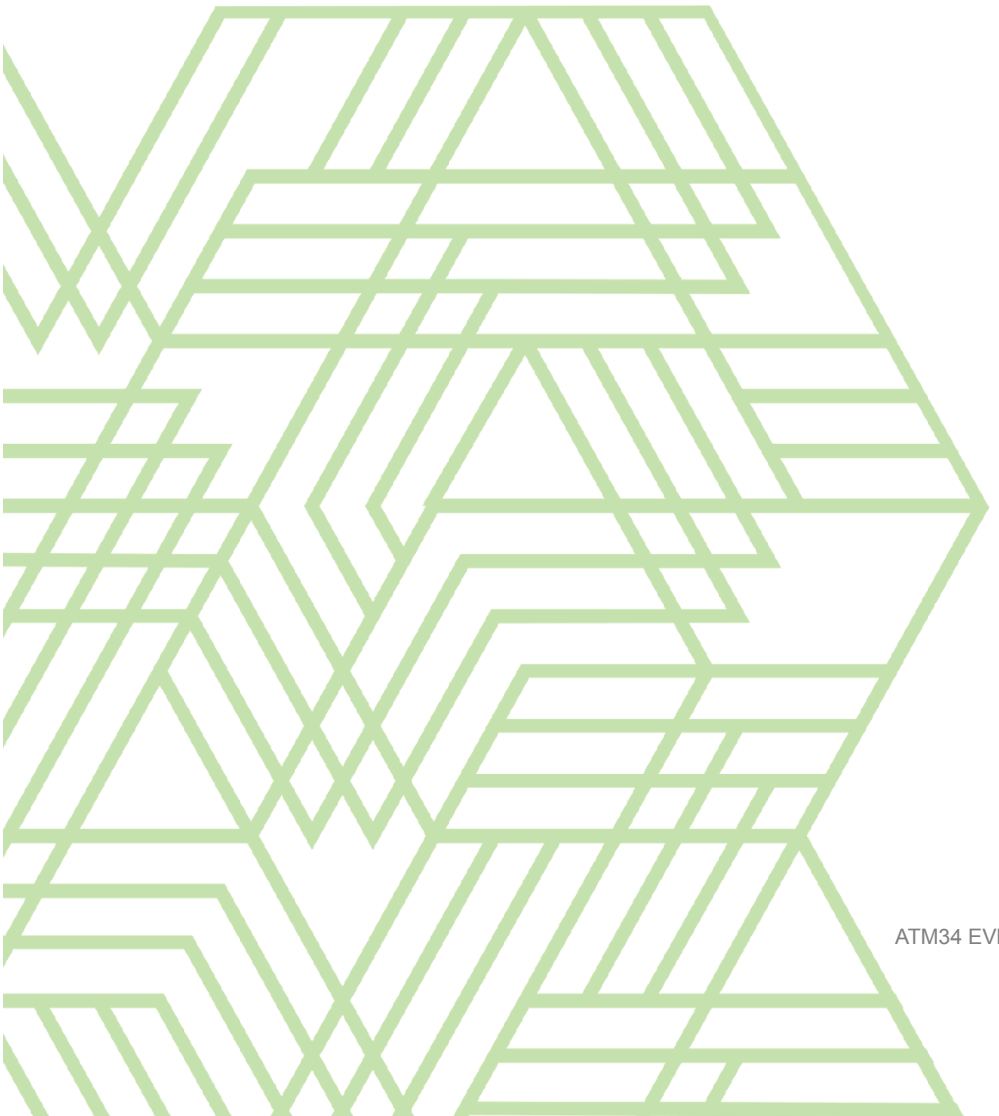
ATM34/e Series EVK Power Consumption Evaluation

User Guide

SUMMARY: This document provides instructions for ATM34/e Evaluation Kit (EVK) users to perform a power consumption evaluation of the ATM34/e Wireless SoC Series. Test setup and power consumption profiles are included in this document.



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ATM34 EVK Power Consumption Evaluation User Guide
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Acronyms and Abbreviations

Acronyms	Definition
ATM34	ATM3430 ATM3405
ATM34e	ATM3430e
ATM34/e	ATM34/ATM34e
EVB	Evaluation Board
EVK	Evaluation Kit
SoC	System-on-Chip

1. Overview

This guide provides instructions for EVK users to perform a power consumption evaluation of the ATM34/e Wireless SoC Series.

