Designation: F2143 – 16

An American National Standard

Standard Test Method for Performance of Refrigerated Buffet and Preparation Tables[1]

This standard is issued under the fixed designation F2143; 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 (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers evaluation of the energy consumption of refrigerated buffet and preparation tables. The food service operator can use this evaluation to select a refrigerated buffet and preparation table and understand its energy performance.

1.2 This test method is applicable to electric self-contained refrigerators used for holding and displaying refrigerated food in an open area.

1.3 The refrigerated buffet and preparation table can be evaluated with respect to the following (where applicable):

1.3.1 Maximum power, or maximum current draw (10.1),

1.3.2 Thermostat calibration (10.4), and

1.3.3 Energy consumption (10.5).

1.4 The values stated in inch-pound units are to be regarded as standard. The SI units given in parentheses are for information only.

1.5 *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 *NSF Standard:*[2]

ANSI/NSF 7 Commercial Refrigerators and Freezers

2.2 *ASHRAE Guideline:*[3]

ASHRAE Guideline 2-1986 (RA90) Engineering Analysis of Experimental Data

2.3 *ANSI/ASHRAE Standards:*[4]

ANSI/ASHRAE 72-2014 Method of Testing Open Refrigerators for Food Stores

2.4 *Food and Drug Administration, U.S. Public Health Service Regulation:*[5]

Food Code, 1999

3. Terminology

3.1 *Definitions:*

3.1.1 *production capacity, n*—maximum volumetric storage capacity (ft^3 (m^3)) at which the refrigerated buffet and preparation table's open display area can hold using a specified container filled to ½ in. of the container rim.

3.1.2 *refrigerated buffet and preparation table, n*—buffet/preparation table herein, equipment designed with a refrigerated open top or open condiment rail.

3.1.3 *refrigerated buffet table or unit, n*—equipment designed with mechanical refrigeration that is intended to receive refrigerated food and maintain food product temperatures and is intended for customer service such as a salad bar. A unit may or may not be equipped with a lower refrigerated compartment.[6]

3.1.4 *refrigerated food preparation unit, n*—equipment designed with a refrigerated open top or open condiment rail such as refrigerated sandwich units, pizza preparation tables, and similar equipment. The unit may or may not be equipped with a lower refrigerated compartment.[6]

3.1.5 *self-contained refrigerator, n*—a refrigerator whose condensing unit is attached as an integral component of the unit.[6]

3.1.6 *storage refrigerator or freezer, n*—a refrigerator or freezer designed for cold storage of nonfrozen or frozen foods.

3.1.7 *storage capacity, n*—maximum volumetric storage capacity (ft^3 (m^3)) as determined by the manufacturer at which the refrigerated buffet or preparation table's storage component can hold food.

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[1] This test method is under the jurisdiction of ASTM Committee F26 on Food Service Equipment and is the direct responsibility of Subcommittee F26.06 on Productivity and Energy Protocol.

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[2] Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140, http://www.nsf.org.

[3] Available from American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE), 1791 Tullie Circle, NE, Atlanta, GA 30329, http://www.ashrae.org.

[4] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

[5] Available from National Technical Information Service (NTIS), 5285 Port Royal Rd., Springfield, VA 22161, http://www.ntis.gov.

[6] Available from National Technical Information Service (NTIS), 5301 Shawnee Rd., Alexandria, VA 22312, http://www.ntis.gov.

3.1.8 *test method, n*—a definitive procedure for the identification, measurement, and evaluation of one or more qualities, characteristics, or properties of a material, product, system, or service that produces test results.

3.1.9 *uncertainty, n*—measure of systematic and precision errors in specified instrumentation or measure of repeatability of a reported test result.

4. Summary of Test Method

4.1 Power is determined to confirm that the buffet/preparation table is operating within 5 % of the manufacturer's rated power.

4.2 Buffet/preparation table energy consumption is determined with the upper lid in the raised position while the unit is used to maintain the temperature of water being held in the refrigerated rail and with the upper lid in the lowered position without any pans in the refrigerated rail.

4.3 Production capacity is determined by measuring the amount of water that the refrigerated rail can hold, using a specified container filled to ½ in. of the container rim.

