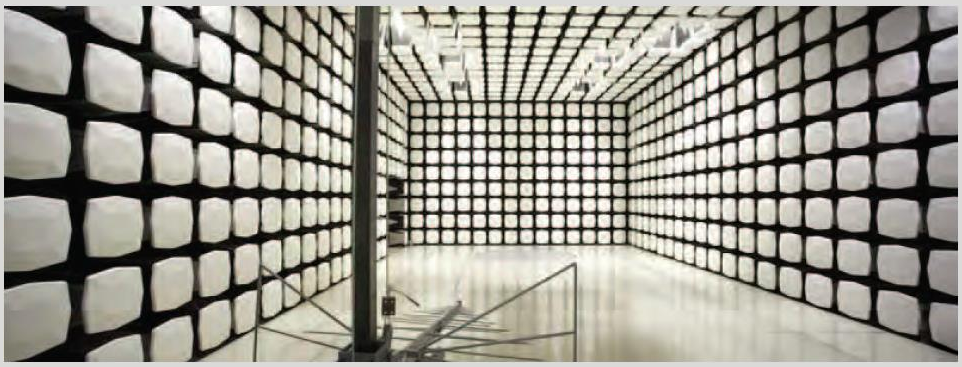
# Paycom Software, Inc.

## Microfence

## FCC 15.247:2021

## Report: PAYC0001.1 Rev. 1, Issue Date: August 10, 2021



ACCREDITED
CERT #3310.03

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# CERTIFICATE OF TEST

**Last Date of Test: June 24, 2021**
**Paycom Software, Inc.**
**EUT: Microfence**

## Radio Equipment Testing

### Standards

| Specification | Method |
|---|---|
| FCC 15.207:2021 | ANSI C63.10:2013 |
| FCC 15.247:2021 | ANSI C63.10:2013, KDB 558074 |

### Results

| Method Clause | Test Description | Applied | Results | Comments |
|---|---|---|---|---|
| 6.2 | Powerline Conducted Emissions | Yes | Pass | |
| 11.6 | Duty Cycle | Yes | Pass | |
| 11.8.2 | Occupied Bandwidth | Yes | Pass | |
| 11.9.1.1 | Output Power | Yes | Pass | |
| 11.9.1.1 | Equivalent Isotropic Radiated Power | Yes | Pass | |
| 11.10.2 | Power Spectral Density | Yes | Pass | |
| 11.11 | Band Edge Compliance | Yes | Pass | |
| 11.11 | Spurious Conducted Emissions | Yes | Pass | |
| 11.12.1, 11.13.2, 6.5, 6.6 | Spurious Radiated Emissions | Yes | Pass | |

### 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 | Listed serial number consistently throughout report | 2021-08-10 | 10, 14, 16, 20, 24, 28, 32, 36, 39, 46, 47 and 50 |
| | Added an explanation for the different operating modes during testing | 2021-08-10 | 14 |
| | Created separate equipment list for testing on 6/24/2021 | 2021-08-10 | 49 |
| | The client has indicated that the power setting is 0 dBm. Added this to the power settings and antenna page. | 2021-08-10 | 12 |

# 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** - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

**NVLAP** - Each laboratory is accredited by NVLAP to ISO 17025

## 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

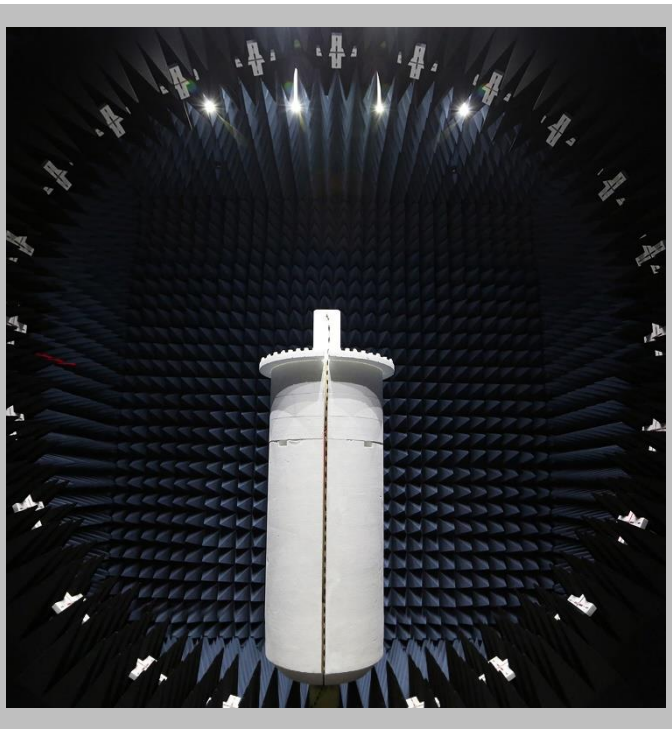
**MIC** – Recognized by MIC as a CAB for the acceptance of test data.

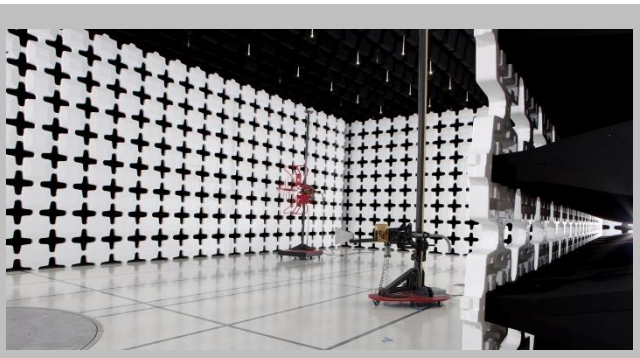
## SCOPE

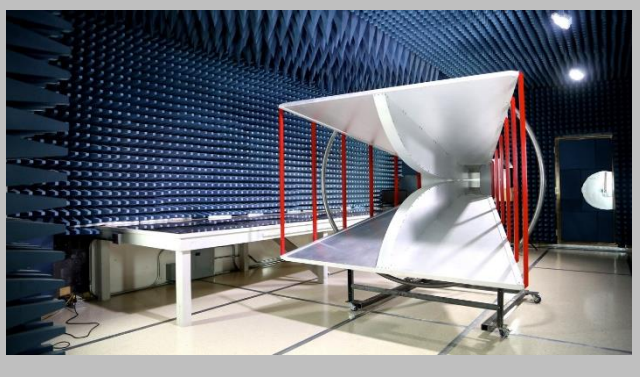
For details on the Scopes of our Accreditations, please visit:
https://www.nwemc.com/emc-testing-accreditations

# FACILITIES

| California | Minnesota | Oregon | Texas | Washington |
|---|---|---|---|---|
| Labs OC01-17<br>41 Tesla<br>Irvine, CA 92618<br>(949) 861-8918 | Labs MN01-11<br>9349 W Broadway Ave.<br>Brooklyn Park, MN 55445<br>(612)-638-5136 | Labs EV01-12<br>6775 NE Evergreen Pkwy #400<br>Hillsboro, OR 97124<br>(503) 844-4066 | Labs TX01-09<br>3801 E Plano Pkwy<br>Plano, TX 75074<br>(469) 304-5255 | Labs NC01-05<br>19201 120th Ave NE<br>Bothell, WA 98011<br>(425)984-6600 |
| **NVLAP** | | | | |
| NVLAP Lab Code: 200676-0 | NVLAP Lab Code: 200881-0 | NVLAP Lab Code: 200630-0 | NVLAP Lab Code:201049-0 | NVLAP Lab Code: 200629-0 |
| **Innovation, Science and Economic Development Canada** | | | | |
| 2834B-1, 2834B-3 | 2834E-1, 2834E-3 | 2834D-1 | 2834G-1 | 2834F-1 |
| **BSMI** | | | | |
| SL2-IN-E-1154R | SL2-IN-E-1152R | SL2-IN-E-1017 | SL2-IN-E-1158R | SL2-IN-E-1153R |
| **VCCI** | | | | |
| A-0029 | A-0109 | A-0108 | A-0201 | A-0110 |
| **Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA** | | | | |
| US0158 | US0175 | US0017 | US0191 | US0157 |







# MEASUREMENT UNCERTAINTY

element
TMU.2015.07.10

## 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.

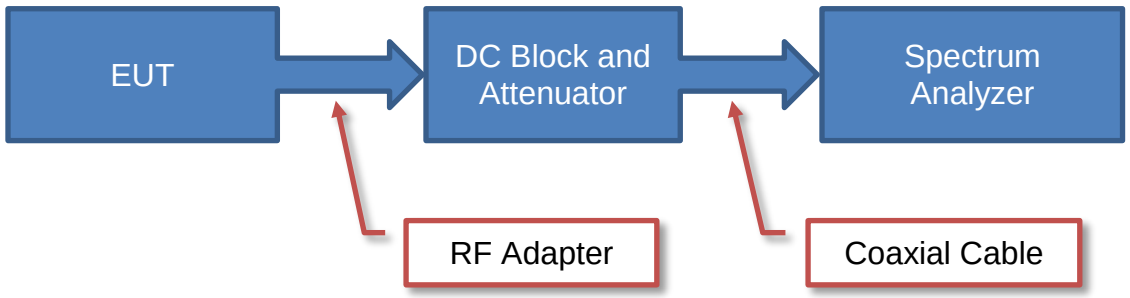
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found in the table below. A lab specific 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.

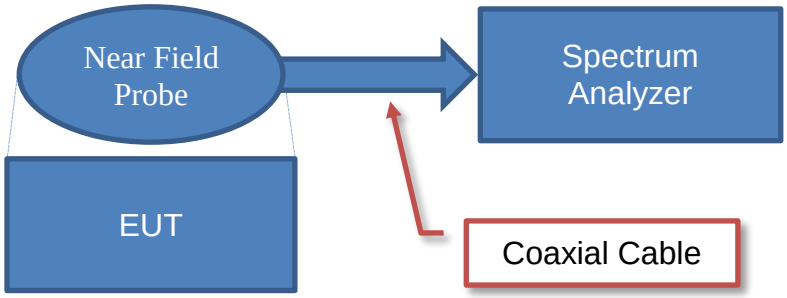
| Test | + MU | - MU |
|---|---|---|
| Frequency Accuracy | 0.0007% | -0.0007% |
| Amplitude Accuracy (dB) | 1.2 dB | -1.2 dB |
| Conducted Power (dB) | 1.2 dB | -1.2 dB |
| Radiated Power via Substitution (dB) | 0.7 dB | -0.7 dB |
| Temperature (degrees C) | 0.7°C | -0.7°C |
| Humidity (% RH) | 2.5% RH | -2.5% RH |
| Voltage (AC) | 1.0% | -1.0% |
| Voltage (DC) | 0.7% | -0.7% |
| Field Strength (dB) | 5.2 dB | -5.2 dB |
| AC Powerline Conducted Emissions (dB) | 2.6 dB | -2.6 dB |

# Test Setup Block Diagrams

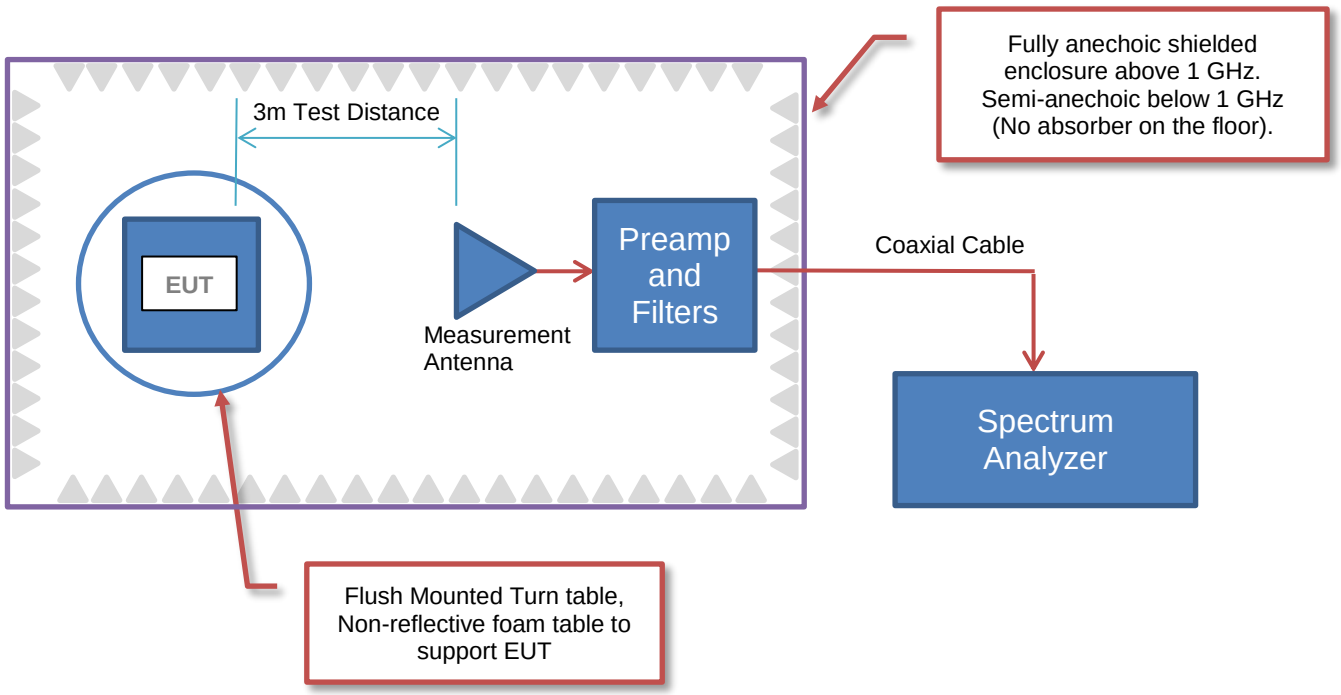
## Antenna Port Conducted Measurements




## Near Field Test Fixture Measurements



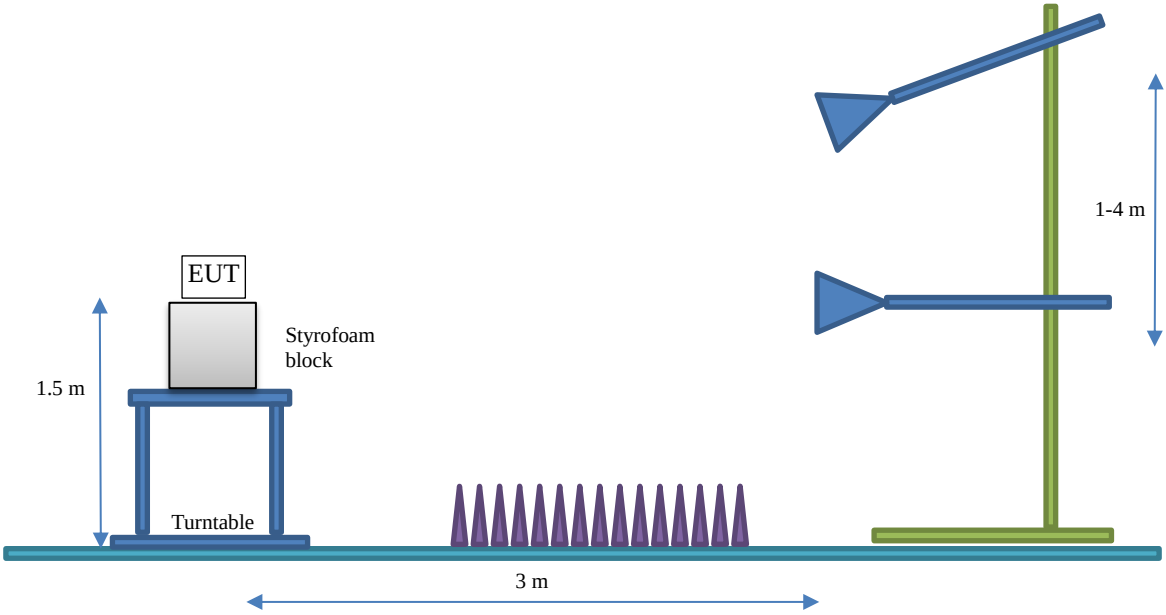

## Spurious Radiated Emissions



# 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:** | Paycom Software, Inc. |
| **Address:** | 7501 W. Memorial Rd |
| **City, State, Zip:** | Oklahoma City, Ok 73142 |
| **Test Requested By:** | Dennis English |
| **EUT:** | Microfence |
| **First Date of Test:** | May 4, 2021 |
| **Last Date of Test:** | June 24, 2021 |
| **Receipt Date of Samples:** | May 4, 2021 |
| **Equipment Design Stage:** | Pre-production |
| **Equipment Condition:** | No damage |
| **Purchase Authorization:** | Verified |

