

Magtek Incorporated

TEST REPORT FOR

Secure Four-Way Reader with BLE Model: DynaFlex II GO*

*(See Appendix A for Manufacturers Declaration)

Tested to The Following Standards:

FCC Part 15 Subpart C Section(s)

15.225
(13.110-14.010 MHz)

Report No.: 109059-16

Date of issue: April 9, 2024



Test Certificate # 803.01

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

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TABLE OF CONTENTS

Administrative Information 3

 Test Report Information3

 Report Authorization 3

 Test Facility Information4

 Software Versions4

 Site Registration & Accreditation Information4

 Summary of Results5

 Standard / Specification: FCC Part 15 Subpart C – 15.2255

 Modifications During Testing.....5

 Conditions During Testing5

 Equipment Under Test (EUT)6

 General Product Information:6

FCC Part 15 Subpart C 12

 15.215(c) Occupied Bandwidth (20dB BW)12

 15.225(a)-(c) Field Strength of Fundamental15

 15.225(e) Frequency Stability23

 15.225(d) Radiated Emissions & Band Edge31

 15.207 AC Conducted Emissions.....43

Appendix A: Manufacturer Declaration 52

Supplemental Information 53

 Measurement Uncertainty53

 Emissions Test Details.....53

Administrative Information

Test Report Information

REPORT PREPARED FOR:

Magtek Incorporated
1710 Apollo Court
Seal Beach, CA 90740

Representative: Kevin Gin
Customer Reference Number: 30015398

DATE OF EQUIPMENT RECEIPT:

DATE(S) OF TESTING:

REPORT PREPARED BY:

Lisa Bevington
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 109059

February 12, 2024

February 12 & 15, 2024

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the equipment provided by the client, tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.



Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information



Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
110 North Olinda Place
Brea, CA 92823

Software Versions

| CKC Laboratories Proprietary Software | Version |
|---------------------------------------|---------|
| EMITest Emissions | 5.03.20 |

Site Registration & Accreditation Information

| Location | *NIST CB # | FCC | Canada | Japan |
|--------------------------|------------|--------|--------|--------|
| Canyon Park, Bothell, WA | US0103 | US1024 | 3082C | A-0136 |
| Brea, CA | US0103 | US1024 | 3082D | A-0136 |
| Fremont, CA | US0103 | US1024 | 3082B | A-0136 |
| Mariposa, CA | US0103 | US1024 | 3082A | A-0136 |

*CKC's list of NIST designated countries can be found at: <https://standards.gov/cabs/designations.html>

Summary of Results

Standard / Specification: FCC Part 15 Subpart C – 15.225

| Test Procedure | Description | Modifications | Results |
|----------------|--------------------------------------|---------------|---------|
| 15.215(c) | Occupied Bandwidth | Mod. #1: | Pass |
| 15.225(a)-(c) | Field Strength of Fundamental | Mod. #1: | Pass |
| 15.225(e) | Frequency Stability | Mod. #1: | Pass |
| 15.225(d) | Field Strength of Spurious Emissions | Mod. #1: | Pass |
| 15.207 | AC Conducted Emissions | Mod. #1: | Pass |

NA = Not Applicable

ISO/IEC 17025 Decision Rule

The equipment sample utilized for testing is selected by the manufacturer. The declaration of pass or fail herein is a binary statement for simple acceptance rule (ILAC G8) based upon assessment to the specification(s) listed above, without consideration of measurement uncertainties. For performance related tests, equipment was monitored for specified criteria identified in that section of testing.

Modifications During Testing

This list is a summary of the modifications made to the equipment during testing.

Summary of Conditions

Mod. #1: Manufacturer provided ferrites installed at each end of the USB cable.

Modifications listed above must be incorporated into all production units.

Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

Summary of Conditions

None

Equipment Under Test (EUT)

During testing, numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

Configuration 1

Equipment Tested:

| Device | Manufacturer | Model # | S/N |
|---------------------------------|---------------------|----------------|---------|
| Secure Four-Way Reader with BLE | Magtek Incorporated | DynaFlex II GO | BE00120 |

Support Equipment:

| Device | Manufacturer | Model # | S/N |
|--------------|--------------|-----------|-----|
| Laptop | Dell | Latitude | 630 |
| Power Supply | Dell | DA90PM111 | NA |

General Product Information:

| Description of EUT |
|---------------------------------|
| Secure Four-Way Reader with BLE |

| Product Information | Manufacturer-Provided Details |
|----------------------------------|--|
| Operating Frequencies Tested: | 13.56MHz |
| Equipment Type: | Stand-Alone Equipment |
| Maximum Duty Cycle: | 98% |
| Modulation Type(s): | OOK |
| Antenna Type(s): | Integral loop |
| Antenna Connection Type: | Integral (External connector provided to facilitate testing) |
| Nominal Input Voltage: | 5V DC USB |
| Firmware / Software Version(s): | 1000009421 AA0 |
| Firmware / Software Description: | FIRMWARE, DYNAFLEX II GO MAIN APP PCI |
| Firmware / Software Setting(s): | None |
| Tune-up or Adjustment(s): | None |

The validity of results is dependent on the stated product details, the accuracy of which the manufacturer assumes full responsibility.

EUT and Accessory Photo(s)



EUT, View 1



EUT, View 2



EUT, View 3



EUT, View 4



EUT, View 5



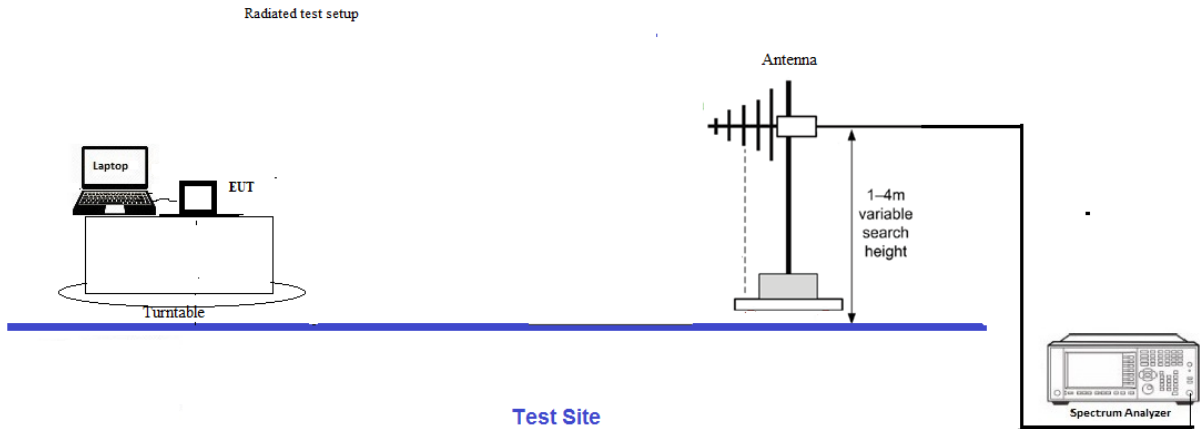
EUT, View 6

Support Equipment Photo(s)



Block Diagram of Test Setup(s)

| Config# | Description of Block Diagram |
|---------|---|
| 1 | <p>The EUT with 13.56 NFC radio and single modular approved radio installed is placed on the Styrofoam. The EUT is connected to the USB port of a support laptop.</p> <p>The EUT is set in constant transmit mode with a card placed in the field. The fundamental signal is modulated. Data is read and send to the support laptop via USB cable.</p> <p style="text-align: center;">TX: 13.56MHz</p> <p style="text-align: center;">BLE: Single modular approved radio</p> <p>Emission profile of the EUT rotated along three orthogonal axis was investigated. Recorded data represent worse case emission.</p> <p>Mod: manufacturer provided ferrites installed at each end of the USB cable.</p> |



FCC Part 15 Subpart C

15.215(c) Occupied Bandwidth (20dB BW)

| Test Setup/Conditions | | | |
|-----------------------|---|----------------|-----------|
| Test Location: | Brea Lab A | Test Engineer: | E. Wong |
| Test Method: | ANSI C63.10 (2020) | Test Date(s): | 2/12/2024 |
| Configuration: | 1 | | |
| Test Setup: | <p>The EUT with 13.56 NFC radio and single modular approved radio installed is placed on the Styrofoam. The EUT is connected to the USB port of a support laptop.</p> <p>The EUT is set in constant transmit mode with a card placed in the field. The fundamental signal is modulated. Data is read and send to the support laptop via USB cable.</p> <p>TX: 13.56MHz</p> <p>BLE: Single modular approved radio</p> <p>Emission profile of the EUT rotated along three orthogonal axis was investigated. Recorded data represent worse case emission.</p> <p>Modification #1 in place during testing.</p> | | |

