

# FCC EMC Test Report

**Report No.:** JYTSZ-R01-2400158  
**Applicant:** PICA Product Development  
**Address of Applicant:** 4 Ash Street Extension, Derry, NH 03038 USA  
**Equipment Under Test (EUT)**  
Product Name: Skyhawk Trapmate PIR Sensor  
Model No.: SHBAEG  
Trade Mark: N/A  
**FCC ID:** UOXXSKYHAWKBAESEN1  
**Applicable Standards:** FCC CFR Title 47 Part 15B  
**Date of Sample Receipt:** 15 Mar., 2024  
**Date of Test:** 16 Mar., to 09 May., 2024  
**Date of report Issued:** 09 May., 2024  
**Test Result:** PASS

**Project by:**

June Li

**Date:**

09 May., 2024

**Reviewed by:**

Yeto Lang

**Date:**

09 May., 2024

**Approved by:**

James Wei

**Date:**

09 May., 2024

**Manager**

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

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## 1 Version

| Version No. | Date          | Description |
|-------------|---------------|-------------|
| 00          | 09 May., 2024 | Original    |
|             |               |             |
|             |               |             |
|             |               |             |
|             |               |             |

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### 3 General Information

#### 3.1 Client Information

|               |                                             |
|---------------|---------------------------------------------|
| Applicant:    | PICA Product Development                    |
| Address:      | 4 Ash Street Extension, Derry, NH 03038 USA |
| Manufacturer: | PICA Product Development                    |
| Address:      | 4 Ash Street Extension, Derry, NH 03038 USA |

#### 3.2 General Description of E.U.T.

|                        |                                                                               |
|------------------------|-------------------------------------------------------------------------------|
| Product Name:          | Skyhawk Trapmate PIR Sensor                                                   |
| Model No.:             | SHBAEG                                                                        |
| Power Supply:          | DC 3.0 V(AA Battery * 2)                                                      |
| Test Sample Condition: | The test samples were provided in good working order with no visible defects. |

#### 3.3 Test Mode

| Operating Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Detail Description           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Working mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Keep the EUT in Working mode |
| <p>The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y &amp; Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.</p> |                              |

### 3.4 Description of Test Auxiliary Equipment

| Manufacturer | Description | Model | S/N | FCC ID/DoC |
|--------------|-------------|-------|-----|------------|
| /            | /           | /     | /   | /          |

### 3.5 Description of Cable Used

| Cable Type | Description | Length | From | To |
|------------|-------------|--------|------|----|
| /          | /           | /      | /    | /  |

### 3.6 Measurement Uncertainty

| Parameter                                      | Expanded Uncertainty<br>(Confidence of 95%(U = 2Uc(y))) |
|------------------------------------------------|---------------------------------------------------------|
| Radiated Emission (30MHz ~ 200MHz) (3m SAC)    | 4.6 dB                                                  |
| Radiated Emission (200MHz ~ 1000MHz) (3m SAC)  | 5.8 dB                                                  |
| Radiated Emission (1GHz ~ 6GHz) (3m SAC)       | 4.5 dB                                                  |
| Radiated Emission (6GHz ~ 18GHz) (3m SAC)      | 4.7 dB                                                  |
| Radiated Emission (30MHz ~ 200MHz) (10m SAC)   | 4.3 dB                                                  |
| Radiated Emission (200MHz ~ 1000MHz) (10m SAC) | 4.3 dB                                                  |

**Note:** All the measurement uncertainty value were shown with a coverage  $k=2$  to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

### 3.7 Additions to, Deviations, or Exclusions from the Method

|    |
|----|
| No |
|----|

### 3.8 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **CNAS - Registration No.: CNAS L15527**

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

### 3.9 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.

Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info-JYTee@lets.com, Website: <http://jyt.lets.com>

