RugFreeCoins Audit

Freedom Protocol Token

Smart Contract Security Audit

March 20, 2022

Contents

Audit details

Audited project
Freedom Protocol Token

Contract Address
0xdf3a527f1fa48e52523cf1abd53a357f74ec178f

Client contact
Freedom Protocol Team

Blockchain
Ethereum smart chain

Project website
http://www.freedomprotocol.xyz

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 disclaimer below – please make sure to read it in full.

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Background

Rugfreecoins was commissioned by the Freedom Protocol Team to perform an audit of the smart contract.

https://etherscan.io/address/0xdf3a527f1fa48e52523cf1abd53a357f74ec178f

The focus of this audit is to verify that the smart contract is secure, resilient, and working according to the specifications.

The information in this report should be used to understand the risk exposure of the smart contract, project feasibility, long-term sustainability, and as a guide to improving the security posture of the smart contract by remediating the issues that were identified.
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About the project

Freedom Protocol is a token built on the Ethereum Smart Chain that is with an innovative investment use case the main purpose of which is to seek out constant revenue sources, **autostaking protocol backed by Defi 3.0 yield farming** on ETH. Freedom Protocol will bring an unparallel, fixed APY of **389,047%, the highest of its kind** onto the ETH blockchain while imposing profound ease, simplicity, and accessibility upon all Freedom Protocol holders. Each transaction, purchase incurs a 14% fee, and sale incurs a 16% fee.

Features

- **5%** of the buy and sales fees are directed to the Freedom Reserve which helps sustain and back the Staking Rewards provided by the Positive Rebase.

- The **sustainability fee of 2.5% when buying and 4.5% when selling for treasury, which is allocated for marketing** is what allows Freedom Protocol to hold the aforementioned promise. Tokens will be swapped into ETH and will be sent to a marketing wallet per transaction. This way, Freedom Protocol will have enough funds to promote the coin and spend for future development without selling tokens as the traditional way.

- The additional component included under the sustainability section is a **liquidity fee of 4% when buying and selling**, which is a redistribution mechanism that ensures the trading pool always has sufficient liquidity.

- 2.5% of all Freedom Protocol tokens traded are burnt in the Fire Pit. The more that is traded, the more get put into the fire causing the fire pit to grow in size, larger and larger through self-fulfilling auto-compounding which in return acts to reduce the circulating supply of Freedom Protocol and keep the Freedom Protocol stable.

Tokenomics

14% fee when buying

- 5% of trade goes to freedom insurance fund in ETH
- 2.5% of trade goes to the treasury in ETH
- 2.5% trade goes to the fire pit
- 4% of trade goes to the liquidity pool.

16% fee when selling

- 5% of trade goes to freedom insurance fund in ETH
- 4.5% of trade goes to the treasury in ETH
- 2.5% trade goes to the fire pit.
- 4% of trade goes to the liquidity pool.

Target market and the concept

Target market

- Anyone who's interested in the Crypto space with long-term investment plans.
- Anyone who's ready to earn a passive income by holding tokens.
- Anyone who's interested in trading tokens.
- Anyone who's ready in receiving automatic staking and compound rewards every 15 minutes.
- Anyone who's interested in receiving fixed interest of **0.02355%** per 15 minutes and 389,047.90% per year.
- Anyone who's interested in taking part with the future plans of the Freedom Protocol token.
- Anyone who's interested in making financial transactions with any other party using Freedom Protocol as the currency.

Core concept

Reward mechanism

5% of all trading fees are stored in the Freedom Reserve fund which helps sustain and back the staking rewards provided by the positive rebase.

Freedom Reserve fund is a separate wallet in the ecosystem. The Freedom Reserve fund uses an algorithm that backs the Rebase Rewards and is supported by a portion of the buy and sell trading fees that accrue in the wallet.

In simple terms, the staking rewards (rebase rewards) which are distributed every 15 minutes at a rate of 0.02355% are backed by the Freedom Reserve parameter, thus ensuring a high and stable interest rate to Freedom token holders.

Sustainable mechanism

The sustainability fee of 2.5% when buying and 4.5% selling for treasury allocated for marketing is what allows Freedom Protocol to promote the token and use funds to further the development of the platform. Tokens will be swapped into ETH and will be sent to a marketing wallet per transaction. This way, Freedom Protocol will have access to the funds without selling tokens as the traditional way, which will enable them to consume funds without hurting the project.

The liquidity fee of 4% when buying and selling, is a redistribution mechanism that ensures the trading pool always has sufficient liquidity.

2.5% of Freedom Protocol tokens from buying and selling traded are burnt in The Fire Pit. The more that is traded, the more get put into the fire causing the fire pit to grow in size, larger and larger through self-fulfilling Auto-Compounding, reducing the circulating supply and keeping the Freedom Protocol stable.

