



element

Garrett Metal Detectors

Paragon

13.56 MHz Radio

FCC 15.207:2024, FCC 15.225:2024

RSS-210 Issue 10:2019+A1:2020, RSS-Gen Issue 5:2018+A1:2019+A2:2021

Report: GARR0118.1 Rev. 1, Issue Date: February 15, 2024



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TABLE OF CONTENTS



| Section | Page Number |
|---|-------------|
| Certificate of Test | 3 |
| Revision History | 5 |
| Accreditations..... | 6 |
| Facilities | 7 |
| Measurement Uncertainty | 8 |
| Test Setup Block Diagrams..... | 9 |
| Product Description..... | 12 |
| Configurations | 13 |
| Modifications | 14 |
| Powerline Conducted Emissions..... | 15 |
| Emissions Bandwidth (20 dB) | 28 |
| Field Strength of Fundamental..... | 31 |
| Field Strength of Spurious Emissions (Less Than 30 MHz) | 34 |
| Field Strength of Spurious Emissions (Greater Than 30 MHz)..... | 37 |
| Frequency Stability..... | 40 |
| Occupied Bandwidth (99%)..... | 45 |
| End of Report..... | 48 |

CERTIFICATE OF TEST



Last Date of Test: February 2, 2024
Garrett Metal Detectors
EUT: Paragon

Radio Equipment Testing Standards

| Specification | Method |
|--------------------------------------|------------------|
| FCC 15.207:2024 | ANSI C63.10:2013 |
| FCC 15.225:2024 | |
| 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 | All radio emissions were at least 10 dB below the limit. Measurements were taken with the radio transmitting and not transmitting to show the remaining emissions are non-radio which will be tested to the applicable product family standard. |
| 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 | |

Note: A gap analysis was performed and the results continue to show compliance.

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



Deviations From Test Standards

None

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 (yyyy-mm-dd) | Page Number |
|------------------------|--|-----------------------------|--------------------|
| 01 | Corrected standards details | 2024-02-14 | 1,3 |
| 01 | Added Power Settings and Antenna page | 2024-02-14 | 13 |
| 01 | Edited comments regarding loop antenna for clarity | 2024-02-14 | 36,39 |

ACCREDITATIONS AND AUTHORIZATIONS



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.

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.

European Union

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

United Kingdom

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

Australia/New Zealand

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

Korea

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

Japan

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

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.

Singapore

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

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

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

[California](#)

[Minnesota](#)

[Oregon](#)

[Texas](#)

[Washington](#)

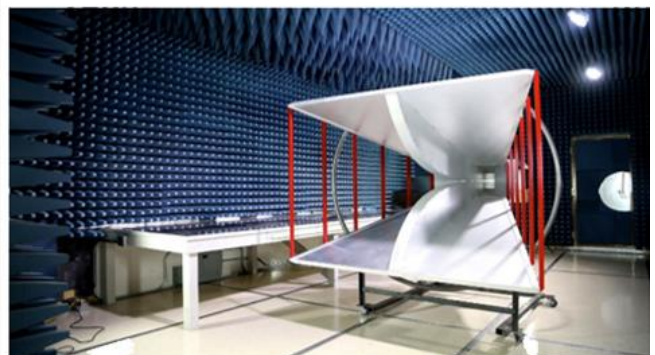
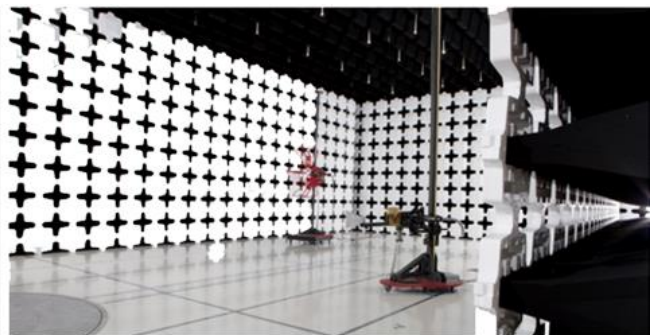
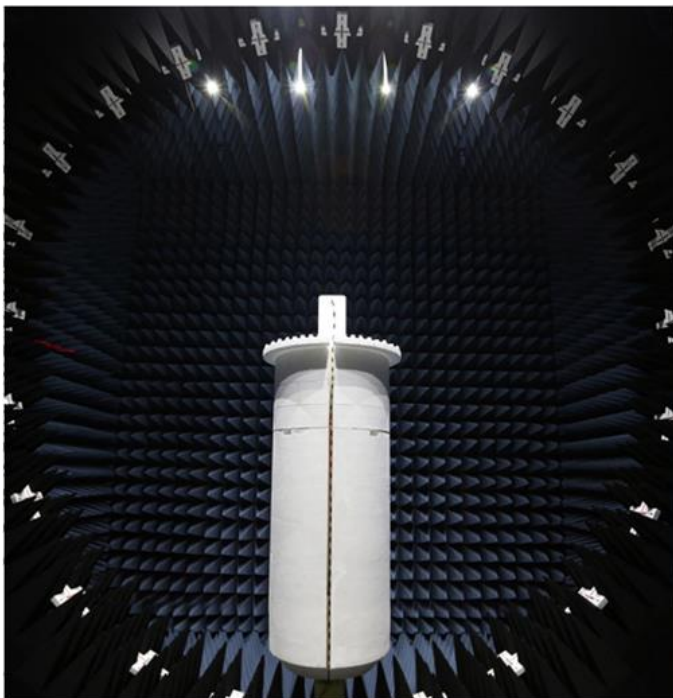
FACILITIES

Testing was performed at the following location(s)

| Location | Labs ⁽¹⁾ | Address | A2LA ⁽²⁾ | ISED ⁽³⁾ | BSMI ⁽⁴⁾ | VCCI ⁽⁵⁾ | CAB ⁽⁶⁾ | FDA ⁽⁷⁾ |
|---|---------------------|--|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|
| <input type="checkbox"/> California | OC01-17 | 41 Tesla Irvine, CA 92618 (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. Brooklyn Park, MN 55445 (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 Hillsboro, OR 97124 (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 Plano, TX 75074 (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 Bothell, WA 98011 (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.

| Test | + MU | - MU |
|---------------------------------------|-------------|-------------|
| Frequency Accuracy | 0.0007% | -0.0007% |
| Amplitude Accuracy (dB) | 1.2 dB | -1.2 dB |
| Conducted Power (dB) | 1.2 dB | -1.2 dB |
| Radiated Power via Substitution (dB) | 0.7 dB | -0.7 dB |
| Temperature (degrees C) | 0.7°C | -0.7°C |
| Humidity (% RH) | 2.5% RH | -2.5% RH |
| Voltage (AC) | 1.0% | -1.0% |
| Voltage (DC) | 0.7% | -0.7% |
| Field Strength (dB) | 5.1 dB | -5.1 dB |
| AC Powerline Conducted Emissions (dB) | 3.1 dB | -3.1 dB |

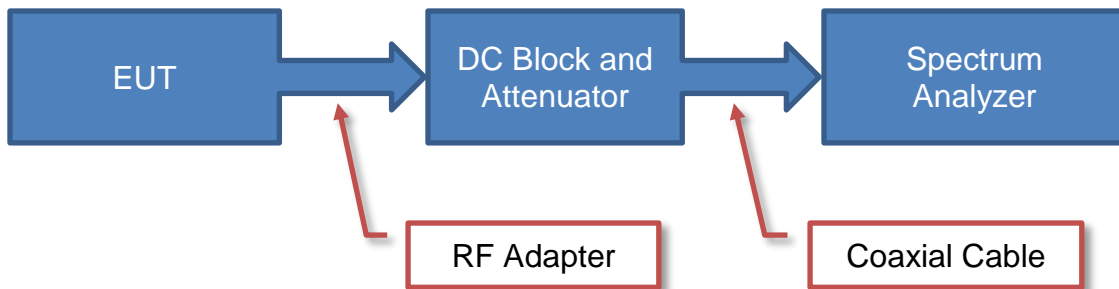
TEST SETUP BLOCK DIAGRAMS

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.

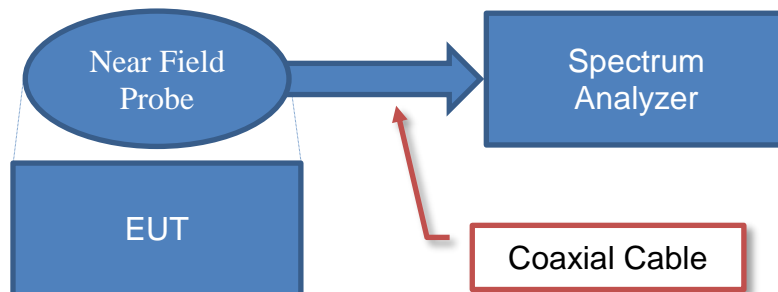
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

$$\begin{array}{r}
 \text{Measured Value} \\
 71.2
 \end{array}
 =
 \begin{array}{r}
 \text{Measured Level} \\
 42.6
 \end{array}
 +
 \begin{array}{r}
 \text{Reference Level Offset} \\
 28.6
 \end{array}$$

Near Field Test Fixture Measurements

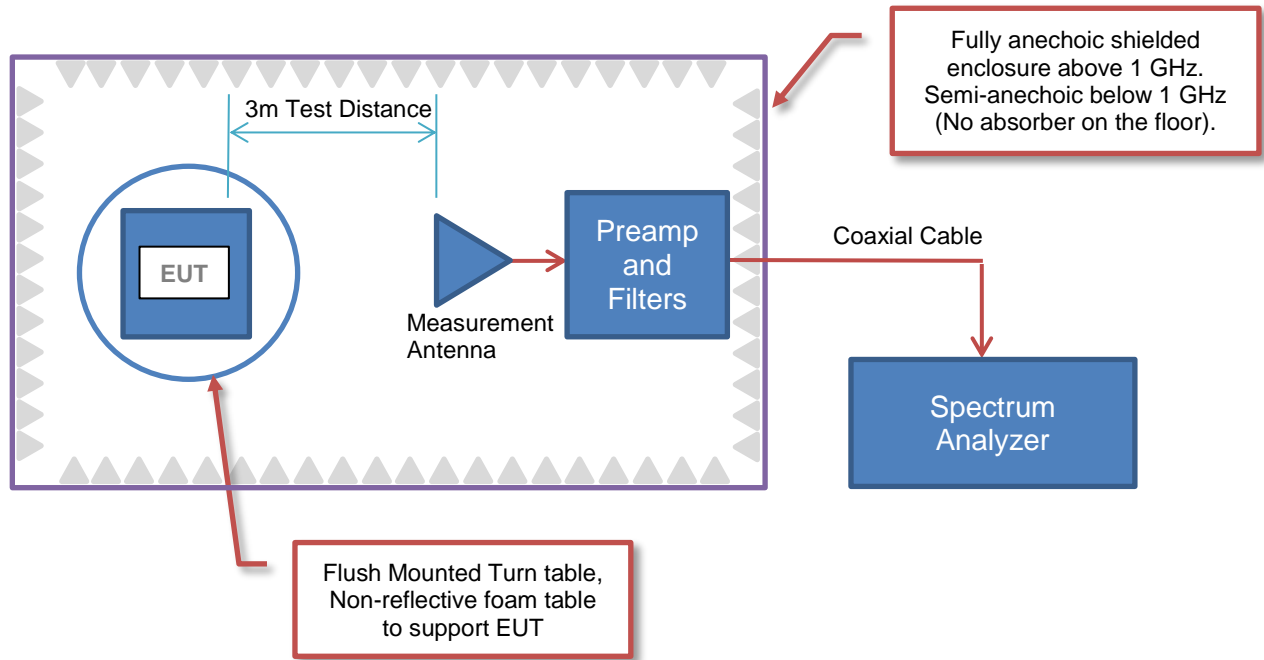


Sample Calculation (logarithmic units)

$$\begin{array}{r}
 \text{Measured Value} \\
 71.2
 \end{array}
 =
 \begin{array}{r}
 \text{Measured Level} \\
 42.6
 \end{array}
 +
 \begin{array}{r}
 \text{Reference Level Offset} \\
 28.6
 \end{array}$$

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 |

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 |

26.7 + 0.3 + 0.1 + 20.0 = 47.1

Radiated Power (ERP/EIRP) – Substitution Method:

