



## **Abbott Laboratories**

### **Switch 90 Convergent Centrifuge**

**FCC 15.225:2023**

**RSS-210 Issue 10:2019+A1:2020**

**RSS-Gen Issue 5:2018+A1:2019+A2:2021**

**13.56 MHz Radio**

**Report: ABBO0294.0 Rev. 0, Issue Date: January 4, 2024**



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# CERTIFICATE OF TEST

**Last Date of Test: November 10, 2023**  
**Abbott Laboratories**  
**EUT: Switch 90 Convergent Centrifuge**

## Radio Equipment Testing

### Standards

| Specification                        | Method           |
|--------------------------------------|------------------|
| FCC 15.207:2023                      | ANSI C63.10:2013 |
| FCC 15.225:2023                      |                  |
| RSS-210 Issue 10:2019+A1:2020        |                  |
| RSS-Gen Issue 5:2018+A1:2019+A2:2021 |                  |

### Guidance

|                       |
|-----------------------|
| Notice 2020 - DRS0023 |
|-----------------------|

### Results

| Test Description                                           | Result | FCC Section(s)                         | RSS Section(s)       | ANSI C63.10 Section(s) | Comments |
|------------------------------------------------------------|--------|----------------------------------------|----------------------|------------------------|----------|
| Powerline Conducted Emissions                              | Pass   | 15.207                                 | RSS-Gen 8.8          | 6.2                    |          |
| Emissions Bandwidth (20 dB)                                | Pass   | 15.215(c)                              | N/A                  | 6.9.2                  |          |
| Field Strength of Fundamental                              | Pass   | 15.225(a)-(c)                          | RSS-210 B.6(a)(i-iv) | 6.4                    |          |
| Field Strength of Spurious Emissions (Less Than 30 MHz)    | Pass   | 15.225(d), 15.209                      | RSS-210 B.6(a)(iv)   | 6.4                    |          |
| Field Strength of Spurious Emissions (Greater Than 30 MHz) | Pass   | 15.225(d), 15.209                      | RSS-210 B.6(a)(iv)   | 6.5                    |          |
| Frequency Stability                                        | Pass   | 15.225(e), 15.31(e), 15.215(c), 2.1055 | RSS-210 B.6(b)       | 6.8                    |          |
| Occupied Bandwidth (99%)                                   | Pass   | N/A                                    | RSS-Gen 6.7          | 6.9.3                  |          |

### Deviations From Test Standards

None

*Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.*

# CERTIFICATE OF TEST

**Approved By:**



Adam Bruno, Operations Manager

*Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.*

# REVISION HISTORY



| Revision Number | Description | Date<br>(yyyy-mm-dd) | Page Number |
|-----------------|-------------|----------------------|-------------|
| 00              | None        |                      |             |

# ACCREDITATIONS AND AUTHORIZATIONS



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## United States

**FCC** - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

**A2LA** - Each laboratory is accredited by A2LA to ISO / IEC 17025, and as a product certifier to ISO / IEC 17065 which allows Element to certify transmitters to FCC and IC specifications.

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## Canada

**ISED** - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

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## European Union

**European Commission** – Recognized as an EU Notified Body validated for the EMCD and RED Directives.

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## United Kingdom

**BEIS** – Recognized by the UK as an Approved Body under the UK Radio Equipment and UK EMC Regulations.

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## Australia/New Zealand

**ACMA** - Recognized by ACMA as a CAB for the acceptance of test data.

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## Korea

**MSIT / RRA** - Recognized by KCC's RRA as a CAB for the acceptance of test data.

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## Japan

**VCCI** - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

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## Taiwan

**BSMI** – Recognized by BSMI as a CAB for the acceptance of test data.

**NCC** - Recognized by NCC as a CAB for the acceptance of test data.

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## Singapore

**IDA** – Recognized by IDA as a CAB for the acceptance of test data.

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## Israel

**MOC** – Recognized by MOC as a CAB for the acceptance of test data.

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## Hong Kong

**OFCA** – Recognized by OFCA as a CAB for the acceptance of test data.

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## Vietnam

**MIC** – Recognized by MIC as a CAB for the acceptance of test data.

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## SCOPE

For details on the Scopes of our Accreditations, please visit:

[California](#)

[Minnesota](#)

[Oregon](#)

[Texas](#)

[Washington](#)

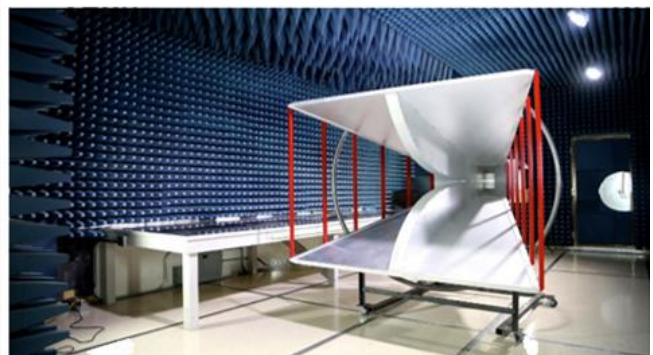
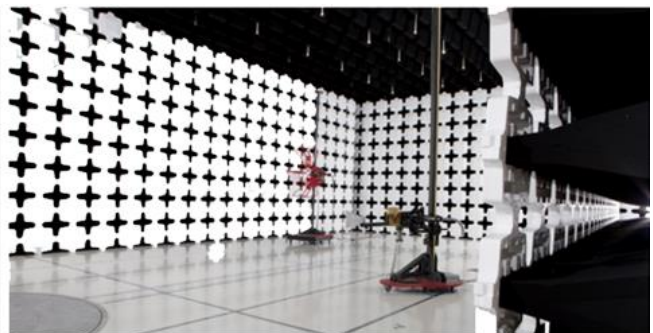
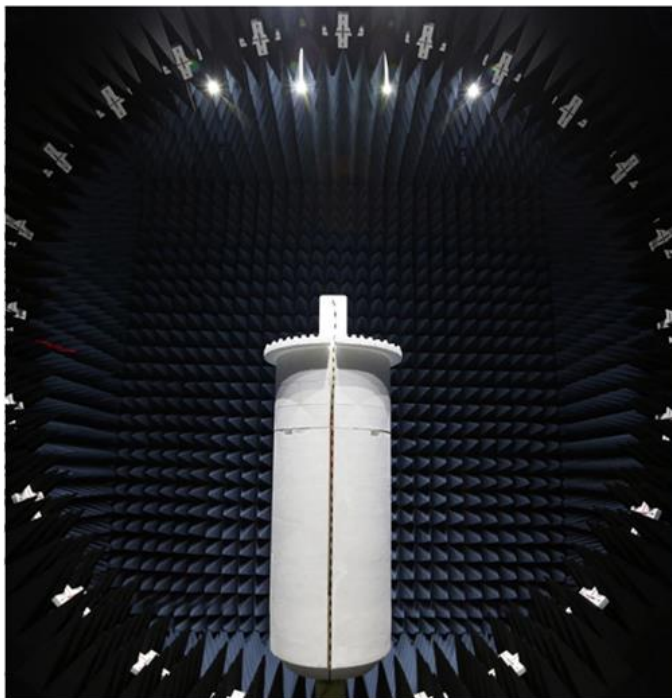
# FACILITIES

Testing was performed at the following location(s)

|                                     | Location   | Labs <sup>(1)</sup> | Address                                                              | A2LA <sup>(2)</sup> | ISED <sup>(3)</sup> | BSMI <sup>(4)</sup> | VCCI <sup>(5)</sup> | CAB <sup>(6)</sup> | FDA <sup>(7)</sup> |
|-------------------------------------|------------|---------------------|----------------------------------------------------------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|
| <input type="checkbox"/>            | California | OC01-17             | 41 Tesla<br>Irvine, CA 92618<br>(949) 861-8918                       | 3310.04             | 2834B               | SL2-IN-E-1154R      | A-0029              | US0158             | TL-55              |
| <input type="checkbox"/>            | Minnesota  | MN01-11             | 9349 W Broadway Ave.<br>Brooklyn Park, MN 55445<br>(612) 638-5136    | 3310.05             | 2834E               | SL2-IN-E-1152R      | A-0109              | US0175             | TL-57              |
| <input type="checkbox"/>            | Oregon     | EV01-12             | 6775 NE Evergreen Pkwy #400<br>Hillsboro, OR 97124<br>(503) 844-4066 | 3310.02             | 2834D               | SL2-IN-E-1017       | A-0108              | US0017             | TL-56              |
| <input checked="" type="checkbox"/> | Texas      | TX01-09             | 3801 E Plano Pkwy<br>Plano, TX 75074<br>(469) 304-5255               | 3310.03             | 2834G               | SL2-IN-E-1158R      | A-0201              | US0191             | TL-54              |
| <input type="checkbox"/>            | Washington | NC01-05             | 19201 120th Ave NE<br>Bothell, WA 98011<br>(425) 984-6600            | 3310.06             | 2834F               | SL2-IN-E-1153R      | A-0110              | US0157             | TL-67              |
| <input type="checkbox"/>            | Offsite    | N/A                 | See Product Description                                              | N/A                 | N/A                 | N/A                 | N/A                 | N/A                | N/A                |

See data sheets for specific labs

- (1) The lab designations denote individual rooms within each location. (OC01, OC02, OC03, etc.)
- (2) A2LA Certificate No.
- (3) ISED Company No.
- (4) BSMI No.
- (5) VCCI Site Filing No.
- (6) CAB Identifier. Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA
- (7) FDA ASCA No.



# MEASUREMENT UNCERTAINTY

## Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty ( $k=2$ ) can be found in the table below. A lab specific value may also be found in the applicable test description section. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable) and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

### Field Strength Measurements (dB)

| Range          | TX02<br>(+/-) |
|----------------|---------------|
| 10kHz-30MHz    | 1.8           |
| 30MHz-1GHz 3m  | 4.7           |
| 30MHz-1GHz 10m | 3.3           |
| 1GHz-6GHz      | 5.1           |
| 6GHz-40GHz     | 5.1           |

### AC Powerline Conducted Emissions Measurements (dB)

| Range                    | TX01<br>(+/-) |
|--------------------------|---------------|
| 9kHz-150kHz LISN         | 3.6           |
| 150kHz-30MHz LISN        | 3.1           |
| 150kHz-30MHz CVP         | 3             |
| 150kHz-30MHz Telecom-ISN | 4.4           |

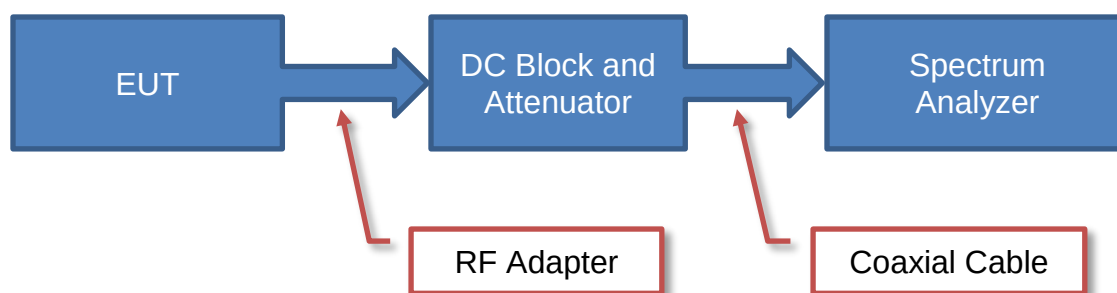
# TEST SETUP BLOCK DIAGRAMS

## Measurement Bandwidths

| Frequency Range (MHz) | Peak Data (kHz) | Quasi-Peak Data (kHz) | Average Data (kHz) |
|-----------------------|-----------------|-----------------------|--------------------|
| 0.01 - 0.15           | 1.0             | 0.2                   | 0.2                |
| 0.15 - 30.0           | 10.0            | 9.0                   | 9.0                |
| 30.0 - 1000           | 100.0           | 120.0                 | 120.0              |
| Above 1000            | 1000.0          | N/A                   | 1000.0             |

Unless otherwise stated, measurements were made using the bandwidths and detectors specified. No video filter was used.

