

# Radio Exposure Evaluation Report

FCC ID : HDC-17600023F1

Equipment : WiFi 6 Gigabit Router

Brand Name : 

Model Name : 834-v6YYYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#") (With voice)  
834-6YYYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#") (Without voice)

Part Number : 17600023FYYYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#") for 834-v6YYYYYYY  
17600022FYYYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#") for 834-6YYYYYYY

Applicant : Adtran  
901 Explorer Blvd., Huntsville, AL 35806, USA

Manufacturer : XAVi Technologies Corporation  
22F., No.69, Sec. 2, Guangfu Rd., Sanchong Dist.,  
New Taipei City 241, Taiwan (R.O.C.)

Standard : 47 CFR FCC Part 2 Subpart J, section 2.1091

The product was received on Oct. 29, 2021, and testing was started from Nov. 09, 2021 and completed on Nov. 10, 2021. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR FCC Part 2 Subpart J, section 2.1091 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Hsinhua Laboratory, the test report shall not be reproduced except in full.



Approved by: Allen Lin

**SPORTON INTERNATIONAL INC. Hsinhua Laboratory**  
No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)



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### Photographs of EUT V01



### History of this test report

| Report No.  | Version | Description                                                                                                              | Issued Date   |
|-------------|---------|--------------------------------------------------------------------------------------------------------------------------|---------------|
| FA1O2025-01 | 01      | Initial issue of report                                                                                                  | Dec. 29, 2021 |
| FA1O2025-01 | 02      | Antenna brand name was modified.<br>(This report is the latest version replacing for the report issued on Dec. 29, 2021) | Jan. 03, 2022 |
| FA1O2025-01 | 03      | Section 2.3 was modified.<br>(This report is the latest version replacing for the report issued on Jan. 03, 2022)        | Mar. 02, 2022 |
|             |         |                                                                                                                          |               |
|             |         |                                                                                                                          |               |
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|             |         |                                                                                                                          |               |



## Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items          | Result (PASS/FAIL) | Remark |
|---------------|-----------------|---------------------|--------------------|--------|
| 2             | -               | Exposure evaluation | PASS               | -      |

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

None

**Reviewed by: Sam Tsai**

**Report Producer: Amber Chiu**

# 1 General Description

## 1.1 Information

### 1.1.1 EUT General Information

| RF General Information |                                                  |                                                  |                                                                                                                                                                                                |
|------------------------|--------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Evaluation Mode        | Frequency Range (MHz)                            | Operating Frequency (MHz)                        | Modulation Type                                                                                                                                                                                |
| 2.4GHz WLAN            | 2400-2483.5                                      | 2412-2462                                        | 802.11b: DSSS (DBPSK, DQPSK, CCK)<br>802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)<br>VHT: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)<br>802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) |
| 5GHz WLAN              | 5150-5250<br>5250-5350<br>5470-5725<br>5725-5850 | 5180-5240<br>5260-5320<br>5500-5700<br>5745-5825 | 802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)<br>802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM), 1024QAM<br>802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)                        |
| Bluetooth              | 2400-2483.5                                      | 2402-2480                                        | LE: DSSS (GFSK)                                                                                                                                                                                |

### 1.1.2 Antenna Information

| Ant. | Brand      | Model Name       | Antenna Type | Connector | Support   |
|------|------------|------------------|--------------|-----------|-----------|
| 1    | Galtronics | 60-2961-03       | PCB          | U.FL      | 2.4G      |
| 2    | Galtronics | 60-2961-03       | PCB          | U.FL      | 2.4G      |
| 3    | Galtronics | 60-2888-03       | PCB          | U.FL      | 5G        |
| 4    | Galtronics | 60-2888-03       | PCB          | U.FL      | 5G        |
| 5    | Galtronics | 60-2773-03       | Chip         | N/A       | BT        |
| 6    | Galtronics | 02036142-07357-1 | Chip         | N/A       | 5G DFS RX |

**Non-Beamforming**

| Ant. | Gain (dBi) |     |     |
|------|------------|-----|-----|
|      | 2.4G       | 5G  | BT  |
| 1    | 2.5        | -   | -   |
| 2    | 2.5        | -   | -   |
| 3    | -          | 3.9 | -   |
| 4    | -          | 3.9 | -   |
| 5    | -          | -   | 2.0 |
| 6    | -          | 4.7 | -   |

Note 1: The EUT has six antennas.