## Information Provided by the Party Requesting the Test

| **Functional Description of the EUT:** |
|---|
| This is BL product based on TI's CC2640R2F BLE radio chip. It also has a Real time clock. The RF section is a copy of the TI launchXL-CC2640R@ evaluation board. |

| **Testing Objective:** |
|---|
| To demonstrate compliance of the Bluetooth radio to FCC 15.247 requirements. |

# CONFIGURATIONS

## Configuration PAYC0001- 1

| EUT | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Microfence | Paycom Software, Inc. | PMF-001A | 4 |
| USB Power Supply | Phihong USA Corporation | PSAA05A-05QL6 | VL27005853A3 |

| Cables | | | | | |
|---|---|---|---|---|---|
| **Cable Type** | **Shield** | **Length (m)** | **Ferrite** | **Connection 1** | **Connection 2** |
| USB Cable | Yes | 2.0m | No | EUT | USB Power Supply |

## Configuration PAYC0001- 2

| EUT | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Microfence | Paycom Software, Inc. | PMF-001A | 6 |

| Cables | | | | | |
|---|---|---|---|---|---|
| **Cable Type** | **Shield** | **Length (m)** | **Ferrite** | **Connection 1** | **Connection 2** |
| Coax Patch Cable | Yes | 7.0cm | No | EUT | RF Test Cable |

## Configuration PAYC0004- 2

| EUT | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Microfence | Paycom Software, Inc. | PMF-001A | 4 |
| USB Power Supply | Phihong USA Corporation | PSAA05A-05QL6 | VL27005853A3 |

| Cables | | | | | |
|---|---|---|---|---|---|
| **Cable Type** | **Shield** | **Length (m)** | **Ferrite** | **Connection 1** | **Connection 2** |
| USB Cable | Yes | 2.0m | No | EUT | USB Power Supply |

# MODIFICATIONS

2017-1-25

## Equipment Modifications

| Item | Date | Test | Modification | Note | Disposition of EUT |
|---|---|---|---|---|---|
| 1 | 2021-05-04 | Powerline Conducted Emissions | 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 | 2021-05-05 | Spurious Radiated Emissions | 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 | 2021-05-06 | Occupied 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. |
| 4 | 2021-05-06 | Output Power | 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 | 2021-05-06 | Equivalent Isotropic Radiated Power | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 6 | 2021-05-06 | Power Spectral Density | 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 | 2021-05-06 | Band Edge Compliance | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 8 | 2021-05-10 | Spurious Conducted Emissions | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed. |
| 9 | 2021-06-24 | Spurious Radiated Emissions | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed. |

# 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.

## ANTENNA GAIN (dBi)

| Type | Provided by | Frequency Range (MHz) | Gain (dBi) |
|---|---|---|---|
| Inverted F Antenna | Texas Instruments | 2402-2480 | 3.3 |

## SETTINGS FOR ALL TESTS IN THIS REPORT

| Frequency Range | Power Setting |
|---|---|
| 2402-2480 | 0 dBm |

# AC POWERLINE CONDUCTED EMISSIONS

element
WTD.2021.04.01.1
EmiR5 2021.01.08.0
PSA-ESCI 2021.03.17.0

## TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## TEST EQUIPMENT

| Description | Manufacturer | Model | ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|
| LISN | Solar Electronics | 9252-50-R-24-BNC | LJK | 2020-08-25 | 2021-08-25 |
| Power Source/Analyzer | Hewlett Packard | 6841A | THC | NCR | NCR |
| Cable - Conducted Cable Assembly | Northwest EMC | TXA, HFC, TQU | TXAA | 2021-01-26 | 2022-01-26 |
| Receiver | Rohde & Schwarz | ESCI | ARF | 2020-08-18 | 2021-08-18 |

## MEASUREMENT UNCERTAINTY

| Description | | |
|---|---|---|
| Expanded k=2 | 2.6 dB | -2.6 dB |

## CONFIGURATIONS INVESTIGATED

PAYC0001-1

## MODES INVESTIGATED

Transmitting Bluetooth LE at Mid Ch 39 (2442 MHz)

# AC POWERLINE CONDUCTED EMISSIONS

element
WTD.2021.04.01.1
EmiR5 2021.01.08.0
PSA-ESCI 2021.03.17.0

| | | | |
|---|---|---|---|
| EUT: | Microfence | Work Order: | PAYC0001 |
| Serial Number: | 6 | Date: | 2021-05-04 |
| Customer: | Paycom Software, Inc. | Temperature: | 21.1°C |
| Attendees: | None | Relative Humidity: | 49.7% |
| Customer Project: | None | Bar. Pressure: | 1016 mb |
| Tested By: | Mark Baytan | Job Site: | TX01 |
| Power: | 110VAC/60Hz | Configuration: | PAYC0001-1 |

## TEST SPECIFICATIONS

| Specification: Equipment Class B | Method: |
|---|---|
| FCC 15.207:2021 | ANSI C63.10:2013 |

## TEST PARAMETERS

| | | | | | |
|---|---|---|---|---|---|
| Run #: | 10 | Line: | High Line | Add. Ext. Attenuation (dB): | 0 |

## COMMENTS

None

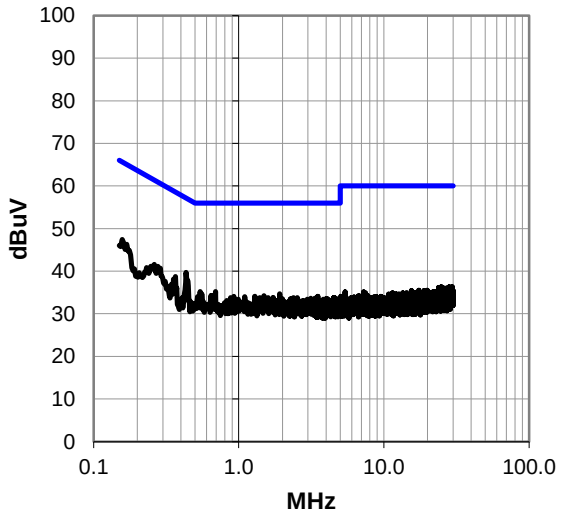
## EUT OPERATING MODES

Transmitting Bluetooth LE at Mid Ch 39 (2442 MHz)

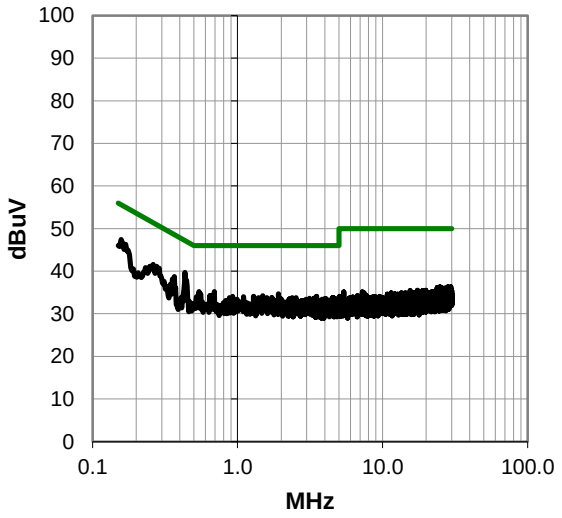
## DEVIATIONS FROM TEST STANDARD

None

**Peak Data - vs - Quasi Peak Limit**




**Peak Data - vs - Average Limit**



# AC POWERLINE CONDUCTED EMISSIONS

element
WTD.2021.04.01.1
EmiR5 2021.01.08.0
PSA-ESCI 2021.03.17.0

## RESULTS - Run #10

Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.434 | 19.5 | 20.2 | 39.7 | 57.2 | -17.5 |
| 0.157 | 27.0 | 20.4 | 47.4 | 65.6 | -18.2 |
| 0.262 | 21.2 | 20.4 | 41.6 | 61.4 | -19.8 |
| 0.366 | 18.5 | 20.2 | 38.7 | 58.6 | -19.9 |
| 0.542 | 15.0 | 20.2 | 35.2 | 56.0 | -20.8 |
| 0.691 | 15.0 | 20.2 | 35.2 | 56.0 | -20.8 |
| 1.915 | 14.4 | 20.3 | 34.7 | 56.0 | -21.3 |
| 0.643 | 14.1 | 20.2 | 34.3 | 56.0 | -21.7 |
| 1.493 | 13.9 | 20.3 | 34.2 | 56.0 | -21.8 |
| 0.922 | 13.8 | 20.3 | 34.1 | 56.0 | -21.9 |
| 1.288 | 13.8 | 20.3 | 34.1 | 56.0 | -21.9 |
| 3.501 | 13.8 | 20.3 | 34.1 | 56.0 | -21.9 |
| 1.101 | 13.8 | 20.2 | 34.0 | 56.0 | -22.0 |
| 0.878 | 13.5 | 20.3 | 33.8 | 56.0 | -22.2 |
| 1.393 | 13.5 | 20.3 | 33.8 | 56.0 | -22.2 |
| 1.590 | 13.5 | 20.3 | 33.8 | 56.0 | -22.2 |
| 1.717 | 13.5 | 20.3 | 33.8 | 56.0 | -22.2 |
| 2.378 | 13.5 | 20.3 | 33.8 | 56.0 | -22.2 |
| 2.527 | 13.5 | 20.3 | 33.8 | 56.0 | -22.2 |
| 4.519 | 13.5 | 20.3 | 33.8 | 56.0 | -22.2 |
| 4.572 | 13.5 | 20.3 | 33.8 | 56.0 | -22.2 |
| 4.504 | 13.4 | 20.3 | 33.7 | 56.0 | -22.3 |
| 3.128 | 13.3 | 20.3 | 33.6 | 56.0 | -22.4 |
| 3.363 | 13.3 | 20.3 | 33.6 | 56.0 | -22.4 |
| 4.892 | 13.3 | 20.3 | 33.6 | 56.0 | -22.4 |

Peak Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.434 | 19.5 | 20.2 | 39.7 | 47.2 | -7.5 |
| 0.157 | 27.0 | 20.4 | 47.4 | 55.6 | -8.2 |
| 0.262 | 21.2 | 20.4 | 41.6 | 51.4 | -9.8 |
| 0.366 | 18.5 | 20.2 | 38.7 | 48.6 | -9.9 |
| 0.542 | 15.0 | 20.2 | 35.2 | 46.0 | -10.8 |
| 0.691 | 15.0 | 20.2 | 35.2 | 46.0 | -10.8 |
| 1.915 | 14.4 | 20.3 | 34.7 | 46.0 | -11.3 |
| 0.643 | 14.1 | 20.2 | 34.3 | 46.0 | -11.7 |
| 1.493 | 13.9 | 20.3 | 34.2 | 46.0 | -11.8 |
| 0.922 | 13.8 | 20.3 | 34.1 | 46.0 | -11.9 |
| 1.288 | 13.8 | 20.3 | 34.1 | 46.0 | -11.9 |
| 3.501 | 13.8 | 20.3 | 34.1 | 46.0 | -11.9 |
| 1.101 | 13.8 | 20.2 | 34.0 | 46.0 | -12.0 |
| 0.878 | 13.5 | 20.3 | 33.8 | 46.0 | -12.2 |
| 1.393 | 13.5 | 20.3 | 33.8 | 46.0 | -12.2 |
| 1.590 | 13.5 | 20.3 | 33.8 | 46.0 | -12.2 |
| 1.717 | 13.5 | 20.3 | 33.8 | 46.0 | -12.2 |
| 2.378 | 13.5 | 20.3 | 33.8 | 46.0 | -12.2 |
| 2.527 | 13.5 | 20.3 | 33.8 | 46.0 | -12.2 |
| 4.519 | 13.5 | 20.3 | 33.8 | 46.0 | -12.2 |
| 4.572 | 13.5 | 20.3 | 33.8 | 46.0 | -12.2 |
| 4.504 | 13.4 | 20.3 | 33.7 | 46.0 | -12.3 |
| 3.128 | 13.3 | 20.3 | 33.6 | 46.0 | -12.4 |
| 3.363 | 13.3 | 20.3 | 33.6 | 46.0 | -12.4 |
| 4.892 | 13.3 | 20.3 | 33.6 | 46.0 | -12.4 |

## CONCLUSION

Pass

Tested By

# AC POWERLINE CONDUCTED EMISSIONS

element
WTD.2021.04.01.1
EmiR5 2021.01.08.0
PSA-ESCI 2021.03.17.0

| | | | |
|---|---|---|---|
| EUT: | Microfence | Work Order: | PAYC0001 |
| Serial Number: | 6 | Date: | 2021-05-04 |
| Customer: | Paycom Software, Inc. | Temperature: | 21.1°C |
| Attendees: | None | Relative Humidity: | 49.7% |
| Customer Project: | None | Bar. Pressure: | 1016 mb |
| Tested By: | Mark Baytan | Job Site: | TX01 |
| Power: | 110VAC/60Hz | Configuration: | PAYC0001-1 |

## TEST SPECIFICATIONS

| Specification: Equipment Class B | Method: |
|---|---|
| FCC 15.207:2021 | ANSI C63.10:2013 |

## TEST PARAMETERS

| | | | | | |
|---|---|---|---|---|---|
| Run #: | 11 | Line: | Neutral | Add. Ext. Attenuation (dB): | 0 |

## COMMENTS

None

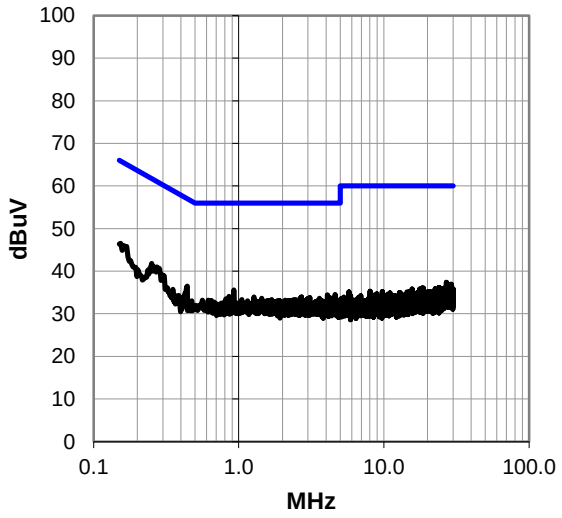
## EUT OPERATING MODES

Transmitting Bluetooth LE at Mid Ch 39 (2442 MHz)

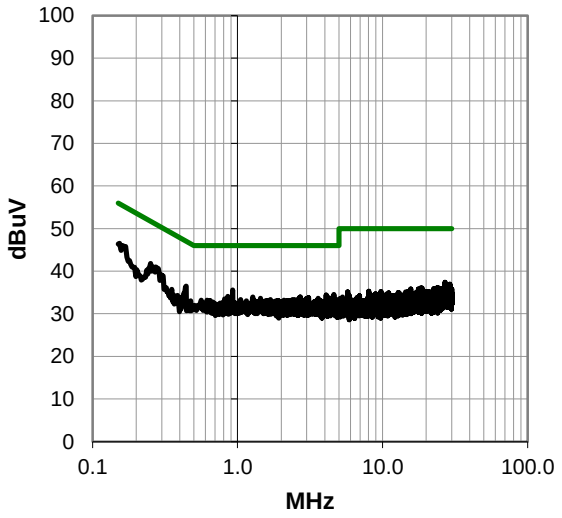
## DEVIATIONS FROM TEST STANDARD

None

**Peak Data - vs - Quasi Peak Limit**




**Peak Data - vs - Average Limit**



# AC POWERLINE CONDUCTED EMISSIONS

element
WTD.2021.04.01.1
EmiR5 2021.01.08.0
PSA-ESCI 2021.03.17.0

## RESULTS - Run #11

Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.154 | 26.1 | 20.4 | 46.5 | 65.8 | -19.3 |
| 0.251 | 21.4 | 20.4 | 41.8 | 61.7 | -19.9 |
| 0.922 | 15.3 | 20.3 | 35.6 | 56.0 | -20.4 |
| 0.441 | 16.3 | 20.2 | 36.5 | 57.0 | -20.5 |
| 4.624 | 14.2 | 20.3 | 34.5 | 56.0 | -21.5 |
| 4.079 | 14.1 | 20.3 | 34.4 | 56.0 | -21.6 |
| 0.855 | 13.9 | 20.2 | 34.1 | 56.0 | -21.9 |
| 1.273 | 13.6 | 20.3 | 33.9 | 56.0 | -22.1 |
| 2.706 | 13.6 | 20.3 | 33.9 | 56.0 | -22.1 |
| 2.657 | 13.5 | 20.3 | 33.8 | 56.0 | -22.2 |
| 3.090 | 13.5 | 20.3 | 33.8 | 56.0 | -22.2 |
| 4.228 | 13.4 | 20.3 | 33.7 | 56.0 | -22.3 |
| 1.441 | 13.3 | 20.3 | 33.6 | 56.0 | -22.4 |
| 3.601 | 13.3 | 20.3 | 33.6 | 56.0 | -22.4 |
| 4.344 | 13.3 | 20.3 | 33.6 | 56.0 | -22.4 |
| 0.814 | 13.3 | 20.2 | 33.5 | 56.0 | -22.5 |
| 2.960 | 13.2 | 20.3 | 33.5 | 56.0 | -22.5 |
| 4.452 | 13.2 | 20.3 | 33.5 | 56.0 | -22.5 |
| 27.008 | 15.0 | 22.4 | 37.4 | 60.0 | -22.6 |
| 1.049 | 13.1 | 20.2 | 33.3 | 56.0 | -22.7 |
| 1.684 | 13.0 | 20.3 | 33.3 | 56.0 | -22.7 |
| 2.396 | 13.0 | 20.3 | 33.3 | 56.0 | -22.7 |
| 2.471 | 13.0 | 20.3 | 33.3 | 56.0 | -22.7 |
| 4.657 | 13.0 | 20.3 | 33.3 | 56.0 | -22.7 |
| 2.090 | 12.9 | 20.3 | 33.2 | 56.0 | -22.8 |

