Classification of services in Acoustics, Ultrasound and Vibration

Last update: *June 2018*

[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*
    - 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*

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

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.

21. Linear vibration
    - 21.1 Acceleration measuring instrument
        - 21.1.1. Frequency response
            - 21.1.1.1. Modulus: *frequency*
            - 21.1.1.2. Phase: *frequency*
        - 21.1.2. Shock response
            - 21.1.2.1. Modulus: *shock duration*
    - 21.2 Acceleration calibrator
        - 21.2.1. Acceleration output
            - 21.2.1.1. Modulus: *frequency*
        - 21.2.2. Shock output
            - 21.2.2.1. Modulus: *shock duration*
    - 21.3 Acceleration measuring chain / accelerometer
        - 21.3.1. Charge sensitivity
            - 21.3.1.1. Modulus: *frequency*
            - 21.3.1.2. Phase: *frequency*
        - 21.3.2. Shock charge sensitivity
            - 21.3.2.1. Modulus: *peak value, shock duration*
        - 21.3.3. Voltage sensitivity
            - 21.3.3.1. Modulus: *frequency*
            - 21.3.3.2. Phase: *frequency*
        - 21.3.4. Shock voltage sensitivity
            - 21.3.4.1. Modulus: *peak value, shock duration*
        - 21.3.5. Current sensitivity
            - 21.3.5.1. Modulus: *frequency*
            - 21.3.5.2. Phase: *frequency*
        - 21.3.6. Shock current sensitivity
            - 21.3.6.1. Modulus: *peak value, shock duration*

22. Angular vibration
    - 22.1 Angular acceleration measuring instrument
        - 22.1.1. Angular acceleration response
            - 22.1.1.1. Modulus: *frequency*
        - 22.1.2. Shock response
            - 22.1.2.1. Modulus: *shock duration*
    - 22.2 Angular acceleration calibrator
        - 22.2.1. Angular acceleration output
            - 22.2.1.1. Modulus: *frequency*
        - 22.2.2. Angular shock output
            - 22.2.2.1. Modulus: *shock duration*
    - 22.3 Angular acceleration measuring chain / accelerometer
        - 22.3.1. Charge sensitivity

22.3.1.1. Modulus: *frequency*
22.3.1.2. Phase: *frequency*
22.3.2. Shock charge sensitivity
22.3.2.1. Modulus: *peak value, shock duration*
22.3.3. Voltage sensitivity
22.3.3.1. Modulus: *frequency*
22.3.3.2. Phase: *frequency*
22.3.4. Shock voltage sensitivity
21.3.4.1. Modulus: *peak value, shock duration*
22.3.5. Current sensitivity
22.3.5.1. Modulus: *frequency*
22.3.5.2. Phase: *frequency*
22.3.6. Shock current sensitivity
22.3.6.1. Modulus: *peak value, shock duration*

23. Dynamic Force
23.1 Force measuring instrument for mechanical impedance and mobility measurements or modal testing
23.1.1. Frequency response
23.1.1.1. Modulus: *frequency*
23.1.1.2. Phase: *frequency*
23.1.2. Shock response
23.1.2.1. Modulus: *shock duration*

23.2 Force measuring chain / force transducer for mechanical impedance and mobility measurements or modal testing
23.2.1. Charge sensitivity
23.2.1.1. Modulus: *frequency*
23.2.1.2. Phase: *frequency*
23.2.2. Shock charge sensitivity
23.2.2.1. Modulus: *peak value, shock duration*
23.2.3. Voltage sensitivity
23.2.3.1. Modulus: *frequency*
23.2.3.2. Phase: *frequency*
23.2.4. Shock voltage sensitivity
23.2.4.1. Modulus: *peak value, shock duration*
23.2.5. Current sensitivity
23.2.5.1. Modulus: *frequency*
23.2.5.2. Phase: *frequency*
23.2.6. Shock Current sensitivity
23.2.6.1. Modulus: *peak value, shock duration*

24. Reserved for future use
25. Reserved for future use
26. Reserved for future use
27. Reserved for future use
28. Reserved for future use
29. Reserved for future use

30. AUV auxiliary instruments and/or devices

30.1 Vibration signal conditioner

30.1.1. Charge sensitivity:
    30.1.1.1. Modulus: *frequency*
    30.1.1.2. Phase: *frequency*
30.1.2. Voltage sensitivity:
    30.1.2.1. Modulus: *frequency*
    30.1.2.2. Phase: *frequency*
30.1.3. Current Sensitivity:
    30.1.3.1. Modulus: *frequency*
    30.1.3.2. Phase: *frequency*