

Smart Contract Security Audit

AUDIT RATE TECH

for

SwirlToken



Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

DISCLAIMER: By reading this report or any part of it, you agree to the terms of this disclaimer. If you do not agree to the terms, then please immediately cease reading this report, and delete and destroy any and all copies of this report downloaded and/or printed by you. This report is provided for information purposes only and on a non-reliance basis, and does not constitute investment advice. No one shall have any right to rely on the report or its contents, and AUDIT RATE TECH and its affiliates (including holding companies, shareholders, subsidiaries, employees, directors, officers and other representatives) (AUDIT RATE TECH) owe no duty of care towards you or any other person, nor does AUDIT RATE TECH make any warranty or representation to any person on the accuracy or completeness of the report. The report is provided "as is", without any conditions, warranties or other terms of any kind except as set out in this disclaimer, and AUDIT RATE TECH hereby excludes all representations, warranties, conditions and other terms (including, without limitation, the warranties implied by law of satisfactory quality, fitness for purpose and the use of reasonable care and skill) which, but for this clause, might have effect in relation to the report. Except and only to the extent that it is prohibited by law, AUDIT RATE TECH hereby excludes all liability and responsibility, and neither you nor any other person shall have any claim against AUDIT RATE TECH, for any amount or kind of loss or damage that may result to you or any other person (including without limitation, any direct, indirect, special, punitive, consequential or pure economic loss or damages, or any loss of income, profits, goodwill, data, contracts, use of money, or business interruption, and whether in delict, tort (including without limitation negligence), contract, breach of statutory duty, misrepresentation (whether innocent or negligent) or otherwise under any claim of any nature whatsoever in any jurisdiction) in any way arising from or connected with this report and the use, inability to use or the results of use of this report, and any reliance on this report.

The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.

Audit details:

Audited project: SwirlToken

Contract address: 0x38fFA52C7628f5cCf871472e40c462E4483215C9

Languages: Solidity (Smart contract)

Platforms and Tools: Remix IDE, Truffle, Truffle Team, Ganache, Solhint, VScode, Mythril,
Contract Library

Total supply: 870,000,000,000,000

Token ticker: SWIRL

Decimals: 9

Compiler Version: v0.8.4+commit.c7e474f2

Contract Deployer Address: 0x97D275Bf2a32f7B8A9114efF84a0BE15873219aF

Optimization Enabled: Yes with 200 runs

Client contacts: SwirlToken team

Blockchain: Binance Smart Chain

Project website: <https://swirltoken.com>

The audit items and results:

(Other unknown security vulnerabilities are not included in the audit responsibility scope)

Audit Result: Passed

Audit Date: December 15, 2021

Audit Team: AUDIT RATE TECH

<https://www.auditrate.tech>

Introduction

This Audit Report mainly focuses on the overall security of SwirlToken Smart Contract. With this report, we have tried to ensure the reliability and correctness of their smart contract by complete and rigorous assessment of their system's architecture and the smart contract codebase.

Auditing Approach and Methodologies applied

The AUDIT RATE TECH team has performed rigorous testing of the project starting with analyzing the code design patterns in which we reviewed the smart contract architecture to ensure it is structured and safe use of third-party smart contracts and libraries.

Our team then performed a formal line by line inspection of the Smart Contract to find any potential issue like race conditions, transaction-ordering dependence, timestamp dependence, and denial of service attacks.

In the Unit testing Phase, we coded/conducted custom unit tests written for each function in the contract to verify that each function works as expected.

In Automated Testing, we tested the Smart Contract with our in-house developed tools to identify vulnerabilities and security flaws.

The code was tested in collaboration of our multiple team members and this included -

- Testing the functionality of the Smart Contract to determine proper logic has been followed throughout the whole process.
- Analyzing the complexity of the code in depth and detailed, manual review of the code, lineby-line.
- Deploying the code on testnet using multiple clients to run live tests.
- Analyzing failure preparations to check how the Smart Contract performs in case of any bugs and vulnerabilities.
- Checking whether all the libraries used in the code are on the latest version.
- Analyzing the security of the on-chain data.

Audit Goals

The focus of the audit was to verify that the Smart Contract System is secure, resilient and working according to the specifications. The audit activities can be grouped in the following three categories:

Security

Identifying security related issues within each contract and the system of contract.

Sound Architecture

Evaluation of the architecture of this system through the lens of established smart contract best practices and general software best practices.

Code Correctness and Quality

A full review of the contract source code. The primary areas of focus include:

- Accuracy
- Readability
- Sections of code with high complexity
- Quantity and quality of test coverage

Issue Categories

Every issue in this report was assigned a severity level from the following:

High level severity issues

Issues on this level are critical to the smart contract's performance/functionality and should be fixed before moving to a live environment.

Medium level severity issues

Issues on this level could potentially bring problems and should eventually be fixed.

Low level severity issues

Issues on this level are minor details and warnings that can remain unfixed but would be better fixed at some point in the future.

