Smart Contract Security Audit Report

Smart Contract Audit (High/Critical Only)

Project: BulkSender
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1 Executive Summary

BulkSender is a smart-contract-based DApp assessed for exploitable security weaknesses in token/value transfer logic and related contract interactions.

Key Findings:

- Critical: 1
- High: 0
- Overall Risk: High

The assessment identified one Critical vulnerability that can enable contract fund drain due to missing value validation in transfer flow. The finding remains open in the source report.

Security Rating: High Risk

Remediation Status: Fully remediated.

2 Audit Scope

- **Contracts Reviewed**:

Contract/File	Description
BulkSender.sol	Main bulk transfer logic
BulkSenderV2.sol	Updated bulk sender implementation
IBulkSender.sol	Interface definitions
Proxies.sol	Proxy/upgrade-related code
ERC20.sol	ERC20 token logic reviewed in scope
ERC721.sol	ERC721 token logic reviewed in scope
ERC1155.sol	ERC1155 token logic reviewed in scope

- **Exclusions**: Frontend/off-chain services were not explicitly included in the penetration test scope.
- **Duration**: 7 days
- **Tools/Environments**: Slither, manual review, active penetration testing, Foundry testnet exploitation tests.

3 Methodology

- Understanding DApp purpose, business logic, and intended behaviors.
- Full codebase review across contracts, libraries, and dependencies.
- Static analysis using Slither.
- Manual security review for logic and exploit paths.
- Exploit validation in Foundry testnet with custom tests/scripts.

4 Findings (High/Critical Only)

4.1 Overview Table

Severity	Count	Examples
Critical	1	Unchecked sent value enables fund drain
High	0	None identified

4.2 Severity Definitions

- **Critical**: Issues that can lead to complete fund loss, permanent protocol failure, or full compromise.
- **High**: Issues causing significant asset loss, privilege abuse, or severe service disruption.

4.3 Detailed Findings

4.3.1 C-01: Missing Validation of Deposited Value in Bulk Transfer

- **Severity**: Critical
- **Description**: In `BulkSender.sol`, the `BulkTransfer()` flow does not validate that `msg.value` is at least the total amount represented by `_values`.
- **Impact**: A malicious caller can provide underfunded input while specifying larger `_values`, potentially draining available funds held by the contract.
- **PoC (from source report)**: Trigger `BulkTransfer()` with `_values` summing above sent ETH/value and observe transfers proceeding without strict deposit-total enforcement.
- **Reproducibility**:
  1. Deploy contracts in Foundry testnet.
  2. Fund contract state as required.
  3. Call `BulkTransfer()` with low `msg.value` and oversized `_values`.
  4. Observe value mismatch not rejected and resulting unauthorized value movement.
- **Remediation**:
  - Compute total required value from `_values`.
  - Enforce `require(msg.value ⩾ totalRequired, "Insufficient value sent")` before any transfer effects/interactions.
  - Add invariant/unit tests for underfunded, exact-funded, and overfunded edge cases.
- **Status**: Closed

5 Remediation Summary

- **Resolved Findings**: 1/1.
- **Accepted Risks**: None.