



We Can Develop IT

**Kassa 400/100, Kassa 200/50,
Kassa 100/30**

Smart Contract Audit

Version 2.0

Last updated 12/11/2018

Kassa 400/100 Contract - Referral Bonus Deposit	2
KASSA 400/100 Program Description	2
Executed Test Cases	3
Audit Results	8
Notes and Recommendations	8
KASSA 200/50 Contract	9
Audit Results for 0x72fa6623cc0800bc180639d60c33c95426d76576 from 12/11/2018	9
KASSA 200/50 Program Description	9
Executed Test Cases	9
Audit Results	13
Conclusion on KASSA 200/50 Contract	14
KASSA 100/30 Contract	14
Audit Results for 0xb0601ee3d8ed87a7f7cd9264ec5d02fe5ae30c97 from 12/11/2018	14
KASSA 100/30 Program Description	14
Executed Test Cases	14
Audit Results	19
Conclusion on KASSA 100/30 Contract	19
Summary on Audit Results	20

Kassa 400/100 Contract - Referral Bonus Deposit

KASSA 400/100 Program Description

Smart contract address: 0x069b5065fadfedbfe9094029234a9bc3838f2f2e

Audit completion and contract publication date: 12/11/2018

General functionality for all contracts:

Daily limit will increase by 2% every day for all contracts

The initial limit for all programs is set to 50 ETH per day

Maximum amount of deposit from the 1st wallet:

Kassa 400/100 program: 50 ETH +1% per day

200/50 program: 50 ETH +1% per day

100/30 program: 50 ETH+1% per day

Amount credited per day: 1%

Deductible fund for the project: 5%

Referrals to inviters:

Link (1st line): 5%

2nd line: 2%

3rd line: 1%

4th line: 1%

5th line: 2%

Minimal deposition amount: 1 ETH

Maximum deposition amount: 50 ETH

Deposition daily limit:

The limit increases every day by 2% up to 100 ETH and then stops. General limit of deposits to the system starts from 50 ETH and increases by 1% per day before reaching 100 ETH. There is a total threshold of limits which is removed when total deposit amount reaches 3000 ETH.

If a daily limit is exceeded, the system of auto return with a penalty of 10% of the deposit amount of deposits applies.

If a user specifies themselves as a referral, referral program doesn't apply. However, the user will be able to avoid 10% payment to the system wallet.

Contract provides allows a user to invest any amount (from 1 ETH to 50 ETH) to the contract and receive 200% return within 400 days. One can send ethereum directly to the contract address or calling invest function. Every subsequent contribution is made

separately in the contract for the purpose of keeping payment deadline by every investment.

Payment amount is charged immediately after deposit is made; withdrawal can be made anytime.

User can withdraw funds by sending 0 ETH to the contract address or by calling withdraw function.

All deposits are summarized and available for withdrawal anytime. Thus it doesn't matter when user decides to withdraw dividends.

If user requests dividends withdrawal immediately after the investment, dividends are not paid and 10% of a deposited amount are charged.

Executed Test Cases

Manual testing and automated testing with special scripts were performed for the contract. The contract has been tested in speed-up mode.

KASSA Base				
1	Case	Steps	Expected Result	Status
2	Transfer of funds to a deposit from one wallet with the minimum allowed amount	Transfer 1 ETH to a deposit from the wallet indicating the referral	Funds are credited to the contract account	pass
3	Transfer of funds to a deposit from one wallet below the minimum allowable amount (0.99)	Transfer 0.99 ETH from a wallet to a deposit indicating the referral	The funds remains on the system account	pass
4	Transfer of funds in amount of 1 ETH to a deposit first time indicating owner as a referral	After the wallet is activated, when you do first deposit, indicate owner as a referral	Funds are credited to the contract account. Commission and referral bonus are credited to the account owner	pass
5	Transfer of funds to a deposit from one wallet with the maximum allowed amount, with an indication of a referral	Transfer 50 ETH from a wallet to a deposit with an indication of a referral	Funds (50 ETH) are credited to the system account, 5% commission is credited to the account owner, 5% referral bonus is credited to a referral	pass

