Classification of services in Acoustics, Ultrasound and Vibration

Last update: *October 2023*

[1]Metrology Area: Acoustics, Ultrasound and Vibration

Branch: Sound in Air

1. Measurement microphones
    - 1.1 Pressure sensitivity level
        - 1.1.1. Modulus: *frequency*
        - 1.1.2. Phase: *frequency*
    - 1.2 Free-field sensitivity level
        - 1.2.1. Modulus: *frequency*
        - 1.2.2. Phase: *frequency*
        - 1.2.3. Directivity: *frequency*
    - 1.3 Diffuse field sensitivity level
        - 1.3.1. Modulus: *frequency*
        - 1.3.2. Phase: *frequency*
    - 1.4 Electrostatic actuator normalized response
        - 1.4.1 Modulus: *microphone type, frequency*

2. Sound calibrators
    - 2.1 Single frequency
        - 2.1.1. Sound pressure level: *microphone type*
    - 2.2 Multi-frequency
        - 2.2.1. Sound pressure level: *microphone type, frequency*

3. Sound measuring instruments
    - 3.1 Response
        - 3.1.1. Sound pressure response level: *frequency*
        - 3.1.2. Free-field response level: *frequency*
        - 3.1.3. Diffuse field response level: *frequency*
        - 3.1.4. Sound intensity response level: *frequency*

4. Ear simulators
    - 4.1 Reference couplers or artificial ears
        - 4.1.1. System response level: *frequency*
        - 4.1.2. Acoustic impedance: *frequency*
    - 4.2 Mechanical couplers
        - 4.2.1. Force response level: *frequency*
        - 4.2.2. Mechanical impedance: *frequency*

[1] For each service the measurand is indicated in Roman characters, and the parameter(s) in italic characters.

4.3 Impedance head force transducer
4.3.1. Modulus of charge sensitivity: *frequency*
4.3.2. Phase shift of charge sensitivity: *frequency*
4.4 Impedance head force measuring chain
4.4.1. Modulus of voltage sensitivity: *frequency*
4.4.2. Phase shift of voltage sensitivity: *frequency*

5. Reference sound sources
5.1 Output
5.1.1. Sound power level: *frequency*
5.1.2. Directivity: *frequency*

6. Audiometers
6.1 Response
6.1.1. Air-conduction response level: *frequency*
6.1.2. Bone-conduction response level: *frequency*

7. Reserved for future use
8. Reserved for future use
9. Reserved for future use
10. Reserved for future use

Branch: Sound in Water
11. Hydrophones (medical ultrasonic)
11.1 Free-field sensitivity
11.1.1. Modulus: *frequency*
11.1.2. Phase: *frequency*
11.2 Pressure sensitivity
11.2.1. Modulus: *frequency*
11.2.2. Phase: *frequency*

12. Hydrophones (underwater acoustics)
12.1 Free-field sensitivity
12.1.1. Modulus: *frequency*
12.1.2. Phase: *frequency*
12.2 Pressure sensitivity
12.2.1. Modulus: *frequency*
12.2.2. Phase: *frequency*

13. Ultrasound transducer with generator
13.1 Output
13.1.1. Ultrasonic power: *frequency*
13.1.2. Directivity: *frequency*
13.1.3. Ultrasonic pressure: *frequency*

14. Ultrasound transducer
    14.1 Output
        14.1.1. Electroacoustic radiation conductance: *frequency, r.m.s. voltage*
        14.1.2. Directivity: *frequency*
        14.1.3. Ultrasonic power: *frequency, r.m.s. voltage*

15. Reserved for future use
16. Reserved for future use
17. Reserved for future use
18. Reserved for future use
19. Reserved for future use
20. Reserved for future use

Branch: Vibration

NOTE: For this branch the CMCs are expressed in terms of the physical quantity of acceleration or angular acceleration. For sinusoidal vibration (e.g. primary vibration calibration in accordance with ISO 16063-11) the entries may also represent the calibration and measurement capabilities for derivatives such as velocity, displacement, angular velocity and rotation angle.

31 Acceleration measuring instrument
    31.1. Frequency response
        31.1.1. Modulus: *frequency*
        31.1.2. Phase: *frequency*
    31.2. Shock response
        31.2.1. Modulus: *shock duration*

32 Acceleration calibrator
    32.1. Acceleration output
        32.1.1. Modulus: *frequency*
    32.2. Shock output
        32.2.1. Modulus: *shock duration*

33 Acceleration measuring chain / accelerometer
    33.1. Charge sensitivity
        33.1.1. Modulus: *frequency*
        33.1.2. Phase: *frequency*
    33.2. Shock charge sensitivity
        33.2.1. Modulus: *peak value, shock duration*
    33.3. Voltage sensitivity
        33.3.1. Modulus: *frequency*
        33.3.2. Phase: *frequency*
    33.4. Shock voltage sensitivity
        33.4.1. Modulus: *peak value, shock duration*
    33.5. Current sensitivity

33.5.1. Modulus: *frequency*
33.5.2. Phase: *frequency*
33.6. Shock current sensitivity
33.6.1. Modulus: *peak value, shock duration*

34 Angular acceleration measuring instrument
34.1. Angular acceleration response
34.1.1. Modulus: *frequency*
34.2. Shock response
34.2.1. Modulus: *shock duration*

35 Angular acceleration calibrator
35.1. Angular acceleration output
35.1.1. Modulus: *frequency*
35.2. Angular shock output
35.2.1. Modulus: *shock duration*

36 Angular acceleration measuring chain / accelerometer
36.1. Charge sensitivity
36.1.1. Modulus: *frequency*
36.1.2. Phase: *frequency*
36.2. Shock charge sensitivity
36.2.1. Modulus: *peak value, shock duration*
36.3. Voltage sensitivity
36.3.1. Modulus: *frequency*
36.3.2. Phase: *frequency*
36.4. Shock voltage sensitivity
36.4.1. Modulus: *peak value, shock duration*
36.5. Current sensitivity
36.5.1. Modulus: *frequency*
36.5.2. Phase: *frequency*
36.6. Shock current sensitivity
36.6.1. Modulus: *peak value, shock duration*

37 Force measuring instrument for mechanical impedance and mobility measurements or modal testing
37.1. Frequency response
37.1.1. Modulus: *frequency*
37.1.2. Phase: *frequency*
37.2. Shock response
37.2.1. Modulus: *shock duration*

38 Force measuring chain / force transducer for mechanical impedance and mobility measurements or modal testing
38.1. Charge sensitivity

38.1.1. Modulus: *frequency*
38.1.2. Phase: *frequency*
38.2. Shock charge sensitivity
38.2.1. Modulus: *peak value, shock duration*
38.3. Voltage sensitivity
38.3.1. Modulus: *frequency*
38.3.2. Phase: *frequency*
38.4. Shock voltage sensitivity
38.4.1. Modulus: *peak value, shock duration*
38.5. Current sensitivity
38.5.1. Modulus: *frequency*
38.5.2. Phase: *frequency*
38.6. Shock Current sensitivity
38.6.1. Modulus: *peak value, shock duration*

39. Reserved for future use
40. Reserved for future use
41. Reserved for future use
42. Reserved for future use
43. Reserved for future use
44. Reserved for future use

45 Vibration signal conditioner
45.1. Charge sensitivity:
45.1.1. Modulus: *frequency*
45.1.2. Phase: *frequency*
45.2. Voltage sensitivity:
45.2.1. Modulus: *frequency*
45.2.2. Phase: *frequency*
45.3. Current Sensitivity:
45.3.1. Modulus: *frequency*
45.3.2. Phase: *frequency*