



TechRate

AUDIT COMPANY

Smart Contract Security Audit

[TechRate](#)

February, 2022

Audit Details



Audited project

SPAL



Deployer address

0x9cba0add64881d3df9db22564432c3bb13f753e3



Client contacts:

SPAL team



Blockchain

Binance Smart Chain



Project website:

www.space-alpaca.com

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.

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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.

Background

TechRate was commissioned by SPAL to perform an audit of smart contracts:

<https://bscscan.com/address/0x4AF95fd28E5C9684eE38457166A42e059B5BD190#code>

The purpose of the audit was to achieve the following:

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be used to understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.

Contracts Details

Token contract details for 18.02.2022

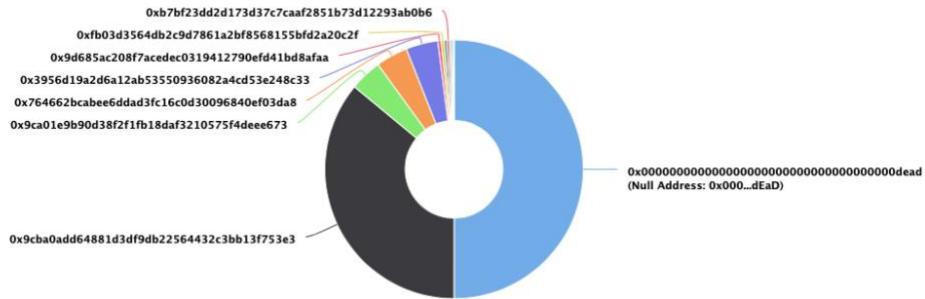
Contract name	SPAL
Contract address	0x4AF95fd28E5C9684eE38457166A42e059B5BD190
Total supply	500,000,000
Token ticker	SPAL
Decimals	18
Token holders	11
Transactions count	14
Top 100 holders dominance	100.00%
Liquidity fee	5
Tax fee	0
Total fees	0
Pcs V2 pair	0xe1467feb6ca6eff1e910a5fdbc4e734b7de6b347
Contract deployer address	0x9cba0add64881d3df9db22564432c3bb13f753e3
Contract's current owner address	0x9cba0add64881d3df9db22564432c3bb13f753e3

SPAL Token Distribution

The top 100 holders collectively own 100.00% (500,000,000.00 Tokens) of SPAL

Token Total Supply: 500,000,000.00 Token | Total Token Holders: 11

SPAL Top 100 Token Holders
Source: BscScan.com



(A total of 500,000,000.00 tokens held by the top 100 accounts from the total supply of 500,000,000.00 token)

SPAL Contract Interaction Details

Time Series: Token Contract Overview

Thu 10, Feb 2022 - Fri 11, Feb 2022

Token Contract 0x4AF95fd28E5C9684eE38457166A42e059B58D190 (SPAL)
Source: BscScan.com



SPAL Top 10 Token Holders

Rank	Address	Quantity (Token)	Percentage
1	Null Address: 0x000...dEaD	250,000,000	50.0000%
2	0x9cba0add64881d3df9db22564432c3bb13f753e3	180,000,000	36.0000%
3	0x9ca01e9b90d38f2f1fb18daf3210575f4deee673	20,000,000	4.0000%
4	0x764662bcabee6ddad3fc16c0d30096840ef03da8	20,000,000	4.0000%
5	0x3956d19a2d6a12ab53550936082a4cd53e248c33	20,000,000	4.0000%
6	0x9d685ac208f7acedec0319412790efd41bd8afaa	2,000,000	0.4000%
7	0xfb03d3564db2c9d7861a2bf8568155bfd2a20c2f	2,000,000	0.4000%
8	0x87fc29ddf210245c7be4240286a7ba7bd1c40ad0	1,600,000	0.3200%
9	0xb7bf23dd2d173d37c7caaf2851b73d12293ab0b6	1,600,000	0.3200%
10	0x887f8231047f91f1e0586859f562a047c86c10c6	1,500,000	0.3000%
11	0x76112d22e4648aab1fa4d8cf272654c671d669b9	1,300,000	0.2600%



Contract functions details

+ Context

- [Int] _msgSender
- [Int] _msgData

+ Ownable (Context)

- [Pub] <Constructor> #
- [Pub] owner
- [Pub] renounceOwnership #
 - modifiers: onlyOwner
- [Pub] transferOwnership #
 - modifiers: onlyOwner
- [Int] _transferOwnership #

+ [Lib] SafeMath

- [Int] tryAdd
- [Int] trySub
- [Int] tryMul
- [Int] tryDiv
- [Int] tryMod
- [Int] add
- [Int] sub
- [Int] mul
- [Int] div
- [Int] mod
- [Int] sub
- [Int] div
- [Int] mod

+ [Int] IUniswapV2Router01

- [Ext] factory
- [Ext] WETH
- [Ext] addLiquidity #
- [Ext] addLiquidityETH (\$)
- [Ext] removeLiquidity #
- [Ext] removeLiquidityETH #
- [Ext] removeLiquidityWithPermit #
- [Ext] removeLiquidityETHWithPermit #
- [Ext] swapExactTokensForTokens #
- [Ext] swapTokensForExactTokens #
- [Ext] swapExactETHForTokens (\$)
- [Ext] swapTokensForExactETH #
- [Ext] swapExactTokensForETH #
- [Ext] swapETHForExactTokens (\$)
- [Ext] quote
- [Ext] getAmountOut
- [Ext] getAmountIn
- [Ext] getAmountsOut
- [Ext] getAmountsIn