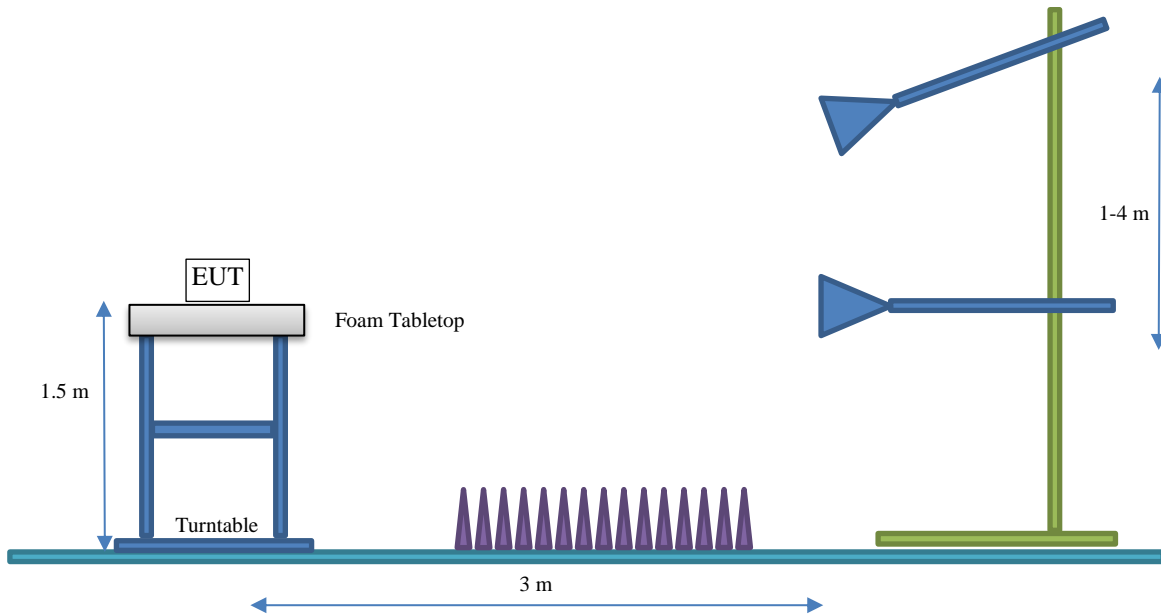
| Measured Level into Substitution Antenna (Amplitude dBm) | Substitution Antenna Factor (dBi) | EIRP to ERP (if applicable) | Measured power (dBm ERP/EIRP) |
|--|-----------------------------------|-----------------------------|-------------------------------|
| 10.0 | 6.0 | 2.15 | 13.9/16.0 |

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

| | |
|---------------------------------|-------------------------|
| Company Name: | Garrett Metal Detectors |
| Address: | 1881 West State Street |
| City, State, Zip: | Garland, TX 75042 |
| Test Requested By: | Bob Podhrasky |
| EUT: | Paragon |
| First Date of Test: | November 8, 2023 |
| Last Date of Test: | February 2, 2024 |
| Receipt Date of Samples: | November 8, 2023 |
| Equipment Design Stage: | Production |
| Equipment Condition: | No Damage |
| Purchase Authorization: | Verified |

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

Walk Through Metal Detector containing a low frequency inductive radio, a 13.56 MHz NFC radio and a 2.4 GHz radio module.

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) |
|-------------------------------|-------------------------|-----------------------|
| Inductive Loop 20mm x 50mm | Garrett Metal Detectors | 13.56 MHz |

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: UI Firmware 3.46
- Rated power settings

SETTINGS FOR ALL TESTS IN THIS REPORT

| Modulation Details | Type | Frequency (MHz) | Power Setting |
|---|-------|-----------------|---------------|
| ISO 14443A with Mill Encoding and AM modulation: <ul style="list-style-type: none">• Mode 0 = 1580 pulses per second (all testing completed with Mode 0 unless otherwise indicated)• Mode 2300 = 480 pulses per second | NFC A | 13.56 | 300 mW |

CONFIGURATIONS



Configuration GARR0118-1

| EUT | | | |
|-----------------------------|-------------------------|-------------------|---------------|
| Description | Manufacturer | Model/Part Number | Serial Number |
| Walk Through Metal Detector | Garrett Metal Detectors | 1557900 | 63202294 |

| Cables | | | | | |
|--------------------------|--------|------------|---------|--------------------------|----------------|
| Cable Type | Shield | Length (m) | Ferrite | Connection 1 | Connection 2 |
| AC Power Cable | Yes | 1.0m | No | AC Power Cable Extension | Metal Detector |
| AC Power Cable | Yes | 1.0m | No | AC Power Cable Extension | Metal Detector |
| AC Power Cable Extension | Yes | 1.6m | No | AC Mains | AC Power Cable |
| AC Power Cable Extension | Yes | 1.6m | No | AC Mains | AC Power Cable |

Configuration GARR0118-2

| EUT | | | |
|----------------------|-------------------------|-------------------|---------------|
| Description | Manufacturer | Model/Part Number | Serial Number |
| Control PCB with NFC | Garrett Metal Detectors | 2354000rB | M146 |

MODIFICATIONS



Equipment Modifications

| Item | Date | Test | Modification | Note | Disposition of EUT |
|------|------------|---|--------------------------------------|---|---|
| 1 | 2023-11-08 | 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. |
| 2 | 2023-11-08 | Field Strength of Spurious Emissions (Greater than 30MHz) | 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 | 2023-11-08 | Field Strength of Spurious Emissions (Less than 30MHz) | 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 | 2023-11-20 | 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. |
| 5 | 2023-12-13 | Powerline Conducted Emissions | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed. |
| 6 | 2024-02-02 | Emissions Bandwidth | 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 | 2024-02-02 | Occupied Bandwidth | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed. |

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 |
| Power Source/Analyzer | Hewlett Packard | 6841A | THC | NCR | NCR |
| 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

GARR0118-1

MODES INVESTIGATED

Transmitting 13.56 MHz, NFC A

POWERLINE CONDUCTED EMISSIONS



| | | | |
|-------------------|-------------------------|-----------------------|------------|
| EUT: | Paragon | Work Order: | GARR0118 |
| Serial Number: | 63202294 | Date: | 2023-12-13 |
| Customer: | Garrett Metal Detectors | Temperature: | 23.2°C |
| Attendees: | None | Relative Humidity: | 26.9% |
| Customer Project: | None | Bar. Pressure (PMSL): | 1033 mb |
| Tested By: | Marty Martin | Job Site: | TX01 |
| Power: | 110VAC/60Hz | Configuration: | GARR0118-1 |

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

COMMENTS

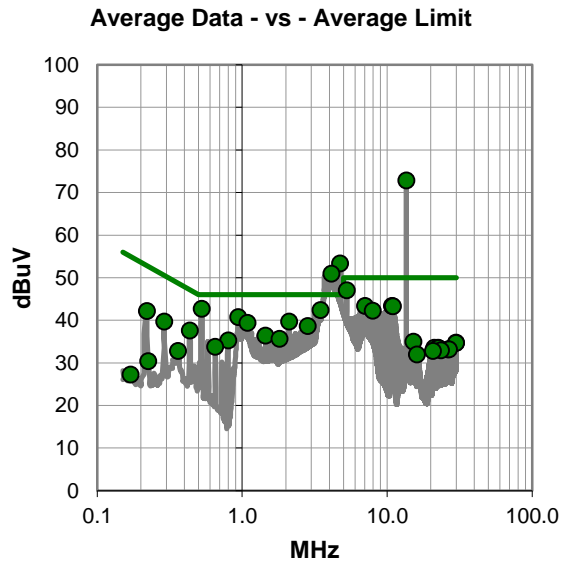
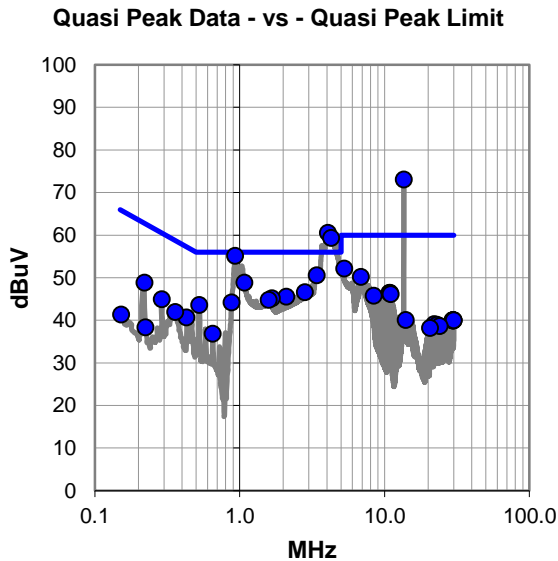
Floor Standing Equipment. Class A Commercial Product. Primary power cord tested, redundant power disconnected.

EUT OPERATING MODES

Transmitting 13.56 MHz, NFC A

DEVIATIONS FROM TEST STANDARD

None



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) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 13.560 | 52.3 | 20.8 | 73.1 | 60.0 | 13.1 |
| 4.058 | 40.2 | 20.4 | 60.6 | 56.0 | 4.6 |
| 4.274 | 39.0 | 20.4 | 59.4 | 56.0 | 3.4 |
| 0.931 | 35.0 | 20.2 | 55.2 | 56.0 | -0.8 |
| 3.406 | 30.2 | 20.4 | 50.6 | 56.0 | -5.4 |
| 1.080 | 28.7 | 20.2 | 48.9 | 56.0 | -7.1 |
| 5.260 | 31.8 | 20.4 | 52.2 | 60.0 | -7.8 |
| 2.825 | 26.3 | 20.3 | 46.6 | 56.0 | -9.4 |
| 6.884 | 29.8 | 20.4 | 50.2 | 60.0 | -9.8 |
| 2.100 | 25.3 | 20.3 | 45.6 | 56.0 | -10.4 |
| 1.670 | 25.0 | 20.2 | 45.2 | 56.0 | -10.8 |
| 1.590 | 24.6 | 20.2 | 44.8 | 56.0 | -11.2 |
| 0.880 | 24.0 | 20.2 | 44.2 | 56.0 | -11.8 |
| 0.526 | 23.4 | 20.2 | 43.6 | 56.0 | -12.4 |
| 10.800 | 25.9 | 20.6 | 46.5 | 60.0 | -13.5 |
| 10.940 | 25.9 | 20.6 | 46.5 | 60.0 | -13.5 |
| 11.015 | 25.6 | 20.6 | 46.2 | 60.0 | -13.8 |
| 0.220 | 28.3 | 20.6 | 48.9 | 62.8 | -13.9 |
| 8.405 | 25.2 | 20.6 | 45.8 | 60.0 | -14.2 |
| 0.290 | 24.7 | 20.3 | 45.0 | 60.5 | -15.5 |
| 0.430 | 20.5 | 20.2 | 40.7 | 57.3 | -16.6 |
| 0.359 | 21.8 | 20.2 | 42.0 | 58.7 | -16.7 |
| 0.652 | 16.7 | 20.2 | 36.9 | 56.0 | -19.1 |
| 13.985 | 19.3 | 20.8 | 40.1 | 60.0 | -19.9 |
| 29.490 | 17.5 | 22.5 | 40.0 | 60.0 | -20.0 |

Average Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 13.560 | 52.1 | 20.8 | 72.9 | 50.0 | 22.9 |
| 4.740 | 33.0 | 20.4 | 53.4 | 46.0 | 7.4 |
| 4.130 | 30.6 | 20.4 | 51.0 | 46.0 | 5.0 |
| 5.260 | 26.7 | 20.4 | 47.1 | 50.0 | -2.9 |
| 0.526 | 22.5 | 20.2 | 42.7 | 46.0 | -3.3 |
| 3.478 | 22.0 | 20.4 | 42.4 | 46.0 | -3.6 |
| 0.940 | 20.6 | 20.2 | 40.8 | 46.0 | -5.2 |
| 2.105 | 19.4 | 20.3 | 39.7 | 46.0 | -6.3 |
| 7.028 | 23.0 | 20.4 | 43.4 | 50.0 | -6.6 |
| 10.800 | 22.8 | 20.6 | 43.4 | 50.0 | -6.6 |
| 1.090 | 19.2 | 20.2 | 39.4 | 46.0 | -6.6 |
| 10.943 | 22.7 | 20.6 | 43.3 | 50.0 | -6.7 |
| 2.825 | 18.4 | 20.3 | 38.7 | 46.0 | -7.3 |
| 7.970 | 21.8 | 20.5 | 42.3 | 50.0 | -7.7 |
| 0.436 | 17.4 | 20.2 | 37.6 | 47.1 | -9.5 |
| 1.448 | 16.2 | 20.2 | 36.4 | 46.0 | -9.6 |
| 1.810 | 15.4 | 20.3 | 35.7 | 46.0 | -10.3 |
| 0.220 | 21.6 | 20.6 | 42.2 | 52.8 | -10.6 |
| 0.800 | 15.1 | 20.2 | 35.3 | 46.0 | -10.7 |
| 0.290 | 19.4 | 20.3 | 39.7 | 50.5 | -10.8 |
| 0.652 | 13.6 | 20.2 | 33.8 | 46.0 | -12.2 |
| 15.140 | 14.1 | 20.9 | 35.0 | 50.0 | -15.0 |
| 29.852 | 12.4 | 22.4 | 34.8 | 50.0 | -15.2 |
| 29.924 | 12.4 | 22.3 | 34.7 | 50.0 | -15.3 |
| 0.360 | 12.6 | 20.2 | 32.8 | 48.7 | -15.9 |