6	Transfer of funds to owner's deposit beyond the maximum amount	Transfer 10 ETH from a wallet to a deposit with an indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
7	Transfer of funds to owner's deposit below the minimum amount	Transfer 0.99 ETH from a wallet to a deposit with an indication of a referral	Funds remain on the system balance	pass
8	Request interest withdrawal immediately after deposit	Перевести с кошелька сумму в 1 eth на депозит с указанием реферала Запросить вывод выплат.	Only commission for method call is charged.	pass
9	Deposit 0.99 ETH from one wallet	Transfer 0.99 ETH from a wallet to a deposit with an indication of a referral	The amount is transferred to the system account, transaction fee is charged	pass
10	Add 50.001 ETH to a deposit account from one wallet	Transfer 50.01 ETH from a wallet to a deposit with an indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
11	Add credit to a deposit account from several wallets to reach a daily limit	Transfer 10 ETH to a deposit account from 5 different wallets with an indication of a referral	For the 6th transfer, funds are returned to the user's account with a 10% penalty	pass
12	Transfer 1 ETH to a deposit account without indication of a referral	Transfer 1 ETH from a wallet to a deposit account without indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
13	Funds transferred to a deposit account should be refunded by deducting 10% penalty if a user enters wrong referral link	Transfer 1 ETH from a wallet to a deposit account without indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
14	Make sure penalty does not exceed 10%	Transfer 1 ETH from a wallet to a deposit account without indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
15	Make sure that user can receive several referral bonuses	Specify the same referral for multiple users	Referral bonuses are received from every deposit account	pass
16	Make sure that user can receive several referral bonuses of the	Specify the same referral for multiple users	Referral 5% are received from each new deposit account	pass

	same type (5%)			
17	Make sure system fees do not exceed 5%	Send 10 ETH	System fees 0.5 ETH	pass
18	Make sure that referral bonus does not exceed 5%	Make multiple deposits from different wallets with an indication of the same referral	Referral fees from every deposit - 5%	pass
19	Daily limit should not exceed 50 ETH	Make multiple deposits totaling 51 ETH from different wallets with an indication of a referral	At the last deposit transfer, an automatic refund is made with a 10% penalty	pass
20	Check that daily limit will not be changed if a participant transfers funds exceeding the maximum allowed amount		A full refund is made with a penalty charge	pass
21	Automatic crediting of referral bonuses when the 0.015 ETH limit is reached		Funds are credited to the user account	pass
22	request for payment: transfer 0 ETH to the smart-contract address with the required amount of gas		User's account is credited with interest amount factored in time passed from the deposit	pass
23	Payment request: transfer 0 ETH to the smart contract address at the day of deposit replenishment		Only commission for method call is charged.	pass
24	Payment request with insufficient funds on the smart contract balance		Error returns: revert Not enough balance. Please retry later.	pass
25	Referral System Verification - Level 1			pass
26	Verification of dynamic maximum limit for 1 transfer	Transfer 50.01 ETH at the 10th day	Amount is successfully transferred to system balance	pass
27	Verification of daily dynamic maximum transaction limit	Transfer 50.5 ETH at the 10th day	Amount is successfully transferred to system balance	pass
28	Deposit is over but somebody makes		Deposit is credited to the account of a new	pass

	deposit and specifies this wallet as a referral		user, referral bonuses are credited	
29	User must receive deposit refund by deducting 10% penalty when they enter their wallet as a referral		Money are refunded to a user, penalty is charged from the system balance	pass
30	User must receive deposit refund by deducting 10% penalty when they enter their wallet as a referral, including the case when deposit has expired		Money are refunded to a user, penalty is charged from the system balance	pass
31	Проверить начисление реферального вознаграждения в размере (5%/1%/1%/1%/2%) для базового контракта	<p>1 - Specify owner's wallet as a referral when making the first deposit</p> <p>2 - Indicate wallet 1 of the previous sender as a referral when making the 2nd deposit from the wallet 2</p> <p>3 - Indicate address wallet of the 2nd sender as a referral when making the 3rd deposit from the wallet 3</p> <p>4 - Indicate address wallet of the 3rd sender as a referral when making the 4th deposit from the wallet 4</p> <p>5 - Indicate address wallet of the 4th sender as a referral when making the 5th deposit from the wallet 5</p> <p>6 - Indicate address wallet of the 5th sender as a referral when making the 6th deposit from the wallet 6</p>	<p>1) Owner should receive a 5% bonus of the amount of a deposit + 5% commission fee</p> <p>2) Holder of the 1st wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 1% of a deposited amount + 5% commission fee</p> <p>3) Holder of the 2nd wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 1% of a deposited amount + 5% commission fee</p> <p>4) Holder of the 3rd wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 1% of a deposited amount + 5% commission fee</p> <p>5) Holder of the 4th wallet should receive a bonus in the amount of 5% of a deposited amount and the owner</p>	pass

			should be credited with 2% of a deposited amount + 5% commission fee 6) Holder of the 5th wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 2% of a deposited amount + 5% commission fee	
3 2	Owner should not receive referral bonus after level 5	1 - Specify owner's wallet as a referral when making the first deposit 2 - Indicate wallet 1 of the previous sender as a referral when making the 2nd deposit from the wallet 2 3 - Indicate address wallet of the 2nd sender as a referral when making the 3rd deposit from the wallet 3 4 - Indicate address wallet of the 3rd sender as a referral when making the 4th deposit from the wallet 4 5 - Indicate address wallet of the 4th sender as a referral when making the 5th deposit from the wallet 5 6 - Indicate address wallet of the 5th sender as a referral when making the 6th deposit from the wallet 6	Owner should receive only 5% commission fee	pass
3 3	Daily limit should increase daily			pass
3 4	Verify crediting of a bonus at the 400th day		User should receive a bonus 2 times more than an amount of deposit	pass