**For 2.4GHz function:**

For IEEE 802.11 b/g/n/VHT/ax mode (2TX/2RX)

Ant. 1 and Ant. 2 could transmit/receive simultaneously.

**For BT function:**

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Ant. 5 can be used as transmitting/receiving antenna.

**For 5GHz function:**

For IEEE 802.11 a/n/ac/ax mode (2TX/2RX)

Ant. 3 and Ant. 4 could transmit/receive simultaneously.

**1.1.3 Table for Multiple Listing**

The model names in the following table are all refer to the identical product.

| Model Name                                                                                                                                                   | Description                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| 834-v6YYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#") (With voice)<br>834-6YYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#") (Without voice) | All the models are identical, the different model served as marketing strategy. |

**1.1.4 Table for Permissive Change**

This product is an extension of original one reported under Sporton project number: FA1O2025AN

Below is the table for the change of the product with respect to the original one.

| Modifications                                    | Performance Checking |
|--------------------------------------------------|----------------------|
| Frequency bands U-NII-2A and U-NII-2C was added. | MPE was evaluated.   |

### 1.1.5 Accessories

| Accessories                 |                     |                                                  |                   |                 |
|-----------------------------|---------------------|--------------------------------------------------|-------------------|-----------------|
| AC Adapter<br>(US Plug)     | <b>Brand Name</b>   | MASS POWER                                       | <b>Model Name</b> | S030-1A120250VU |
|                             | <b>Power Rating</b> | I/P: 100 – 240 Vac, 0.8A, O/P: 12.0 Vdc, 2.5 A   |                   |                 |
|                             | <b>Power Cord</b>   | 1.45 meter, non-shielded cable, w/o ferrite core |                   |                 |
| AC Adapter<br>(EU Plug)     | <b>Brand Name</b>   | MASS POWER                                       | <b>Model Name</b> | S030-1A120250VE |
|                             | <b>Power Rating</b> | I/P: 100 – 240 Vac, 0.8A, O/P: 12.0 Vdc, 2.5 A   |                   |                 |
|                             | <b>Power Cord</b>   | 1.45 meter, non-shielded cable, w/o ferrite core |                   |                 |
| AC Adapter<br>(UK Plug)     | <b>Brand Name</b>   | MASS POWER                                       | <b>Model Name</b> | S030-1A120250VK |
|                             | <b>Power Rating</b> | I/P: 100 – 240 Vac, 0.8A, O/P: 12.0 Vdc, 2.5 A   |                   |                 |
|                             | <b>Power Cord</b>   | 1.45 meter, non-shielded cable, w/o ferrite core |                   |                 |
| AC Adapter<br>(AUS/NZ Plug) | <b>Brand Name</b>   | MASS POWER                                       | <b>Model Name</b> | S030-1A120250VA |
|                             | <b>Power Rating</b> | I/P: 100 – 240 Vac, 0.8A, O/P: 12.0 Vdc, 2.5 A   |                   |                 |
|                             | <b>Power Cord</b>   | 1.45 meter, non-shielded cable, w/o ferrite core |                   |                 |

Reminder: Regarding to more detail and other information, please refer to user manual.

### 1.2 Testing Location

| Test Lab. : Sporton International Inc. Hsinhua Laboratory |                             |                                                                                                                                                         |
|-----------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/>                       | Hsinhua<br>(TAF: 3785)      | <b>ADD:</b> No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)<br><b>TEL:</b> 886-3-327-3456 <b>FAX:</b> 886-3-327-0973          |
| Test site Designation No. TW3785 with FCC.                |                             |                                                                                                                                                         |
| <input type="checkbox"/>                                  | Wen 33rd.St.<br>(TAF: 3785) | <b>ADD:</b> No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)<br><b>TEL:</b> 886-3-318-0787 <b>FAX:</b> 886-3-318-0287 |
| Test site Designation No. TW0008 with FCC.                |                             |                                                                                                                                                         |

