

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.



Table of Contents

Table of Contents	2
List of Figures	3
List of Tables	3
Acronyms and Abbreviations	4
1. Overview	5
2. Hardware and Software Requirements	5
2.1 Supported EVKs	5
2.2 Supported Software	5
3. Evaluation Board Setup	5
4. Power Measurement Procedures	8
4.1 Average Power Measurement with Multimeter	8
4.2 Power Profile Measurement	8
Reference Documents	12
Revision History	13

List of Figures

Figure 1 - ATM3430e Evaluation Board Power Consumption Setup

Figure 2 - OpenAir Beacon Power Profile

Figure 3 - Average Advertising Current

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

List of Tables

Table 1 - ATM34/e Series EVKs

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.

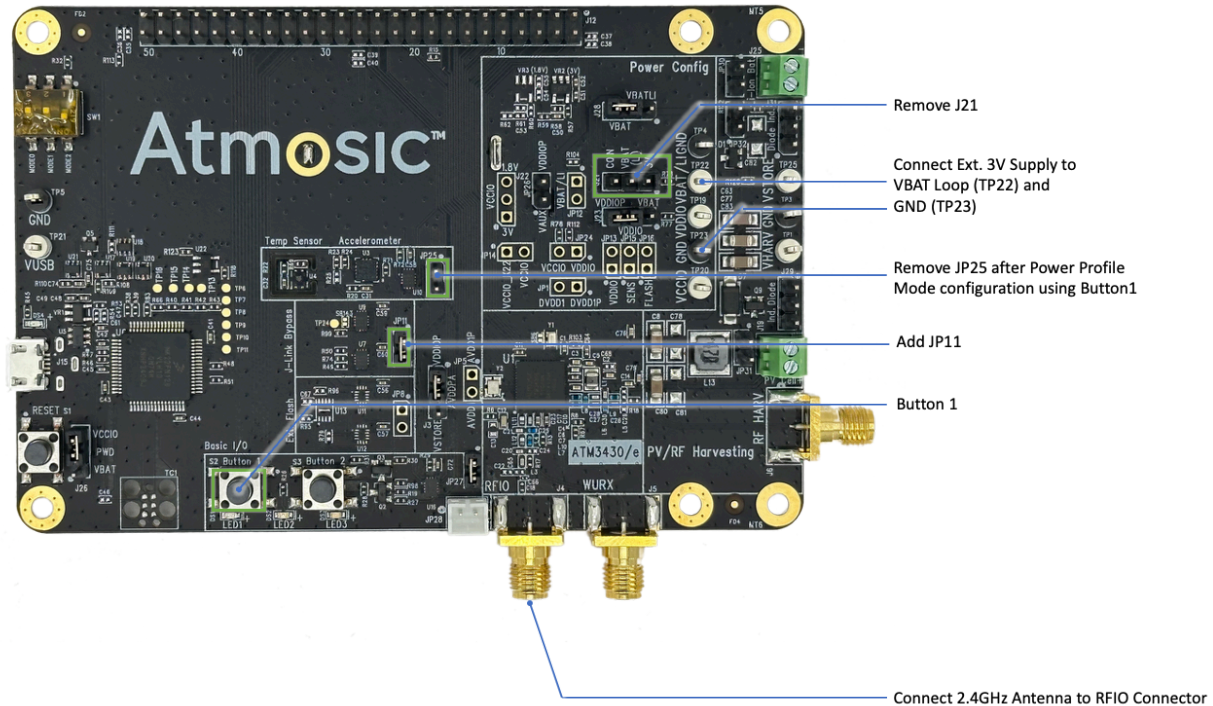


Figure 1 - ATM3430e Evaluation Board Power Consumption Setup

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) 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.
- 5) 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.
- 6) 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.

7) In the Power Profile Mode, the EVB will have the power profile shown in [Figure 2](#).