CONCLUSION

Evaluation

POWERLINE CONDUCTED EMISSIONS



| | | | |
|-------------------|-------------------------|-----------------------|------------|
| EUT: | Paragon | Work Order: | GARR0118 |
| Serial Number: | 63202294 | Date: | 2023-12-13 |
| Customer: | Garrett Metal Detectors | Temperature: | 23.2°C |
| Attendees: | None | Relative Humidity: | 26.9% |
| Customer Project: | None | Bar. Pressure (PMSL): | 1033 mb |
| Tested By: | Marty Martin | Job Site: | TX01 |
| Power: | 110VAC/60Hz | Configuration: | GARR0118-1 |

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 #: | 29 | Line: | Neutral | Add. Ext. Attenuation (dB): | 0 |
|--------|----|-------|---------|-----------------------------|---|

COMMENTS

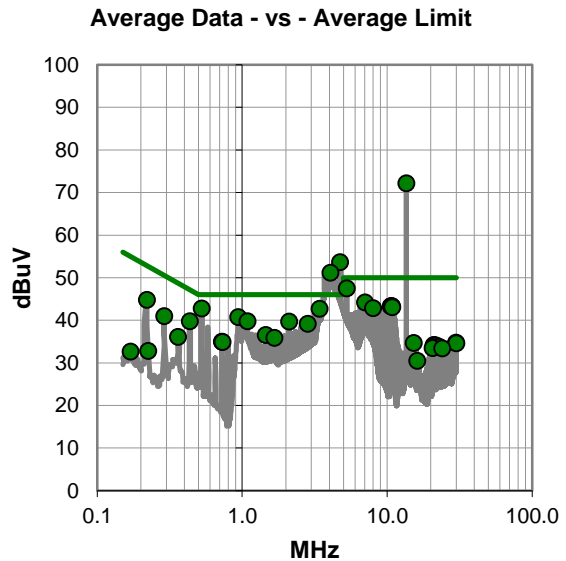
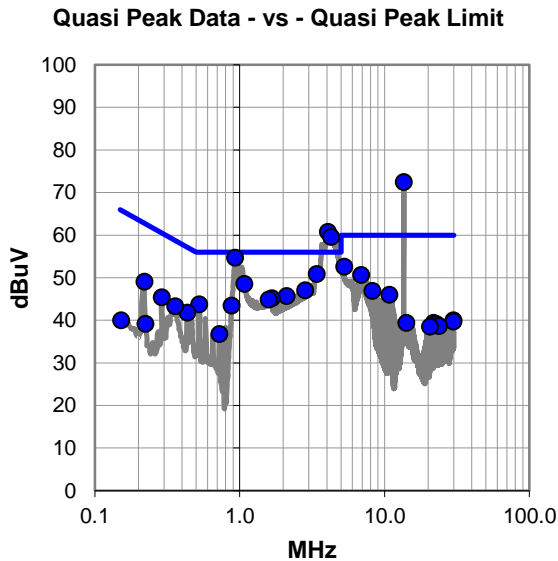
Floor Standing Equipment. Class A Commercial Product. Primary power cord tested, redundant power disconnected.

EUT OPERATING MODES

Transmitting 13.56 MHz, NFC A

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #29

Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 13.560 | 51.7 | 20.8 | 72.5 | 60.0 | 12.5 |
| 4.060 | 40.4 | 20.4 | 60.8 | 56.0 | 4.8 |
| 4.280 | 39.2 | 20.4 | 59.6 | 56.0 | 3.6 |
| 0.931 | 34.5 | 20.2 | 54.7 | 56.0 | -1.3 |
| 3.410 | 30.5 | 20.4 | 50.9 | 56.0 | -5.1 |
| 1.080 | 28.4 | 20.2 | 48.6 | 56.0 | -7.4 |
| 5.264 | 32.2 | 20.4 | 52.6 | 60.0 | -7.4 |
| 2.830 | 26.8 | 20.3 | 47.1 | 56.0 | -8.9 |
| 6.890 | 30.3 | 20.4 | 50.7 | 60.0 | -9.3 |
| 2.105 | 25.4 | 20.3 | 45.7 | 56.0 | -10.3 |
| 1.670 | 25.0 | 20.2 | 45.2 | 56.0 | -10.8 |
| 1.590 | 24.7 | 20.2 | 44.9 | 56.0 | -11.1 |
| 0.526 | 23.6 | 20.2 | 43.8 | 56.0 | -12.2 |
| 0.880 | 23.3 | 20.2 | 43.5 | 56.0 | -12.5 |
| 8.266 | 26.4 | 20.5 | 46.9 | 60.0 | -13.1 |
| 0.220 | 28.5 | 20.6 | 49.1 | 62.8 | -13.7 |
| 10.800 | 25.4 | 20.6 | 46.0 | 60.0 | -14.0 |
| 0.290 | 25.1 | 20.3 | 45.4 | 60.5 | -15.1 |
| 0.436 | 21.6 | 20.2 | 41.8 | 57.1 | -15.3 |
| 0.360 | 23.1 | 20.2 | 43.3 | 58.7 | -15.4 |
| 0.724 | 16.6 | 20.2 | 36.8 | 56.0 | -19.2 |
| 29.870 | 17.6 | 22.4 | 40.0 | 60.0 | -20.0 |
| 29.942 | 17.4 | 22.3 | 39.7 | 60.0 | -20.3 |
| 21.824 | 17.9 | 21.5 | 39.4 | 60.0 | -20.6 |
| 14.138 | 18.6 | 20.8 | 39.4 | 60.0 | -20.6 |

Average Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 13.560 | 51.4 | 20.8 | 72.2 | 50.0 | 22.2 |
| 4.740 | 33.3 | 20.4 | 53.7 | 46.0 | 7.7 |
| 4.058 | 30.8 | 20.4 | 51.2 | 46.0 | 5.2 |
| 5.270 | 27.1 | 20.4 | 47.5 | 50.0 | -2.5 |
| 0.526 | 22.6 | 20.2 | 42.8 | 46.0 | -3.2 |
| 3.410 | 22.3 | 20.4 | 42.7 | 46.0 | -3.3 |
| 0.940 | 20.6 | 20.2 | 40.8 | 46.0 | -5.2 |
| 7.033 | 23.8 | 20.4 | 44.2 | 50.0 | -5.8 |
| 1.090 | 19.6 | 20.2 | 39.8 | 46.0 | -6.2 |
| 2.105 | 19.4 | 20.3 | 39.7 | 46.0 | -6.3 |
| 10.583 | 22.7 | 20.6 | 43.3 | 50.0 | -6.7 |
| 10.660 | 22.7 | 20.6 | 43.3 | 50.0 | -6.7 |
| 10.727 | 22.7 | 20.6 | 43.3 | 50.0 | -6.7 |
| 10.800 | 22.7 | 20.6 | 43.3 | 50.0 | -6.7 |
| 2.830 | 18.9 | 20.3 | 39.2 | 46.0 | -6.8 |
| 10.870 | 22.5 | 20.6 | 43.1 | 50.0 | -6.9 |
| 7.973 | 22.4 | 20.5 | 42.9 | 50.0 | -7.1 |
| 0.436 | 19.6 | 20.2 | 39.8 | 47.1 | -7.3 |
| 0.220 | 24.2 | 20.6 | 44.8 | 52.8 | -8.0 |
| 1.450 | 16.4 | 20.2 | 36.6 | 46.0 | -9.4 |
| 0.290 | 20.7 | 20.3 | 41.0 | 50.5 | -9.5 |
| 1.670 | 15.7 | 20.2 | 35.9 | 46.0 | -10.1 |
| 0.724 | 14.8 | 20.2 | 35.0 | 46.0 | -11.0 |
| 0.730 | 14.7 | 20.2 | 34.9 | 46.0 | -11.1 |
| 0.360 | 15.9 | 20.2 | 36.1 | 48.7 | -12.6 |

CONCLUSION

Evaluation

POWERLINE CONDUCTED EMISSIONS



| | | | |
|-------------------|-------------------------|-----------------------|------------|
| EUT: | Paragon | Work Order: | GARR0118 |
| Serial Number: | 63202294 | Date: | 2023-12-08 |
| Customer: | Garrett Metal Detectors | Temperature: | 24.3°C |
| Attendees: | None | Relative Humidity: | 44.3% |
| Customer Project: | None | Bar. Pressure (PMSL): | 1009 mb |
| Tested By: | Jarrold Brenden | Job Site: | TX01 |
| Power: | 110VAC/60Hz | Configuration: | GARR0118-1 |

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 #: | 23 | Line: | High Line | Add. Ext. Attenuation (dB): | 0 |
|--------|----|-------|-----------|-----------------------------|---|

COMMENTS

Floor Standing Equipment. Class A Commercial Product. Primary power cord tested, redundant power disconnected. Antenna path terminated with load.

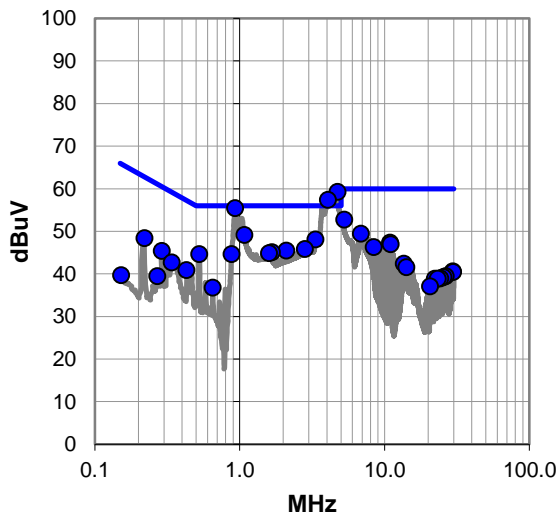
EUT OPERATING MODES

Transmitting 13.56 MHz, NFC A

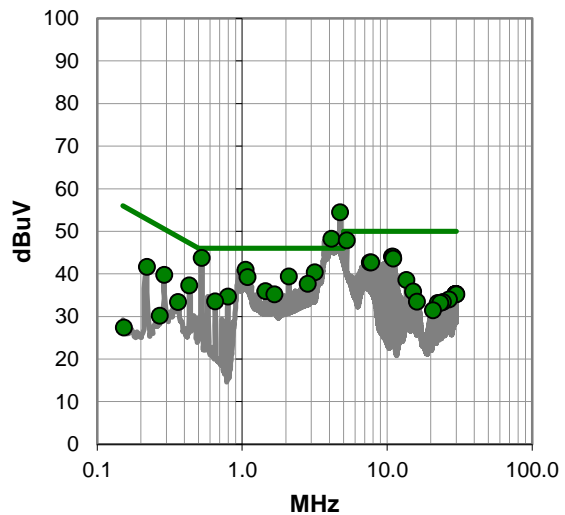
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS



RESULTS - Run #23

Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 4.733 | 38.9 | 20.4 | 59.3 | 56.0 | 3.3 |
| 4.060 | 37.0 | 20.4 | 57.4 | 56.0 | 1.4 |
| 0.931 | 35.3 | 20.2 | 55.5 | 56.0 | -0.5 |
| 1.080 | 29.0 | 20.2 | 49.2 | 56.0 | -6.8 |
| 5.260 | 32.4 | 20.4 | 52.8 | 60.0 | -7.2 |
| 3.330 | 27.7 | 20.4 | 48.1 | 56.0 | -7.9 |
| 2.825 | 25.6 | 20.3 | 45.9 | 56.0 | -10.1 |
| 6.880 | 29.1 | 20.4 | 49.5 | 60.0 | -10.5 |
| 2.100 | 25.2 | 20.3 | 45.5 | 56.0 | -10.5 |
| 1.670 | 24.9 | 20.2 | 45.1 | 56.0 | -10.9 |
| 1.592 | 24.7 | 20.2 | 44.9 | 56.0 | -11.1 |
| 0.526 | 24.5 | 20.2 | 44.7 | 56.0 | -11.3 |
| 0.880 | 24.5 | 20.2 | 44.7 | 56.0 | -11.3 |
| 10.939 | 26.8 | 20.6 | 47.4 | 60.0 | -12.6 |
| 11.011 | 26.4 | 20.6 | 47.0 | 60.0 | -13.0 |
| 8.400 | 25.7 | 20.6 | 46.3 | 60.0 | -13.7 |
| 0.220 | 27.8 | 20.6 | 48.4 | 62.8 | -14.4 |
| 0.290 | 25.1 | 20.3 | 45.4 | 60.5 | -15.1 |
| 0.430 | 20.7 | 20.2 | 40.9 | 57.3 | -16.4 |
| 0.340 | 22.5 | 20.2 | 42.7 | 59.2 | -16.5 |
| 13.560 | 21.6 | 20.8 | 42.4 | 60.0 | -17.6 |
| 14.130 | 20.8 | 20.8 | 41.6 | 60.0 | -18.4 |
| 0.652 | 16.6 | 20.2 | 36.8 | 56.0 | -19.2 |
| 29.627 | 18.2 | 22.4 | 40.6 | 60.0 | -19.4 |
| 29.700 | 18.1 | 22.4 | 40.5 | 60.0 | -19.5 |