Number of issues per severity

Critical	High	Medium	Low	Note
0	0	0	0	0

Issues Checking Status

No	Issue description.	Checking status
1	Compiler warnings.	Passed
2	Race conditions and Reentrancy. Cross-function race conditions.	Passed
3	Possible delays in data delivery.	Passed
4	Oracle calls.	Passed
5	Front running.	Passed
6	Timestamp dependence.	Passed
7	Integer Overflow and Underflow.	Passed
8	DoS with Revert.	Passed
9	DoS with block gas limit.	Passed
10	Methods execution permissions.	Passed
11	Economy model.	Passed
12	The impact of the exchange rate on the logic.	Passed
13	Private user data leaks.	Passed
14	Malicious Event log.	Passed
15	Scoping and Declarations.	Passed
16	Uninitialized storage pointers.	Passed
17	Arithmetic accuracy.	Passed
18	Design Logic.	Passed
19	Cross-function race conditions.	Passed
20	Safe Zeppelin module.	Passed
21	Fallback function security.	Passed

Manual Audit:

For this section the code was tested/read line by line by our developers. We also used Remix IDE's JavaScript VM and Kovan networks to test the contract functionality.

Automated Audit

Remix Compiler Warnings

It throws warnings by Solidity's compiler. If it encounters any errors the contract cannot be compiled and deployed. No issues found.

Owner privileges

- Transfers ownership of the contract to a new account (`newOwner`).
- Owner can authorize address
- Owner can remove address authorization

Conclusion

Smart contracts do not contain any high severity issues!

Note:

Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner.

Implemented events

OwnershipTransferred(address)
Approval(address,address,uint256)
Transfer(address,address,uint256)
PairCreated()
TokenCreated()
AutoLiquify(uint256,uint256)
BuybackMultiplierActive(uint256)

Implemented functions

authorize(address)
unauthorize(address)
transferOwnership(address)
deposit()
process(uint256)
getCumulativeDividends(uint256)
addShareholder(address)
removeShareholder(address)
totalSupply()
decimals()
symbol()
name()
allowance(address,address)
balanceOf(address)
approve(address,uint256)
transfer(address,uint256)
transferFrom(address,address,uint256)
getTotalFee(bool)
takeFee()
shouldSwapBack()
swapBack()
shouldAutoBuyback()
triggerZeusBuyback()
clearBuybackMultiplier()
triggerAutoBuyback()
buyTokens(uint256,address)
setAutoBuybackSettings()
getPair(address,address)
feeTo()
factory()
WETH()

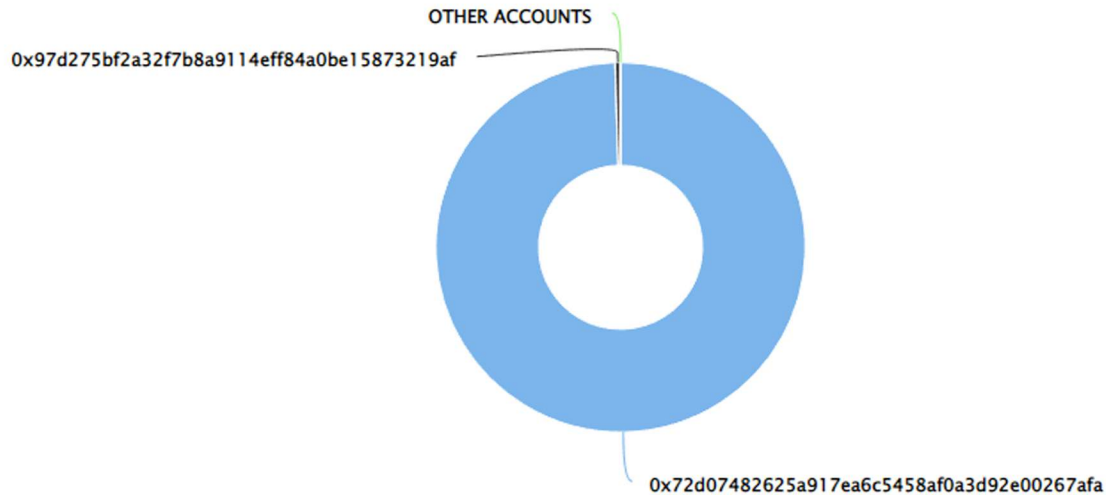
Top Token Holders

💡 The top 100 holders collectively own 100.00%
(870,000,000,000,000.00 Tokens) of SwirlToken

💡 Token Total Supply: 870,000,000,000,000.00 Token | Total
Token Holders: 2

SwirlToken Top 100 Token Holders

Source: BscScan.com



(A total of 870,000,000,000,000.00 tokens held by the top 100 accounts from the total supply of 870,000,000,000,000.00 token)

At the time of the audit:

99.53% tokens are in the wallet 0x72d07482625a917ea6c5458af0a3d92e00267afa

Do your own research and ask the current owner about it

KYC/Doxx

At the time of the audit, there is no information about the conduct of KYC / Doxx

THANK YOU!