5. Significance and Use

5.1 The power test is used to confirm that the buffet/preparation table is operating properly prior to further testing.

5.2 Buffet/preparation table energy consumption is a precise indicator of buffet/preparation table energy performance under the test loading condition and under a simulated overnight operating condition. This information enables the food service operator to consider energy performance when selecting a buffet/preparation table.

5.3 Production capacity is used by food service operators to choose a buffet/preparation table that matches their food output requirements.

6. Apparatus

6.1 *Analytical Balance Scale,* for measuring weights up to 25 lb, with a resolution of 0.01 lb and an uncertainty of 0.01 lb.

6.2 *Pans,* for holding water. Standard 4-in. (102-mm) deep ⅙-size steam table pans are used in this test method. Pans shall have nominal dimensions of $6 \times 6^{15}/_{16} \times 4$ in. ($162 \times 176 \times 102$ mm). Metal pans shall be used. The weight of the pan shall be 0.70 ± 0.07 lb. The buffet/preparation table manufacturer may provide alternative pans if the unit is designed specifically to only be used with the alternative pans. If alternative pans are used, they shall have nominal dimensions as close to that of the standard pans as is available. All pans must be equipped with thermocouples for temperature measurement. An example of a typical setup is shown in Fig. 1. The thermocouple lead shall be long enough to allow connection to the monitoring device while the pans are in the storage refrigerator.

6.3 *Electronic Humidity Sensor,* for measuring the relative humidity within the test environment with a range of 25 to 45 % and an uncertainty of ±2 %.

6.4 *Thermocouple Probe,* capable of immersion with a range of 30° to 50°F and an uncertainty of ±1°F. Preferably industry standard type T or type K thermocouples.

6.5 *Power Meter,* for measuring the electrical energy consumption of a buffet/preparation table, shall have a resolution of at least 1 W and a maximum uncertainty no greater than 1.5 % of the measured value for any demand greater than 100 W. For any demand less than 100 W, the meter shall have a resolution of at least 1 W and a maximum uncertainty no greater than 10 %.

6.6 *Air Velocity Meter,* for measuring air velocity around the buffet/preparation table with an uncertainty of ±10 % at 100 ft/min (0.51 m/s) and capable of measuring air velocities at 50 ft/min (0.25 m/s).

7. Reagents and Materials

7.1 *Water*—Distilled water shall be used.

8. Sampling, Test Units

8.1 *Buffet/Preparation Table*—Select a representative production model for performance testing.

9. Preparation of Apparatus

9.1 Install the buffet/preparation table according to the manufacturer's instructions. Position the buffet/preparation table so that there is 6 in. clearance maintained between a back wall and the back vertical plane of the buffet/preparation table. In addition, both sides of the buffet/preparation table shall be a minimum of 12 in. from any side wall, or side partition (see

