SOLIDProof

Bring trust into your projects

Blockchain Security | Smart Contract Audits | KYC

MADE IN GERMANY

Kvoltz

Audit

Security Assessment

22.November,2022

For

kvoltz

GREEN ENERGY TOKEN

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Version	Date	Description
1.0	18.November,2022	• Layout project • Automated- /Manual-Security Testing • Summary
1.1	22.November,2022	• Reaudit

Network
Binance Smart Chain (BSC)

Website
https://www.kvoltz.com

Telegram
https://t.me/KVOLTZ

Twitter
https://twitter.com/kvoltz_oficial

Facebook
https://www.facebook.com/kvoltz_oficial

Instagram
https://www.instagram.com/kvoltz_oficial/

Description

In a galaxy far, far away (or not) traditionally produced electricity is traded at ever higher prices, and the government centralizes all trading and regulatory rights in a few companies. A group unites all their knowledge to develop a decentralized solution to transform this consumption relationship. In this journey, they realize a way out in the communion of clean energy generation with the cryptoactive universe. Thus is born KVOLTZ, an initiative that revolutionizes the market with investment opportunities and monetization of surplus produced by independent plants. Join this transformation and get ready for the future!

Project Engagement

During the 18th of November 2022, **Kvoltz** team engaged Solidproof.io to audit the smart contracts that they created. The engagement was technical in nature and focused on identifying the security flaws in the design and implementation of the contracts. They provided Solidproof.io with access to their code repository and whitepaper.

Logo

Contract Links

v1.0

https://github.com/rodrigooliveiraletsgo/kvoltz/commit/a02504cfa6ea686de00eeb001c5eeb8b0a874921

Vulnerability & Risk Level

Risk represents the probability that a certain source-threat will exploit vulnerability, and the impact of that event on the organization or system. Risk Level is computed based on CVSS version 3.0.

Level	Value	Vulnerability	Risk (Required Action)
Critical	9 - 10	A vulnerability that can disrupt the contract functioning in a number of scenarios, or creates a risk that the contract may be broken.	Immediate action to reduce risk level.
High	7 – 8.9	A vulnerability that affects the desired outcome when using a contract, or provides the opportunity to use a contract in an unintended way.	Implementation of corrective actions as soon as possible.
Medium	4 – 6.9	A vulnerability that could affect the desired outcome of executing the contract in a specific scenario.	Implementation of corrective actions in a certain period.
Low	2 – 3.9	A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective.	Implementation of certain corrective actions or accepting the risk.
Informational	0 – 1.9	A vulnerability that have informational character but is not effecting any of the code.	An observation that does not determine a level of risk

Auditing Strategy and Techniques Applied

Throughout the review process, care was taken to evaluate the repository for security-related issues, code quality, and adherence to specification and best practices. To do so, reviewed line-by-line by our team of expert pentesters and smart contract developers, documenting any issues as there were discovered.

Methodology

The auditing process follows a routine series of steps:

1. Code review that includes the following:
    i) Review of the specifications, sources, and instructions provided to SolidProof to make sure we understand the size, scope, and functionality of the smart contract.
    ii) Manual review of code, which is the process of reading source code line-by-line in an attempt to identify potential vulnerabilities.
    iii) Comparison to specification, which is the process of checking whether the code does what the specifications, sources, and instructions provided to SolidProof describe.

2. Testing and automated analysis that includes the following:
    i) Test coverage analysis, which is the process of determining whether the test cases are actually covering the code and how much code is exercised when we run those test cases.
    ii) Symbolic execution, which is analyzing a program to determine what inputs causes each part of a program to execute.

3. Best practices review, which is a review of the smart contracts to improve efficiency, effectiveness, clarify, maintainability, security, and control based on the established industry and academic practices, recommendations, and research.

4. Specific, itemized, actionable recommendations to help you take steps to secure your smart contracts.

Used Code from other Frameworks/Smart Contracts (direct imports)

Imported packages:

```
"./IBEP20.sol";
"./Context.sol";
"./Ownable.sol";
```

```
./BEP20.sol
```

Tested Contract Files

This audit covered the following files listed below with a SHA-1 Hash.

A file with a different Hash has been modified, intentionally or otherwise, after the security review. A different Hash could be (but not necessarily) an indication of a changed condition or potential vulnerability that was not within the scope of this review.

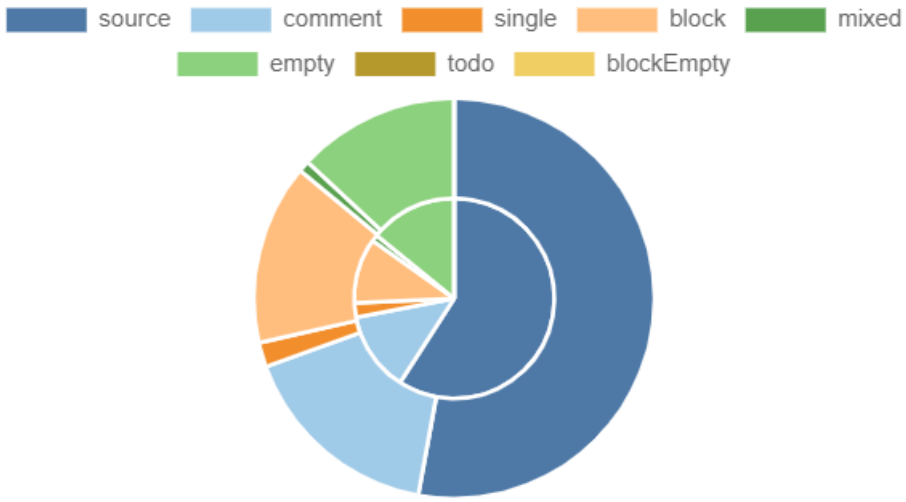
v1.0

File Name	SHA-1 Hash
contracts/IBEP20.sol	a7a267d41c9651eb5d9b6d1655416fad77b872c9
contracts/BEP20.sol	dcd45b12d022ffd3595b4d29c3ae7074e0aed25e
contracts/Context.sol	719844505df30bda93516e78eab1ced3bfe9ff4a
contracts/KvoltzVesting.sol	491abfa6161b1229c0b764f227fa9f95cb0c7c21
contracts/Ownable.sol	6e1d4b1c71b11ab929022ce1194ded1b6153788e
contracts/Kvoltz.sol	780fad3c894a3e893bcc984684d0293cbbf48e6e

Metrics

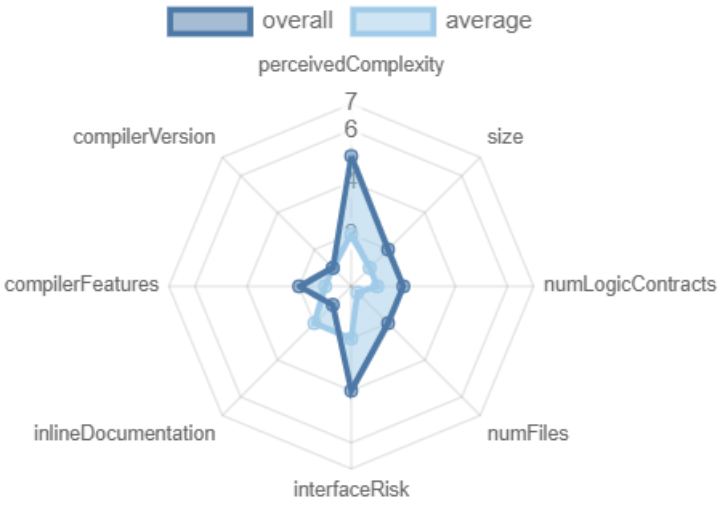
Source Lines

v1.0



Risk Level

v1.0



Capabilities

v1.0

Components

Contracts	Libraries	Interfaces	Abstract
3	0	1	2

Exposed Functions

This section lists functions that are explicitly declared public or payable. Please note that getter methods for public stateVars are not included.