Peak Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.154 | 26.1 | 20.4 | 46.5 | 55.8 | -9.3 |
| 0.251 | 21.4 | 20.4 | 41.8 | 51.7 | -9.9 |
| 0.922 | 15.3 | 20.3 | 35.6 | 46.0 | -10.4 |
| 0.441 | 16.3 | 20.2 | 36.5 | 47.0 | -10.5 |
| 4.624 | 14.2 | 20.3 | 34.5 | 46.0 | -11.5 |
| 4.079 | 14.1 | 20.3 | 34.4 | 46.0 | -11.6 |
| 0.855 | 13.9 | 20.2 | 34.1 | 46.0 | -11.9 |
| 1.273 | 13.6 | 20.3 | 33.9 | 46.0 | -12.1 |
| 2.706 | 13.6 | 20.3 | 33.9 | 46.0 | -12.1 |
| 2.657 | 13.5 | 20.3 | 33.8 | 46.0 | -12.2 |
| 3.090 | 13.5 | 20.3 | 33.8 | 46.0 | -12.2 |
| 4.228 | 13.4 | 20.3 | 33.7 | 46.0 | -12.3 |
| 1.441 | 13.3 | 20.3 | 33.6 | 46.0 | -12.4 |
| 3.601 | 13.3 | 20.3 | 33.6 | 46.0 | -12.4 |
| 4.344 | 13.3 | 20.3 | 33.6 | 46.0 | -12.4 |
| 0.814 | 13.3 | 20.2 | 33.5 | 46.0 | -12.5 |
| 2.960 | 13.2 | 20.3 | 33.5 | 46.0 | -12.5 |
| 4.452 | 13.2 | 20.3 | 33.5 | 46.0 | -12.5 |
| 27.008 | 15.0 | 22.4 | 37.4 | 50.0 | -12.6 |
| 1.049 | 13.1 | 20.2 | 33.3 | 46.0 | -12.7 |
| 1.684 | 13.0 | 20.3 | 33.3 | 46.0 | -12.7 |
| 2.396 | 13.0 | 20.3 | 33.3 | 46.0 | -12.7 |
| 2.471 | 13.0 | 20.3 | 33.3 | 46.0 | -12.7 |
| 4.657 | 13.0 | 20.3 | 33.3 | 46.0 | -12.7 |
| 2.090 | 12.9 | 20.3 | 33.2 | 46.0 | -12.8 |

## CONCLUSION

Pass

Tested By

# DUTY CYCLE

## TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

The EUT operates at 100% Duty Cycle.

# OCCUPIED BANDWIDTH

XMit 2020.12.30.0

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.

**TEST EQUIPMENT**

| Description | Manufacturer | Model | ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|
| Generator - Signal | Agilent | N5173B | TIW | 2020-07-17 | 2023-07-17 |
| Cable | Micro-Coax | UFD150A-1-0720-200200 | TXG | 2020-09-18 | 2021-09-18 |
| Attenuator | Fairview Microwave | SA18E 1913 | TZV | 2020-09-22 | 2021-09-22 |
| Block - DC | Fairview Microwave | SD3379 | AMM | 2020-09-21 | 2021-09-21 |
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFL | 2021-03-11 | 2022-03-11 |

**TEST DESCRIPTION**

The EUT was set to the channels and modes listed in the datasheet.

The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.0% occupied bandwidth was also measured at the same time which can be needed during Output Power depending on the applicable method.

# OCCUPIED BANDWIDTH

TbtTx 2019.08.30.0 XMit 2020.12.30.0

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | Microfence | | | **Work Order:** | PAYC0001 |
| **Serial Number:** | 6 | | | **Date:** | 6-May-21 |
| **Customer:** | Paycom Software, Inc. | | | **Temperature:** | 22.7 °C |
| **Attendees:** | None | | | **Humidity:** | 45.9% RH |
| **Project:** | None | | | **Barometric Pres.:** | 1019 mbar |
| **Tested by:** | Mark Baytan | **Power:** | Battery | **Job Site:** | TX05 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.247:2021 | ANSI C63.10:2013 |

**COMMENTS**

Reference level offset includes Patch Cable, RF Test Cable, 20dB Attenuator, and DC Block.

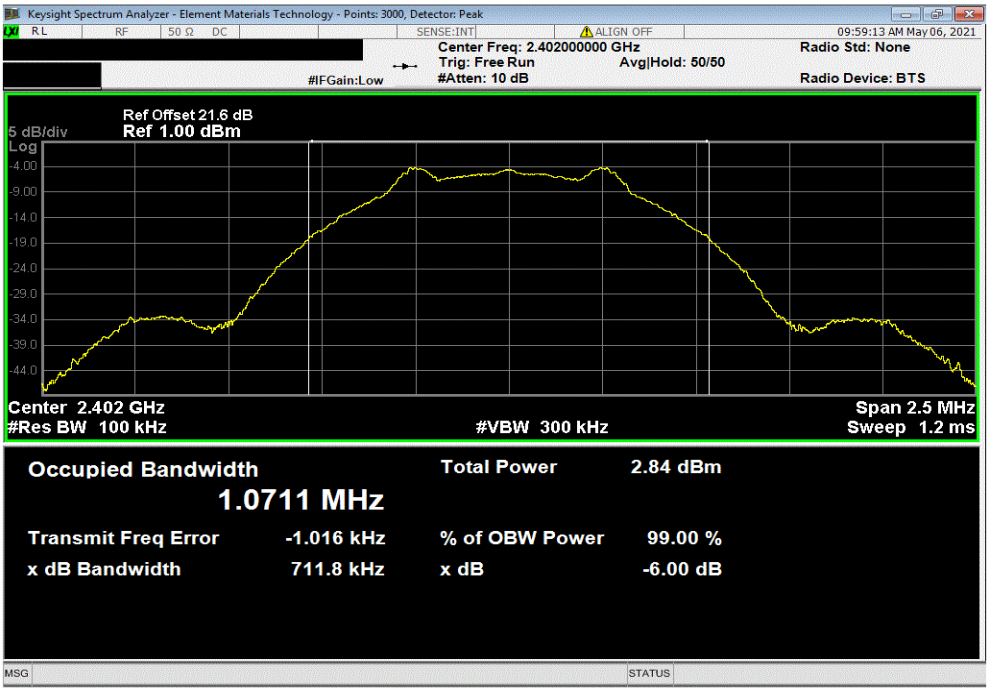
**DEVIATIONS FROM TEST STANDARD**

None

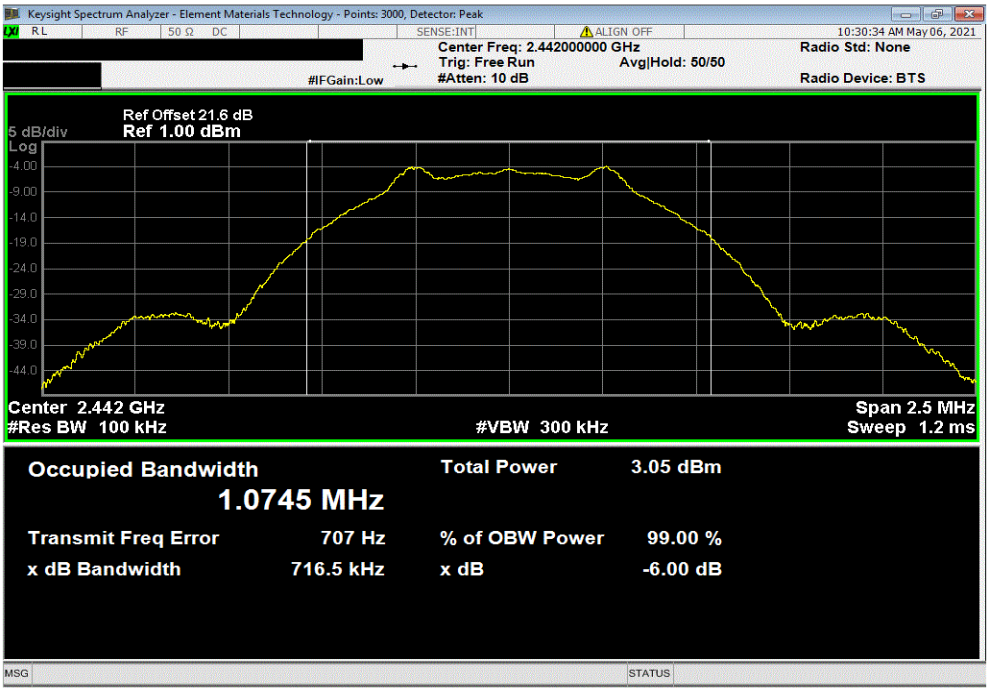
| Configuration # | 2 | Signature |
|---|---|---|

| | Value | Limit (≥) | Result |
|---|---|---|---|
| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | 711.779 kHz | 500 kHz | Pass |
| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | 716.483 kHz | 500 kHz | Pass |
| BLE/GFSK 1 Mbps High Channel, 2480 MHz | 729.501 kHz | 500 kHz | Pass |

| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (≥) | Result |
| | | | | 711.779 kHz | 500 kHz | Pass |



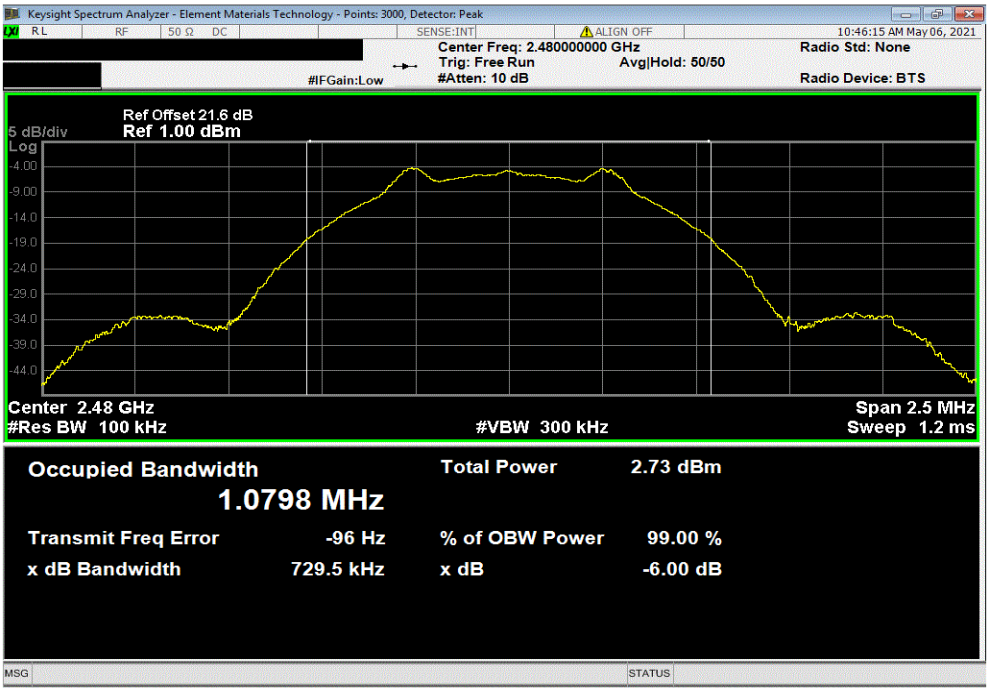

| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (≥) | Result |
| | | | | 716.483 kHz | 500 kHz | Pass |



# OCCUPIED BANDWIDTH



| BLE/GFSK 1 Mbps High Channel, 2480 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | Value | Limit (≥) | Result |
| | | | | | 729.501 kHz | 500 kHz | Pass |



# OUTPUT POWER

XMit 2020.12.30.0

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.

**TEST EQUIPMENT**

| Description | Manufacturer | Model | ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|
| Generator - Signal | Agilent | N5173B | TIW | 2020-07-17 | 2023-07-17 |
| Cable | Micro-Coax | UFD150A-1-0720-200200 | TXG | 2020-09-18 | 2021-09-18 |
| Attenuator | Fairview Microwave | SA18E 1913 | TZV | 2020-09-22 | 2021-09-22 |
| Block - DC | Fairview Microwave | SD3379 | AMM | 2020-09-21 | 2021-09-21 |
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFL | 2021-03-11 | 2022-03-11 |

**TEST DESCRIPTION**

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

# OUTPUT POWER

TbtTx 2019.08.30.0 XMit 2020.12.30.0

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | Microfence | | | **Work Order:** | PAYC0001 |
| **Serial Number:** | 6 | | | **Date:** | 6-May-21 |
| **Customer:** | Paycom Software, Inc. | | | **Temperature:** | 22.7 °C |
| **Attendees:** | None | | | **Humidity:** | 45.9% RH |
| **Project:** | None | | | **Barometric Pres.:** | 1019 mbar |
| **Tested by:** | Mark Baytan | **Power:** | Battery | **Job Site:** | TX05 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.247:2021 | ANSI C63.10:2013 |

**COMMENTS**

Reference level offset includes Patch Cable, RF Test Cable, 20dB Attenuator, and DC Block.

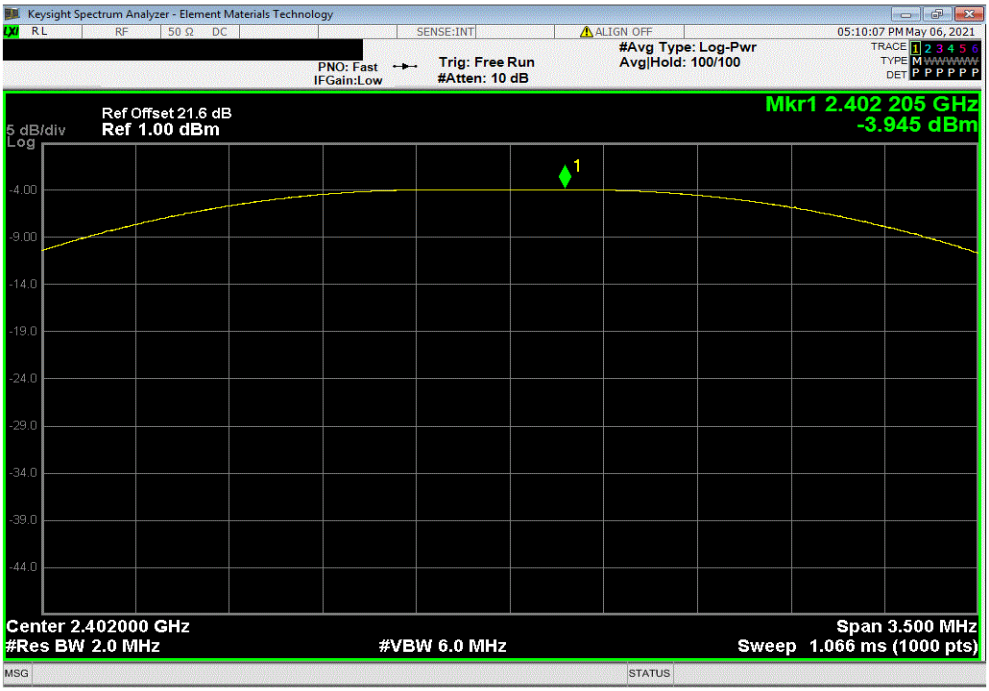
**DEVIATIONS FROM TEST STANDARD**

None

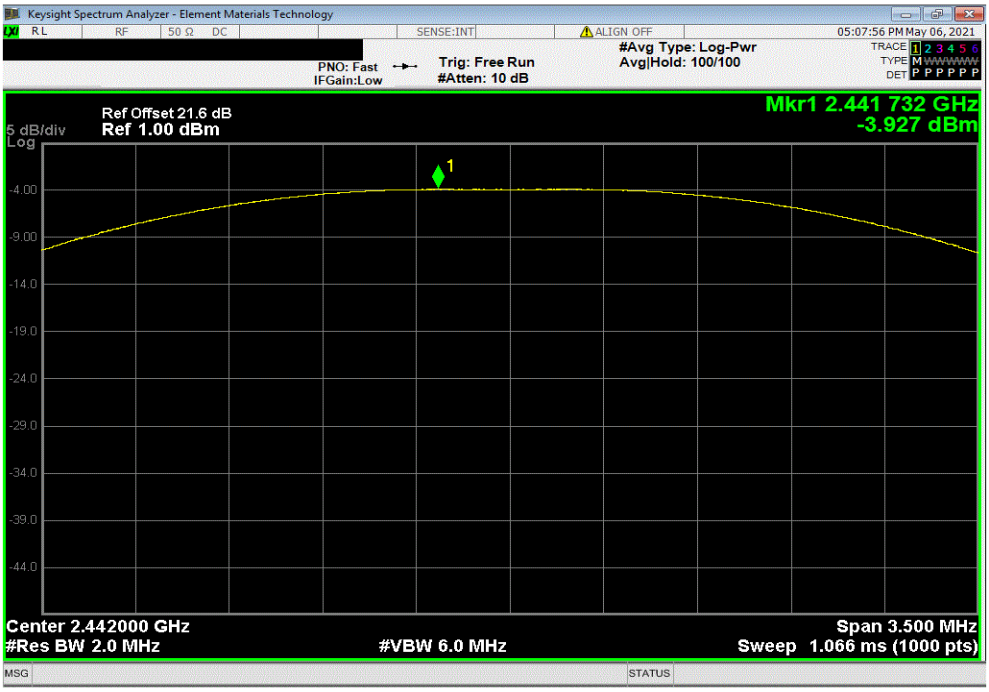
| Configuration # | 2 | Signature |
|---|---|---|

| | Out Pwr (dBm) | Limit (dBm) | Result |
|---|---|---|---|
| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | -3.945 | 30 | Pass |
| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | -3.927 | 30 | Pass |
| BLE/GFSK 1 Mbps High Channel, 2480 MHz | -3.978 | 30 | Pass |

| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Out Pwr (dBm) | Limit (dBm) | Result |
| | | | | -3.945 | 30 | Pass |