<https://docs.google.com/spreadsheets/d/1Usj94doyz3g4QUNrOgF7P1EgPpvr-jUGBVcRw6WBLuM/edit#gid=1511536476>

Audit Results

Contract audit end date: 12/11/2018

Critical vulnerabilities: 0

Errors and issues: 0

Optimization capability: 1

A possibility to reduce transaction cost and number of code lines.

Optimization results: Algorithm of calculation the contract limits based on quadratic optimization was implemented. This allowed to avoid recursive computation and reduce transaction cost.

Notes and Recommendations

This contract uses SafeMath - a math library especially designed to support safe math operations that prevents computational errors in smart contracts.

SafeMath is used only in formulas for investors payments calculation. There is no risk of overflow in all other cases, because calculations don't allow to move beyond 0 - 2256-1. Thus, all calculations in the contract are safe.

The contract code could contain a potential ability to close depositing of funds to the project. However, after the following addresses have been checked:

(assembly { size := extcodesize(addr) })

it was proved that addresses for commission fees are not smart contracts that could interfere transferring of the project commission to the balance. Thus, owners in the contract have no ability to stop receiving of funds.

Calling a refund can be initiated by a null transaction from a wallet. Some wallets don't allow transactions of this type. Therefore users who came into the project from such a wallet can withdraw their funds only by connecting contract interface to the wallet and calling withdraw function, or by exporting private key to another wallet.

KASSA 200/50 Contract

Audit Results for

[0x72fa6623cc0800bc180639d60c33c95426d76576](#) from 12/11/2018

KASSA 200/50 Program Description

Daily limit will increase by 2% every day for all contracts

The initial limit for all programs is set to 50 ETH per day

Maximum amount of deposit from the 1st wallet:

200/50 program: 50 ETH +1% per day

Deposit lifetime: 200 days (income + 50% of a deposit amount)

Amount credited per day: 0.75%

Deductible fund for the project: 5%

Referrals to inviters: 5%

2nd line: 2%

3rd line: 1%

Minimal deposition amount: 0.5 ETH

Maximum deposition amount: 30 ETH

Executed Test Cases

Manual testing and automated testing with special scripts were performed for the contract.

The contract has been tested in speed-up mode.

KASSA Stable				
1	Case	Steps	Expected Result	Status
2	Transfer of funds to a deposit from one wallet with the minimum allowed amount	Transfer 1 ETH to a deposit from the wallet indicating the referral	Funds are credited to the contract account	pass
3	Transfer of funds to a deposit from one wallet below the minimum allowable amount (0.99)	Transfer 0.99 ETH from a wallet to a deposit indicating the referral	The funds remains on the system account	pass
4	Transfer of funds in amount of 1 ETH to a	After the wallet is activated, when you do first deposit,	Funds are credited to the contract account.	pass

	deposit first time indicating owner as a referral	indicate owner as a referral	Commission and referral bonus are credited to the account owner	
5	Transfer of funds to a deposit from one wallet with the maximum allowed amount, with an indication of a referral	Transfer 50 ETH from a wallet to a deposit with an indication of a referral	Funds (50 ETH) are credited to the system account, 5% commission is credited to the account owner, 5% referral bonus is credited to a referral	pass
6	Transfer of funds to owner's deposit beyond the maximum amount	Transfer 10 ETH from a wallet to a deposit with an indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
7	Transfer of funds to owner's deposit below the minimum amount	Transfer 0.99 ETH from a wallet to a deposit with an indication of a referral	Funds remain on the system balance	pass
8	Request interest withdrawal immediately after deposit	Перевести с кошелька сумму в 1 eth на депозит с указанием реферала Запросить вывод выплат.	Only commission for method call is charged.	pass
9	Deposit 0.99 ETH from one wallet	Transfer 0.99 ETH from a wallet to a deposit with an indication of a referral	The amount is transferred to the system account, transaction fee is charged	pass
10	Add 50.001 ETH to a deposit account from one wallet	Transfer 50.01 ETH from a wallet to a deposit with an indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
11	Add credit to a deposit account from several wallets to reach a daily limit	Transfer 10 ETH to a deposit account from 5 different wallets with an indication of a referral	For the 6th transfer, funds are returned to the user's account with a 10% penalty	pass
12	Transfer 1 ETH to a deposit account without indication of a referral	Transfer 1 ETH from a wallet to a deposit account without indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
13	Funds transferred to a deposit account should be refunded by deducting 10% penalty if a user enters wrong referral link	Transfer 1 ETH from a wallet to a deposit account without indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
14	Make sure penalty does not exceed 10%	Transfer 1 ETH from a wallet to a deposit account without indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
15	Make sure that user can receive several referral	Specify the same referral for multiple users	Referral bonuses are received from every	pass