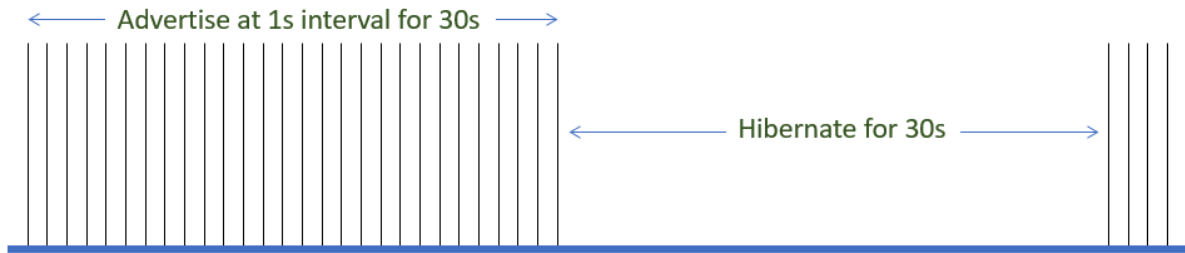


Figure 2 - OpenAir Beacon Power Profile

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.

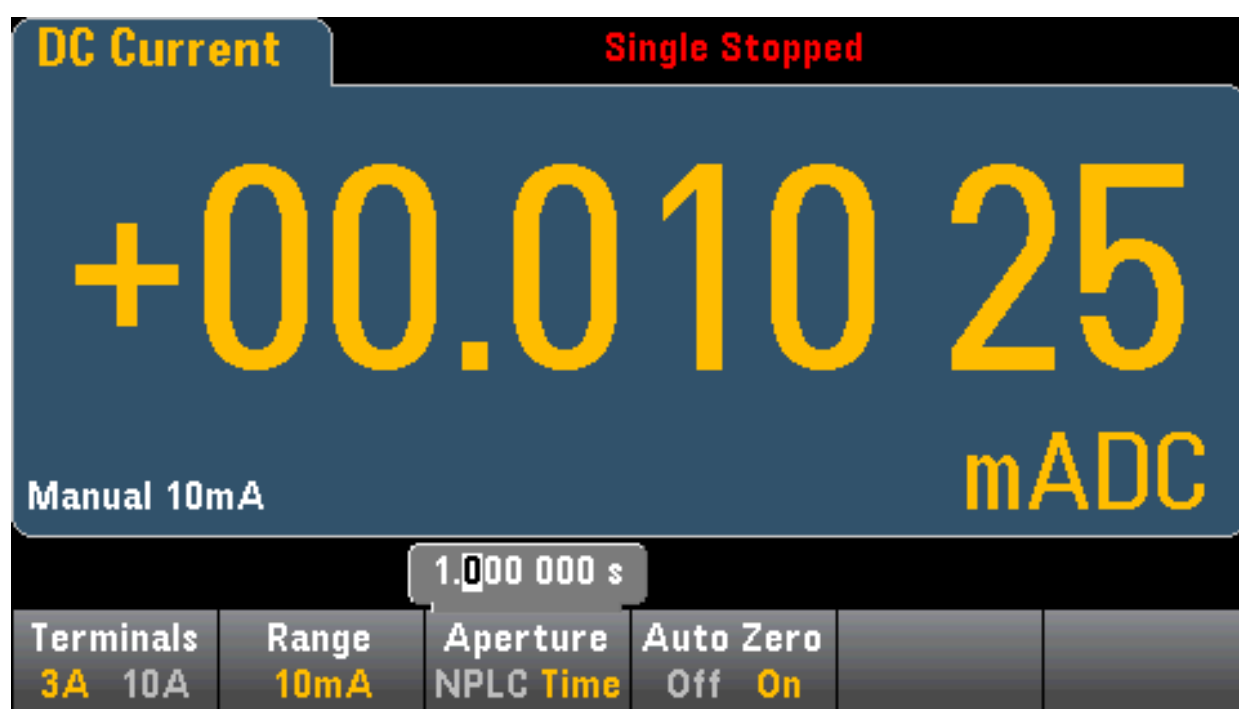


Figure 3 - Average Advertising Current

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.