### 3.10 Test Instruments List

| Radiated Emission(3m SAC):   |                 |                 |                  |                      |                          |
|------------------------------|-----------------|-----------------|------------------|----------------------|--------------------------|
| Test Equipment               | Manufacturer    | Model No.       | Manage No.       | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| 3m SAC                       | ETS             | 9m*6m*6m        | WXJ001-1         | 04-14-2021           | 04-13-2026               |
| BiConiLog Antenna            | Schwarzbeck     | VULB9163        | WXJ002           | 01-09-2024           | 01-08-2025               |
| Horn Antenna                 | Schwarzbeck     | BBHA9120D       | WXJ002-2         | 01-05-2024           | 01-04-2025               |
| Pre-amplifier (30MHz ~ 1GHz) | Schwarzbeck     | BBV9743B        | WXJ001-2         | 12-27-2023           | 12-26-2024               |
| Pre-amplifier (1GHz ~ 18GHz) | SKET            | LNPA_0118G-50   | WXJ001-3         | 12-27-2023           | 12-26-2024               |
| EMI Test Receiver            | Rohde & Schwarz | ESRP7           | WXJ003-1         | 12-27-2023           | 12-26-2024               |
| Spectrum Analyzer            | Rohde & Schwarz | FSP 30          | WXJ004           | 12-27-2023           | 12-26-2024               |
| Coaxial Cable (30MHz ~ 1GHz) | JYTSZ           | JYT3M-1G-NN-8M  | WXG001-4         | 01-17-2024           | 01-16-2025               |
| Coaxial Cable (1GHz ~ 18GHz) | JYTSZ           | JYT3M-18G-NN-8M | WXG001-5         | 01-17-2024           | 01-16-2025               |
| Band Reject Filter Group     | Tonscend        | JS0806-F        | WXJ089           | N/A                  |                          |
| Test Software                | Tonscend        | TS+             | Version: 3.0.0.1 |                      |                          |

| Radiated Emission(10m SAC): |              |                  |                   |                      |                          |
|-----------------------------|--------------|------------------|-------------------|----------------------|--------------------------|
| Test Equipment              | Manufacturer | Model No.        | Manage No.        | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| 10m SAC                     | ETS          | RFSD-100-F/A     | WXJ090            | 04-28-2021           | 04-27-2026               |
| BiConiLog Antenna           | SCHWARZBECK  | VULB 9168        | WXJ090-1          | 12-28-2023           | 12-27-2024               |
| BiConiLog Antenna           | SCHWARZBECK  | VULB 9168        | WXJ090-2          | 12-28-2023           | 12-27-2024               |
| EMI Test Receiver           | R&S          | ESR 3            | WXJ090-3          | 12-27-2023           | 12-26-2024               |
| EMI Test Receiver           | R&S          | ESR 3            | WXJ090-4          | 12-27-2023           | 12-26-2024               |
| Low Pre-amplifier           | Bost         | LNA 0920N        | WXJ090-6          | 12-27-2023           | 12-26-2024               |
| Low Pre-amplifier           | Bost         | LNA 0920N        | WXJ090-7          | 12-27-2023           | 12-26-2024               |
| Cable                       | Bost         | JYT10M-1G-NN-10M | WXG002-7          | 01-17-2024           | 01-16-2025               |
| Cable                       | Bost         | JYT10M-1G-NN-10M | WXG002-8          | 01-17-2024           | 01-16-2025               |
| Test Software               | R&S          | EMC32            | Version: 10.50.40 |                      |                          |

