



### Engineering Test Report No. 2402725-01

|                             |                                                                                                                                                                                                                 |                                                                            |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Report Date                 | January 7, 2025                                                                                                                                                                                                 |                                                                            |
| Manufacturer Name           | Elkay Manufacturing Company                                                                                                                                                                                     |                                                                            |
| Manufacturer Address        | 2222 Camden Ct<br>Oak Brook, IL 60523                                                                                                                                                                           |                                                                            |
| Test Item Name<br>Model No. | ezH20 Floor-Standing Bottle Filling Station – DSSBF8SP                                                                                                                                                          |                                                                            |
| Date Received               | December 18, 2024                                                                                                                                                                                               |                                                                            |
| Test Dates                  | December 18, 2024 – December 26, 2024                                                                                                                                                                           |                                                                            |
| Specifications              | FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.225<br>Innovation, Science, and Economic Development Canada, RSS-210<br>Innovation, Science, and Economic Development Canada, RSS-GEN |                                                                            |
| Test Facility               | Elite Electronic Engineering, Inc.<br>1516 Centre Circle,<br>Downers Grove, IL 60515                                                                                                                            | FCC Reg. Number: 269750<br>IC Reg. Number: 2987A<br>CAB Identifier: US0107 |
| Signature                   | <i>Nathaniel Bouchie</i>                                                                                                                                                                                        |                                                                            |
| Tested by                   | Nathaniel Bouchie                                                                                                                                                                                               |                                                                            |
| Signature                   | <i>Raymond J. Klouda</i>                                                                                                                                                                                        |                                                                            |
| Approved by                 | Raymond J. Klouda,<br>Registered Professional Engineer of Illinois – 44894                                                                                                                                      |                                                                            |
| PO Number                   | 1075956                                                                                                                                                                                                         |                                                                            |

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## 1. Report Revision History

| Revision | Date        | Description                                               |
|----------|-------------|-----------------------------------------------------------|
| –        | 10 JAN 2025 | Initial Release of Engineering Test Report No. 2402725-01 |

## 2. Introduction

### 2.1. Scope of Tests

This document presents the results of a series of RF emissions tests that were performed on the Elkay Manufacturing Company ezH20 Floor-Standing Bottle Filling Station (hereinafter referred to as the Equipment Under Test (EUT)). The EUT was manufactured and submitted for testing by Elkay Manufacturing Company located in Oak Brook, IL.

### 2.2. Purpose

The test series was performed to determine if the EUT meets the RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Chapter I, Subchapter A, §15.225.

The test series was also performed to determine if the EUT meets the RF emission requirements of the Industry Canada Radio Standards Specification RSS-Gen and Industry Canada Radio Standards Specification RSS-210 for Transmitters.

Testing was performed in accordance with ANSI C63.10-2013.

### 2.3. Identification of the EUT

The EUT was identified as follows:

| EUT Identification           |                                             |
|------------------------------|---------------------------------------------|
| Product Description          | ezH20 Floor-Standing Bottle Filling Station |
| Model/Part No.               | DSSBF8SP                                    |
| Serial No.                   | Sample 1                                    |
| Size of EUT                  | 47.5 in x 21.5 in x 14.5 in                 |
| Device Type                  | Digitally Modulated Transmission Device     |
| Band of Operation            | 13.553 – 13.567MHz                          |
| Antenna Type                 | Trace                                       |
| 20dB Bandwidth               | 5.59kHz                                     |
| Occupied Bandwidth (99% CBW) | 27.26kHz                                    |

The EUT listed above was used throughout the test series.

## 3. Power Input

The EUT obtained 115VAC 60Hz power via a 3 wire, unshielded power cord.

## 4. Grounding

The EUT was connected to ground through the third wire of its input power cord.

## 5. Support Equipment

No support equipment was used during the tests.

## 6. Interconnect Leads

No interconnect leads were used during the tests.

## 7. Modifications Made to the EUT

No modifications were made to the EUT during the testing.

## 8. Mode of Operation

The EMC tests were performed with the EUT operating in the test mode described below.

### 8.1. Tx @ 13.56MHz

This mode was achieved by applying power to the device, with the NFC radioactive and transmitting at 13.56MHz.

## 9. Test Specifications

The tests were performed to selected portions of, and in accordance with the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.225 and Innovation, Science, and Economic Development Canada, RSS-210 test specifications.

- Federal Communications Commission "Code of Federal Regulations", Title 47, Chapter I, Subchapter A, Part 15, Subpart C, Section 225 – "Operation within the band 13.110-14.010 MHz"
- ANSI C63.4-2014 – "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"
- ANSI C63.10-2013 – "American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices"
- Radio Standard Specification RSS-Gen Issue 5, February 2020, Amendment 2 – "General Requirements for Compliance of Radio Apparatus"
- Radio Standard Specification RSS-210 Issue 10, April 2020, Amendment 2 – "License-Exempt Radio Apparatus: Category I Equipment"

## 10. Test Plan

No test plan was provided. Instructions were provided by personnel from Elkay Manufacturing Company and used in conjunction with the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.225, Innovation, Science, and Economic Development Canada, RSS-210, and ANSI C63.10-2013 specifications.

## 11. Deviation, Additions to, or Exclusions from Test Specifications

There were no deviations, additions to, or exclusions from the test specifications during this test series.

## 12. Laboratory Conditions

The ambient parameters of the laboratory during testing were as follows:

| Ambient Parameters   | Value  |
|----------------------|--------|
| Temperature          | 21.3°C |
| Relative Humidity    | 33%    |
| Atmospheric Pressure | 1023mb |

### 13. Summary

The following EMC tests were performed and the results are shown below:

| Test Description                         | Requirements                     | Test Method      | Results  |
|------------------------------------------|----------------------------------|------------------|----------|
| Powerline Conducted Emissions (AC Mains) | FCC 15.207<br>RSS-GEN            | ANSI C63.10:2013 | Conforms |
| Frequency Stability                      | FCC 15.225(e)<br>ISED RSS-210    | ANSI C63.10:2013 | Conforms |
| Occupied Bandwidth – 20dB                | FCC 15.215(c)                    | ANSI C63.10:2013 | Conforms |
| Occupied Bandwidth – 99%                 | ISED RSS-210                     | ANSI C63.10:2013 | Conforms |
| Radiated Emissions                       | FCC 15.225(a)(d)<br>ISED RSS-210 | ANSI C63.10:2013 | Conforms |

### 14. Sample Calculations

For Powerline Conducted Emissions:

The resultant voltage level (VL) is a summation in decibels (dB) of the receiver meter reading (MTR) and the cable loss factor (CF).

$$\text{Formula 1: } VL \text{ (dB}\mu\text{V)} = \text{MTR (dB}\mu\text{V)} + \text{CF (dB)}.$$

For Radiated Emissions:

The resultant field strength (FS) is a summation in decibels (dB) of the receiver meter reading (MTR), the antenna correction factor (AF), and the cable loss factor (CF). If an external preamplifier is used, the total is reduced by its gain (-PA). If a distance correction (DC) is required, it is added to the total.

$$\text{Formula 1: } FS \text{ (dB}\mu\text{V/m)} = \text{MTR (dB}\mu\text{V)} + \text{AF (dB/m)} + \text{CF (dB)} + (-\text{PA (dB)}) + \text{DC (dB)}$$

To convert the Field Strength dB $\mu$ V/m term to  $\mu$ V/m, the dB $\mu$ V/m is first divided by 20. The Base 10 AntiLog is taken of this quotient. The result is the Field Strength value in  $\mu$ V/m terms.

$$\text{Formula 2: } FS \text{ (}\mu\text{V/m)} = \text{AntiLog} [(FS \text{ (dB}\mu\text{V/m)})/20]$$

### 15. Statement of Conformity

The Elkay Manufacturing Company ezH20 Floor-Standing Bottle Filling Station (Model No. DSSBF8SP, Serial No. Sample 1) did fully conform to the selected requirements of FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.225 and Innovation, Science, and Economic Development Canada, RSS-210.

### 16. Certification

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.225 and Innovation, Science, and Economic Development Canada, RSS-210 test specifications. The data presented in this test report pertains to the EUT on the test date specified. Any electrical or mechanical modifications made to the EUT subsequent to the specified test date will serve to invalidate the data and void this certification.

## 17. Photographs of EUT





## 18. Equipment List

| Eq ID  | Equipment Description              | Manufacturer       | Model No.                | Serial No.   | Frequency Range        | Cal Date   | Due Date   |
|--------|------------------------------------|--------------------|--------------------------|--------------|------------------------|------------|------------|
| APW10  | PREAMPLIFIER                       | PLANAR ELECTRONICS | PE2-35-120-5R0-10-12-SFF | PL11685/1241 | 1GHZ-20GHZ             | 3/20/2024  | 3/20/2025  |
| CDY0   | WORKSTATION                        | ELITE              | WORKSTATION              |              | WINDOWS 7              | N/A        |            |
| CDZ3   | LAB WORKSTATION                    | ELITE              | LWS-10                   |              | WINDOWS 10             | CNR        |            |
| ENVE33 | TEMPERATURE/ALTITUDE CHAMBER       | THERMOTRON         | FA-64-CHM-705-705        | 16037        | -73 TO 180 C/10K-79KFT | 8/15/2024  | 8/15/2025  |
| GRB0   | 1MHZ, LISN SIGNAL CHECKER          | ELITE              | LISNCHKR1M               | 1            | 1MHZ                   | 10/2/2024  | 10/2/2026  |
| NTA2   | BILOG ANTENNA                      | TESEQ              | 6112D                    | 28040        | 25-2000MHz             | 6/21/2024  | 6/21/2026  |
| NWQ0   | DOUBLE RIDGED WAVEGUIDE ANTENNA    | ETS LINDGREN       | 3117                     | 66657        | 1GHZ-18GHZ             | 6/24/2024  | 6/24/2026  |
| PLF2   | CISPR16 50UH LISN                  | ELITE              | CISPR16/70A              | 002          | 150kHz-30MHz           | 3/26/2024  | 3/26/2025  |
| PLF4   | CISPR16 50UH LISN                  | ELITE              | CISPR16/70A              | 003          | 150kHz-30MHz           | 3/26/2024  | 3/26/2025  |
| R23P   | ROOM 23                            |                    |                          | 001          | ---                    | CNR        |            |
| R29F   | 3M ANECHOIC CHAMBER NSA            | EMC TEST SYSTEMS   | 3M ANECHOIC              |              | 30MHZ-18GHZ            | 6/12/2023  | 6/12/2025  |
| RBD0   | EMI ANALYZER                       | ROHDE & SCHWARZ    | ESU40                    | 100010       | 20Hz-40GHz             | 8/1/2024   | 8/1/2025   |
| RBG2   | EMI ANALYZER                       | ROHDE & SCHWARZ    | ESW44                    | 101591       | 2HZ-44GHZ              | 6/16/2024  | 6/16/2025  |
| RBG4   | EMI ANALYZER                       | ROHDE & SCHWARZ    | ESW44                    | 103007       | 2HZ-44GHZ              | 3/16/2024  | 3/16/2025  |
| SES0   | 24VDC POWER SUPPLY                 | P-TRANS            | FS-32024-1M              | 001          | 18-27VDC               | NOTE 1     |            |
| SPR1   | AC/DC PROGRAMMABLE POWER SUPPLY    | PREEN              | AFV-P-1250B              | F121090013   | 0-310VAC/0-420VDC      | NOTE 1     |            |
| T1E12  | 10DB 25W ATTENUATOR                | WEINSCHEL          | 46-10-43                 | CM5691       | DC-18GHZ               | 12/19/2023 | 12/19/2025 |
| VBR8   | COMMERCIAL CONDUCTED EMISSIONS.EXE | ELITE              |                          |              |                        | N/A        |            |
| VBV2   | COMMERCIAL RADIATED EMISSIONS.EXE  | ELITE              |                          | ---          | ---                    | N/A        |            |
| XLT18  | 5W, 50Ω TERMINATION                | JFW INDUSTRIES     | 50T-199 N M              | ---          | DC-18 GHZ              | 12/20/2023 | 12/20/2025 |