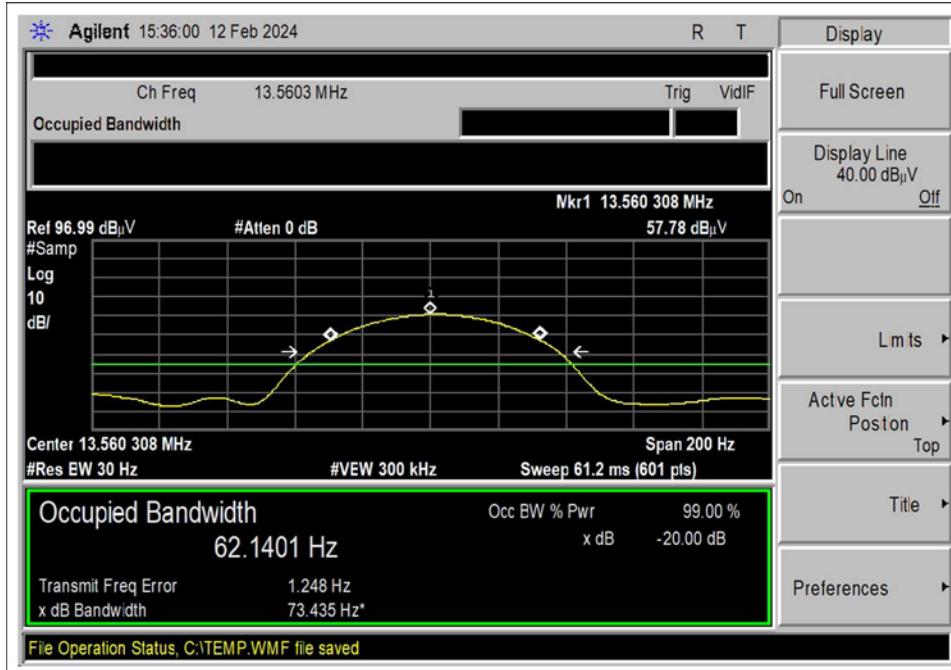
| Environmental Conditions | | | |
|--------------------------|------|------------------------|----|
| Temperature (°C) | 20.3 | Relative Humidity (%): | 33 |

| Test Equipment | | | | | |
|----------------|-------------------|--------------|---------|------------|------------|
| Asset# | Description | Manufacturer | Model | Cal Date | Cal Due |
| 02672 | Spectrum Analyzer | Agilent | E4446A | 5/9/2022 | 5/9/2024 |
| 00314 | Loop Antenna | EMCO | 6502 | 3/29/2022 | 3/29/2024 |
| 05198 | Cable | Belden | 8268 | 12/31/2022 | 12/31/2024 |
| 01438 | DC Power Supply | Topward | 6306D | 4/4/2023 | 4/4/2025 |
| 07164 | Multimeter | Fluke | 8845A/G | 8/21/2023 | 8/21/2025 |

| Test Data Summary | | | | | |
|-------------------|--------------|------------|----------------|-------------|---------|
| Frequency (MHz) | Antenna Port | Modulation | Measured (kHz) | Limit (kHz) | Results |
| 13.56 | 1 | OOK | 0.073 | None | NA |

Measured at 3 meter due to low amplitude of fundamental emission.
 Measured at RBW of 30Hz due to narrow band nature of the signal, 1% OBW <RBW <5% OBW could not be achieved.

Plot(s)



Test Setup Photo(s)



0.8m, View 1



0.8m, View 1

15.225(a)-(c) Field Strength of Fundamental

| Test Setup/Conditions | | | |
|-----------------------|--|----------------|-----------|
| Test Location: | Brea Lab A | Test Engineer: | E. Wong |
| Test Method: | ANSI C63.10 (2020) | Test Date(s): | 2/12/2024 |
| Configuration: | 1 | | |
| Test Setup: | <p>The EUT with 13.56 NFC radio and single modular approved radio installed is placed on the Styrofoam. The EUT is connected to the USB port of a support laptop.</p> <p>The EUT is set in constant transmit mode with a card placed in the field. The fundamental signal is modulated. Data is read and send to the support laptop via USB cable.</p> <p>TX: 13.56MHz</p> <p>BLE: Single modular approved radio</p> <p>Frequency range of measurement = Fundamental 150 kHz-30 MHz;RBW=9 kHz,VBW=27 kHz;</p> <p>Emission profile of the EUT rotated along three orthogonal axis was investigated. Recorded data represent worse case emission.</p> <p>Modification #1 in place during testing.</p> | | |

| Environmental Conditions | | | |
|--------------------------|----|------------------------|----|
| Temperature (°C) | 18 | Relative Humidity (%): | 36 |

| Test Equipment | | | | | |
|----------------|---------------------|------------------|----------------|------------|------------|
| Asset# | Description | Manufacturer | Model | Cal Date | Cal Due |
| 02672 | Spectrum Analyzer | Agilent | E4446A | 5/9/2022 | 5/9/2024 |
| 00314 | Loop Antenna | EMCO | 6502 | 3/29/2022 | 3/29/2024 |
| 05198 | Cable | Belden | 8268 | 12/31/2022 | 12/31/2024 |
| 01878 | Temperature Chamber | Thermotron Corp. | S 1.2 Mini-Max | 4/4/2023 | 4/4/2025 |
| 07164 | Multimeter | Fluke | 8845A/G | 8/21/2023 | 8/21/2025 |
| 05947 | Thermometer | Fluke | 51 | 5/19/2022 | 5/19/2024 |
| 01438 | DC Power Supply | Topward | 6306D | 4/4/2023 | 4/4/2025 |

| Test Data Summary - Voltage Variations | | | | | |
|--|-----------------------|-----------------------------------|-----------------------------------|-----------------------------------|--|
| Frequency (MHz) | Modulation / Ant Port | V _{Minimum} (dBuV/m@30m) | V _{Nominal} (dBuV/m@30m) | V _{Maximum} (dBuV/m@30m) | Max Deviation from V _{Nominal} (dB) |
| 13.561 | OOK | 30.3 | 30.3 | 30.3 | 0 |

Test performed using operational mode with the highest output power, representing worst case.

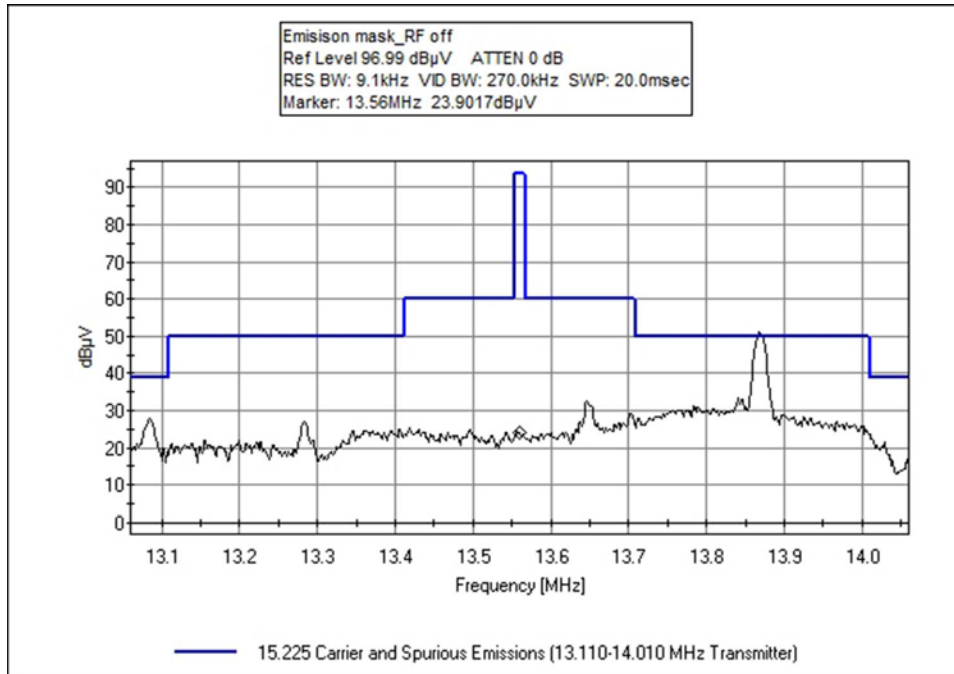
Parameter Definitions:

Measurements performed at input voltage V_{Nominal} ± 15%.

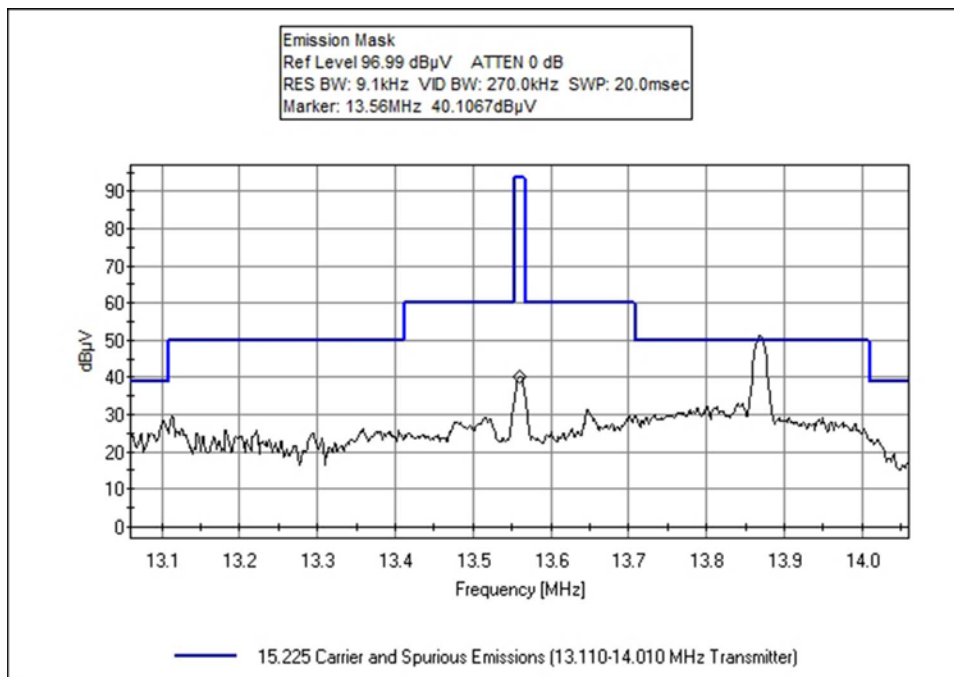
| Parameter | Value |
|------------------------|---------|
| V _{Nominal} : | 5.00Vdc |
| V _{Minimum} : | 4.25Vdc |
| V _{Maximum} : | 5.75Vdc |

| Test Data Summary – Radiated Field Strength Measurement | | | | | |
|---|------------|---------------|-------------------------|----------------------|---------|
| Frequency (MHz) | Modulation | Ant. Type | Measured (dBuV/m @ 30m) | Limit (dBuV/m @ 30m) | Results |
| 13.561 | OOK | Integral Loop | 30.3 | ≤84 | Pass |

