

USDT.z SECURITY AUDIT REPORT
Tether USD Bridged ZED20
Smart Contract Security Analysis

Version 1.0 | October 2025

Contract Address: 0xB1e01D8461E7C7Ec9897eAF603E337Caa4E7a704

Network: BNB Smart Chain (Mainnet)

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EXECUTIVE SUMMARY

This security audit report presents a comprehensive analysis of the USDT.z (Tether USD Bridged ZED20) smart contract deployed on Binance Smart Chain. The audit focuses on code quality, security vulnerabilities, best practices compliance, and potential risks.

Audit Scope: TeamToken.sol and dependencies (Context.sol, IERC20.sol, SafeMath.sol, ERC20.sol)

Audit Type: Self-assessment and community review

Methodology: Static code analysis, function testing, OpenZeppelin standards verification

Date: October 2025

OVERALL ASSESSMENT: LOW RISK

The contract is built on industry-standard OpenZeppelin libraries and follows established security patterns. No critical vulnerabilities identified.

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1. CONTRACT INFORMATION

Contract Name: TeamToken

Token Name: Tether USD Bridged ZED20

Symbol: USDT.z

Compiler: Solidity 0.6.12

Optimization: Enabled (200 runs)

EVM Version: Istanbul

License: MIT

Network Details:

- Blockchain: BNB Smart Chain

- Chain ID: 56

- Contract Address: 0xB1e01D8461E7C7Ec9897eAF603E337Caa4E7a704

- Verification Status: Verified on BscScan

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2. AUDIT METHODOLOGY

2.1 Scope of Audit

The audit covers the following files:

- ✓ Context.sol - Context provider for msg.sender and msg.data
- ✓ IERC20.sol - ERC20 interface standard
- ✓ SafeMath.sol - Mathematical operations with overflow protection
- ✓ ERC20.sol - Base ERC20 implementation
- ✓ TeamToken.sol - Main token contract with admin features

2.2 Audit Process

Static Code Analysis

Review of contract code for common vulnerabilities and anti-patterns.

Functional Testing

Verification of token functions (transfer, approve, mint, burn, etc.).

Best Practices Review

Compliance with Solidity and OpenZeppelin best practices.

Security Patterns

Assessment of access control, reentrancy protection, and integer overflow safeguards.

2.3 Testing Environment

Testing performed on:

- BSC Testnet (Chain ID: 97)
- Remix IDE with Injected Provider (MetaMask)
- Manual function calls and transaction verification

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3. SECURITY FINDINGS

3.1 Critical Issues: NONE FOUND ✓

No critical vulnerabilities that could lead to loss of funds or contract compromise.

3.2 High Severity Issues: NONE FOUND ✓

No high-severity issues identified.

3.3 Medium Severity Issues: NONE FOUND ✓

No medium-severity issues identified.

3.4 Low Severity Issues: 1 IDENTIFIED ⚠

Issue: Owner Centralization Risk

Severity: LOW

Description: Contract owner has significant control (mint, burn, pause, fee settings).

Impact: Owner could potentially abuse privileges.

Mitigation:

- Implement multi-signature wallet for owner address
 - Consider time-locks for critical functions
 - Establish transparent governance process
- Status: ACKNOWLEDGED (standard for educational project)

3.5 Informational Findings: 2 IDENTIFIED

Finding 1: Solidity Version

Observation: Contract uses Solidity 0.6.12 (not latest version).

Recommendation: Consider upgrading to 0.8.x for built-in overflow protection.

Note: SafeMath library adequately addresses this in 0.6.12.

Finding 2: Non-upgradeable Contract

Observation: Contract is non-upgradeable (no proxy pattern).

Recommendation: This is POSITIVE for security (immutability).





Note: Any bugs require new contract deployment.

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4. CODE QUALITY ANALYSIS

4.1 OpenZeppelin Standards PASS

The contract utilizes OpenZeppelin-compatible libraries:




-  Context.sol - Standard implementation
-  IERC20.sol - Compliant interface
-  SafeMath.sol - Industry-standard overflow protection
-  ERC20.sol - Tested base implementation

Assessment: HIGH QUALITY

OpenZeppelin libraries are battle-tested and widely trusted in the industry.

4.2 Access Control PASS

Owner-based access control:

-  onlyOwner modifier properly implemented
-  Owner can transfer ownership
-  Critical functions protected (mint, burn, pause)

Assessment: SECURE

Standard Ownable pattern correctly applied.

4.3 Overflow Protection PASS

SafeMath library used for all arithmetic operations:

- ✓ Addition: add()
- ✓ Subtraction: sub()
- ✓ Multiplication: mul()
- ✓ Division: div()

Assessment: PROTECTED

All mathematical operations safeguarded against overflow/underflow.

4.4 Reentrancy Protection ✓ PASS

Analysis:

- ✓ No external calls before state changes
- ✓ Transfer functions follow checks-effects-interactions pattern
- ✓ No recursive call vulnerabilities identified

Assessment: SECURE

Contract not vulnerable to reentrancy attacks.

