

# **DEXIRA SMART CONTRACT SECURITY AUDIT**

August, 2021

## EXECUTIVE SUMMARY

<b>Project Name</b>	DexIRA
<b>Platform</b>	Binance Smart Chain; Solidity
<b>Type</b>	Token Audit
<b>Auditor</b>	Prosper Onah
<b>Language</b>	Solidity
<b>Delivery Date</b>	2021-08-09
<b>Method of audit</b>	OWASP Risk Rating Methodology
<b>Timeline</b>	2 days
<b>Total issues</b>	3
<b>High risk issues</b>	0
<b>Medium risk issues</b>	1
<b>Low risk issues</b>	0
<b>Informational risk issues</b>	2
<b>Undetermined risk issues</b>	0
<b>Specification</b>	<a href="https://bscscan.com/address/0x147E07976E1ae78287c33aAFAab87760d32E50A5#code">https://bscscan.com/address/0x147E07976E1ae78287c33aAFAab87760d32E50A5#code</a> <a href="https://github.com/dexIRA/dexIRA/blob/main/dexIRA.sol">https://github.com/dexIRA/dexIRA/blob/main/dexIRA.sol</a> <a href="https://dexira.com/">https://dexira.com/</a>

## INTRODUCTION

On 2021-08-06, Prosper Onah performed an audit of the DexIRA smart contracts.

I, Prosper Onah, have no stake in DexIRA. This audit was performed under a contracted hourly rate with no other compensation or remuneration.

This audit was conducted in conformity with [OWASP Risk Rating Methodology](#)

## DISCLAIMER

Reports do not constitute an “endorsement” or “disapproval” of any project or team, and should not be construed as such. These reports are not intended to be an indicator of the economics or worth of any "product" or "asset" developed by any team or project, and should not be construed as such.

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## AUDIT GOALS AND FOCUS

### *Verification of details*

This will verify that every detail in the specification is correctly implemented in the smart contract

### *Verification of behavior*

This will verify that the smart contract does not have any behavior, explicit or implicit that is not captured in the specification.

This audit will also verify that the contract does not violate the original intended behavior of the specification.

### *Smart Contract Best Practices*

This audit will evaluate whether the codebase follows the current established best practices for smart contract development.

### *Code Correctness*

This audit will evaluate whether the code does what it is intended to do.

### *Code Quality*

This audit will evaluate whether the code has been written in a way that ensures readability and maintainability.

### *Security*

This audit will look for any exploitable security vulnerabilities, or other potential threats to either the operators of DexIRA or its users.

### *Testing and testability*

This audit will examine how easily tested the code is, and review how thoroughly tested the code is.

## TERMINOLOGY

This audit uses the following terminology.

### *Likelihood*

How likely a bug is to be encountered or exploited

### *Impact*

The impact a bug would have if exploited

### *Severity*

How serious the issue is, derived from Likelihood and Impact as specified by the [OWASP risk rating methodology](#)

Severity Level	Explanation
<b>High risk issues</b>	The issue has put the sensitive information of a large number of users at risk, or it is reasonably likely to have a catastrophic impact on the client's reputation or serious financial implications for clients or users.
<b>Medium risk issues</b>	The issue jeopardized a subset of users' sensitive information, would be detrimental to the client's reputation if exploited, or is likely to have a minor financial impact.
<b>Low risk issues</b>	This risk is of low impact.
<b>Informational issues</b>	This does not pose an immediate threat to immediate operations but is relevant for security best practices
<b>Undetermined risk issues</b>	The impact of the issue is uncertain

## OVERVIEW

### *Source code*

The smart contract source code was pulled from the [smartcontractkit/DexIRA Github repository](#)

### *Audit Summary*

The review was conducted on commit 4f11fadd5f688e38a603107ae973fd1b1311b4c2, which contains the two contracts that are the focus of this review, specifically DexIRA.sol, and DexIRADividendTracker.sol.

Defense against unknown vulnerability, which gives the owner of the contract to respond to future bugs and unknown vulnerabilities includes (not excluding anti-whale):

transferDelayEnabled: line 1283 in the commit above.

## PROCEDURE

### *Manual code review*

- Review of the specification and instruction provided to Onah Prosper to make sure I understand the size, scope and functionality of the smart contract.
- Manual review of code, which is the process of reading source code line-by-line in an attempt to identify potential vulnerability.
- Comparison to specification to check if the code does what the specifications, source, and instruction provided.

### *Automated Verification*

- To detect certain types of bugs human might not see.
- To free me up to think about bigger picture issues
- Symbolic execution, which is analyzing a program to determine what inputs cause each part of a program.

### *Toolset*

The setup and steps utilized in the process of this audit are outlined below;

- [Oyente with Docker](#).
- [Mithril with remixIDE](#)

## AUDIT SCOPE

The list of vulnerability checks conducted on the token contract includes but not limited to;

- Reentrancy.
- Access controls
- Arithmetic Issues (integers Overflow/Underflow).
- Unchecked return value for low level call.
- Unsafe external calls
- Centralization of power.
- Business logic contradicting the specification
- Short Address Attack
- Unknown Vulnerability.

## SUMMARY OF FINDINGS

ID	Description	Severity	Status
DEX-01	Possible case for <b>reentrancy</b> to occur	Medium	Not resolved
DEX-02	Only owner of the contract can <b>unset</b> Reward Token for user.	Informational	Not resolved
DEX-03	Only owner of the contract can <b>set</b> Reward Token for user.	Informational	Not resolved



## DETAILED AUDIT REPORT

### DEX-01: Possible case for reentrancy to occur

**Description:** Calls to untrusted contracts can introduce several unexpected risks or errors. External calls may execute malicious code in that contract or any other contract that it depends upon. As such, every external call should be treated as a potential security risk. When it is not possible, or undesirable to remove external calls.

**Severity:** Medium

**Status:** Not fixed.

### DEX-02: Only owner of the contract can unset Reward Token for user.

**Description:** As contained in the website ([www.dexira.com](http://www.dexira.com)), user should be able to unset their rewards to default reward tokens, however, in `dividendTracker.unsetRewardToken(msg.sender)` [line 1749] on this commit, unset user reward token is called from `function unsetRewardToken(address holder) external onlyOwner` [line 901] where only the owner can make this call.

**Severity:** Information

**Status:** Not fixed

### DEX-03: Only owner of the contract can set Reward Token for user

**Description:** As contained in the website ([www.dexira.com](http://www.dexira.com)), user should be able to set their rewards to default reward tokens, however, in `dividendTracker.setRewardToken(msg.sender, rewardTokenAddress, address(uniswapV2Router))` [line 1732] on this commit, unset user reward token is called from `function setRewardToken(address holder, address rewardTokenAddress, address ammContractAddress) external onlyOwner` [line 901] where only the owner can make this call.

**Severity:** Information

**Status:** Not fixed

## RECOMMENDATION

Changes after external calls and when interacting with external contracts should be avoided, variables, methods, and contract interfaces should be appropriately stated in a way that makes it clear if interacting with them is potentially unsafe. This applies to private functions that call external contracts.