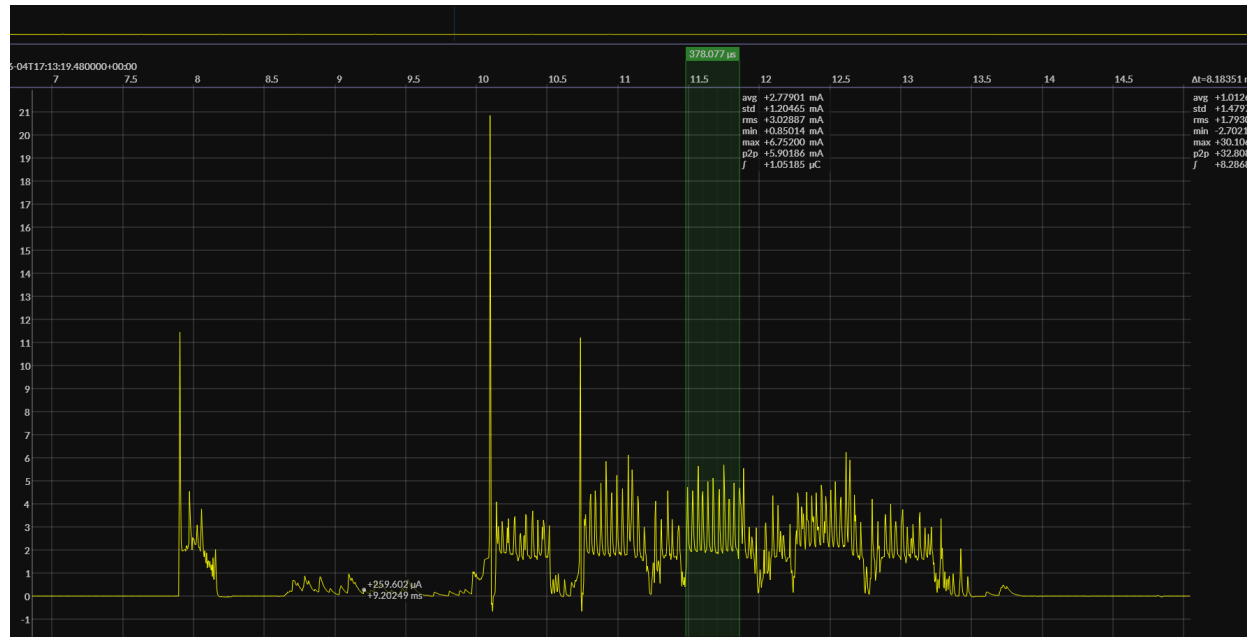


Figure 4 - Transmit Current Profile

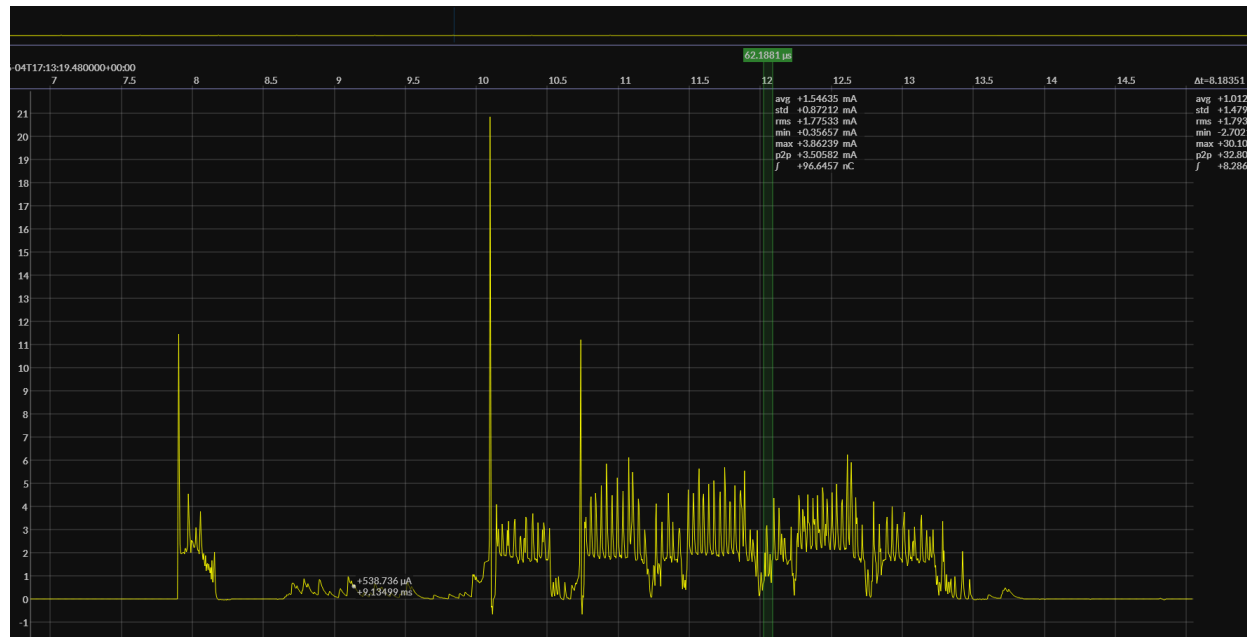


Figure 5 - Receive Current Profile

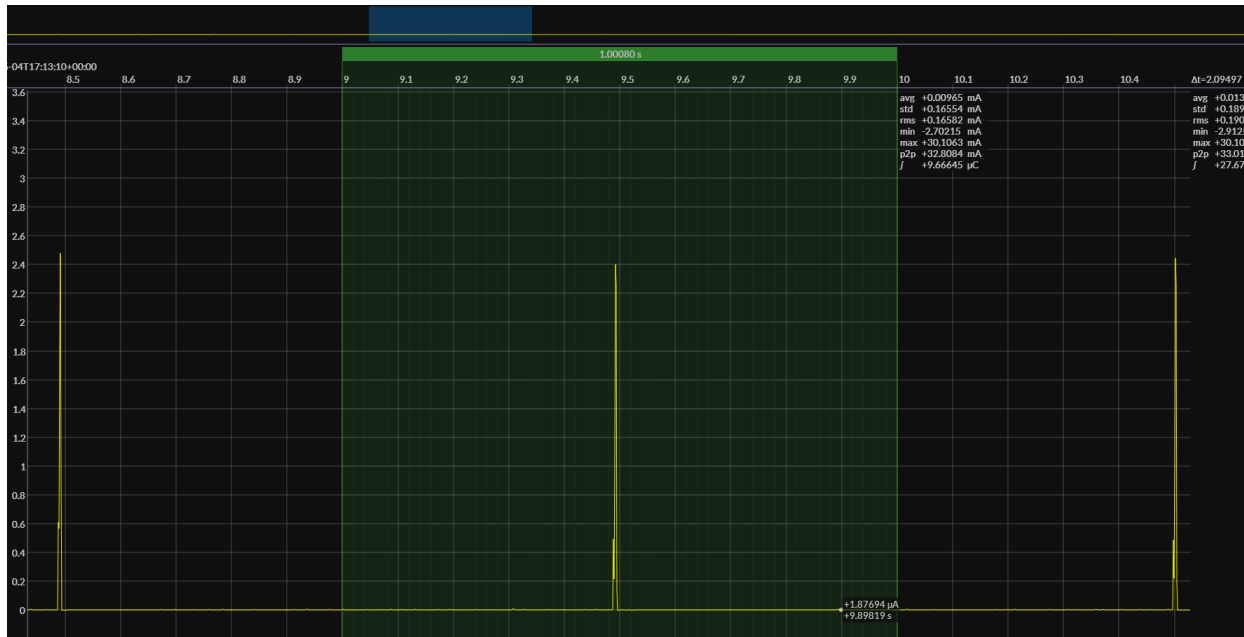