	bonuses		deposit account	
16	Make sure that user can receive several referral bonuses of the same type (5%)	Specify the same referral for multiple users	Referral 5% are received from each new deposit account	pass
17	Make sure system fees do not exceed 5%	Send 10 ETH	System fees 0.5 ETH	pass
18	Make sure that referral bonus does not exceed 5%	Make multiple deposits from different wallets with an indication of the same referral	Referral fees from every deposit - 5%	pass
19	Daily limit should not exceed 50 ETH	Make multiple deposits totaling 51 ETH from different wallets with an indication of a referral	At the last deposit transfer, an automatic refund is made with a 10% penalty	pass
20	Check that daily limit will not be changed if a participant transfers funds exceeding the maximum allowed amount		A full refund is made with a penalty charge	pass
21	Automatic crediting of referral bonuses when the 0.015 ETH limit is reached		Funds are credited to the user account	pass
22	request for payment: transfer 0 ETH to the smart-contract address with the required amount of gas		User's account is credited with interest amount factored in time passed from the deposit	pass
23	Payment request: transfer 0 ETH to the smart contract address at the day of deposit replenishment		Only commission for method call is charged.	pass
24	Payment request with insufficient funds on the smart contract balance		Error returns: revert Not enough balance. Please retry later.	pass
25	Referral System Verification - Level 1			pass
26	Verification of dynamic maximum limit for 1 transfer	Transfer 50.01 ETH at the 10th day	Amount is successfully transferred to system balance	pass
27	Verification of daily dynamic maximum transaction limit	Transfer 50.5 ETH at the 10th day	Amount is successfully transferred to system balance	pass

28	Deposit is over but somebody makes deposit and specifies this wallet as a referral		Deposit is credited to the account of a new user, referral bonuses are credited	pass
29	User must receive deposit refund by deducting 10% penalty when they enter their wallet as a referral		Money are refunded to a user, penalty is charged from the system balance	pass
30	User must receive deposit refund by deducting 10% penalty when they enter their wallet as a referral, including the case when deposit has expired		Money are refunded to a user, penalty is charged from the system balance	pass
31	Проверить начисление реферального вознаграждения в размере (5%/1%/1%/1%/2%) для базового контракта	<p>1 - Specify owner's wallet as a referral when making the first deposit</p> <p>2 - Indicate wallet 1 of the previous sender as a referral when making the 2nd deposit from the wallet 2</p> <p>3 - Indicate address wallet of the 2nd sender as a referral when making the 3rd deposit from the wallet 3</p> <p>4 - Indicate address wallet of the 3rd sender as a referral when making the 4th deposit from the wallet 4</p> <p>5 - Indicate address wallet of the 4th sender as a referral when making the 5th deposit from the wallet 5</p> <p>6 - Indicate address wallet of the 5th sender as a referral when making the 6th deposit from the wallet 6</p>	<p>1) Owner should receive a 5% bonus of the amount of a deposit + 5% commission fee</p> <p>2) Holder of the 1st wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 1% of a deposited amount + 5% commission fee</p> <p>3) Holder of the 2nd wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 1% of a deposited amount + 5% commission fee</p> <p>4) Holder of the 3rd wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 1% of a deposited amount + 5% commission fee</p> <p>5) Holder of the 4th wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 2% of a deposited amount + 5% commission fee</p> <p>6) Holder of the 5th</p>	pass

			wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 2% of a deposited amount + 5% commission fee	
32	Owner should not receive referral bonus after level 5	<p>1 - Specify owner's wallet as a referral when making the first deposit</p> <p>2 - Indicate wallet 1 of the previous sender as a referral when making the 2nd deposit from the wallet 2</p> <p>3 - Indicate address wallet of the 2nd sender as a referral when making the 3rd deposit from the wallet 3</p> <p>4 - Indicate address wallet of the 3rd sender as a referral when making the 4th deposit from the wallet 4</p> <p>5 - Indicate address wallet of the 4th sender as a referral when making the 5th deposit from the wallet 5</p> <p>6 - