



Smart Contract Security Audit

Audit details:

Audited project:	PinkMoon
Deployer address:	0x3dc0b53da7e6ffb8c85c962b49ddb9e45dc7a79a
Client contacts:	PinkMoon team
Blockchain:	Binance Smart Chain
Project website:	https://www.pinkmoon.finance/#/

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 PinkMoon to perform an audit of smart contracts:

- <https://bscscan.com/address/0xb6090a50f66046E3c6aFB9311846a6432E45060A#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 09.05.2021.

Contract name:	PinkMoon
Contract address:	0xb6090a50f66046E3c6aFB9311846a6432E45060A
Total supply:	1000000000000000000000000
Token ticker:	PinkM
Decimals:	9
Token holders:	36481
Transactions count:	96718
Top 100 holders dominance:	60.84 %
Liquidity fee:	5
Tax fee:	5
Total fees:	199305376804565975801019
Uniswap V2 pair:	0x0ea646d9394f43205534186ffe2e0b96dd6564d9
Contract deployer address:	0x3dc0b53da7e6ffb8c85c962b49ddb9e45dc7a79a
Contract's current owner address:	0x00

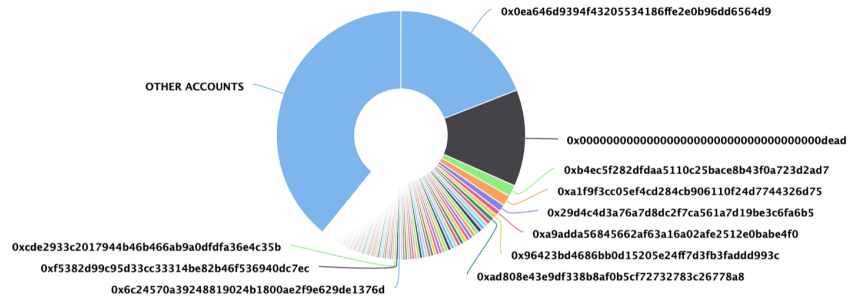
PinkMoon token distribution

The top 100 holders collectively own 60.84% (608,383,094,507,896.00 Tokens) of PinkMoon

Token Total Supply: 1,000,000,000,000.00 Token | Total Token Holders: 36,481

PinkMoon Top 100 Token Holders

Source: BscScan.com



(A total of 608,383,094,507,896.00 tokens held by the top 100 accounts from the total supply of 1,000,000,000,000.00 token)

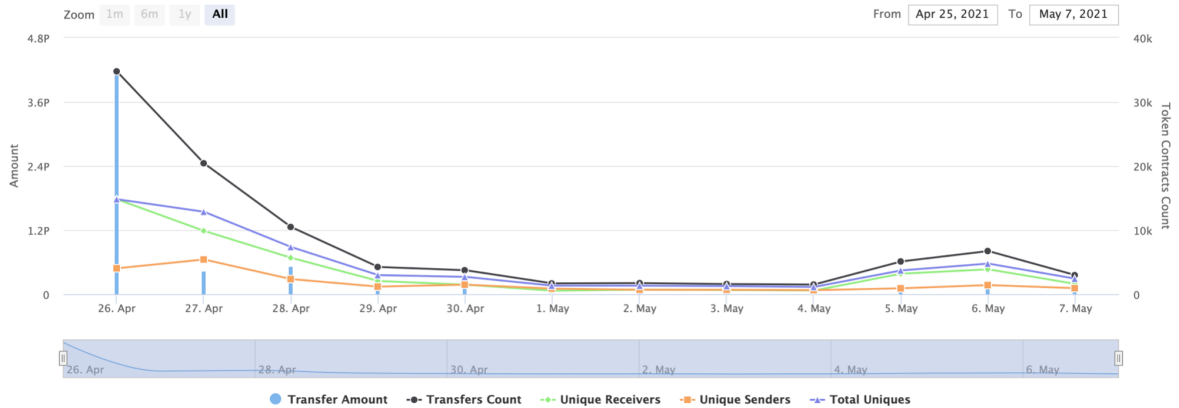
PinkMoon contract interaction details

Time Series: Token Contract Overview


Mon 26, Apr 2021 - Fri 7, May 2021

Token Contract 0xb6090a50f66046E3c6afB9311846a6432E45060A (PinkMoon)



