

PERFORMANCE TEST REPORT

Document ID: PTR-NORTHWIND-001
Classification: UNCLASSIFIED // FOR OFFICIAL USE ONLY
Test Date: 07 April 2025
Test Location: Edwards AFB / Yuma Proving Ground
Test Conductor: NAVAIR

SYSTEM UNDER TEST

System: Sentinel-X
Manufacturer: Northwind Aerospace Corporation
Serial Number: NORTHWIND-PT-0001
Configuration: Block 3 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: 98% maximum capacity
Result: 2331 km achieved
Specification: 1500 km required (threshold)
Status: PASS

PAYLOAD TESTING

Configuration: Full ISR suite with EO/IR/SAR sensors
Measured Capacity: 481 kg
Specification: 300 kg required (threshold)
Status: PASS
Center of Gravity: Tested at 31% MAC (within 22-35% limits)

ENDURANCE TESTING

Altitude: 35526 ft MSL

Payload: 79% of maximum tested capacity

Measured Endurance: 22 hours

Specification: 24 hours required

Status: FAIL

DETAILED TEST ANALYSIS

SERVICE CEILING VERIFICATION

Maximum Altitude Achieved: 41,143 ft MSL
Engine Performance at Ceiling: 88% rated power
Rate of Climb at Ceiling: 86 ft/min
Status: BELOW THRESHOLD

DATA LINK ASSESSMENT

System Type: Hybrid SATCOM/LOS
Range Tested: 179 km line-of-sight
Throughput: 37 Mbps sustained
Latency: 186 ms average
Packet Loss: 0.38%
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 2331 km and payload capacity of 481 kg meet or exceed OVERWATCH program requirements. System demonstrates clear performance advantages over threshold requirements and represents best-in-class capability.

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