 4.1 | General description | 2 |
| 4.2 | Advantages and limitations of impact excitation | 3 |
| 4.2.1 | General | 3 |
| 4.2.2 | Nonlinearity restrictions | 4 |
| 4.2.3 | Signal-to-noise problems | 4 |
| 4.2.4 | Limited frequency resolution | 4 |
| 4.2.5 | Damping restrictions | 4 |
| 4.2.6 | Dependence on operator skill | 5 |
| 5 | Support of the structure under test | 5 |
| 5.1 | General | 5 |
| 5.2 | Ungrounded measurements | 5 |
| 5.3 | Grounded measurements | 5 |
| 6 | Application of the excitation | 5 |
| 6.1 | Impactor design | 5 |
| 6.2 | Force spectrum characteristics | 6 |
| 6.3 | Control of the frequency range of excitation | 10 |
| 6.4 | Avoidance of impactor double hits | 10 |
| 7 | Transducer system | 12 |
| 7.1 | General | 12 |
| 7.2 | Impactor calibration | 12 |
| 8 | Processing of the transducer signals | 13 |
| 8.1 | Filtering | 13 |
| 8.2 | Transient capture characteristics | 13 |
| 8.3 | Sampling relationships | 14 |
| 8.4 | Avoidance of saturation (clipping) | 15 |
| 8.5 | Windowing techniques | 15 |
| 8.5.1 | Force signal | 15 |
| 8.5.2 | Windowing the response signals | 19 |
| 8.6 | Averaging techniques | 23 |
| 9 | Tests for validity of the measurements | 24 |
| 9.1 | Coherence function | 24 |
| 9.2 | Repeatability check | 25 |
| 9.3 | Reciprocity check | 25 |
| 9.4 | Linearity check | 25 |
| 9.5 | Comparison with measurements using an attached exciter | 25 |
| Annex A (informative) | Correction of mobility measurements for the effects of exponential windowing | 26 |
| Bibliography | | 28 |