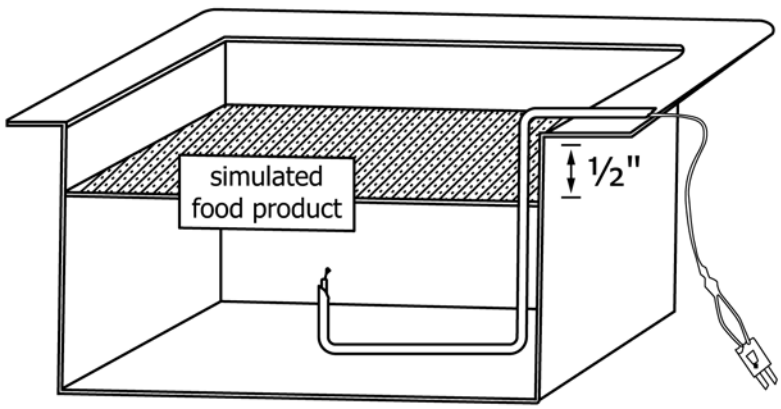

FIG. 1 Pan With Thermocouple Probe

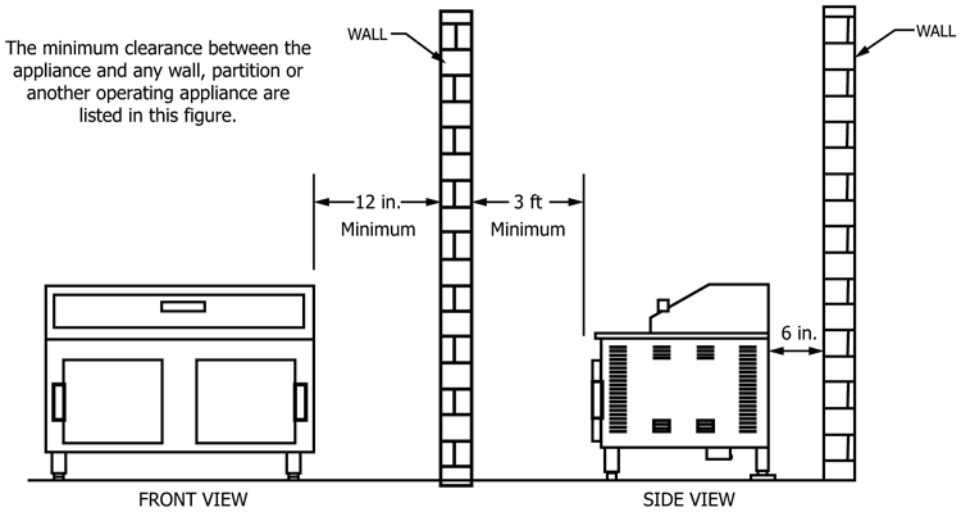

FIG. 2 Example of Appliance Placement

Fig. 2). Walls can be portable or suspended from ceiling. There shall be a minimum of 3 ft of clearance between the front vertical plane of the buffet/preparation table and any wall or partition. Report appliance placement relative to test room walls in results reporting section.

9.2 The testing environment during energy tests shall be maintained as follows: ambient temperature of 86 ± 2°F (30 ± 1°C), no vertical temperature gradient exceeding 1.5°F/ft (2.5°C/m), relative humidity of 35 ± 5 % and maximum air current velocity of 50 ft/min (0.25 m/s) across the surfaces of the test pans while the buffet/preparation table is not operating.

9.3 Ambient temperatures shall be measured at two locations along a vertical line at the center line of the buffet/preparation table. The first shall be 5.9 ± 2 in. (150 ± 50 mm) above the highest point on the buffet/preparation table. The second shall be at the geometric center of the buffet/preparation table. Both points shall be located 36 ± 2 in. (914 ± 50 mm) out from the front face of the buffet/preparation table. It shall be verified that no location around the perimeter of the buffet/preparation table at the same heights as the two points has an average temperature lower than that specified for the test conditions.

9.4 Connect the buffet/preparation table to a calibrated energy test meter. A voltage regulator may be required during tests if the voltage supply is not within ±2.5 % of the manufacturer's rated voltage.

9.5 Confirm (while the buffet/preparation table compressor(s) are energized) that the supply voltage is within ±2.5 % of the operating voltage specified by the manufacturer during the entire test period. Record the test voltage throughout each test.

NOTE 1—It is the intent of the testing procedure herein to evaluate the performance of a buffet/preparation table at its rated voltage. If a unit is rated for dual voltage (that is, designed to operate at either 208 or 240 V with no change in components), the voltage selected by the manufacturer and/or tester shall be reported. If a buffet/preparation table is designed to operate at two voltages without a change in components, the performance of the unit (for example, holding energy rate) may differ at the two voltages.

9.6 If the buffet/preparation table is equipped with a refrigerated compartment, the compartment air temperature shall be monitored to evaluate the buffet/preparation table's ability to maintain the air temperature between 33°F (1°C) and 41°F (5°C). The compartment shall be empty, and three thermocouples shall be used to monitor air temperatures. If the buffet/preparation table is not equipped with a refrigerated compartment then skip steps 9.6.1 – 9.6.3.

9.6.1 For buffet/preparation tables with refrigerated compartments position thermocouple no. 1 when viewed from the front of the refrigerated table 5 ± 0.25 in (127 ± 6 mm) from the left interior wall. Center the thermocouple in the compartment relative to the front and the back. For refrigerated compartments with overhead cooling, position the thermocouple 2 ± 0.25 in. (51 ± 6 mm) above the bottom horizontal plane of the compartment. For units where the evaporator is not suspended from the ceiling, the thermocouple shall be placed 5 ± 0.25 in. (127 ± 6 mm) down from the ceiling.