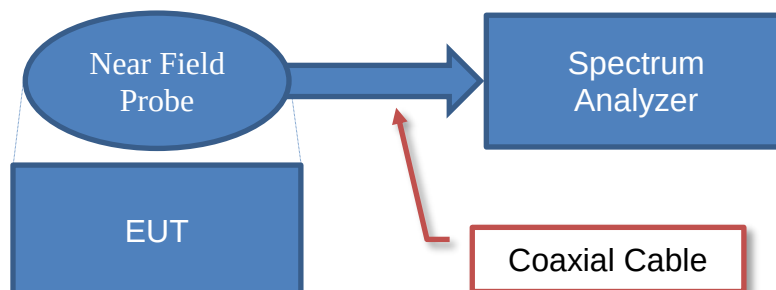
## Antenna Port Conducted Measurements



### Sample Calculation (logarithmic units)

|                |   |                |   |                        |
|----------------|---|----------------|---|------------------------|
| Measured Value |   | Measured Level |   | Reference Level Offset |
| 71.2           | = | 42.6           | + | 28.6                   |

## Near Field Test Fixture Measurements

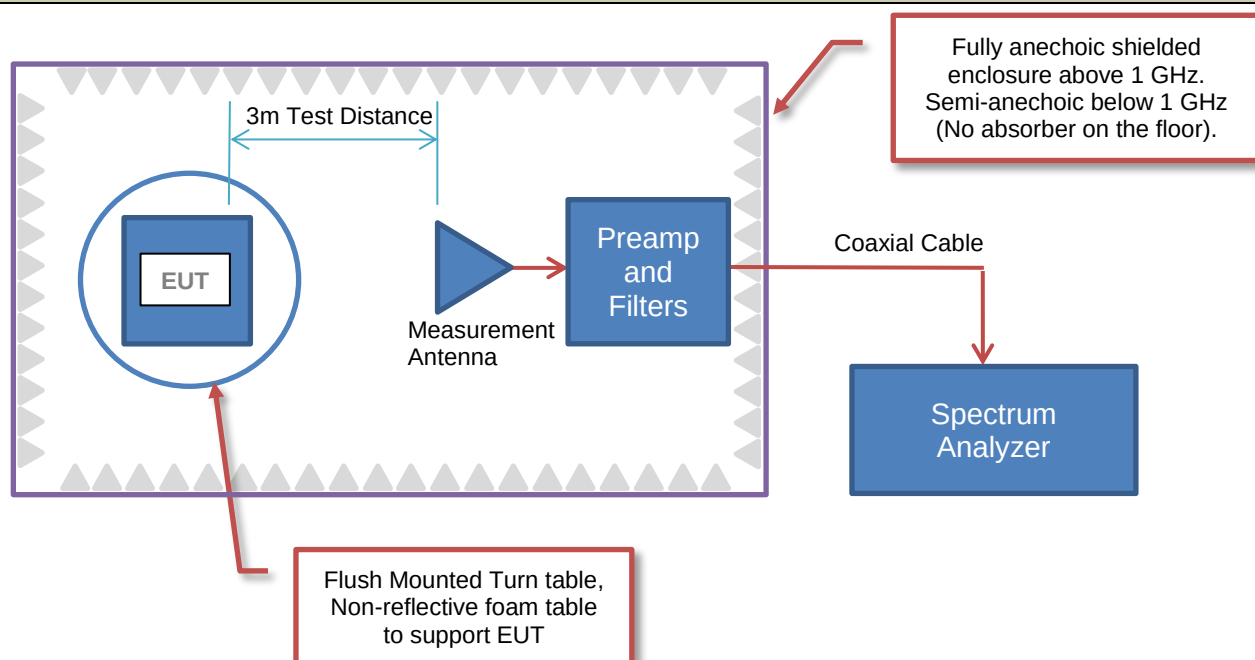


### Sample Calculation (logarithmic units)

|                |   |                |   |                        |
|----------------|---|----------------|---|------------------------|
| Measured Value |   | Measured Level |   | Reference Level Offset |
| 71.2           | = | 42.6           | + | 28.6                   |

# TEST SETUP BLOCK DIAGRAMS

## Emissions Measurements



## Sample Calculation (logarithmic units)

### Radiated Emissions:

| Measured Level (Amplitude) | Factor         |              |                | Distance Adjustment Factor | External Attenuation | Field Strength |
|----------------------------|----------------|--------------|----------------|----------------------------|----------------------|----------------|
|                            | Antenna Factor | Cable Factor | Amplifier Gain |                            |                      |                |
| 42.6                       | 28.6           | 3.1          | 40.8           | 0.0                        | 0.0                  | 33.5           |

### Conducted Emissions:

| Measured Level (Amplitude) | Factor            |              | External Attenuation | Adjusted Level |
|----------------------------|-------------------|--------------|----------------------|----------------|
|                            | Transducer Factor | Cable Factor |                      |                |
| 26.7                       | 0.3               | 0.1          | 20.0                 | 47.1           |

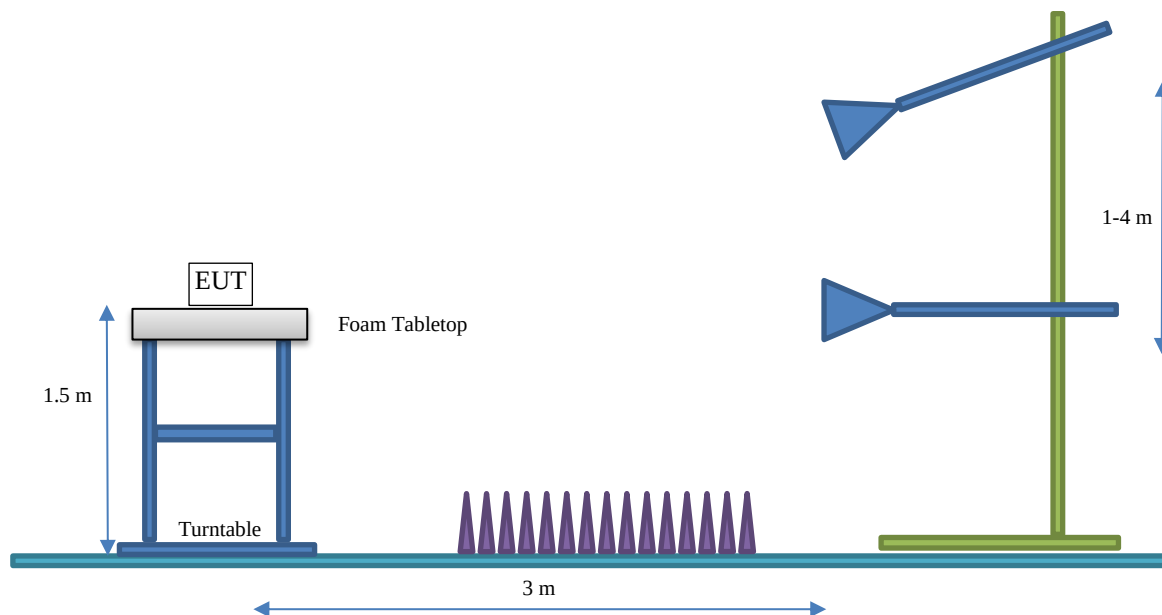
### Radiated Power (ERP/EIRP) – Substitution Method:

| Measured Level into Substitution Antenna (Amplitude dBm) | Substitution Antenna Factor (dBi) | EIRP to ERP (if applicable) | Measured power (dBm ERP/EIRP) |
|----------------------------------------------------------|-----------------------------------|-----------------------------|-------------------------------|
| 10.0                                                     | 6.0                               | 2.15                        | 13.9/16.0                     |

# TEST SETUP BLOCK DIAGRAMS

## Bore Sighting (>1GHz)

The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. Above 1 GHz, when required by the measurement standard, the antenna is pointed for both azimuth and elevation to maintain the receive antenna within the cone of radiation from the EUT. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.



# PRODUCT DESCRIPTION

## Client and Equipment under Test (EUT) Information

|                                 |                                 |
|---------------------------------|---------------------------------|
| <b>Company Name:</b>            | Abbott Laboratories             |
| <b>Address:</b>                 | 1921 Hurd Drive                 |
| <b>City, State, Zip:</b>        | Irving, Texas 75038             |
| <b>Test Requested By:</b>       | Frank Sun                       |
| <b>EUT:</b>                     | Switch 90 Convergent Centrifuge |
| <b>First Date of Test:</b>      | October 31, 2023                |
| <b>Last Date of Test:</b>       | November 10, 2023               |
| <b>Receipt Date of Samples:</b> | October 31, 2023                |
| <b>Equipment Design Stage:</b>  | Production                      |
| <b>Equipment Condition:</b>     | No Damage                       |
| <b>Purchase Authorization:</b>  | Verified                        |

## Information Provided by the Party Requesting the Test

### Functional Description of the EUT:

The GLP systems Track is a modular laboratory automation system used to perform multiple pre-analytic and post-analytic steps to automate sample preparation and distribution processes in clinical laboratories. These processes include bar code identification of samples, centrifugation, aliquoting of samples, transport of samples between processes (modules), and delivery of samples to one or more Abbott and third-party commercially available laboratory analyzers. Each module includes a built-in touchscreen, a user interface that functions as a central operating and display element.

After samples have been loaded onto the system, they are loaded into transport vehicles (CARs) that run on an inter-module track system. Samples are then directed to the sample preparation modules and connected analyzers. After the analysis process is completed, the samples are available to be removed, archived, or disposed.

The CARs on the GLP systems Track transport the samples to the various modules. External analyzers are connected to the track through specific interfaces.

Switch 90 convergent centrifuge – The Switch 90 convergent centrifuge is a Switch 90 convergent track component paired with a Switch IO track component used as bridge for communication and power input in lieu of a Switch 90 divergent. It is only utilized as a track component when a Centrifuge Module is installed onto GLP systems Track. This track component contains a total of 1 RFID enabled PCB including 1 RFID reader.

### Testing Objective:

To demonstrate compliance of the 13.56 MHz radio to FCC 15.225 requirements. and RSS-210 Annex B.6 specifications.

# POWER SETTINGS AND ANTENNAS



The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information. The power settings below reflect the maximum power that the EUT is allowed to transmit at during normal operation.

## ANTENNA GAIN (dBi)

| Type                              | Provided by: | Frequency Range (MHz) | Dimensions  |
|-----------------------------------|--------------|-----------------------|-------------|
| Embedded Loop Antenna,<br>2 Turns | GLP Systems  | 13.56 MHz             | 51mm x 35mm |

The EUT was tested using the power settings provided by the manufacturer which were based upon:

- ☐ Test software settings      Test software/firmware installed on EUT: \_See\_Configuration\_\_\_\_\_
- ☒ Rated power settings

## POWER SETTING

| Radio | Modulation | Protocol  | Data Rate  | Frequency | Power Setting (mW) |
|-------|------------|-----------|------------|-----------|--------------------|
| RFID  | OOK        | ISO 15693 | 26.48 kbps | 13.56 MHz | 200                |

\*Power is set internally through product firmware at the default maximum.

\*Antenna information/power setting is identical for each 13.56 MHz radio.

# CONFIGURATIONS



## Configuration ABBO0294-1

| Software/Firmware Running During Test                                            |         |
|----------------------------------------------------------------------------------|---------|
| Description                                                                      | Version |
| D000104071-Switch Controller Divergent and Convergent RFID Firmware Verification | A       |

| EUT                             |                     |                         |               |
|---------------------------------|---------------------|-------------------------|---------------|
| Description                     | Manufacturer        | Model/Part Number       | Serial Number |
| Switch 90 Convergent Centrifuge | Abbott Laboratories | 20012034-101 (06R21-81) | S90CC1        |

| Peripherals in Test Setup Boundary |                     |                   |               |
|------------------------------------|---------------------|-------------------|---------------|
| Description                        | Manufacturer        | Model/Part Number | Serial Number |
| Junction Box Assembly              | Abbott Laboratories | 06U35-06          | None          |

| Cables         |        |            |         |              |                                 |
|----------------|--------|------------|---------|--------------|---------------------------------|
| Cable Type     | Shield | Length (m) | Ferrite | Connection 1 | Connection 2                    |
| AC Power Cable | Yes    | 1.2m       | No      | AC Mains     | Junction Box                    |
| DC Power Cable | No     | 0.5m       | Yes     | Junction Box | Switch 90 Convergent Centrifuge |

# MODIFICATIONS

## Equipment Modifications

| Item | Date       | Test                                                       | Modification                         | Note                                                                | Disposition of EUT                          |
|------|------------|------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------|---------------------------------------------|
| 1    | 2023-10-31 | Emissions Bandwidth (20 dB)                                | Tested as delivered to test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 2    | 2023-10-31 | Field Strength Of Fundamental                              | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 3    | 2023-10-31 | Field Strength Of Spurious Emissions (less Than 30 Mhz)    | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 4    | 2023-10-31 | Field Strength Of Spurious Emissions (greater Than 30 Mhz) | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 5    | 2023-10-31 | Occupied Bandwidth (99%)                                   | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 6    | 2023-11-01 | Frequency Stability                                        | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 7    | 2023-11-10 | Powerline Conducted Emissions                              | Tested as delivered to test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed.            |

# AC POWERLINE CONDUCTED EMISSIONS

## TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT.

The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10.

In the event that the operating frequency of 13.56 MHz is causing the product to fail the FCC 15.207 limits, the following guidance can be used:

FCC KDB 174176 D01 AC Conducted FAQ v01r01, June 3, 2015 Section Q5:

For a device with a permanent or detachable antenna operating at or below 30 MHz, the FCC will accept measurements performed with a suitable dummy load in lieu of the antenna under the following conditions:

- (1) perform the AC power-line conducted tests with the antenna connected to determine compliance with Section 15.207 limits outside the transmitter's fundamental emission band;
- (2) retest with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network which simulates the antenna in the fundamental frequency band.

All measurements must be performed as specified in clause 6.2 of ANSI C63.10-2013.

## TEST EQUIPMENT

| Description                      | Manufacturer      | Model              | ID   | Last Cal.  | Cal. Due   |
|----------------------------------|-------------------|--------------------|------|------------|------------|
| Receiver                         | Rohde & Schwarz   | ESCI               | ARF  | 2023-10-02 | 2024-10-02 |
| LISN                             | Solar Electronics | 9252-50-R-24-BNC   | LJK  | 2023-07-25 | 2024-07-25 |
| Cable - Conducted Cable Assembly | Northwest EMC     | TXA, HFC, TQU, VAC | TXAA | 2023-04-18 | 2024-04-18 |

## MEASUREMENT UNCERTAINTY

| Description  |        |         |
|--------------|--------|---------|
| Expanded k=2 | 3.1 dB | -3.1 dB |

## CONFIGURATIONS INVESTIGATED

ABBO0294-1

## MODES INVESTIGATED

Transmitting, 13.56 MHz, RFID

# AC POWERLINE CONDUCTED EMISSIONS

|                   |                                 |                       |            |
|-------------------|---------------------------------|-----------------------|------------|
| EUT:              | Switch 90 Convergent Centrifuge | Work Order:           | ABBO0294   |
| Serial Number:    | S90CC1                          | Date:                 | 2023-11-01 |
| Customer:         | Abbott Laboratories             | Temperature:          | 22.8°C     |
| Attendees:        | None                            | Relative Humidity:    | 26.2%      |
| Customer Project: | None                            | Bar. Pressure (PMSL): | 1029 mb    |
| Tested By:        | Jarrod Brenden                  | Job Site:             | TX01       |
| Power:            | 220VAC/60Hz                     | Configuration:        | ABBO0294-1 |

## TEST SPECIFICATIONS

|                                      |                  |
|--------------------------------------|------------------|
| Specification:                       | Method:          |
| FCC 15.207:2023                      | ANSI C63.10:2013 |
| RSS-Gen Issue 5:2018+A1:2019+A2:2021 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |   |       |         |                             |   |
|--------|---|-------|---------|-----------------------------|---|
| Run #: | 3 | Line: | Neutral | Add. Ext. Attenuation (dB): | 0 |
|--------|---|-------|---------|-----------------------------|---|

## COMMENTS

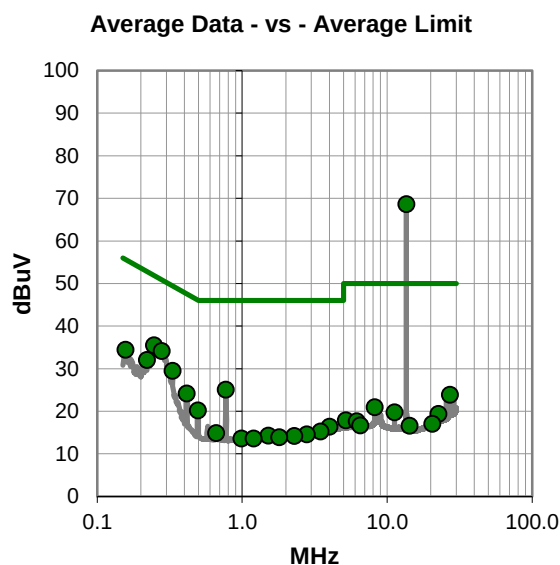
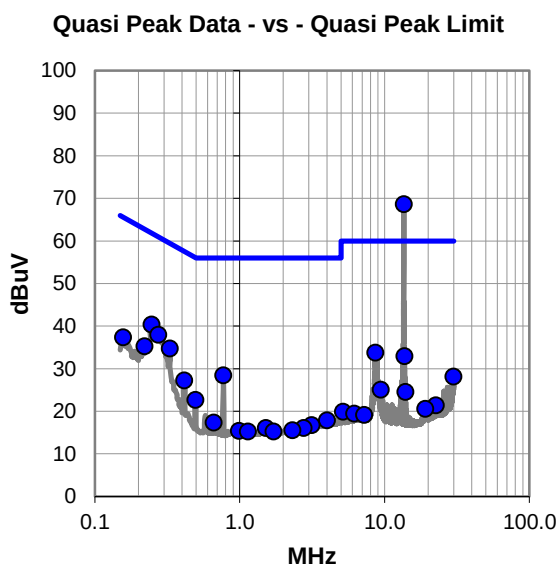
Test Protocol D000141866A\_EMC. Track component of Floor Standing equipment.

## EUT OPERATING MODES

Transmitting, 13.56 MHz, RFID

## DEVIATIONS FROM TEST STANDARD

None



# AC POWERLINE CONDUCTED EMISSIONS

## RESULTS - Run #3

Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 13.560     | 47.9        | 20.8        | 68.7            | 60.0               | 8.7         |
| 0.247      | 19.9        | 20.5        | 40.4            | 61.9               | -21.5       |
| 0.274      | 17.7        | 20.3        | 38.0            | 61.0               | -23.0       |
| 0.330      | 14.6        | 20.2        | 34.8            | 59.5               | -24.7       |
| 8.650      | 13.2        | 20.6        | 33.8            | 60.0               | -26.2       |
| 13.720     | 12.2        | 20.8        | 33.0            | 60.0               | -27.0       |
| 0.770      | 8.3         | 20.2        | 28.5            | 56.0               | -27.5       |
| 0.220      | 14.7        | 20.6        | 35.3            | 62.8               | -27.5       |
| 0.157      | 16.8        | 20.6        | 37.4            | 65.6               | -28.2       |
| 0.413      | 7.1         | 20.2        | 27.3            | 57.6               | -30.3       |
| 29.970     | 5.9         | 22.3        | 28.2            | 60.0               | -31.8       |
| 0.494      | 2.5         | 20.2        | 22.7            | 56.1               | -33.4       |
| 9.422      | 4.5         | 20.6        | 25.1            | 60.0               | -34.9       |
| 13.931     | 3.8         | 20.8        | 24.6            | 60.0               | -35.4       |
| 4.000      | -2.5        | 20.4        | 17.9            | 56.0               | -38.1       |
| 0.661      | -2.8        | 20.2        | 17.4            | 56.0               | -38.6       |
| 22.590     | -0.2        | 21.6        | 21.4            | 60.0               | -38.6       |
| 3.131      | -3.5        | 20.3        | 16.8            | 56.0               | -39.2       |
| 19.111     | -0.7        | 21.3        | 20.6            | 60.0               | -39.4       |
| 1.516      | -4.1        | 20.2        | 16.1            | 56.0               | -39.9       |
| 2.770      | -4.2        | 20.3        | 16.1            | 56.0               | -39.9       |
| 5.179      | -0.5        | 20.4        | 19.9            | 60.0               | -40.1       |
| 2.317      | -4.7        | 20.3        | 15.6            | 56.0               | -40.4       |
| 6.164      | -0.9        | 20.4        | 19.5            | 60.0               | -40.5       |
| 0.989      | -4.8        | 20.2        | 15.4            | 56.0               | -40.6       |

Average Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 13.560     | 47.9        | 20.8        | 68.7            | 50.0               | 18.7        |
| 0.247      | 15.0        | 20.5        | 35.5            | 51.9               | -16.4       |
| 0.278      | 13.9        | 20.3        | 34.2            | 50.9               | -16.7       |
| 0.330      | 9.3         | 20.2        | 29.5            | 49.5               | -20.0       |
| 0.220      | 11.5        | 20.6        | 32.1            | 52.8               | -20.7       |
| 0.770      | 4.9         | 20.2        | 25.1            | 46.0               | -20.9       |
| 0.157      | 13.9        | 20.6        | 34.5            | 55.6               | -21.1       |
| 0.413      | 4.0         | 20.2        | 24.2            | 47.6               | -23.4       |
| 0.494      | 0.0         | 20.2        | 20.2            | 46.1               | -25.9       |
| 27.121     | 1.0         | 22.9        | 23.9            | 50.0               | -26.1       |
| 8.212      | 0.5         | 20.5        | 21.0            | 50.0               | -29.0       |
| 4.000      | -4.0        | 20.4        | 16.4            | 46.0               | -29.6       |
| 11.245     | -0.9        | 20.7        | 19.8            | 50.0               | -30.2       |
| 22.590     | -2.2        | 21.6        | 19.4            | 50.0               | -30.6       |
| 3.469      | -5.1        | 20.4        | 15.3            | 46.0               | -30.7       |
| 0.661      | -5.3        | 20.2        | 14.9            | 46.0               | -31.1       |
| 2.790      | -5.7        | 20.3        | 14.6            | 46.0               | -31.4       |
| 1.516      | -5.9        | 20.2        | 14.3            | 46.0               | -31.7       |
| 2.290      | -6.1        | 20.3        | 14.2            | 46.0               | -31.8       |
| 1.800      | -6.4        | 20.3        | 13.9            | 46.0               | -32.1       |
| 5.179      | -2.5        | 20.4        | 17.9            | 50.0               | -32.1       |
| 6.164      | -2.7        | 20.4        | 17.7            | 50.0               | -32.3       |
| 0.989      | -6.6        | 20.2        | 13.6            | 46.0               | -32.4       |
| 1.200      | -6.6        | 20.2        | 13.6            | 46.0               | -32.4       |
| 20.537     | -4.3        | 21.4        | 17.1            | 50.0               | -32.9       |

## CONCLUSION

Evaluation

# AC POWERLINE CONDUCTED EMISSIONS

|                   |                                 |                       |            |
|-------------------|---------------------------------|-----------------------|------------|
| EUT:              | Switch 90 Convergent Centrifuge | Work Order:           | ABBO0294   |
| Serial Number:    | S90CC1                          | Date:                 | 2023-11-01 |
| Customer:         | Abbott Laboratories             | Temperature:          | 22.8°C     |
| Attendees:        | None                            | Relative Humidity:    | 26.2%      |
| Customer Project: | None                            | Bar. Pressure (PMSL): | 1029 mb    |
| Tested By:        | Jarrod Brenden                  | Job Site:             | TX01       |
| Power:            | 220VAC/60Hz                     | Configuration:        | ABBO0294-1 |

## TEST SPECIFICATIONS

|                                      |                  |
|--------------------------------------|------------------|
| Specification:                       | Method:          |
| FCC 15.207:2023                      | ANSI C63.10:2013 |
| RSS-Gen Issue 5:2018+A1:2019+A2:2021 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |   |       |           |                             |   |
|--------|---|-------|-----------|-----------------------------|---|
| Run #: | 4 | Line: | High Line | Add. Ext. Attenuation (dB): | 0 |
|--------|---|-------|-----------|-----------------------------|---|

## COMMENTS

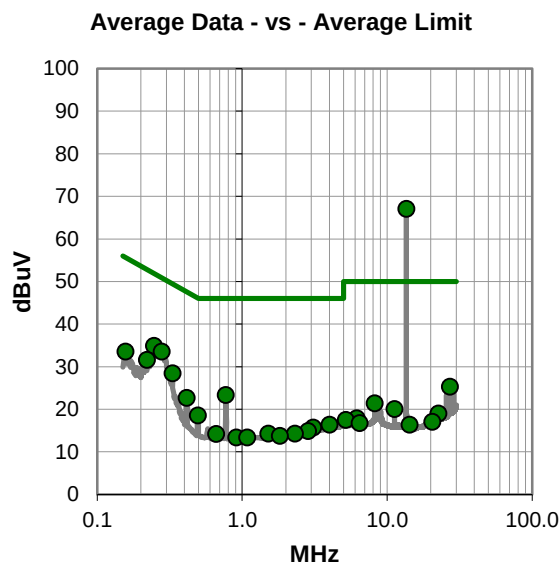
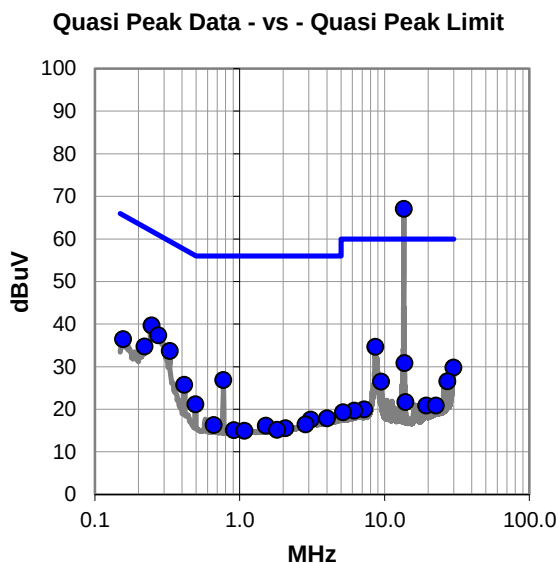
Test Protocol D000141866A EMC. Track component of Floor Standing equipment.

## EUT OPERATING MODES

Transmitting, 13.56 MHz, RFID

## DEVIATIONS FROM TEST STANDARD

None



# AC POWERLINE CONDUCTED EMISSIONS

## RESULTS - Run #4

Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 13.560     | 46.3        | 20.8        | 67.1            | 60.0               | 7.1         |
| 0.247      | 19.2        | 20.5        | 39.7            | 61.9               | -22.2       |
| 0.274      | 17.1        | 20.3        | 37.4            | 61.0               | -23.6       |
| 8.640      | 14.1        | 20.6        | 34.7            | 60.0               | -25.3       |
| 0.330      | 13.5        | 20.2        | 33.7            | 59.5               | -25.8       |
| 0.220      | 14.2        | 20.6        | 34.8            | 62.8               | -28.0       |
| 0.157      | 15.9        | 20.6        | 36.5            | 65.6               | -29.1       |
| 0.770      | 6.7         | 20.2        | 26.9            | 56.0               | -29.1       |
| 13.720     | 10.1        | 20.8        | 30.9            | 60.0               | -29.1       |
| 29.947     | 7.5         | 22.3        | 29.8            | 60.0               | -30.2       |
| 0.413      | 5.6         | 20.2        | 25.8            | 57.6               | -31.8       |
| 27.121     | 3.7         | 22.9        | 26.6            | 60.0               | -33.4       |
| 9.449      | 5.9         | 20.6        | 26.5            | 60.0               | -33.5       |
| 0.494      | 1.0         | 20.2        | 21.2            | 56.1               | -34.9       |
| 4.000      | -2.5        | 20.4        | 17.9            | 56.0               | -38.1       |
| 13.931     | 0.9         | 20.8        | 21.7            | 60.0               | -38.3       |
| 3.090      | -2.7        | 20.3        | 17.6            | 56.0               | -38.4       |
| 19.430     | -0.4        | 21.3        | 20.9            | 60.0               | -39.1       |
| 22.590     | -0.7        | 21.6        | 20.9            | 60.0               | -39.1       |
| 2.850      | -3.8        | 20.3        | 16.5            | 56.0               | -39.5       |
| 0.660      | -3.9        | 20.2        | 16.3            | 56.0               | -39.7       |
| 1.516      | -4.0        | 20.2        | 16.2            | 56.0               | -39.8       |
| 7.244      | -0.4        | 20.4        | 20.0            | 60.0               | -40.0       |
| 6.164      | -0.7        | 20.4        | 19.7            | 60.0               | -40.3       |
| 2.070      | -4.7        | 20.3        | 15.6            | 56.0               | -40.4       |