## 4 Measurement Setup and Procedure

## 4.1 Test Setup

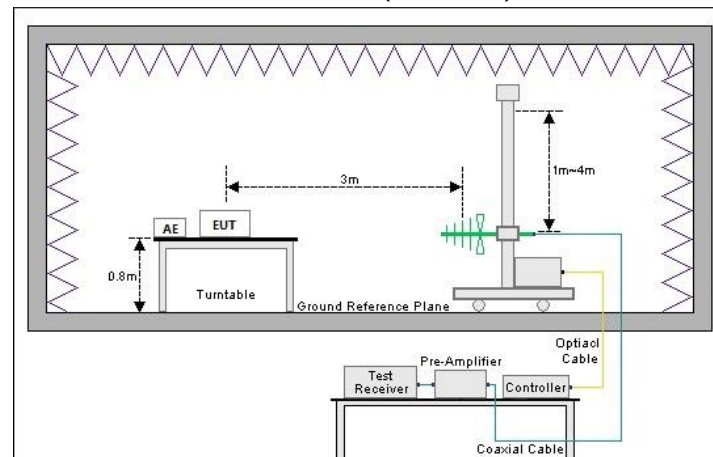
**1) Conducted emission measurement:**

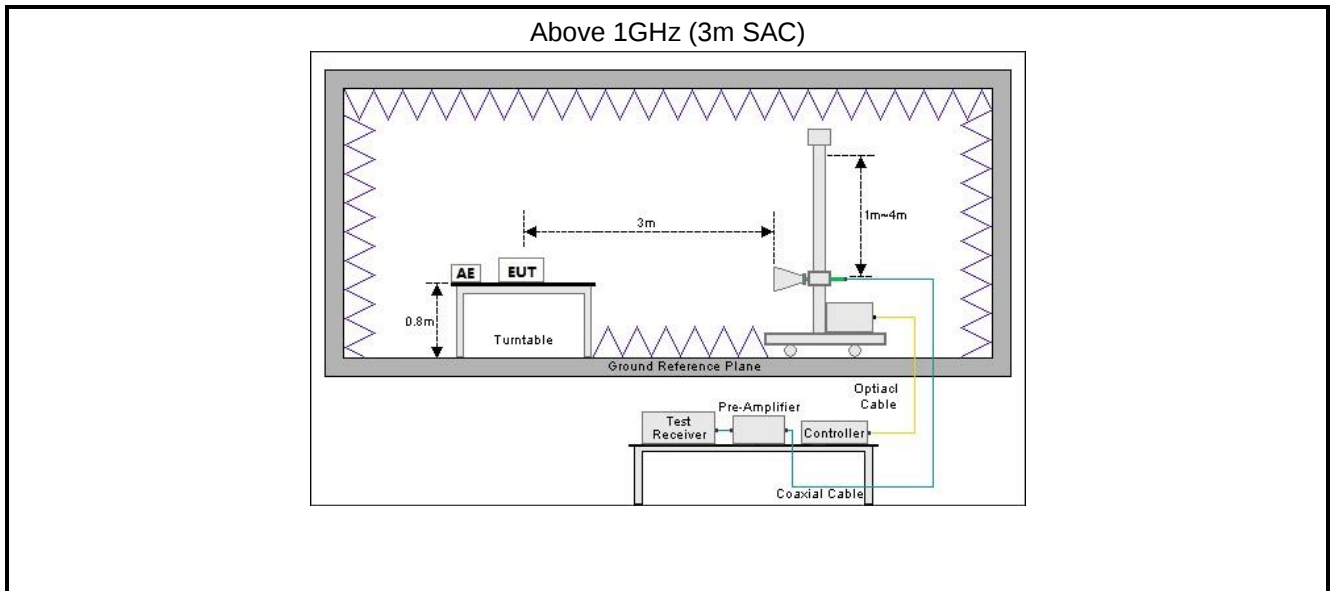


**Note:** The detailed descriptions please refer to Figure 8 of ANSI C63.4:2014.

**2) Radiated emission measurement:**

Below 1GHz (10m SAC)





## 4.2 Test Procedure

| Test method       | Test step                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Radiated emission | <p><b>For below 1GHz:</b></p> <ol style="list-style-type: none"> <li>1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 10 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 10 m.</li> <li>2. EUT works in each mode of operation that needs to be tested, and having the EUT continuously working, respectively on 3 axis (X, Y &amp; Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.</li> <li>3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.</li> </ol> <p><b>For above 1GHz:</b></p> <ol style="list-style-type: none"> <li>1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m.</li> <li>2. EUT works in each mode of operation that needs to be tested, and having the EUT continuously working, respectively on 3 axis (X, Y &amp; Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.</li> <li>3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.</li> </ol> |

