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PERFORMANCE TEST REPORT

Document ID: PTR-NORTHWIND-006

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Test Date: 08 August 2025

Test Location: Edwards AFB / Yuma Proving Ground

Test Conductor: DT&E;

SYSTEM UNDER TEST

System: Sentinel-X

Manufacturer: Northwind Aerospace Corporation

Serial Number: NORTHWIND-PT-0006

Configuration: Block 1 Production Standard

TEST OBJECTIVES

1. Validate operational range under mission-representative conditions
2. Verify payload capacity and center-of-gravity limitations
3. Assess endurance at various altitudes and payload configurations
4. Evaluate data link performance and reliability
5. Confirm environmental operating envelope

TEST RESULTS SUMMARY

RANGE TESTING

Flight Profile: Standard ISR mission profile with 3 waypoint navigation

Conditions: Standard day, winds 7 knots

Fuel Load: 87% maximum capacity

Result: 2253 km achieved

Specification: 1500 km required (threshold)

Status: PASS

PAYOUT TESTING

Configuration: Full ISR suite with EO/IR/SAR sensors

Measured Capacity: 473 kg

Specification: 300 kg required (threshold)

Status: PASS

Center of Gravity: Tested at 30% MAC (within 22-35% limits)

ENDURANCE TESTING

Altitude: 39228 ft MSL

Payload: 79% of maximum tested capacity

Measured Endurance: 31 hours

Specification: 24 hours required

Status: PASS

DETAILED TEST ANALYSIS

SERVICE CEILING VERIFICATION

Maximum Altitude Achieved: 44,601 ft MSL

Engine Performance at Ceiling: 87% rated power

Rate of Climb at Ceiling: 150 ft/min

Status: BELOW THRESHOLD

DATA LINK ASSESSMENT

System Type: SATCOM Ka-band

Range Tested: 214 km line-of-sight

Throughput: 45 Mbps sustained

Latency: 124 ms average

Packet Loss: 2.04%

Status: MEETS REQUIREMENTS

ANOMALIES AND DEFICIENCIES

No significant anomalies noted during testing.

CONCLUSIONS

The Sentinel-X demonstrated satisfactory performance across tested parameters. Measured range of 2253 km and payload capacity of 473 kg meet or exceed OVERWATCH program requirements.

System demonstrates clear performance advantages over threshold requirements and represents best-in-class capability.

Test Director: LCDR S. Johnson

QA Representative: D. Williams

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