A REPORT

ON

Firmware verification for Automotive Wireless Battery Monitoring Systems

BY

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Prepared in partial fulfilment of
the Practice School-II Course BITS F412

AT

Analog Devices India

A Practice School – II Station of

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE
PILANI, PILANI CAMPUS

September 2023

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Abbreviations

wBMS	**w**ireless **B**attery **M**onitoring **S**ystem
OEM	**O**riginal **E**quipment **M**anufacturer

Chapter 1

Introduction

1.1 Motive

There is a growing demand for advanced cockpit electronic systems as a result of the automotive industry's ongoing shift towards electric mobility. These technologies are essential for enabling comprehensive vehicle component monitoring and for providing the occupants with a clear, comprehensive overview of the current state and overall health of the vehicle.
The battery of the car is by far the most important of the crucial factors that need constant monitoring. This is particularly important for battery packs made mostly of Li-ion substrates because of the potential for severe, potentially dangerous consequences if their health and charge states are not strictly monitored.
Given these factors, Analog Devices Inc. provides a wBMS solution that is simple to integrate into the automotive setting. Notably, such technology is finding support with Tier 1 auto suppliers for example Stellantis and Visteon, who work closely with OEMs for example Tata, Honda, and Tesla. End-to-end solutions that enable users to thoroughly monitor various aspects of battery health are finally provided as the result of these collaborations.

1.2 Contribution to the project

This project has provided the chance to significantly advance the implementation and verification of functional safety, particularly at the level of battery monitoring sensors, the exact details of which will be discussed in the later sections.

Chapter 2

Product walkthrough

2.1 Hardware setup

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2.2 Software setup

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Chapter 3

Testing methodologies

3.1 Original test scripts

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3.2 Python packages

3.2.1 Flashing and logging

3.2.2 Explorer APIs

3.2.3 Emulator package

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Chapter 4

Conclusion and future work

4.1 Conclusion

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4.2 Future work

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