+ [Int] IERC20

- [Ext] name

- [Ext] symbol
 - [Ext] decimals
 - [Ext] totalSupply
 - [Ext] balanceOf
 - [Ext] allowance
 - [Ext] approve #
 - [Ext] transfer #
 - [Ext] transferFrom #
- + [Int] IUniswapV2Factory
 - [Ext] feeTo
 - [Ext] feeToSetter
 - [Ext] getPair
 - [Ext] allPairs
 - [Ext] allPairsLength
 - [Ext] createPair #
 - [Ext] setFeeTo #
 - [Ext] setFeeToSetter #
- + [Int] IUniswapV2Router02 (IUniswapV2Router01)
 - [Ext] removeLiquidityETHSupportingFeeOnTransferTokens #
 - [Ext] removeLiquidityETHWithPermitSupportingFeeOnTransferTokens #
 - [Ext] swapExactTokensForTokensSupportingFeeOnTransferTokens #
 - [Ext] swapExactETHForTokensSupportingFeeOnTransferTokens (\$)
 - [Ext] swapExactTokensForETHSupportingFeeOnTransferTokens #
- + SPAL (IERC20, Ownable)
 - [Pub] <Constructor> #
 - [Pub] name
 - [Pub] symbol
 - [Pub] decimals
 - [Pub] totalSupply
 - [Pub] balanceOf
 - [Pub] transfer #
 - [Pub] allowance
 - [Pub] approve #
 - [Pub] transferFrom #
 - [Pub] increaseAllowance #
 - [Pub] decreaseAllowance #
 - [Pub] isExcludedFromReward
 - [Pub] totalFees
 - [Pub] deliver #
 - [Pub] reflectionFromToken
 - [Pub] tokenFromReflection
 - [Pub] excludeFromReward #
 - modifiers: onlyOwner
 - [Ext] includeInReward #
 - modifiers: onlyOwner
 - [Pub] includedFromFee #
 - modifiers: onlyOwner
 - [Pub] excludedFromFee #
 - modifiers: onlyOwner
 - [Ext] setAllFeePercent #
 - modifiers: onlyOwner
 - [Pub] setSwapAndLiquifyEnabled #

- modifiers: onlyOwner
- **[Ext]** setFeeWallet #
 - modifiers: onlyOwner
- **[Pub]** setNumTokensBuybackMarketing #
 - modifiers: onlyOwner
- **[Pub]** getNumTokensBuybackMarketing
- **[Ext]** <Fallback> (\$)
 - **[Prv]** _reflectFee #
 - **[Prv]** _getValues
 - **[Prv]** _getTValues
 - **[Prv]** _getRValues
 - **[Prv]** _getRate
 - **[Prv]** _getCurrentSupply
 - **[Prv]** _takeLiquidity #
 - **[Prv]** calculateTaxFee
 - **[Prv]** calculateLiquidityFee
 - **[Prv]** removeAllFee #
 - **[Prv]** restoreAllFee #
 - **[Pub]** isIncludedFromFee
 - **[Prv]** _approve #
 - **[Prv]** _transfer #
 - **[Pub]** setnumTokensSellToAddToLiquidity #
 - modifiers: onlyOwner
 - **[Prv]** swapAndLiquify #
 - modifiers: lockTheSwap
 - **[Prv]** swapBNBForTokens #
 - **[Prv]** swapTokensForBNB #
 - **[Prv]** addLiquidity #
 - **[Prv]** _tokenTransfer #
 - **[Prv]** _transferStandard #
 - **[Prv]** _transferToExcluded #
 - **[Prv]** _transferFromExcluded #
 - **[Prv]** _transferBothExcluded #
 - **[Prv]** _tokenTransferNoFee #
 - **[Pub]** recoverToken #
 - modifiers: onlyOwner

(\$) = payable function

= non-constant function

Issues Checking Status

Issue description	Checking status
1. Compiler errors.	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.	Low issues
10. Methods execution permissions.	Passed
11. Economy model of the contract.	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.	High issues Low issues
19. Cross-function race conditions.	Passed
20. Safe Open Zeppelin contracts implementation and usage.	Passed
21. Fallback function security.	Passed

Security Issues

✓ High Severity Issues

1. Transfer issue

Issue:

- The function `_transfer()` has double `swapAndLiquify` function with the same `contractTokenBalance` value. That means sell transfers will fail if `contractTokenBalance` will be less sum of `numTokensSellToAddToLiquidity` and `numTokensBuybackMarketing`.

Recommendation:

Revise logic of swap and liquify block in `transfer_function()`.

🖥️ Medium Severity Issues

No medium severity issues found.

✓ Low Severity Issues

2. Out of gas

Issue:

- The function `includeInReward()` uses the loop to find and remove addresses from the `_excluded` list. Function will be aborted with `OUT_OF_GAS` exception if there will be a long excluded addresses list.
- The function `_getCurrentSupply` also uses the loop for evaluating total supply. It also could be aborted with `OUT_OF_GAS` exception if there will be a long excluded addresses list.

Recommendation:

Check that the excluded array length is not too big.

3. Rounding error

Issue:

- At some calculation with division, it is goes first. In Solidity we don't have floating points, but instead we get rounding errors.

Recommendation:

Do division after multiplication.

Notes:

- `setFeeWallet()` function do not include old addresses back in fee taking.

Owner privileges (In the period when the owner is not renounced)

- Owner can exclude from the fee.
- Owner can change fees.
- Owner can `_marketingAddress` and `_buybackAddress`.
- Owner can change `numTokensSellToAddToLiquidity` and `numTokensBuybackMarketing`.
- Owner can withdraw ERC20 tokens except self tokens from the contract.

Conclusion

Smart contracts contain low severity issues! Liquidity pair contract's security is not checked due to out of scope.

Liquidity locking details NOT provided by the team.

TechRate 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.