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## Standard Test Method for Livestock, Meat, and Poultry Evaluation Devices<sup>1</sup>

This standard is issued under the fixed designation F2343; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method covers test methods used to determine the accuracy of electronic devices that evaluate composition or quality constituents of livestock, meat, and poultry.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

[F2463 Terminology for Livestock, Meat, and Poultry Evaluation Systems](#)

2.2 *NIST Standard:*<sup>3</sup>

[NIST Handbook 44 Electronic Livestock, Meat, and Poultry Evaluation Systems and/or Devices](#)

### 3. Terminology

3.1 For definitions relating to livestock, meat, and poultry evaluation systems, see Terminology [F2463](#).

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *error, n*—difference between the “true” value of a reference material and the indication received from an electronic evaluation device or system.

3.2.2 *meat, n*—all edible products and edible by-products harvested by the meat-packing industry.

3.2.3 *reference material, n*—physical object used as a basis for comparison or calibration.

3.2.4 *test, n*—procedure for determining a characteristic by direct measurement.

3.2.5 *tolerance, n*—value fixing the limit of allowable error or departure from true performance or value.

3.2.6 *value, measurement, n*—data point or indication representing the outcome of a measurement or observation.

### 4. Significance and Use

4.1 Characteristics of livestock, meat, and poultry can be used to determine value. Devices have been and are currently under development to evaluate these characteristics. The use of this test method will assist manufacturers, users, and regulating authorities to refer to uniform test methods to determine if the devices are accurate.

### 5. Apparatus

5.1 Reference materials may include, but are not limited to, test blocks to verify linear measurements for ultrasound and linear probes, “phantom carcasses” to verify non-linear measurements used in devices that use magnetic energy absorption, photographic plates for visual imaging devices, or other means to verify a characteristic.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee [F10](#) on Livestock, Meat, and Poultry Evaluation Systems and is the direct responsibility of Subcommittee [F10.20](#) on Device Performance Criteria.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](#), or contact ASTM Customer Service at [service@astm.org](#). For *Annual Book of ASTM Standards* volume information, refer to the standard’s Document Summary page on the ASTM website.

<sup>3</sup> Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 1070, Gaithersburg, MD 20899-1070, [http://www.nist.gov](#).

5.2 Manufacturers provide reference materials to use in the initial setup and calibration of evaluating devices before use; these reference materials can be used as standards for ensuring accuracy after they are verified and documented by an independent third party. Reference material shall be uniquely identified (for example, serial number) and retained for additional testing and calibration to ensure the accuracy of the device as it is being used over time.

5.3 Verification of the reference material requires: (1) that the reference materials stated measurements are accurate (this requires that the error of the labeled measurements can not be greater than one-third of the smallest allowable error acceptable when the reference material is used to verify an evaluating device), and (2) the reference material is an appropriate proxy for the characteristic being evaluated by the device or system (the reference material is considered appropriate if it has been designed to be used as a reference material, and it is constructed to retain its characteristics for a reasonable period of time under conditions of normal use).

## 6. Calibration and Standardization

6.1 *Reference Material*—The user is responsible for ensuring that all reference materials used to test its evaluating device have been verified as accurate by an independent third party. The frequency of this verification shall be every two years or less.

6.1.1 When an evaluation device or system is being calibrated at initial setup or adjusted after it has been found to be out of tolerance, the user shall ensure that the device is adjusted as close as practicable to the indications of the reference material.

## 7. Procedure Procedures

7.1 The production daily test for evaluating devices require a minimum of three readings from each third of the normal operating range of the device.

### 7.2 *Autofom Test Procedures:*

#### 7.2.1 *Transducer Test:*

7.2.1.1 Dry the transducer array so that no water is left.

7.2.1.2 Test function is activated on the control panel.

7.2.1.3 Wait 1 min to check that none of the transducers are starting automatically.

7.2.1.4 Put some gel on the test block (reference material).

7.2.1.5 The transducer is checked with the test block.

7.2.1.6 Remove gel from transducer.

7.2.1.7 Repeat 7.2.1.4 – 7.2.1.6 on all 16 transducers. Take ten measurements with the test block for each required measurement on each transducer.

7.2.2 After each transducer test, the results will be recorded. At the end of a test series, the latest result from each transducer will be written on the last line. If a transducer is approved more than nine times, an “X” will indicate ten or more approved tests.

7.2.3 A complete test of the transducers requires that the test block be correctly placed on each transducer. It is important that the test block rest on the whole surface on the transducer head with light pressure. When starting the test, all transducers must be “0”. If this is not the case, the transducer might be broken (wait approximately 1 min after activation of the test function). If a transducer is defective, then the display will show no results.

7.2.4 Verify that all measurement errors are within NIST Handbook 44 or this test method, as applicable.

### 7.3 *Fat-o-Meat’er Test Procedures:*

7.3.1 Push the morning control button.

7.3.2 Take ten measurements with the test block (reference material) for each required measurement (see 6.1 and 7.1).

7.3.3 Record test results.

7.3.4 The measurement results can be cancelled by pushing the pistol button or accepted by pushing the morning control button on the terminal. When the morning control button is activated, no transmission is sent to the scale terminal.

7.3.5 Verify that all measurement errors are within NIST Handbook 44 or this test method, as applicable.

### 7.4 *UltraFom Test Procedures:*

7.4.1 Press the key twice and select “Test” from the main menu.

7.4.2 Press \* and select “Test”.

7.4.3 Put water on the test block (reference material).

7.4.4 Hold the test block to the sensor.

7.4.5 Record the displayed results.

7.4.6 Repeat 7.4.3 – 7.4.5 a total of ten times for each required measurement.

7.4.7 Data is automatically recorded.

### 7.5 *CVT Test Procedures:*

7.5.1 Apply fine spray of water on test block, reference material, and transducer standoff cover.

7.5.2 Place transducer on test block.

7.5.3 Be sure that the surface of the test block is set at zero. Reset baseline if necessary.

7.5.4 Press trigger to make a measurement.