Public	Payable
53	0

External	Internal	Private	Pure	View
31	55	0	1	27

StateVariables

Total	Public
57	0

Capabilities

Solidity Versions observed	Experimental Features	Can Receive Funds	Uses Assembly	Has Destroyable Contracts

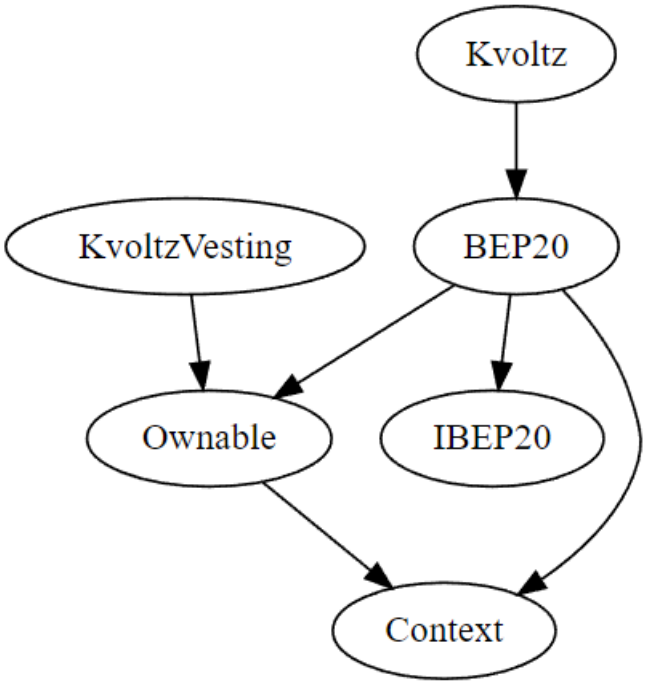
`0.8.17`
`^0.8.17`
`^0.8.0`				

Transfers ETH	Low-Level Calls	DelegateCall	Uses Hash Functions	ECRecover	New/Create/Create2
`yes`					

TryCatch	Σ Unchecked
	`yes`

Inheritance Graph

v1.0



Call Graph
v1.0

Scope of Work/Verify Claims

The above token Team provided us with the files that needs to be tested (Github, Bscscan, Etherscan, files, etc.). The scope of the audit is the main contract (usual the same name as team appended with .sol).

We will verify the following claims:

1. Is contract an upgradeable
2. Correct implementation of Token standard
3. Deployer cannot mint any new tokens
4. Deployer cannot burn or lock user funds
5. Deployer cannot pause the contract
6. Deployer can set fees
7. Deployer can blacklist/antisnipe address
8. Overall checkup (Smart Contract Security)

Is contract an upgradeable

Name	
Is contract an upgradeable?	No

Correct implementation of Token standard

ERC20				
Function	**Description**	**Exist**	**Tested**	**Verified**
totalSupply	Provides information about the total token supply			
balanceOf	Provides account balance of the owner's account			
transfer	Executes transfers of a specified number of tokens to a specified address			
transferFrom	Executes transfers of a specified number of tokens from a specified address			
approve	Allow a spender to withdraw a set number of tokens from a specified account			
allowance	Returns a set number of tokens from a spender to the owner			

Deployer cannot mint any new tokens

Name	Exist	Tested	Status
Deployer cannot mint			
Max / Total Supply	N/A		

Comments:

The tokens will be minted to the following addresses at the time of deployment:

- IDO_WALLET = 0x043a25e730C64e3D93b6D6ADce88D0bC06ba1bCc
- TEAM_WALLET = 0x928bb80267FfC88a3EfE6BC81B226D97Dd1Fcb89
- ECOSYSTEM_WALLET = 0x01399a8F0F4aA025af68E6a56ce5bD5883EEa503
- MARKETING_WALLET = 0xD387ce9e89Ab1d1B2c7c596902711b771565B639
- STRATEGICRESERVE_WALLET = 0x4c6Cb05FD4D5C6dEb6838240Cdb3611b551473A8
- EXCHANGE_WALLET = 0xfE84C0d87aA631b1E3e6bD0F9F1c80EEdBC0B15C

Deployer cannot burn or lock user funds

Name	Exist	Tested	Status
Deployer can lock			
Deployer cannot burn			

Deployer cannot pause the contract

Name	Exist	Tested	Status
Deployer cannot pause			

Deployer can set fees

Name	Exist	Tested	Status
Deployer cannot set fees over 25%			
Deployer cannot set fees to nearly 100% or more			

Comments:

Maximum fees cannot be more than 25%

Deployer cannot blacklist/antisnipe addresses

Name	Exist	Tested	Status
Deployer can blacklist/antisnipe addresses			

Overall checkup (Smart Contract Security)

Tested	Verified

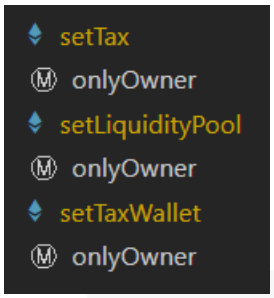
Legend

Attribute	Symbol
Verified / Checked	
Partly Verified	
Unverified / Not checked	
Not available	

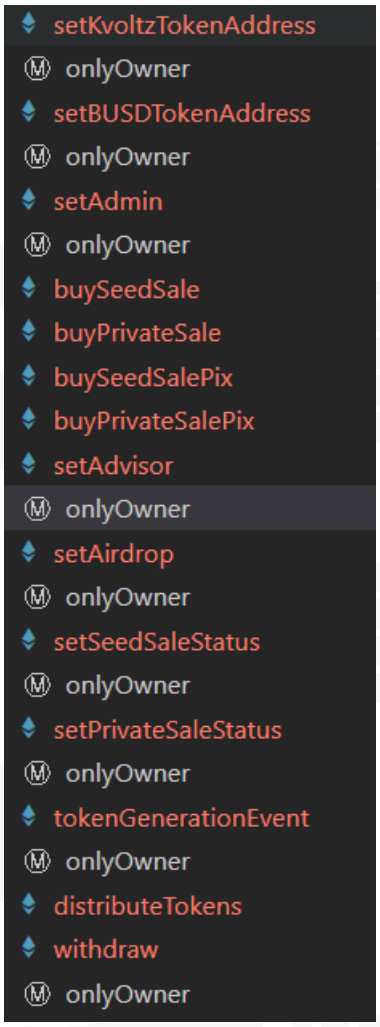
Modifiers and public functions

v1.1

Kvoltz



KvoltzVesting



Ownership Privileges:

- Set liquidity pool address and tax address
- Set KovaltzToken and BUSD Address in the vesting contract even after deployment.
- Set a new Admin and advisors address for the advisor token allocation in the contract
- Set Airdrop, Seed Sale, and Private Sale status to true or false at any time because there is no protection against it.
- Start the Token Generation Event but cannot stop it, once it is called.
- The owner can withdraw the vesting contract balance at any time.

Source Units in Scope

v1.0

File	Logic Contracts	Interfaces	Lines	nLines	nSLOC	Comment Lines	Complex. Score
contracts/IBEP20.sol		1	94	23	17	66	21
contracts/BEP20.sol	1		188	164	118	6	86
contracts/Context.sol	1		24	24	9	12	1
contracts/KvoltzVesting.sol	1		423	419	310	58	257
contracts/Ownable.sol	1		83	83	31	41	24
contracts/Kvoltz.sol	1		94	94	76	1	51
Totals	**5**	**1**	**906**	**807**	**561**	**184**	**440**

Legend

Attribute	Description
Lines	total lines of the source unit
nLines	normalized lines of the source unit (e.g. normalizes functions spanning multiple lines)
nSLOC	normalized source lines of code (only source-code lines; no comments, no blank lines)
Comment Lines	lines containing single or block comments
Complexity Score	a custom complexity score derived from code statements that are known to introduce code complexity (branches, loops, calls, external interfaces, ...)

Audit Results

AUDIT PASSED

Critical issues

No critical issues

High issues

No high issues

Medium issues

No medium issues

Low issues

Issue	File	Type	Line	Description
#1	All	Contract doesn't import npm packages from source (like OpenZeppelin etc.)	-	We recommend importing all packages from npm directly without flattening the contract. Functions could be modified or can be susceptible to vulnerabilities

Informational issues

Issue	File	Type	Line	Description
#1	All	NatSpec documentation missing	-	If you started to comment your code, also comment all other functions, variables etc.

Audit Comments

We recommend you to use the special form of comments (NatSpec Format, Follow link for more information https://docs.soliditylang.org/en/v0.5.10/natspec-format.html) for your contracts to provide rich documentation for functions, return variables and more. This helps investors to make clear what that variables, functions etc. do.

