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USER REQUIREMENTS DOCUMENT

Document ID: URD-FALCON-001

System: Raptor-MQ

Contractor: Falcon Defense Systems Inc.

Date: 21 November 2025

1.0 INTRODUCTION

This user requirements document describes the Raptor-MQ unmanned aerial system developed by Falcon Defense Systems Inc.. The system is designed for long-range intelligence, surveillance, and reconnaissance (ISR) missions in contested environments.

2.0 PERFORMANCE CHARACTERISTICS

2.1 Range and Endurance

The Raptor-MQ achieves a maximum operational range of **1760 km** with standard fuel load. This meets the OVERWATCH program threshold requirement. Mission endurance at optimal cruise altitude is 26 hours with 75% payload loading.

2.2 Payload Capacity

Maximum payload capacity is **358 kg**, sufficient for a comprehensive ISR sensor suite. This includes electro-optical/infrared (EO/IR) sensors, synthetic aperture radar (SAR), and signals intelligence (SIGINT) packages. Center of gravity limits accommodate payload distribution from 24% to 36% mean aerodynamic chord.

2.3 Altitude Performance

Service ceiling is 47,121 ft MSL, providing standoff capability in contested airspace. Optimal cruise altitude for ISR missions is 36,441 ft, balancing sensor performance with fuel efficiency.

3.0 SYSTEM DESCRIPTION

3.1 Airframe

The airframe features a modular design optimized for endurance. Wingspan is 24.7 meters with a length of 11.4 meters.

3.2 Propulsion

Power is provided by a turboprop engine with 81 horsepower output. Fuel capacity is 667 liters.

3.3 Avionics and Control

Flight control is provided by a redundant dual autopilot system with hybrid SATCOM/LOS data link. Navigation uses GPS with INS backup for GPS-denied operations.

4.0 REQUIREMENTS COMPLIANCE

Requirement	Threshold	Objective	Raptor-MQ	Status
Range	1500 km	2000 km	1760 km	MEETS
Payload	300 kg	400 kg	358 kg	MEETS
Ceiling	45,000 ft	50,000 ft	47,121 ft	MEETS

5.0 SUMMARY

The Raptor-MQ represents a proven, low-risk solution with extensive operational heritage. Performance specifications of 1760 km range and 358 kg payload capacity demonstrate strong alignment with OVERWATCH program needs.

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