Plots



Emission Mask RF Off



Emission Mask RF On

Test Setup / Conditions / Data

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA • 714 993 6112
 Customer: **Magtek Incorporated**
 Specification: **15.225 Carrier and Spurious Emissions (13.110-14.010 MHz Transmitter)**
 Work Order #: **109059** Date: 2/12/2024
 Test Type: **Radiated Scan** Time: 16:41:35
 Tested By: E. Wong Sequence#: 1
 Software: EMITest 5.03.20

Equipment Tested:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 | | | |

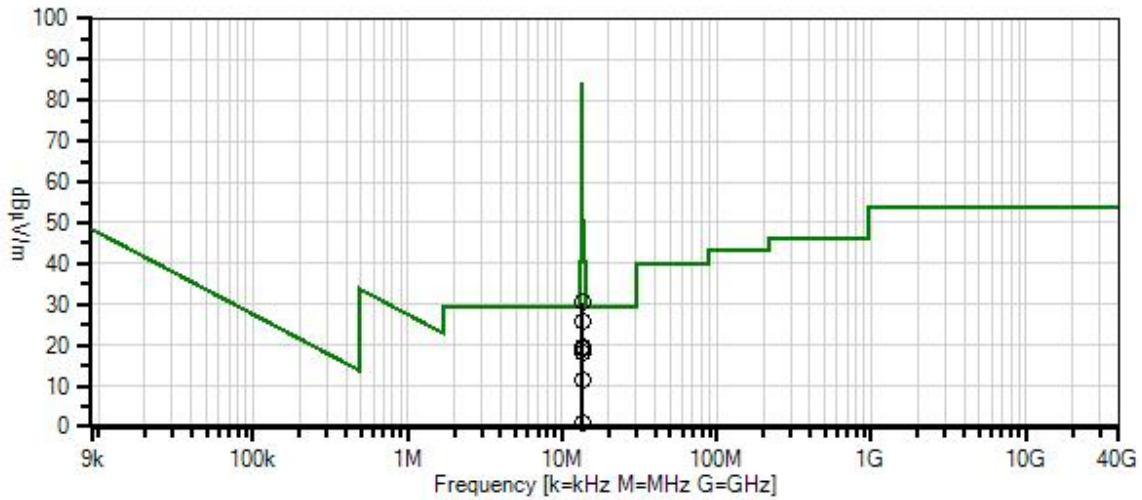
Support Equipment:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 | | | |

Test Conditions / Notes:

See test setup

Magtek Incorporated WO#: 109059 Sequence#: 1 Date: 2/12/2024
 15.225 Carrier and Spurious Emissions (13.110-14.010 MHz Transmitter) Test Distance: 10 Meters Parallel



Test Equipment:

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|----|----------|--------------------------------------|----------------------------|------------------|--------------|
| T1 | AN02672 | Spectrum Analyzer | E4446A | 5/9/2022 | 5/9/2024 |
| | AN00851 | Biconilog Antenna | CBL6111C | 4/21/2022 | 4/21/2024 |
| T2 | ANP05198 | Cable-Amplitude +15C to +45C (dB) | 8268 | 12/31/2022 | 12/31/2024 |
| | AN00309 | Preamp | 8447D | 11/21/2023 | 11/21/2025 |
| | ANP06664 | Cable | PHASEFLEX FJR01N01036.0 | 3/25/2022 | 3/25/2024 |
| T3 | AN00314 | Loop Antenna | 6502 | 3/29/2022 | 3/29/2024 |

Measurement Data:

Reading listed by margin.

Test Distance: 10 Meters

| # | Freq MHz | Rdng dB μ V | T1 dB | T2 dB | T3 dB | Dist Table | Corr dB μ V/m | Spec dB μ V/m | Margin dB | Polar Ant |
|---|-------------|--------------------|----------|----------|----------|---------------|----------------------|----------------------------------|--------------|--------------|
| 1 | 13.561M | 40.1 | +0.0 | +0.6 | +8.9 | -19.1 | 30.5 | 84.0 | -53.5 | Paral |
| | | | | | | | | Fundamental_Y_10 m_worst case | | |
| 2 | 13.561M | 56.5 | +0.0 | +0.6 | +8.9 | -40.0 | 26.0 | 84.0 | -58.0 | Paral |
| | | | | | | | | Fundamental_Y_wo rst case | | |
| 3 | 13.561M | 56.1 | +0.0 | +0.6 | +8.9 | -40.0 | 25.6 | 84.0 | -58.4 | Paral |
| | | | | | | | | Fundamental_Z | | |
| 4 | 13.561M | 50.2 | +0.0 | +0.6 | +8.9 | -40.0 | 19.7 | 84.0 | -64.3 | Perpe |
| | | | | | | | | Fundamental_Y | | |
| 5 | 13.561M | 49.6 | +0.0 | +0.6 | +8.9 | -40.0 | 19.1 | 84.0 | -64.9 | Perpe |
| | | | | | | | | Fundamental_Z | | |
| 6 | 13.561M | 49.6 | +0.0 | +0.6 | +8.9 | -40.0 | 19.1 | 84.0 | -64.9 | Groun |
| | | | | | | | | Fundamental_Z | | |
| 7 | 13.561M | 48.7 | +0.0 | +0.6 | +8.9 | -40.0 | 18.2 | 84.0 | -65.8 | Groun |
| | | | | | | | | Fundamental_Y | | |
| 8 | 13.561M | 42.2 | +0.0 | +0.6 | +8.9 | -40.0 | 11.7 | 84.0 | -72.3 | Groun |
| | | | | | | | | Fundamental_X | | |
| 9 | 13.561M | 31.6 | +0.0 | +0.6 | +8.9 | -40.0 | 1.1 | 84.0 | -82.9 | Perpe |
| | | | | | | | | Fundamental_X | | |

Test Setup Photo(s)



0.8m, View 1



0.8m, View 2



X Axis



Y Axis



Z Axis

15.225(e) Frequency Stability

| Test Setup/Conditions | | | |
|-----------------------|---|----------------|-----------|
| Test Location: | Brea Lab A | Test Engineer: | E. Wong |
| Test Method: | ANSI C63.10 (2020) | Test Date(s): | 2/15/2024 |
| Configuration: | 1 | | |
| Test Setup: | <p>The EUT with 13.56 NFC radio and single modular approved radio installed is placed in the temperature. The EUT is connected to the USB port of a support laptop.</p> <p>The EUT is set in constant transmit mode with a card placed in the field. The fundamental signal is modulated. Data is read and send to the support laptop via USB cable.</p> <p>TX: 13.56MHz</p> <p>Modification #1 in place during testing.</p> | | |

| Environmental Conditions | | | |
|--------------------------|----|------------------------|----|
| Temperature (°C) | 20 | Relative Humidity (%): | 48 |

| Test Equipment | | | | | |
|----------------|---------------------|------------------|----------------|------------|------------|
| Asset# | Description | Manufacturer | Model | Cal Date | Cal Due |
| 02672 | Spectrum Analyzer | Agilent | E4446A | 5/9/2022 | 5/9/2024 |
| 00314 | Loop Antenna | EMCO | 6502 | 3/29/2022 | 3/29/2024 |
| 05198 | Cable | Belden | 8268 | 12/31/2022 | 12/31/2024 |
| 01878 | Temperature Chamber | Thermotron Corp. | S 1.2 Mini-Max | 4/4/2023 | 4/4/2025 |
| 07164 | Multimeter | Fluke | 8845A/G | 8/21/2023 | 8/21/2025 |
| 05947 | Thermometer | Fluke | 51 | 5/19/2022 | 5/19/2024 |
| 01438 | DC Power Supply | Topward | 6306D | 4/4/2023 | 4/4/2025 |

| Test Data Summary | | | | | |
|--------------------|----------------------|----------------------------------|---------------|-----------|---------|
| Temperature (°C) | Voltage | Frequency (MHz) At -6dB point | Deviation (%) | Limit (%) | Results |
| -20 | V _{Nominal} | 13.558960 | 0.00059 | ±0.01 | Pass |
| -10 | V _{Nominal} | 13.558980 | 0.00074 | ±0.01 | |
| 0 | V _{Nominal} | 13.558960 | 0.00059 | ±0.01 | |
| 10 | V _{Nominal} | 13.558960 | 0.00059 | ±0.01 | |
| 20 | V _{Minimum} | 13.558880 | 0.00000 | ±0.01 | |
| 20 | V _{Nominal} | 13.558880 | 0.00000 | ±0.01 | |
| 20 | V _{Maximum} | 13.558880 | 0.00000 | ±0.01 | |
| 30 | V _{Nominal} | 13.558880 | 0.00000 | ±0.01 | |
| 40 | V _{Nominal} | 13.558820 | 0.00044 | ±0.01 | |
| 50 | V _{Nominal} | 13.558880 | 0.00000 | ±0.01 | |
| Nominal Frequency: | | 13.558880 | | | |

Parameter Definitions:

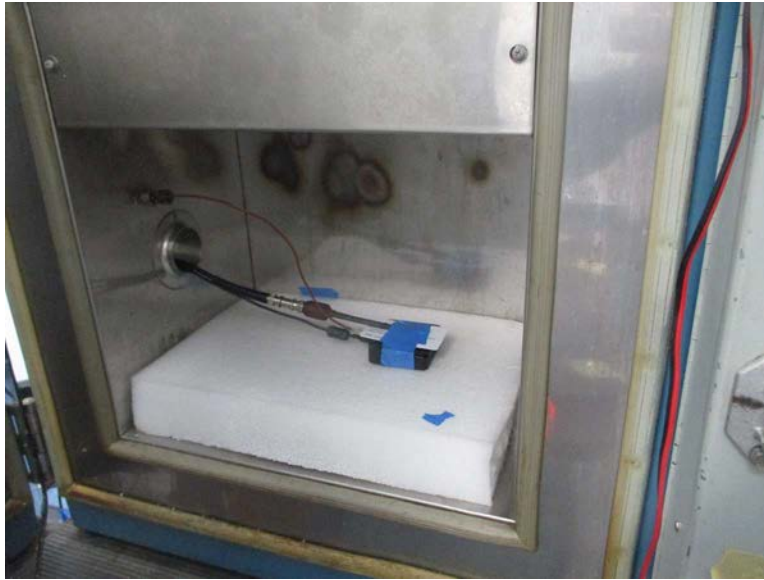
Measurements performed at input voltage $V_{nominal} \pm 15\%$.

| Parameter | Value |
|-----------------|---------|
| $V_{Nominal}$: | 4.25Vdc |
| $V_{Minimum}$: | 5.00Vdc |
| $V_{Maximum}$: | 5.75Vdc |

Test Setup Photo(s)



FCC Voltage Variance



Frequency Stability, View 1



Frequency Stability, View 2



0.8m, View 1



0.8m, View 2



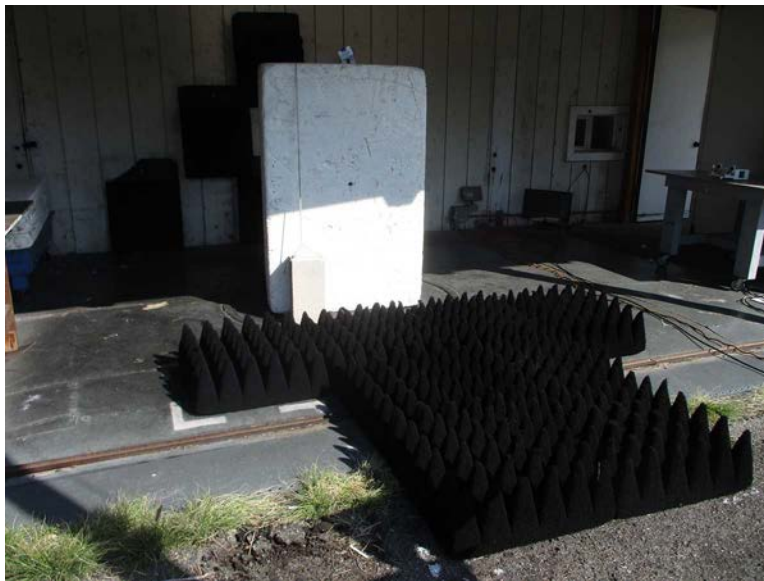
1.5m, View 1



1.5m, View 2



Above 1GHz, View 1



Above 1GHz, View 2



X Axis



Y Axis



Z Axis

15.225(d) Radiated Emissions & Band Edge

Test Setup / Conditions/ Data

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA • 714 993 6112
 Customer: **Magtek Incorporated**
 Specification: **15.225 Carrier and Spurious Emissions (13.110-14.010 MHz Transmitter)**
 Work Order #: **109059** Date: 2/12/2024
 Test Type: **Radiated Scan** Time: 16:41:35
 Tested By: E. Wong Sequence#: 1
 Software: EMITest 5.03.20

Equipment Tested:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 | | | |

Support Equipment:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 | | | |

Test Conditions / Notes:

The EUT with 13.56 NFC radio and single modular approved radio installed is placed on the Styrofoam. The EUT is connected to the USB port of a support laptop.

The EUT is set in constant transmit mode with a card placed in the field. The fundamental signal is modulated. Data is read and send to the support laptop via USB cable.

TX: 13.56MHz
 The manufacturer declares the EUT digital processor does not generate or use frequencies higher than 108 MHz.

BLE: Single modular approved radio

'Frequency range of measurement = 9 kHz- 1 GHz.
 9 kH -150 kHz;RBW=200 Hz,VBW=600 Hz;
 150 kHz-30 MHz;RBW=9 kHz,VBW=27 kHz;
 30 MHz-1000 MHz;RBW=120 kHz,VBW=360 kHz,

Test environment conditions:
 Temperature: 18 °C
 Humidity: 36%
 Pressure: 100kPa

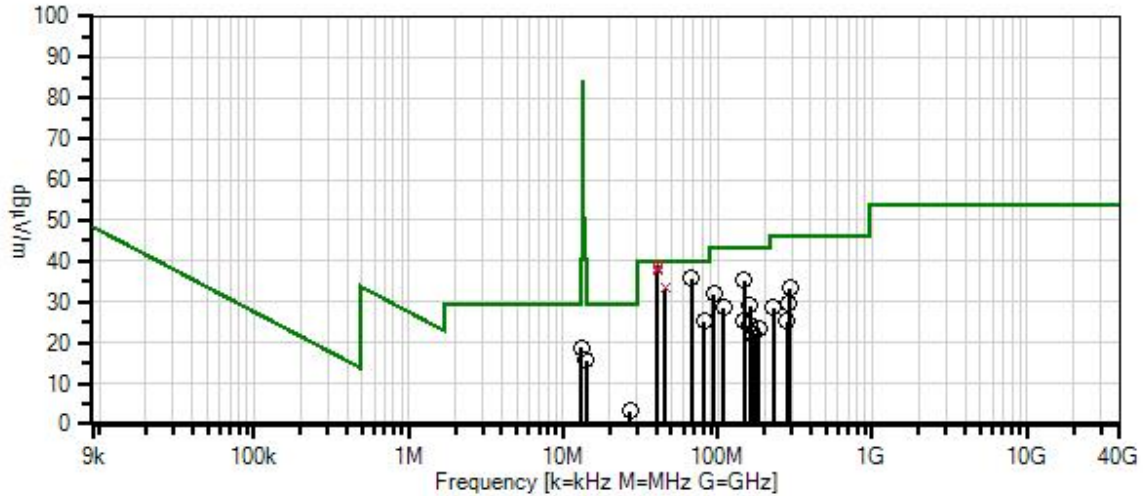
Emission profile of the EUT rotated along three orthogonal axis was investigated. Recorded data represent worse case emission.

Site A

ANSI C63.10-2013

Modification #1 in place during testing.

Magtek Incorporated WO#: 109059 Sequence#: 1 Date: 2/12/2024
 15.225 Carrier and Spurious Emissions (13.110-14.010 MHz Transmitter) Test Distance: 10 Meters Parallel



- Readings
 - Peak Readings
 - × QP Readings
 - * Average Readings
 - ▼ Ambient
- Software Version: 5.03.20
 1 - 15.225 Carrier and Spurious Emissions (13.110-14.010 MHz Transmitter)

Test Equipment:

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|----|----------|--------------------------------------|----------------------------|------------------|--------------|
| T1 | AN02672 | Spectrum Analyzer | E4446A | 5/9/2022 | 5/9/2024 |
| T2 | AN00851 | Biconilog Antenna | CBL6111C | 4/21/2022 | 4/21/2024 |
| T3 | ANP05198 | Cable-Amplitude +15C to +45C (dB) | 8268 | 12/31/2022 | 12/31/2024 |
| T4 | AN00309 | Preamp | 8447D | 11/21/2023 | 11/21/2025 |
| T5 | ANP06664 | Cable | PHASEFLEX FJR01N01036.0 | 3/25/2022 | 3/25/2024 |
| T6 | AN00314 | Loop Antenna | 6502 | 3/29/2022 | 3/29/2024 |