Average Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 4.733 | 34.1 | 20.4 | 54.5 | 46.0 | 8.5 |
| 4.130 | 27.9 | 20.4 | 48.3 | 46.0 | 2.3 |
| 5.260 | 27.5 | 20.4 | 47.9 | 50.0 | -2.1 |
| 0.526 | 23.6 | 20.2 | 43.8 | 46.0 | -2.2 |
| 1.052 | 20.8 | 20.2 | 41.0 | 46.0 | -5.0 |
| 3.160 | 20.1 | 20.3 | 40.4 | 46.0 | -5.6 |
| 10.790 | 23.5 | 20.6 | 44.1 | 50.0 | -5.9 |
| 10.939 | 23.5 | 20.6 | 44.1 | 50.0 | -5.9 |
| 11.011 | 23.0 | 20.6 | 43.6 | 50.0 | -6.4 |
| 2.100 | 19.1 | 20.3 | 39.4 | 46.0 | -6.6 |
| 1.090 | 19.1 | 20.2 | 39.3 | 46.0 | -6.7 |
| 7.610 | 22.3 | 20.4 | 42.7 | 50.0 | -7.3 |
| 7.750 | 22.2 | 20.5 | 42.7 | 50.0 | -7.3 |
| 2.825 | 17.4 | 20.3 | 37.7 | 46.0 | -8.3 |
| 0.430 | 17.1 | 20.2 | 37.3 | 47.3 | -10.0 |
| 1.448 | 15.8 | 20.2 | 36.0 | 46.0 | -10.0 |
| 0.290 | 19.5 | 20.3 | 39.8 | 50.5 | -10.7 |
| 1.670 | 15.0 | 20.2 | 35.2 | 46.0 | -10.8 |
| 0.220 | 21.1 | 20.6 | 41.7 | 52.8 | -11.1 |
| 0.796 | 14.5 | 20.2 | 34.7 | 46.0 | -11.3 |
| 13.560 | 17.8 | 20.8 | 38.6 | 50.0 | -11.4 |
| 0.652 | 13.4 | 20.2 | 33.6 | 46.0 | -12.4 |
| 15.070 | 15.0 | 20.9 | 35.9 | 50.0 | -14.1 |
| 29.490 | 12.8 | 22.5 | 35.3 | 50.0 | -14.7 |
| 29.560 | 12.8 | 22.5 | 35.3 | 50.0 | -14.7 |

CONCLUSION

See Certificate of Test for Results.

Tested By

POWERLINE CONDUCTED EMISSIONS



| | | | |
|-------------------|-------------------------|-----------------------|------------|
| EUT: | Paragon | Work Order: | GARR0118 |
| Serial Number: | 63202294 | Date: | 2023-12-08 |
| Customer: | Garrett Metal Detectors | Temperature: | 24.3°C |
| Attendees: | None | Relative Humidity: | 44.3% |
| Customer Project: | None | Bar. Pressure (PMSL): | 1009 mb |
| Tested By: | Jarrod Brenden | Job Site: | TX01 |
| Power: | 110VAC/60Hz | Configuration: | GARR0118-1 |

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 #: | 24 | Line: | Neutral | Add. Ext. Attenuation (dB): | 0 |
|--------|----|-------|---------|-----------------------------|---|

COMMENTS

Floor Standing Equipment. Class A Commercial Product. Primary power cord tested, redundant power disconnected. Antenna path terminated with load.

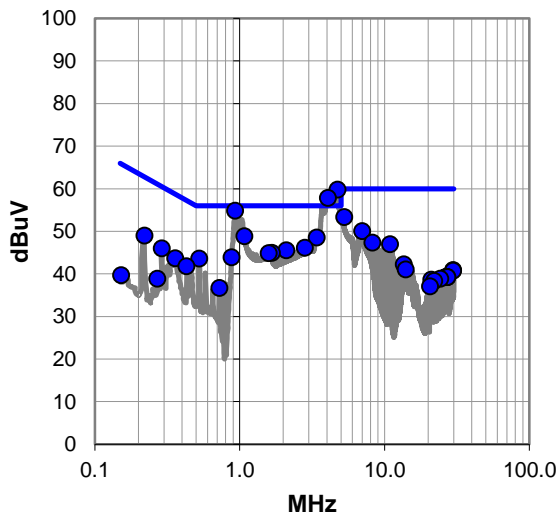
EUT OPERATING MODES

Transmitting 13.56 MHz, NFC A

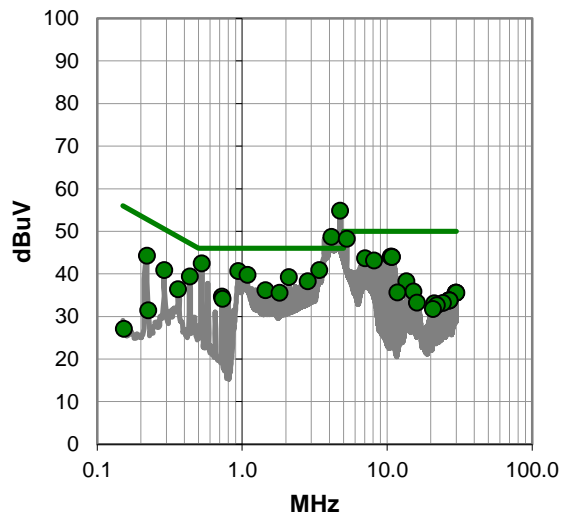
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS



RESULTS - Run #24

Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 4.740 | 39.4 | 20.4 | 59.8 | 56.0 | 3.8 |
| 4.058 | 37.5 | 20.4 | 57.9 | 56.0 | 1.9 |
| 0.931 | 34.7 | 20.2 | 54.9 | 56.0 | -1.1 |
| 5.260 | 33.0 | 20.4 | 53.4 | 60.0 | -6.6 |
| 1.080 | 28.7 | 20.2 | 48.9 | 56.0 | -7.1 |
| 3.406 | 28.2 | 20.4 | 48.6 | 56.0 | -7.4 |
| 2.825 | 25.9 | 20.3 | 46.2 | 56.0 | -9.8 |
| 7.028 | 29.7 | 20.4 | 50.1 | 60.0 | -9.9 |
| 2.100 | 25.3 | 20.3 | 45.6 | 56.0 | -10.4 |
| 1.670 | 24.8 | 20.2 | 45.0 | 56.0 | -11.0 |
| 1.590 | 24.7 | 20.2 | 44.9 | 56.0 | -11.1 |
| 0.880 | 23.7 | 20.2 | 43.9 | 56.0 | -12.1 |
| 0.526 | 23.4 | 20.2 | 43.6 | 56.0 | -12.4 |
| 8.260 | 26.9 | 20.5 | 47.4 | 60.0 | -12.6 |
| 10.940 | 26.4 | 20.6 | 47.0 | 60.0 | -13.0 |
| 0.220 | 28.4 | 20.6 | 49.0 | 62.8 | -13.8 |
| 0.290 | 25.7 | 20.3 | 46.0 | 60.5 | -14.5 |
| 0.360 | 23.5 | 20.2 | 43.7 | 58.7 | -15.0 |
| 0.430 | 21.6 | 20.2 | 41.8 | 57.3 | -15.5 |
| 13.560 | 21.6 | 20.8 | 42.3 | 60.0 | -17.7 |
| 13.985 | 20.3 | 20.8 | 41.1 | 60.0 | -18.9 |
| 29.708 | 18.5 | 22.4 | 40.9 | 60.0 | -19.1 |
| 29.780 | 18.4 | 22.4 | 40.8 | 60.0 | -19.2 |
| 0.724 | 16.5 | 20.2 | 36.7 | 56.0 | -19.3 |
| 26.520 | 16.7 | 22.6 | 39.3 | 60.0 | -20.7 |

Average Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 4.740 | 34.5 | 20.4 | 54.9 | 46.0 | 8.9 |
| 4.130 | 28.3 | 20.4 | 48.7 | 46.0 | 2.7 |
| 5.260 | 27.9 | 20.4 | 48.3 | 50.0 | -1.7 |
| 0.526 | 22.3 | 20.2 | 42.5 | 46.0 | -3.5 |
| 3.406 | 20.5 | 20.4 | 40.9 | 46.0 | -5.1 |
| 0.940 | 20.5 | 20.2 | 40.7 | 46.0 | -5.3 |
| 10.579 | 23.5 | 20.6 | 44.1 | 50.0 | -5.9 |
| 10.723 | 23.5 | 20.6 | 44.1 | 50.0 | -5.9 |
| 10.795 | 23.4 | 20.6 | 44.0 | 50.0 | -6.0 |
| 1.090 | 19.6 | 20.2 | 39.8 | 46.0 | -6.2 |
| 7.028 | 23.3 | 20.4 | 43.7 | 50.0 | -6.3 |
| 2.100 | 19.0 | 20.3 | 39.3 | 46.0 | -6.7 |
| 8.120 | 22.7 | 20.5 | 43.2 | 50.0 | -6.8 |
| 0.436 | 19.2 | 20.2 | 39.4 | 47.1 | -7.7 |
| 2.825 | 18.0 | 20.3 | 38.3 | 46.0 | -7.7 |
| 0.220 | 23.7 | 20.6 | 44.3 | 52.8 | -8.5 |
| 0.290 | 20.6 | 20.3 | 40.9 | 50.5 | -9.6 |
| 1.448 | 16.0 | 20.2 | 36.2 | 46.0 | -9.8 |
| 1.810 | 15.3 | 20.3 | 35.6 | 46.0 | -10.4 |
| 0.724 | 14.5 | 20.2 | 34.7 | 46.0 | -11.3 |
| 13.560 | 17.5 | 20.8 | 38.3 | 50.0 | -11.7 |
| 0.730 | 14.0 | 20.2 | 34.2 | 46.0 | -11.8 |
| 0.360 | 16.2 | 20.2 | 36.4 | 48.7 | -12.3 |
| 15.140 | 15.0 | 20.9 | 35.9 | 50.0 | -14.1 |
| 11.740 | 15.0 | 20.7 | 35.7 | 50.0 | -14.3 |

CONCLUSION

See Certificate of Test for Results.

Tested By

POWERLINE CONDUCTED EMISSIONS



| | | | |
|-------------------|-------------------------|-----------------------|------------|
| EUT: | Paragon | Work Order: | GARR0118 |
| Serial Number: | 63202294 | Date: | 2023-12-08 |
| Customer: | Garrett Metal Detectors | Temperature: | 24.3°C |
| Attendees: | None | Relative Humidity: | 44.3% |
| Customer Project: | None | Bar. Pressure (PMSL): | 1009 mb |
| Tested By: | Jarrod Brenden | Job Site: | TX01 |
| Power: | 110VAC/60Hz | Configuration: | GARR0118-1 |

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 #: | 25 | Line: | High Line | Add. Ext. Attenuation (dB): | 0 |
|--------|----|-------|-----------|-----------------------------|---|

COMMENTS

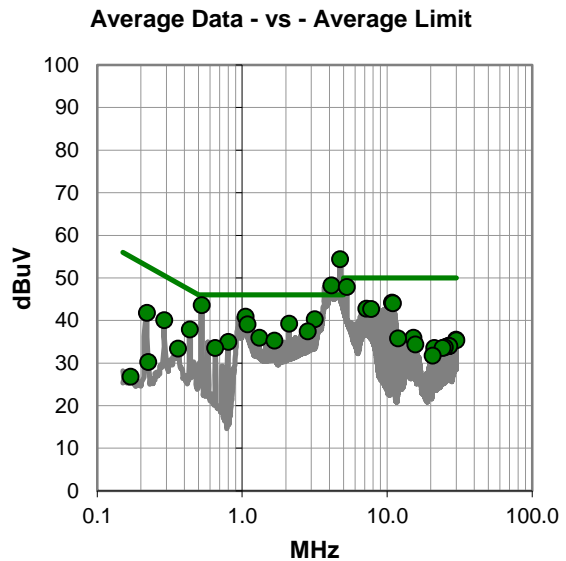
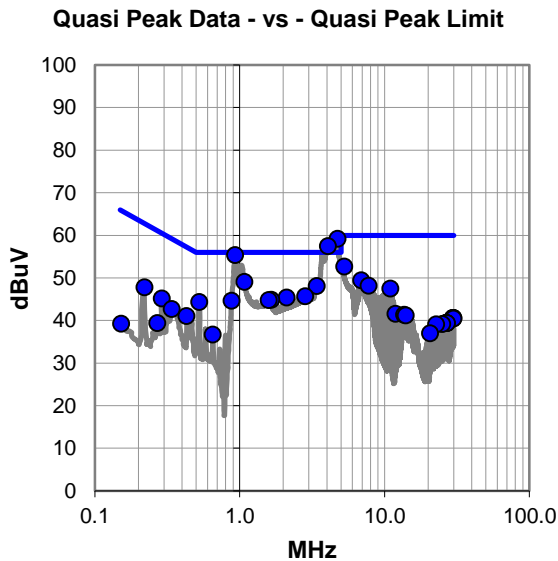
Floor Standing Equipment. Class A Commercial Product. Primary power cord tested, redundant power disconnected. All radios disabled; inductive loops, 13.56 MHz NFC, and 2.4GHz Bluetooth LE. EUT tested independently to FCC 15.107, Class A and meets those requirements and use cases.