Source: BscScan.com



PinkMoon top 10 token holders

Rank	Address	Quantity (Token)	Percentage
1	 0x0ea646d9394f43205534186ffe2e0b96dd6564d9	191,001,525,314,752.276886691	19.1002%
2	0x00dead	125,556,060,333,302.067710319	12.5556%
3	0xb4ec5f282dfdaa5110c25bace8b43f0a723d2ad7	14,803,234,989,340.530415121	1.4803%
4	0xa1f9f3cc05ef4cd284cb906110f24d7744326d75	14,036,881,815,436.830784915	1.4037%
5	0x29d4c4d3a76a7d8dc2f7ca561a7d19be3c6fa6b5	8,784,594,481,903.226652407	0.8785%
6	0xa9adda56845662af63a16a02afe2512e0babe4f0	6,380,003,930,921.543328231	0.6380%
7	0x96423bd4686bb0d15205e24ff7d3fb3fadd993c	5,602,396,270,239.826871976	0.5602%
8	0xad808e43e9df338b8af0b5cf72732783c26778a8	5,526,574,107,988.407913634	0.5527%
9	0x0c63c51bdbbb487be40f55e261749fa04cf029a0	5,434,447,247,500.828569511	0.5434%
10	0x8454e1ee9a5324a291516b95364a929d723b2308	5,168,776,651,438.911641147	0.5169%

PinkMoon LP token holders (10 from 21)

Rank	Address	Quantity	Percentage
1	 0xc765bddb93b0d1c1a88282ba0fa6b2d00e3e0c83	13,325.178044643207084847	64.0521%
2	 0x00	6,998.501956579134420243	33.6407%
3	0x07d80ae6f36a5e08dca74ce884a24d39db9934ed	457.187965469207105508	2.1976%
4	0xaa3d85ad9d128dfecb55424085754f6dfa643eb1	17.968933777338785406	0.0864%
5	0x0cee0c88fb22f68769c5646ed827de77b52ec8d4	1.750803559320874479	0.0084%
6	0x04ce9b4e5b7225707b3009afdad3d2293342b93c	0.66430268552715541	0.0032%
7	0x16911fff9c9505c9610145202a57d4a2276b59c4	0.655621530750550745	0.0032%
8	0x771d10a93da3400c06f868942facbbe9ea8f2681	0.446522762649076228	0.0021%
9	0x70479ceb85dd388c9346187f3eaff62c925417d7	0.360184918923965985	0.0017%
10	0xb637ab71cb479c251dedd26dcd6e16a756d0f0ad	0.298491203931962605	0.0014%

Contract functions details

+ [Int] IERC20

- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] transfer #
- [Ext] allowance
- [Ext] approve #
- [Ext] transferFrom #

+ [Lib] SafeMath

- [Int] add
- [Int] sub
- [Int] sub
- [Int] mul
- [Int] div
- [Int] div
- [Int] mod
- [Int] mod

+ Context

- [Int] _msgSender
- [Int] _msgData

+ [Lib] Address

- [Int] isContract
- [Int] sendValue #
- [Int] functionCall #
- [Int] functionCall #
- [Int] functionCallWithValue #
- [Int] functionCallWithValue #
- [Prv] _functionCallWithValue #

+ Ownable (Context)

- [Int] <Constructor> #
- [Pub] owner
- [Pub] renounceOwnership #
 - modifiers: onlyOwner
- [Pub] transferOwnership #
 - modifiers: onlyOwner
- [Pub] geUnlockTime
- [Pub] lock #
 - modifiers: onlyOwner
- [Pub] unlock #

+ [Int] IUniswapV2Factory

- [Ext] feeTo
- [Ext] feeToSetter
- [Ext] getPair
- [Ext] allPairs
- [Ext] allPairsLength
- [Ext] createPair #
- [Ext] setFeeTo #
- [Ext] setFeeToSetter #