9.6.2 Position thermocouple no. 2 centered front-to-back, top-to-bottom, and left-to-right.

9.6.3 Position thermocouple no. 3 when viewed from the front of the refrigerated table 5 ± 0.25 in. (127 ± 6 mm) from the right interior wall and 5 ± 0.25 in. (127 ± 6 mm) above the internal floor of the compartment. Center the thermocouple in the compartment relative to the front and the back.

10. Procedure

NOTE 2—Prior to starting this test, the tester should read the operating manual and fully understand the operation of the appliance.

10.1 *General:*

10.1.1 Record the following for each test run: (*1*) voltage, (*2*) current, (*3*) power, (*4*) relative humidity, (*5*) ambient temperature, (*6*) pan water temperatures, and (*7*) refrigerated compartment air temperatures. All data points shall be measured continuously in 1 min intervals or less for each test. For (*1*) voltage, (*2*) current, and (*3*) power the recorded values shall be the average reading over each 1 min or shorter interval.

10.1.2 For each test run, confirm that the peak amperage draw rate is below the manufacturer's rated maximum amperage. If the measured amperage is greater than the rated

maximum amperage, terminate testing and contact the manufacturer. The manufacturer may make appropriate changes or adjustments to the buffet/preparation table.

10.2 *Pan Thermocouple Placement:*

10.2.1 Determine whether standard, 4-in. (102-mm) deep ⅙-sized pans or manufacturer specified pans will be used to hold water in the display (rail) area of the buffet/preparation table. During the test, thermocouples will measure the temperature of the water in the pans. Place the pans in display area (rail) of the buffet/preparation table to determine thermocouple placement. Later, when the water is prepared, the pans will be filled with water to within ½ in. (13 mm) of the pan's top rim. Note where ½ in. (13 mm) is from the pan's top rim for determining placement of thermocouples.

10.2.2 Install a thermocouple at the geometric center of the water in the pans, top to bottom, side to side, and front to back, of every pan in the display area (rail). Thermocouple leads should be firmly attached to the pan to prevent movement. The thermocouple leads should be long enough to allow connection to the monitoring device while the pans are in the buffet/preparation table. See Fig. 3 for an example of standard pans with thermocouple probes.

10.3 *Stabilization/Run-in Time:*

10.3.1 Establish and maintain the test room (test chamber) conditions of 86 ± 2°F (30 ± 1°C) ambient temperature, no vertical temperature gradient exceeding 1.5°F/ft (2.5°C/m), relative humidity of 35 ± 5 % and maximum air current velocity of 50 ft/min (0.25 m/s) across the surfaces of the test pans while the buffet/preparation table is not operating.

10.3.2 Place the buffet/preparation table in test environment (test chamber).

10.3.3 Place the empty pans into the display area (rail) of the buffet/preparation table. If the manufacturer's instructions specify pans should not be empty while in the display area (rail) of the buffet/preparation table, follow the manufacturer's instructions for what is acceptable. If the unit is equipped with cover(s) for the display area, the cover(s) shall be open.