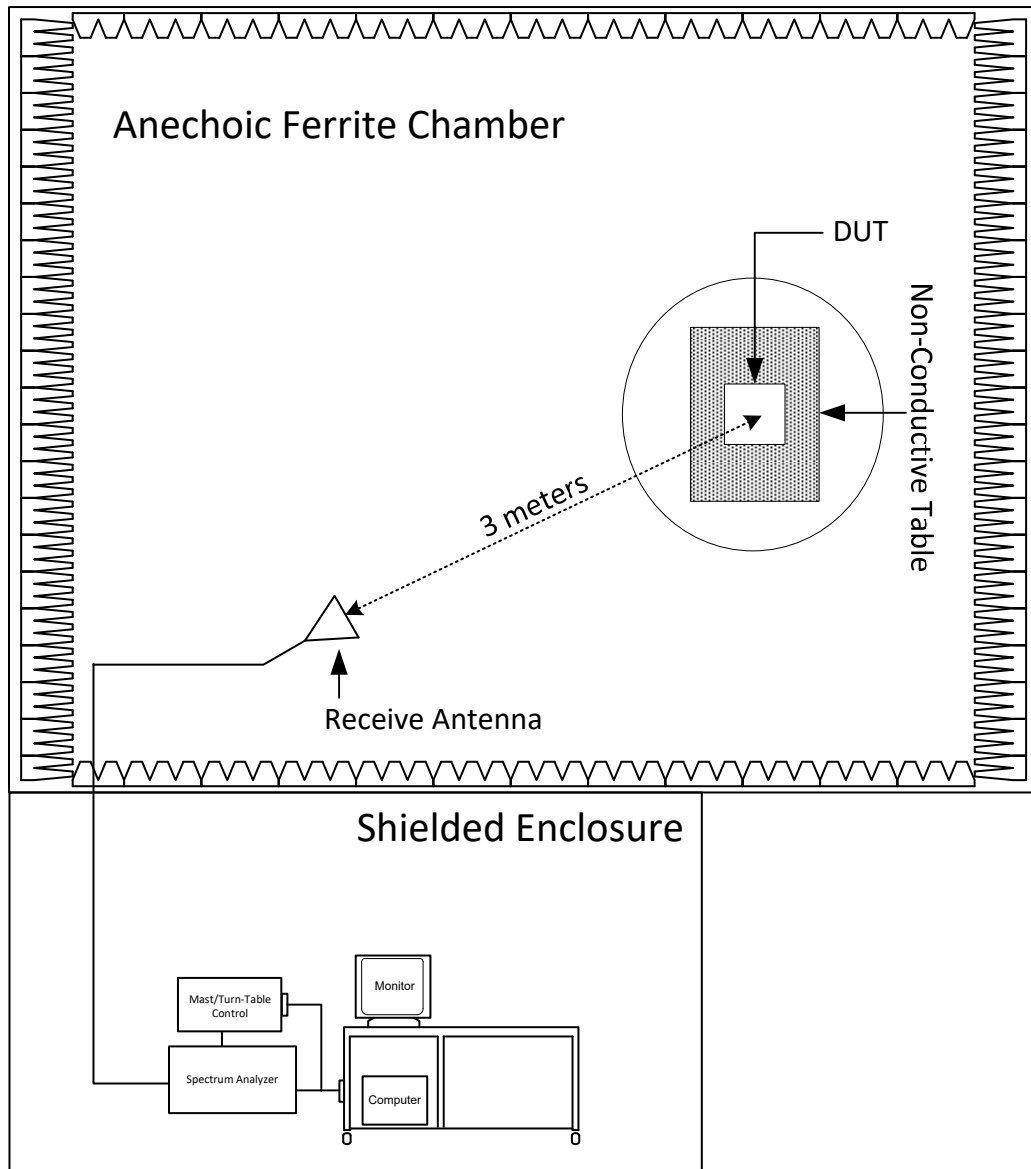
N/A: Not Applicable

I/O: Initial Only

CNR: Calibration Not Required

NOTE 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

## 19. Block Diagram of Test Setup



Radiated Measurements Test Setup

## 20. Powerline Conducted Emissions (AC Mains)

| Test Information |                                             |
|------------------|---------------------------------------------|
| Manufacturer     | Elkay Manufacturing Company                 |
| Product          | ezH20 Floor-Standing Bottle Filling Station |
| Model No.        | DSSBF8SP                                    |
| Serial No.       | Sample 1                                    |
| Mode             | Tx @ 13.56MHz                               |

| Test Setup Details |                       |
|--------------------|-----------------------|
| Setup Format       | Floor Standing        |
| Type of Test Site  | Reverberation Chamber |
| Test Site Used     | R23P                  |
| Notes              | None                  |

| Measurement Uncertainty                               |                                  |
|-------------------------------------------------------|----------------------------------|
| Measurement Type                                      | Expanded Measurement Uncertainty |
| Conducted disturbance (mains port) (150 kHz – 30 MHz) | 2.7                              |

| Requirement                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| All radio frequency voltages on the power lines for any frequency or frequencies of an intentional radiator shall not exceed the limits in the following table. |

| Conducted Emissions Limits  |                         |         |
|-----------------------------|-------------------------|---------|
| Frequency of Emission (MHz) | Conducted Limits (dBμV) |         |
|                             | Quasi-peak              | Average |
| 0.15 – 0.5                  | 66 to 56*               | 56-46*  |
| 0.5 – 5                     | 56                      | 46      |
| 5 – 30                      | 60                      | 50      |

\* The lower limit shall apply at the transition frequencies.

**Procedure**

The interference on each power lead of the EUT was measured by connecting the measuring equipment to the appropriate meter terminal of the Line Impedance Stabilization Network (LISN). The meter terminal of the LISN not under test was terminated with 50Ω.

- 1) The EUT was operated in the Tx @ 13.56MHz mode.
- 2) Measurements were first made on the 120VAC high line.
- 3) The frequency range from 150kHz to 30MHz was broken up into smaller frequency sub-bands.
- 4) Conducted emissions measurements were taken on the first frequency sub-band using a peak detector.
- 5) The data thus obtained was then searched by the computer for the highest levels. Any emissions levels that were within 10dB of the average limit were then measured again using both a quasi-peak detector and an average detector. (If no peak readings were within 10dB of the average limit, quasi-peak and average readings were taken on the highest emissions levels measured during the peak detector scan.)
- 6) Steps (4) and (5) were repeated for the remainder of the frequency sub-bands until the entire frequency range from 150kHz to 30MHz was investigated. The peak trace was automatically plotted. The plot also shows quasi-peak and average readings that were taken on discrete frequencies. A table showing the quasi-peak and average readings was also generated. This tabular data compares the quasi-peak and average conducted emissions to the applicable conducted emissions limits. The resultant voltage level (VL) is a summation in decibels (dB) of the receiver meter reading (MTR) and the cable loss factor (CF).

$$\text{Formula 1: VL (dB}\mu\text{V)} = \text{MTR (dB}\mu\text{V)} + \text{CF (dB)}$$

- 7) Steps (3) through (6) were repeated on the 120VAC return line.



Test Setup for Powerline Conducted Emissions (AC Mains)



Test Setup for Powerline Conducted Emissions (AC Mains)

# FCC Part 15 Subpart B 2017-2022 Conducted Emissions Test

## Significant Emissions Data

VBR8 12/06/2024

Manufacturer : ELKAY  
Model : DSSBF8SP  
DUT Revision : 1.0  
Serial Number :  
DUT Mode : TX @ 13.56MHZ  
Line Tested : 120VAC 60HZ HIGH LINE  
Scan Step Time [ms] : 30  
Meas. Threshold [dB] : -10  
Notes :  
Test Engineer : T. Jozefczyk  
RBW : 9 kHz  
Limit : Class B  
Test Date : Dec 18, 2024 11:14:12 AM  
Data Filter : Up to 80 maximum levels detected with 6 dB level excursion threshold over 10 dB margin below limit

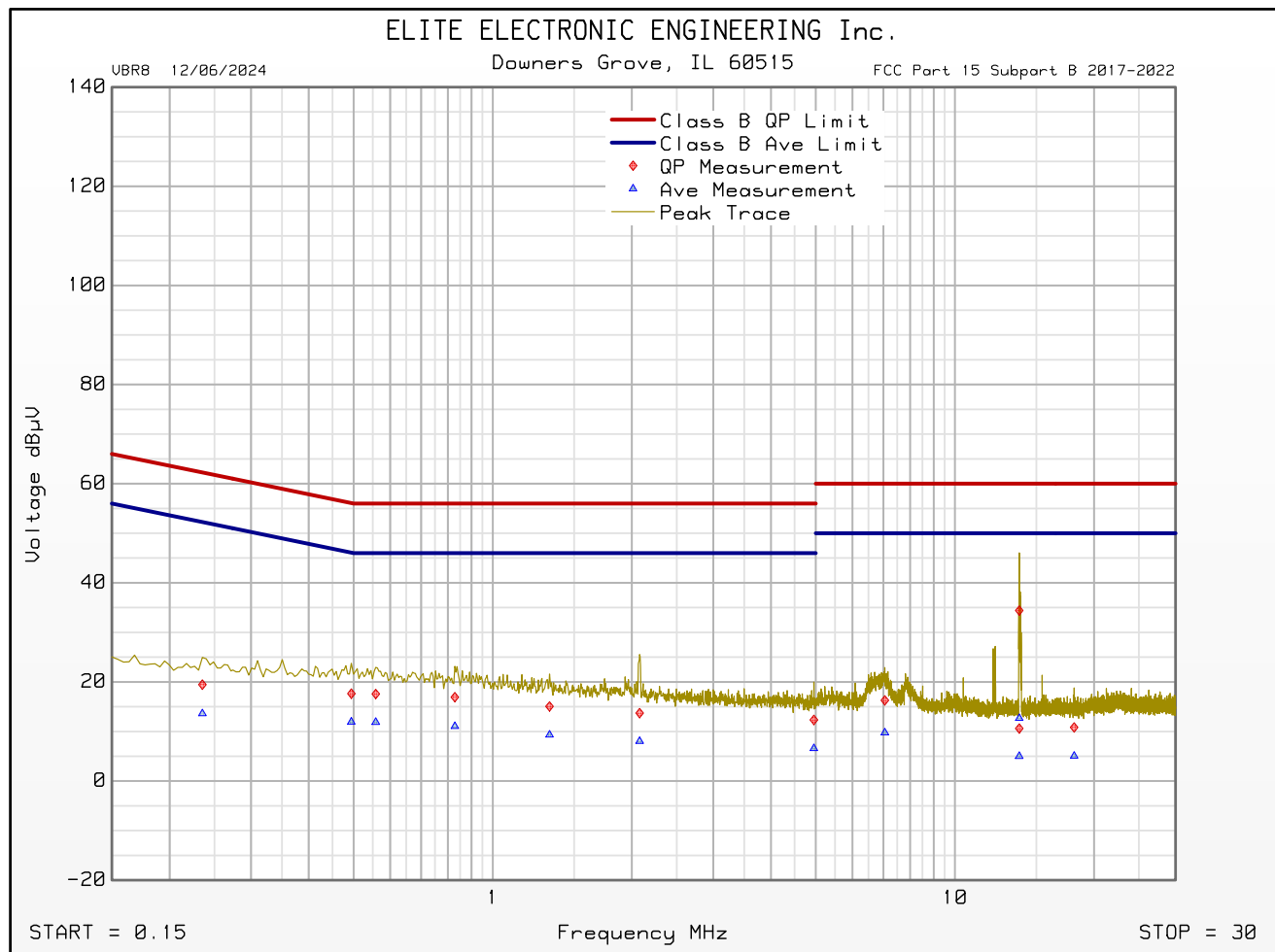
| Freq MHz | Quasi-peak Level dBμV | Quasi-peak Limit dBμV | Excessive Quasi-peak Emissions | Average Level dBμV | Average Limit dBμV | Excessive Average Emissions |
|----------|-----------------------|-----------------------|--------------------------------|--------------------|--------------------|-----------------------------|
| 0.236    | 19.5                  | 62.3                  |                                | 13.6               | 52.3               |                             |
| 0.495    | 17.6                  | 56.1                  |                                | 11.9               | 46.1               |                             |
| 0.559    | 17.6                  | 56.0                  |                                | 11.9               | 46.0               |                             |
| 0.828    | 16.9                  | 56.0                  |                                | 11.0               | 46.0               |                             |
| 1.327    | 15.1                  | 56.0                  |                                | 9.3                | 46.0               |                             |
| 2.079    | 13.7                  | 56.0                  |                                | 8.0                | 46.0               |                             |
| 4.952    | 12.3                  | 56.0                  |                                | 6.6                | 46.0               |                             |
| 7.052    | 16.3                  | 60.0                  |                                | 9.8                | 50.0               |                             |
| 13.775   | 34.4                  | 60.0                  |                                | 12.7               | 50.0               |                             |
| 18.103   | 10.8                  | 60.0                  |                                | 5.1                | 50.0               |                             |

# FCC Part 15 Subpart B 2017-2022 Conducted Emissions Test

## Cumulative Data

VBR8 12/06/2024

Manufacturer : ELKAY  
Model : DSSBF8SP  
DUT Revision : 1.0  
Serial Number :  
DUT Mode : TX @ 13.56MHZ  
Line Tested : 120VAC 60HZ HIGH LINE  
Scan Step Time [ms] : 30  
Meas. Threshold [dB] : -10  
Notes :  
Test Engineer : T. Jozefczyk  
RBW : 9 kHz  
Limit : Class B  
Test Date : Dec 18, 2024 11:14:12 AM



Emissions Meet QP Limit  
Emissions Meet Ave Limit

## FCC Part 15 Subpart B 2017-2022 Conducted Emissions Test

### Significant Emissions Data

VBR8 12/06/2024

Manufacturer : ELKAY  
 Model : DSSBF8SP  
 DUT Revision : 1.0  
 Serial Number :  
 DUT Mode : TX @ 13.56MHZ  
 Line Tested : 120VAC 60HZ NEUTRAL LINE  
 Scan Step Time [ms] : 30  
 Meas. Threshold [dB] : -10  
 Notes :  
 Test Engineer : T. Jozefczyk  
 RBW : 9 kHz  
 Limit : Class B  
 Test Date : Dec 18, 2024 11:08:21 AM  
 Data Filter : Up to 80 maximum levels detected with 6 dB level excursion threshold over 10 dB margin below limit

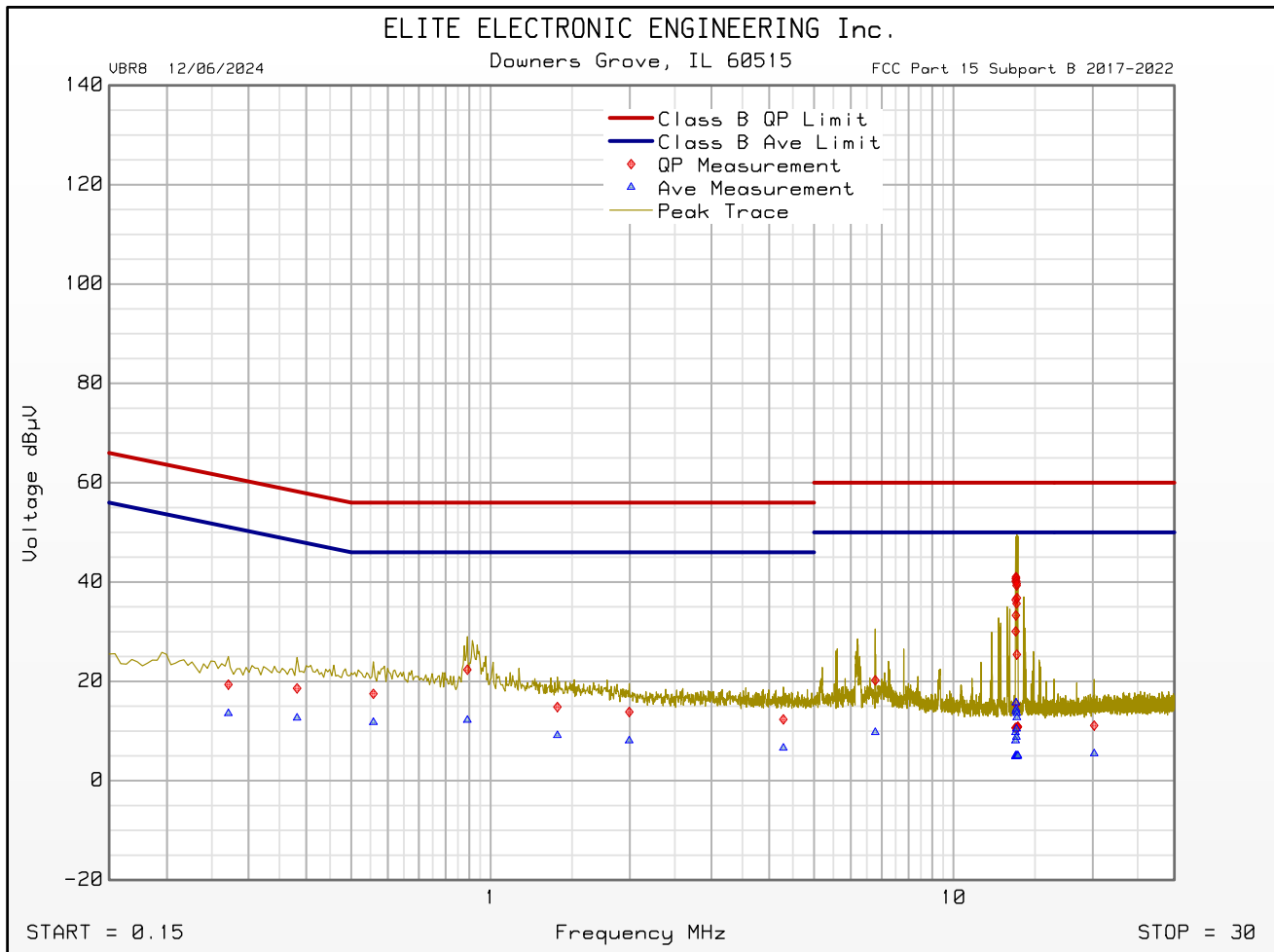
| Freq MHz | Quasi-peak Level dBμV | Quasi-peak Limit dBμV | Excessive Quasi-peak Emissions | Average Level dBμV | Average Limit dBμV | Excessive Average Emissions |
|----------|-----------------------|-----------------------|--------------------------------|--------------------|--------------------|-----------------------------|
| 0.272    | 19.4                  | 61.1                  |                                | 13.5               | 51.1               |                             |
| 0.382    | 18.6                  | 58.2                  |                                | 12.7               | 48.2               |                             |
| 0.559    | 17.5                  | 56.0                  |                                | 11.8               | 46.0               |                             |
| 0.891    | 22.4                  | 56.0                  |                                | 12.2               | 46.0               |                             |
| 1.395    | 14.8                  | 56.0                  |                                | 9.1                | 46.0               |                             |
| 1.994    | 13.8                  | 56.0                  |                                | 8.1                | 46.0               |                             |
| 4.291    | 12.4                  | 56.0                  |                                | 6.6                | 46.0               |                             |
| 6.778    | 20.2                  | 60.0                  |                                | 9.7                | 50.0               |                             |
| 13.645   | 41.0                  | 60.0                  |                                | 15.7               | 50.0               |                             |
| 20.133   | 11.1                  | 60.0                  |                                | 5.5                | 50.0               |                             |

# FCC Part 15 Subpart B 2017-2022 Conducted Emissions Test

## Cumulative Data

VBR8 12/06/2024

Manufacturer : ELKAY  
Model : DSSBF8SP  
DUT Revision : 1.0  
Serial Number :  
DUT Mode : TX @ 13.56MHZ  
Line Tested : 120VAC 60HZ NEUTRAL LINE  
Scan Step Time [ms] : 30  
Meas. Threshold [dB] : -10  
Notes :  
Test Engineer : T. Jozefczyk  
RBW : 9 kHz  
Limit : Class B  
Test Date : Dec 18, 2024 11:08:21 AM



Emissions Meet QP Limit  
Emissions Meet Ave Limit

## 21. Frequency Stability

| EUT Information |                                             |
|-----------------|---------------------------------------------|
| Manufacturer    | Elkay Manufacturing Company                 |
| Product         | ezH20 Floor-Standing Bottle Filling Station |
| Model No.       | DSSBF8SP                                    |
| Serial No.      | Sample 1                                    |
| Mode            | Tx @ 13.56MHz                               |
| Test Date       | December 20, 2024                           |

| Test Site Information |                      |
|-----------------------|----------------------|
| Type of Test Site     | Temperature Chamber  |
| Test Site Used        | ENVE33               |
| Type of Antennas Used | Loop (or equivalent) |
| Note                  | None                 |

| Requirements                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Per §15.225(e), the frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of $-20^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of $20^{\circ}\text{C}$ . |
| Per RSS-210 Annex B Section B.6.(b), the carrier frequency stability shall not exceed $\pm 100$ ppm.                                                                                                                                                                                                                                                                                |
| Per RSS-GEN Section 6.11, the following conditions apply:<br>a. at the temperatures of $-20^{\circ}\text{C}$ , $+20^{\circ}\text{C}$ , and $+50^{\circ}\text{C}$ , and at the manufacturer's rated supply voltage<br>b. at the temperature of $+20^{\circ}\text{C}$ and at $\pm 15\%$ of the manufacturer's rated supply voltage                                                    |

| Procedure                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) The EUT was placed in a temperature chamber set to normal temperature ( $21^{\circ}\text{C}$ ).                                                    |
| 2) The temperature chamber was then set to $-20^{\circ}\text{C}$ and once the temperature was stabilized, the EUT was allowed to soak for 30 minutes. |
| 3) After soaking, the EUT was set in the Tx @ 13.56MHz mode and the frequency was noted at nominal voltage.                                           |
| 4) Steps (2) and (3) were repeated for every $+10^{\circ}\text{C}$ increment until $+50^{\circ}\text{C}$ .                                            |
| 5) Step (3) was repeated at $20^{\circ}\text{C}$ for nominal, 85%, and 115% voltage.                                                                  |



Test Setup for Frequency Stability



Test Setup for Frequency Stability

| Test Details     |                                                                                              |
|------------------|----------------------------------------------------------------------------------------------|
| Manufacturer     | Elkay Manufacturing Company                                                                  |
| EUT              | ezH20 Floor-Standing Bottle Filling Station                                                  |
| Model No.        | DSSBF8SP                                                                                     |
| Serial No.       | Sample 1                                                                                     |
| Mode             | Tx @ 13.56MHz                                                                                |
| Frequency Tested | 13.56MHz                                                                                     |
| Notes            | Nominal Voltage: 120VAC<br>85% of Nominal Voltage: 102VAC<br>115% of Nominal Voltage: 138VAC |

| Temperature<br>°C | Input<br>Voltage | Nominal<br>Frequency<br>MHz | Measured<br>Frequency<br>MHz | Frequency Variation in % |                            |                     | Pass/Fail |
|-------------------|------------------|-----------------------------|------------------------------|--------------------------|----------------------------|---------------------|-----------|
|                   |                  |                             |                              | Lower<br>Limit<br>%      | Measured<br>Variation<br>% | Upper<br>Limit<br>% |           |
| -20               | 120              | 13.56                       | 13.56                        | -0.01                    | 0.00000                    | 0.01                | Pass      |
| -10               | 120              | 13.56                       | 13.5598                      | -0.01                    | -0.00147                   | 0.01                | Pass      |
| 0                 | 120              | 13.56                       | 13.5597                      | -0.01                    | -0.00221                   | 0.01                | Pass      |
| +10               | 120              | 13.56                       | 13.5598                      | -0.01                    | -0.00147                   | 0.01                | Pass      |
| +20               | 120              | 13.56                       | 13.5601                      | -0.01                    | 0.00074                    | 0.01                | Pass      |
| +20               | 102              | 13.56                       | 13.56005                     | -0.01                    | 0.00037                    | 0.01                | Pass      |
| +20               | 138              | 13.56                       | 13.5599                      | -0.01                    | -0.00074                   | 0.01                | Pass      |
| +30               | 120              | 13.56                       | 13.56015                     | -0.01                    | 0.00111                    | 0.01                | Pass      |
| +40               | 120              | 13.56                       | 13.56015                     | -0.01                    | 0.00111                    | 0.01                | Pass      |
| +50               | 120              | 13.56                       | 13.5602                      | -0.01                    | 0.00147                    | 0.01                | Pass      |

## 22. Occupied Bandwidth – 20dB

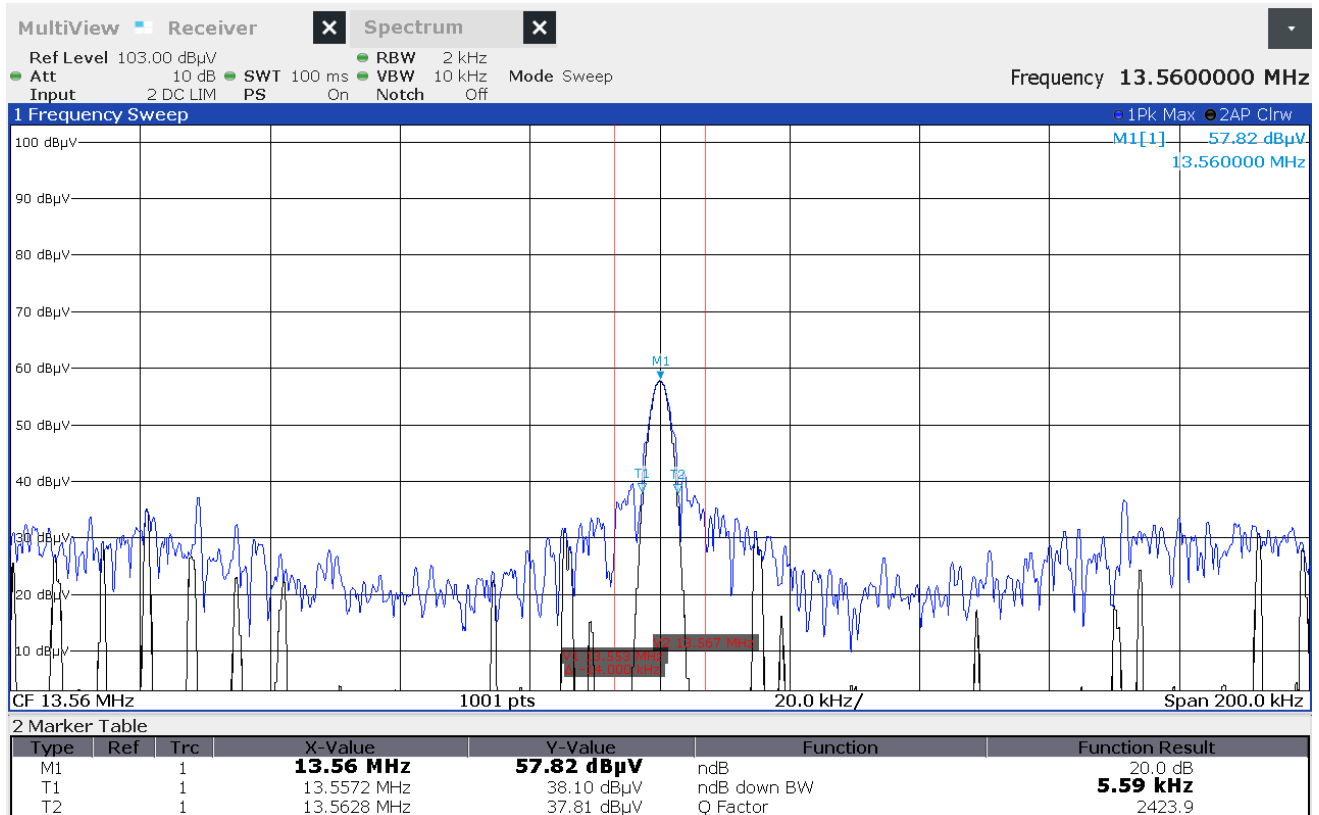
| EUT Information |                                             |
|-----------------|---------------------------------------------|
| Manufacturer    | Elkay Manufacturing Company                 |
| Product         | ezH20 Floor-Standing Bottle Filling Station |
| Model No.       | DSSBF8SP                                    |
| Serial No.      | Sample 1                                    |
| Mode            | Tx @ 13.56MHz                               |

| Test Setup Details   |                       |
|----------------------|-----------------------|
| Setup Format         | Floor Standing        |
| Measurement Method   | Radiated              |
| Type of Test Site    | Semi-Anechoic Chamber |
| Test Site Used       | Room 29               |
| Type of Antenna Used | Loop (or equivalent)  |

| Requirement                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><u>FCC 15.215(c):</u><br/>Intentional radiators operating under the alternative provisions to the general emission limits must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.</p> |

| Procedure                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"><li>1) The EUT was set to transmit continuously.</li><li>2) With an antenna positioned nearby, occupied bandwidth emissions were displayed on the receiver.</li><li>3) The resolution bandwidth was set to 2kHz and span was set to 200kHz.</li><li>4) A screen capture was taken of the frequency spectrum near the carrier using a screen dump function on the receiver.</li></ol> |

| Test Details     |                                                    |
|------------------|----------------------------------------------------|
| Manufacturer     | Elkay Manufacturing Company                        |
| EUT              | ezH20 Floor-Standing Bottle Filling Station        |
| Model No.        | DSSBF8SP                                           |
| Serial No.       | Sample 1                                           |
| Mode             | Tx @ 13.56MHz                                      |
| Frequency Tested | 13.56MHz                                           |
| Result           | 20dB BW = 5.59kHz                                  |
| Notes            | Lower Limit = 13.553MHz<br>Upper Limit = 13.567MHz |