Potential to grow with score points

1.	Project efficiency	10/10
2.	Project uniqueness	7/10
3	Information quality	8/10
4	Service quality	9/10
5	System quality	9/10
6	Impact on the community	9/10
7	Impact on the business	9/10
8	Preparing for the future	8/10
Total Points		**8.625/10**

Contract details

Token contract details for 20th March 2022

Contract name	Freedom Protocol
Contract address	0xdf3a527f1fa48E52523cf1Abd53a357F74Ec178F
Token supply	389,047
Token ticker	Freedom
Decimals	5
Token holders	3
Transaction count	3
Auto liquidity receiver	0xa588416544d53e3ceef20661b1673e061c61c713
Firepit	0x9d059ea67591d549f099b543c7b7881bd7200860
Freedom insurance fund receiver	0xf7536a0970db2b9ec03023809d4793db696f432d
Treasury Receiver	0x722e9f65a9a1eb13b07d93c050bad36f42f08237
Contract deployer address	0xfcCaA044c7e1d567b191978Fe998a8C6860f0af0
Contract's current owner address	0x722e9f65a9a1eb13b07d93c050bad36f42f08237

Contract code function details

No	Category	Item	Result
1	Coding conventions	BRC20 Token standards	pass
		compile errors	pass
		Compiler version security	pass
		visibility specifiers	pass
		Gas consumption	pass
		SafeMath features	pass
		Fallback usage	pass
		tx.origin usage	pass
		deprecated items	pass
		Redundant code	pass
		Overriding variables	pass
2	Function call audit	Authorization of function call	pass
		Low level function (call/delegate call) security	pass
		Returned value security	pass
		Selfdestruct function security	pass
3	Business security	Access control of owners	pass
		Business logics	pass
		Business implementations	pass
4	Integer overflow/underflow		pass
5	Reentrancy		pass
6	Exceptional reachable state		pass
7	Transaction ordering dependence		pass
8	Block properties dependence		pass
9	Pseudo random number generator (PRNG)		pass
10	DoS (Denial of Service)		pass
11	Token vesting implementation		pass

12	**Fake deposit**		**pass**
13	**Event security**		**pass**

Contract description table

The below table represents the summary of the contracts and methods in the token contract. We scanned the whole contract and listed down all the Interfaces, functions, and implementations with their visibility and mutability.

Contract	**Type**	**Bases**		
L	Function Name	Visibility	Mutability	Modifiers
SafeMathInt	**Library**			
L	mul	Internal 🔒		
L	div	Internal 🔒		
L	sub	Internal 🔒		
L	add	Internal 🔒		
L	abs	Internal 🔒		
SafeMath	**Library**			
L	add	Internal 🔒		
L	sub	Internal 🔒		
L	sub	Internal 🔒		
L	mul	Internal 🔒		
L	div	Internal 🔒		
L	div	Internal 🔒		
L	mod	Internal 🔒		

IERC20	Interface			
└	totalSupply	External ❗		NO❗
└	balanceOf	External ❗		NO❗
└	allowance	External ❗		NO❗
└	transfer	External ❗	🛑	NO❗
└	approve	External ❗	🛑	NO❗
└	transferFrom	External ❗	🛑	NO❗
IPancakeSwapPair	**Interface**			
└	name	External ❗		NO❗
└	symbol	External ❗		NO❗
└	decimals	External ❗		NO❗
└	totalSupply	External ❗		NO❗
└	balanceOf	External ❗		NO❗
└	allowance	External ❗		NO❗
└	approve	External ❗	🛑	NO❗
└	transfer	External ❗	🛑	NO❗
└	transferFrom	External ❗	🛑	NO❗
└	DOMAIN_SEPARATOR	External ❗		NO❗
└	PERMIT_TYPEHASH	External ❗		NO❗
└	nonces	External ❗		NO❗

└	permit	External ❗	🛑	NO❗
└	MINIMUM_LIQUIDITY	External ❗		NO❗
└	factory	External ❗		NO❗
└	token0	External ❗		NO❗
└	token1	External ❗		NO❗
└	getReserves	External ❗		NO❗
└	price0CumulativeLast	External ❗		NO❗
└	price1CumulativeLast	External ❗		NO❗
└	kLast	External ❗		NO❗
└	mint	External ❗	🛑	NO❗
└	burn	External ❗	🛑	NO❗
└	swap	External ❗	🛑	NO❗
└	skim	External ❗	🛑	NO❗
└	sync	External ❗	🛑	NO❗
└	initialize	External ❗	🛑	NO❗
IPancakeSwapRouter	**Interface**			
└	factory	External ❗		NO❗
└	WETH	External ❗		NO❗
└	addLiquidity	External ❗	🛑	NO❗
└	addLiquidityETH	External ❗	💵	NO❗