Average Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 13.560     | 46.3        | 20.8        | 67.1            | 50.0               | 17.1        |
| 0.247      | 14.4        | 20.5        | 34.9            | 51.9               | -17.0       |
| 0.278      | 13.3        | 20.3        | 33.6            | 50.9               | -17.3       |
| 0.330      | 8.3         | 20.2        | 28.5            | 49.5               | -21.0       |
| 0.220      | 11.0        | 20.6        | 31.6            | 52.8               | -21.2       |
| 0.157      | 13.0        | 20.6        | 33.6            | 55.6               | -22.0       |
| 0.770      | 3.2         | 20.2        | 23.4            | 46.0               | -22.6       |
| 27.121     | 2.4         | 22.9        | 25.3            | 50.0               | -24.7       |
| 0.413      | 2.5         | 20.2        | 22.7            | 47.6               | -24.9       |
| 0.494      | -1.6        | 20.2        | 18.6            | 46.1               | -27.5       |
| 8.212      | 0.9         | 20.5        | 21.4            | 50.0               | -28.6       |
| 4.000      | -4.0        | 20.4        | 16.4            | 46.0               | -29.6       |
| 11.245     | -0.6        | 20.7        | 20.1            | 50.0               | -29.9       |
| 3.086      | -4.6        | 20.3        | 15.7            | 46.0               | -30.3       |
| 22.590     | -2.6        | 21.6        | 19.0            | 50.0               | -31.0       |
| 2.839      | -5.4        | 20.3        | 14.9            | 46.0               | -31.1       |
| 1.516      | -5.9        | 20.2        | 14.3            | 46.0               | -31.7       |
| 2.310      | -6.0        | 20.3        | 14.3            | 46.0               | -31.7       |
| 0.660      | -6.0        | 20.2        | 14.2            | 46.0               | -31.8       |
| 6.164      | -2.5        | 20.4        | 17.9            | 50.0               | -32.1       |
| 1.817      | -6.5        | 20.3        | 13.8            | 46.0               | -32.2       |
| 5.179      | -2.9        | 20.4        | 17.5            | 50.0               | -32.5       |
| 0.908      | -6.8        | 20.2        | 13.4            | 46.0               | -32.6       |
| 1.080      | -6.8        | 20.2        | 13.4            | 46.0               | -32.6       |
| 20.510     | -4.3        | 21.4        | 17.1            | 50.0               | -32.9       |

## CONCLUSION

Evaluation

# AC POWERLINE CONDUCTED EMISSIONS

|                   |                                 |                       |            |
|-------------------|---------------------------------|-----------------------|------------|
| EUT:              | Switch 90 Convergent Centrifuge | Work Order:           | ABBO0294   |
| Serial Number:    | S90CC1                          | Date:                 | 2023-11-10 |
| Customer:         | Abbott Laboratories             | Temperature:          | 21.3°C     |
| Attendees:        | None                            | Relative Humidity:    | 53.4%      |
| Customer Project: | None                            | Bar. Pressure (PMSL): | 1002 mb    |
| Tested By:        | Jarrod Brenden                  | Job Site:             | TX01       |
| Power:            | 220VAC/60Hz                     | Configuration:        | ABBO0294-1 |

## TEST SPECIFICATIONS

|                                      |                  |
|--------------------------------------|------------------|
| Specification:                       | Method:          |
| FCC 15.207:2023                      | ANSI C63.10:2013 |
| RSS-Gen Issue 5:2018+A1:2019+A2:2021 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |    |       |           |                             |   |
|--------|----|-------|-----------|-----------------------------|---|
| Run #: | 27 | Line: | High Line | Add. Ext. Attenuation (dB): | 0 |
|--------|----|-------|-----------|-----------------------------|---|

## COMMENTS

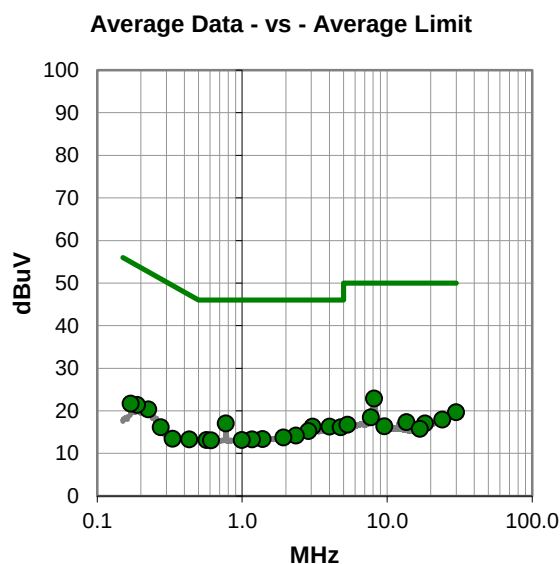
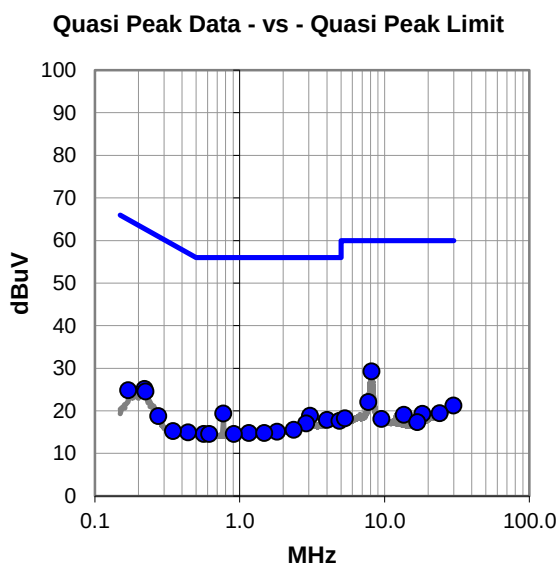
Test Protocol D000141866A EMC. Track component of Floor Standing equipment. Antenna disconnected and terminated with load.

## EUT OPERATING MODES

Transmitting, 13.56 MHz, RFID

## DEVIATIONS FROM TEST STANDARD

None



# AC POWERLINE CONDUCTED EMISSIONS

## RESULTS - Run #27

Quasi Peak Data - vs - Quasi Peak Limit

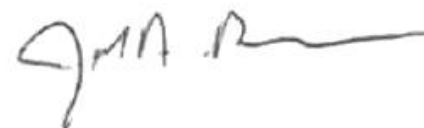
| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 8.108      | 8.8         | 20.5        | 29.3            | 60.0               | -30.7       |
| 0.770      | -0.8        | 20.2        | 19.4            | 56.0               | -36.6       |
| 3.060      | -1.4        | 20.3        | 18.9            | 56.0               | -37.1       |
| 0.220      | 4.6         | 20.6        | 25.2            | 62.8               | -37.6       |
| 7.710      | 1.7         | 20.4        | 22.1            | 60.0               | -37.9       |
| 0.224      | 4.0         | 20.6        | 24.6            | 62.7               | -38.1       |
| 4.000      | -2.5        | 20.4        | 17.9            | 56.0               | -38.1       |
| 4.880      | -2.7        | 20.4        | 17.7            | 56.0               | -38.3       |
| 29.850     | -1.1        | 22.4        | 21.3            | 60.0               | -38.7       |
| 2.879      | -3.2        | 20.3        | 17.1            | 56.0               | -38.9       |
| 0.170      | 4.2         | 20.7        | 24.9            | 65.0               | -40.1       |
| 2.360      | -4.7        | 20.3        | 15.6            | 56.0               | -40.4       |
| 24.060     | -2.3        | 21.8        | 19.5            | 60.0               | -40.5       |
| 18.283     | -2.0        | 21.3        | 19.3            | 60.0               | -40.7       |
| 1.808      | -5.2        | 20.3        | 15.1            | 56.0               | -40.9       |
| 13.560     | -1.7        | 20.8        | 19.1            | 60.0               | -40.9       |
| 1.156      | -5.4        | 20.2        | 14.8            | 56.0               | -41.2       |
| 1.475      | -5.4        | 20.2        | 14.8            | 56.0               | -41.2       |
| 0.566      | -5.6        | 20.2        | 14.6            | 56.0               | -41.4       |
| 0.616      | -5.6        | 20.2        | 14.6            | 56.0               | -41.4       |
| 0.910      | -5.6        | 20.2        | 14.6            | 56.0               | -41.4       |
| 5.330      | -2.1        | 20.4        | 18.3            | 60.0               | -41.7       |
| 9.530      | -2.5        | 20.6        | 18.1            | 60.0               | -41.9       |
| 0.440      | -5.2        | 20.2        | 15.0            | 57.1               | -42.1       |
| 0.274      | -1.5        | 20.3        | 18.8            | 61.0               | -42.2       |

Average Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 8.110      | 2.4         | 20.5        | 22.9            | 50.0               | -27.1       |
| 0.770      | -3.1        | 20.2        | 17.1            | 46.0               | -28.9       |
| 3.050      | -4.0        | 20.3        | 16.3            | 46.0               | -29.7       |
| 4.000      | -4.1        | 20.4        | 16.3            | 46.0               | -29.7       |
| 4.790      | -4.2        | 20.4        | 16.2            | 46.0               | -29.8       |
| 29.848     | -2.7        | 22.4        | 19.7            | 50.0               | -30.3       |
| 2.866      | -5.0        | 20.3        | 15.3            | 46.0               | -30.7       |
| 7.710      | -1.9        | 20.4        | 18.5            | 50.0               | -31.5       |
| 2.350      | -6.1        | 20.3        | 14.2            | 46.0               | -31.8       |
| 23.970     | -3.8        | 21.8        | 18.0            | 50.0               | -32.0       |
| 1.921      | -6.5        | 20.3        | 13.8            | 46.0               | -32.2       |
| 0.224      | -0.2        | 20.6        | 20.4            | 52.7               | -32.3       |
| 1.380      | -6.8        | 20.2        | 13.4            | 46.0               | -32.6       |
| 13.560     | -3.4        | 20.8        | 17.4            | 50.0               | -32.6       |
| 0.188      | 0.7         | 20.7        | 21.4            | 54.1               | -32.7       |
| 1.170      | -6.9        | 20.2        | 13.3            | 46.0               | -32.7       |
| 0.566      | -7.0        | 20.2        | 13.2            | 46.0               | -32.8       |
| 0.994      | -7.0        | 20.2        | 13.2            | 46.0               | -32.8       |
| 0.610      | -7.1        | 20.2        | 13.1            | 46.0               | -32.9       |
| 18.242     | -4.2        | 21.3        | 17.1            | 50.0               | -32.9       |
| 5.330      | -3.6        | 20.4        | 16.8            | 50.0               | -33.2       |
| 0.170      | 1.0         | 20.7        | 21.7            | 55.0               | -33.3       |
| 9.530      | -4.2        | 20.6        | 16.4            | 50.0               | -33.6       |
| 0.430      | -6.9        | 20.2        | 13.3            | 47.3               | -34.0       |
| 16.766     | -5.3        | 21.1        | 15.8            | 50.0               | -34.2       |

## CONCLUSION

Pass



Tested By

# AC POWERLINE CONDUCTED EMISSIONS

|                   |                                 |                       |            |
|-------------------|---------------------------------|-----------------------|------------|
| EUT:              | Switch 90 Convergent Centrifuge | Work Order:           | ABBO0294   |
| Serial Number:    | S90CC1                          | Date:                 | 2023-11-10 |
| Customer:         | Abbott Laboratories             | Temperature:          | 21.3°C     |
| Attendees:        | None                            | Relative Humidity:    | 53.4%      |
| Customer Project: | None                            | Bar. Pressure (PMSL): | 1002 mb    |
| Tested By:        | Jarrod Brenden                  | Job Site:             | TX01       |
| Power:            | 220VAC/60Hz                     | Configuration:        | ABBO0294-1 |

## TEST SPECIFICATIONS

|                                      |                  |
|--------------------------------------|------------------|
| Specification:                       | Method:          |
| FCC 15.207:2023                      | ANSI C63.10:2013 |
| RSS-Gen Issue 5:2018+A1:2019+A2:2021 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |    |       |         |                             |   |
|--------|----|-------|---------|-----------------------------|---|
| Run #: | 28 | Line: | Neutral | Add. Ext. Attenuation (dB): | 0 |
|--------|----|-------|---------|-----------------------------|---|

## COMMENTS

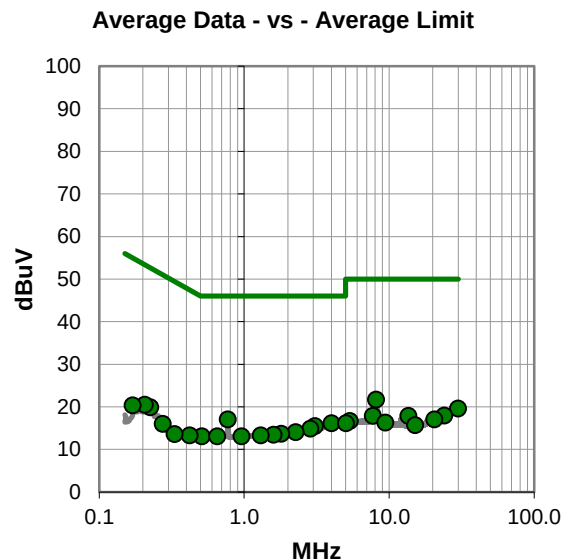
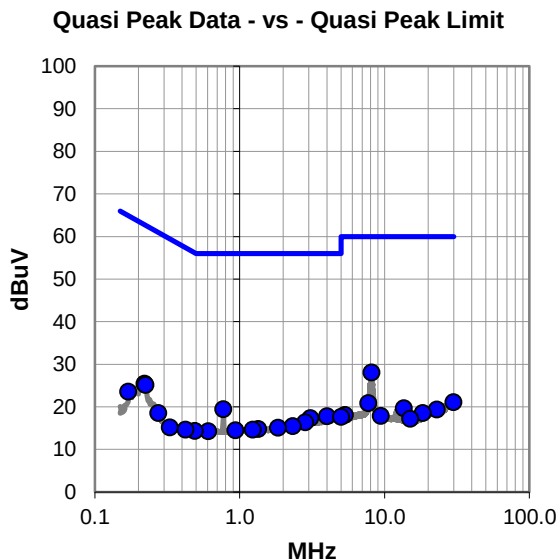
Test Protocol D000141866A\_EMC. Track component of Floor Standing equipment. Antenna disconnected and terminated with load.

