



BLOCK AUDIT REPORT

Smart Contract Security Audit Report



Ryu NFTs (RYU)



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Block Audit Report Team received the ryu.sol file for smart contract security audit of the Ryu NFTs (RYU) on February 26, 2022. The following are the details and results of this smart contract security audit:

Project Name: Ryu NFTs (RYU)

The Contract address: 0x3F0f1CE31e2481f8Daf8940dc2Bd6800da566a79

0x7Cf1d24708D36F8BD1442Cb6319E66969228BA4c

0x33e07178b23871bE12A810e2E3162B47438D656C

Link Address:

<https://rinkeby.etherscan.io/address/0x3F0f1CE31e2481f8Daf8940dc2Bd6800da566a79#code>

<https://rinkeby.etherscan.io/address/0x7Cf1d24708D36F8BD1442Cb6319E66969228BA4c>

<https://rinkeby.etherscan.io/address/0x33e07178b23871bE12A810e2E3162B47438D656C>

The audit items and results:

(Other undiscovered security vulnerabilities are not included in the audit responsibility scope)



Audit Result: Passed

Audit Number: BAR0019026022022

Audit Date: February 26, 2022

Audit Team: Block Audit Report Team



Table of Content

| | |
|--|------------|
| Introduction | 4-5 |
| Auditing Approach and Methodologies applied..... | 4 |
| Audit Details | 5 |
| Audit Goals | 6-7 |
| Security | 6 |
| Sound Architecture | 6 |
| Code Correctness and Quality | 6 |
| Issue Categories | 6 |
| High level severity issues..... | 6 |
| Medium level severity issues | 6 |
| Low level severity issues | 6 |
| Issues Checking Status | 7 |
| Manual Audit:..... | 8 |
| Critical level severity issues..... | 8 |
| High level severity issues..... | 8 |
| Medium level severity issues | 8 |
| Low level severity issues | 8 |
| Owner Privileges..... | 8 |
| Automated Audit..... | 9 |
| Remix Compiler Warnings..... | 9 |
| Disclaimer..... | 10 |
| Summary | 11 |



Introduction

This Audit Report mainly focuses on the extensive security of RYU NFTS (RYU) Smart Contract. With this report, we attempt to ensure the reliability and correctness of the smart contract by complete and rigorous assessment of the system's architecture and the smart contract codebase.

Auditing Approach and Methodologies applied

The Block Audit Report team has performed rigorous testing of the project including the analysis of the code design patterns where we reviewed the smart contract architecture to ensure it is structured along with the safe use of standard inherited contracts and libraries. Our team also conducted a formal line by line inspection of the Smart Contract i.e., a manual review, to find potential issues including but not limited to;

- **Race conditions**
- **Zero race conditions approval attacks**
- **Re-entrancy**
- **Transaction-ordering dependence**
- **Timestamp dependence**
- **Check-effects-interaction pattern (optimistic accounting)**
- **Decentralized denial-of-service attacks**
- **Secure ether transfer pattern**
- **Guard check pattern**
- **Fail-safe mode**
- **Gas-limits and infinite loops**
- **Call Stack depth**

In the Unit testing Phase, we coded/conducted custom unit tests written against each function in the contract to verify the claimed functionality from our client.

In Automated Testing, we tested the Smart Contract with our standard set of multifunctional tools to identify vulnerabilities and security flaws.

The code was tested in collaboration of our multiple team members and this included but not limited to;

- Testing the functionality of the Smart Contract to determine proper logic has been followed throughout the whole process.
- Analyzing the complexity of the code in depth and detailed, manual review of the code, line-by-line.
- Deploying the code on testnet using multiple clients to run live tests.
- Analyzing failure preparations to check how the Smart Contract performs in case of any bugs and vulnerabilities.
- Checking whether all the libraries used in the code are on the latest version.
- Analyzing the security of the on-chain data.



BLOCK AUDIT REPORT

Audit Details

Project Name: Ryu NFTs (RYU)

Website/ etherscan Code (**Testnet**):

0x3F0f1CE31e2481f8Daf8940dc2Bd6800da566a79

0x7Cf1d24708D36F8BD1442Cb6319E66969228BA4c

0x33e07178b23871bE12A810e2E3162B47438D656C

Languages: Solidity (Smart contract)

Platforms and Tools: Remix IDE, Truffle, Ganache, Mythril, Contract Library, Slither, Dapp.Tools, Echidna, Etheno



Audit Goals

The focus of the audit was to verify that the Smart Contract System is secure, resilient and working according to the specifications. The audit activities can be grouped in the following three categories:

Security Sight

Identifying security related issues within each contract and the system of contract.

Sound Architecture

Evaluation of the architecture of this system through the lens of established smart contract best practices and general software best practices, standard software design principle, design patterns and practices.

Code Correctness and Quality

A full review of the contract source code. The primary areas of focus include:

- Accuracy
- Readability
- Usability vs Security
- Sections of code with high complexity
- Quantity and quality of test coverage

Issue Categories

Every issue in this report was assigned a severity level from the following:

Critical Severity Issues

Issues of this level are critical to the smart contract's performance/functionality and should be fixed before moving to a production environment.

High level severity issues

Issues on this level are strongly suggested by the team to be fixed before moving to the production environment.

Medium level severity issues

Issues on this level could potentially bring problems and should eventually be fixed.

Low level severity issues

Issues on this level are minor details and warning's that can remain unfixed but would be better fixed at some point in the future.



BLOCK AUDIT REPORT

Issues Checking Status

| No | Issue description | Checking status |
|----|---|-----------------|
| 1 | Compiler warnings. | Passed |
| 2 | Race conditions and Reentrancy. Cross-function race conditions. | Passed |
| 3 | Oracle calls. | Passed |
| 4 | Timestamp dependence. | Passed |
| 5 | DoS with Revert. | Passed |
| 6 | DoS with block gas limit. | Passed |
| 7 | Methods execution permissions. | Passed |
| 8 | Economy model. | Passed |
| 9 | The impact of the exchange rate on the logic. | Passed |
| 10 | Malicious Event log. | Passed |
| 11 | Scoping and Declarations. | Passed |
| 12 | Uninitialized storage pointers. | Passed |
| 13 | Arithmetic Operations accuracy. | Passed |
| 14 | Design Logic. | Passed |
| 15 | Cross-function race conditions. | Passed |
| 16 | Safe usage for Open Zeppelin module. | Passed |
| 17 | Fallback function security. | Passed |
| 18 | Send & receive ether. | Passed |
| 19 | Zero race condition approval attacks. | Passed |
| 20 | Short address attack. | Passed |
| 21 | Owner's authority to freeze. | Passed |
| 22 | Attempt to block ether flows. | Passed |
| 23 | Redundant inheritance check. | Passed |
| 24 | Silent overrides of mapping structs. | Passed |
| 25 | Function state mutability. | Passed |
| 26 | Unnecessary conversion of type. | Passed |



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Manual Audit:

For this section the code was tested/read line by line by our auditors. We used Remix IDE's JavaScript VM and testnet Kovan to test the contract functionality in a simulated environment.

Files in scope

All solidity files in:

<https://rinkeby.etherscan.io/address/0x3F0f1CE31e2481f8Daf8940dc2Bd6800da566a79#code>

| | |
|----------------------------------|--------|
| File 1 of 6 : ERC1967Proxy.sol | Passed |
| File 2 of 6 : Proxy.sol | Passed |
| File 3 of 6 : ERC1967Upgrade.sol | Passed |
| File 4 of 6 : IBeacon.sol | Passed |
| File 5 of 6 : Address.sol | Passed |
| File 6 of 6 : StorageSlot.sol | Passed |

Critical Severity Issues

No critical severity issues found.

High Severity Issues

No high severity issues found.

Medium Severity Issues

No medium severity issues found.

Low Severity Issues

No low severity issues found.

Owner privileges

- None



Automated Audit

Remix Compiler Warnings

It throws warnings by Solidity's compiler. If it encounters any errors the contract cannot be compiled and deployed.

The screenshot shows the Remix Solidity Compiler interface. On the left is a sidebar with icons for file operations, deployment, and contracts. The main area is titled "SOLIDITY COMPILER". It includes sections for "COMPILER" (version 0.8.2+commit.661d1103, with an option to include nightly builds), "LANGUAGE" (Solidity), "EVM VERSION" (compiler default), and "COMPILER CONFIGURATION" (Auto compile checked, Enable optimization checked with a dropdown set to 200, Hide warnings unchecked). A large blue button at the bottom left says "Compile Ryu NFTs (RYU).sol". Below this is a "CONTRACT" section with a dropdown currently set to "Proxy (Ryu NFTs (RYU).sol)". Further down are buttons for "Publish on Ipfs" (with an IPFS icon) and "Compilation Details". At the bottom right are links for ABI and Bytecode.



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 the client 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 the client 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 the client to conduct the client's 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 received smart contracts alone. No related/third-party smart contracts, applications or operations were reviewed for security. No product code has been reviewed.



Summary

Smart contracts received in file named: "Ryu NFTs (RYU)" do not contain any high severity issues!

Note:

Please read the disclaimer above and note, the audit claims NO statements or warranties on business model, investment advice/ attractiveness or code sustainability. This report is provided for the only set of contracts mentioned in the report and does not claim responsibility to include security audits for any other contracts deployed by Owner.





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