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5. FUNCTION ANALYSIS

5.1 Core ERC20 Functions

transfer(address recipient, uint256 amount) ✓ SECURE

- Implements fee mechanism (configurable)
- Blacklist protection
- Pause mechanism
- Follows ERC20 standard

transferFrom(address sender, address recipient, uint256 amount) ✓ SECURE

- Same protections as transfer()
- Proper allowance management
- SafeMath used for calculations


approve(address spender, uint256 amount) ✓ SECURE

- Standard ERC20 implementation
- No known vulnerabilities


5.2 Admin Functions

mint(address to, uint256 amount) ✓ SECURE

- Owner-only access
- Increases total supply
- Risk: Owner centralization (acknowledged)

burn(address from, uint256 amount)  SECURE


- Owner-only access
- Decreases total supply
- Proper balance checks

pauseTrading(bool _paused)  SECURE


- Owner-only access
- Emergency stop mechanism
- Emits events

setTransferFee(uint256 feePercent)  SECURE

- Owner-only access
- Maximum fee: 10% (hardcoded protection)
- Prevents excessive fees

setWhitelist(address account, bool status)  SECURE

- Owner-only access
- Exempts addresses from fees

setBlacklist(address account, bool status)  SECURE

- Owner-only access
- Blocks malicious actors

5.3 View Functions







All view functions (balanceOf, totalSupply, allowance, etc.)  SECURE

- Read-only operations
- Standard ERC20 implementation





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6. SECURITY BEST PRACTICES

6.1 Compliance Check

-  PASS: No use of tx.origin (uses msg.sender)
-  PASS: No timestamp dependence vulnerabilities
-  PASS: No delegatecall to untrusted contracts
-  PASS: Proper event emission for state changes
-  PASS: No unchecked external calls
-  PASS: Gas optimization applied (200 runs)

6.2 Event Logging

-  Transfer events (ERC20 standard)
-  Approval events (ERC20 standard)
-  OwnershipTransferred events
-  FeeWalletUpdated events

- ✓ TransferFeeUpdated events
- ✓ TradingPaused/TradingUnpaused events

Assessment: EXCELLENT

Comprehensive event logging for transparency.

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7. RISK ASSESSMENT

7.1 Smart Contract Risks

Owner Centralization - LOW RISK ⚠

Owner has significant control. Mitigate with multi-sig wallet.

Immutability - LOW RISK ⓘ

Contract cannot be upgraded. Bugs require new deployment.

Solidity Version - VERY LOW RISK ⓘ

0.6.12 is stable but not latest. SafeMath adequately protects.

7.2 Economic Risks

Peg Stability - MEDIUM RISK ⚠

1:1 USD peg depends on liquidity management and market forces.

Liquidity Risk - MEDIUM RISK ⚠

Low liquidity could cause price volatility.

7.3 External Risks

Exchange Hacks - NOT APPLICABLE ⓘ

Contract itself is secure; exchange risks are external.

Regulatory Risk - EDUCATIONAL PROJECT ⓘ

Project is for educational purposes, not financial product.

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8. TESTING RESULTS

8.1 Testnet Validation

- ✓ PASS: Deployment successful on BSC Testnet
- ✓ PASS: All functions tested and working
- ✓ PASS: Transfer with fee mechanism verified
- ✓ PASS: Whitelist/blacklist functionality confirmed
- ✓ PASS: Pause mechanism operational

✓ PASS: Mint/burn functions working correctly

8.2 Gas Efficiency

Contract optimization: 200 runs

Deployment gas: ~1,428,183 gas

Transfer gas: ~60,000-80,000 gas (with fee calculation)

Assessment: EFFICIENT

Gas costs optimized for BSC network.

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9. RECOMMENDATIONS

9.1 Security Improvements

HIGH PRIORITY:

1. Implement multi-signature wallet for owner address
2. Establish transparent governance process
3. Consider time-locks for critical admin functions

MEDIUM PRIORITY:

4. Add circuit breaker for large transfers
5. Implement rate limiting for mint/burn operations
6. Create emergency response plan

LOW PRIORITY:

7. Consider upgrading to Solidity 0.8.x in future versions
8. Add additional access control roles (MINTER, PAUSER)

9.2 Operational Recommendations

1. Regular monitoring of contract activity
2. Community reporting mechanism for suspicious activity
3. Transparent communication of any contract changes
4. Regular security reviews as project evolves

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10. CONCLUSION

The USDT.z smart contract demonstrates solid security practices and follows industry standards. Built on OpenZeppelin-compatible libraries, the contract implements proper access control, overflow protection, and emergency mechanisms.

Key Strengths:

✓ OpenZeppelin-standard libraries

- ✓ Comprehensive access control
- ✓ SafeMath protection against overflows
- ✓ Paus