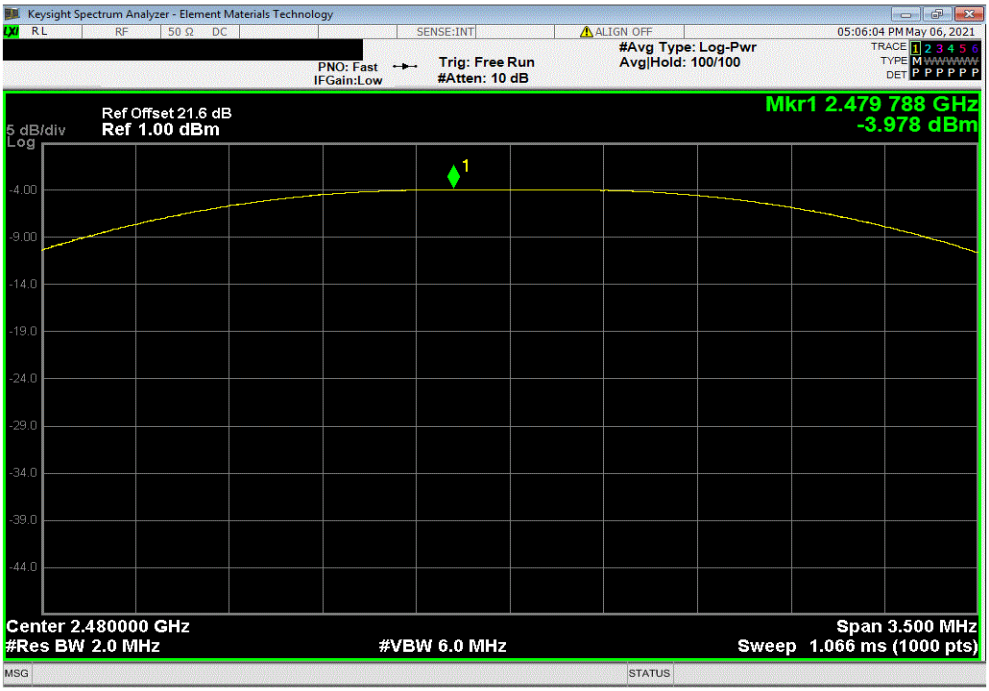

| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Out Pwr (dBm) | Limit (dBm) | Result |
| | | | | -3.927 | 30 | Pass |



# OUTPUT POWER



| BLE/GFSK 1 Mbps High Channel, 2480 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Out Pwr (dBm) | Limit (dBm) | Result |
| | | | | -3.978 | 30 | Pass |



# EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

XMit 2020.12.30.0

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.

**TEST EQUIPMENT**

| Description | Manufacturer | Model | ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|
| Generator - Signal | Agilent | N5173B | TIW | 2020-07-17 | 2023-07-17 |
| Cable | Micro-Coax | UFD150A-1-0720-200200 | TXG | 2020-09-18 | 2021-09-18 |
| Attenuator | Fairview Microwave | SA18E 1913 | TZV | 2020-09-22 | 2021-09-22 |
| Block - DC | Fairview Microwave | SD3379 | AMM | 2020-09-21 | 2021-09-21 |
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFL | 2021-03-11 | 2022-03-11 |

**TEST DESCRIPTION**

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

Equivalent Isotropic Radiated Power (EIRP) = Max Measured Power + Antenna gain (dBi)

# EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

TbtTx 2019.08.30.0 XMit 2020.12.30.0

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | Microfence | | | **Work Order:** | PAYC0001 |
| **Serial Number:** | 6 | | | **Date:** | 6-May-21 |
| **Customer:** | Paycom Software, Inc. | | | **Temperature:** | 22.7 °C |
| **Attendees:** | None | | | **Humidity:** | 45.9% RH |
| **Project:** | None | | | **Barometric Pres.:** | 1019 mbar |
| **Tested by:** | Mark Baytan | **Power:** | Battery | **Job Site:** | TX05 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.247:2021 | ANSI C63.10:2013 |

**COMMENTS**

Reference level offset includes Patch Cable, RF Test Cable, 20dB Attenuator, and DC Block.

**DEVIATIONS FROM TEST STANDARD**

None

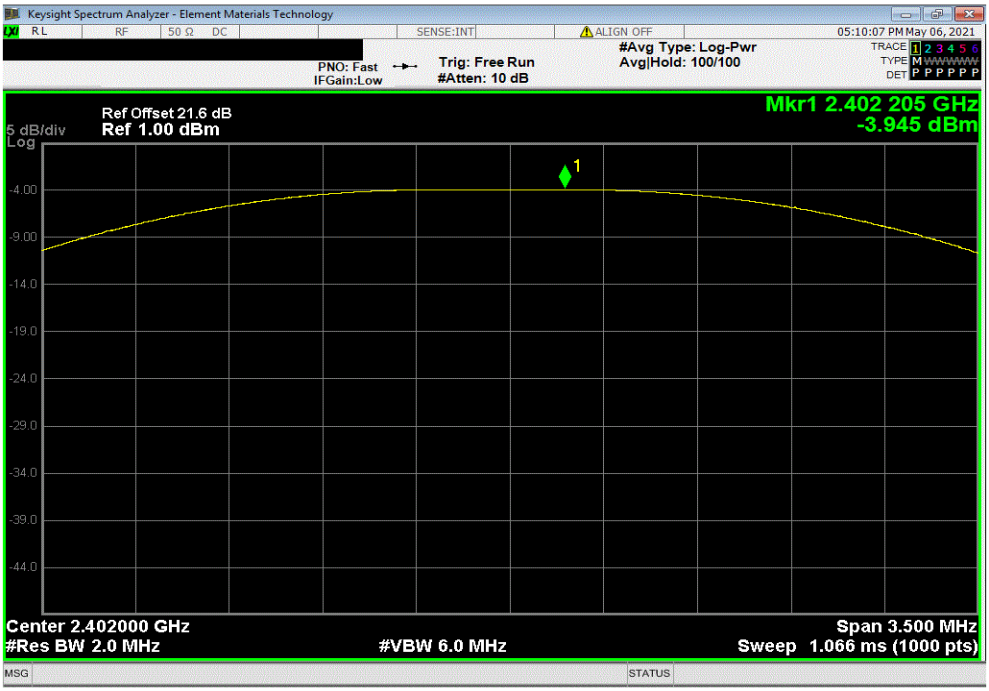
| Configuration # | 2 | Signature |
|---|---|---|

| | Out Pwr (dBm) | Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Result |
|---|---|---|---|---|---|
| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | -3.945 | 3.3 | -0.645 | 36 | Pass |
| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | -3.927 | 3.3 | -0.627 | 36 | Pass |
| BLE/GFSK 1 Mbps High Channel, 2480 MHz | -3.978 | 3.3 | -0.678 | 36 | Pass |

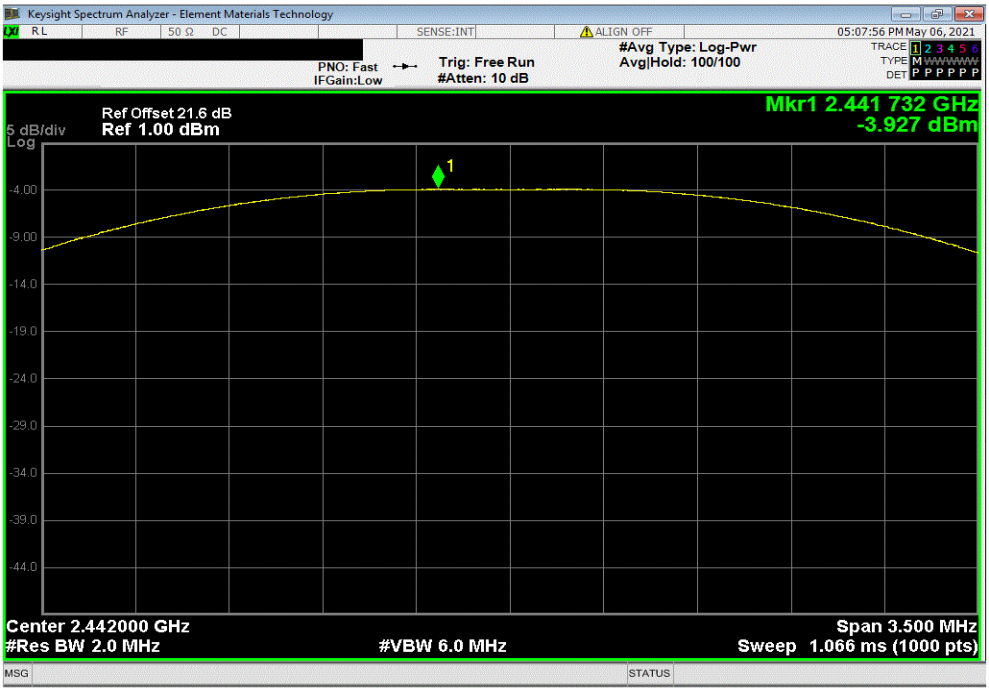
# EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | Out Pwr (dBm) | Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Result |
| | | -3.945 | 3.3 | -0.645 | 36 | Pass |



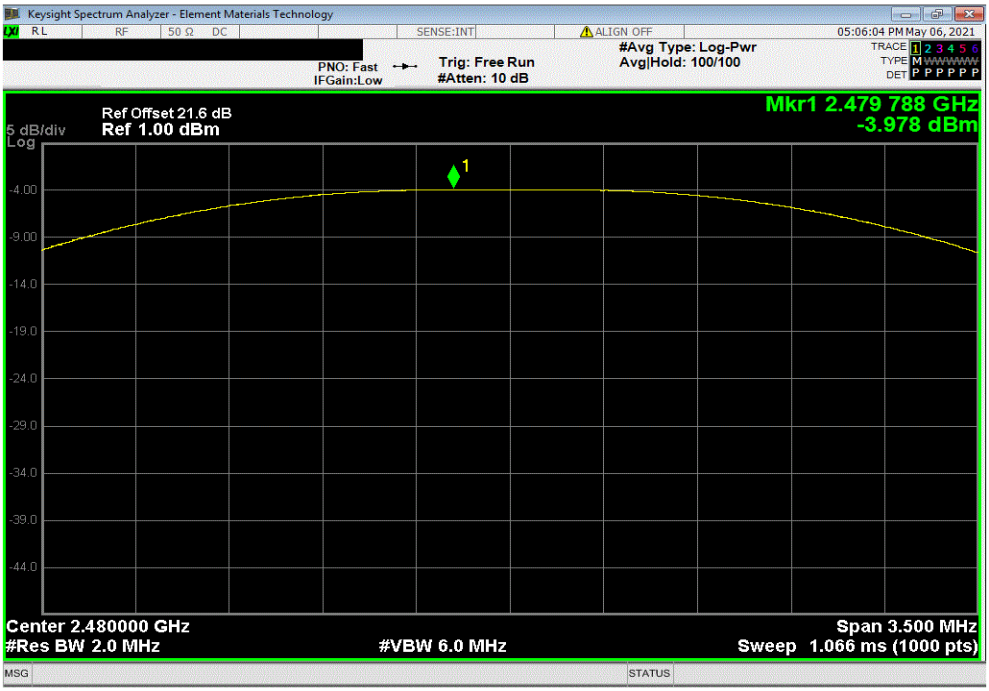

| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | Out Pwr (dBm) | Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Result |
| | | -3.927 | 3.3 | -0.627 | 36 | Pass |



# EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



| BLE/GFSK 1 Mbps High Channel, 2480 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | Out Pwr (dBm) | Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Result |
| | | -3.978 | 3.3 | -0.678 | 36 | Pass |



# POWER SPECTRAL DENSITY

XMit 2020.12.30.0

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.

**TEST EQUIPMENT**

| Description | Manufacturer | Model | ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|
| Generator - Signal | Agilent | N5173B | TIW | 2020-07-17 | 2023-07-17 |
| Cable | Micro-Coax | UFD150A-1-0720-200200 | TXG | 2020-09-18 | 2021-09-18 |
| Attenuator | Fairview Microwave | SA18E 1913 | TZV | 2020-09-22 | 2021-09-22 |
| Block - DC | Fairview Microwave | SD3379 | AMM | 2020-09-21 | 2021-09-21 |
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFL | 2021-03-11 | 2022-03-11 |

**TEST DESCRIPTION**

The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

# POWER SPECTRAL DENSITY

element

TbtTx 2019.08.30.0 XMit 2020.12.30.0

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | **Microfence** | | | **Work Order:** | **PAYC0001** |
| **Serial Number:** | **6** | | | **Date:** | **6-May-21** |
| **Customer:** | **Paycom Software, Inc.** | | | **Temperature:** | **22.7 °C** |
| **Attendees:** | **None** | | | **Humidity:** | **45.9% RH** |
| **Project:** | **None** | | | **Barometric Pres.:** | **1019 mbar** |
| **Tested by:** | **Mark Baytan** | **Power:** | **Battery** | **Job Site:** | **TX05** |

| **TEST SPECIFICATIONS** | **Test Method** |
|---|---|
| **FCC 15.247:2021** | ANSI C63.10:2013 |
| | |