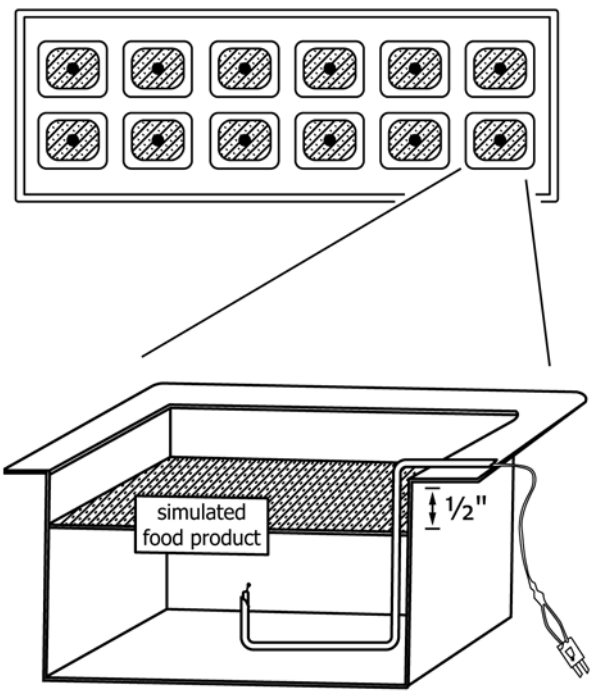

FIG. 3 Example of Standard Pans With Thermocouple Probes

10.3.4 Allow the unit to run for not less than 24 h.

10.4 *Thermostat Calibration:*

10.4.1 Establish and maintain the test room (test chamber) conditions of 86 ± 2°F (30 ± 1°C) ambient temperature, no vertical temperature gradient exceeding 1.5°F/ft (2.5°C/m), relative humidity of 35 ± 5 % and maximum air current velocity of 50 ft/min (0.25 m/s) across the surfaces of the test pans while the buffet/preparation table is not operating.

10.4.2 If the unit is equipped with cover(s) for the display area, the cover(s) shall be open.

10.4.3 *Pan Loading Procedure:*

10.4.3.1 Determine the weight of water required to fill one pan to within ½ in. (13 mm) of the pan's top rim.

10.4.3.2 Fill a container with enough water to fill every test pan with the determined weight of water.

10.4.3.3 Refrigerate and maintain the container of water at 35 ± 1°F.

10.4.3.4 Place the empty pans in the display area (rail) and ensure that thermocouples in the pans are positioned as described in 10.2. Empty pans must remain in the display area (rail) of the buffet/preparation table for 2 h before continuing.

10.4.3.5 Using the analytical balance scale, weigh the determined weight of water (±0.025 lb) from the refrigerated container of water into a separate container.

10.4.3.6 Carefully pour the measured water into one of the empty pans in the display area (rail) of the buffet/preparation table.

10.4.3.7 Repeat steps 10.4.3.5 and 10.4.3.6 until all test pans are filled with water. The total pan loading time, from removal of container filled with water from storage refrigerator to the last pan filled with water, shall be no longer than 50 s per pan in the display area (rail).

10.4.4 Record the water temperature of the pans placed in the display area (rail) and the air temperature of the under cabinet as the unit runs for not less than 4 h. If any temperature reading is below 33°F (1°C) or above 41°F (5°C) for any consecutive 15 min period, then adjust the thermostat accordingly and repeat the calibration. If not, then calibration of the thermostat is done. Repeat adjustment of the thermostat until no temperature reading is below 33°F (1°C) or above 41°F (5°C) for any consecutive 15 min period over the 4 h. If this is not achieved after repeated thermostat adjustment, then stop thermostat calibration and contact the manufacturer for assistance.

10.4.5 Indicate in the test report whether or not a defrost cycle occurred during the calibration. Through visual inspection, report if any ice buildup occurred on or inside the buffet/preparation table and if so, at what location(s) and to what degree.

10.5 *Test:*

10.5.1 Establish and maintain the test room (test chamber) conditions of 86 ± 2°F (30 ± 1°C) ambient temperature, no vertical temperature gradient exceeding 1.5°F/ft (2.5°C/m), relative humidity of 35 ± 5 % and maximum air current

velocity of 50 ft/min (0.25 m/s) across the surfaces of the test pans while the buffet/preparation table is not operating.

10.5.2 If the unit is equipped with cover(s) for the display area, then test the unit with the cover(s) in an open position or, if the cover(s) are not designed to remain open, then remove the cover(s). Close all refrigerated compartment doors, excluding the display area.

10.5.3 Follow the pan loading procedure described in 10.4.3.

10.5.4 Start test immediately after all test pans are filled with water.

10.5.5 For the first 8 h (the "active period"), the components should be operated as follows:

10.5.5.1 If the unit is equipped with cover(s) for the display area, the cover(s) shall be positioned as follows: open for 2 h, closed for 4 h, open for 2 h.

10.5.5.2 Every 30 min each preparation table under-cabinet door or drawer, or both, shall be fully opened for 6 consecutive seconds. Open each door or drawer, or both, sequentially, one at a time. For units with pass-thru doors, only the doors on one side of the unit shall be opened. Example: For a 4-drawer unit, the first drawer opening would start 30 min into the active period. Drawer 1 would be opened, stand fully open for 6 s, then be closed. Immediately upon closing drawer 1, drawer 2 would be opened, stand fully open for 6 s, then be closed. Immediately following would be drawer 3, then drawer 4. This entire process would repeat 30 min after the start of drawer openings and repeat every 30 min thereafter until the end of the active period.