## 5 Test Results

### 5.1 Summary

#### 5.1.1 Clause and data summary

| Test items                                                                                                                                                                | Standard clause | Test data       | Result |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|--------|
| Conducted Emission                                                                                                                                                        | Part 15.107     | N/A             | N/A    |
| Radiated Emission                                                                                                                                                         | Part 15.109     | See Section 5.3 | Pass   |
| <b>Remark:</b><br>1. The EUT is a <b>Class B</b> digital device.<br>2. Pass: The EUT complies with the essential requirements in the standard.<br>3. N/A: Not Applicable. |                 |                 |        |
| <b>Test Method:</b>                                                                                                                                                       | ANSI C63.4:2014 |                 |        |

#### 5.1.2 Test Limit

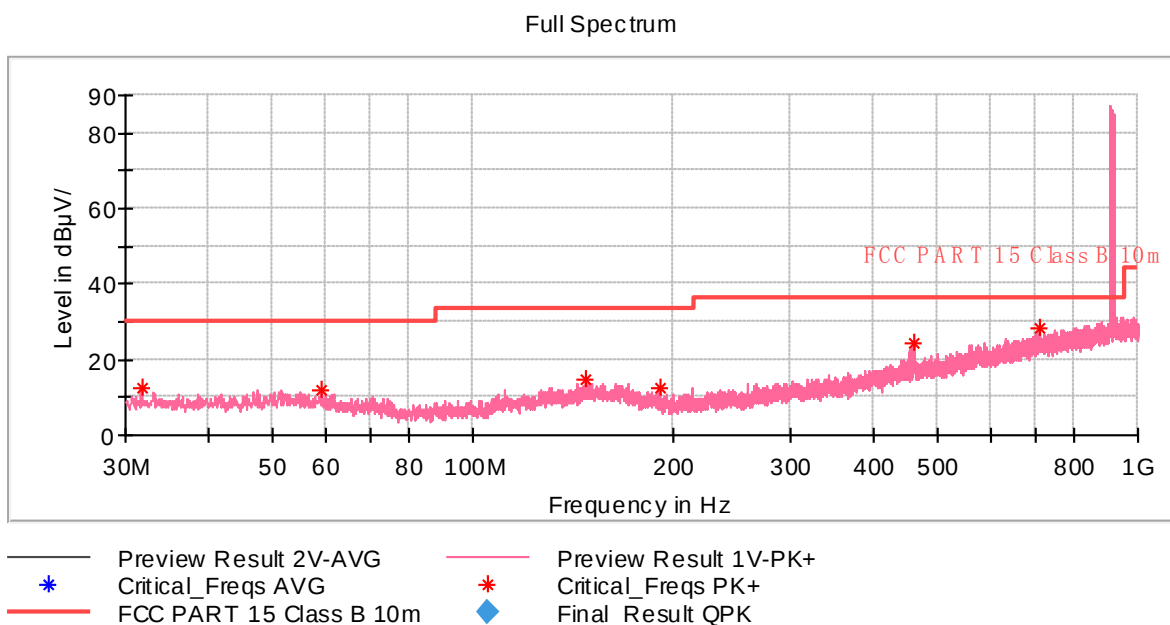
Size Test Limit

| Test items        | Limit                                                             |                             |                  |                             |                  |
|-------------------|-------------------------------------------------------------------|-----------------------------|------------------|-----------------------------|------------------|
| Radiated Emission | Frequency (MHz)                                                   | Class A Limit (dBµV/m)      |                  | Class B Limit (dBµV/m)      |                  |
|                   |                                                                   | Quasi-Peak @ 3m             | Quasi-Peak @ 10m | Quasi-Peak @ 3m             | Quasi-Peak @ 10m |
|                   | 30 – 88                                                           | 49.0                        | 39.0             | 40.0                        | 30.0             |
|                   | 88 – 216                                                          | 53.5                        | 43.5             | 43.5                        | 33.5             |
|                   | 216 – 960                                                         | 56.0                        | 46.0             | 46.0                        | 36.0             |
|                   | 960 – 1000                                                        | 60.0                        | 50.0             | 54.0                        | 44.0             |
|                   | Note: The more stringent limit applies at transition frequencies. |                             |                  |                             |                  |
|                   | Frequency                                                         | Class A Limit (dBµV/m) @ 3m |                  | Class B Limit (dBµV/m) @ 3m |                  |
|                   |                                                                   | Average                     | Peake            | Average                     | Peake            |
|                   | Above 1 GHz                                                       | 60.0                        | 80.0             | 54.0                        | 74.0             |
|                   | Note: The measurement bandwidth shall be 1 MHz or greater.        |                             |                  |                             |                  |