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

| # | Freq MHz | Rdng dB μ V | T1 T5 dB | T2 T6 dB | T3 dB | T4 dB | Dist Table | Corr dB μ V/m | Spec dB μ V/m | Margin dB | Polar Ant |
|----|-------------|--------------------|----------------|----------------|----------|----------|---------------|----------------------|----------------------|--------------|--------------|
| 1 | 40.668M | 46.7 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 39.0 | 40.0 Z | -1.0 | Horiz |
| ^ | 40.668M | 49.5 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 41.8 | 40.0 Z | +1.8 | Horiz |
| ^ | 40.677M | 39.2 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 31.5 | 40.0 Z | -8.5 | Horiz |
| ^ | 40.675M | 38.2 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 30.5 | 40.0 X | -9.5 | Horiz |
| ^ | 40.677M | 37.6 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 29.9 | 40.0 Y | -10.1 | Horiz |
| 6 | 40.675M | 45.8 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 38.1 | 40.0 X | -1.9 | Vert |
| 7 | 40.668M | 45.3 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 37.6 | 40.0 Y | -2.4 | Vert |
| ^ | 40.675M | 48.5 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 40.8 | 40.0 X | +0.8 | Vert |
| ^ | 40.668M | 47.1 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 39.4 | 40.0 Y | -0.6 | Vert |
| 10 | 67.797M | 50.1 | +0.0 +0.1 | +12.3 +0.0 | +1.4 | -28.1 | +0.0 | 35.8 | 40.0 | -4.2 | Vert |
| 11 | 45.975M | 43.8 | +0.0 +0.1 | +16.4 +0.0 | +1.2 | -28.2 | +0.0 | 33.3 | 40.0 | -6.7 | Vert |
| ^ | 45.975M | 45.6 | +0.0 +0.1 | +16.4 +0.0 | +1.2 | -28.2 | +0.0 | 35.1 | 40.0 | -4.9 | Vert |
| 13 | 149.157M | 44.0 | +0.0 +0.1 | +17.2 +0.0 | +2.1 | -28.1 | +0.0 | 35.3 | 43.5 | -8.2 | Vert |
| 14 | 13.110M | 28.2 | +0.0 +0.0 | +0.0 +9.0 | +0.6 | +0.0 | -19.1 | 18.7 | 29.5 Bandedge_L | -10.8 | Paral |
| 15 | 94.917M | 42.6 | +0.0 +0.1 | +15.5 +0.0 | +1.7 | -28.1 | +0.0 | 31.8 | 43.5 | -11.7 | Vert |
| 16 | 292.532M | 39.1 | +0.0 +0.1 | +19.2 +0.0 | +3.1 | -28.0 | +0.0 | 33.5 | 46.0 | -12.5 | Vert |
| 17 | 14.010M | 25.1 | +0.0 +0.0 | +0.0 +8.9 | +0.7 | +0.0 | -19.1 | 15.6 | 29.5 Bandedge_H | -13.9 | Paral |
| 18 | 162.717M | 38.5 | +0.0 +0.1 | +16.3 +0.0 | +2.2 | -28.1 | +0.0 | 29.0 | 43.5 | -14.5 | Vert |
| 19 | 81.357M | 37.9 | +0.0 +0.1 | +13.8 +0.0 | +1.6 | -28.1 | +0.0 | 25.3 | 40.0 | -14.7 | Vert |
| 20 | 108.477M | 37.8 | +0.0 +0.1 | +17.0 +0.0 | +1.8 | -28.1 | +0.0 | 28.6 | 43.5 | -14.9 | Vert |
| 21 | 287.944M | 35.5 | +0.0 +0.1 | +19.1 +0.0 | +3.0 | -28.0 | +0.0 | 29.7 | 46.0 | -16.3 | Horiz |

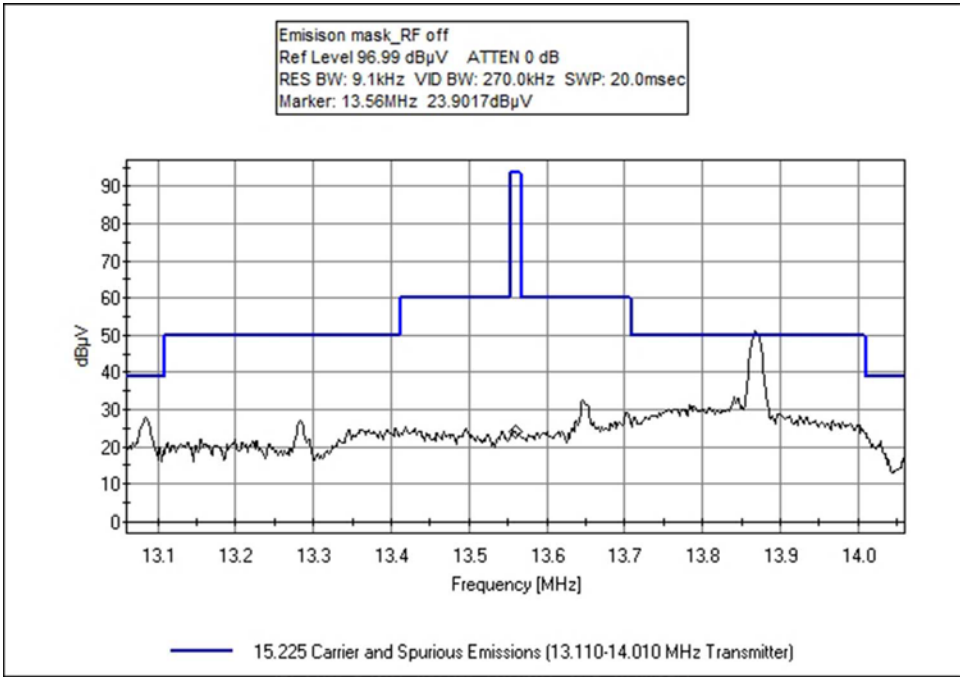
| | | | | | | | | | | | |
|----|----------|------|--------------|---------------|------|-------|-------|------|------|-------|-------|
| 22 | 230.517M | 37.3 | +0.0 +0.1 | +16.4 +0.0 | +2.7 | -28.0 | +0.0 | 28.5 | 46.0 | -17.5 | Vert |
| 23 | 148.066M | 33.7 | +0.0 +0.1 | +17.3 +0.0 | +2.1 | -28.1 | +0.0 | 25.1 | 43.5 | -18.4 | Horiz |
| 24 | 162.011M | 33.7 | +0.0 +0.1 | +16.4 +0.0 | +2.2 | -28.1 | +0.0 | 24.3 | 43.5 | -19.2 | Horiz |
| 25 | 183.911M | 33.9 | +0.0 +0.1 | +15.0 +0.0 | +2.4 | -28.1 | +0.0 | 23.3 | 43.5 | -20.2 | Horiz |
| 26 | 279.927M | 31.3 | +0.0 +0.1 | +18.8 +0.0 | +3.0 | -28.0 | +0.0 | 25.2 | 46.0 | -20.8 | Vert |
| 27 | 171.161M | 32.1 | +0.0 +0.0 | +0.0 +0.0 | +2.3 | +0.0 | +0.0 | 22.0 | 43.5 | -21.5 | Horiz |
| 28 | 27.121M | 15.1 | +0.0 +0.0 | +0.0 +6.4 | +0.8 | +0.0 | -19.1 | 3.2 | 29.5 | -26.3 | Paral |

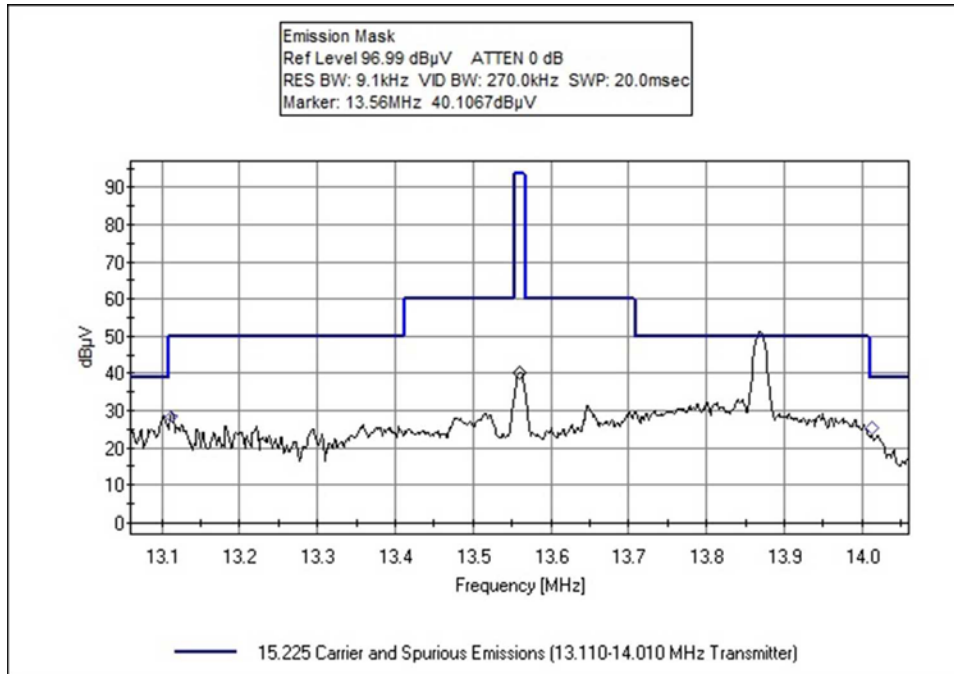
Band Edge

Band Edge Summary

| Frequency (MHz) | Modulation | Ant. Type | Field Strength (dBuV/m @30m) | Limit (dBuV/m @30m) | Results |
|-----------------|------------|----------------|------------------------------|---------------------|---------|
| 13.110 | OOK | Integral, Loop | 18.7 | ≤29.5 | Pass |
| 14.010 | OOK | Integral, Loop | 15.6 | ≤29.5 | Pass |

Band Edge Plots





Test Setup / Conditions / Data

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA • 714 993 6112
 Customer: **Magtek Incorporated**
 Specification: **15.225 Carrier and Spurious Emissions (13.110-14.010 MHz Transmitter)**
 Work Order #: **109059** Date: 2/12/2024
 Test Type: **Radiated Scan** Time: 16:41:35
 Tested By: E. Wong Sequence#: 1
 Software: EMITest 5.03.20

Equipment Tested:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 | | | |

Support Equipment:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 | | | |

Test Conditions / Notes:

The EUT with 13.56 NFC radio and single modular approved radio installed is placed on the Styrofoam. The EUT is connected to the USB port of a support laptop.

The EUT is set in constant transmit mode with a card placed in the field. The fundamental signal is modulated. Data is read and send to the support laptop via USB cable.

TX: 13.56MHz
 The manufacturer declares the EUT digital processor does not generate or use frequencies higher than 108 MHz.

BLE: Single modular approved radio

'Frequency range of measurement = 9 kHz- 1 GHz.
 9 kH -150 kHz;RBW=200 Hz,VBW=600 Hz;
 150 kHz-30 MHz;RBW=9 kHz,VBW=27 kHz;
 30 MHz-1000 MHz;RBW=120 kHz,VBW=360 kHz,

Test environment conditions:
 Temperature: 18 °C
 Humidity: 36%
 Pressure: 100kPa

Emission profile of the EUT rotated along three orthogonal axis was investigated. Recorded data represent worse case emission.

Site A

ANSI C63.10-2013

Modification #1 in place during testing.

Test Equipment:

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|----|----------|--------------------------------------|----------------------------|------------------|--------------|
| T1 | AN02672 | Spectrum Analyzer | E4446A | 5/9/2022 | 5/9/2024 |
| T2 | AN00851 | Biconilog Antenna | CBL6111C | 4/21/2022 | 4/21/2024 |
| T3 | ANP05198 | Cable-Amplitude +15C to +45C (dB) | 8268 | 12/31/2022 | 12/31/2024 |
| T4 | AN00309 | Preamp | 8447D | 11/21/2023 | 11/21/2025 |
| T5 | ANP06664 | Cable | PHASEFLEX FJR01N01036.0 | 3/25/2022 | 3/25/2024 |
| T6 | AN00314 | Loop Antenna | 6502 | 3/29/2022 | 3/29/2024 |

Measurement Data:

Reading listed by margin.

Test Distance: 10 Meters

| # | Freq MHz | Rdng dB μ V | T1 T5 dB | T2 T6 dB | T3 dB | T4 dB | Dist Table | Corr dB μ V/m | Spec dB μ V/m | Margin dB | Polar Ant |
|----|---------------|--------------------|----------------|----------------|----------|----------|---------------|----------------------|----------------------|--------------|--------------|
| 1 | 40.668M QP | 46.7 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 39.0 | 40.0 Z | -1.0 | Horiz |
| ^ | 40.668M | 49.5 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 41.8 | 40.0 Z | +1.8 | Horiz |
| ^ | 40.677M | 39.2 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 31.5 | 40.0 Z | -8.5 | Horiz |
| ^ | 40.675M | 38.2 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 30.5 | 40.0 X | -9.5 | Horiz |
| ^ | 40.677M | 37.6 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 29.9 | 40.0 Y | -10.1 | Horiz |
| 6 | 40.675M QP | 45.8 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 38.1 | 40.0 X | -1.9 | Vert |
| 7 | 40.668M QP | 45.3 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 37.6 | 40.0 Y | -2.4 | Vert |
| ^ | 40.675M | 48.5 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 40.8 | 40.0 X | +0.8 | Vert |
| ^ | 40.668M | 47.1 | +0.0 +0.1 | +19.3 +0.0 | +1.1 | -28.2 | +0.0 | 39.4 | 40.0 Y | -0.6 | Vert |
| 10 | 67.797M | 50.1 | +0.0 +0.1 | +12.3 +0.0 | +1.4 | -28.1 | +0.0 | 35.8 | 40.0 | -4.2 | Vert |
| 11 | 45.975M QP | 43.8 | +0.0 +0.1 | +16.4 +0.0 | +1.2 | -28.2 | +0.0 | 33.3 | 40.0 | -6.7 | Vert |
| ^ | 45.975M | 45.6 | +0.0 +0.1 | +16.4 +0.0 | +1.2 | -28.2 | +0.0 | 35.1 | 40.0 | -4.9 | Vert |
| 13 | 149.157M | 44.0 | +0.0 +0.1 | +17.2 +0.0 | +2.1 | -28.1 | +0.0 | 35.3 | 43.5 | -8.2 | Vert |
| 14 | 13.110M | 28.2 | +0.0 +0.0 | +0.0 +9.0 | +0.6 | +0.0 | -19.1 | 18.7 | 29.5 Bandedge_L | -10.8 | Paral |
| 15 | 94.917M | 42.6 | +0.0 +0.1 | +15.5 +0.0 | +1.7 | -28.1 | +0.0 | 31.8 | 43.5 | -11.7 | Vert |

| | | | | | | | | | | | |
|----|----------|------|--------------|---------------|------|-------|-------|------|--------------------|-------|-------|
| 16 | 292.532M | 39.1 | +0.0 +0.1 | +19.2 +0.0 | +3.1 | -28.0 | +0.0 | 33.5 | 46.0 | -12.5 | Vert |
| 17 | 14.010M | 25.1 | +0.0 +0.0 | +0.0 +8.9 | +0.7 | +0.0 | -19.1 | 15.6 | 29.5 Bandedge_H | -13.9 | Paral |
| 18 | 162.717M | 38.5 | +0.0 +0.1 | +16.3 +0.0 | +2.2 | -28.1 | +0.0 | 29.0 | 43.5 | -14.5 | Vert |
| 19 | 81.357M | 37.9 | +0.0 +0.1 | +13.8 +0.0 | +1.6 | -28.1 | +0.0 | 25.3 | 40.0 | -14.7 | Vert |
| 20 | 108.477M | 37.8 | +0.0 +0.1 | +17.0 +0.0 | +1.8 | -28.1 | +0.0 | 28.6 | 43.5 | -14.9 | Vert |
| 21 | 287.944M | 35.5 | +0.0 +0.1 | +19.1 +0.0 | +3.0 | -28.0 | +0.0 | 29.7 | 46.0 | -16.3 | Horiz |
| 22 | 230.517M | 37.3 | +0.0 +0.1 | +16.4 +0.0 | +2.7 | -28.0 | +0.0 | 28.5 | 46.0 | -17.5 | Vert |
| 23 | 148.066M | 33.7 | +0.0 +0.1 | +17.3 +0.0 | +2.1 | -28.1 | +0.0 | 25.1 | 43.5 | -18.4 | Horiz |
| 24 | 162.011M | 33.7 | +0.0 +0.1 | +16.4 +0.0 | +2.2 | -28.1 | +0.0 | 24.3 | 43.5 | -19.2 | Horiz |
| 25 | 183.911M | 33.9 | +0.0 +0.1 | +15.0 +0.0 | +2.4 | -28.1 | +0.0 | 23.3 | 43.5 | -20.2 | Horiz |
| 26 | 279.927M | 31.3 | +0.0 +0.1 | +18.8 +0.0 | +3.0 | -28.0 | +0.0 | 25.2 | 46.0 | -20.8 | Vert |
| 27 | 171.161M | 32.1 | +0.0 +0.0 | +0.0 +0.0 | +2.3 | +0.0 | +0.0 | 22.0 | 43.5 | -21.5 | Horiz |
| 28 | 27.121M | 15.1 | +0.0 +0.0 | +0.0 +6.4 | +0.8 | +0.0 | -19.1 | 3.2 | 29.5 | -26.3 | Paral |

Test Setup Photo(s)



0.8m, View 1



0.8m, View 1



X Axis



Y Axis



Z Axis

15.207 AC Conducted Emissions

Test Setup / Conditions / Data

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA • 714 993 6112
 Customer: **Magtek Incorporated**
 Specification: **15.207 AC Mains - Average**
 Work Order #: **109059** Date: 2/15/2024
 Test Type: **Conducted Emissions** Time: 08:04:33
 Tested By: E. Wong Sequence#: 2
 Software: EMITest 5.03.20 120/60Hz

Equipment Tested:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 | | | |

Support Equipment:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 | | | |

Test Conditions / Notes:

The EUT with 13.56 NFC radio and single modular approved radio installed is placed on the Styrofoam. The EUT is connected to the USB port of a support laptop.

The EUT is set in constant transmit mode with a card placed in the field. The fundamental signal is modulated. Data is read and send to the support laptop via USB cable..