## EUT OPERATING MODES

Transmitting, 13.56 MHz, RFID

## DEVIATIONS FROM TEST STANDARD

None



# AC POWERLINE CONDUCTED EMISSIONS

## RESULTS - Run #28

Quasi Peak Data - vs - Quasi Peak Limit

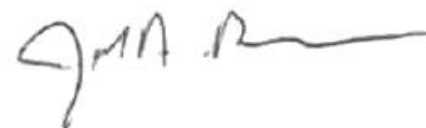
| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 8.110      | 7.6         | 20.5        | 28.1            | 60.0               | -31.9       |
| 0.770      | -0.7        | 20.2        | 19.5            | 56.0               | -36.5       |
| 0.220      | 4.9         | 20.6        | 25.5            | 62.8               | -37.3       |
| 0.224      | 4.6         | 20.6        | 25.2            | 62.7               | -37.5       |
| 4.000      | -2.6        | 20.4        | 17.8            | 56.0               | -38.2       |
| 3.068      | -2.9        | 20.3        | 17.4            | 56.0               | -38.6       |
| 29.860     | -1.3        | 22.4        | 21.1            | 60.0               | -38.9       |
| 7.712      | 0.5         | 20.4        | 20.9            | 60.0               | -39.1       |
| 2.839      | -3.9        | 20.3        | 16.4            | 56.0               | -39.6       |
| 13.560     | -1.1        | 20.8        | 19.7            | 60.0               | -40.3       |
| 2.326      | -4.8        | 20.3        | 15.5            | 56.0               | -40.5       |
| 22.990     | -2.2        | 21.6        | 19.4            | 60.0               | -40.6       |
| 1.840      | -5.2        | 20.3        | 15.1            | 56.0               | -40.9       |
| 1.340      | -5.4        | 20.2        | 14.8            | 56.0               | -41.2       |
| 1.232      | -5.5        | 20.2        | 14.7            | 56.0               | -41.3       |
| 0.170      | 2.9         | 20.7        | 23.6            | 65.0               | -41.4       |
| 18.320     | -2.7        | 21.3        | 18.6            | 60.0               | -41.4       |
| 0.935      | -5.7        | 20.2        | 14.5            | 56.0               | -41.5       |
| 0.607      | -5.9        | 20.2        | 14.3            | 56.0               | -41.7       |
| 0.490      | -5.8        | 20.2        | 14.4            | 56.2               | -41.8       |
| 5.330      | -2.3        | 20.4        | 18.1            | 60.0               | -41.9       |
| 9.410      | -2.7        | 20.6        | 17.9            | 60.0               | -42.1       |
| 5.012      | -2.7        | 20.4        | 17.7            | 60.0               | -42.3       |
| 0.274      | -1.7        | 20.3        | 18.6            | 61.0               | -42.4       |
| 0.422      | -5.5        | 20.2        | 14.7            | 57.4               | -42.7       |

Average Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 8.110      | 1.2         | 20.5        | 21.7            | 50.0               | -28.3       |
| 0.770      | -3.1        | 20.2        | 17.1            | 46.0               | -28.9       |
| 4.000      | -4.2        | 20.4        | 16.2            | 46.0               | -29.8       |
| 29.870     | -2.8        | 22.4        | 19.6            | 50.0               | -30.4       |
| 3.070      | -4.8        | 20.3        | 15.5            | 46.0               | -30.5       |
| 2.866      | -5.4        | 20.3        | 14.9            | 46.0               | -31.1       |
| 2.260      | -6.2        | 20.3        | 14.1            | 46.0               | -31.9       |
| 24.000     | -3.8        | 21.8        | 18.0            | 50.0               | -32.0       |
| 7.710      | -2.5        | 20.4        | 17.9            | 50.0               | -32.1       |
| 13.560     | -2.9        | 20.8        | 17.9            | 50.0               | -32.1       |
| 1.800      | -6.6        | 20.3        | 13.7            | 46.0               | -32.3       |
| 1.590      | -6.7        | 20.2        | 13.5            | 46.0               | -32.5       |
| 1.300      | -6.9        | 20.2        | 13.3            | 46.0               | -32.7       |
| 0.224      | -0.7        | 20.6        | 19.9            | 52.7               | -32.8       |
| 0.206      | -0.1        | 20.6        | 20.5            | 53.4               | -32.9       |
| 0.510      | -7.1        | 20.2        | 13.1            | 46.0               | -32.9       |
| 0.650      | -7.1        | 20.2        | 13.1            | 46.0               | -32.9       |
| 0.960      | -7.1        | 20.2        | 13.1            | 46.0               | -32.9       |
| 20.510     | -4.3        | 21.4        | 17.1            | 50.0               | -32.9       |
| 5.350      | -3.7        | 20.4        | 16.7            | 50.0               | -33.3       |
| 9.420      | -4.3        | 20.6        | 16.3            | 50.0               | -33.7       |
| 5.030      | -4.2        | 20.4        | 16.2            | 50.0               | -33.8       |
| 0.420      | -6.9        | 20.2        | 13.3            | 47.4               | -34.1       |
| 15.080     | -5.2        | 20.9        | 15.7            | 50.0               | -34.3       |
| 0.170      | -0.3        | 20.7        | 20.4            | 55.0               | -34.6       |

## CONCLUSION

Pass



Tested By

# EMISSIONS BANDWIDTH (20 DB)

## TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the spectrum analyzer.

As defined in FCC 15.215 Part (c), intentional radiators 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 designed in the rule section under which the equipment is operated.

The 20 dB bandwidth must be contained within the band 13.110-14.010 MHz. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

Due to the amplitude of the carrier with respect to the modulated signal, the EUT was unable to meet the 1-5% RBW requirement when based off the 20 dB Bandwidth. Therefore the 99% Bandwidth was used to determine the RBW setting for the 20 dB Bandwidth. Video bandwidth (VBW) bandwidth was set to at least 3 times the resolution bandwidth. This is considered worst case. The analyzer sweep time was set to auto and a peak detector was used.

The spectrum analyzer bandwidth measurement function was used to measure the 20 dB bandwidth.

## TEST EQUIPMENT

| Description                    | Manufacturer              | Model                  | ID  | Last Cal.  | Cal. Due   |
|--------------------------------|---------------------------|------------------------|-----|------------|------------|
| Analyzer - Spectrum Analyzer   | Agilent                   | N9010A                 | AFL | 2023-03-17 | 2024-03-17 |
| Block - DC                     | Fairview Microwave        | SD3235-2148            | ANF | 2023-05-24 | 2024-05-24 |
| Cable                          | UtiFlex Micro-Coax        | UFD1150A-1-0720-200200 | TXJ | 2023-08-30 | 2024-08-30 |
| Generator - Signal             | Agilent                   | N5173B                 | TIW | 2023-08-07 | 2026-08-07 |
| Probe - Near Field Set         | ETS Lindgren              | 7405                   | IPS | NCR        | NCR        |
| Thermometer                    | Omega Engineering, Inc.   | HH311                  | DUI | 2023-03-02 | 2024-03-02 |
| Chamber - Temperature/Humidity | Cincinnati Sub Zero (CSZ) | ZPH-8-2-SCT/AC         | TBH | NCR        | NCR        |
| Power Source/Analyzer          | Hewlett Packard           | 6841A                  | THC | NCR        | NCR        |

# EMISSIONS BANDWIDTH (20 DB)

|                   |                                                                                   |                       |            |
|-------------------|-----------------------------------------------------------------------------------|-----------------------|------------|
| EUT:              | Switch 90 Convergent Centrifuge                                                   | Work Order:           | ABBO0294   |
| Serial Number:    | S90CC1                                                                            | Date:                 | 2023-10-31 |
| Customer:         | Abbott Laboratories                                                               | Temperature:          | 22.6°C     |
| Attendees:        | None                                                                              | Relative Humidity:    | 29.3%      |
| Customer Project: | None                                                                              | Bar. Pressure (PMSL): | 1030 mbar  |
| Tested By:        | Jarrod Brenden                                                                    | Job Site:             | TX02       |
| Power:            | 220VAC/60Hz                                                                       | Configuration:        | ABBO0294-1 |
| Signature:        |  |                       |            |

## TEST SPECIFICATIONS

|                 |                  |
|-----------------|------------------|
| Specification:  | Method:          |
| FCC 15.225:2023 | ANSI C63.10:2013 |

## COMMENTS

|                                                                             |
|-----------------------------------------------------------------------------|
| Test Protocol D000141866A EMC. Track component of Floor Standing equipment. |
|-----------------------------------------------------------------------------|

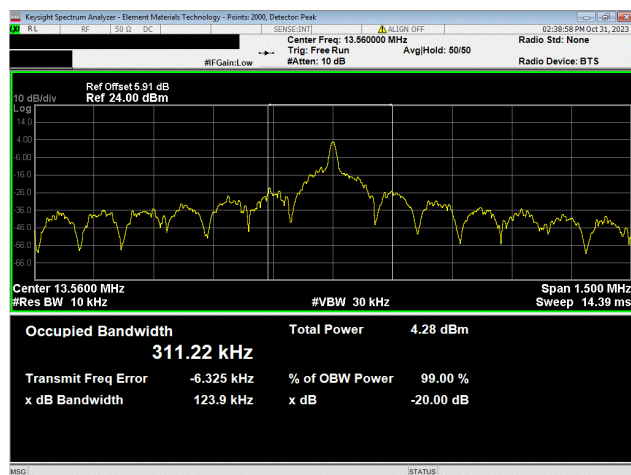
## DEVIATIONS FROM TEST STANDARD

|      |
|------|
| None |
|------|

## TEST RESULTS

|                                 | Value       | Limit  | Result |
|---------------------------------|-------------|--------|--------|
| RFID, 13.56 MHz                 |             |        |        |
| Switch 90 Convergent Centrifuge |             |        |        |
| Nominal Temperature, 20°C       |             |        |        |
| Voltage, Nominal, 220V          | 123.908 kHz | Within | Pass   |

# EMISSIONS BANDWIDTH (20 DB)



RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal Temperature, 20°C  
Voltage, Nominal, 220V

# FIELD STRENGTH OF FUNDAMENTAL

## TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

The fundamental carrier of the EUT was maximized by rotating the EUT on a turntable and adjusting the measurement antenna height and polarization (per ANSI C63.10). A calibrated active loop antenna was used for this test in order to provide sufficient measurement sensitivity. The reference point of the loop antenna was maintained at 1m above the ground plane during the testing.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.5, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

The limits in CFR 47, Part 15C 15.209(a) are identical to those in RSS-Gen section 8.9 Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohms. For example, an E-Field measurement in dBuV/m can be converted to dBuA/m via the following formula: dBuV/m - 51.5 dB = dBuA/m. E-Field measurements have the same margin in dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limits.

## TEST EQUIPMENT

| Description                  | Manufacturer  | Model          | ID  | Last Cal.  | Cal. Due   |
|------------------------------|---------------|----------------|-----|------------|------------|
| Antenna - Loop               | ETS Lindgren  | 6502           | AZM | 2022-07-19 | 2024-07-19 |
| Cable                        | Northwest EMC | RE 9kHz - 1GHz | TXB | 2023-05-25 | 2024-05-25 |
| Analyzer - Spectrum Analyzer | Keysight      | N9010A         | AFQ | 2023-02-09 | 2024-02-09 |

## MEASUREMENT UNCERTAINTY

| Description  |        |         |
|--------------|--------|---------|
| Expanded k=2 | 1.8 dB | -1.8 dB |

## FREQUENCY RANGE INVESTIGATED

12.06 MHz TO 15.06 MHz

## POWER INVESTIGATED

220VAC/60Hz

## CONFIGURATIONS INVESTIGATED

ABBO0294-1

## MODES INVESTIGATED

Transmitting, 13.56 MHz, RFID

# FIELD STRENGTH OF FUNDAMENTAL

|                   |                                 |                       |            |
|-------------------|---------------------------------|-----------------------|------------|
| EUT:              | Switch 90 Convergent Centrifuge | Work Order:           | ABBO0294   |
| Serial Number:    | S90CC1                          | Date:                 | 2023-10-31 |
| Customer:         | Abbott Laboratories             | Temperature:          | 22.1°C     |
| Attendees:        | None                            | Relative Humidity:    | 29.8%      |
| Customer Project: | None                            | Bar. Pressure (PMSL): | 1031 mb    |
| Tested By:        | Jarrod Brenden                  | Job Site:             | TX02       |
| Power:            | 220VAC/60Hz                     | Configuration:        | ABBO0294-1 |

## TEST SPECIFICATIONS

|                                |                  |
|--------------------------------|------------------|
| Specification:                 | Method:          |
| FCC 15.225:2023                | ANSI C63.10:2013 |
| RSS-210 Issue 10:2019 +A1:2020 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |   |                    |    |                     |      |
|--------|---|--------------------|----|---------------------|------|
| Run #: | 3 | Test Distance (m): | 10 | Ant. Height(s) (m): | 1(m) |
|--------|---|--------------------|----|---------------------|------|