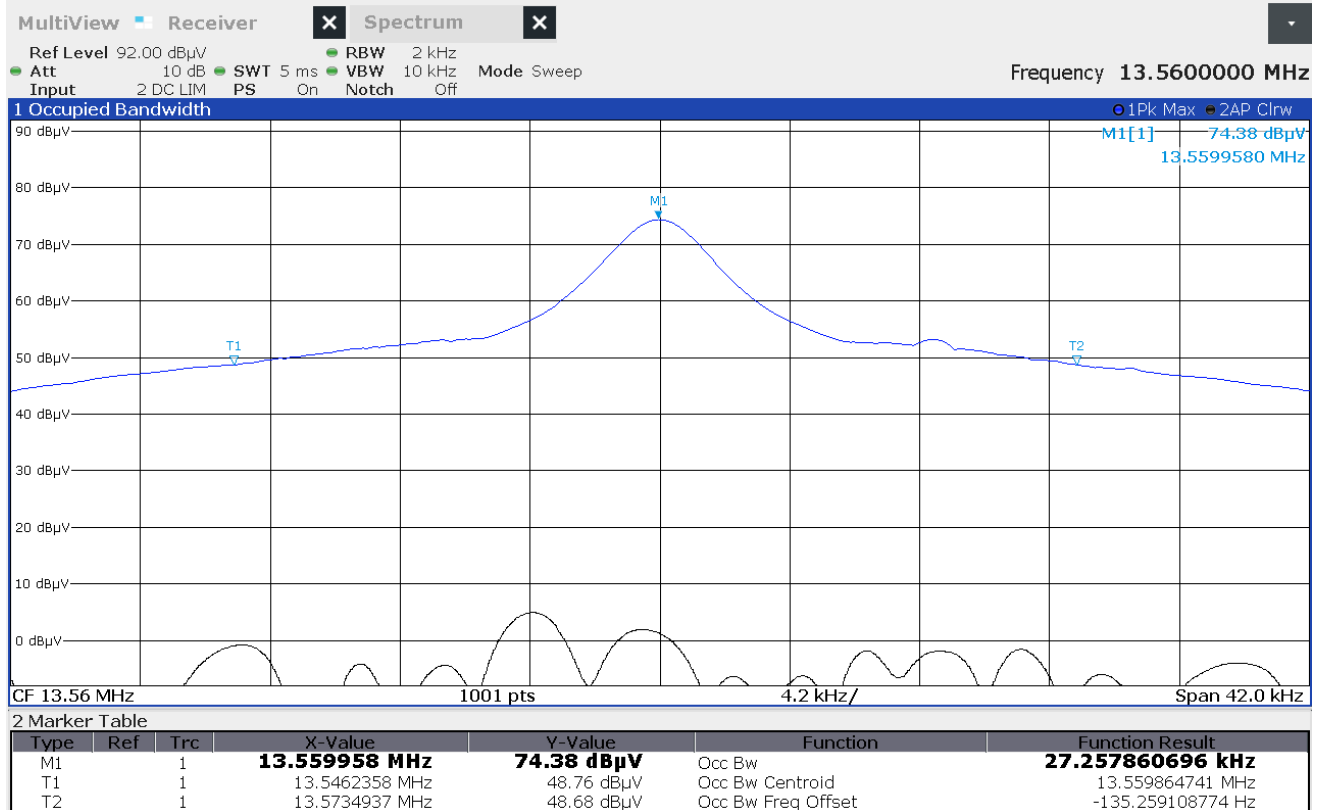
## 23. Occupied Bandwidth – 99%

| EUT Information |                                             |
|-----------------|---------------------------------------------|
| Manufacturer    | Elkay Manufacturing Company                 |
| Product         | ezH20 Floor-Standing Bottle Filling Station |
| Model No.       | DSSBF8SP                                    |
| Serial No.      | Sample 1                                    |
| Mode            | Tx @ 13.56MHz                               |

| Test Setup Details   |                       |
|----------------------|-----------------------|
| Setup Format         | Floor Standing        |
| Measurement Method   | Radiated              |
| Type of Test Site    | Semi-Anechoic Chamber |
| Test Site Used       | Room 29               |
| Type of Antenna Used | Loop (or equivalent)  |

| Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>The EUT was setup inside the chamber. The EUT was allowed to transmit continuously. The transmit channel was set separately to low, middle, and high channels. The resolution bandwidth (RBW) was set to 1% to 5% of the actual occupied / x dB bandwidth, the video bandwidth (VBW) was set 3 times greater than the RBW, and the span was set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency.</p> <p>The 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined. The analyzer's display was plotted using a 'screen dump' utility.</p> |

| Test Details     |                                             |
|------------------|---------------------------------------------|
| Manufacturer     | Elkay Manufacturing Company                 |
| EUT              | ezH20 Floor-Standing Bottle Filling Station |
| Model No.        | DSSBF8SP                                    |
| Serial No.       | Sample 1                                    |
| Mode             | Tx @ 13.56MHz                               |
| Frequency Tested | 13.56MHz                                    |
| Result           | 99% OBW = 27.26kHz                          |
| Notes            | None                                        |



## 24. Radiated Emissions

| EUT Information |                                             |
|-----------------|---------------------------------------------|
| Manufacturer    | Elkay Manufacturing Company                 |
| Product         | ezH20 Floor-Standing Bottle Filling Station |
| Model No.       | DSSBF8SP                                    |
| Serial No.      | Sample 1                                    |
| Mode            | Tx @ 13.56MHz                               |

| Test Setup Details    |                       |
|-----------------------|-----------------------|
| Setup Format          | Floor Standing        |
| Type of Test Site     | Semi-Anechoic Chamber |
| Test Site Used        | Room 29               |
| Type of Antennas Used | Loop (or equivalent)  |
| Notes                 | None                  |

| Measurement Uncertainty                                                                                               |                                  |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Measurement Type                                                                                                      | Expanded Measurement Uncertainty |
| Radiated disturbance (electric field strength on an open area test site or alternative test site) (30 MHz – 1000 MHz) | 4.3                              |

| Requirement                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------|
| Per §15.225(b), the field strength of the EUT within the 13.553 – 13.567MHz bands shall not exceed 15,848 microvolts/meter at 30 meters.    |
| Per RSS-210 B.6 (a), the field strength of the EUT within the band 13.553 – 13.567MHz shall not exceed 15.848mV/m (84 dBµV/m) at 30 meters. |

#### Procedure

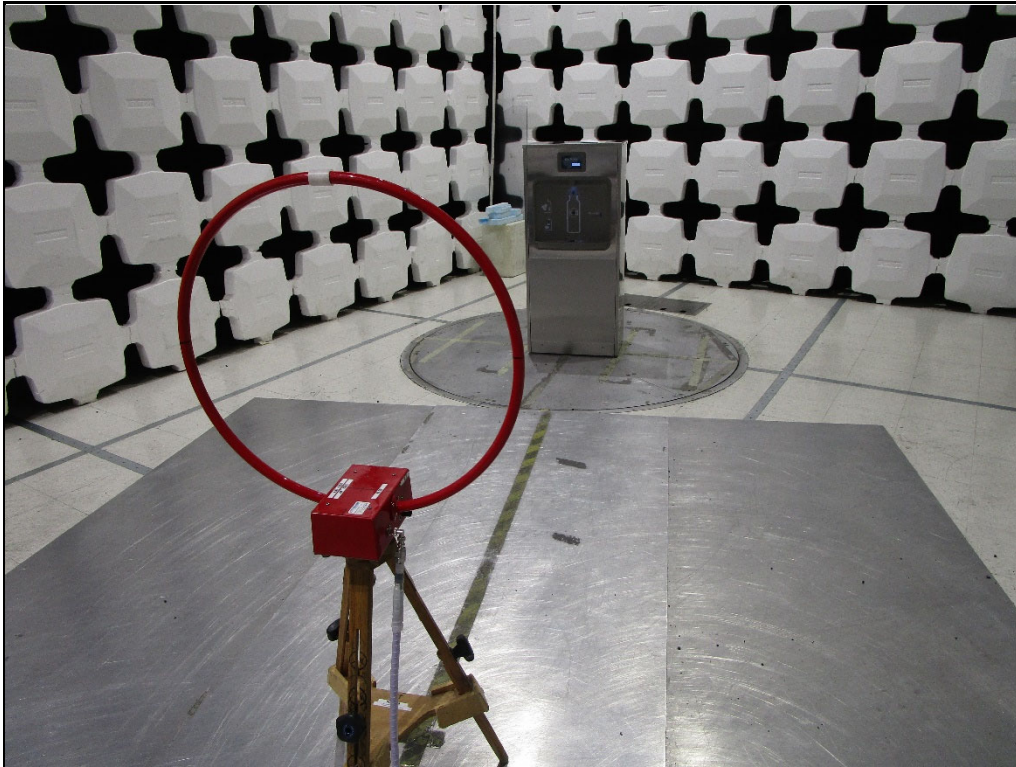
All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4-2014 for site attenuation.

The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering the enclosure pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads.

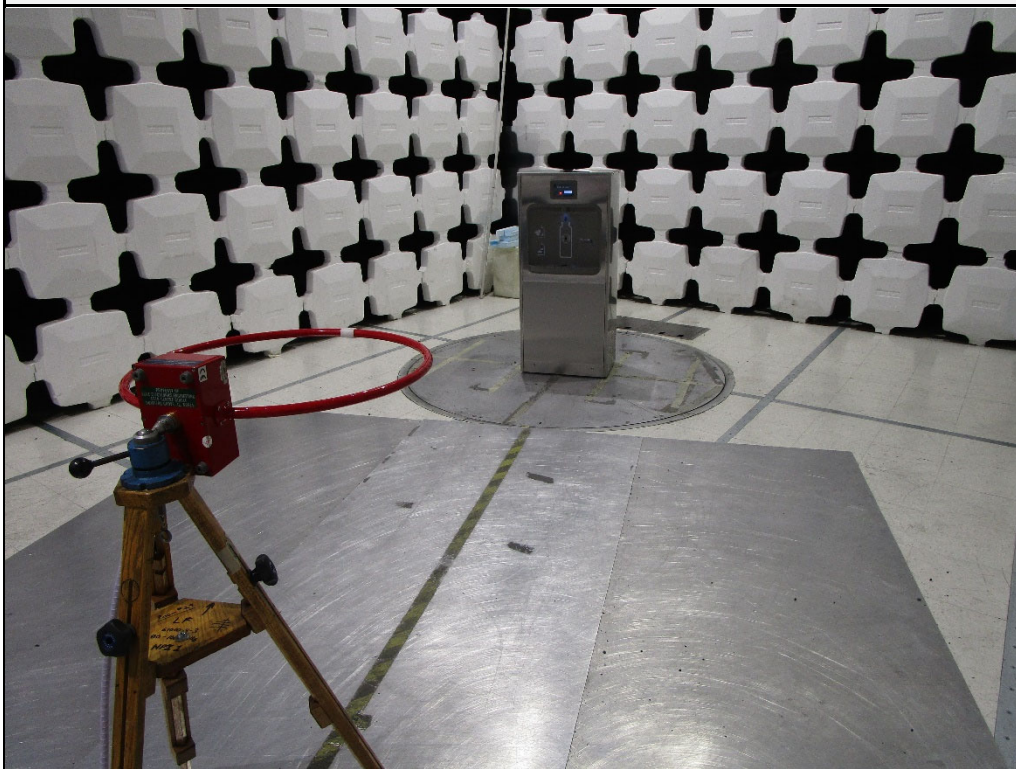
A preliminary radiated emissions test was performed to determine the emission characteristics of the EUT. For the preliminary test, a broadband measuring antenna was positioned at a 3 meter distance from the EUT. The entire frequency range from 9kHz to 1GHz was investigated using a peak detector function.

The final emission tests were then manually performed over the frequency range of 9kHz to 1GHz.