## 5.2 Radiated Emission

Below 1GHz:

|                 |                             |                |              |
|-----------------|-----------------------------|----------------|--------------|
| Product Name:   | Skyhawk Trapmate PIR Sensor | Product Model: | SHBAEG       |
| Test By:        | Asher                       | Test mode:     | Working mode |
| Test Frequency: | 30 MHz ~ 1 GHz              | Polarization:  | Vertical     |
| Test Voltage:   | DC 3.0V                     |                |              |



### Critical\_Freqs

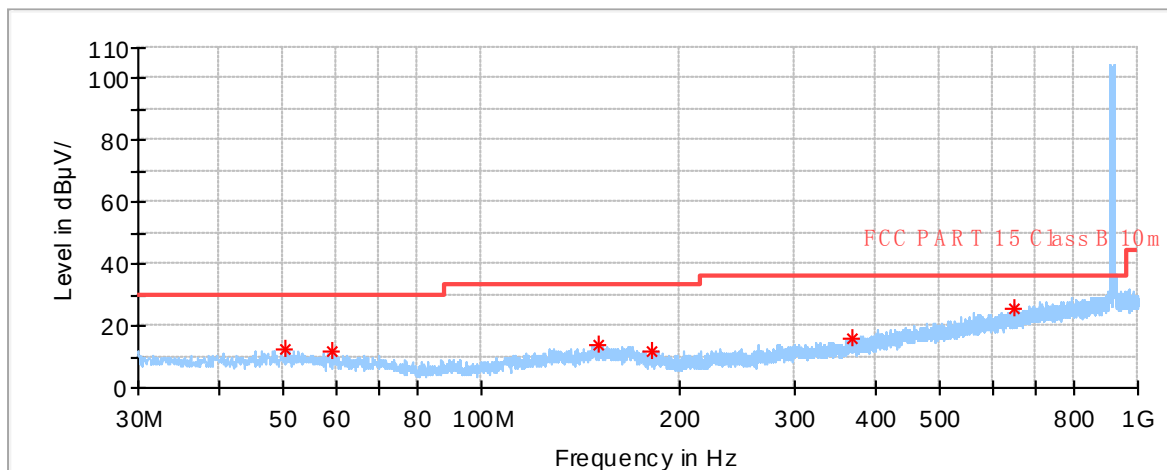
| Frequency (MHz) | MaxPeak (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|------------------|-------------|-------------|-----|---------------|--------------|
| 31.746000       | 12.38              | 30.00            | 17.62       | 100.0       | V   | 0.0           | -17.3        |
| 59.051500       | 11.84              | 30.00            | 18.16       | 100.0       | V   | 19.0          | -16.9        |
| 148.194500      | 14.68              | 33.50            | 18.82       | 100.0       | V   | 68.0          | -15.4        |
| 190.680500      | 12.45              | 33.50            | 21.05       | 100.0       | V   | 4.0           | -18.3        |
| 461.601500      | 24.25              | 36.00            | 11.75       | 100.0       | V   | 81.0          | -10.0        |
| 709.485000      | 28.03              | 36.00            | 7.97        | 100.0       | V   | 161.0         | -4.0         |

#### Remark:

1. Level = Reading + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).

|                 |                             |                |              |
|-----------------|-----------------------------|----------------|--------------|
| Product Name:   | Skyhawk Trapmate PIR Sensor | Product Model: | SHBAEG       |
| Test By:        | Asher                       | Test mode:     | Working mode |
| Test Frequency: | 30 MHz ~ 1 GHz              | Polarization:  | Horizontal   |
| Test Voltage:   | DC 3.0V                     |                |              |

Full Spectrum



— Preview Result 2H-AVG  
— Preview Result 1H-PK+  
\* Critical\_Freqs AVG  
\* Critical\_Freqs PK+  
— FCC PART 15 Class B 10m  
◆ Final\_Result QPK