EUT OPERATING MODES

Idle / Standby

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS



RESULTS - Run #25

Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 4.738 | 38.8 | 20.4 | 59.2 | 56.0 | 3.2 |
| 4.058 | 37.1 | 20.4 | 57.5 | 56.0 | 1.5 |
| 0.931 | 35.2 | 20.2 | 55.4 | 56.0 | -0.6 |
| 1.080 | 28.9 | 20.2 | 49.1 | 56.0 | -6.9 |
| 5.264 | 32.3 | 20.4 | 52.7 | 60.0 | -7.3 |
| 3.406 | 27.7 | 20.4 | 48.1 | 56.0 | -7.9 |
| 2.830 | 25.4 | 20.3 | 45.7 | 56.0 | -10.3 |
| 6.890 | 29.1 | 20.4 | 49.5 | 60.0 | -10.5 |
| 2.105 | 25.1 | 20.3 | 45.4 | 56.0 | -10.6 |
| 1.650 | 24.7 | 20.2 | 44.9 | 56.0 | -11.1 |
| 1.590 | 24.6 | 20.2 | 44.8 | 56.0 | -11.2 |
| 0.880 | 24.5 | 20.2 | 44.7 | 56.0 | -11.3 |
| 0.526 | 24.2 | 20.2 | 44.4 | 56.0 | -11.6 |
| 7.757 | 27.7 | 20.5 | 48.2 | 60.0 | -11.8 |
| 10.950 | 26.9 | 20.6 | 47.5 | 60.0 | -12.5 |
| 0.220 | 27.2 | 20.6 | 47.8 | 62.8 | -15.0 |
| 0.290 | 24.9 | 20.3 | 45.2 | 60.5 | -15.3 |
| 0.430 | 20.9 | 20.2 | 41.1 | 57.3 | -16.2 |
| 0.340 | 22.5 | 20.2 | 42.7 | 59.2 | -16.5 |
| 11.888 | 20.9 | 20.7 | 41.6 | 60.0 | -18.4 |
| 13.630 | 20.6 | 20.8 | 41.4 | 60.0 | -18.6 |
| 13.990 | 20.4 | 20.8 | 41.2 | 60.0 | -18.8 |
| 0.652 | 16.5 | 20.2 | 36.7 | 56.0 | -19.3 |
| 29.578 | 18.1 | 22.5 | 40.6 | 60.0 | -19.4 |
| 29.800 | 18.2 | 22.4 | 40.6 | 60.0 | -19.4 |

Average Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 4.738 | 34.0 | 20.4 | 54.4 | 46.0 | 8.4 |
| 4.130 | 27.9 | 20.4 | 48.3 | 46.0 | 2.3 |
| 5.264 | 27.5 | 20.4 | 47.9 | 50.0 | -2.1 |
| 0.526 | 23.4 | 20.2 | 43.6 | 46.0 | -2.4 |
| 1.052 | 20.7 | 20.2 | 40.9 | 46.0 | -5.1 |
| 3.158 | 20.0 | 20.3 | 40.3 | 46.0 | -5.7 |
| 10.800 | 23.6 | 20.6 | 44.2 | 50.0 | -5.8 |
| 10.950 | 23.5 | 20.6 | 44.1 | 50.0 | -5.9 |
| 2.105 | 19.0 | 20.3 | 39.3 | 46.0 | -6.7 |
| 1.090 | 18.9 | 20.2 | 39.1 | 46.0 | -6.9 |
| 7.177 | 22.4 | 20.4 | 42.8 | 50.0 | -7.2 |
| 7.757 | 22.2 | 20.5 | 42.7 | 50.0 | -7.3 |
| 2.830 | 17.2 | 20.3 | 37.5 | 46.0 | -8.5 |
| 0.436 | 17.7 | 20.2 | 37.9 | 47.1 | -9.2 |
| 1.310 | 15.8 | 20.2 | 36.0 | 46.0 | -10.0 |
| 0.290 | 19.8 | 20.3 | 40.1 | 50.5 | -10.4 |
| 1.670 | 15.1 | 20.2 | 35.3 | 46.0 | -10.7 |
| 0.220 | 21.2 | 20.6 | 41.8 | 52.8 | -11.0 |
| 0.800 | 14.8 | 20.2 | 35.0 | 46.0 | -11.0 |
| 0.652 | 13.4 | 20.2 | 33.6 | 46.0 | -12.4 |
| 15.151 | 15.1 | 20.9 | 36.0 | 50.0 | -14.0 |
| 11.888 | 15.1 | 20.7 | 35.8 | 50.0 | -14.2 |
| 29.870 | 13.1 | 22.4 | 35.5 | 50.0 | -14.5 |
| 29.940 | 13.1 | 22.3 | 35.4 | 50.0 | -14.6 |
| 0.360 | 13.2 | 20.2 | 33.4 | 48.7 | -15.3 |

CONCLUSION

Evaluation

POWERLINE CONDUCTED EMISSIONS



| | | | |
|-------------------|-------------------------|-----------------------|------------|
| EUT: | Paragon | Work Order: | GARR0118 |
| Serial Number: | 63202294 | Date: | 2023-12-08 |
| Customer: | Garrett Metal Detectors | Temperature: | 24.3°C |
| Attendees: | None | Relative Humidity: | 44.3% |
| Customer Project: | None | Bar. Pressure (PMSL): | 1009 mb |
| Tested By: | Jarrold Brenden | Job Site: | TX01 |
| Power: | 110VAC/60Hz | Configuration: | GARR0118-1 |

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 #: | 26 | Line: | Neutral | Add. Ext. Attenuation (dB): | 0 |
|--------|----|-------|---------|-----------------------------|---|

COMMENTS

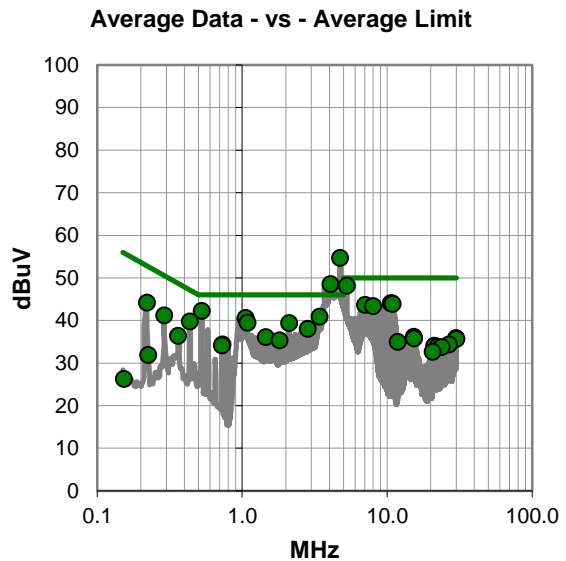
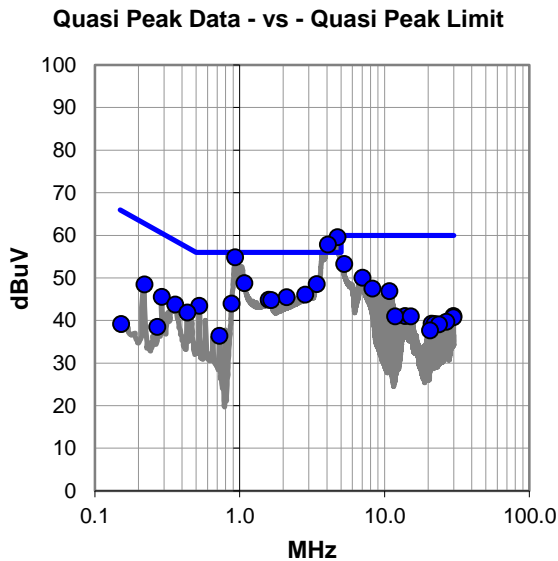
Floor Standing Equipment. Class A Commercial Product. Primary power cord tested, redundant power disconnected. All radios disabled; inductive loops, 13.56 MHz NFC, and 2.4GHz Bluetooth LE. EUT tested independently to FCC 15.107, Class A and meets those requirements and use cases.

EUT OPERATING MODES

Idle / Standby

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS



RESULTS - Run #26

Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 4.738 | 39.2 | 20.4 | 59.6 | 56.0 | 3.6 |
| 4.060 | 37.5 | 20.4 | 57.9 | 56.0 | 1.9 |
| 0.931 | 34.7 | 20.2 | 54.9 | 56.0 | -1.1 |
| 5.264 | 32.9 | 20.4 | 53.3 | 60.0 | -6.7 |
| 1.080 | 28.6 | 20.2 | 48.8 | 56.0 | -7.2 |
| 3.410 | 28.2 | 20.4 | 48.6 | 56.0 | -7.4 |
| 7.033 | 29.7 | 20.4 | 50.1 | 60.0 | -9.9 |
| 2.830 | 25.8 | 20.3 | 46.1 | 56.0 | -9.9 |
| 2.105 | 25.2 | 20.3 | 45.5 | 56.0 | -10.5 |
| 1.590 | 24.7 | 20.2 | 44.9 | 56.0 | -11.1 |
| 1.650 | 24.6 | 20.2 | 44.8 | 56.0 | -11.2 |
| 0.880 | 23.8 | 20.2 | 44.0 | 56.0 | -12.0 |
| 8.266 | 27.0 | 20.5 | 47.5 | 60.0 | -12.5 |
| 0.526 | 23.3 | 20.2 | 43.5 | 56.0 | -12.5 |
| 10.804 | 26.3 | 20.6 | 46.9 | 60.0 | -13.1 |
| 0.220 | 27.9 | 20.6 | 48.5 | 62.8 | -14.3 |
| 0.290 | 25.3 | 20.3 | 45.6 | 60.5 | -14.9 |
| 0.360 | 23.6 | 20.2 | 43.8 | 58.7 | -14.9 |
| 0.436 | 21.7 | 20.2 | 41.9 | 57.1 | -15.2 |
| 13.850 | 20.3 | 20.8 | 41.1 | 60.0 | -18.9 |
| 29.875 | 18.7 | 22.4 | 41.1 | 60.0 | -18.9 |
| 11.820 | 20.3 | 20.7 | 41.0 | 60.0 | -19.0 |
| 15.227 | 20.1 | 20.9 | 41.0 | 60.0 | -19.0 |
| 29.947 | 18.5 | 22.3 | 40.8 | 60.0 | -19.2 |
| 0.724 | 16.2 | 20.2 | 36.4 | 56.0 | -19.6 |

Average Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|------------|-------------|-------------|-----------------|--------------------|-------------|
| 4.738 | 34.3 | 20.4 | 54.7 | 46.0 | 8.7 |
| 4.060 | 28.2 | 20.4 | 48.6 | 46.0 | 2.6 |
| 5.264 | 27.8 | 20.4 | 48.2 | 50.0 | -1.8 |
| 0.526 | 22.1 | 20.2 | 42.3 | 46.0 | -3.7 |
| 3.410 | 20.5 | 20.4 | 40.9 | 46.0 | -5.1 |
| 1.052 | 20.4 | 20.2 | 40.6 | 46.0 | -5.4 |
| 10.590 | 23.5 | 20.6 | 44.1 | 50.0 | -5.9 |
| 10.804 | 23.5 | 20.6 | 44.1 | 50.0 | -5.9 |
| 10.876 | 23.3 | 20.6 | 43.9 | 50.0 | -6.1 |
| 7.033 | 23.3 | 20.4 | 43.7 | 50.0 | -6.3 |
| 1.090 | 19.3 | 20.2 | 39.5 | 46.0 | -6.5 |
| 7.980 | 22.9 | 20.5 | 43.4 | 50.0 | -6.6 |
| 2.105 | 19.1 | 20.3 | 39.4 | 46.0 | -6.6 |
| 0.436 | 19.6 | 20.2 | 39.8 | 47.1 | -7.3 |
| 2.830 | 17.8 | 20.3 | 38.1 | 46.0 | -7.9 |
| 0.220 | 23.6 | 20.6 | 44.2 | 52.8 | -8.6 |
| 0.290 | 20.9 | 20.3 | 41.2 | 50.5 | -9.3 |
| 1.450 | 15.9 | 20.2 | 36.1 | 46.0 | -9.9 |
| 1.813 | 15.1 | 20.3 | 35.4 | 46.0 | -10.6 |
| 0.730 | 14.2 | 20.2 | 34.4 | 46.0 | -11.6 |
| 0.724 | 14.0 | 20.2 | 34.2 | 46.0 | -11.8 |
| 0.360 | 16.2 | 20.2 | 36.4 | 48.7 | -12.3 |
| 15.227 | 15.3 | 20.9 | 36.2 | 50.0 | -13.8 |
| 29.875 | 13.5 | 22.4 | 35.9 | 50.0 | -14.1 |
| 15.299 | 14.9 | 20.9 | 35.8 | 50.0 | -14.2 |

CONCLUSION

Evaluation

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.