TX: 13.56MHz

BLE: Single modular approved radio

Frequency range of measurement = 150kHz- 30MHz.
 150 kHz-30 MHz;RBW=9 kHz,VBW=30kH

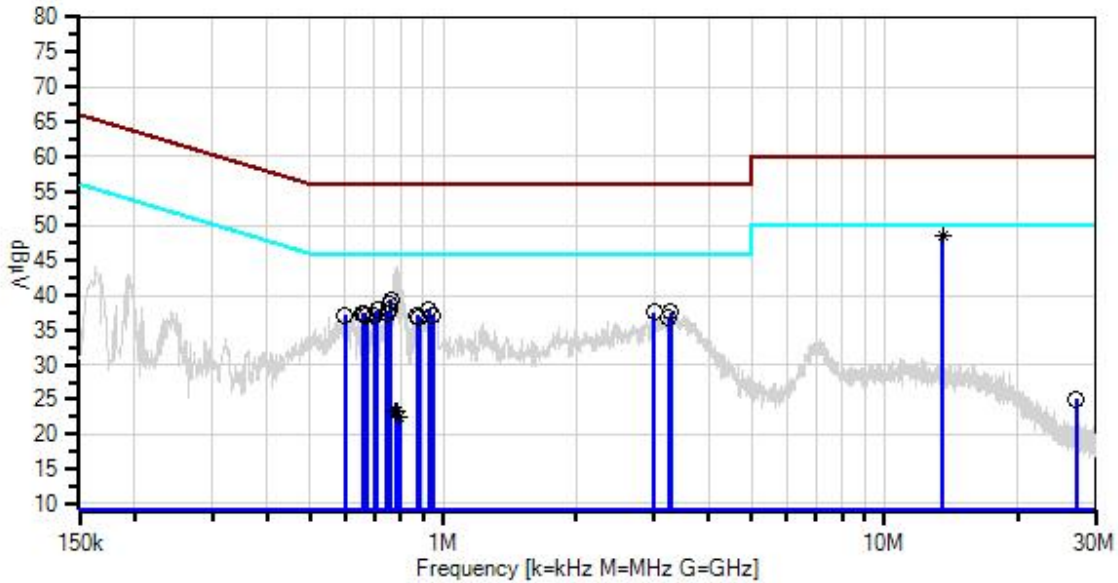
Test environment conditions:
 Temperature: 21 °C
 Humidity: 43%
 Pressure: 100kPa

Site A

ANSI C63.10-2013

AC conducted emission performed at the AC main of the support laptop. NFC loop antenna is attached.
Modification #1 in place during testing.

Magtek Incorporated W/O#: 109059 Sequence#: 2 Date: 2/15/2024
 15.207 AC Mains - Average Test Lead: 120/60Hz L1-Line



— Sweep Data
 × QP Readings
 Software Version: 5.03.20
 — Readings
 * Average Readings
 ○ Peak Readings
 ▼ Ambient
 — 1 - 15.207 AC Mains - Average
 — 2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|----|-----------|---------------------|---------------------|------------------|--------------|
| | AN02672 | Spectrum Analyzer | E4446A | 5/9/2022 | 5/9/2024 |
| T1 | ANP08007 | Attenuator | SA18N10W-06 | 10/24/2022 | 10/24/2024 |
| T2 | ANP07338 | Cable | 2249-Y-240 | 1/10/2024 | 1/10/2026 |
| T3 | AN02343 | High Pass Filter | HE9615-150K-50-720B | 1/2/2023 | 1/2/2025 |
| T4 | AN00847.1 | 50uH LISN-Line 1 | 3816/2NM | 4/19/2023 | 4/19/2024 |
| | AN00847.1 | 50uH LISN-Line 2(N) | 3816/2NM | 4/19/2023 | 4/19/2024 |

Measurement Data: Reading listed by margin. Test Lead: L1-Line

| # | Freq MHz | Rdng dB μ V | T1 dB | T2 dB | T3 dB | T4 dB | Dist Table | Corr dB μ V | Spec dB μ V | Margin dB | Polar Ant |
|-----|-------------|--------------------|----------|----------|----------|----------|---------------|--------------------|--------------------|--------------|--------------|
| 1 | 13.560M | 42.1 | +5.8 | +0.3 | +0.2 | +0.1 | +0.0 | 48.5 | 50.0 | -1.5 | L1-Li |
| Ave | | | | | | | | | | | |
| ^ | 13.560M | 46.7 | +5.8 | +0.3 | +0.2 | +0.1 | +0.0 | 53.1 | 50.0 | +3.1 | L1-Li |
| 3 | 760.125k | 33.3 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 39.4 | 46.0 | -6.6 | L1-Li |
| 4 | 757.217k | 32.7 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 38.8 | 46.0 | -7.2 | L1-Li |
| 5 | 928.237k | 31.9 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 38.0 | 46.0 | -8.0 | L1-Li |
| 6 | 753.580k | 31.8 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 37.9 | 46.0 | -8.1 | L1-Li |
| 7 | 710.675k | 31.7 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 37.8 | 46.0 | -8.2 | L1-Li |
| 8 | 3.012M | 31.5 | +5.8 | +0.1 | +0.1 | +0.0 | +0.0 | 37.5 | 46.0 | -8.5 | L1-Li |
| 9 | 3.280M | 31.5 | +5.8 | +0.1 | +0.1 | +0.0 | +0.0 | 37.5 | 46.0 | -8.5 | L1-Li |
| 10 | 656.862k | 31.4 | +5.8 | +0.0 | +0.2 | +0.0 | +0.0 | 37.4 | 46.0 | -8.6 | L1-Li |
| 11 | 747.036k | 31.3 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 37.4 | 46.0 | -8.6 | L1-Li |
| 12 | 662.680k | 31.3 | +5.8 | +0.0 | +0.2 | +0.0 | +0.0 | 37.3 | 46.0 | -8.7 | L1-Li |
| 13 | 599.413k | 31.2 | +5.8 | +0.0 | +0.2 | +0.0 | +0.0 | 37.2 | 46.0 | -8.8 | L1-Li |
| 14 | 698.313k | 31.0 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 37.1 | 46.0 | -8.9 | L1-Li |
| 15 | 871.388k | 31.0 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 37.1 | 46.0 | -8.9 | L1-Li |
| 16 | 669.225k | 31.0 | +5.8 | +0.0 | +0.2 | +0.0 | +0.0 | 37.0 | 46.0 | -9.0 | L1-Li |
| 17 | 945.248k | 30.9 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 37.0 | 46.0 | -9.0 | L1-Li |
| 18 | 3.246M | 30.9 | +5.8 | +0.1 | +0.1 | +0.0 | +0.0 | 36.9 | 46.0 | -9.1 | L1-Li |
| 19 | 881.457k | 30.8 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 36.9 | 46.0 | -9.1 | L1-Li |
| 20 | 781.942k | 17.3 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 23.4 | 46.0 | -22.6 | L1-Li |
| Ave | | | | | | | | | | | |
| ^ | 781.942k | 37.9 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 44.0 | 46.0 | -2.0 | L1-Li |

| | | | | | | | | | | | |
|----|----------|------|------|------|------|------|------|------|------|-------|-------|
| 22 | 789.941k | 17.2 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 23.3 | 46.0 | -22.7 | L1-Li |
| | Ave | | | | | | | | | | |
| ^ | 789.941k | 38.1 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 44.2 | 46.0 | -1.8 | L1-Li |
| 24 | 796.486k | 16.3 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 22.4 | 46.0 | -23.6 | L1-Li |
| | Ave | | | | | | | | | | |
| ^ | 796.486k | 36.5 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 42.6 | 46.0 | -3.4 | L1-Li |
| 26 | 27.120M | 18.4 | +5.8 | +0.4 | +0.2 | +0.2 | +0.0 | 25.0 | 50.0 | -25.0 | L1-Li |

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA • 714 993 6112
 Customer: **Magtek Incorporated**
 Specification: **15.207 AC Mains - Average**
 Work Order #: **109059** Date: 2/15/2024
 Test Type: **Conducted Emissions** Time: 08:15:53
 Tested By: E. Wong Sequence#: 3
 Software: EMITest 5.03.20 120/60Hz

Equipment Tested:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 | | | |

Support Equipment:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 | | | |

Test Conditions / Notes:

The EUT with 13.56 NFC radio and single modular approved radio installed is placed on the Styrofoam. The EUT is connected to the USB port of a support laptop.

The EUT is set in constant transmit mode with a card placed in the field. The fundamental signal is modulated. Data is read and send to the support laptop via USB cable..

TX: 13.56MHz

BLE: Single modular approved radio

Frequency range of measurement = 150kHz- 30MHz.
 150 kHz-30 MHz;RBW=9 kHz,VBW=30kH

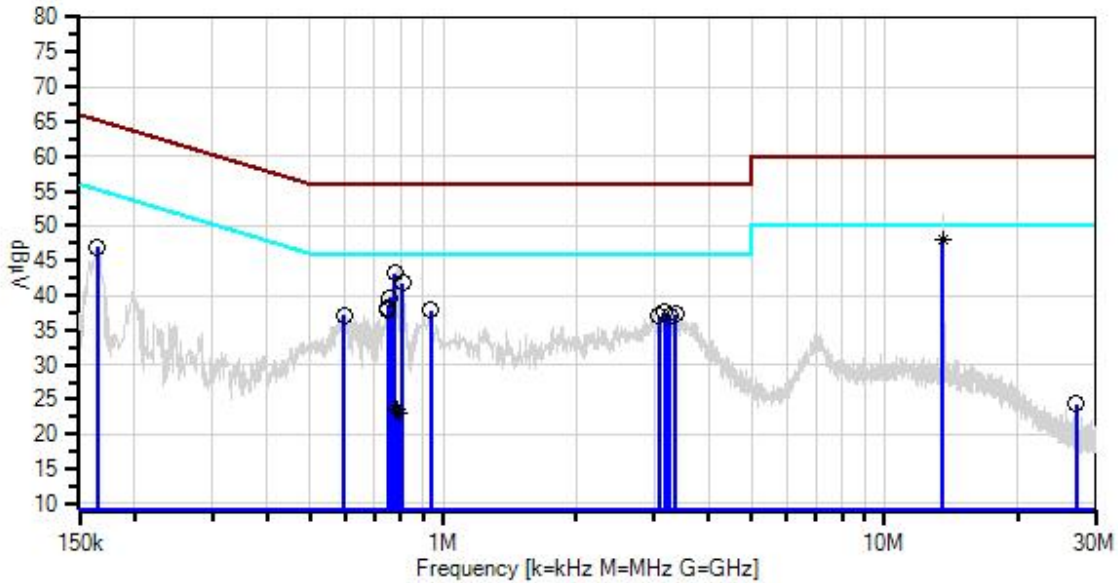
Test environment conditions:
 Temperature: 21 °C
 Humidity: 43%
 Pressure: 100kPa

Site A

ANSI C63.10-2013

AC conducted emission performed at the AC main of the support laptop. NFC loop antenna is attached.
Modification #1 in place during testing.