2. Hardware and Software Requirements

Refer to the Reference Documents section for related documents.

2.1 Supported EVKs

EVK	SoC	SoC Part Number	Kit Part Number
Evaluation Kit for ATM3405 5x5 QFN	40-pin 5x5 mm QFN	ATM3405-5WCQK ATM3405-5PCAQK	ATMEVK-3405-WQK-5
Evaluation Kit for ATM3405 4x4 BGA	93 pin 4x4 BGA	ATM3405-5YCABV	ATMEVK-3405-YBV-5
Evaluation Kit for ATM3430e	56-pin 7x7 mm QFN	ATM3430E-5WCAQN	ATMEVK-3430e-WQN-5

Table 1 - ATM34/e Series EVKs

2.2 Supported Software

Please use the latest Atmosic OpenAir release at https://github.com/Atmosic/openair.

3. Evaluation Board Setup

Figure 1 shows the power consumption setup for the ATM3430e EVB.

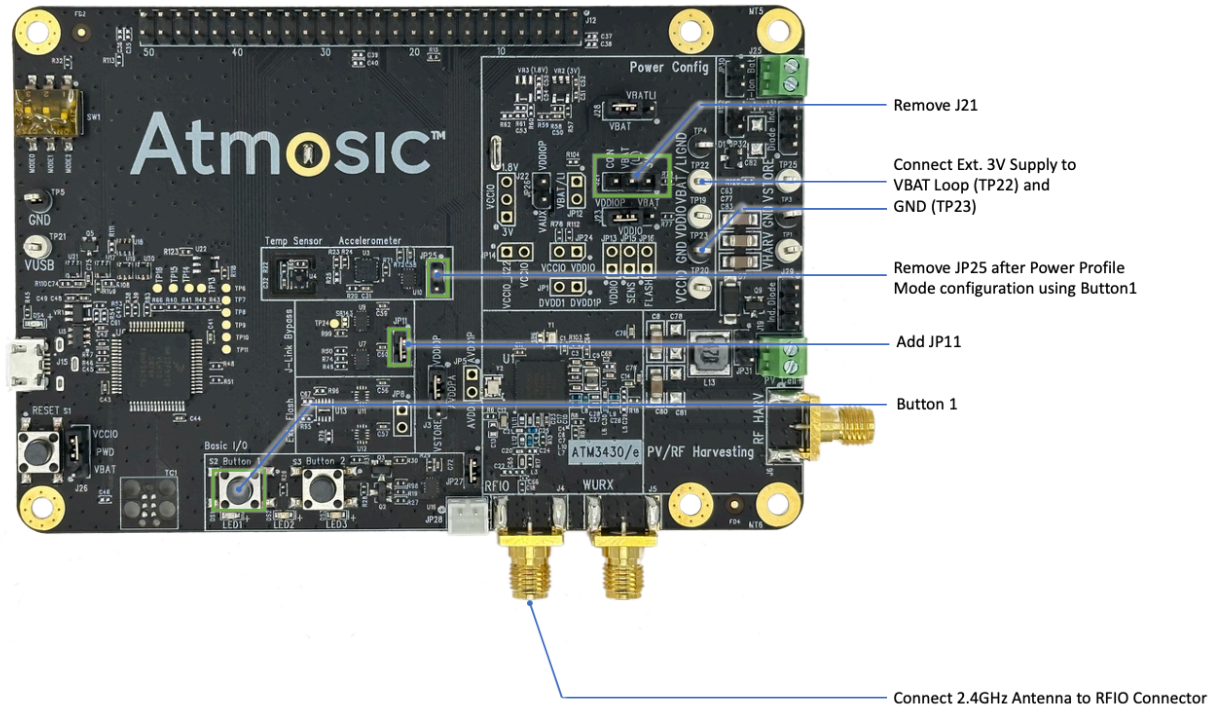

Figure 1 - ATM3430e Evaluation Board Power Consumption Setup

All ATM34/e EVBs can use the same instructions listed below:

1) Attach the 2.4 GHz antenna to the RFIO connector of the EVB.
2) Remove the jumper on J21 and connect an external 3 V power supply to TP22 (3 V) and TP23 (GND) on the right side of the board (see Figure 1)
3) Connect a DC power analyzer (e.g., Keysight N6705C or Joulescope JS220) or 6-1/2 digit multimeter (e.g., Keysight 34465A) for power measurements.
4) Please make sure that the USB port remains connected so that it can power the EVB support circuitry. Otherwise, the ATM34/e power measurement will incorrectly include the power consumption of the supply circuitry.
5) Add a jumper on JP11 to disconnect the MK22 and prevent it from drawing power from the ATM34/e (see Figure 1). Remove this jumper once the power measurement is complete if the EVB needs to be reprogrammed.
6) Enable the external 3 V power supply for the EVB while pressing Button 1. The EVB is pre-programmed with the OpenAir beacon application, which runs in Power Profile Mode when Button 1 is pressed at boot time.

7) Remove the jumper on JP25 to power down the onboard sensors (see Figure 1). Add this jumper once the power measurement is complete if Button 1 needs to be pressed again.

8) In the Power Profile Mode, the EVB will have the power profile shown in Figure 2.

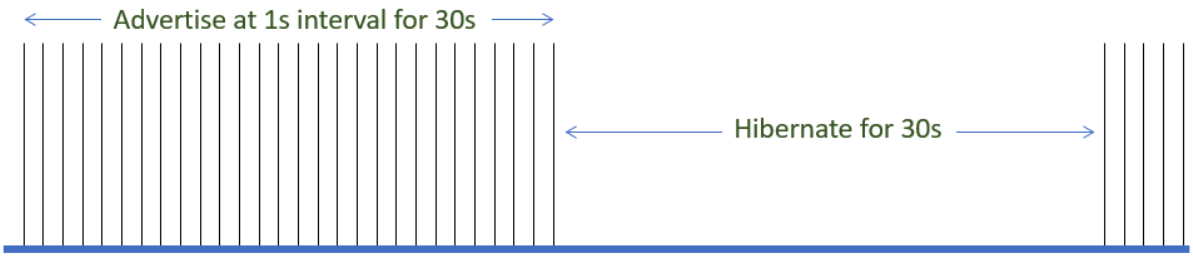

Figure 2 - OpenAir Beacon Power Profile

4. Power Measurement Procedures

4.1 Average Power Measurement with Multimeter

To make an average power measurement with a 6½ digit multimeter, please follow these instructions:

1) Connect the multimeter in series with the external 3 V supply.
2) Set the multimeter for DC Current, configure the range for 10mA, and increase the aperture to 1s. Figure 3 shows an average current consumption measurement during advertising.

Figure 3 - Average Advertising Current

4.2 Power Profile Measurement

Measuring the dynamic current more accurately requires a DC power analyzer such as the Keysight N6705C or Joulescope JS220. For the Keysight N6705C, it is important to use auto-ranging and the maximum number of horizontal data points to observe the most accurate power profile. Figure 4, Figure 5, Figure 6, Figure 7, and Figure 8 show current consumption measurements of various states using Joulescope.