## Critical\_Freqs

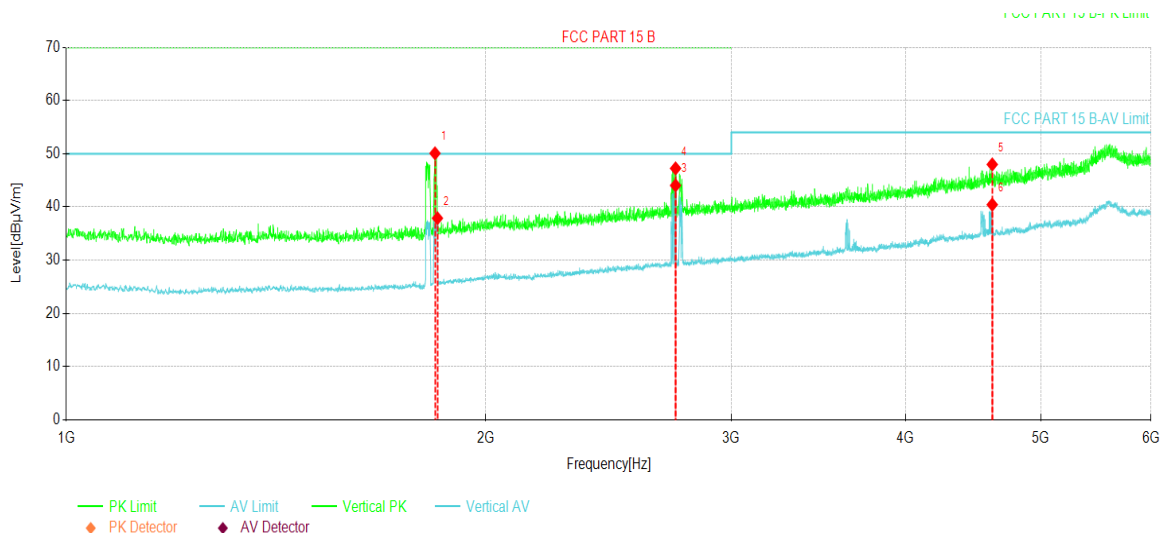
| Frequency (MHz) | MaxPeak (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|------------------|-------------|-------------|-----|---------------|--------------|
| 50.273000       | 12.60              | 30.00            | 17.40       | 100.0       | H   | 28.0          | -16.5        |
| 59.439500       | 11.75              | 30.00            | 18.25       | 100.0       | H   | 346.0         | -17.0        |
| 151.201500      | 13.72              | 33.50            | 19.78       | 100.0       | H   | 223.0         | -15.2        |
| 182.435500      | 12.05              | 33.50            | 21.45       | 100.0       | H   | 336.0         | -17.5        |
| 367.269000      | 15.81              | 36.00            | 20.19       | 100.0       | H   | 24.0          | -13.4        |
| 647.938500      | 25.38              | 36.00            | 10.62       | 100.0       | H   | 229.0         | -5.5         |

### Remark:

1. Level = Reading + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).

### Above 1GHz:

|                 |                             |                |              |
|-----------------|-----------------------------|----------------|--------------|
| Product Name:   | Skyhawk Trapmate PIR Sensor | Product Model: | SHBAEG       |
| Test By:        | Robin                       | Test mode:     | Working mode |
| Test Frequency: | 1000 MHz ~ 6000 MHz         | Polarization:  | Vertical     |
| Test Voltage:   | DC 3.0V                     |                |              |