## COMMENTS

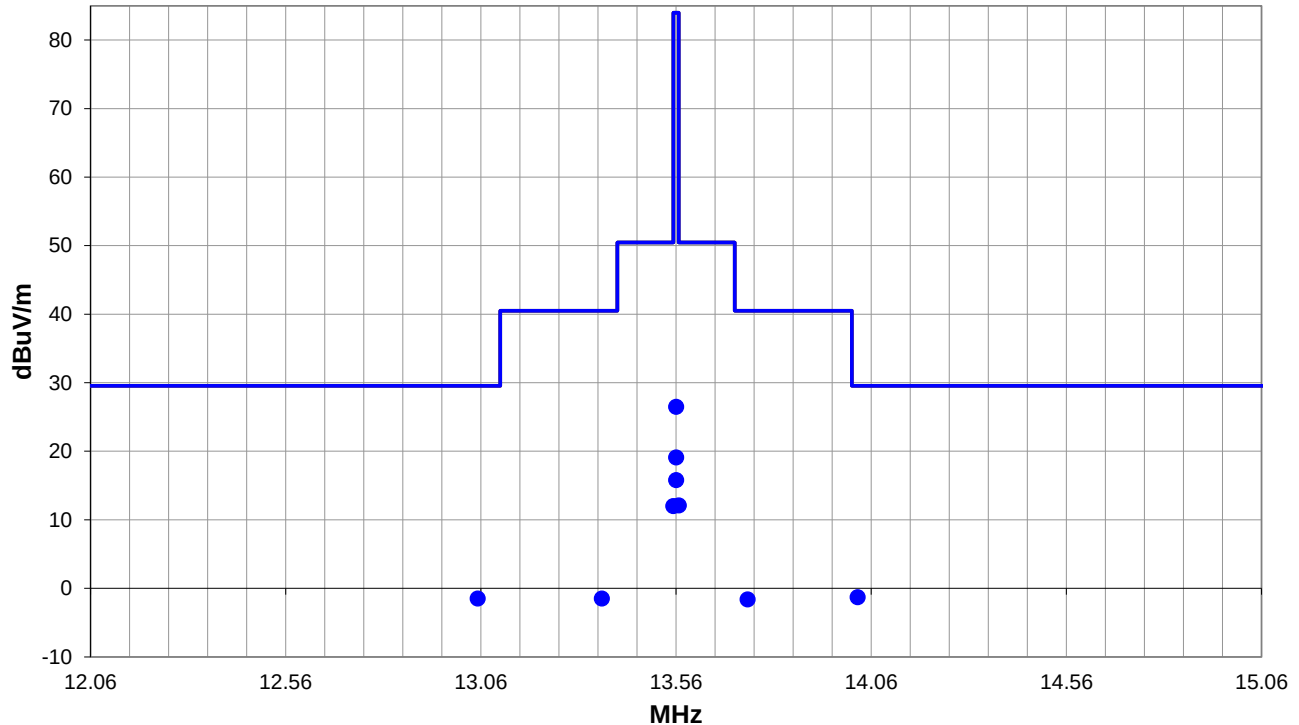
|                                                                             |
|-----------------------------------------------------------------------------|
| Test Protocol D000141866A EMC. Track component of Floor Standing equipment. |
|-----------------------------------------------------------------------------|

## EUT OPERATING MODES

|                               |
|-------------------------------|
| Transmitting, 13.56 MHz, RFID |
|-------------------------------|

## DEVIATIONS FROM TEST STANDARD

|      |
|------|
| None |
|------|



Run #: 3

■ PK ◆ AV ● QP

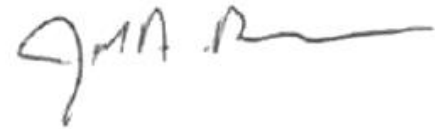
# FIELD STRENGTH OF FUNDAMENTAL

## RESULTS - Run #3

| Freq (MHz) | Amplitude (dBuV) | Factor (dB/m) | Antenna Height (meters) | Azimuth (degrees) | Test Distance (meters) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) |
|------------|------------------|---------------|-------------------------|-------------------|------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|
| 14.025     | 6.2              | 11.6          | 1.0                     | 42.0              | 10.0                   | 0.0                       | Perp to EUT               | QP       | -19.1                    | -1.3              | 29.5                 | -30.8                  |
| 13.052     | 6.0              | 11.6          | 1.0                     | 57.0              | 10.0                   | 0.0                       | Perp to EUT               | QP       | -19.1                    | -1.5              | 29.5                 | -31.0                  |
| 13.567     | 19.6             | 11.6          | 1.0                     | 321.0             | 10.0                   | 0.0                       | Perp to EUT               | QP       | -19.1                    | 12.1              | 50.5                 | -38.4                  |
| 13.553     | 19.5             | 11.6          | 1.0                     | 273.9             | 10.0                   | 0.0                       | Perp to EUT               | QP       | -19.1                    | 12.0              | 50.5                 | -38.5                  |
| 13.370     | 6.0              | 11.6          | 1.0                     | 140.0             | 10.0                   | 0.0                       | Perp to EUT               | QP       | -19.1                    | -1.5              | 40.5                 | -42.0                  |
| 13.744     | 5.9              | 11.6          | 1.0                     | 98.0              | 10.0                   | 0.0                       | Perp to EUT               | QP       | -19.1                    | -1.6              | 40.5                 | -42.1                  |
| 13.560     | 34.0             | 11.6          | 1.0                     | 331.0             | 10.0                   | 0.0                       | Perp to EUT               | QP       | -19.1                    | 26.5              | 84.0                 | -57.5                  |
| 13.560     | 26.6             | 11.6          | 1.0                     | 72.0              | 10.0                   | 0.0                       | Para to EUT               | QP       | -19.1                    | 19.1              | 84.0                 | -64.9                  |
| 13.560     | 23.3             | 11.6          | 1.0                     | 357.9             | 10.0                   | 0.0                       | Para to GND               | QP       | -19.1                    | 15.8              | 84.0                 | -68.2                  |

## CONCLUSION

Pass



Tested By

# FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)



## TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These "pre-scans" are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable and adjusting the measurement antenna height and polarization (per ANSI C63.10). An active loop antenna was used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.5, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

The limits in CFR 47, Part 15C 15.209(a) are identical to those in RSS-Gen section 8.9 Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohms. For example, an E-Field measurement in dBuV/m can be converted to dBuA/m via the following formula:  $\text{dBuV/m} - 51.5 \text{ dB} = \text{dBuA/m}$ . E-Field measurements have the same margin in dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limits.

## TEST EQUIPMENT

| Description                  | Manufacturer  | Model          | ID  | Last Cal.  | Cal. Due   |
|------------------------------|---------------|----------------|-----|------------|------------|
| Antenna - Loop               | ETS Lindgren  | 6502           | AZM | 2022-07-19 | 2024-07-19 |
| Cable                        | Northwest EMC | RE 9kHz - 1GHz | TXB | 2023-05-25 | 2024-05-25 |
| Analyzer - Spectrum Analyzer | Keysight      | N9010A         | AFQ | 2023-02-09 | 2024-02-09 |

## MEASUREMENT UNCERTAINTY

| Description  |        |         |
|--------------|--------|---------|
| Expanded k=2 | 1.8 dB | -1.8 dB |

## FREQUENCY RANGE INVESTIGATED

9 kHz TO 30 MHz

## POWER INVESTIGATED

220VAC/60Hz

## CONFIGURATIONS INVESTIGATED

ABBO0294-1

## MODES INVESTIGATED

Transmitting, 13.56 MHz, RFID

# FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

|                   |                                 |                       |            |
|-------------------|---------------------------------|-----------------------|------------|
| EUT:              | Switch 90 Convergent Centrifuge | Work Order:           | ABBO0294   |
| Serial Number:    | S90CC1                          | Date:                 | 2023-10-31 |
| Customer:         | Abbott Laboratories             | Temperature:          | 22.1°C     |
| Attendees:        | None                            | Relative Humidity:    | 29.8%      |
| Customer Project: | None                            | Bar. Pressure (PMSL): | 1031 mb    |
| Tested By:        | Jarrod Brenden                  | Job Site:             | TX02       |
| Power:            | 220VAC/60Hz                     | Configuration:        | ABBO0294-1 |

## TEST SPECIFICATIONS

|                                |                  |
|--------------------------------|------------------|
| Specification:                 | Method:          |
| FCC 15.225:2023                | ANSI C63.10:2013 |
| RSS-210 Issue 10:2019 +A1:2020 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |   |                    |    |                     |      |
|--------|---|--------------------|----|---------------------|------|
| Run #: | 4 | Test Distance (m): | 10 | Ant. Height(s) (m): | 1(m) |
|--------|---|--------------------|----|---------------------|------|

## COMMENTS

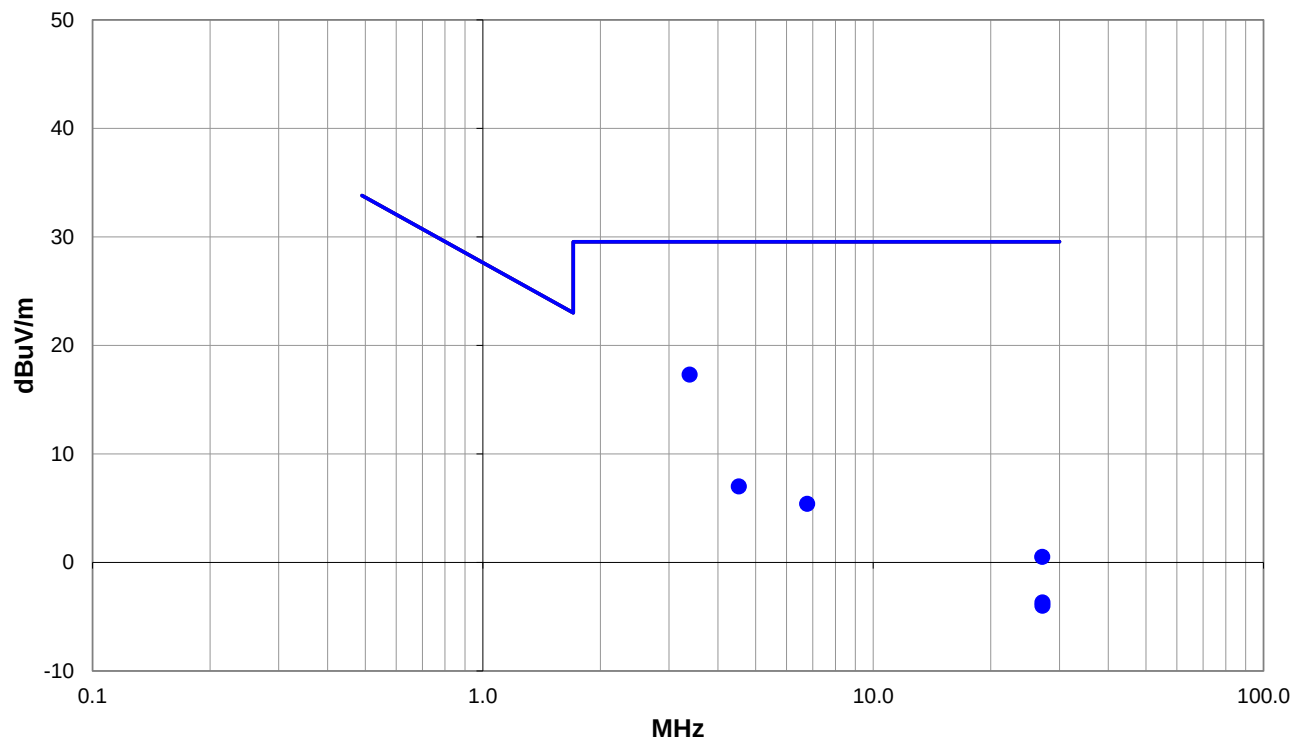
Test Protocol D000141866A\_EMC. Track component of Floor Standing equipment.

## EUT OPERATING MODES

Transmitting, 13.56 MHz, RFID

## DEVIATIONS FROM TEST STANDARD

None



Run #: 4

■ PK ◆ AV ● QP

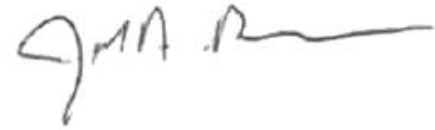
# FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

## RESULTS - Run #4

| Freq (MHz) | Amplitude (dBuV) | Factor (dB/m) | Antenna Height (meters) | Azimuth (degrees) | Test Distance (meters) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) |
|------------|------------------|---------------|-------------------------|-------------------|------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|
| 3.385      | 24.8             | 11.6          | 1.0                     | 200.0             | 10.0                   | 0.0                       | Perp to EUT               | QP       | -19.1                    | 17.3              | 29.5                 | -12.2                  |
| 4.524      | 14.3             | 11.8          | 1.0                     | 141.0             | 10.0                   | 0.0                       | Perp to EUT               | QP       | -19.1                    | 7.0               | 29.5                 | -22.5                  |
| 6.776      | 12.8             | 11.7          | 1.0                     | 195.0             | 10.0                   | 0.0                       | Perp to EUT               | QP       | -19.1                    | 5.4               | 29.5                 | -24.1                  |
| 27.116     | 9.6              | 10.0          | 1.0                     | 349.0             | 10.0                   | 0.0                       | Perp to EUT               | QP       | -19.1                    | 0.5               | 29.5                 | -29.0                  |
| 27.123     | 5.4              | 10.0          | 1.0                     | 314.0             | 10.0                   | 0.0                       | Para to EUT               | QP       | -19.1                    | -3.7              | 29.5                 | -33.2                  |
| 27.145     | 5.1              | 10.0          | 1.0                     | 261.9             | 10.0                   | 0.0                       | Para to GND               | QP       | -19.1                    | -4.0              | 29.5                 | -33.5                  |

## CONCLUSION

Pass



Tested By

# FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)

## TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting while set at the operating channel.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These "pre-scans" are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

## TEST EQUIPMENT

| Description                  | Manufacturer       | Model          | ID  | Last Cal.  | Cal. Due   |
|------------------------------|--------------------|----------------|-----|------------|------------|
| Antenna - Biconilog          | ETS Lindgren       | 3143B          | AYF | 2023-05-03 | 2025-05-03 |
| Cable                        | Northwest EMC      | RE 9kHz - 1GHz | TXB | 2023-05-25 | 2024-05-25 |
| Amplifier - Pre-Amplifier    | Fairview Microwave | FMAM63001      | PAS | 2023-04-11 | 2024-04-11 |
| Filter - Low Pass            | Micro-Tronics      | LPM50004       | HHV | 2023-07-21 | 2024-07-21 |
| Analyzer - Spectrum Analyzer | Keysight           | N9010A         | AFQ | 2023-02-09 | 2024-02-09 |