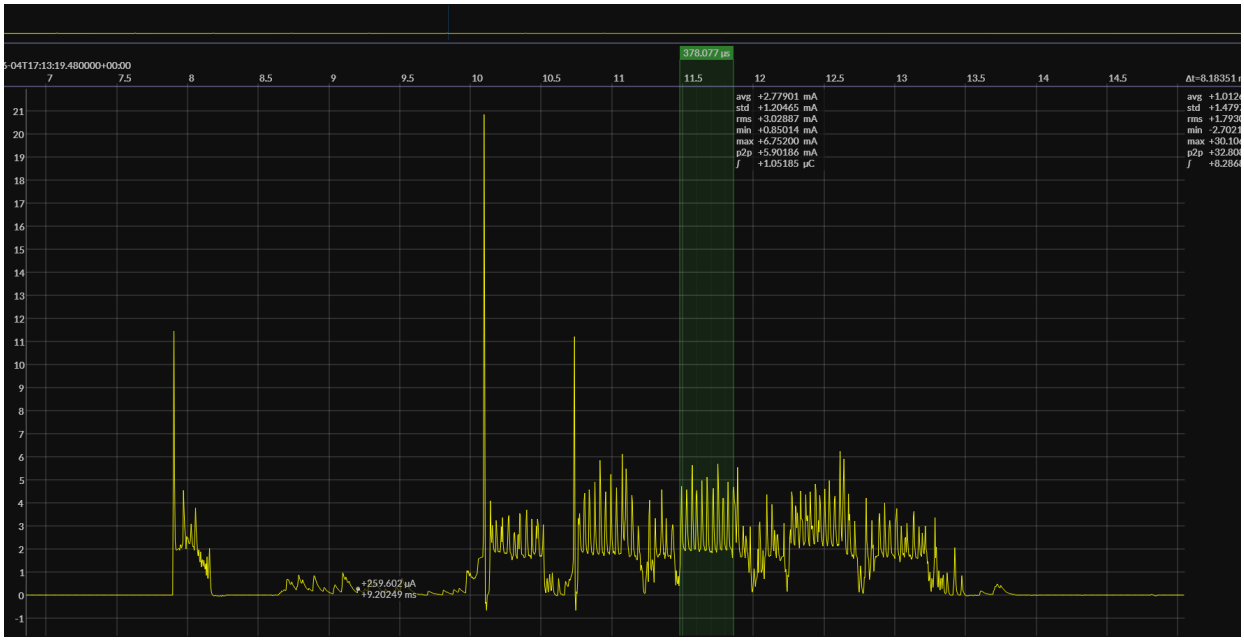

Figure 4 - Transmit Current Profile

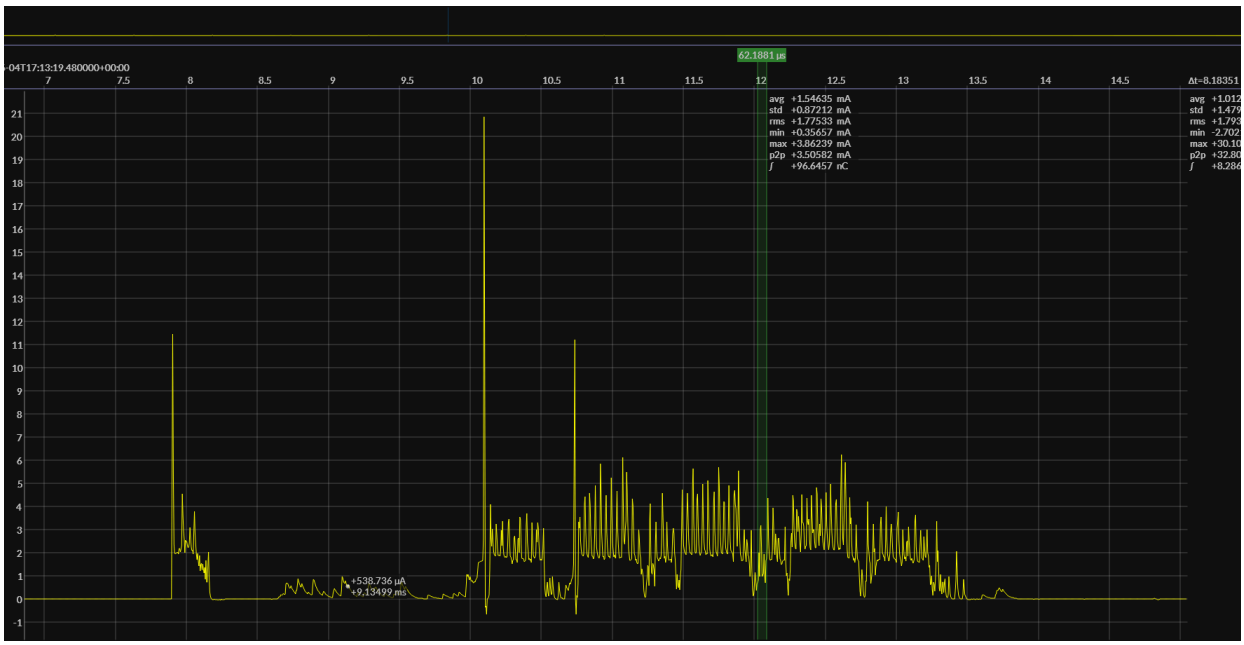

Figure 5 - Receive Current Profile

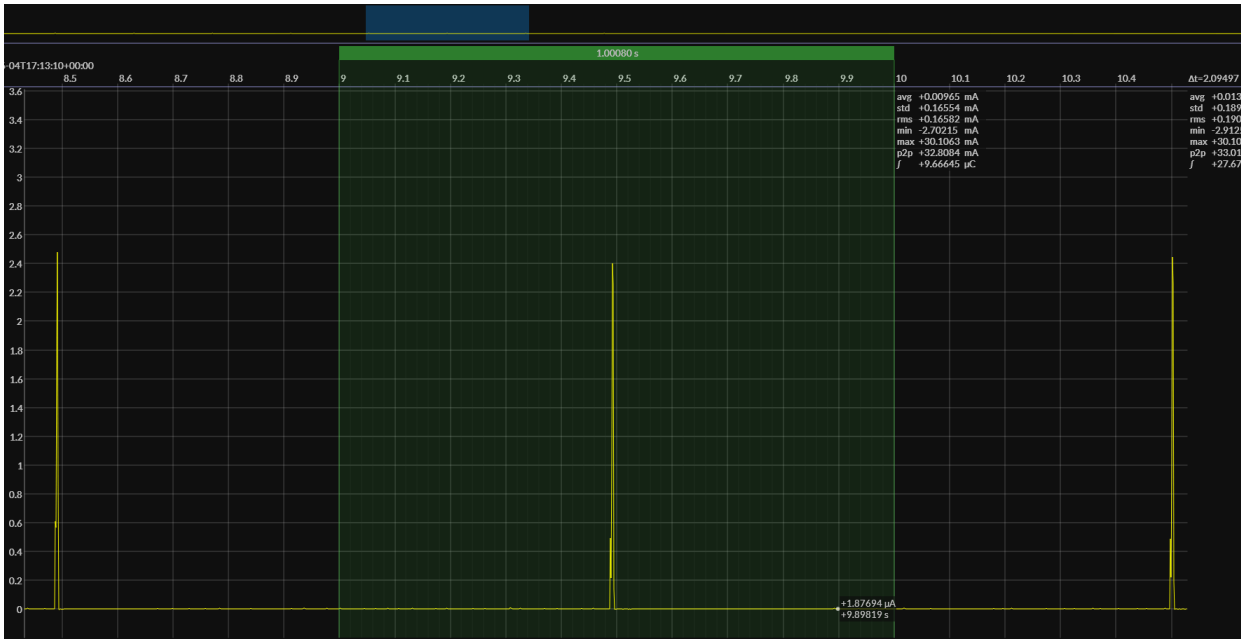

Figure 6 - Current Profile Over 1s Interval During Advertising Phase

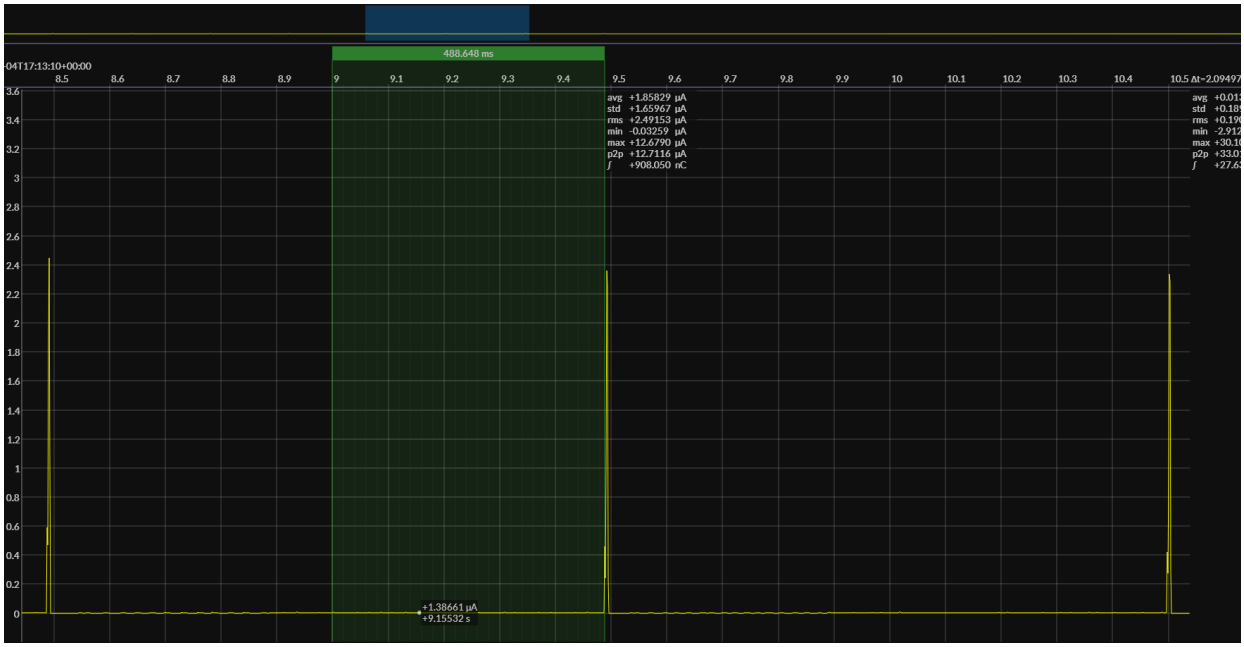

Figure 7 - Retention Current Profile