22. November, 2022:

- There is still an owner (Owner still has not renounced ownership)
- Read the whole report and modifiers section for more information.

SWC Attacks

ID	Title	Relationships	Status
SWC-136	Unencrypted Private Data On-Chain	CWE-767: Access to Critical Private Variable via Public Method	PASSED
SWC-135	Code With No Effects	CWE-1164: Irrelevant Code	PASSED
SWC-134	Message call with hardcoded gas amount	CWE-655: Improper Initialization	PASSED
SWC-133	Hash Collisions With Multiple Variable Length Arguments	CWE-294: Authentication Bypass by Capture-replay	PASSED
SWC-132	Unexpected Ether balance	CWE-667: Improper Locking	PASSED
SWC-	Presence of unused variables	CWE-1164: Irrelevant Code	PASSED

131			PASSED
SWC-130	Right-To-Left-Override control character (U+202E)	CWE-451: User Interface (UI) Misrepresentation of Critical Information	
SWC-129	Typographical Error	CWE-480: Use of Incorrect Operator	
SWC-128	DoS With Block Gas Limit	CWE-400: Uncontrolled Resource Consumption	
SWC-127	Arbitrary Jump with Function Type Variable	CWE-695: Use of Low-Level Functionality	
SWC-125	Incorrect Inheritance Order	CWE-696: Incorrect Behavior Order	
SWC-	Write to Arbitrary	CWE-123: Write-what-where Condition	

124	Storage Location		
SWC-123	Requirement Violation	CWE-573: Improper Following of Specification by Caller	PASSED
SWC-122	Lack of Proper Signature Verification	CWE-345: Insufficient Verification of Data Authenticity	PASSED
SWC-121	Missing Protection against Signature Replay Attacks	CWE-347: Improper Verification of Cryptographic Signature	PASSED
SWC-120	Weak Sources of Randomness from Chain Attributes	CWE-330: Use of Insufficiently Random Values	PASSED
SWC-119	Shadowing State Variables	CWE-710: Improper Adherence to Coding Standards	NOT PASSED

SWC-118	Incorrect Constructor Name	CWE-665: Improper Initialization	PASSED
SWC-117	Signature Malleability	CWE-347: Improper Verification of Cryptographic Signature	PASSED
SWC-116	Timestamp Dependence	CWE-829: Inclusion of Functionality from Untrusted Control Sphere	PASSED
SWC-115	Authorization through tx.origin	CWE-477: Use of Obsolete Function	PASSED
SWC-114	Transaction Order Dependence	CWE-362: Concurrent Execution using Shared Resource with Improper Synchronization ('Race Condition')	PASSED
SWC-113	DoS with Failed Call	CWE-703: Improper Check or Handling of Exceptional Conditions	PASSED

SWC-112	Delegatecall to Untrusted Callee	CWE-829: Inclusion of Functionality from Untrusted Control Sphere	PASSED
SWC-111	Use of Deprecated Solidity Functions	CWE-477: Use of Obsolete Function	PASSED
SWC-110	Assert Violation	CWE-670: Always-Incorrect Control Flow Implementation	PASSED
SWC-109	Uninitialized Storage Pointer	CWE-824: Access of Uninitialized Pointer	PASSED
SWC-108	State Variable Default Visibility	CWE-710: Improper Adherence to Coding Standards	PASSED
SWC-107	Reentrancy	CWE-841: Improper Enforcement of Behavioral Workflow	PASSED

SWC-106	Unprotected SELFDESTRUCT Instruction	CWE-284: Improper Access Control	PASSED
SWC-105	Unprotected Ether Withdrawal	CWE-284: Improper Access Control	PASSED
SWC-104	Unchecked Call Return Value	CWE-252: Unchecked Return Value	PASSED
SWC-103	Floating Pragma	CWE-664: Improper Control of a Resource Through its Lifetime	NOT PASSED
SWC-102	Outdated Compiler Version	CWE-937: Using Components with Known Vulnerabilities	PASSED
SWC-101	Integer Overflow and Underflow	CWE-682: Incorrect Calculation	PASSED

SWC-100	Function Default Visibility	CWE-710: Improper Adherence to Coding Standards	PASSED