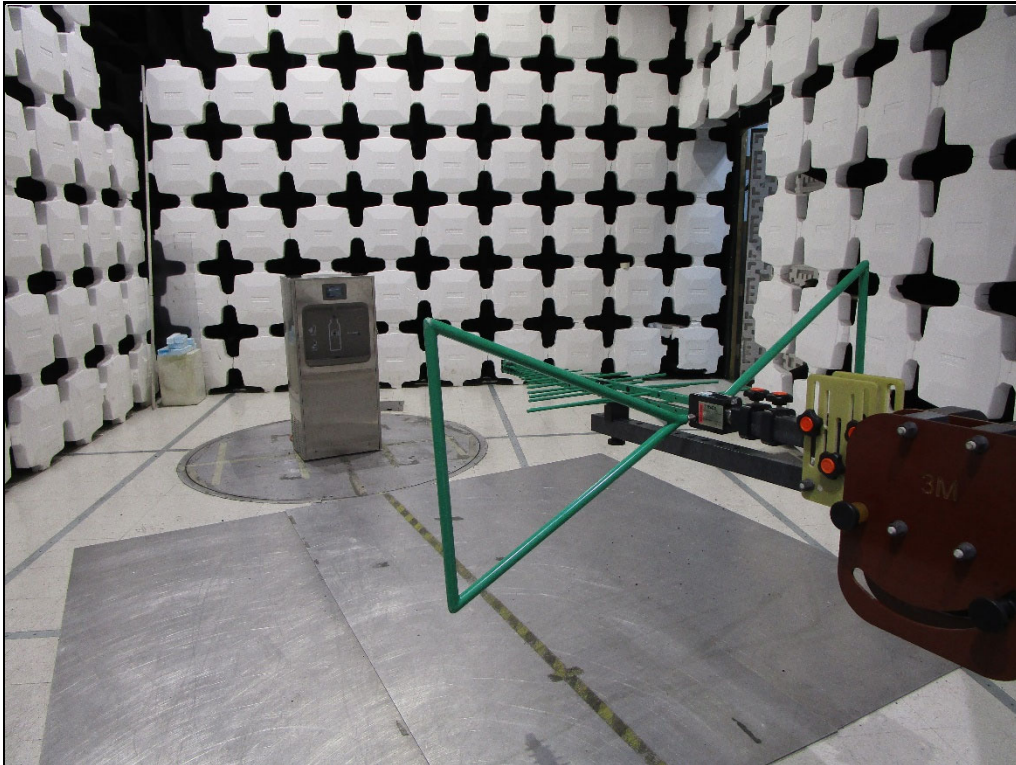
- 1) Between 9kHz and 30MHz, a loop antenna was used as the pick-up device. The EUT was centered on the turntable.
- 2) A peak detector with a resolution bandwidth of 10kHz was used on the spectrum analyzer.
- 3) To ensure that maximum or worst case, emission levels were measured, the following steps were taken:
  - i) The EUT was rotated so that all of its sides were exposed to the receiving antenna.
  - ii) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.
  - iii) The measuring antenna was raised and lowered for each antenna polarization to maximize the readings.
  - iv) In instances where it was necessary to use a shortened cable between the measuring antenna and the spectrum analyzer, the measuring antenna was not raised or lowered to ensure maximized readings. Instead, the EUT was rotated through all axis to ensure the maximum readings were recorded for the EUT.



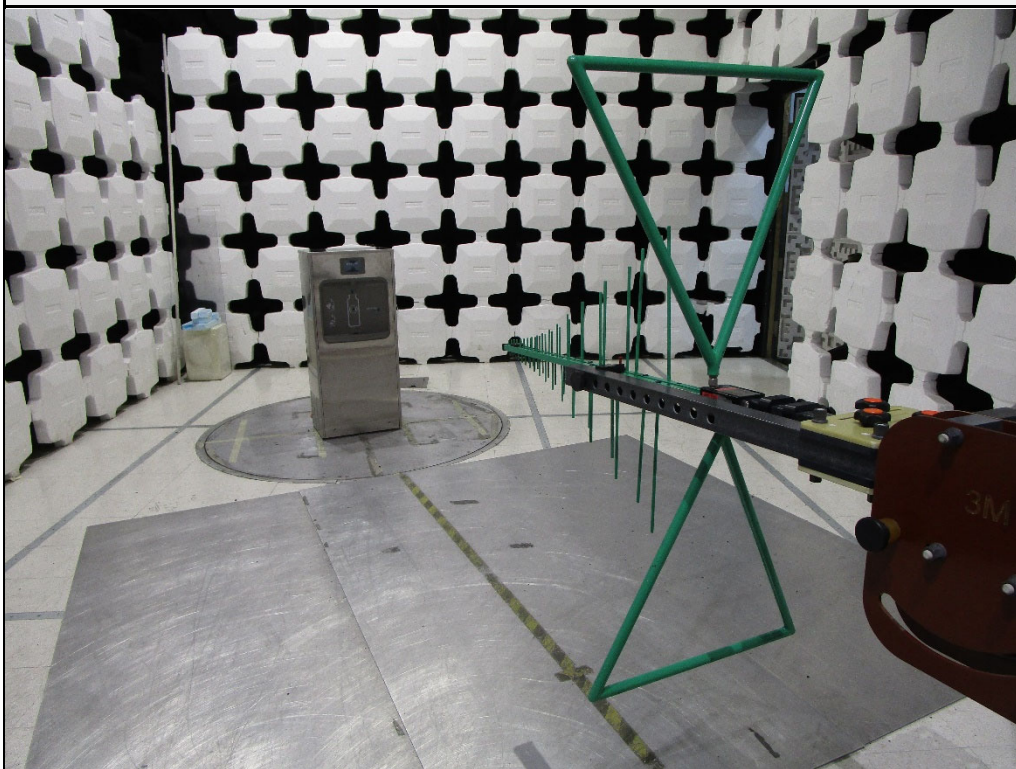
Test Setup for Spurious Radiated Emissions – Antenna Polarization Horizontal



Test Setup for Spurious Radiated Emissions – Antenna Polarization Vertical



Test Setup for Spurious Radiated Emissions, 30-1000MHz – Antenna Polarization Horizontal



Test Setup for Spurious Radiated Emissions, 30-1000MHz – Antenna Polarization Vertical

| Test Details     |                                                           |
|------------------|-----------------------------------------------------------|
| Manufacturer     | Elkay Manufacturing Company                               |
| EUT              | ezH20 Floor-Standing Bottle Filling Station               |
| Model No.        | DSSBF8SP                                                  |
| Serial No.       | Sample 1                                                  |
| Mode             | Tx @ 13.56MHz                                             |
| Frequency Tested | 13.58MHz                                                  |
| Notes            | Field Strength of the Fundamental Limit = 15848 $\mu$ V/m |

| Freq.<br>(MHz) | Ant<br>Pol | Meter<br>Reading<br>(dBuV) | Ambient | CBL<br>Fac<br>(dB) | Ant<br>Fac<br>(dB/m) | Dist.<br>Corr.<br>(dB) | Total<br>(dBuV/m) | Total<br>(uV/m) | Limit<br>(uV/m) | Specified<br>Test<br>Distance<br>(meters) | Margin<br>(dB) |
|----------------|------------|----------------------------|---------|--------------------|----------------------|------------------------|-------------------|-----------------|-----------------|-------------------------------------------|----------------|
| 13.560         | H          | 45.6                       |         | 0.2                | 10.1                 | -40.0                  | 15.9              | 6.2             | 15848.0         | 30.0                                      | -68.1          |
| 13.560         | V          | 29.8                       |         | 0.2                | 10.1                 | -40.0                  | 0.1               | 1.0             | 15848.0         | 30.0                                      | -83.9          |
| 27.120         | H          | 14.9                       | *       | 0.3                | 8.3                  | -40.0                  | -16.5             | 0.1             | 30.0            | 30.0                                      | -46.1          |
| 27.120         | V          | 15.3                       | *       | 0.3                | 8.3                  | -40.0                  | -16.1             | 0.2             | 30.0            | 30.0                                      | -45.7          |
| 40.680         | H          | 12.0                       | *       | 0.3                | 18.6                 | 0.0                    | 30.9              | 35.2            | 100.0           | 3.0                                       | -9.1           |
| 40.680         | V          | 12.2                       | *       | 0.3                | 18.6                 | 0.0                    | 31.0              | 35.6            | 100.0           | 3.0                                       | -9.0           |
| 54.240         | H          | 12.1                       | *       | 0.4                | 13.2                 | 0.0                    | 25.6              | 19.1            | 100.0           | 3.0                                       | -14.4          |
| 54.240         | V          | 12.4                       | *       | 0.4                | 13.2                 | 0.0                    | 26.0              | 19.9            | 100.0           | 3.0                                       | -14.0          |
| 67.800         | H          | 12.4                       | *       | 0.4                | 12.3                 | 0.0                    | 25.1              | 18.0            | 100.0           | 3.0                                       | -14.9          |
| 67.800         | V          | 12.8                       | *       | 0.4                | 12.3                 | 0.0                    | 25.5              | 18.8            | 100.0           | 3.0                                       | -14.5          |
| 81.360         | H          | 11.8                       | *       | 0.5                | 13.3                 | 0.0                    | 25.5              | 18.8            | 100.0           | 3.0                                       | -14.5          |
| 81.360         | V          | 11.7                       | *       | 0.5                | 13.3                 | 0.0                    | 25.4              | 18.7            | 100.0           | 3.0                                       | -14.6          |
| 94.920         | H          | 12.2                       | *       | 0.5                | 16.3                 | 0.0                    | 29.0              | 28.1            | 150.0           | 3.0                                       | -14.6          |
| 94.920         | V          | 11.6                       | *       | 0.5                | 16.3                 | 0.0                    | 28.4              | 26.4            | 150.0           | 3.0                                       | -15.1          |
| 108.480        | H          | 11.9                       | *       | 0.5                | 18.0                 | 0.0                    | 30.5              | 33.5            | 150.0           | 3.0                                       | -13.0          |
| 108.480        | V          | 12.5                       | *       | 0.5                | 18.0                 | 0.0                    | 31.1              | 35.8            | 150.0           | 3.0                                       | -12.5          |
| 122.040        | H          | 11.4                       | *       | 0.6                | 18.4                 | 0.0                    | 30.4              | 33.1            | 150.0           | 3.0                                       | -13.1          |
| 122.040        | V          | 11.3                       | *       | 0.6                | 18.4                 | 0.0                    | 30.3              | 32.6            | 150.0           | 3.0                                       | -13.3          |
| 135.600        | H          | 11.8                       | *       | 0.6                | 17.6                 | 0.0                    | 30.0              | 31.6            | 150.0           | 3.0                                       | -13.5          |
| 135.600        | V          | 11.2                       | *       | 0.6                | 17.6                 | 0.0                    | 29.4              | 29.5            | 150.0           | 3.0                                       | -14.1          |

## 25. Scope of Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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Email: [reking@elitetest.com](mailto:reking@elitetest.com)  
Website: [www.elitetest.com](http://www.elitetest.com)

## ELECTRICAL

Valid To: June 30, 2025

Certificate Number: 1786.01

In recognition of the successful completion of the A2LA Accreditation Program evaluation process, accreditation is granted to this laboratory to perform the following automotive electromagnetic compatibility and other electrical tests:

