



**TechRate**

AUDIT COMPANY

# Smart Contract Security Audit

# Audit Details



Audited project

**MADAGASCAR**



Deployer address

**0x0d793AdE3F727B6845D9A82931195a1ACA56C166**



Client contacts:

**MADAGASCAR team**



Blockchain

**Binance Smart Chain**



Project website:

**[Madagascar-crypto.com](https://Madagascar-crypto.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 MADAGASCAR to perform an audit of smart contracts:

<https://bscscan.com/address/0x0526289ef04c94c3b6888e6c44faac2417c39f46#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 27.07.2021

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Contract name	MADAGASCAR
Contract address	0x0526289EF04C94c3B6888E6C44fAaC2417C39F46
Total supply	1,000,000,000,000,000
Token ticker	\$TIME
Decimals	9
Token holders	9
Transactions count	33
Top 100 holders dominance	100.00%
Liquidity fee	0
Tax fee	0
Total fees	41141934607108
Uniswap V2 pair	0xccded499f5999e55cfa2b2a68a49811d1adfcf06
Contract deployer address	0x0d793AdE3F727B6845D9A82931195a1ACA56C166
Contract's current owner address	0x0d793ade3f727b6845d9a82931195a1aca56c166

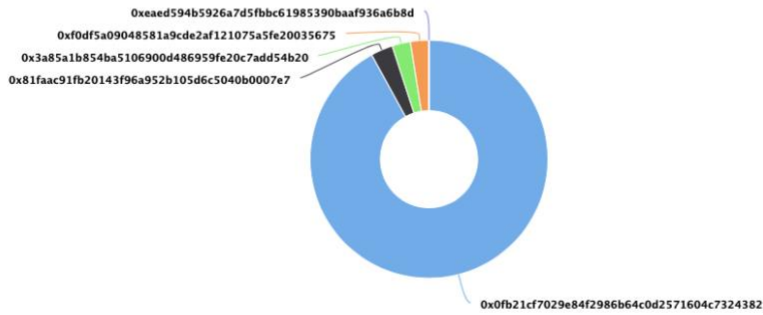
# MADAGASCAR Token Distribution

The top 100 holders collectively own 100.00% (999,999,999,917,716.00 Tokens) of MADAGASCAR

Token Total Supply: 1,000,000,000,000,000.00 Token | Total Token Holders: 9

MADAGASCAR Top 100 Token Holders

Source: BscScan.com



(A total of 999,999,999,917,716.00 tokens held by the top 100 accounts from the total supply of 1,000,000,000,000,000.00 token)

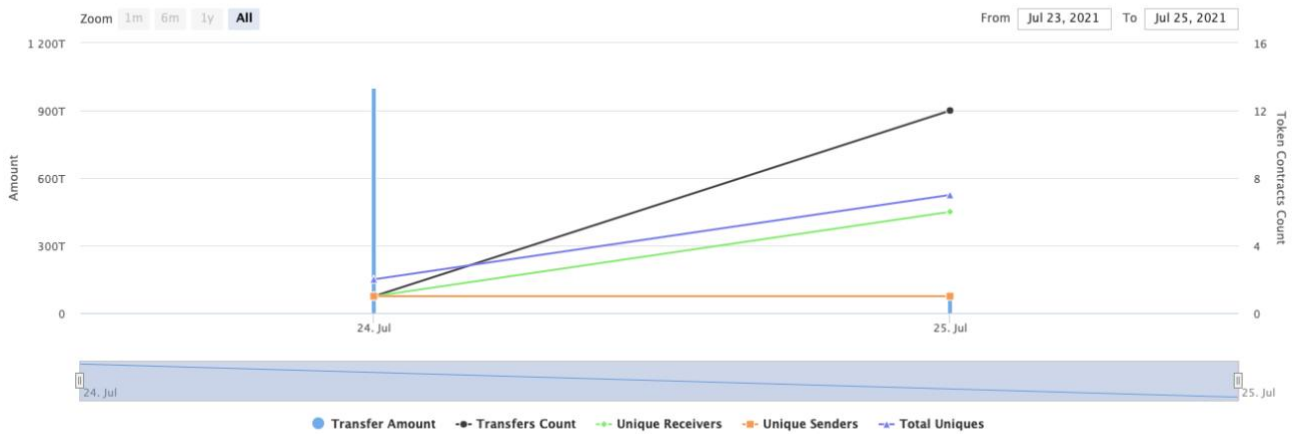
# MADAGASCAR Contract Interaction Details

Time Series: Token Contract Overview

Sat 24, Jul 2021 - Sun 25, Jul 2021

Token Contract 0x0526289ef04c94c3b6888e6c44faac2417c39f46 (MADAGASCAR)