**COMMENTS**

**Reference level offset includes Patch Cable, RF Test Cable, 20dB Attenuator, and DC Block.**

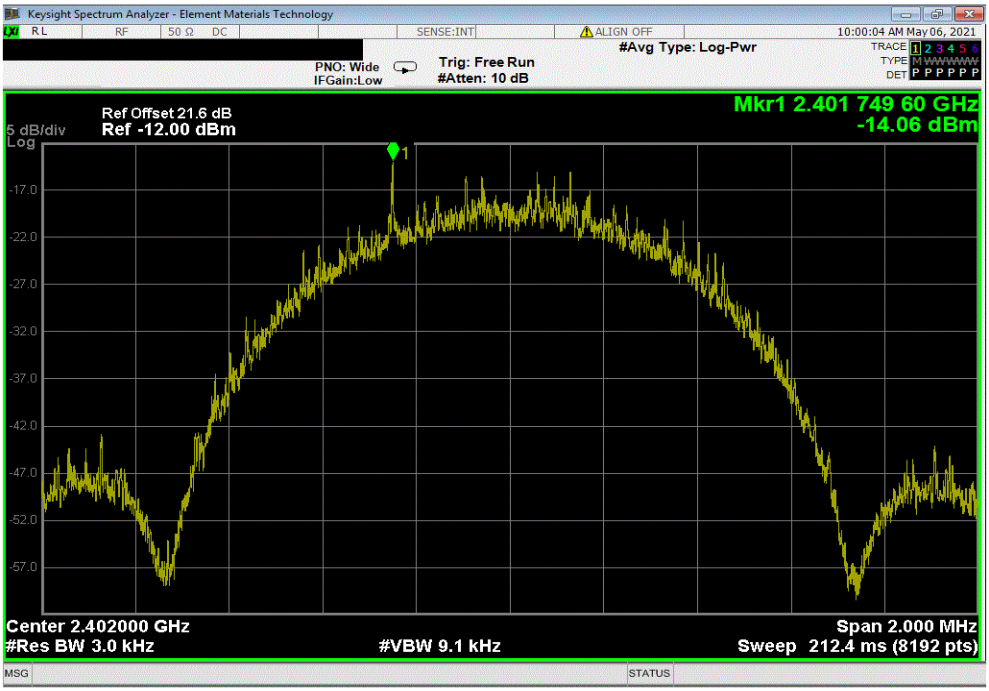
**DEVIATIONS FROM TEST STANDARD**

**None**

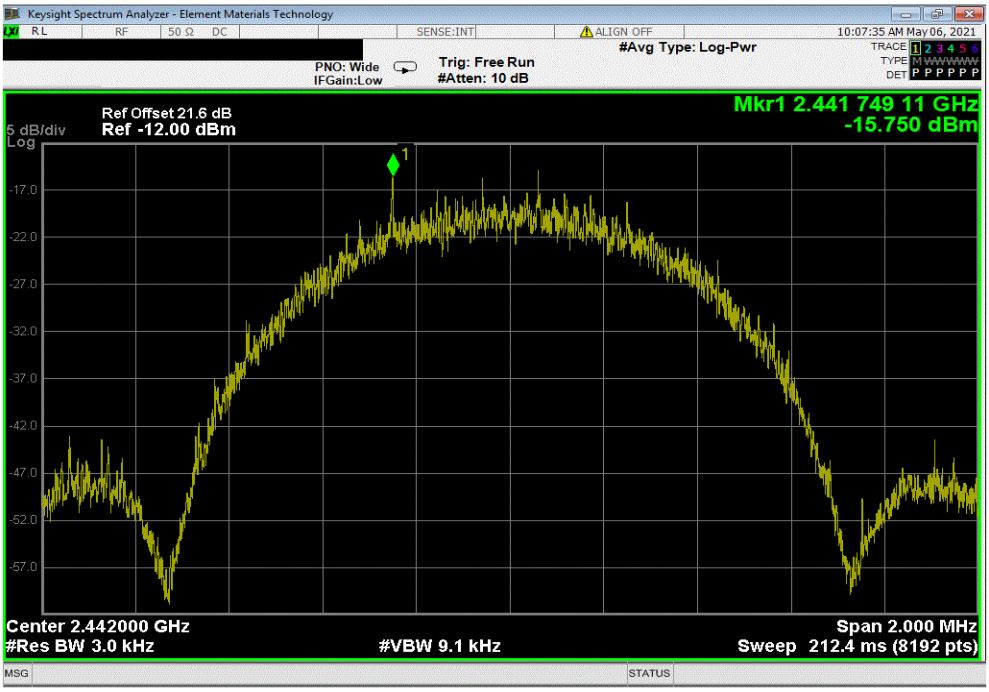
| **Configuration #** | **2** | *Signature* |
|---|---|---|

| | **Value dBm/3kHz** | **Limit < dBm/3kHz** | **Results** |
|---|---|---|---|
| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | -14.057 | 8 | Pass |
| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | -15.75 | 8 | Pass |
| BLE/GFSK 1 Mbps High Channel, 2480 MHz | -15.463 | 8 | Pass |

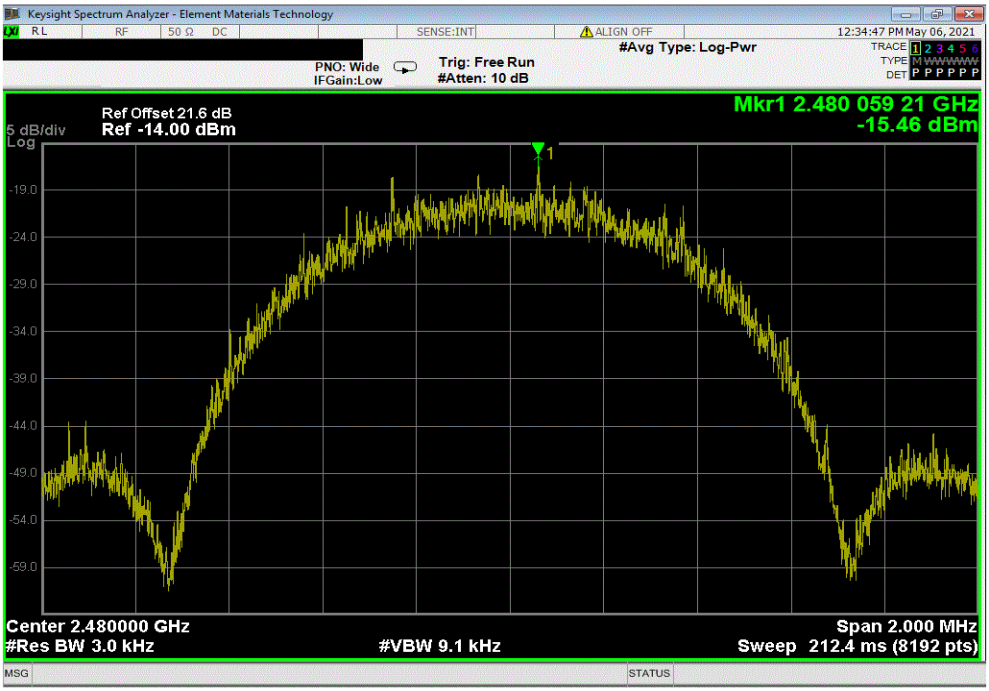
| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value dBm/3kHz | Limit < dBm/3kHz | Results |
| | | | | -14.057 | 8 | Pass |




| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value dBm/3kHz | Limit < dBm/3kHz | Results |
| | | | | -15.75 | 8 | Pass |



| BLE/GFSK 1 Mbps High Channel, 2480 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | Value dBm/3kHz | Limit < dBm/3kHz | Results |
| | | | | | -15.463 | 8 | Pass |



# BAND EDGE COMPLIANCE

XMit 2020.12.30.0

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.

**TEST EQUIPMENT**

| Description | Manufacturer | Model | ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|
| Generator - Signal | Agilent | N5173B | TIW | 2020-07-17 | 2023-07-17 |
| Cable | Micro-Coax | UFD150A-1-0720-200200 | TXG | 2020-09-18 | 2021-09-18 |
| Attenuator | Fairview Microwave | SA18E 1913 | TZV | 2020-09-22 | 2021-09-22 |
| Block - DC | Fairview Microwave | SD3379 | AMM | 2020-09-21 | 2021-09-21 |
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFL | 2021-03-11 | 2022-03-11 |

**TEST DESCRIPTION**

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

# BAND EDGE COMPLIANCE

TbtTx 2019.08.30.0 XMit 2020.12.30.0

| | | | | | |
|---|---|---|---|---|---|
| EUT: | Microfence | | | Work Order: | PAYC0001 |
| Serial Number: | 6 | | | Date: | 6-May-21 |
| Customer: | Paycom Software, Inc. | | | Temperature: | 22.7 °C |
| Attendees: | None | | | Humidity: | 45.9% RH |
| Project: | None | | | Barometric Pres.: | 1019 mbar |
| Tested by: | Mark Baytan | Power: | Battery | Job Site: | TX05 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.247:2021 | ANSI C63.10:2013 |

COMMENTS

Reference level offset includes Patch Cable, RF Test Cable, 20dB Attenuator, and DC Block.

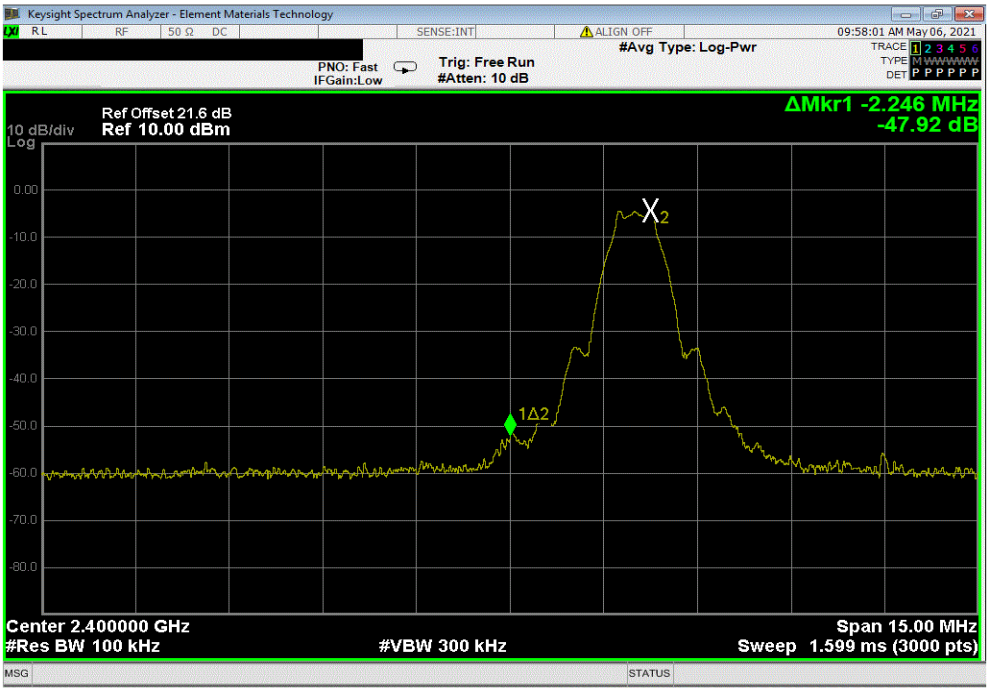
DEVIATIONS FROM TEST STANDARD

None

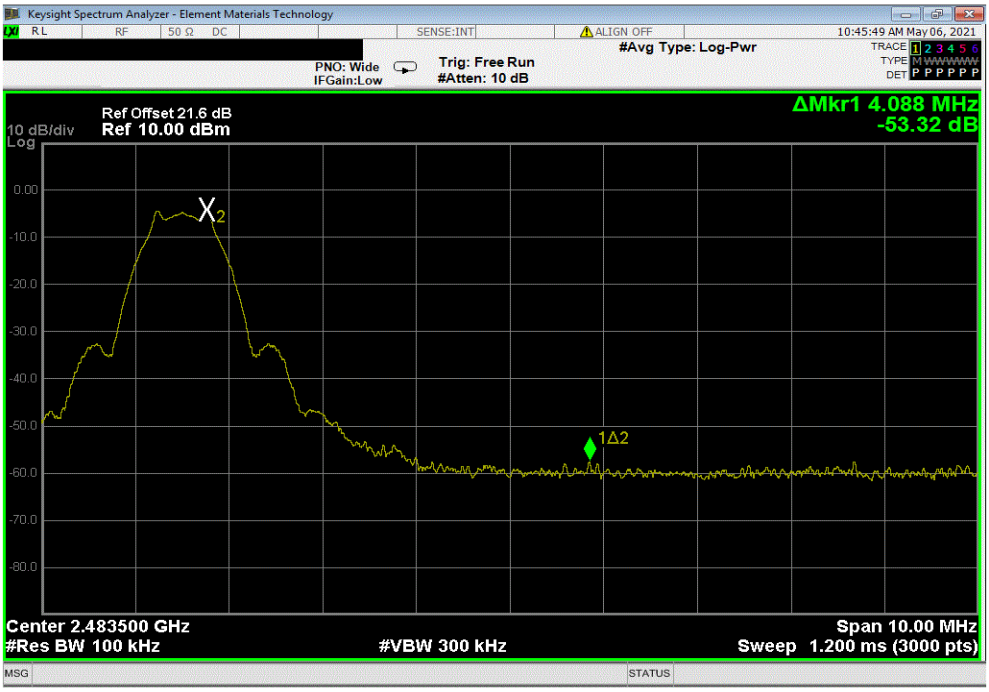
| Configuration # | 2 | Signature |
|---|---|---|

| | Value (dBc) | Limit ≤ (dBc) | Result |
|---|---|---|---|
| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | -47.92 | -20 | Pass |
| BLE/GFSK 1 Mbps High Channel, 2480 MHz | -53.32 | -20 | Pass |

| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value (dBc) | Limit ≤ (dBc) | Result |
| | | | | -47.92 | -20 | Pass |




| BLE/GFSK 1 Mbps High Channel, 2480 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value (dBc) | Limit ≤ (dBc) | Result |
| | | | | -53.32 | -20 | Pass |



# SPURIOUS CONDUCTED EMISSIONS

XMit 2020.12.30.0

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.

**TEST EQUIPMENT**

| Description | Manufacturer | Model | ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|
| Generator - Signal | Agilent | N5173B | TIW | 2020-07-17 | 2023-07-17 |
| Cable | Micro-Coax | UFD150A-1-0720-200200 | TXG | 2020-09-18 | 2021-09-18 |
| Attenuator | Fairview Microwave | SA18E 1913 | TZV | 2020-09-22 | 2021-09-22 |
| Block - DC | Fairview Microwave | SD3379 | AMM | 2020-09-21 | 2021-09-21 |
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFL | 2021-03-11 | 2022-03-11 |

**TEST DESCRIPTION**

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

# SPURIOUS CONDUCTED EMISSIONS

element

TbtTx 2019.08.30.0 XMit 2020.12.30.0

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | Microfence | | | **Work Order:** | PAYC0001 |
| **Serial Number:** | 6 | | | **Date:** | 10-May-21 |
| **Customer:** | Paycom Software, Inc. | | | **Temperature:** | 22.7 °C |
| **Attendees:** | None | | | **Humidity:** | 45.9% RH |
| **Project:** | None | | | **Barometric Pres.:** | 1019 mbar |
| **Tested by:** | Mark Baytan | **Power:** | Battery | **Job Site:** | TX05 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.247:2021 | ANSI C63.10:2013 |
| | |

**COMMENTS**

Reference level offset includes Patch Cable, RF Test Cable, 20dB Attenuator, and DC Block.

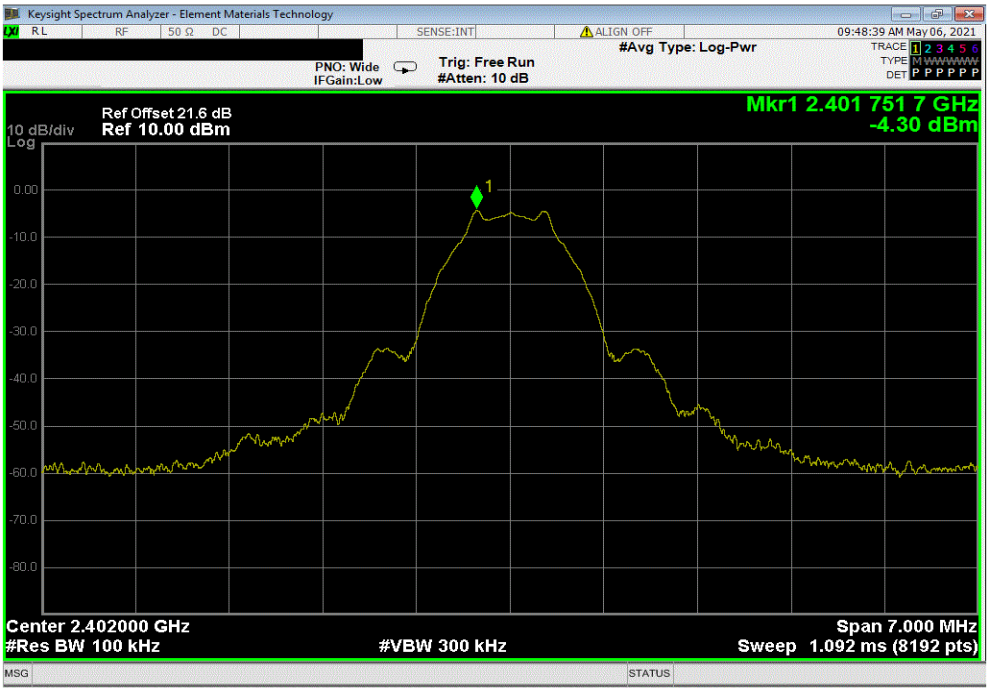
**DEVIATIONS FROM TEST STANDARD**

None

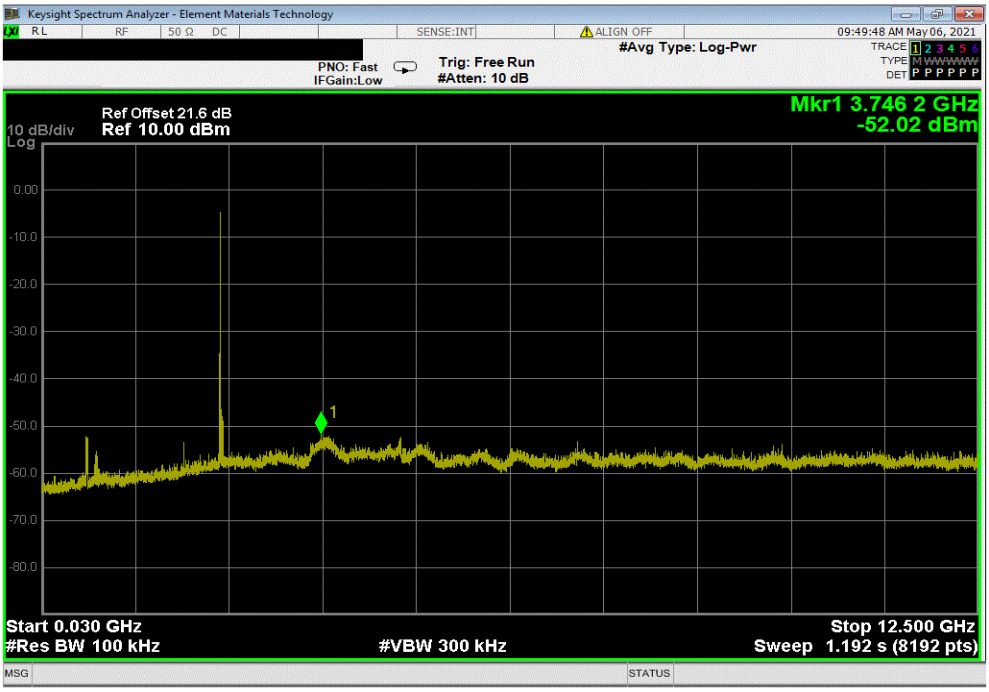
| Configuration # | 2 | Signature |
|---|---|---|