10.5.6 After the active period, if it is possible to control cooling to the display area (rail) independently of the under cabinet, move all pans from the display area to the under cabinet, and turn off the cooling to the display area. If it is not possible to control the display area cooling independently, leave the pans in the display area. If the unit is equipped with cover(s) for the display area, then move the cover(s) into the closed position. Test for an additional 16 consecutive hours (the "standby period") in this configuration. Do not perform any door openings.

10.5.7 For each thermocouple in the display area (rail) pans and in the under cabinet, the temperature reading must not be below 33°F (1°C) or above 41°F (5°C) for any consecutive 15 min period. If one or more are, then indicate this in the test report.

10.5.8 Indicate in the test report whether or not a defrost cycle occurred during the test. Through visual inspection, report if any ice buildup occurred on or inside the buffet/preparation table and if so, at what location(s) and to what degree.

11. Calculation and Report

11.1 *Test Buffet/Preparation Table:*

11.1.1 Summarize the physical and operating characteristics of the buffet/preparation table. If needed, describe other design or operating characteristics that may facilitate interpretation of the test results.

11.2 *Apparatus and Procedure:*

11.2.1 Confirm that the testing apparatus conformed to all of the specifications in Section 6. Describe any deviations from those specifications.

11.2.2 Describe the pans used for the tests.

11.2.3 Report the measured average voltage for each test.

11.3 *Power:*

11.3.1 Report the manufacturer's rated power in kW.

11.3.2 Calculate and report the measured peak power (kW) recorded during the test.

11.3.3 Calculate and report the percent difference between the manufacturer's rated power and the measured peak power.

11.4 *Energy Consumption:*

11.4.1 Calculate and report the total energy consumption during the test.

11.4.2 Calculate and report the energy consumption for only the first 8 h of the test.

11.4.3 Calculate and report the energy consumption for only the last 16 h of the test.

11.4.4 Describe the thermocouple locations in the refrigerated display area (rail) and the refrigerated compartment (if applicable).

11.4.5 Generate a graph of pan temperature versus time for each of the monitored pans during the test. Also, report the average temperature for each of the monitored pans.

11.4.6 Report whether a defrost cycle was employed during the test.

11.5 *Production Capacity:*

11.5.1 Calculate production capacity (ft^3) based on:

$$PC = V \times n \quad (1)$$

where:

PC = production capacity of the buffet/preparation table, ft^3 (m^3),
V = total volume of the test pan when filled to within ½ in. of the rim, ft^3 (m^3), and
n = total number of pans held in the display area (rail) of the buffet/preparation table.

11.6 *Compressor Run Time*[6]*:*

11.6.1 Calculate and report compressor run time based on:

$$R = d/D \times 100 \quad (2)$$

where:

R = compressor run time, %,
d = the elapsed time that the compressor is operating during whole number of cycles, min, and
D = the total elapsed time during a whole number of cycles, min.

11.7 *Average Temperatures:*

11.7.1 Calculate and report average temperatures of the thermocouples in water during the first 8 h of the test.

11.7.2 Calculate and report average temperatures of the thermocouples in the refrigerated compartment (if applicable) over the entire test period.

12. Precision and Bias

12.1 *Precision:*

12.1.1 *Repeatability (within laboratory, same operator and equipment)*—The repeatability for each reported parameter is being determined.

12.1.2 *Reproducibility (multiple laboratories)*—The inter-laboratory precision of the procedure in this test method for measuring each reported parameter is being determined.

12.2 *Bias*—No statement can be made concerning the bias of the procedures in this test method because there are no accepted reference values for the parameters reported.

13. Keywords

13.1 buffet table; display; energy; energy rate; open refrigeration; performance; preparation table; production capacity; rail; refrigeration; table; test method

APPENDIX

(Nonmandatory Information)

X1. RESULTS REPORTING SHEETS

X1.1 Results reporting sheets are shown below.