**Test Technology:****Test Method(s)<sup>1</sup>:**

***Transient Immunity***  
*(Max Voltage 60V/Max current 100A)*

ISO 7637-2 (including emissions); ISO 7637-3;  
ISO 16750-2:2012, Sections 4.6.3 and 4.6.4;  
CS-11979, Section 6.4; CS.00054, Section 5.9;  
EMC-CS-2009.1 (CI220); FMC1278 (CI220, CI221, CI222);  
GMW 3097, Section 3.5; SAE J1113-11; SAE J1113-12;  
ECE Regulation 10.06 Annex 10

***Electrostatic Discharge (ESD)***  
*(Up to +/-25kV)*

ISO 10605 (2001, 2008);  
CS-11979 Section 7.0; CS.00054, Section 5.10;  
EMC-CS-2009.1 (CI 280); FMC1278 (CI280); SAE J1113-13;  
GMW 3097 Section 3.6

***Conducted Emissions***

CISPR 25 (2002, 2008), Sections 6.2 and 6.3;  
CISPR 25 (2016), Sections 6.3 and 6.4;  
CS-11979, Section 5.1; CS.00054, Sections 5.6.1 and 5.6.2;  
GMW 3097, Section 3.3.2;  
EMC-CS-2009.1 (CE 420); FMC1278 (CE420, CE421,  
CE 430, CE440)

(A2LA Cert. No. 1786.01) 08/15/2023



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**Test Technology:**
**Test Method(s)<sup>1</sup>:**

***Radiated Emissions Anechoic***  
(Up to 6GHz)

CISPR 25 (2002, 2008), Section 6.4;  
CISPR 25 (2016), Section 6.5;  
CS-11979, Section 5.3; CS.00054, Section 5.6.3;  
GMW 3097, Section 3.3.1;  
EMC-CS-2009.1 (RE 310); FMC1278 (RE310, RE320);

***Vehicle Radiated Emissions***

CISPR 12; CISPR 36; ICES-002;  
ECE Regulation 10.06 Annex 5

***Bulk Current Injection (BCI)***  
(1 to 400MHz 500mA)

ISO 11452-4; CS-11979, Section 6.1; CS.00054, Section 5.8.1;  
GMW 3097, Section 3.4.1; SAE J1113-4;  
EMC-CS-2009.1 (RI112); FMC1278 (RI112);  
ECE Regulation 10.06 Annex 9

***Radiated Immunity Anechoic***  
(Up to 6GHz and 200V/m)  
(Including Radar Pulse 600V/m)

ISO 11452-2;  
CS-11979, Section 6.2; CS.00054, Section 5.8.2;  
GMW 3097, Section 3.4.2;  
EMC-CS-2009.1 (RI114); FMC1278 (RI114); SAE J1113-21;  
ECE Regulation 10.06 Annex 9

***Radiated Immunity Magnetic Field***

ISO 11452-8; FMC 1278 (RI140)

***Radiated Immunity Reverb***  
(360MHz to 6GHz and 100V/m)

ISO/IEC 61000-4-21; GMW 3097, Section 3.4.3;  
EMC-CS-2009.1 (RI114); FMC1278 (RI114);  
ISO 11452-11

***Radiated Immunity***  
(Portable Transmitters)  
(Up to 6GHz and 20W)

ISO 11452-9;  
EMC-CS-2009.1 (RI115); FMC1278 (RI115);  
GMW 3097, Sec 3.4.4

***Vehicle Radiated Immunity (ALSE)***

ISO 11451-2; ECE Regulation 10.06 Annex 6

***Vehicle Product Specific EMC Standards***

EN 14982; EN ISO 13309; ISO 13766; EN 50498;  
EC Regulation No. 2015/208; EN 55012

***Electrical Loads***

ISO 16750-2

***Stripline***

ISO 11452-5

***Transverse Electromagnetic (TEM) Cell***

ISO 11452-3

Test Technology:
Test Method(s)¹:
**Emissions**

Radiated and Conducted  
(3m Semi-anechoic chamber,  
up to 40 GHz)

47 CFR, FCC Part 15 B (using ANSI C63.4:2014);  
47 CFR, FCC Part 18 (using FCC MP-5:1986);  
ICES-001; ICES-003; ICES-005;  
IEC/CISPR 11, Ed. 4.1 (2004-06); AS/NZS CISPR 11 (2004);  
IEC/CISPR 11 Ed 5 (2009-05) + A1 (2010);  
KN 11 (2008-5) with RRL Notice No. 2008-3 (May 20, 2008);  
CISPR 11; EN 55011; KS C 9811; CNS 13803 (1997, 2003);  
CISPR 14-1; EN 55014-1; AS/NZS CISPR 14.1;  
CISPR 16-2-1 (2008); CISPR 16-2-1; KS C 9814-1; KN 14-1;  
IEC/CISPR 22 (1997);  
EN 55022 (1998) + A1(2000);  
EN 55022 (1998) + A1(2000) + A2(2003); EN 55022 (2006);  
IEC/CISPR 22 (2008-09); AS/NZS CISPR 22 (2004);  
AS/NZS CISPR 22, 3rd Edition (2006); KN 22 (up to 6 GHz);  
CNS 13438 (up to 6 GHz); VCCI V-3 (up to 6 GHz);  
CISPR 32; EN 55032; KS C 9832; KN 32;  
ECE Regulation 10.06 Annex 7 (Broadband);  
ECE Regulation 10.06 Annex 8 (Narrowband);  
ECE Regulation 10.06 Annex 14 (Conducted)

## Cellular Radiated Spurious Emissions

ETSI TS 151 010-1 GSM; 3GPP TS 51.010-1, Sec 12;  
ETSI TS 134 124 UMTS; 3GPP TS 34.124;  
ETSI TS 136 124 LTE; E-UTRA; 3GPP TS 36.124

## Current Harmonics

IEC 61000-3-2; IEC 61000-3-12;  
EN 61000-3-2; KN 61000-3-2;  
KS C 9610-3-2; ECE Regulation 10.06 Annex 11

## Flicker and Fluctuations

IEC 61000-3-3; IEC 61000-3-11;  
EN 61000-3-3; KN 61000-3-3;  
KS C 9610-3-3; ECE Regulation 10.06 Annex 12

**Immunity**

## Electrostatic Discharge

IEC 61000-4-2, Ed. 1.2 (2001);  
IEC 61000-4-2 (1995) + A1(1998) + A2(2000);  
EN 61000-4-2 (1995); EN 61000-4-2 (2009-05);  
KN 61000-4-2 (2008-5);  
RRL Notice No. 2008-4 (May 20, 2008);  
IEC 61000-4-2; EN 61000-4-2; KN 61000-4-2;  
KS C 9610-4-2; IEEE C37.90.3 2001

## Radiated Immunity

IEC 61000-4-3 (1995) + A1(1998) + A2(2000);  
IEC 61000-4-3, Ed. 3.0 (2006-02);  
IEC 61000-4-3, Ed. 3.2 (2010);  
KN 61000-4-3 (2008-5);  
RRL Notice No. 2008-4 (May 20, 2008);  
IEC 61000-4-3; EN 61000-4-3; KN 61000-4-3;  
KS C 9610-4-3; IEEE C37.90.2 2004

Test Technology:
Test Method(s)<sup>1</sup>:
**Immunity (cont'd)**

Electrical Fast Transient/Burst

IEC 61000-4-4, Ed. 2.0 (2004-07);  
IEC 61000-4-4, Ed. 2.1 (2011);  
IEC 61000-4-4 (1995) + A1(2000) + A2(2001);  
KN 61000-4-4 (2008-5);  
RRL Notice No. 2008-5 (May 20, 2008);  
IEC 61000-4-4; EN 61000-4-4; KN 61000-4-4;  
KS C 9610-4-4; ECE Regulation 10.06 Annex 15

Surge

IEC 61000-4-5 (1995) + A1(2000);  
IEC 61000-4-5, Ed 1.1 (2005-11);  
EN 61000-4-5 (1995) + A1(2001);  
KN 61000-4-5 (2008-5);  
RRL Notice No. 2008-4 (May 20, 2008);  
IEC 61000-4-5; EN 61000-4-5; KN 61000-4-5;  
KS C 9610-4-5;  
IEEE C37.90.1 2012; IEEE STD C62.41.2 2002;  
ECE Regulation 10.06 Annex 16

Conducted Immunity

IEC 61000-4-6 (1996) + A1(2000);  
IEC 61000-4-6, Ed 2.0 (2006-05);  
IEC 61000-4-6 Ed. 3.0 (2008);  
KN 61000-4-6 (2008-5);  
RRL Notice No. 2008-4 (May 20, 2008);  
EN 61000-4-6 (1996) + A1(2001); IEC 61000-4-6;  
EN 61000-4-6; KN 61000-4-6; KS C 9610-4-6

Power Frequency Magnetic Field  
Immunity (*Down to 3 A/m*)

IEC 61000-4-8 (1993) + A1(2000); IEC 61000-4-8 (2009);  
EN 61000-4-8 (1994) + A1(2000);  
KN 61000-4-8 (2008-5);  
RRL Notice No. 2008-4 (May 20, 2008);  
IEC 61000-4-8; EN 61000-4-8; KN 61000-4-8; KS C 9610-4-8

Voltage Dips, Short Interrupts, and Line  
Voltage Variations

IEC 61000-4-11, Ed. 2 (2004-03);  
KN 61000-4-11 (2008-5);  
RRL Notice No. 2008-4 (May 20, 2008);  
IEC 61000-4-11; EN 61000-4-11; KN 61000-4-11;  
KS C 9610-4-11

Ring Wave

IEC 61000-4-12, Ed. 2 (2006-09);  
EN 61000-4-12:2006;  
IEC 61000-4-12; EN 61000-4-12; KN 61000-4-12;  
IEEE STD C62.41.2 2002

**Test Technology:**

Generic and Product Specific EMC Standards

**Test Method(s)<sup>1</sup>:**

IEC/EN 61000-6-1; AS/NZS 61000-6-1; KN 61000-6-1;  
KS C 9610-6-1; IEC/EN 61000-6-2; AS/NZS 61000-6-2;  
KN 61000-6-2; KS C 9610-6-2; IEC/EN 61000-6-3;  
AS/NZS 61000-6-3; KN 61000-6-3; KS C 9610-6-3;  
IEC/EN 61000-6-4; AS/NZS 61000-6-4; KN 61000-6-4;  
KS C 9610-6-4; EN 50130-4; EN 61326-1; EN 50121-3-2;  
EN 12895; EN 50270; EN 50491-1; EN 50491-2; EN 50491-3;  
EN 55015; EN 60730-1; EN 60945; IEC 60533;  
EN 61326-2-6; EN 61800-3; IEC/CISPR 14-2; EN 55014-2;  
AS/NZS CISPR 14-2; KN 14-2; KS C 9814-2;  
IEC/CISPR 24; AS/NZS CISPR 24; EN 55024; KN 24;  
IEC/CISPR 35; AS/NZS CISPR 35; EN 55035; KN 35;  
KS C 9835; IEC 60601-1-2; JIS T0601-1-2