| | Frequency Range | Measured Freq (MHz) | Max Value (dBc) | Limit ≤ (dBc) | Result |
|---|---|---|---|---|---|
| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | Fundamental | 2401.75 | N/A | N/A | N/A |
| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | 30 MHz - 12.5 GHz | 3746.18 | -47.72 | -20 | Pass |
| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | 12.5 GHz - 25 GHz | 23620.44 | -47.55 | -20 | Pass |
| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | Fundamental | 2442.26 | N/A | N/A | N/A |
| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | 30 MHz - 12.5 GHz | 1920.82 | -40.21 | -20 | Pass |
| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | 12.5 GHz - 25 GHz | 24020.27 | -47.42 | -20 | Pass |
| BLE/GFSK 1 Mbps High Channel, 2480 MHz | Fundamental | 2479.74 | N/A | N/A | N/A |
| BLE/GFSK 1 Mbps High Channel, 2480 MHz | 30 MHz - 12.5 GHz | 637.44 | -44.64 | -20 | Pass |
| BLE/GFSK 1 Mbps High Channel, 2480 MHz | 12.5 GHz - 25 GHz | 23992.8 | -47.22 | -20 | Pass |

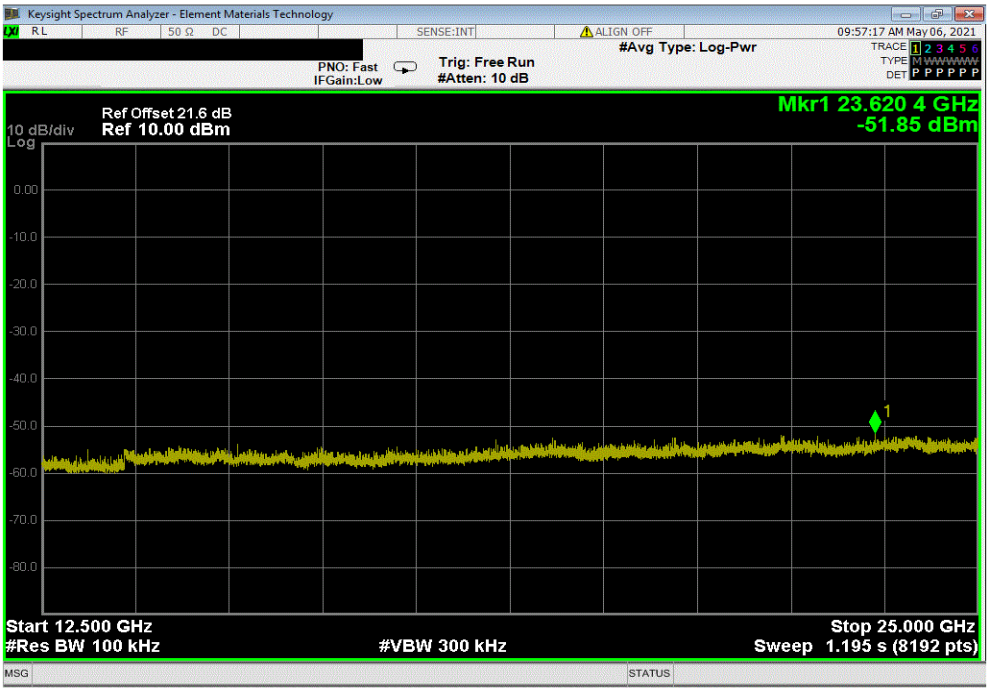
| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | | | | | |
|---|---|---|---|---|---|
| Frequency Range | | Measured Freq (MHz) | Max Value (dBc) | Limit ≤ (dBc) | Result |
| | Fundamental | 2401.75 | N/A | N/A | N/A |



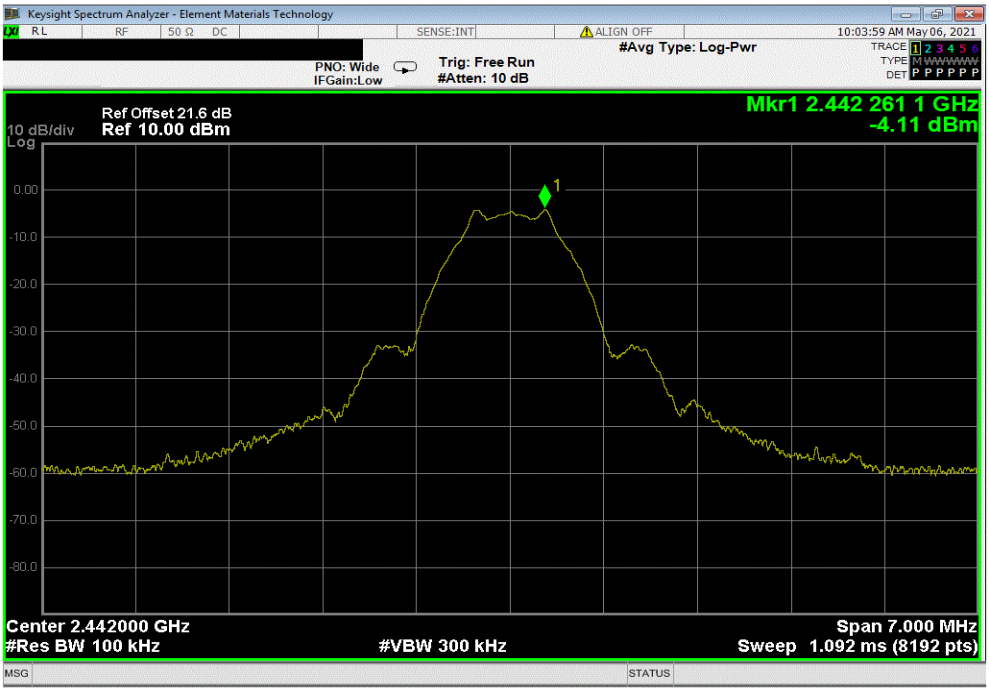

| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | | | | |
|---|---|---|---|---|
| Frequency Range | Measured Freq (MHz) | Max Value (dBc) | Limit ≤ (dBc) | Result |
| 30 MHz - 12.5 GHz | 3746.18 | -47.72 | -20 | Pass |



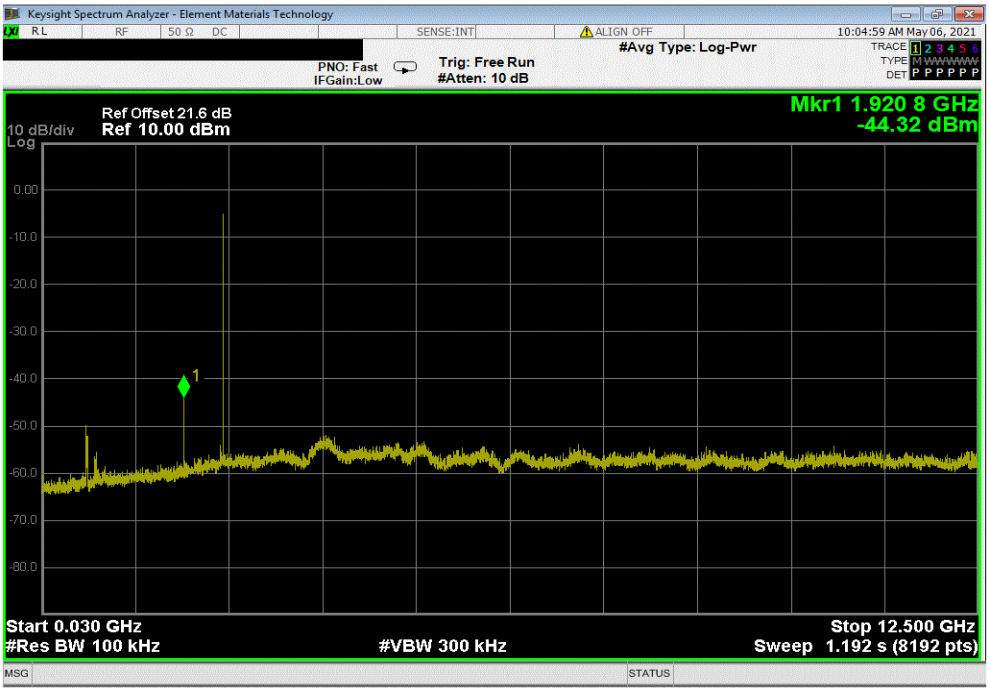
| BLE/GFSK 1 Mbps Low Channel, 2402 MHz | | | | |
|---|---|---|---|---|
| Frequency Range | Measured Freq (MHz) | Max Value (dBc) | Limit ≤ (dBc) | Result |
| 12.5 GHz - 25 GHz | 23620.44 | -47.55 | -20 | Pass |



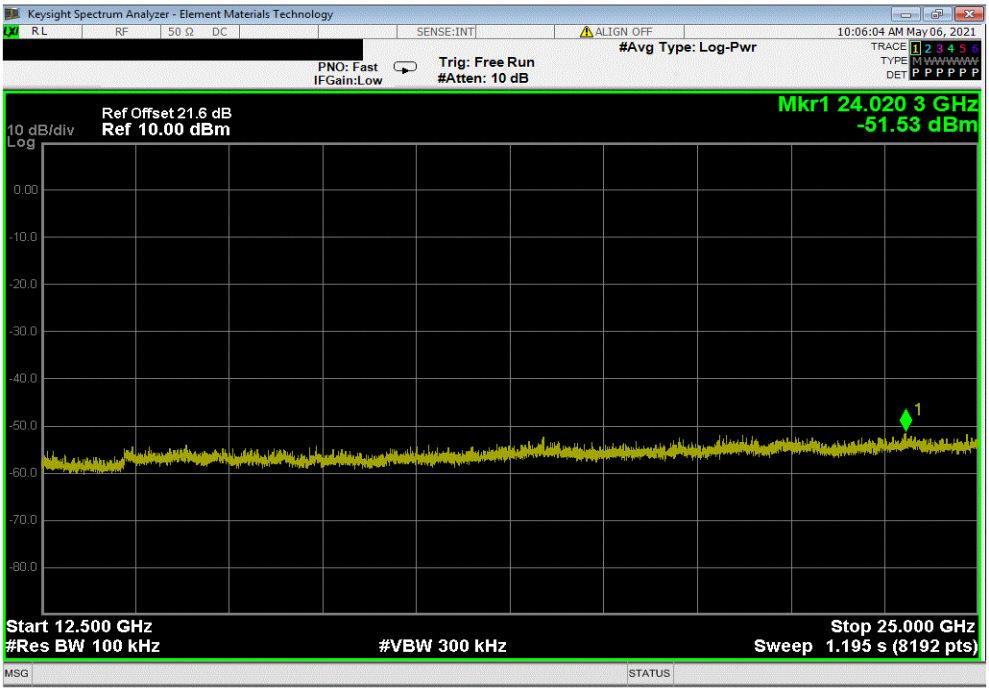

| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | | | | | |
|---|---|---|---|---|---|
| Frequency Range | | Measured Freq (MHz) | Max Value (dBc) | Limit ≤ (dBc) | Result |
| | Fundamental | 2442.26 | N/A | N/A | N/A |



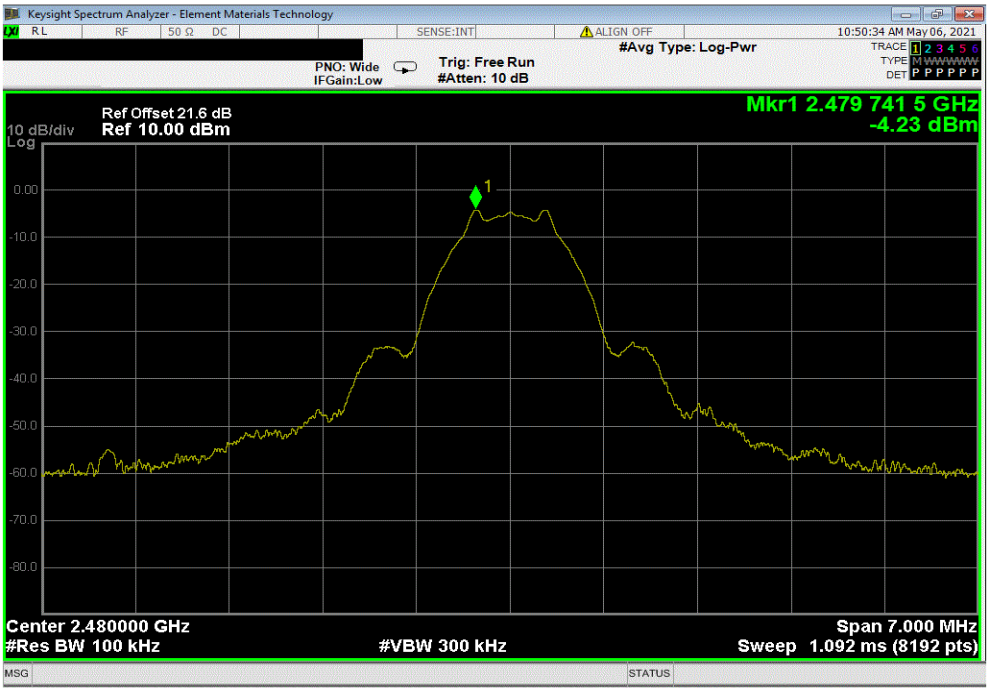
| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | | | | |
|---|---|---|---|---|
| Frequency Range | Measured Freq (MHz) | Max Value (dBc) | Limit ≤ (dBc) | Result |
| 30 MHz - 12.5 GHz | 1920.82 | -40.21 | -20 | Pass |



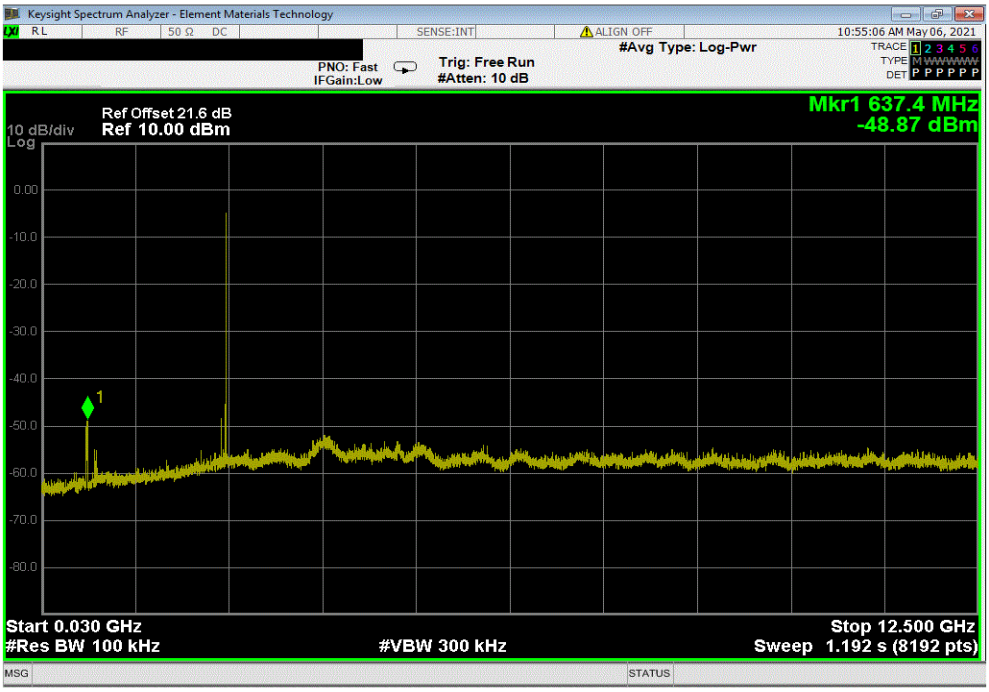

| BLE/GFSK 1 Mbps Mid Channel, 2442 MHz | | | | |
|---|---|---|---|---|
| Frequency Range | Measured Freq (MHz) | Max Value (dBc) | Limit ≤ (dBc) | Result |
| 12.5 GHz - 25 GHz | 24020.27 | -47.42 | -20 | Pass |