Manufacturer _____

Model _____

Date _____

Test Reference Number (optional) _____

Section 11.1 Refrigerated Buffet and Preparation Table

Classification (check one for each classification)

_____ Style A - Counter mounted
_____ Style B - Floor mounted on an open stand
_____ Style C - Floor mounted on a refrigerated cabinet base
_____ Other – (describe in appliance characteristics section)

Additional description of operational characteristics:

_____

_____

_____

_____

_____

_____

_____

Manufacturer's Rated Input _____ (amps)

Manufacturer's Rated Input _____ (kW)

Section 11.2 Apparatus

_____ Check if testing apparatus conformed to specifications in section 9 and describe placement buffet/preparation table in test room include measured clearances between walls and appliance.

Deviations _____

_____

_____

_____

_____

_____

_____

Section 11.3 Maximum Energy Input Rate

Measured (kW) _____

Rated (kW) _____

Percent Difference Between Measured and Rated _____%

Section 11.4 Holding Energy Rate

(kW) _____

Description of Thermocouple Locations in Refrigerated Display Area (Rail)

Thermocouple #1 _____

Thermocouple #2 _____

Thermocouple #3 _____

Thermocouple #4 _____

Thermocouple #5 _____

Thermocouple #6 _____

Thermocouple #7 _____

Thermocouple #8 _____

Thermocouple #9 _____

Thermocouple #10 _____

Description of Thermocouple Locations in Refrigerated Compartment (if applicable)

Thermocouple #1 _____

Thermocouple #2 _____

Thermocouple #3 _____

Section 11.5 Production Capacity

Describe pans used for holding energy test _____

_____

_____

Measured Production Capacity (ft^3 (m^3)) _____

Measured Test Capacity (ft^3 (m^3)) _____

Section 11.6 Compressor Run Time

Compressor Run Time _____%

Section 11.7 Box Car Temperature Averages

Thermocouple #	1	2	3	4	5
Box Car #1 (°F (C°))					
Box Car #2 (°F (C°))					
Box Car #3 (°F (C°))					
Box Car #4 (°F (C°))					
Box Car #5 (°F (C°))					
Box Car #6 (°F (C°))					
Box Car #7 (°F (C°))					
Box Car #8 (°F (C°))					
Box Car #9 (°F (C°))					
Box Car #10 (°F (C°))					
Box Car #11 (°F (C°))					
Box Car #12 (°F (C°))					
Box Car #13 (°F (C°))					

Box Car #14 (°F (C°))					
Box Car #15 (°F (C°))					
Box Car #16 (°F (C°))					
Box Car #17 (°F (C°))					
Box Car #18 (°F (C°))					
Box Car #19 (°F (C°))					
Box Car #20 (°F (C°))					
Box Car #21 (°F (C°))					
Box Car #22 (°F (C°))					
Box Car #23 (°F (C°))					
Box Car #24 (°F (C°))					
Box Car #25 (°F (C°))					
Box Car #26 (°F (C°))					
Box Car #27 (°F (C°))					
Box Car #28 (°F (C°))					
Box Car #29 (°F (C°))					
Box Car #30 (°F (C°))					
Box Car #31 (°F (C°))					
Box Car #32 (°F (C°))					
Box Car #33 (°F (C°))					
Box Car #34 (°F (C°))					
Box Car #35 (°F (C°))					
Box Car #36 (°F (C°))					
Box Car #37 (°F (C°))					

Box Car Temperature Averages (Continued)

Thermocouple #	6	7	8	9	10
Box Car #1 (°F (C°))					
Box Car #2 (°F (C°))					
Box Car #3 (°F (C°))					
Box Car #4 (°F (C°))					
Box Car #5 (°F (C°))					
Box Car #6 (°F (C°))					
Box Car #7 (°F (C°))					
Box Car #8 (°F (C°))					
Box Car #9 (°F (C°))					
Box Car #10 (°F (C°))					
Box Car #11 (°F (C°))					
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Box Car #30 (°F (C°))					
Box Car #31 (°F (C°))					
Box Car #32 (°F (C°))					
Box Car #33 (°F (C°))					
Box Car #34 (°F (C°))					
Box Car #35 (°F (C°))					
Box Car #36 (°F (C°))					
Box Car #37 (°F (C°))					

Refrigerated Compartment Temperature (If equipped with compartment)

Thermocouple #	1	2	3
Minimum Temperature (°F (C°))			
Maximum Temperature (°F (C°))			
Average Temperature (°F (C°))			