The resolution bandwidth (RBW) of the spectrum analyzer was set to the range of 1% to 5% of the emissions bandwidth (EBW) and video bandwidth (VBW) bandwidth was set to at least 3 times the resolution bandwidth. 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 |
| Probe - Near Field Set | ETS Lindgren | 7405 | IPS | NCR | NCR |
| Power Supply - DC | Ametek Programmable Power, Inc. | Sorenson XEL30-3D | TQE | NCR | NCR |

EMISSIONS BANDWIDTH (20 DB)



| | | | |
|-------------------|-----------------------------|-----------------------|------------|
| EUT: | Walk Through Metal Detector | Work Order: | GARR0118 |
| Serial Number: | 63202294 | Date: | 2024-02-02 |
| Customer: | Garrett Metal Detectors | Temperature: | 22.4°C |
| Attendees: | None | Relative Humidity: | 40.2% |
| Customer Project: | None | Bar. Pressure (PMSL): | 1020 mbar |
| Tested By: | Jarrold Brenden | Job Site: | TX07 |
| Power: | 110 VAC / 60 Hz | Configuration: | GARR0118-1 |

TEST SPECIFICATIONS

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

COMMENTS

Floor Standing Equipment. Inductive loop radio antenna disabled.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

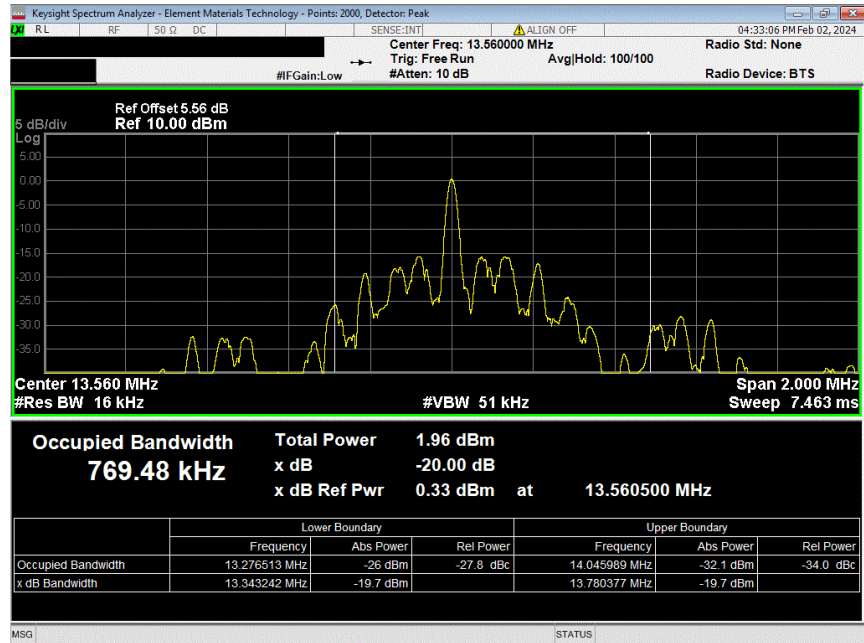
Pass

Tested By

TEST RESULTS

| | Value | Limit | Result |
|-------------------|-----------|-------------|--------|
| 13.56 MHz NFC A | | | |
| Normal Conditions | 437.1 kHz | Within Band | Pass |

EMISSIONS BANDWIDTH (20 DB)



13.56 MHz NFC
Normal Conditions

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.

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

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

GARR0118-1

MODES INVESTIGATED

Transmitting 13.56 MHz, NFC A

FIELD STRENGTH OF FUNDAMENTAL



| | | | |
|-------------------|-------------------------|-----------------------|------------|
| EUT: | Paragon | Work Order: | GARR0118 |
| Serial Number: | 63202294 | Date: | 2023-11-08 |
| Customer: | Garrett Metal Detectors | Temperature: | 22°C |
| Attendees: | None | Relative Humidity: | 49.7% |
| Customer Project: | None | Bar. Pressure (PMSL): | 979 mb |
| Tested By: | Jarrod Brenden | Job Site: | TX02 |
| Power: | 110VAC/60Hz | Configuration: | GARR0118-1 |

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 #: | 21 | Test Distance (m): | 10 | Ant. Height(s) (m): | 1(m) |
|--------|----|--------------------|----|---------------------|------|

COMMENTS

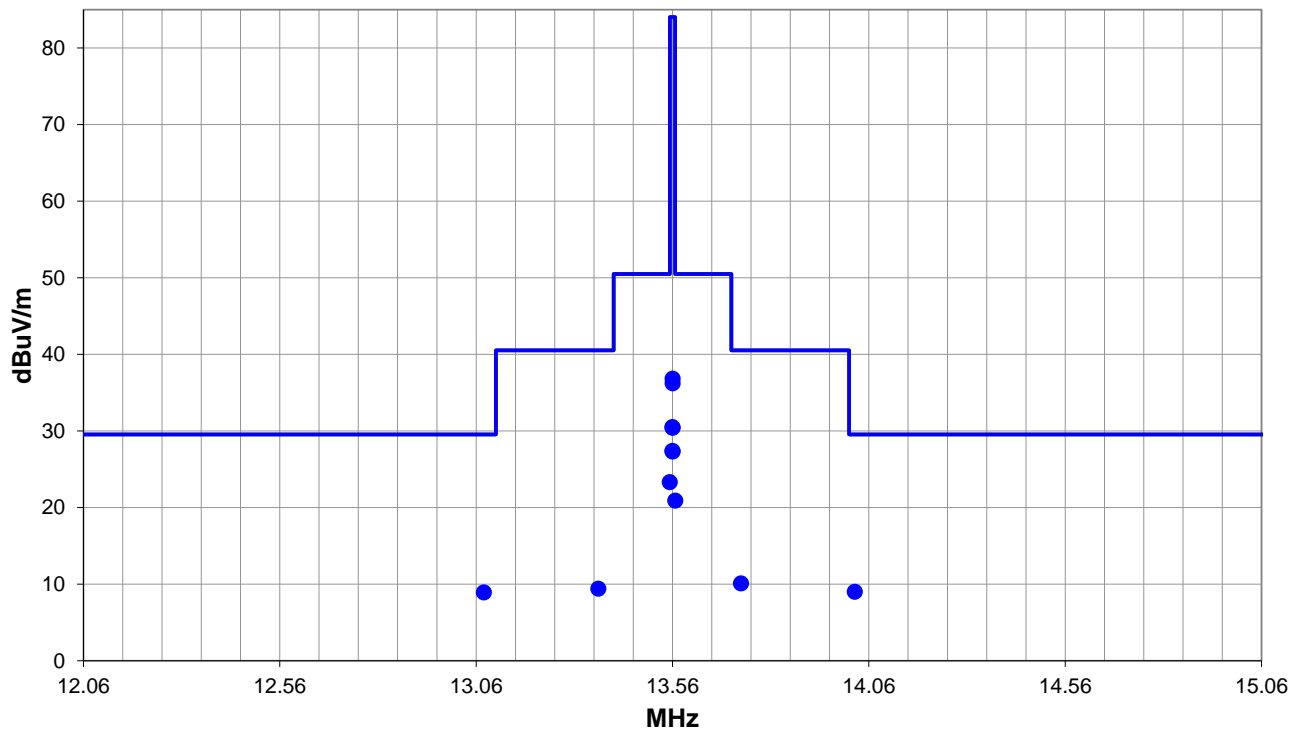
Floor Standing Equipment. Inductive loop radio antenna disabled. Line comments regarding Mode indicate pulse rate of Inductive coil; Mode 0 = 1580pps, Mode 2300 = 480pps.

EUT OPERATING MODES

Transmitting 13.56 MHz, NFC A

DEVIATIONS FROM TEST STANDARD

None



Run #: 21

PK AV QP

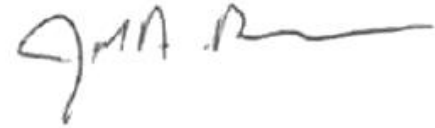
FIELD STRENGTH OF FUNDAMENTAL

RESULTS - Run #21

| 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) | Comments |
|------------|------------------|---------------|-------------------------|-------------------|------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-----------|
| 14.024 | 16.5 | 11.6 | 1.0 | 0.0 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 9.0 | 29.5 | -20.5 | Mode 0 |
| 13.080 | 16.4 | 11.6 | 1.0 | 118.9 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 8.9 | 29.5 | -20.6 | Mode 0 |
| 13.553 | 30.8 | 11.6 | 1.0 | 184.9 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 23.3 | 50.5 | -27.2 | Mode 0 |
| 13.567 | 28.4 | 11.6 | 1.0 | 187.0 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 20.9 | 50.5 | -29.6 | Mode 0 |
| 13.735 | 17.6 | 11.6 | 1.0 | 140.0 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 10.1 | 40.5 | -30.4 | Mode 0 |
| 13.371 | 16.9 | 11.6 | 1.0 | 219.9 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 9.4 | 40.5 | -31.1 | Mode 0 |
| 13.560 | 44.3 | 11.6 | 1.0 | 183.9 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 36.8 | 84.0 | -47.2 | Mode 0 |
| 13.560 | 43.7 | 11.6 | 1.0 | 130.9 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 36.2 | 84.0 | -47.8 | Mode 2300 |
| 13.560 | 38.0 | 11.6 | 1.0 | 190.9 | 10.0 | 0.0 | Para to EUT | QP | -19.1 | 30.5 | 84.0 | -53.5 | Mode 2300 |
| 13.560 | 37.9 | 11.6 | 1.0 | 190.9 | 10.0 | 0.0 | Para to EUT | QP | -19.1 | 30.4 | 84.0 | -53.6 | Mode 0 |
| 13.560 | 34.9 | 11.6 | 1.0 | 189.9 | 10.0 | 0.0 | Para to GND | QP | -19.1 | 27.4 | 84.0 | -56.6 | Mode 2300 |
| 13.560 | 34.8 | 11.6 | 1.0 | 195.0 | 10.0 | 0.0 | Para to GND | QP | -19.1 | 27.3 | 84.0 | -56.7 | Mode 0 |

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. A reference preview scan (pre-scan) is 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, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, 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

490 kHz TO 30 MHz

POWER INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

GARR0118-1

MODES INVESTIGATED

Transmitting 13.56 MHz, NFC A

FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)



| | | | |
|-------------------|-------------------------|-----------------------|------------|
| EUT: | Paragon | Work Order: | GARR0118 |
| Serial Number: | 63202294 | Date: | 2023-11-08 |
| Customer: | Garrett Metal Detectors | Temperature: | 22°C |
| Attendees: | None | Relative Humidity: | 49.7% |
| Customer Project: | None | Bar. Pressure (PMSL): | 979 mb |
| Tested By: | Jarrold Brenden | Job Site: | TX02 |
| Power: | 110VAC/60Hz | Configuration: | GARR0118-1 |

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 #: | 25 | Test Distance (m): | 10 | Ant. Height(s) (m): | 1(m) |
|--------|----|--------------------|----|---------------------|------|

COMMENTS

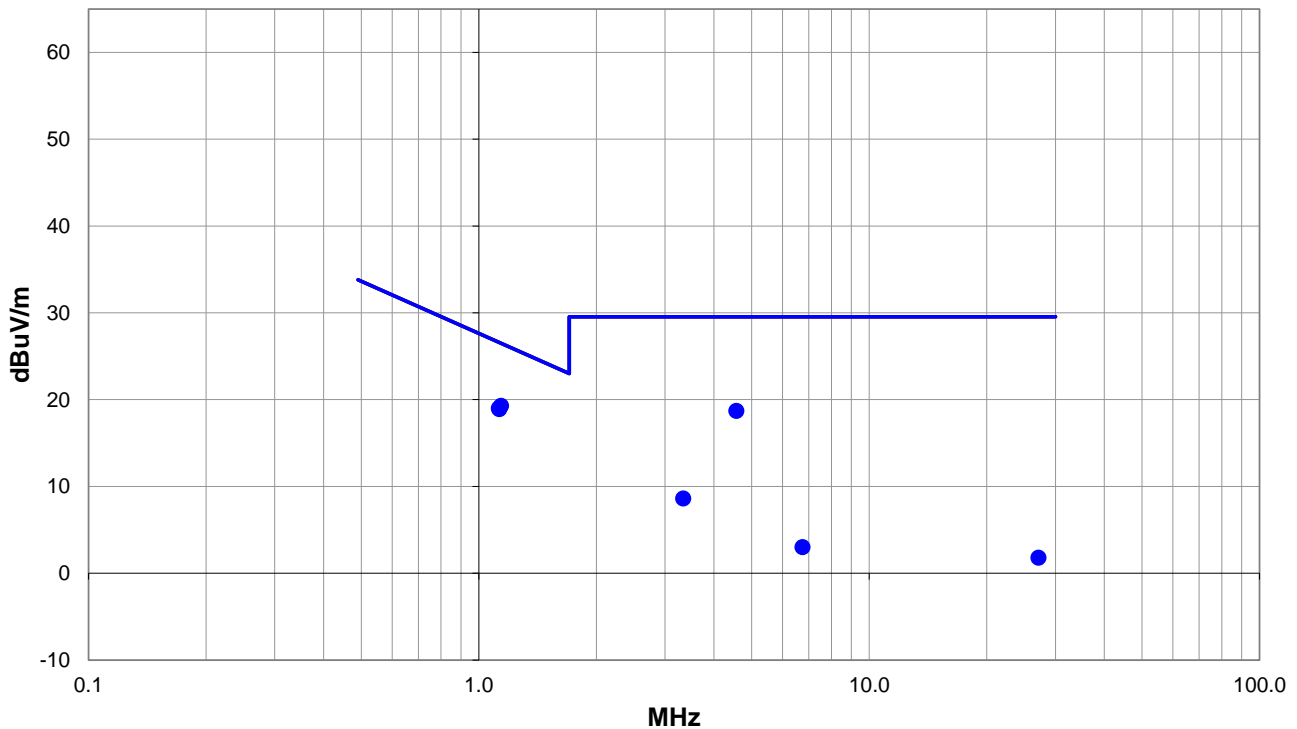
Floor Standing Equipment. Inductive detection loop radio antenna disabled with software controls.