## 2 Maximum Permissible Exposure

### 2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|------------------------------------------|------------------------------------------------------------------|
| 0.3-3.0               | 614                               | 1.63                              | (100)*                                   | 6                                                                |
| 3.0-30                | 1842 / f                          | 4.89 / f                          | (900 / f <sup>2</sup> )*                 | 6                                                                |
| 30-300                | 61.4                              | 0.163                             | 1.0                                      | 6                                                                |
| 300-1500              | -                                 | -                                 | F/300                                    | 6                                                                |
| 1500-100,000          | -                                 | -                                 | 5                                        | 6                                                                |

(B) Limits for General Population / Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|------------------------------------------|------------------------------------------------------------------|
| 0.3-1.34              | 614                               | 1.63                              | (100)*                                   | 30                                                               |
| 1.34-30               | 824/f                             | 2.19/f                            | (180/f <sup>2</sup> )*                   | 30                                                               |
| 30-300                | 27.5                              | 0.073                             | 0.2                                      | 30                                                               |
| 300-1500              | -                                 | -                                 | F/1500                                   | 30                                                               |
| 1500-100,000          | -                                 | -                                 | 1.0                                      | 30                                                               |

Note: f = frequency in MHz ; \*Plane-wave equivalent power density

#### Multiple Transmitters Condition

Co-location as simultaneously transmitting (co-transmitting) and the evaluation shall be consider that simultaneous transmissions from co-located devices the individual transmitters are evaluated separately. After sum of the individual value (basic restriction / reference level) are measured/calculated also have to under basic restriction / reference level.

Co-transmitting mode: WLAN 2.4GHz+WLAN 5GHz + Bluetooth

### 2.2 MPE Calculation Method

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

**E** = Electric field (V/m)

**P** = RF output power (W)

**G** = EUT Antenna numeric gain (numeric)

**d** = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

## 2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

### WLAN 2.4GHz <Non-Beamforming>

| Mode     | DG<br>(dBi) | Power<br>(dBm) | EIRP<br>(dBm) | Tolerance<br>(dB) | Tune-up<br>EIRP<br>(dBm) | Tune-up<br>EIRP<br>(W) | Distance<br>(cm) | S<br>(mW/cm <sup>2</sup> ) | S Limit<br>(mW/cm <sup>2</sup> ) |
|----------|-------------|----------------|---------------|-------------------|--------------------------|------------------------|------------------|----------------------------|----------------------------------|
| 2.4G;G1D | 2.50        | 18.54          | 21.04         | 0.50              | 21.54                    | 0.14256                | 20               | 0.02836                    | 1.00000                          |
| 2.4G;D1D | 2.50        | 20.76          | 23.26         | 0.50              | 23.76                    | 0.23768                | 20               | 0.04728                    | 1.00000                          |

### WLAN 2.4GHz <Beamforming>

| Mode     | DG<br>(dBi) | Power<br>(dBm) | EIRP<br>(dBm) | Tolerance<br>(dB) | Tune-up<br>EIRP<br>(dBm) | Tune-up<br>EIRP<br>(W) | Distance<br>(cm) | S<br>(mW/cm <sup>2</sup> ) | S Limit<br>(mW/cm <sup>2</sup> ) |
|----------|-------------|----------------|---------------|-------------------|--------------------------|------------------------|------------------|----------------------------|----------------------------------|
| 2.4G;D1D | 5.51        | 22.87          | 28.38         | 0.50              | 28.88                    | 0.77268                | 20               | 0.15372                    | 1.00000                          |

