

Functional Requirements Document (FRD) - Project Raptor

1. Introduction

The purpose of this document is to define the high-level functional requirements for the development of the Raptor, an all-electric crossover SUV being developed by Maple Leaf Motors. This document outlines what the product should do, focusing on user needs, core features, and performance expectations without specifying implementation details.

2. Scope

Project Raptor aims to deliver a five-passenger electric SUV designed for both urban commuting and moderate off-road use. It is expected to be the company's flagship EV, balancing range, comfort, and versatility.

3. Definitions and Acronyms

EV: Electric Vehicle

UI: User Interface

HVAC: Heating, Ventilation, and Air Conditioning

OTA: Over-the-Air software updates

ADAS: Advanced Driver-Assistance Systems

4. Assumptions and Constraints

- The vehicle must comply with North American safety and emissions standards (see Compliance Matrix CMP-RPT-003).
- Core feature set must be delivered by Q2 2026.
- All software modules must be OTA updatable.
- The final cost per unit must not exceed \$38,000 CAD for the base model.

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5. Functional Requirements

- Powertrain: 200 kW motor, 400 km range, fast charging < 35 minutes.
- Infotainment: 12-inch touchscreen, voice commands, OTA updates.
- Safety: Lane keeping, adaptive cruise, blind spot monitoring, SAE Level 2.
- Comfort: 5 seats, dual-zone climate, foldable seats.
- Sustainability: 30% recycled materials, ethical sourcing.

6. Non-Functional Requirements

- UI response < 300ms
- Operating temp: -30 degreesC to +45 degreesC
- System uptime: 99.8%
- ISO 26262 ASIL-C compliant
- English and French supported.

7. User Profiles

- Suburban commuters
- Families with children
- Municipal fleet buyers

8. Dependencies

- Mechanical spec: DOC-RPT-MECH-002
- Software validation: VAL-RPT-SW-009
- RFQ: RFQ-RPT-005

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9. Appendices

Change Log:

- 1.0 | 2025-05-24 | L. Nguyen | Initial draft

Open Issues:

- Pending UX input on multilingual support
- High-humidity performance review pending

10. References

DOC-RPT-MECH-002 | Mechanical Technical Specification - Project Raptor | Rev A

VAL-RPT-SW-009 | Software Validation Report - Project Raptor | Rev 1

RFQ-RPT-005 | Request for Quote - Raptor Interior Components | Rev B

CMP-RPT-003 | Compliance Matrix - North American Safety Standards | Rev A

ENV-RPT-006 | Sustainability Charter - Maple Leaf Motors | Rev C