EUT OPERATING MODES

Transmitting 13.56 MHz, NFC A

DEVIATIONS FROM TEST STANDARD

None



Run #: 25

■ PK ◆ AV ● QP

FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)



RESULTS - Run #25

| 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) |
|------------|------------------|---------------|-------------------------|-------------------|------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|
| 1.140 | 27.1 | 11.3 | 1.0 | 157.0 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 19.3 | 26.5 | -7.2 |
| 1.124 | 26.8 | 11.3 | 1.0 | 141.9 | 10.0 | 0.0 | Para to EUT | QP | -19.1 | 19.0 | 26.6 | -7.6 |
| 1.129 | 26.7 | 11.3 | 1.0 | 219.0 | 10.0 | 0.0 | Para to GND | QP | -19.1 | 18.9 | 26.6 | -7.7 |
| 4.569 | 26.0 | 11.8 | 1.0 | 135.0 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 18.7 | 29.5 | -10.8 |
| 3.336 | 16.1 | 11.6 | 1.0 | 24.0 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 8.6 | 29.5 | -20.9 |
| 6.745 | 10.4 | 11.7 | 1.0 | 63.9 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 3.0 | 29.5 | -26.5 |
| 27.135 | 10.9 | 10.0 | 1.0 | 210.0 | 10.0 | 0.0 | Perp to EUT | QP | -19.1 | 1.8 | 29.5 | -27.7 |

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 |
|------------------------------|--------------------|----------------|-----|------------|------------|
| Analyzer - Spectrum Analyzer | Keysight | N9010A | AFQ | 2023-02-09 | 2024-02-09 |
| 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 |

MEASUREMENT UNCERTAINTY

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

FREQUENCY RANGE INVESTIGATED

30 MHz TO 1000 MHz

POWER INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

GARR0118-1

MODES INVESTIGATED

Transmitting 13.56 MHz, NFC A

FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)



| | | | |
|-------------------|-------------------------|-----------------------|------------|
| EUT: | Paragon | Work Order: | GARR0118 |
| Serial Number: | 63202294 | Date: | 2023-11-08 |
| Customer: | Garrett Metal Detectors | Temperature: | 22°C |
| Attendees: | None | Relative Humidity: | 49.7% |
| Customer Project: | None | Bar. Pressure (PMSL): | 979 mb |
| Tested By: | Jarrold Brenden | Job Site: | TX02 |
| Power: | 110VAC/60Hz | Configuration: | GARR0118-1 |

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 #: | 29 | Test Distance (m): | 3 | Ant. Height(s) (m): | 1 to 4(m) |
|--------|----|--------------------|---|---------------------|-----------|

COMMENTS

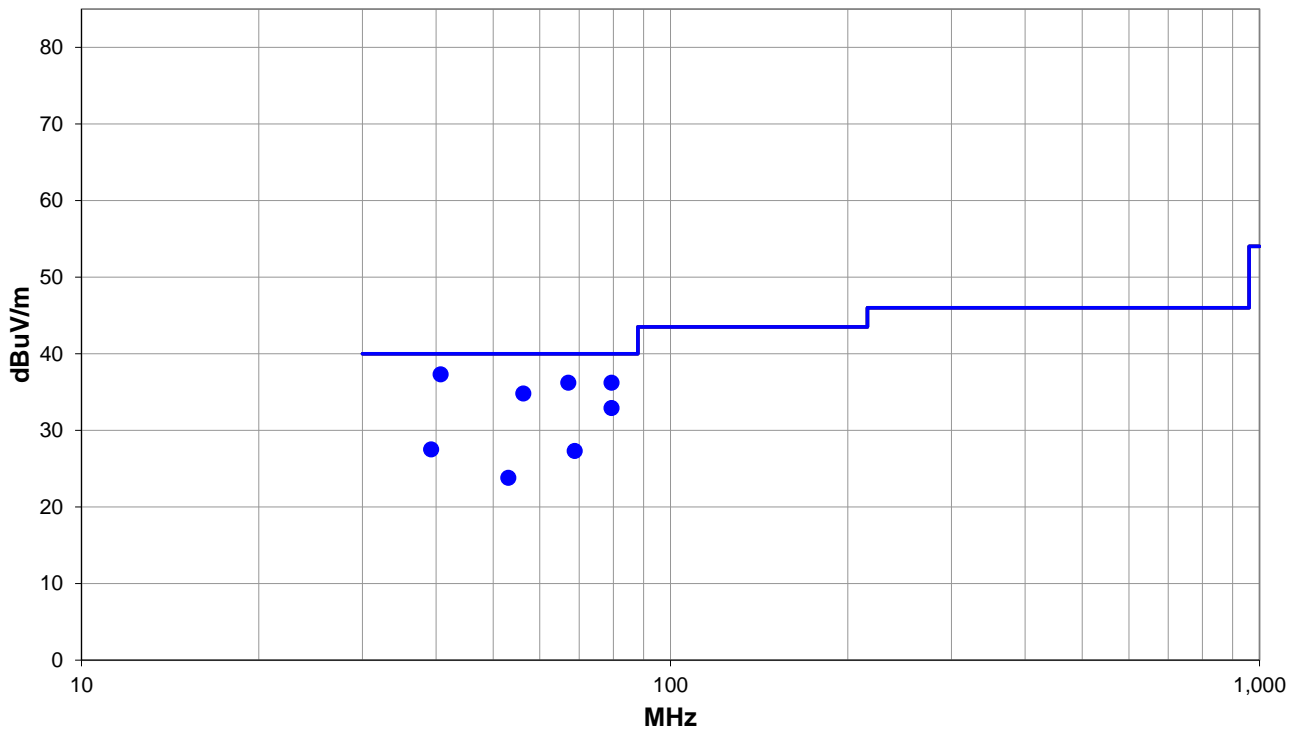
Floor Standing Equipment. Inductive detection loop radio antenna disabled with software controls.

EUT OPERATING MODES

Transmitting 13.56 MHz, NFC A

DEVIATIONS FROM TEST STANDARD

None



Run #: 29

■ PK ◆ AV ● QP

FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)



RESULTS - Run #29

| 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) |
|------------|------------------|---------------|-------------------------|-------------------|------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|
| 40.702 | 60.7 | -23.4 | 1.0 | 294.0 | 3.0 | 0.0 | Vert | QP | 0.0 | 37.3 | 40.0 | -2.7 |
| 67.069 | 62.2 | -26.0 | 1.09 | 63.0 | 3.0 | 0.0 | Vert | QP | 0.0 | 36.2 | 40.0 | -3.8 |
| 79.373 | 62.1 | -25.9 | 1.0 | 21.9 | 3.0 | 0.0 | Vert | QP | 0.0 | 36.2 | 40.0 | -3.8 |
| 56.266 | 61.5 | -26.7 | 1.4 | 122.0 | 3.0 | 0.0 | Vert | QP | 0.0 | 34.8 | 40.0 | -5.2 |
| 79.375 | 58.8 | -25.9 | 2.12 | 135.0 | 3.0 | 0.0 | Horz | QP | 0.0 | 32.9 | 40.0 | -7.1 |
| 39.243 | 50.1 | -22.6 | 2.78 | 255.0 | 3.0 | 0.0 | Horz | QP | 0.0 | 27.5 | 40.0 | -12.5 |
| 68.782 | 53.2 | -25.9 | 2.41 | 160.9 | 3.0 | 0.0 | Horz | QP | 0.0 | 27.3 | 40.0 | -12.7 |
| 53.028 | 50.8 | -27.0 | 3.76 | 177.0 | 3.0 | 0.0 | Horz | QP | 0.0 | 23.8 | 40.0 | -16.2 |

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 |
| Probe - Near Field Set | ETS Lindgren | 7405 | IPS | NCR | NCR |
| Power Supply - DC | Ametek Programmable Power, Inc. | Sorenson XEL30-3D | TQE | 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 |

FREQUENCY STABILITY



| | | | |
|-------------------|-------------------------|-----------------------|------------|
| EUT: | Paragon | Work Order: | GARR0118 |
| Serial Number: | 2354000 | Date: | 2023-11-20 |
| Customer: | Garrett Metal Detectors | Temperature: | 20.3°C |
| Attendees: | None | Relative Humidity: | 54.2% |
| Customer Project: | None | Bar. Pressure (PMSL): | 1006 mbar |
| Tested By: | Jarrold Brenden | Job Site: | TX07 |
| Power: | 5VDC | Configuration: | GARR0118-2 |
| 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

Radio component of Floor Standing Equipment.

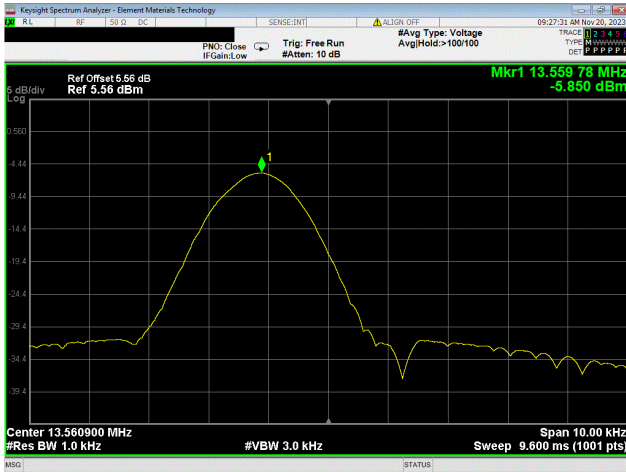
DEVIATIONS FROM TEST STANDARD

None

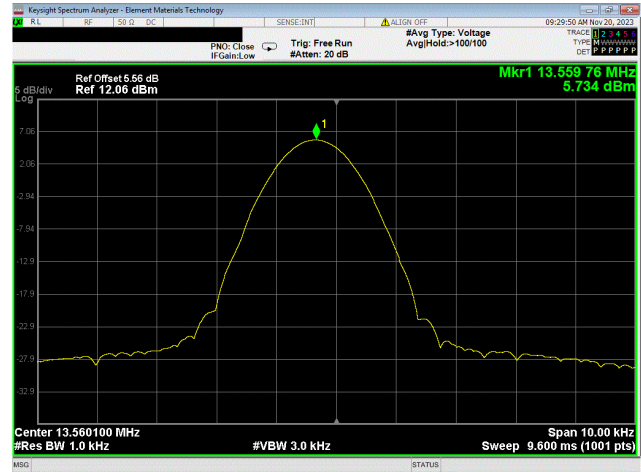
TEST RESULTS

| | Measured Value (MHz) | Nominal Value (MHz) | Error (ppm) | Limit (ppm) | Results |
|---------------------------|----------------------|---------------------|-------------|-------------|---------|
| 13.56 MHz NFC A | | | | | |
| Normal Conditions | 13.55978 | 13.55978 | 0 | 100 | Pass |
| Extreme Voltage 115% | 13.55976 | 13.55978 | 1.47 | 100 | Pass |
| Extreme Voltage 85% | 13.55971 | 13.55978 | 5.16 | 100 | Pass |
| Extreme Temperature +50°C | 13.55971 | 13.55978 | 5.16 | 100 | Pass |
| Extreme Temperature +40°C | 13.55967 | 13.55978 | 8.11 | 100 | Pass |
| Extreme Temperature +30°C | 13.55972 | 13.55978 | 4.42 | 100 | Pass |
| Extreme Temperature +20°C | 13.55971 | 13.55978 | 5.16 | 100 | Pass |
| Extreme Temperature +10°C | 13.55975 | 13.55978 | 2.21 | 100 | Pass |
| Extreme Temperature +0°C | 13.55976 | 13.55978 | 1.47 | 100 | Pass |
| Extreme Temperature -10°C | 13.55974 | 13.55978 | 2.95 | 100 | Pass |
| Extreme Temperature -20°C | 13.55975 | 13.55978 | 2.21 | 100 | Pass |