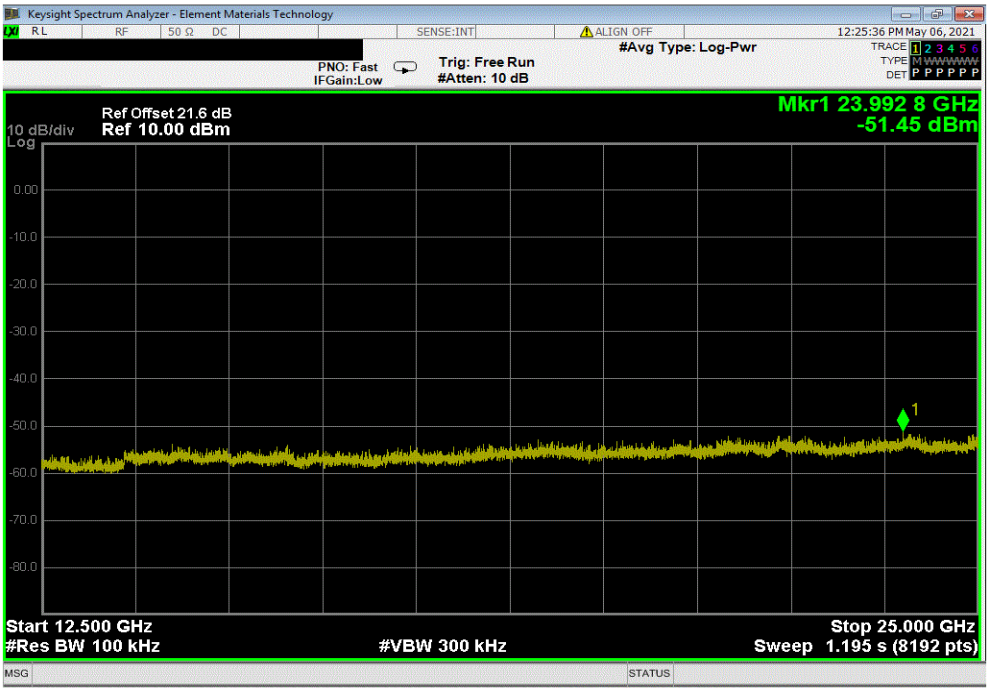
| BLE/GFSK 1 Mbps High Channel, 2480 MHz | | | | | |
|---|---|---|---|---|---|
| Frequency Range | | Measured Freq (MHz) | Max Value (dBc) | Limit ≤ (dBc) | Result |
| | Fundamental | 2479.74 | N/A | N/A | N/A |




| BLE/GFSK 1 Mbps High Channel, 2480 MHz | | | | |
|---|---|---|---|---|
| Frequency Range | Measured Freq (MHz) | Max Value (dBc) | Limit ≤ (dBc) | Result |
| 30 MHz - 12.5 GHz | 637.44 | -44.64 | -20 | Pass |



| BLE/GFSK 1 Mbps High Channel, 2480 MHz | | | | |
|---|---|---|---|---|
| Frequency Range | Measured Freq (MHz) | Max Value (dBc) | Limit ≤ (dBc) | Result |
| 12.5 GHz - 25 GHz | 23992.8 | -47.22 | -20 | Pass |



# SPURIOUS RADIATED EMISSIONS

element

PSA-ESCI 2021.03.17.0

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

**MODES OF OPERATION**

Transmitting BLE: Low Ch 0 (2402 MHz), Mid Ch 20 (2442 MHz), High Ch (2480 MHz); 1Mbps
Transmitting BLE: Low Ch 0 (2402 MHz), High Ch (2480 MHz); 1Mbps

**POWER SETTINGS INVESTIGATED**

110VAC/60Hz

**CONFIGURATIONS INVESTIGATED**

PAYC0001 - 1

**FREQUENCY RANGE INVESTIGATED**

| Start Frequency | 30 MHz | Stop Frequency | 26500 MHz |
|---|---|---|---|

**SAMPLE CALCULATIONS**

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

**TEST EQUIPMENT**

| Description | Manufacturer | Model | ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|
| Amplifier - Pre-Amplifier | Miteq | JSDWK42-18004000-60-5P | PAM | 2020-09-18 | 2021-09-18 |
| Cable | Northwest EMC | 18-40GHz | TXE | 2020-09-18 | 2021-09-18 |
| Antenna - Double Ridge | A.H. Systems, Inc. | SAS-574 | AXW | 2020-09-02 | 2022-09-02 |
| Amplifier - Pre-Amplifier | Miteq | AMF-6F-12001800-30-10P | PAL | 2020-09-17 | 2021-09-17 |
| Antenna - Standard Gain | ETS Lindgren | 3160-08 | AJG | NCR | NCR |
| Amplifier - Pre-Amplifier | Miteq | AMF-6F-08001200-30-10P | PAK | 2020-09-17 | 2021-09-17 |
| Cable | Northwest EMC | 8-18GHz | TXD | 2021-04-30 | 2022-04-30 |
| Antenna - Double Ridge | ETS Lindgren | 3117 | AJK | NCR | NCR |
| Amplifier - Pre-Amplifier | Miteq | AMF-3D-00100800-32-13P | PAJ | 2020-06-02 | 2021-06-02 |
| Antenna - Double Ridge | ETS Lindgren | 3115 | AJL | 2020-10-20 | 2022-10-20 |
| Cable | Northwest EMC | 1-8.2 GHz | TXC | 2020-06-02 | 2021-06-02 |
| Attenuator | Weinschel Corp | 4H-10 | AWA | 2021-03-09 | 2022-03-09 |
| Filter - Low Pass | Micro-Tronics | LPM50004 | HHV | 2020-08-04 | 2021-08-04 |
| Filter - High Pass | Micro-Tronics | HPM50111 | HGC | 2021-03-09 | 2022-03-09 |
| Analyzer - Spectrum Analyzer | Agilent | E4446A | AAQ | 2020-05-07 | 2021-05-07 |

**TEST DESCRIPTION**

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

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, 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). 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
PK = Peak Detector
AV = RMS 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.

Measurements within 2 MHz of the allowable band may have been taken using the integration method from ANSI C63.10 clause 11.13.3. This procedure uses the channel power feature of the spectrum analyzer to integrate the power of the emission within a 1 MHz bandwidth.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of 10*log(1/dc).

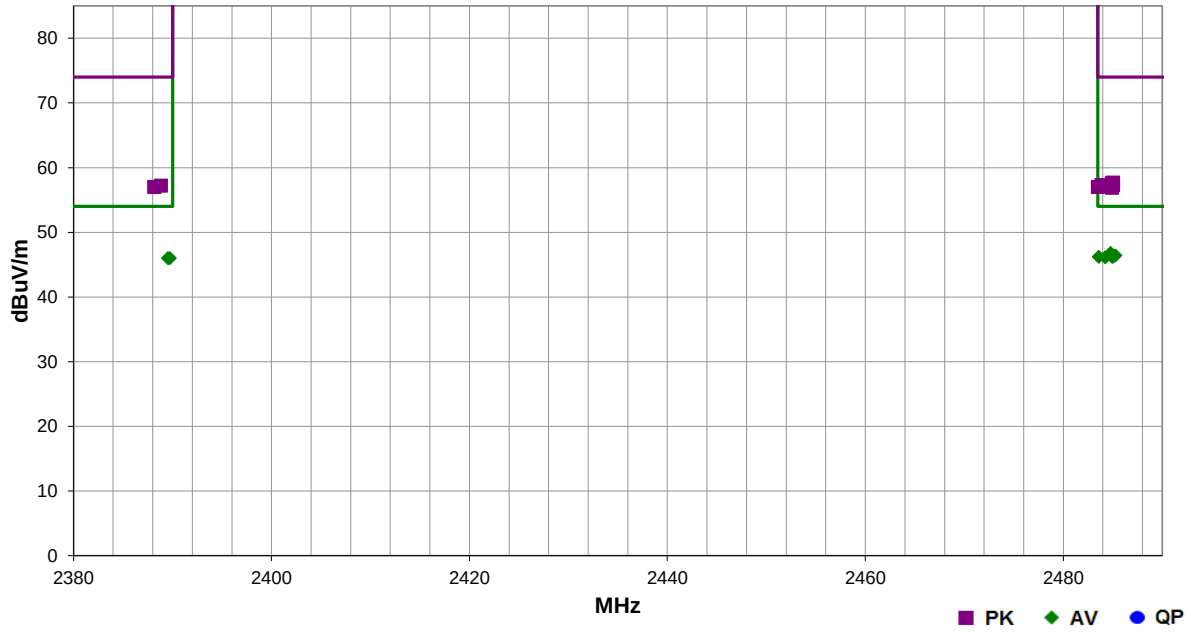
# SPURIOUS RADIATED EMISSIONS

EmiR5 2021.01.08.0 PSA-ESCI 2021.03.17.0

| | | | | | |
|---|---|---|---|---|---|
| **Work Order:** | PAYC0001 | **Date:** | 2021-05-05 | | |
| **Project:** | None | **Temperature:** | 21.9 °C | | |
| **Job Site:** | TX02 | **Humidity:** | 45.6% RH | | |
| **Serial Number:** | 4 | **Barometric Pres.:** | 1025 mbar | **Tested by:** | Mark Baytan |
| **EUT:** | Microfence | | | | |
| **Configuration:** | 1 | | | | |
| **Customer:** | Paycom Software, Inc. | | | | |
| **Attendees:** | None | | | | |
| **EUT Power:** | 110VAC/60Hz | | | | |
| **Operating Mode:** | Transmitting BLE: Low Ch 0 (2402 MHz), High Ch (2480 MHz); 1Mbps | | | | |
| **Deviations:** | None | | | | |
| **Comments:** | None | | | | |

| **Test Specifications** | **Test Method** |
|---|---|
| FCC 15.247:2021 | ANSI C63.10:2013 |

| **Run #** | 12 | **Test Distance (m)** | 3 | **Antenna Height(s)** | 1 to 4(m) | **Results** | Pass |
|---|---|---|---|---|---|---|---|




| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2484.793 | 32.9 | -6.1 | 1.5 | 16.9 | 3.0 | 20.0 | Horz | AV | 0.0 | 46.8 | 54.0 | -7.2 | High Ch, EUT Horz |
| 2485.273 | 32.5 | -6.1 | 1.5 | 18.0 | 3.0 | 20.0 | Vert | AV | 0.0 | 46.4 | 54.0 | -7.6 | High Ch, EUT Horz |
| 2483.587 | 32.3 | -6.1 | 1.5 | 274.9 | 3.0 | 20.0 | Vert | AV | 0.0 | 46.2 | 54.0 | -7.8 | High Ch, EUT Vert |
| 2484.957 | 32.3 | -6.1 | 1.5 | 189.0 | 3.0 | 20.0 | Horz | AV | 0.0 | 46.2 | 54.0 | -7.8 | High Ch, EUT on Side |
| 2485.027 | 32.3 | -6.1 | 1.5 | 3.9 | 3.0 | 20.0 | Vert | AV | 0.0 | 46.2 | 54.0 | -7.8 | High Ch, EUT on Side |
| 2484.253 | 32.2 | -6.1 | 3.91 | 346.9 | 3.0 | 20.0 | Horz | AV | 0.0 | 46.1 | 54.0 | -7.9 | High Ch, EUT Vert |
| 2389.733 | 32.4 | -6.4 | 1.5 | 27.0 | 3.0 | 20.0 | Horz | AV | 0.0 | 46.0 | 54.0 | -8.0 | Low Ch, EUT Horz |
| 2389.543 | 32.4 | -6.4 | 1.5 | 62.0 | 3.0 | 20.0 | Vert | AV | 0.0 | 46.0 | 54.0 | -8.0 | Low Ch, EUT Horz |
| 2485.020 | 43.8 | -6.1 | 1.5 | 189.0 | 3.0 | 20.0 | Horz | PK | 0.0 | 57.7 | 74.0 | -16.3 | High Ch, EUT on Side |
| 2484.903 | 43.7 | -6.1 | 1.5 | 16.9 | 3.0 | 20.0 | Horz | PK | 0.0 | 57.6 | 74.0 | -16.4 | High Ch, EUT Horz |
| 2485.027 | 43.4 | -6.1 | 1.5 | 18.0 | 3.0 | 20.0 | Vert | PK | 0.0 | 57.3 | 74.0 | -16.7 | High Ch, EUT Horz |
| 2483.863 | 43.4 | -6.1 | 1.5 | 3.9 | 3.0 | 20.0 | Vert | PK | 0.0 | 57.3 | 74.0 | -16.7 | High Ch, EUT on Side |
| 2388.833 | 43.6 | -6.4 | 1.5 | 62.0 | 3.0 | 20.0 | Vert | PK | 0.0 | 57.2 | 74.0 | -16.8 | Low Ch, EUT Horz |
| 2483.503 | 43.1 | -6.1 | 3.91 | 346.9 | 3.0 | 20.0 | Horz | PK | 0.0 | 57.0 | 74.0 | -17.0 | High Ch, EUT Vert |
| 2388.157 | 43.4 | -6.4 | 1.5 | 27.0 | 3.0 | 20.0 | Horz | PK | 0.0 | 57.0 | 74.0 | -17.0 | Low Ch, EUT Horz |
| 2484.907 | 43.0 | -6.1 | 1.5 | 274.9 | 3.0 | 20.0 | Vert | PK | 0.0 | 56.9 | 74.0 | -17.1 | High Ch, EUT Vert |

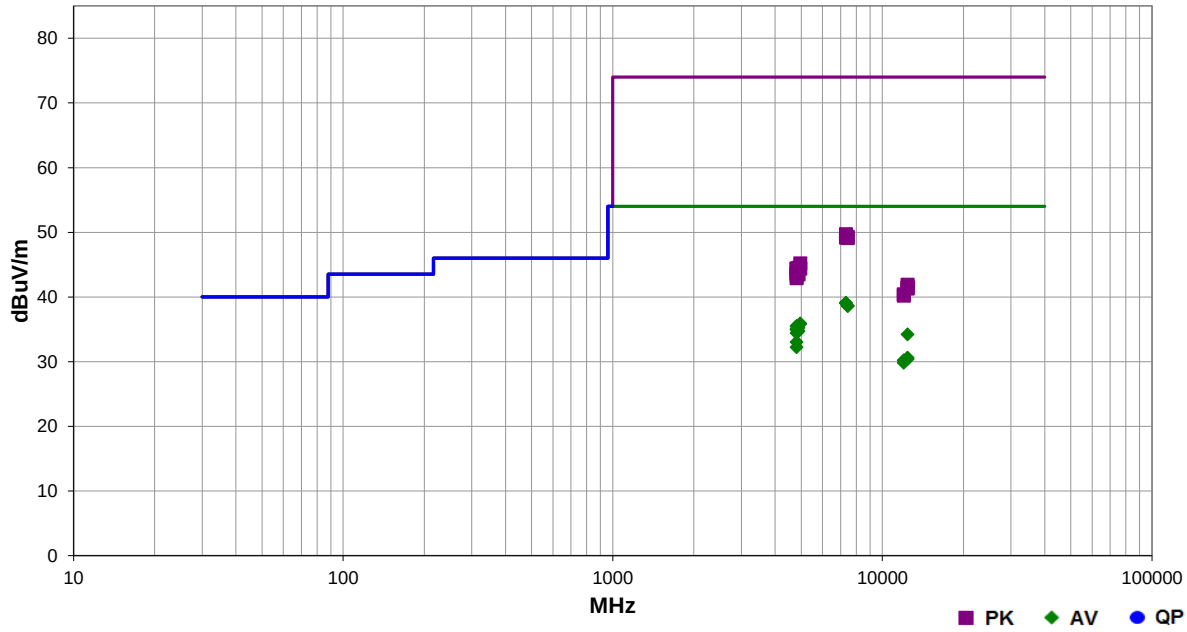
# SPURIOUS RADIATED EMISSIONS

EmiR5 2021.01.08.0 PSA-ESCI 2021.03.17.0

| | | | | | |
|---|---|---|---|---|---|
| **Work Order:** | PAYC0001 | **Date:** | 2021-05-05 | | |
| **Project:** | None | **Temperature:** | 21.9 °C | | |
| **Job Site:** | TX02 | **Humidity:** | 45.6% RH | | |
| **Serial Number:** | 4 | **Barometric Pres.:** | 1025 mbar | **Tested by:** | Mark Baytan |
| **EUT:** | Microfence | | | | |
| **Configuration:** | 1 | | | | |
| **Customer:** | Paycom Software, Inc. | | | | |
| **Attendees:** | None | | | | |
| **EUT Power:** | 110VAC/60Hz | | | | |
| **Operating Mode:** | Transmitting BLE: Low Ch 0 (2402 MHz), Mid Ch 20 (2442 MHz), High Ch (2480 MHz); 1Mbps | | | | |
| **Deviations:** | None | | | | |
| **Comments:** | None | | | | |