Source: BscScan.com



# MADAGASCAR Top 10 Token Holders

Rank	Address	Quantity (Token)	Percentage
1	<a href="#">0x0fb21cf7029e84f2986b64c0d2571604c7324382</a>	919,999,374,786,400.102324	91.9999%
2	<a href="#">0x81faac91fb20143f96a952b105d6c5040b0007e7</a>	30,000,000,000,000	3.0000%
3	<a href="#">0x3a85a1b854ba5106900d486959fe20c7add54b20</a>	25,000,000,000,000	2.5000%
4	<a href="#">0xf0df5a09048581a9cde2af121075a5fe20035675</a>	25,000,000,000,000	2.5000%
5	<a href="#">0xeaed594b5926a7d5fbbc61985390baaf936a6b8d</a>	623,068,964.098332872	0.0001%
6	<a href="#">0xaa3d85ad9d128dfecb554240857546dfa643eb1</a>	1,974,812.861222436	0.0000%
7	<a href="#">0x34128167b2c4637bc1c379a5780360f3b69b502c</a>	43,768.015539474	0.0000%
8	<a href="#">0x84d5b3fd87ba5a638d33e562088f063a38a306f4</a>	43,768.015539474	0.0000%
9	<a href="#">0xd793ade3f727b6845d9a82931195a1aca56c166</a>	3.063546638	0.0000%



# 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 #
- + MADAGASCAR (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 #
  - [Ext] <Fallback> (\$)
  - [Prv] \_reflectFee #
  - [Prv] \_getValues
  - [Prv] \_getTValues
  - [Prv] \_getRValues
  - [Prv] \_getRate
  - [Prv] \_getCurrentSupply
  - [Prv] \_takeLiquidity #
  - [Prv] calculateTaxFee
  - [Prv] calculateLiquidityFee
  - [Pub] removeAllFee #
  - [Pub] restoreAllFee #
  - [Pub] isExcludedFromFee
  - [Prv] \_approve #
  - [Prv] \_transfer #
  - [Prv] swapAndLiquify #
    - modifiers: lockTheSwap
  - [Prv] swapTokensForEth #
  - [Prv] addLiquidity #
  - [Prv] \_tokenTransfer #
  - [Prv] \_transferStandard #
  - [Prv] \_transferToExcluded #
  - [Prv] \_transferFromExcluded #
  - [Pub] excludeFromFee #
    - modifiers: onlyOwner
  - [Pub] includeInFee #
    - modifiers: onlyOwner
  - [Ext] setCharityWallet #

- modifiers: onlyOwner
- **[Ext]** setDevWallet **#**
  - modifiers: onlyOwner
- **[Ext]** setComunityWallet **#**
  - modifiers: onlyOwner
- **[Ext]** setMaxTxPercent **#**
  - modifiers: onlyOwner
- **[Pub]** setSwapAndLiquifyEnabled **#**
  - 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.	Low issues
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:

Check that the excluded array length is not too big.

## 2. Wrong fee transfer.

Issue:

- The function `_tokenTransfer()` uses `_transferStandard(only reflection transfer)` function to send burn, marketing and charity fees. If this addresses would be excluded from reward, it will be a high issue.

Recommendation:

Do not exclude fee addresses from reward.

Notes:

- `_maxTxAmount` equals to total supply.
- `numTokensSellToAddToLiquidity` equals to total supply, that means swap and liquify will never runs.

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

- Owner can change charity, dev and community wallets.

```
ftrace | funcSig
function setCharityWallet(address newWallet↑) external onlyOwner() {
    charityAddress = newWallet↑;
}

ftrace | funcSig
function setDevWallet(address newWallet↑) external onlyOwner() {
    DevWallet = newWallet↑;
}

ftrace | funcSig
function setCommunityWallet(address newWallet↑) external onlyOwner() {
    communityAddress = newWallet↑;
}
```

- Owner can change the maximum transaction amount.

```
function setMaxTxPercent(uint256 maxTxPercent↑) external onlyOwner() {
    // require(maxTxPercent > 10, "Cannot set transaction amount less than 10 percent!");
    _maxTxAmount = _tTotal.mul(maxTxPercent↑).div(
        10**2
    );
}
```

- Owner can exclude from the fee.

```
function excludeFromFee(address account↑) public onlyOwner {
    _isExcludedFromFee[account↑] = true;
}
```

- Owner can lock and unlock. By the way, using these functions the owner could retake privileges even after the ownership was renounced.

```
//Locks the contract for owner for the amount of time provided
function lock(uint256 time) public virtual onlyOwner {
    _previousOwner = _owner;
    _owner = address(0);
    _lockTime = now + time;
    emit OwnershipTransferred(_owner, address(0));
}

//Unlocks the contract for owner when _lockTime is exceeds
function unlock() public virtual {
    require(_previousOwner == msg.sender, "You don't have permission to unlock");
    require(now > _lockTime, "Contract is locked until 7 days");
    emit OwnershipTransferred(_owner, _previousOwner);
    _owner = _previousOwner;
}
```

# 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.

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## *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.*