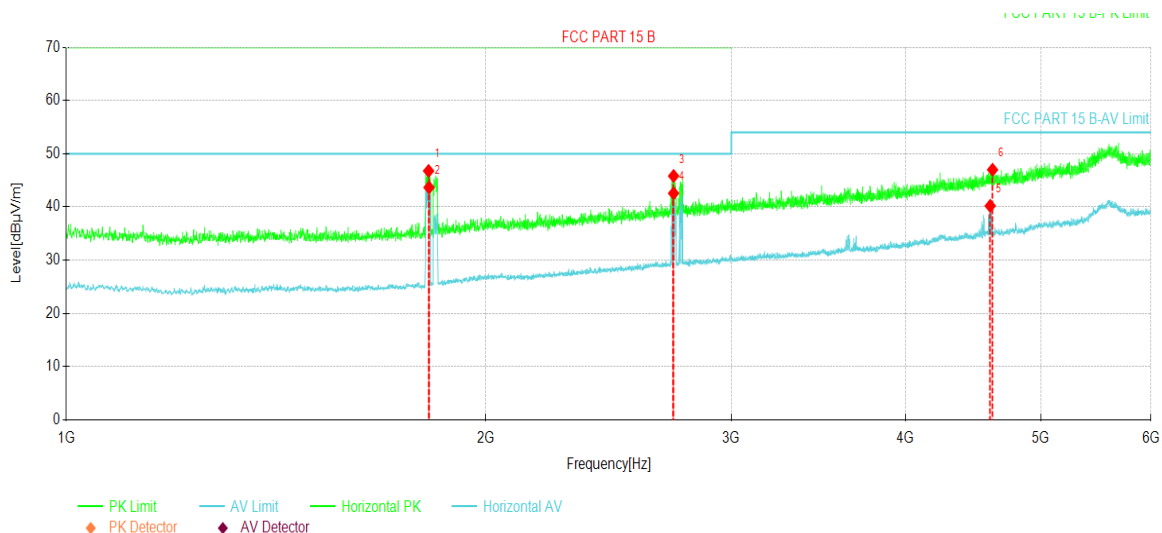
### Suspected Data List

| NO. | Freq. [MHz] | Reading [dBμV/m] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Trace | Polarity |
|-----|-------------|------------------|----------------|-------------|----------------|-------------|-------|----------|
| 1   | 1838.8549   | 72.00            | 50.07          | -21.93      | 70.00          | 19.93       | PK    | Vertical |
| 2   | 1846.3558   | 59.75            | 37.88          | -21.87      | 50.00          | 12.12       | AV    | Vertical |
| 3   | 2735.8420   | 62.34            | 44.04          | -18.30      | 50.00          | 5.96        | AV    | Vertical |
| 4   | 2735.8420   | 65.54            | 47.24          | -18.30      | 70.00          | 22.76       | PK    | Vertical |
| 5   | 4616.0770   | 59.01            | 47.99          | -11.02      | 74.00          | 26.01       | PK    | Vertical |
| 6   | 4616.0770   | 51.45            | 40.43          | -11.02      | 54.00          | 13.57       | AV    | Vertical |

### Remark:

1. Level = Reading + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).

|                 |                             |                |              |
|-----------------|-----------------------------|----------------|--------------|
| Product Name:   | Skyhawk Trapmate PIR Sensor | Product Model: | SHBAEG       |
| Test By:        | Robin                       | Test mode:     | Working mode |
| Test Frequency: | 1000 MHz ~ 6000 MHz         | Polarization:  | Horizontal   |
| Test Voltage:   | DC 3.0V                     |                |              |



#### Suspected Data List

| NO. | Freq. [MHz] | Reading [dBμV/m] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Trace | Polarity   |
|-----|-------------|------------------|----------------|-------------|----------------|-------------|-------|------------|
| 1   | 1819.4774   | 68.84            | 46.77          | -22.07      | 70.00          | 23.23       | PK    | Horizontal |
| 2   | 1820.7276   | 65.73            | 43.66          | -22.07      | 50.00          | 6.34        | AV    | Horizontal |
| 3   | 2727.0909   | 64.15            | 45.82          | -18.33      | 70.00          | 24.18       | AV    | Horizontal |
| 4   | 2727.0909   | 60.90            | 42.57          | -18.33      | 50.00          | 7.43        | PK    | Horizontal |
| 5   | 4600.4501   | 51.25            | 40.20          | -11.05      | 54.00          | 13.80       | AV    | Horizontal |
| 6   | 4618.5773   | 58.00            | 46.98          | -11.02      | 74.00          | 27.02       | PK    | Horizontal |

#### Remark:

1. Level = Reading + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).

-----End of report-----