***TxRx EMC Requirements***

EN 301 489-1; EN 301 489-3; EN 301 489-9;  
EN 301 489-17; EN 301 489-19; EN 301 489-20

***European Radio Test Standards***

ETSI EN 300 086-1; ETSI EN 300 086-2;  
ETSI EN 300 113-1; ETSI EN 300 113-2;  
ETSI EN 300 220-1; ETSI EN 300 220-2;  
ETSI EN 300 220-3-1; ETSI EN 300 220-3-2;  
ETSI EN 300 330-1; ETSI EN 300 330-2;  
ETSI EN 300 440-1; ETSI EN 300 440-2;  
ETSI EN 300 422-1; ETSI EN 300 422-2;  
ETSI EN 300 328; ETSI EN 301 893;  
ETSI EN 301 511; ETSI EN 301 908-1;  
ETSI EN 908-2; ETSI EN 908-13;  
ETSI EN 303 413; ETSI EN 302 502;  
EN 303 340; EN 303 345-2; EN 303 345-3; EN 303 345-4

***Canadian Radio Tests***

RSS-102 measurement (RF Exposure Evaluation);  
RSS-102 measurement (Nerve Stimulation);  
SPR-002; RSS-111; RSS-112; RSS-117; RSS-119; RSS-123;  
RSS-125; RSS-127; RSS-130; RSS-131; RSS-132; RSS-133;  
RSS-134; RSS-135; RSS-137; RSS-139; RSS-140; RSS-141;  
RSS-142; RSS-170; RSS-181; RSS-182; RSS-191; RSS-192;  
RSS-194; RSS-195; RSS-196; RSS-197; RSS-199; RSS-210;  
RSS-211; RSS-213; RSS-215; RSS-216; RSS-220; RSS-222;  
RSS-236; RSS-238; RSS-243; RSS-244; RSS-247; RSS-248;  
RSS-251; RSS-252; RSS-287; RSS-288; RSS-310; RSS-GEN

***Mexico Radio Tests***

IFT-008-2015; NOM-208-SCFI-2016

***Japan Radio Tests***

Radio Law No. 131, Ordinance of MPT No. 37, 1981,  
MIC Notification No. 88:2004, Table No. 22-11;  
ARIB STD-T66, Regulation 18

***Taiwan Radio Tests***

LP-0002 (July 15, 2020)

**Test Technology:**
**Test Method(s)<sup>1</sup>:**

*Australia/New Zealand Radio Tests*

AS/NZS 4268; Radiocommunications (Short Range Devices) Standard (2014)

*Hong Kong Radio Tests*

HKCA 1039 Issue 6;  
HKCA 1042;  
HKCA 1033 Issue 7;  
HKCA 1061;  
HKCA 1008;  
HKCA 1043;  
HKCA 1057;  
HKCA 1073

*Korean Radio Test Standards*

KN 301 489-1; KN 301 489-3; KN 301 489-9;  
KN 301 489-17; KN 301 489-52; KS X 3124; KS X 3125;  
KS X 3130; KS X 3126; KS X 3129

*Vietnam Radio Test Standards*

QCVN 47:2015/BTTTT; QCVN 54:2020/BTTTT;  
QCVN 55:2011/BTTTT; QCVN 65:2013/BTTTT;  
QCVN 73:2013/BTTTT; QCVN 74:2020/BTTTT;  
QCVN 112:2017/BTTTT; QCVN 117:2020/BTTTT

*Vietnam EMC Test Standards*

QCVN 18:2014/BTTTT; QCVN 86:2019/BTTTT;  
QCVN 96:2015/BTTTT; QCVN 118:2018/BTTTT

*Unlicensed Radio Frequency Devices  
(3 Meter Semi-Anechoic Room)*

47 CFR FCC Part 15C, 15D, 15E, 15F, 15G, 15H  
(using ANSI C63.10:2013, ANSI C63.17:2013 and  
FCC KDB 905462 D02 (v02))

*Licensed Radio Service Equipment*

47 CFR FCC Parts 20, 22, 24, 25, 27, 30, 73, 74, 80, 87,  
90, 95, 96, 97, 101 (using ANSI/TIA-603-E,  
TIA-102.CAAA-E, ANSI C63.26:2015)

*OIA (Over the Air) Performance*

GSM, GPRS, EGPRS  
UMTS (W-CDMA)  
LTE including CAT M1  
A-GPS for UMTS/GSM  
LTS A-GPS, A-GLONASS,  
SIB8/SIB16  
Large Device/Laptop/Tablet Testing  
Integrated Device Testing  
WiFi 802.11 a/b/g/n/a

CTIA Test Plan for Wireless Device Over-the-Air  
Performance (Method for Measurement for Radiated Power  
and Receiver Performance) V3.8.2;  
CTIA Test Plan for RF Performance Evaluation of WiFi  
Mobile Converged Devices V2.1.0

**Test Technology:**
**Test Method(s)<sup>1</sup>:**
**Electrical Measurements and Simulation**
**AC Voltage / Current**

(1mV to 5kV) 60 Hz  
(0.1V to 250V) up to 500 MHz  
(1μA to 150A) 60 Hz

FAA AC 150/5345-10H;  
FAA AC 150/5345-43J;  
FAA AC 150/5345-44K;  
FAA AC 150/5345-46E;  
FAA AC 150/5345-47C;  
FAA EB 67D

**DC Voltage / Current**

(1mV to 15 kV) / (1μA to 10A)

**Power Factor / Efficiency / Crest Factor**

(Power to 30kW)

**Resistance**

(1mΩ to 4000MΩ)

**Surge**

(Up to 10 kV / 5 kA) (Combination  
Wave and Ring Wave)

**On the following products and materials:**

Telecommunications Terminal Equipment (TTE), Radio Equipment, Network Equipment, Information Technology Equipment (ITE), Automotive Electronic Equipment, Automotive Hybrid Electronic Devices, Maritime Navigation and Radio Communication Equipment and Systems, Vehicles, Boats and Internal Combustion Engine Driven Devices, Automotive, Aviation, and General Lighting Products, Medical Electrical Equipment, Motors, Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment, Household Appliances, Electric Tools, Low-voltage Switchgear and Control gear, Programmable Controllers, Electrical Equipment for Measurement, Control and Laboratory Use, Base Materials, Power and Data Transmission Cables and Connectors

<sup>1</sup> When the date, edition, version, etc. is not identified in the scope of accreditation, laboratories may use the version that immediately precedes the current version for a period of one year from the date of publication of the standard measurement method, per part C., Section 1 of A2LA R101 - General Requirements - Accreditation of ISO-IEC 17025 Laboratories.

Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1<sup>2</sup>

| Rule Subpart/Technology                                     | Test Method              | Maximum Frequency (MHz) |
|-------------------------------------------------------------|--------------------------|-------------------------|
| <b><u>Unintentional Radiators</u></b>                       |                          |                         |
| Part 15B                                                    | ANSI C63.4:2014          | 40000                   |
| <b><u>Industrial, Scientific, and Medical Equipment</u></b> |                          |                         |
| Part 18                                                     | FCC MP-5 (February 1986) | 40000                   |
| <b><u>Intentional Radiators</u></b>                         |                          |                         |
| Part 15C                                                    | ANSI C63.10:2013         | 40000                   |

Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1<sup>2</sup>

| Rule Subpart/Technology                                                                                                                                 | Test Method                                            | Maximum Frequency (MHz) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------|
| <u>Unlicensed Personal Communication Systems Devices</u><br>Part 15D                                                                                    | ANSI C63.17:2013                                       | 40000                   |
| <u>U-NII without DFS Intentional Radiators</u><br>Part 15E                                                                                              | ANSI C63.10:2013                                       | 40000                   |
| <u>U-NII with DFS Intentional Radiators</u><br>Part 15E                                                                                                 | FCC KDB 905462 D02 (v02)                               | 40000                   |
| <u>UWB Intentional Radiators</u><br>Part 15F                                                                                                            | ANSI C63.10:2013                                       | 40000                   |
| <u>BPL Intentional Radiators</u><br>Part 15G                                                                                                            | ANSI C63.10:2013                                       | 40000                   |
| <u>White Space Device Intentional Radiators</u><br>Part 15H                                                                                             | ANSI C63.10:2013                                       | 40000                   |
| <u>Commercial Mobile Services (FCC Licensed Radio Service Equipment)</u><br>Parts 22 (cellular), 24, 25 (below 3 GHz), and 27                           | ANSI/TIA-603-E;<br>TIA-102.CAAA-E;<br>ANSI C63.26:2015 | 40000                   |
| <u>General Mobile Radio Services (FCC Licensed Radio Service Equipment)</u><br>Parts 22 (non-cellular), 90 (below 3 GHz), 95, 97, and 101 (below 3 GHz) | ANSI/TIA-603-E;<br>TIA-102.CAAA-E;<br>ANSI C63.26:2015 | 40000                   |
| <u>Citizens Broadband Radio Services (FCC Licensed Radio Service Equipment)</u><br>Part 96                                                              | ANSI/TIA-603-E;<br>TIA-102.CAAA-E;<br>ANSI C63.26:2015 | 40000                   |
| <u>Maritime and Aviation Radio Services</u><br>Parts 80 and 87                                                                                          | ANSI/TIA-603-E;<br>ANSI C63.26:2015                    | 40000                   |
| <u>Microwave and Millimeter Bands Radio Services</u><br>Parts 25, 30, 74, 90 (above 3 GHz), 97 (above 3 GHz), and 101                                   | ANSI/TIA-603-E;<br>TIA-102.CAAA-E;<br>ANSI C63.26:2015 | 40000                   |

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Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1<sup>2</sup>

| Rule Subpart/Technology                                                                                                                                    | Test Method                                            | Maximum Frequency (MHz) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------|
| <u>Broadcast Radio Services</u><br>Parts 73 and 74 (below 3 GHz)                                                                                           | ANSI/TIA-603-E;<br>TIA-102.CAAA-E;<br>ANSI C63.26:2015 | 40000                   |
| <u>Signal Boosters</u><br>Part 20 (Wideband Consumer Signal Boosters, Provider-specific signal boosters, and Industrial Signal Boosters)<br>Section 90.219 | ANSI C63.26:2015                                       | 40000                   |

<sup>2</sup> Accreditation does not imply acceptance to the FCC equipment authorization program. Please see the FCC website (<https://apps.fcc.gov/oetcf/eas/>) for a listing of FCC approved laboratories.



## Accredited Laboratory

A2LA has accredited

**ELITE ELECTRONIC ENGINEERING INC.**

*Downers Grove, IL*

for technical competence in the field of

**Electrical Testing**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 15<sup>th</sup> day of August 2023.

A blue ink signature of Trace McInturff.

Mr. Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 1786.01  
Valid to June 30, 2025

*For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.*