| **Test Specifications** | **Test Method** |
|---|---|
| FCC 15.247:2021 | ANSI C63.10:2013 |

| **Run #** | 13 | **Test Distance (m)** | 3 | **Antenna Height(s)** | 1 to 4(m) | **Results** | Pass |
|---|---|---|---|---|---|---|---|




| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7324.175 | 29.3 | 9.8 | 1.5 | 9.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 39.1 | 54.0 | -14.9 | Mid Ch, EUT Vert |
| 7323.792 | 29.2 | 9.8 | 1.5 | 278.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 39.0 | 54.0 | -15.0 | Mid Ch, EUT on Side |
| 7440.708 | 28.8 | 9.8 | 1.5 | 345.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 38.6 | 54.0 | -15.4 | High Ch, EUT on Side |
| 7442.225 | 28.8 | 9.8 | 3.0 | 201.9 | 3.0 | 0.0 | Vert | AV | 0.0 | 38.6 | 54.0 | -15.4 | High Ch, EUT Vert |
| 4960.000 | 32.0 | 3.9 | 3.0 | 207.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 35.9 | 54.0 | -18.1 | High Ch, EUT Vert |
| 4960.108 | 31.9 | 3.9 | 1.5 | 157.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 35.8 | 54.0 | -18.2 | High Ch, EUT on Side |
| 4804.158 | 31.8 | 3.7 | 1.5 | 184.9 | 3.0 | 0.0 | Horz | AV | 0.0 | 35.5 | 54.0 | -18.5 | Low Ch, EUT on Side |
| 4884.000 | 31.4 | 3.8 | 1.5 | 160.9 | 3.0 | 0.0 | Horz | AV | 0.0 | 35.2 | 54.0 | -18.8 | Mid Ch, EUT on Side |
| 4803.858 | 31.4 | 3.7 | 1.4 | 80.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 35.1 | 54.0 | -18.9 | Low Ch, EUT Vert |
| 4804.050 | 31.2 | 3.7 | 2.9 | 145.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 34.9 | 54.0 | -19.1 | Low Ch, EUT Horz |
| 4884.183 | 30.9 | 3.8 | 3.2 | 199.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 34.7 | 54.0 | -19.3 | Mid Ch, EUT Vert |
| 4803.750 | 30.7 | 3.7 | 1.5 | 334.9 | 3.0 | 0.0 | Vert | AV | 0.0 | 34.4 | 54.0 | -19.6 | Low Ch, EUT on Side |
| 12398.590 | 36.2 | -2.0 | 1.5 | 320.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 34.2 | 54.0 | -19.8 | High Ch, EUT Vert |
| 4803.875 | 29.3 | 3.7 | 1.5 | 266.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 33.0 | 54.0 | -21.0 | Low Ch, EUT Vert |
| 4803.950 | 28.5 | 3.7 | 1.5 | 141.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 32.2 | 54.0 | -21.8 | Low Ch, EUT Horz |
| 12399.120 | 32.6 | -2.0 | 1.5 | 315.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 30.6 | 54.0 | -23.4 | High Ch, EUT on Side |
| 12398.820 | 32.4 | -2.0 | 1.5 | 312.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 30.4 | 54.0 | -23.6 | Mid Ch, EUT Vert |
| 12399.380 | 32.4 | -2.0 | 1.5 | 111.9 | 3.0 | 0.0 | Horz | AV | 0.0 | 30.4 | 54.0 | -23.6 | Mid Ch, EUT on Side |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12011.280 | 33.5 | -3.3 | 1.5 | 259.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 30.2 | 54.0 | -23.8 | Low Ch, EUT on Side |
| 12012.020 | 33.1 | -3.3 | 1.5 | 63.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 29.8 | 54.0 | -24.2 | Low Ch, EUT Vert |
| 7324.958 | 39.9 | 9.8 | 1.5 | 278.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 49.7 | 74.0 | -24.3 | Mid Ch, EUT on Side |
| 7441.475 | 39.5 | 9.8 | 1.5 | 345.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 49.3 | 74.0 | -24.7 | High Ch, EUT on Side |
| 7325.617 | 39.4 | 9.8 | 1.5 | 9.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 49.2 | 74.0 | -24.8 | Mid Ch, EUT Vert |
| 7441.183 | 39.3 | 9.8 | 3.0 | 201.9 | 3.0 | 0.0 | Vert | PK | 0.0 | 49.1 | 74.0 | -24.9 | High Ch, EUT Vert |
| 4960.450 | 41.3 | 3.9 | 3.0 | 207.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 45.2 | 74.0 | -28.8 | High Ch, EUT Vert |
| 4884.433 | 40.7 | 3.8 | 1.5 | 160.9 | 3.0 | 0.0 | Horz | PK | 0.0 | 44.5 | 74.0 | -29.5 | Mid Ch, EUT on Side |
| 4804.517 | 40.7 | 3.7 | 1.4 | 80.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 44.4 | 74.0 | -29.6 | Low Ch, EUT Vert |
| 4803.308 | 40.7 | 3.7 | 1.5 | 184.9 | 3.0 | 0.0 | Horz | PK | 0.0 | 44.4 | 74.0 | -29.6 | Low Ch, EUT on Side |
| 4959.517 | 40.5 | 3.9 | 1.5 | 157.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 44.4 | 74.0 | -29.6 | High Ch, EUT on Side |
| 4803.600 | 39.9 | 3.7 | 2.9 | 145.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 43.6 | 74.0 | -30.4 | Low Ch, EUT Horz |
| 4804.450 | 39.9 | 3.7 | 1.5 | 334.9 | 3.0 | 0.0 | Vert | PK | 0.0 | 43.6 | 74.0 | -30.4 | Low Ch, EUT on Side |
| 4884.033 | 39.7 | 3.8 | 3.2 | 199.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 43.5 | 74.0 | -30.5 | Mid Ch, EUT Vert |
| 4803.575 | 39.6 | 3.7 | 1.5 | 266.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 43.3 | 74.0 | -30.7 | Low Ch, EUT Vert |
| 4804.300 | 39.2 | 3.7 | 1.5 | 141.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 42.9 | 74.0 | -31.1 | Low Ch, EUT Horz |
| 12398.970 | 43.9 | -2.0 | 1.5 | 320.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 41.9 | 74.0 | -32.1 | High Ch, EUT Vert |
| 12398.360 | 43.5 | -2.0 | 1.5 | 111.9 | 3.0 | 0.0 | Horz | PK | 0.0 | 41.5 | 74.0 | -32.5 | Mid Ch, EUT on Side |
| 12399.440 | 43.4 | -2.0 | 1.5 | 315.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 41.4 | 74.0 | -32.6 | High Ch, EUT on Side |
| 12399.370 | 43.3 | -2.0 | 1.5 | 312.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 41.3 | 74.0 | -32.7 | Mid Ch, EUT Vert |
| 12009.810 | 43.7 | -3.3 | 1.5 | 63.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 40.4 | 74.0 | -33.6 | Low Ch, EUT Vert |
| 12011.030 | 43.5 | -3.3 | 1.5 | 259.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 40.2 | 74.0 | -33.8 | Low Ch, EUT on Side |

# SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2021.03.17.0

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

**MODES OF OPERATION**

Transmitting BLE: Mid Ch (2442 MHz) and High Ch (2480 MHz); 1Mbps

**POWER SETTINGS INVESTIGATED**

110VAC/60Hz

**CONFIGURATIONS INVESTIGATED**

PAYC0004 - 2

**FREQUENCY RANGE INVESTIGATED**

| | | | |
|---|---|---|---|
| Start Frequency | 30 MHz | Stop Frequency | 26500 MHz |

**SAMPLE CALCULATIONS**

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

**TEST EQUIPMENT**

| Description | Manufacturer | Model | ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|
| Amplifier - Pre-Amplifier | Miteq | JSDWK42-18004000-60-5P | PAM | 2020-09-18 | 2021-09-18 |
| Cable | Northwest EMC | 18-40GHz | TXE | 2020-09-18 | 2021-09-18 |
| Antenna - Double Ridge | A.H. Systems, Inc. | SAS-574 | AXW | 2020-09-02 | 2022-09-02 |
| Amplifier - Pre-Amplifier | Miteq | AMF-6F-12001800-30-10P | PAL | 2020-09-17 | 2021-09-17 |
| Antenna - Standard Gain | ETS Lindgren | 3160-08 | AJG | NCR | NCR |
| Amplifier - Pre-Amplifier | Miteq | AMF-6F-08001200-30-10P | PAK | 2020-09-17 | 2021-09-17 |
| Cable | Northwest EMC | 8-18GHz | TXD | 2021-04-30 | 2022-04-30 |
| Antenna - Double Ridge | ETS Lindgren | 3117 | AJK | NCR | NCR |
| Amplifier - Pre-Amplifier | Miteq | AMF-3D-00100800-32-13P | PAJ | 2021-06-02 | 2022-06-02 |
| Antenna - Double Ridge | ETS Lindgren | 3115 | AJL | 2020-10-20 | 2022-10-20 |
| Cable | Northwest EMC | 1-8.2 GHz | TXC | 2021-06-02 | 2022-06-02 |
| Attenuator | Weinschel Corp | 4H-10 | AWA | 2021-03-09 | 2022-03-09 |
| Filter - Low Pass | Micro-Tronics | LPM50004 | HHV | 2020-08-04 | 2021-08-04 |
| Filter - High Pass | Micro-Tronics | HPM50111 | HGC | 2021-03-09 | 2022-03-09 |
| Analyzer - Spectrum Analyzer | Agilent | E4446A | AAQ | 2020-05-07 | 2021-05-07 |

**TEST DESCRIPTION**

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

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, 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). 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
PK = Peak Detector
AV = RMS 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.

Measurements within 2 MHz of the allowable band may have been taken using the integration method from ANSI C63.10 clause 11.13.3. This procedure uses the channel power feature of the spectrum analyzer to integrate the power of the emission within a 1 MHz bandwidth.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of 10*log(1/dc).

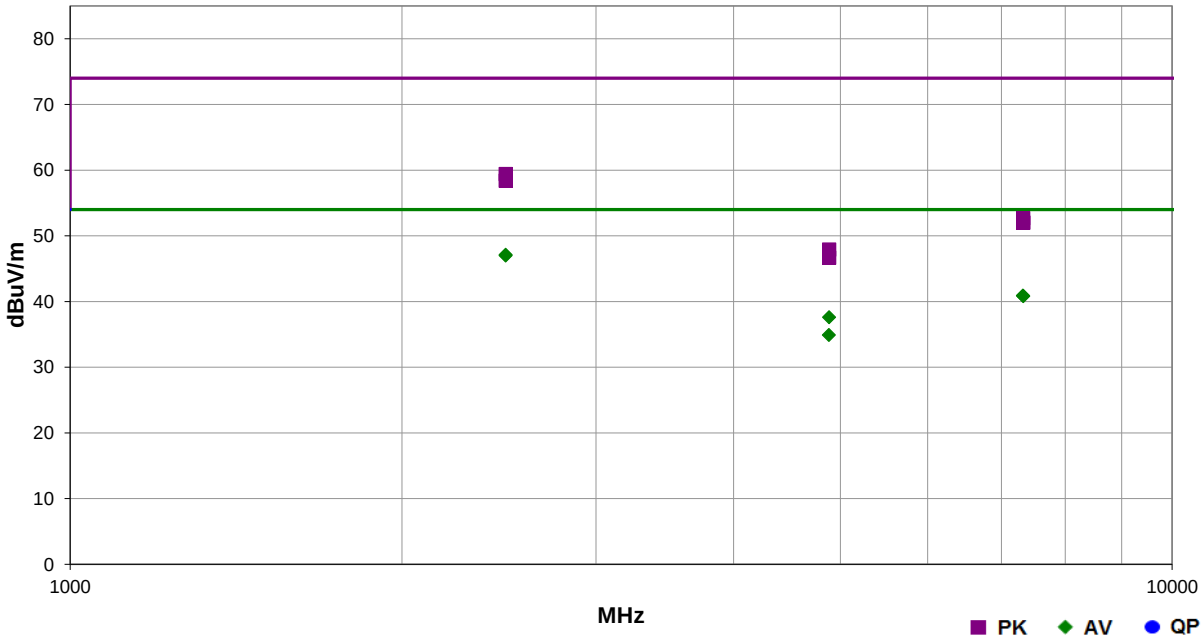
# SPURIOUS RADIATED EMISSIONS

EmiR5 2021.05.14.0 PSA-ESCI 2021.03.17.0

| | | | | | |
|---|---|---|---|---|---|
| **Work Order:** | PAYC0004 | **Date:** | 2021-06-24 | | |
| **Project:** | None | **Temperature:** | 20.6 °C | | |
| **Job Site:** | TX02 | **Humidity:** | 57.3% RH | | |
| **Serial Number:** | 4 | **Barometric Pres.:** | 1015 mbar | **Tested by:** | Mark Baytan |
| **EUT:** | Microfence | | | | |
| **Configuration:** | 2 | | | | |
| **Customer:** | Paycom Software, Inc. | | | | |
| **Attendees:** | None | | | | |
| **EUT Power:** | 110VAC/60Hz | | | | |
| **Operating Mode:** | Transmitting BLE: Mid Ch (2442 MHz) and High Ch (2480 MHz); 1Mbps | | | | |
| **Deviations:** | None | | | | |
| **Comments:** | Enclosure installed. Data taken on highest emissions found during testing on the EUT without an enclosure. | | | | |

| **Test Specifications** | **Test Method** |
|---|---|
| FCC 15.247:2021 | ANSI C63.10:2013 |

| **Run #** | 6 | **Test Distance (m)** | 3 | **Antenna Height(s)** | 1 to 4(m) | **Results** | Pass |
|---|---|---|---|---|---|---|---|




| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2484.990 | 32.5 | -5.4 | 1.5 | 93.9 | 3.0 | 20.0 | Horz | AV | 0.0 | 47.1 | 54.0 | -6.9 | High Ch, EUT Horz |
| 2484.540 | 32.4 | -5.4 | 1.5 | 96.0 | 3.0 | 20.0 | Vert | AV | 0.0 | 47.0 | 54.0 | -7.0 | High Ch, EUT Vert |
| 7323.700 | 29.0 | 11.9 | 1.5 | 249.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 40.9 | 54.0 | -13.1 | Mid Ch, EUT Vert |
| 7327.633 | 28.9 | 11.9 | 3.5 | 69.9 | 3.0 | 0.0 | Vert | AV | 0.0 | 40.8 | 54.0 | -13.2 | Mid Ch, EUT on Side |
| 2483.997 | 44.8 | -5.4 | 1.5 | 96.0 | 3.0 | 20.0 | Vert | PK | 0.0 | 59.4 | 74.0 | -14.6 | High Ch, EUT Vert |
| 2484.653 | 43.8 | -5.4 | 1.5 | 93.9 | 3.0 | 20.0 | Horz | PK | 0.0 | 58.4 | 74.0 | -15.6 | High Ch, EUT Horz |
| 4883.892 | 31.8 | 5.8 | 2.0 | 343.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 37.6 | 54.0 | -16.4 | Mid Ch, EUT Vert |
| 4881.658 | 29.1 | 5.8 | 1.5 | 184.9 | 3.0 | 0.0 | Vert | AV | 0.0 | 34.9 | 54.0 | -19.1 | Mid Ch, EUT on Side |
| 7326.208 | 40.8 | 11.9 | 3.5 | 69.9 | 3.0 | 0.0 | Vert | PK | 0.0 | 52.7 | 74.0 | -21.3 | Mid Ch, EUT on Side |
| 7328.333 | 40.1 | 11.9 | 1.5 | 249.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 52.0 | 74.0 | -22.0 | Mid Ch, EUT Vert |
| 4883.608 | 42.1 | 5.8 | 2.0 | 343.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 47.9 | 74.0 | -26.1 | Mid Ch, EUT Vert |
| 4884.783 | 40.9 | 5.8 | 1.5 | 184.9 | 3.0 | 0.0 | Vert | PK | 0.0 | 46.7 | 74.0 | -27.3 | Mid Ch, EUT on Side |

End of Test Report