└	removeLiquidity	External ❗	🛑	NO❗
└	removeLiquidityETH	External ❗	🛑	NO❗
└	removeLiquidityWithPermit	External ❗	🛑	NO❗
└	removeLiquidityETHWithPermit	External ❗	🛑	NO❗
└	swapExactTokensForTokens	External ❗	🛑	NO❗
└	swapTokensForExactTokens	External ❗	🛑	NO❗
└	swapExactETHForTokens	External ❗	💵	NO❗
└	swapTokensForExactETH	External ❗	🛑	NO❗
└	swapExactTokensForETH	External ❗	🛑	NO❗
└	swapETHForExactTokens	External ❗	💵	NO❗
└	quote	External ❗		NO❗
└	getAmountOut	External ❗		NO❗
└	getAmountIn	External ❗		NO❗
└	getAmountsOut	External ❗		NO❗
└	getAmountsIn	External ❗		NO❗
└	removeLiquidityETHSupportingFeeOnTransferTokens	External ❗	🛑	NO❗
└	removeLiquidityETHWithPermitSupportingFeeOnTransferTokens	External ❗	🛑	NO❗
└	swapExactTokensForTokensSupportingFeeOnTransferTokens	External ❗	🛑	NO❗
└	swapExactETHForTokensSupportingFeeOnTransferTokens	External ❗	💵	NO❗
└	swapExactTokensForETHSupportingFeeOnTransferTokens	External ❗	🛑	NO❗

IPancakeSwapFactory	**Interface**			
└	feeTo	External ❗		NO❗
└	feeToSetter	External ❗		NO❗
└	getPair	External ❗		NO❗
└	allPairs	External ❗		NO❗
└	allPairsLength	External ❗		NO❗
└	createPair	External ❗	🛑	NO❗
└	setFeeTo	External ❗	🛑	NO❗
└	setFeeToSetter	External ❗	🛑	NO❗
Ownable	**Implementation**			
└		Public ❗	🛑	NO❗
└	owner	Public ❗		NO❗
└	isOwner	Public ❗		NO❗
└	renounceOwnership	Public ❗	🛑	onlyOwner
└	transferOwnership	Public ❗	🛑	onlyOwner
└	_transferOwnership	Internal 🔒	🛑	
ERC20Detailed	**Implementation**	**IERC20**		
└		Public ❗	🛑	NO❗
└	name	Public ❗		NO❗

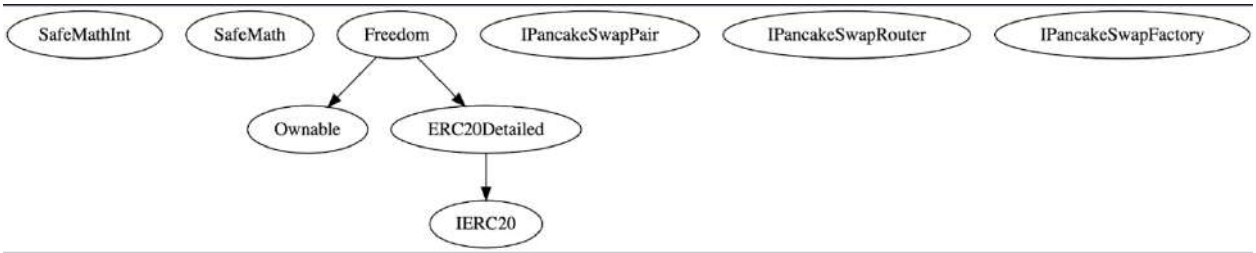
└	symbol	Public ❗		NO❗
└	decimals	Public ❗		NO❗
Freedom	**Implementation**	**ERC20Detailed, Ownable**		
└		Public ❗	🛑	ERC20Detailed Ownable
└	rebase	Internal 🔒	🛑	
└	transfer	External ❗	🛑	validRecipient
└	transferFrom	External ❗	🛑	validRecipient
└	_basicTransfer	Internal 🔒	🛑	
└	_transferFrom	Internal 🔒	🛑	
└	takeFee	Internal 🔒	🛑	
└	addLiquidity	Internal 🔒	🛑	swapping
└	swapBack	Internal 🔒	🛑	swapping
└	withdrawAllToTreasury	External ❗	🛑	swapping onlyOwner
└	shouldTakeFee	Internal 🔒		
└	shouldRebase	Internal 🔒		
└	shouldAddLiquidity	Internal 🔒		
└	shouldSwapBack	Internal 🔒		
└	setAutoRebase	External ❗	🛑	onlyOwner
└	setAutoAddLiquidity	External ❗	🛑	onlyOwner