## MEASUREMENT UNCERTAINTY

| Description  |        |         |
|--------------|--------|---------|
| Expanded k=2 | 4.7 dB | -4.7 dB |

## FREQUENCY RANGE INVESTIGATED

30 MHz TO 1000 MHz

## POWER INVESTIGATED

220VAC/60Hz

## CONFIGURATIONS INVESTIGATED

ABBO0294-1

## MODES INVESTIGATED

Transmitting, 13.56 MHz, RFID

# FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)

|                   |                                 |                       |            |
|-------------------|---------------------------------|-----------------------|------------|
| EUT:              | Switch 90 Convergent Centrifuge | Work Order:           | ABBO0294   |
| Serial Number:    | S90CC1                          | Date:                 | 2023-10-31 |
| Customer:         | Abbott Laboratories             | Temperature:          | 22.1°C     |
| Attendees:        | None                            | Relative Humidity:    | 29.8%      |
| Customer Project: | None                            | Bar. Pressure (PMSL): | 1031 mb    |
| Tested By:        | Jarrod Brenden                  | Job Site:             | TX02       |
| Power:            | 220VAC/60Hz                     | Configuration:        | ABBO0294-1 |

## TEST SPECIFICATIONS

|                                |                  |
|--------------------------------|------------------|
| Specification:                 | Method:          |
| FCC 15.225:2023                | ANSI C63.10:2013 |
| RSS-210 Issue 10:2019 +A1:2020 | ANSI C63.10:2013 |

## TEST PARAMETERS

|        |   |                    |   |                     |           |
|--------|---|--------------------|---|---------------------|-----------|
| Run #: | 6 | Test Distance (m): | 3 | Ant. Height(s) (m): | 1 to 4(m) |
|--------|---|--------------------|---|---------------------|-----------|

## COMMENTS

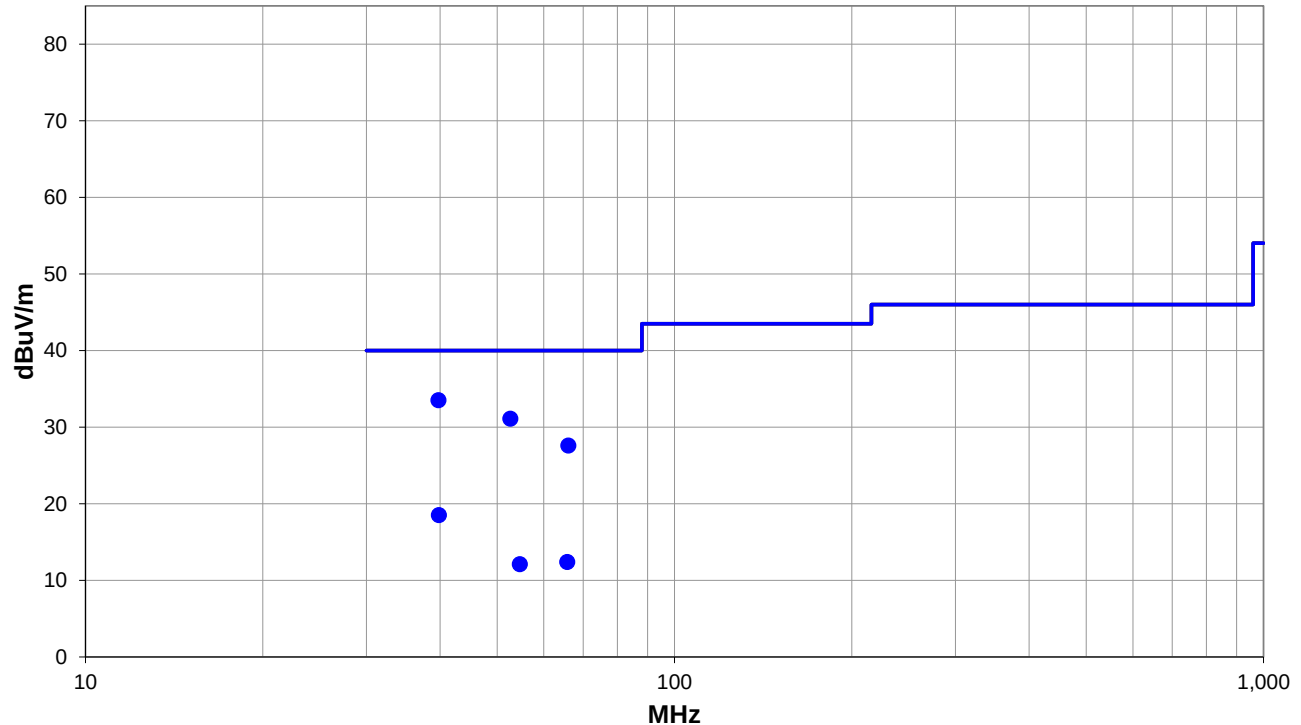
Test Protocol D000141866A\_EMC. Track component of Floor Standing equipment.

## EUT OPERATING MODES

Transmitting, 13.56 MHz, RFID

## DEVIATIONS FROM TEST STANDARD

None



Run #: 6

■ PK ◆ AV ● QP

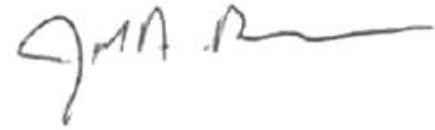
# FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)

## RESULTS - Run #6

| Freq (MHz) | Amplitude (dBuV) | Factor (dB/m) | Antenna Height (meters) | Azimuth (degrees) | Test Distance (meters) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) |
|------------|------------------|---------------|-------------------------|-------------------|------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|
| 39.746     | 56.4             | -22.9         | 1.0                     | 255.0             | 3.0                    | 0.0                       | Vert                      | QP       | 0.0                      | 33.5              | 40.0                 | -6.5                   |
| 52.631     | 58.1             | -27.0         | 1.0                     | 159.0             | 3.0                    | 0.0                       | Vert                      | QP       | 0.0                      | 31.1              | 40.0                 | -8.9                   |
| 66.043     | 53.6             | -26.0         | 1.0                     | 285.0             | 3.0                    | 0.0                       | Vert                      | QP       | 0.0                      | 27.6              | 40.0                 | -12.4                  |
| 39.807     | 41.4             | -22.9         | 1.0                     | 178.9             | 3.0                    | 0.0                       | Horz                      | QP       | 0.0                      | 18.5              | 40.0                 | -21.5                  |
| 65.769     | 38.4             | -26.0         | 3.0                     | 280.9             | 3.0                    | 0.0                       | Horz                      | QP       | 0.0                      | 12.4              | 40.0                 | -27.6                  |
| 54.613     | 39.0             | -26.9         | 1.0                     | 141.9             | 3.0                    | 0.0                       | Horz                      | QP       | 0.0                      | 12.1              | 40.0                 | -27.9                  |

## CONCLUSION

Pass



Tested By

# FREQUENCY STABILITY

## TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the spectrum analyzer.

The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

Measurements were made on the single transmit frequency as called out on the data sheets. Testing was done while the EUT was continuously polling.

The primary supply voltage was varied from 85 % to 115% of the nominal voltage while at ambient temperature. Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range of -20 ° to +50° C and at 10°C intervals.

The requirement of a frequency tolerance of  $\pm 0.01\%$  is equivalent to 100 ppm  
The formula to check for compliance is:

$$\text{ppm} = (\text{Measured Frequency} / \text{Measured Nominal Frequency} - 1) * 1,000,000$$

## TEST EQUIPMENT

| Description                    | Manufacturer              | Model                  | ID  | Last Cal.  | Cal. Due   |
|--------------------------------|---------------------------|------------------------|-----|------------|------------|
| Analyzer - Spectrum Analyzer   | Agilent                   | N9010A                 | AFL | 2023-03-17 | 2024-03-17 |
| Block - DC                     | Fairview Microwave        | SD3235-2148            | ANF | 2023-05-24 | 2024-05-24 |
| Cable                          | UtiFlex Micro-Coax        | UFD1150A-1-0720-200200 | TXJ | 2023-08-30 | 2024-08-30 |
| Generator - Signal             | Agilent                   | N5173B                 | TIW | 2023-08-07 | 2026-08-07 |
| Probe - Near Field Set         | ETS Lindgren              | 7405                   | IPS | NCR        | NCR        |
| Thermometer                    | Omega Engineering, Inc.   | HH311                  | DUI | 2023-03-02 | 2024-03-02 |
| Chamber - Temperature/Humidity | Cincinnati Sub Zero (CSZ) | ZPH-8-2-SCT/AC         | TBH | NCR        | NCR        |
| Power Source/Analyzer          | Hewlett Packard           | 6841A                  | THC | NCR        | NCR        |

# FREQUENCY STABILITY

|                   |                                                                                   |                       |            |
|-------------------|-----------------------------------------------------------------------------------|-----------------------|------------|
| EUT:              | Switch 90 Convergent Centrifuge                                                   | Work Order:           | ABBO0294   |
| Serial Number:    | S90CC1                                                                            | Date:                 | 2023-11-01 |
| Customer:         | Abbott Laboratories                                                               | Temperature:          | 22.5°C     |
| Attendees:        | None                                                                              | Relative Humidity:    | 26%        |
| Customer Project: | None                                                                              | Bar. Pressure (PMSL): | 1032 mbar  |
| Tested By:        | Jarrod Brenden                                                                    | Job Site:             | TX07       |
| Power:            | 220VAC/60Hz                                                                       | Configuration:        | ABBO0294-1 |
| Signature:        |  |                       |            |

## TEST SPECIFICATIONS

|                               |                  |
|-------------------------------|------------------|
| Specification:                | Method:          |
| FCC 15.225:2023               | ANSI C63.10:2013 |
| RSS-210 Issue 10:2019+A1:2020 | ANSI C63.10:2013 |

## COMMENTS

Test Protocol D000141866A EMC. Track component of Floor Standing equipment. RFID radios operate with modulation OOK, 100%, ISO 15693 at full rated power.

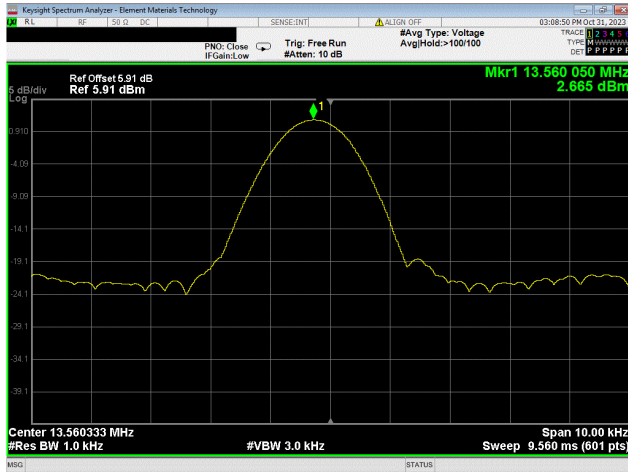
## DEVIATIONS FROM TEST STANDARD

None

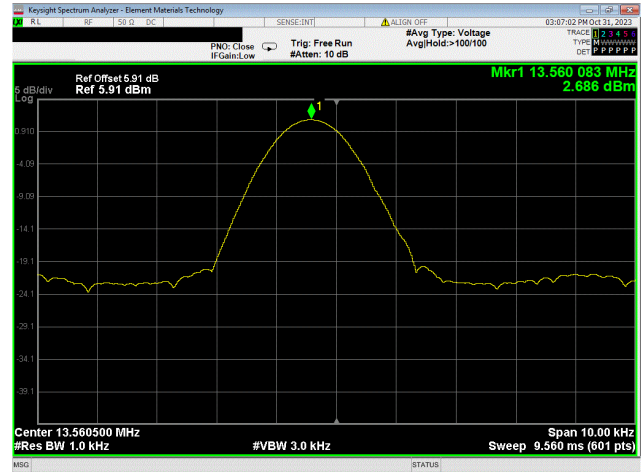
## TEST RESULTS

|                                 | Measured Value (MHz) | Nominal Value (MHz) | Error (ppm) | Limit (ppm) | Results |
|---------------------------------|----------------------|---------------------|-------------|-------------|---------|
| RFID, 13.56 MHz                 |                      |                     |             |             |         |
| Switch 90 Convergent Centrifuge |                      |                     |             |             |         |
| Nominal Temperature, 20°C       |                      |                     |             |             |         |
| Voltage, 115%, 253V             | 13.560050            | 13.560083           | 2.48        | 100         | Pass    |
| Voltage, Nominal, 220V          | 13.560083            | 13.560083           | 0           | 100         | Pass    |
| Voltage, 85%, 187V              | 13.560050            | 13.560083           | 2.48        | 100         | Pass    |
| Nominal AC Voltage, 220V        |                      |                     |             |             |         |
| Temp, 50°C                      | 13.559933            | 13.560083           | 11.11       | 100         | Pass    |
| Temp, 40°C                      | 13.559950            | 13.560083           | 9.86        | 100         | Pass    |
| Temp, 30°C                      | 13.560016            | 13.560083           | 4.94        | 100         | Pass    |
| Temp, 20°C                      | 13.560050            | 13.560083           | 2.46        | 100         | Pass    |
| Temp, 10°C                      | 13.560100            | 13.560083           | 1.23        | 100         | Pass    |
| Temp, 0°C                       | 13.560150            | 13.560083           | 4.92        | 100         | Pass    |
| Temp, -10°C                     | 13.560167            | 13.560083           | 6.15        | 100         | Pass    |
| Temp, -20°C                     | 13.560133            | 13.560083           | 3.66        | 100         | Pass    |