Figure 6 - Current Profile Over 1s Interval During Advertising Phase

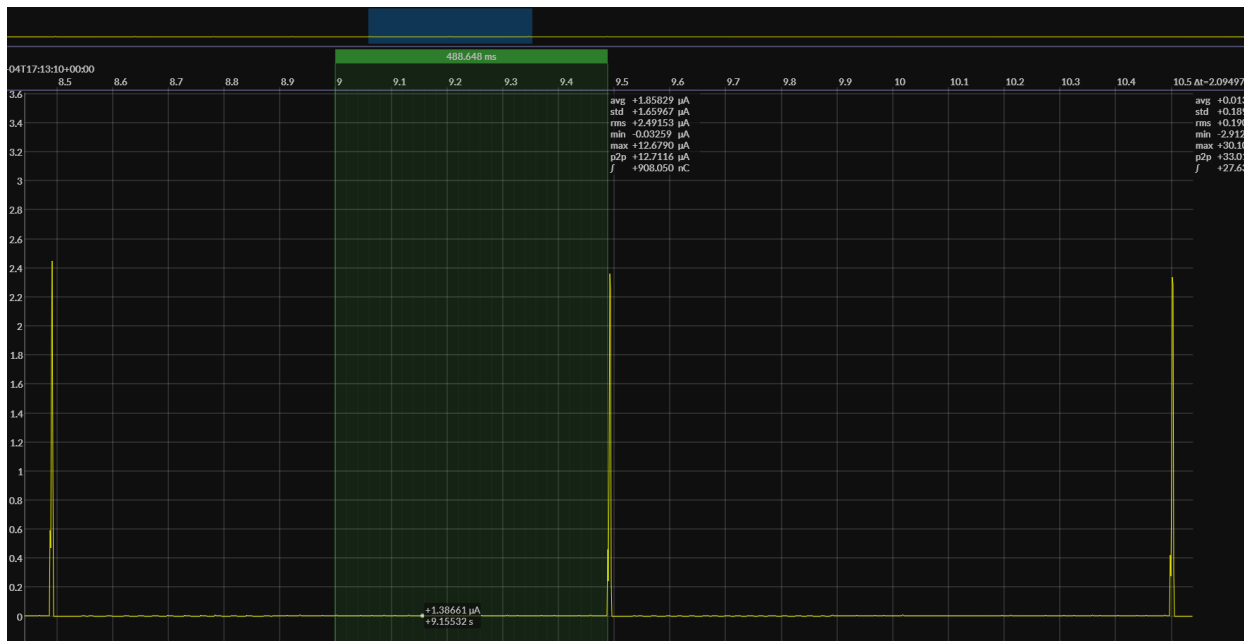


Figure 7 - Retention Current Profile

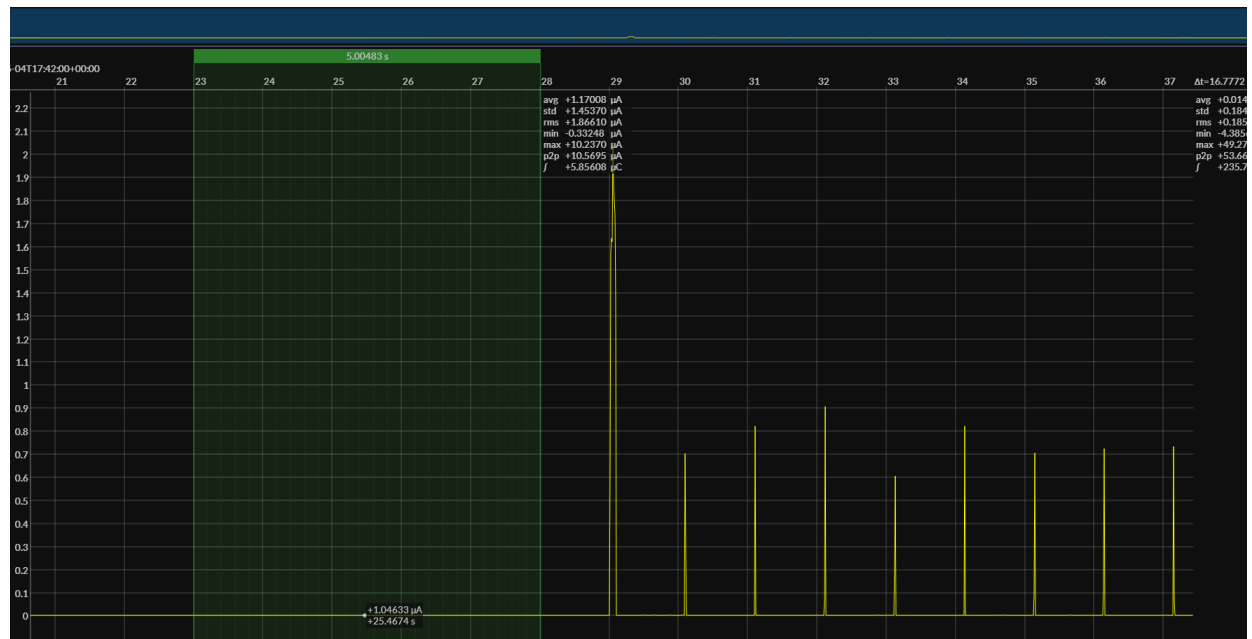


Figure 8 - Hibernation Current Profile

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
September 8, 2025	0.51	Updated with Zephyr OpenAir SDK release
July 17, 2024	0.50	Initial version created



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