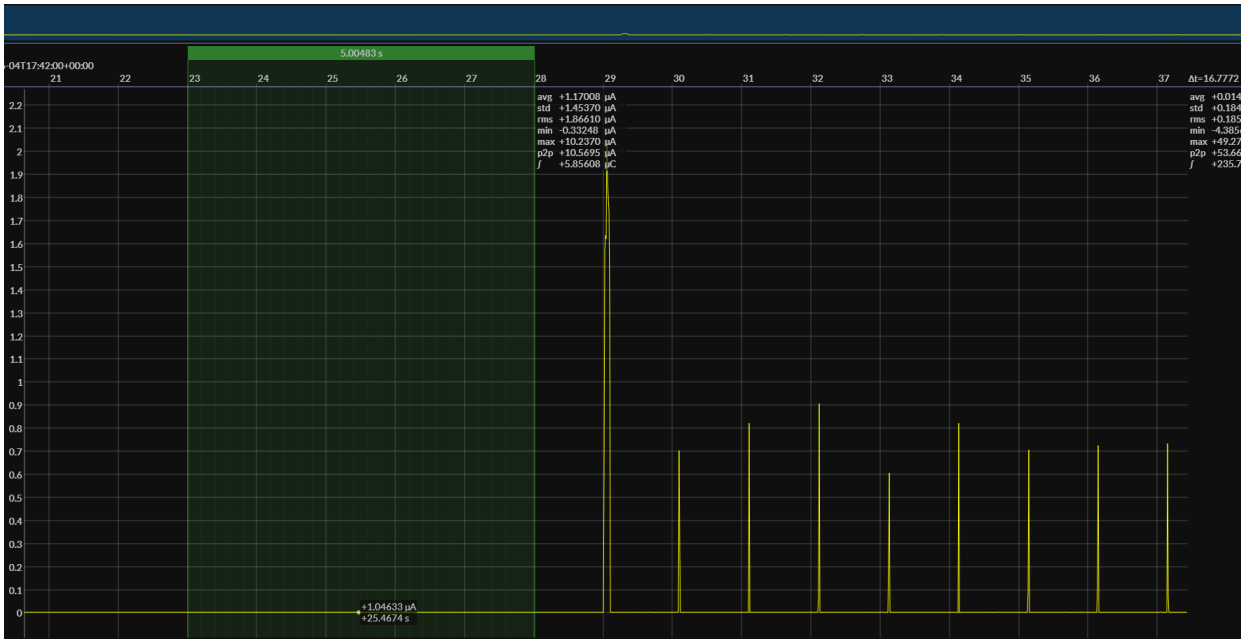

Figure 8 - Hibernation Current Profile

It is normal to observe periodic current peaks during all ATM34e operating modes. These peaks result from the typical operation of the DC/DC switching regulator.

Reference Documents

Title	Document Number
ATM34/e Series Datasheet	6494-xxxx-xxxx
ATM34/e Series Evaluation Kit User Guide	6441-xxxx-xxxx
Understanding Low Power Mode Application Notes	4288-xxxx-xxxx

Revision History

Date	Version	Description
October 20, 2025	0.52	Updated Evaluation Board Setup
September 8, 2025	0.51	Updated with Zephyr OpenAir SDK release
July 17, 2024	0.50	Initial version created

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