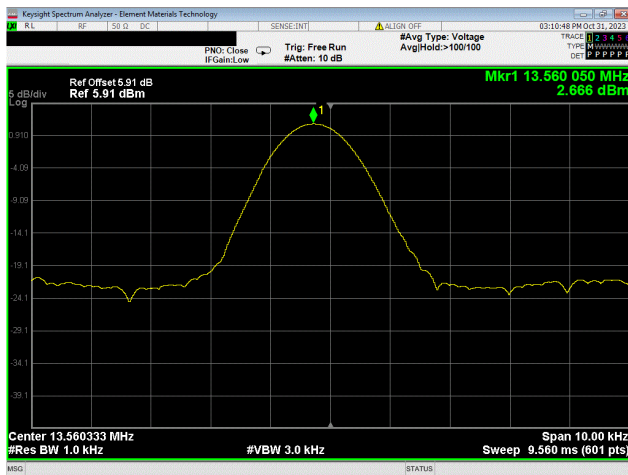
# FREQUENCY STABILITY



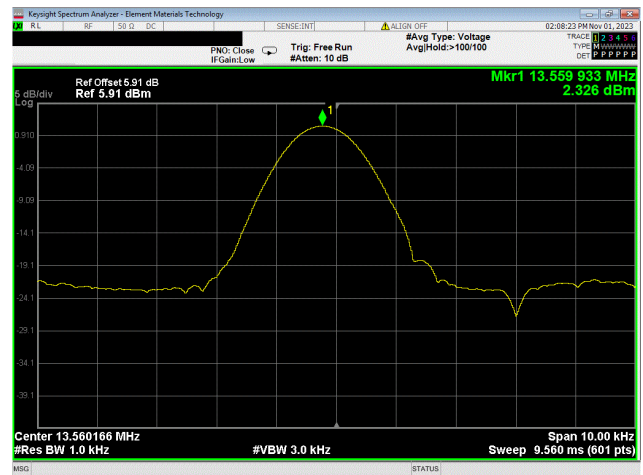
RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal Temperature, 20°C  
Voltage, 115%, 253V



RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal Temperature, 20°C  
Voltage, Nominal, 220V

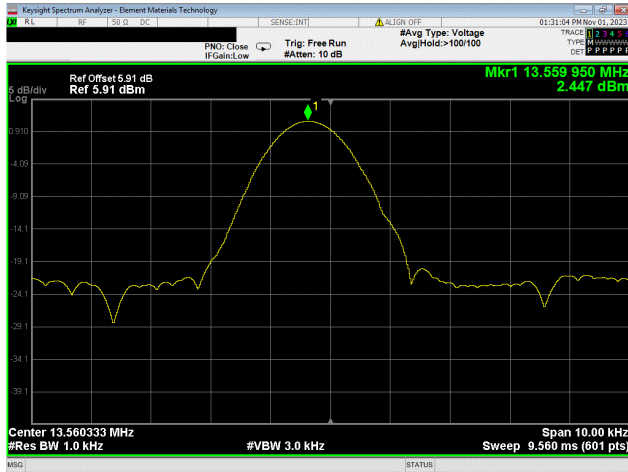


RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal Temperature, 20°C  
Voltage, 85%, 187V

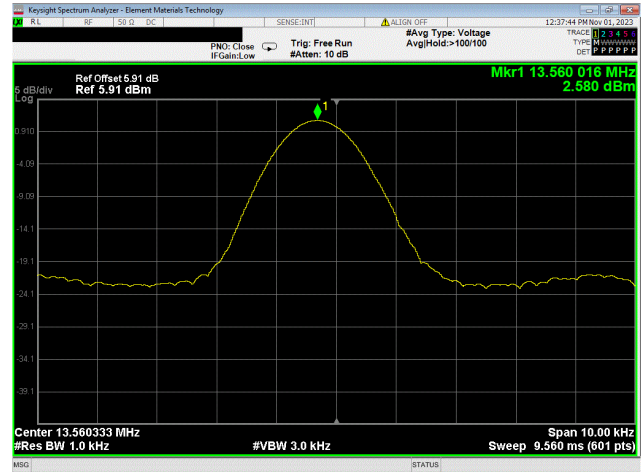


RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal AC Voltage, 220V  
Temp, 50°C

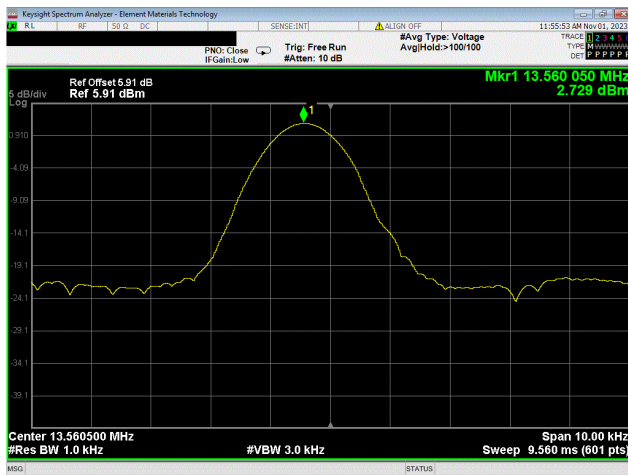
# FREQUENCY STABILITY



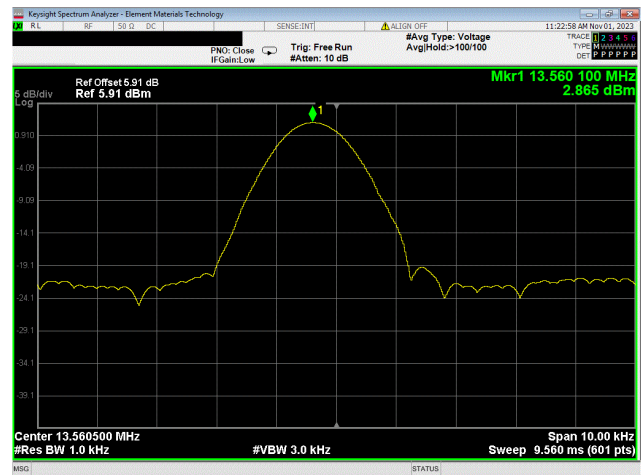
RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal AC Voltage, 220V  
Temp, 40°C



RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal AC Voltage, 220V  
Temp, 30°C

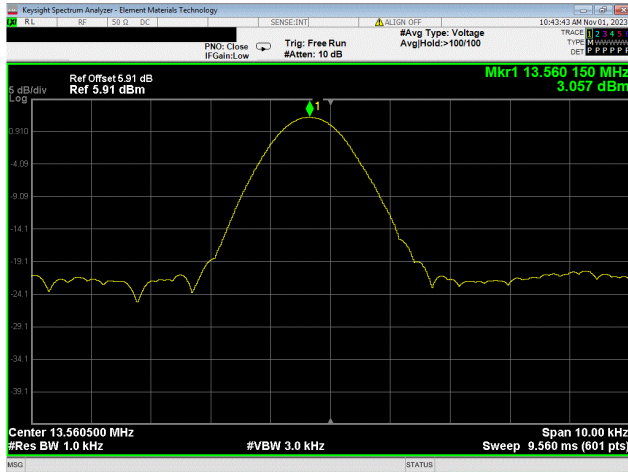


RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal AC Voltage, 220V  
Temp, 20°C

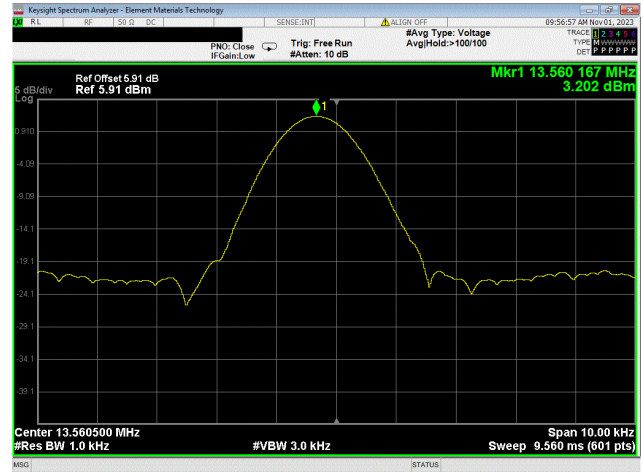


RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal AC Voltage, 220V  
Temp, 10°C

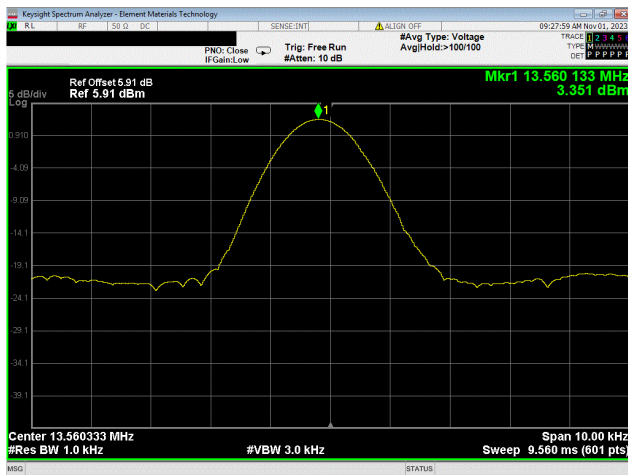
# FREQUENCY STABILITY



RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal AC Voltage, 220V  
Temp, 0°C



RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal AC Voltage, 220V  
Temp, -10°C



RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal AC Voltage, 220V  
Temp, -20°C

# OCCUPIED BANDWIDTH

## TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the spectrum analyzer.

When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth as defined in RSS-Gen.

The 99% occupied bandwidth was measured with the EUT configured for continuous modulated operation.

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) of the spectrum analyzer was set to the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) bandwidth was set to at least 3 times the resolution bandwidth. The analyzer sweep time was set to auto to prevent video filtering or averaging. A Peak detector with max hold mode was used until the trace stabilized.

The spectrum analyzer occupied bandwidth measurement function was used to sum the power of the transmission in linear terms to obtain the 99% bandwidth.

## TEST EQUIPMENT

| Description                    | Manufacturer              | Model                  | ID  | Last Cal.  | Cal. Due   |
|--------------------------------|---------------------------|------------------------|-----|------------|------------|
| Analyzer - Spectrum Analyzer   | Agilent                   | N9010A                 | AFL | 2023-03-17 | 2024-03-17 |
| Block - DC                     | Fairview Microwave        | SD3235-2148            | ANF | 2023-05-24 | 2024-05-24 |
| Cable                          | UtiFlex Micro-Coax        | UFD1150A-1-0720-200200 | TXJ | 2023-08-30 | 2024-08-30 |
| Generator - Signal             | Agilent                   | N5173B                 | TIW | 2023-08-07 | 2026-08-07 |
| Probe - Near Field Set         | ETS Lindgren              | 7405                   | IPS | NCR        | NCR        |
| Thermometer                    | Omega Engineering, Inc.   | HH311                  | DUI | 2023-03-02 | 2024-03-02 |
| Chamber - Temperature/Humidity | Cincinnati Sub Zero (CSZ) | ZPH-8-2-SCT/AC         | TBH | NCR        | NCR        |
| Power Source/Analyzer          | Hewlett Packard           | 6841A                  | THC | NCR        | NCR        |

# OCCUPIED BANDWIDTH

|                   |                                                                                   |                       |            |
|-------------------|-----------------------------------------------------------------------------------|-----------------------|------------|
| EUT:              | Switch 90 Convergent Centrifuge                                                   | Work Order:           | ABBO0294   |
| Serial Number:    | S90CC1                                                                            | Date:                 | 2023-10-31 |
| Customer:         | Abbott Laboratories                                                               | Temperature:          | 22.6°C     |
| Attendees:        | None                                                                              | Relative Humidity:    | 29%        |
| Customer Project: | None                                                                              | Bar. Pressure (PMSL): | 1030 mbar  |
| Tested By:        | Jarrod Brenden                                                                    | Job Site:             | TX02       |
| Power:            | 220VAC/60Hz                                                                       | Configuration:        | ABBO0294-1 |
| Signature:        |  |                       |            |

## TEST SPECIFICATIONS

|                                      |                  |
|--------------------------------------|------------------|
| Specification:                       | Method:          |
| RSS-Gen Issue 5:2018+A1:2019+A2:2021 | ANSI C63.10:2013 |
| RSS-210 Issue 10:2019+A1:2020        | ANSI C63.10:2013 |

## COMMENTS

Test Protocol D000141866A\_EMC. Track component of Floor Standing equipment.

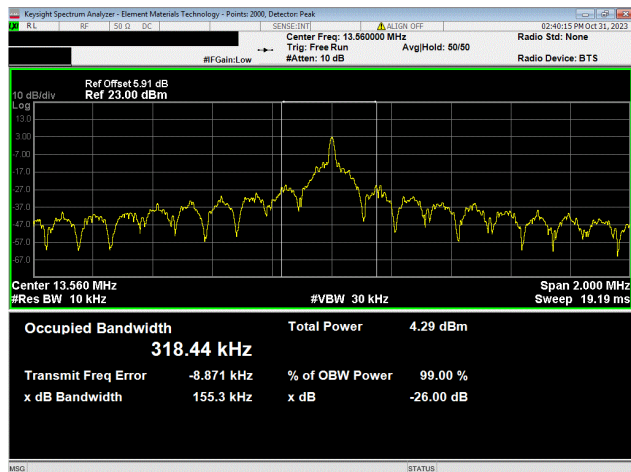
## DEVIATIONS FROM TEST STANDARD

None

## TEST RESULTS

|                                 | Value       | Limit | Result |
|---------------------------------|-------------|-------|--------|
| RFID, 13.56 MHz                 |             |       |        |
| Switch 90 Convergent Centrifuge |             |       |        |
| Nominal Temperature, 20°C       |             |       |        |
| Voltage, Nominal, 220V          | 318.445 kHz | N/A   | N/A    |

# OCCUPIED BANDWIDTH



RFID, 13.56 MHz  
Switch 90 Convergent Centrifuge  
Nominal Temperature, 20°C  
Voltage, Nominal, 220V

## End of Test Report