### WLAN 5GHz <Non-Beamforming>

| Mode     | DG<br>(dBi) | Power<br>(dBm) | EIRP<br>(dBm) | Tolerance<br>(dB) | Tune-up<br>EIRP<br>(dBm) | Tune-up<br>EIRP<br>(W) | Distance<br>(cm) | S<br>(mW/cm <sup>2</sup> ) | S Limit<br>(mW/cm <sup>2</sup> ) |
|----------|-------------|----------------|---------------|-------------------|--------------------------|------------------------|------------------|----------------------------|----------------------------------|
| 5.2G;D1D | 3.90        | 26.63          | 30.53         | 0.50              | 31.03                    | 1.26765                | 20               | 0.25219                    | 1.00000                          |
| 5.3G;D1D | 3.90        | 22.67          | 26.57         | 0.50              | 27.07                    | 0.50933                | 20               | 0.10133                    | 1.00000                          |
| 5.6G;D1D | 3.90        | 21.59          | 25.49         | 0.50              | 25.99                    | 0.39719                | 20               | 0.07902                    | 1.00000                          |
| 5.8G;D1D | 3.90        | 21.58          | 25.48         | 0.50              | 25.98                    | 0.39628                | 20               | 0.07884                    | 1.00000                          |

**WLAN 5GHz <Beamforming>**

| Mode     | DG<br>(dBi) | Power<br>(dBm) | EIRP<br>(dBm) | Tolerance<br>(dB) | Tune-up<br>EIRP<br>(dBm) | Tune-up<br>EIRP<br>(W) | Distance<br>(cm) | S<br>(mW/cm <sup>2</sup> ) | S Limit<br>(mW/cm <sup>2</sup> ) |
|----------|-------------|----------------|---------------|-------------------|--------------------------|------------------------|------------------|----------------------------|----------------------------------|
| 5.2G;D1D | 6.91        | 24.91          | 31.82         | 0.50              | 32.32                    | 1.70608                | 20               | 0.33941                    | 1.00000                          |
| 5.3G;D1D | 6.91        | 22.54          | 29.45         | 0.50              | 29.95                    | 0.98855                | 20               | 0.19667                    | 1.00000                          |
| 5.6G;D1D | 6.91        | 22.43          | 29.34         | 0.50              | 29.84                    | 0.96383                | 20               | 0.19175                    | 1.00000                          |
| 5.8G;D1D | 6.91        | 22.30          | 29.21         | 0.50              | 29.71                    | 0.93541                | 20               | 0.18609                    | 1.00000                          |

**Bluetooth**

| Mode       | DG<br>(dBi) | Power<br>(dBm) | EIRP<br>(dBm) | Tolerance<br>(dB) | Tune-up<br>EIRP<br>(dBm) | Tune-up<br>EIRP<br>(W) | Distance<br>(cm) | S<br>(mW/cm <sup>2</sup> ) | S Limit<br>(mW/cm <sup>2</sup> ) |
|------------|-------------|----------------|---------------|-------------------|--------------------------|------------------------|------------------|----------------------------|----------------------------------|
| 2.4G;BT-LE | 2.00        | 7.21           | 9.21          | 0.50              | 9.71                     | 0.00935                | 20               | 0.00186                    | 1.00000                          |

**WLAN 2.4GHz+WLAN 5GHz + Bluetooth**

| Mode       | DG<br>(dBi) | Power<br>(dBm) | EIRP<br>(dBm) | Tolerance<br>(dB) | Tune-up EIRP<br>(dBm) | Tune-up EIRP<br>(W) | Distance<br>(cm) | S<br>(mW/cm <sup>2</sup> ) | Lim<br>(mW/cm <sup>2</sup> ) | Ratio<br>(S/Limit) |
|------------|-------------|----------------|---------------|-------------------|-----------------------|---------------------|------------------|----------------------------|------------------------------|--------------------|
| 2.4G;D1D   | 5.51        | 22.87          | 28.38         | 0.50              | 28.88                 | 0.77268             | 20               | 0.15372                    | 1.00000                      | 0.15372            |
| 5.2G;D1D   | 6.91        | 24.91          | 31.82         | 0.50              | 32.32                 | 1.70608             | 20               | 0.33941                    | 1.00000                      | 0.33941            |
| 2.4G;BT-LE | 2           | 7.21           | 9.21          | 0.50              | 9.71                  | 0.00935             | 20               | 0.00186                    | 1.00000                      | 0.00186            |
|            |             |                |               |                   |                       |                     |                  |                            | Sum Ratio                    | 0.49499            |
|            |             |                |               |                   |                       |                     |                  |                            | Ratio Limit                  | 1                  |

—————THE END—————