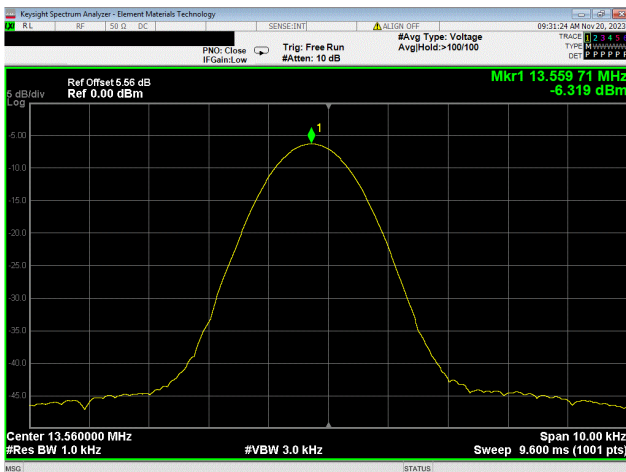
FREQUENCY STABILITY



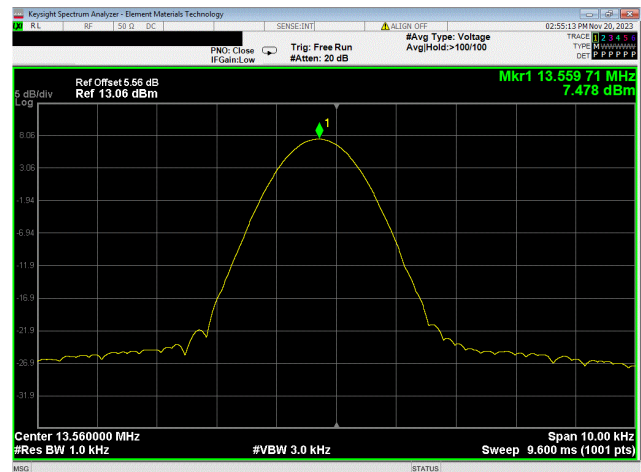
**13.56 MHz NFC
Normal Conditions**



**13.56 MHz NFC
Extreme Voltage 115%**

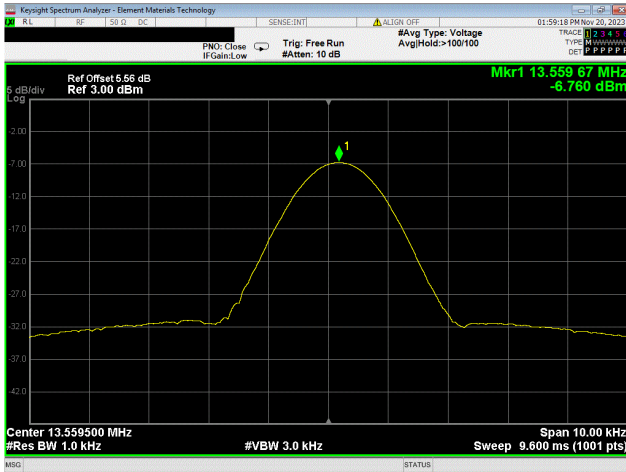


**13.56 MHz NFC
Extreme Voltage 85%**

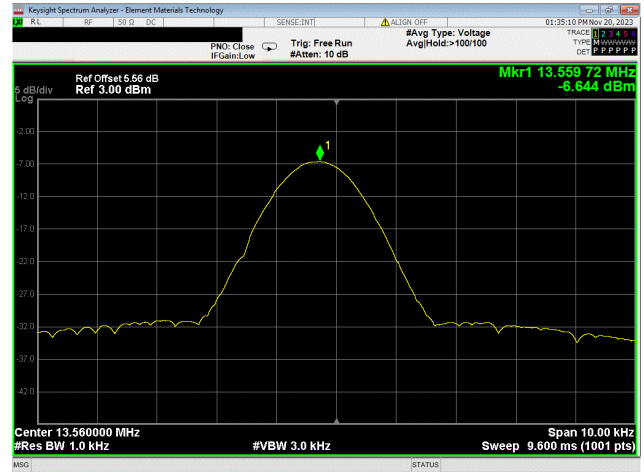


**13.56 MHz NFC
Extreme Temperature +50°C**

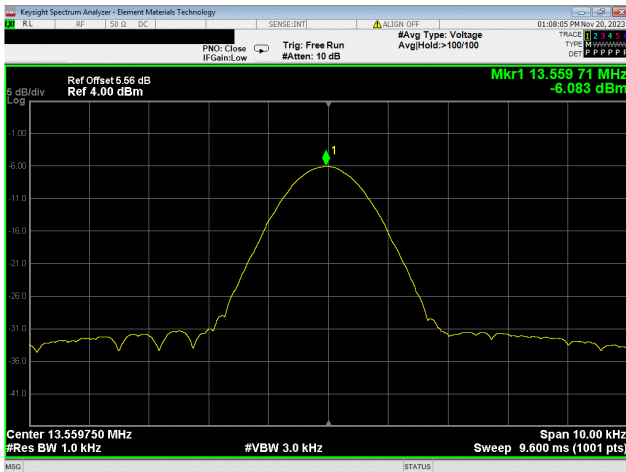
FREQUENCY STABILITY



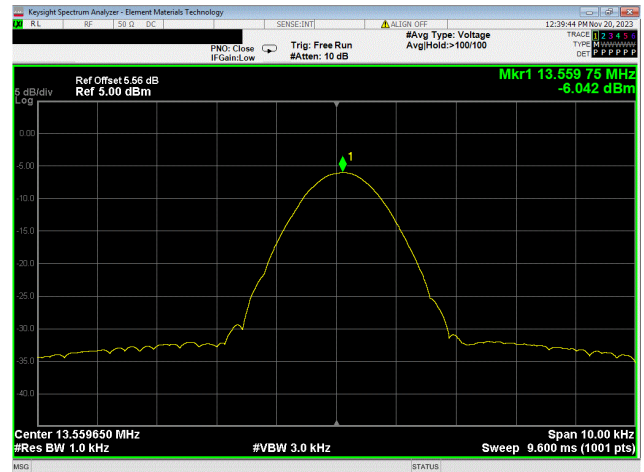
**13.56 MHz NFC
Extreme Temperature +40°C**



**13.56 MHz NFC
Extreme Temperature +30°C**

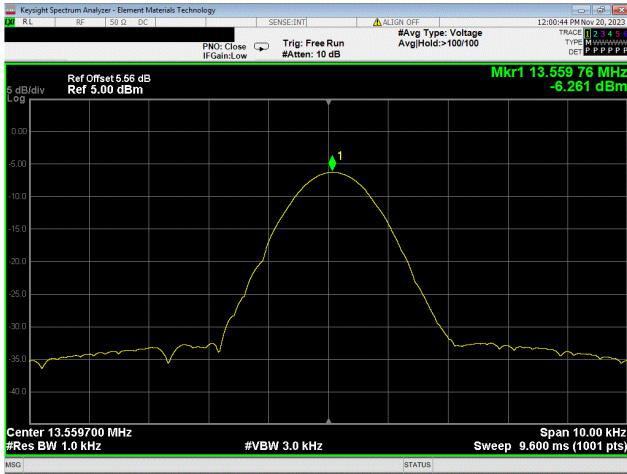


**13.56 MHz NFC
Extreme Temperature +20°C**

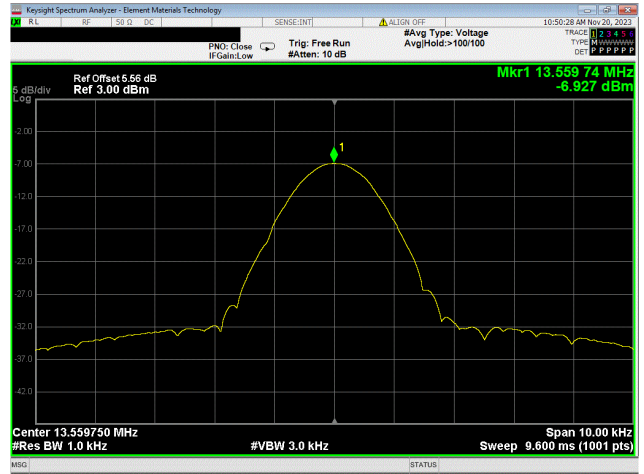


**13.56 MHz NFC
Extreme Temperature +10°C**

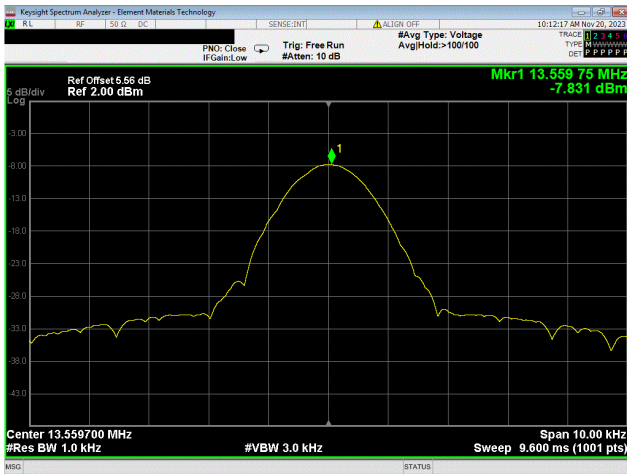
FREQUENCY STABILITY



13.56 MHz NFC
Extreme Temperature +0°C



13.56 MHz NFC
Extreme Temperature -10°C



13.56 MHz NFC
Extreme Temperature -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 sample detector was used unless the device was not able to be operated in a continuous transmit mode, in which case a peak detector was used.

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 |
| Probe - Near Field Set | ETS Lindgren | 7405 | IPS | NCR | NCR |
| Power Supply - DC | Ametek Programmable Power, Inc. | Sorenson XEL30-3D | TQE | NCR | NCR |

OCCUPIED BANDWIDTH



| | | | |
|-------------------|-----------------------------|-----------------------|------------|
| EUT: | Walk Through Metal Detector | Work Order: | GARR0118 |
| Serial Number: | 63202294 | Date: | 2024-02-02 |
| Customer: | Garrett Metal Detectors | Temperature: | 22.4°C |
| Attendees: | None | Relative Humidity: | 40% |
| Customer Project: | None | Bar. Pressure (PMSL): | 1020 mbar |
| Tested By: | Jarrold Brenden | Job Site: | TX07 |
| Power: | 110 VAC / 60 Hz | Configuration: | GARR0118-1 |

TEST SPECIFICATIONS

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

COMMENTS

Floor Standing Equipment. Inductive loop radio antenna disabled.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

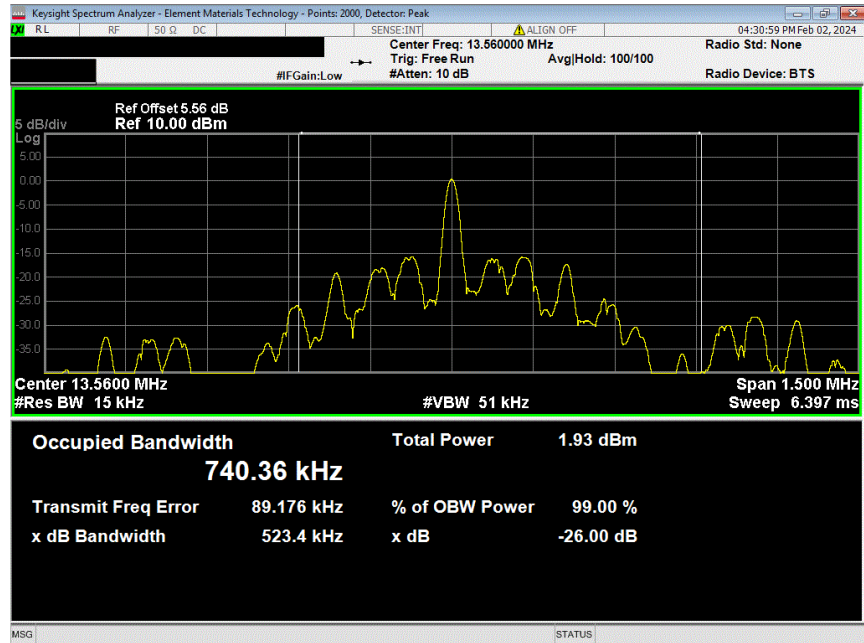
Pass

Tested By

TEST RESULTS

| | Value | Limit | Result |
|-------------------|------------|-------|--------|
| 13.56 MHz NFC A | | | |
| Normal Conditions | 740.36 kHz | N/A | N/A |

OCCUPIED BANDWIDTH



13.56 MHz NFC
Normal Conditions

End of Test Report