Magtek Incorporated W/O#: 109059 Sequence#: 3 Date: 2/15/2024
 15.207 AC Mains - Average Test Lead: 120/60Hz L2-Neutral



— Sweep Data
 × QP Readings
 Software Version: 5.03.20
 — Readings
 * Average Readings
 ○ Peak Readings
 ▼ Ambient
 — 1 - 15.207 AC Mains - Average
 — 2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|----|-----------|---------------------|---------------------|------------------|--------------|
| | AN02672 | Spectrum Analyzer | E4446A | 5/9/2022 | 5/9/2024 |
| T1 | ANP08007 | Attenuator | SA18N10W-06 | 10/24/2022 | 10/24/2024 |
| T2 | ANP07338 | Cable | 2249-Y-240 | 1/10/2024 | 1/10/2026 |
| T3 | AN02343 | High Pass Filter | HE9615-150K-50-720B | 1/2/2023 | 1/2/2025 |
| | AN00847.1 | 50uH LISN-Line 1 | 3816/2NM | 4/19/2023 | 4/19/2024 |
| T4 | AN00847.1 | 50uH LISN-Line 2(N) | 3816/2NM | 4/19/2023 | 4/19/2024 |

Measurement Data:

Reading listed by margin.

Test Lead: L2-Neutral

| # | Freq MHz | Rdng dB μ V | T1 dB | T2 dB | T3 dB | T4 dB | Dist Table | Corr dB μ V | Spec dB μ V | Margin dB | Polar Ant |
|----|-------------|--------------------|----------|----------|----------|----------|---------------|--------------------|--------------------|--------------|--------------|
| 1 | 13.560M | 41.5 | +5.8 | +0.3 | +0.2 | +0.1 | +0.0 | 47.9 | 50.0 | -2.1 | L2-Ne |
| | Ave | | | | | | | | | | |
| ^ | 13.562M | 45.3 | +5.8 | +0.3 | +0.2 | +0.1 | +0.0 | 51.7 | 50.0 | +1.7 | L2-Ne |
| 3 | 775.397k | 37.0 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 43.1 | 46.0 | -2.9 | L2-Ne |
| 4 | 808.121k | 35.7 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 41.8 | 46.0 | -4.2 | L2-Ne |
| 5 | 757.944k | 33.6 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 39.7 | 46.0 | -6.3 | L2-Ne |
| 6 | 749.944k | 32.1 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 38.2 | 46.0 | -7.8 | L2-Ne |
| 7 | 164.544k | 40.8 | +5.8 | +0.0 | +0.4 | +0.0 | +0.0 | 47.0 | 55.2 | -8.2 | L2-Ne |
| 8 | 748.490k | 31.7 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 37.8 | 46.0 | -8.2 | L2-Ne |
| 9 | 936.743k | 31.7 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 37.8 | 46.0 | -8.2 | L2-Ne |
| 10 | 3.178M | 31.6 | +5.8 | +0.1 | +0.1 | +0.0 | +0.0 | 37.6 | 46.0 | -8.4 | L2-Ne |
| 11 | 3.369M | 31.3 | +5.8 | +0.1 | +0.1 | +0.0 | +0.0 | 37.3 | 46.0 | -8.7 | L2-Ne |
| 12 | 3.254M | 31.2 | +5.8 | +0.1 | +0.1 | +0.0 | +0.0 | 37.2 | 46.0 | -8.8 | L2-Ne |
| 13 | 595.050k | 31.1 | +5.8 | +0.0 | +0.2 | +0.0 | +0.0 | 37.1 | 46.0 | -8.9 | L2-Ne |
| 14 | 3.089M | 31.0 | +5.8 | +0.1 | +0.1 | +0.0 | +0.0 | 37.0 | 46.0 | -9.0 | L2-Ne |
| 15 | 781.942k | 17.4 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 23.5 | 46.0 | -22.5 | L2-Ne |
| | Ave | | | | | | | | | | |
| ^ | 781.942k | 37.2 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 43.3 | 46.0 | -2.7 | L2-Ne |
| ^ | 778.305k | 35.6 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 41.7 | 46.0 | -4.3 | L2-Ne |
| 18 | 787.760k | 17.4 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 23.5 | 46.0 | -22.5 | L2-Ne |
| | Ave | | | | | | | | | | |
| ^ | 787.759k | 37.7 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 43.8 | 46.0 | -2.2 | L2-Ne |
| ^ | 784.850k | 37.2 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 43.3 | 46.0 | -2.7 | L2-Ne |
| ^ | 791.395k | 37.0 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 43.1 | 46.0 | -2.9 | L2-Ne |

| | | | | | | | | | | | |
|----|----------|------|------|------|------|------|------|------|------|-------|-------|
| 22 | 797.213k | 16.9 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 23.0 | 46.0 | -23.0 | L2-Ne |
| | Ave | | | | | | | | | | |
| ^ | 797.213k | 37.5 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 43.6 | 46.0 | -2.4 | L2-Ne |
| ^ | 800.849k | 37.1 | +5.8 | +0.1 | +0.2 | +0.0 | +0.0 | 43.2 | 46.0 | -2.8 | L2-Ne |
| 25 | 27.120M | 17.8 | +5.8 | +0.4 | +0.2 | +0.2 | +0.0 | 24.4 | 50.0 | -25.6 | L2-Ne |

Test Setup Photo(s)



Test Setup View 1



Test Setup View 2

Appendix A: Manufacturer Declaration

The following models have been tested by CKC Laboratories:

Device: Secure Four-Way Reader with BLE

Model: DynaFlex II GO

The manufacturer declares that the following additional models are identical electrically or any differences between them do not affect their EMC characteristics, and therefore meets the level of testing equivalent to the tested model:

| Model Number: | Description: |
|---------------|--|
| 21078400 | DYNAFLEX II GO, PCI, BCR, BLACK, BLUETOOTH LE |
| 21078401 | DYNAFLEX II GO, PCI, BLACK, BLUETOOTH LE |
| 21078402 | DYNAFLEX II GO, PCI, BCR, BLACK |
| 21078403 | DYNAFLEX II GO, PCI, BLACK |
| 21078404 | DYNAFLEX II GO, PCI, BCR, BLACK, BLUETOOTH LE, LOCKED MAGENSA BUNDLE LMB |
| 21078405 | DYNAFLEX II GO, PCI, BLACK, BLUETOOTH LE, LOCKED MAGENSA BUNDLE LMB |
| 21078406 | DYNAFLEX II GO, PCI, BCR, BLACK, LOCKED MAGENSA BUNDLE LMB |
| 21078407 | DYNAFLEX II GO, PCI, BLACK, LOCKED MAGENSA BUNDLE LMB |
| 21078412 | DYNAFLEX II GO, BCR, BLACK, BLUETOOTH LE, ANSI TEST KEY |

Supplemental Information

Measurement Uncertainty

| Uncertainty Value | Parameter |
|------------------------|---------------------------|
| 5.77 dB | Radiated Emissions |
| 0.673 dB | RF Conducted Measurements |
| 5.77×10^{-10} | Frequency Deviation |
| 0.00005 s | Time Deviation |
| 3.18 dB | Mains Conducted Emissions |

Uncertainties reported are worst case for all CKC Laboratories’ sites and represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBμV/m, the spectrum analyzer reading in dBμV was corrected by using the following formula. This reading was then compared to the applicable specification limit. Individual measurements were compared with the displayed limit value in the margin column. The margin was calculated based on subtracting the limit value from the corrected measurement value; a positive margin represents a measurement exceeding the limit, while a negative margin represents a measurement less than the limit.

| SAMPLE CALCULATIONS | | |
|---------------------|---------------------|----------|
| | Meter reading | (dBμV) |
| + | Antenna Factor | (dB/m) |
| + | Cable Loss | (dB) |
| - | Distance Correction | (dB) |
| - | Preamplifier Gain | (dB) |
| = | Corrected Reading | (dBμV/m) |

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

| MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE | | | |
|--|---------------------|------------------|-------------------|
| TEST | BEGINNING FREQUENCY | ENDING FREQUENCY | BANDWIDTH SETTING |
| CONDUCTED EMISSIONS | 150 kHz | 30 MHz | 9 kHz |
| RADIATED EMISSIONS | 9 kHz | 150 kHz | 200 Hz |
| RADIATED EMISSIONS | 150 kHz | 30 MHz | 9 kHz |
| RADIATED EMISSIONS | 30 MHz | 1000 MHz | 120 kHz |
| RADIATED EMISSIONS | 1000 MHz | >1 GHz | 1 MHz |

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or caret ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point, the measuring device is set into the linear mode and the scan time is reduced.