+ [Int] IUniswapV2Pair

- [Ext] name
- [Ext] symbol
- [Ext] decimals
- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] allowance
- [Ext] approve #
- [Ext] transfer #
- [Ext] transferFrom #
- [Ext] DOMAIN_SEPARATOR
- [Ext] PERMIT_TYPEHASH
- [Ext] nonces
- [Ext] permit #
- [Ext] MINIMUM_LIQUIDITY
- [Ext] factory
- [Ext] token0
- [Ext] token1
- [Ext] getReserves
- [Ext] price0CumulativeLast
- [Ext] price1CumulativeLast
- [Ext] kLast
- [Ext] mint #
- [Ext] burn #
- [Ext] swap #
- [Ext] skim #
- [Ext] sync #
- [Ext] initialize #

+ [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] IUniswapV2Router02 (IUniswapV2Router01)

- [Ext] removeLiquidityETHSupportingFeeOnTransferTokens #
- [Ext] removeLiquidityETHWithPermitSupportingFeeOnTransferTokens #
- [Ext] swapExactTokensForTokensSupportingFeeOnTransferTokens #
- [Ext] swapExactETHForTokensSupportingFeeOnTransferTokens (\$)
- [Ext] swapExactTokensForETHSupportingFeeOnTransferTokens #

+ PinkMoon (Context, 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
- [Prv] _transferBothExcluded #
- [Pub] excludeFromFee #
 - modifiers: onlyOwner
- [Pub] includeInFee #
 - modifiers: onlyOwner
- [Ext] setTaxFeePercent #

- modifiers: onlyOwner
- [Ext] setLiquidityFeePercent #
 - modifiers: onlyOwner
- [Ext] setMaxTxPercent #
 - modifiers: onlyOwner
- [Pub] setSwapAndLiquifyEnabled #
 - modifiers: onlyOwner
- [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] isExcludedFromFee
- [Prv] _approve #
- [Prv] _transfer #
- [Prv] swapAndLiquify #
 - modifiers: lockTheSwap
- [Prv] swapTokensForEth #
- [Prv] addLiquidity #
- [Prv] _tokenTransfer #
- [Prv] _transferStandard #
- [Prv] _transferToExcluded #
- [Prv] _transferFromExcluded #

(\$) = 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.	Passed
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

No high severity issues found.

Medium Severity Issues

No medium severity issues found.

Low Severity Issues

1. 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.

```
function includeInReward(address account) external onlyOwner() {
    require(!_isExcluded[account], "Account is already excluded");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account) {
            _excluded[i] = _excluded[_excluded.length - 1];
            tOwned[account] = 0;
            _isExcluded[account] = false;
            _excluded.pop();
            break;
        }
    }
}
```

- ❑ 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.

```
function _getCurrentSupply() private view returns (uint256, uint256) {
    uint256 rSupply = _rTotal;
    uint256 tSupply = _tTotal;
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (
            _rOwned[_excluded[i]] > rSupply ||
            _tOwned[_excluded[i]] > tSupply
        ) return (_rTotal, _tTotal);
        rSupply = rSupply.sub(_rOwned[_excluded[i]]);
        tSupply = tSupply.sub(_tOwned[_excluded[i]]);
    }
    if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
    return (rSupply, tSupply);
}
```

Recommendation:

Use EnumerableSet instead of array or do not use long arrays.

Conclusion

Smart contracts do not contain high severity issues! Liquidity pair contract's security is not checked due to out of scope. No liquidity info provided by the team, as the liquidity is added to the owner address.

```
function addLiquidity(uint256 tokenAmount↑, uint256 ethAmount↑) private {
    // approve token transfer to cover all possible scenarios
    _approve(address(this), address(uniswapV2Router), tokenAmount↑);

    // add the liquidity
    uniswapV2Router.addLiquidityETH{value: ethAmount↑}(
        address(this),
        tokenAmount↑,
        0, // slippage is unavoidable
        0, // slippage is unavoidable
        owner(),
        block.timestamp
    );
}
```

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.