└	allowance	External ❗		NO❗
└	decreaseAllowance	External ❗	🛑	NO❗
└	increaseAllowance	External ❗	🛑	NO❗
└	approve	External ❗	🛑	NO❗
└	checkFeeExempt	External ❗		NO❗
└	getCirculatingSupply	Public ❗		NO❗
└	isNotInSwap	External ❗		NO❗
└	manualSync	External ❗	🛑	NO❗
└	setFeeReceivers	External ❗	🛑	onlyOwner
└	getLiquidityBacking	Public ❗		NO❗
└	setWhitelist	External ❗	🛑	onlyOwner
└	setBotBlacklist	External ❗	🛑	onlyOwner
└	setPairAddress	Public ❗	🛑	onlyOwner
└	setLP	External ❗	🛑	onlyOwner
└	totalSupply	External ❗		NO❗
└	balanceOf	External ❗		NO❗
└	isContract	Internal 🔒		
└		External ❗	💵	NO❗

Legend

Symbol	Meaning
	Function can modify state
	Function is payable

Inheritance Hierarchy



Security issue checking status

- **High severity issues**
  No medium severity issues found.

- **Medium severity issues**
  No medium severity issues found

- **Low severity issues**
  No low severity issues found

Owner privileges

- The owner can withdraw tokens in contract by swapping them into ETH

```
ftrace | funcSig
function withdrawAllToTreasury() external swapping onlyOwner {

    uint256 amountToSwap = _gonBalances[address(this)].div(_gonsPerFragment);
    require( amountToSwap > 0,"There is no  token deposited in token contract");
    address[] memory path = new address[](2);
    path[0] = address(this);
    path[1] = router.WETH();
    router.swapExactTokensForETHSupportingFeeOnTransferTokens(
        amountToSwap,
        0,
        path,
        treasuryReceiver,
        block.timestamp
    );
}
```

- The owner can enable/disable rebase

```
ftrace | funcSig
function setAutoRebase(bool _flag⬆) external onlyOwner {
    if (_flag⬆) {
        _autoRebase = _flag⬆;
        _lastRebasedTime = block.timestamp;
    } else {
        _autoRebase = _flag⬆;
    }
}
```

- The owner can enable/disable auto liquidity adding

```
ftrace | funcSig
function setAutoAddLiquidity(bool _flag⬆) external onlyOwner {
    if(_flag⬆) {
        _autoAddLiquidity = _flag⬆;
        _lastAddLiquidityTime = block.timestamp;
    } else {
        _autoAddLiquidity = _flag⬆;
    }
}
```

❖ The owner can change all fee receiver wallet address

```
ftrace | funcSig
function setFeeReceivers(
    address _autoLiquidityReceiver⬆,
    address _treasuryReceiver⬆,
    address _freedomInsuranceFundReceiver⬆,
    address _firePit⬆
) external onlyOwner {
    autoLiquidityReceiver = _autoLiquidityReceiver⬆;
    treasuryReceiver = _treasuryReceiver⬆;
    freedomInsuranceFundReceiver = _freedomInsuranceFundReceiver⬆;
    firePit = _firePit⬆;
}
```

❖ The owner can exclude wallet from fees (once excluded cannot include them again)

```
ftrace | funcSig
function setWhitelist(address _addr⬆) external onlyOwner {
    _isFeeExempt[_addr⬆] = true;
}
```

❖ The owner can add/remove contracts from blacklist

```
ftrace | funcSig
function setBotBlacklist(address _botAddress⬆, bool _flag⬆) external onlyOwner {
    require(isContract(_botAddress⬆), "only contract address, not allowed exteranlly owned account");
    blacklist[_botAddress⬆] = _flag⬆;
}
```

❖ The owner can change pair address and pair contract

```
ftrace | funcSig
function setPairAddress(address _pairAddress⬆) public onlyOwner {
    pairAddress = _pairAddress⬆;
}

ftrace | funcSig
function setLP(address _address⬆) external onlyOwner {
    pairContract = IPancakeSwapPair(_address⬆);
}
```

Audit conclusion

RugFreeCoins team has performed in-depth testings, line by line manual code review, and automated audit of the smart contract. The smart contract was analyzed mainly for common smart contract vulnerabilities, exploits, manipulations, and hacks. According to the smart contract audit.

Smart contract functional Status: **PASSED**

Number of risk issues: **0**

Solidity code functional issue level: **PASSED**

Number of owner privileges: **7**

Centralization risk correlated to the active owner: **LOW**

Smart contract active ownership: **YES**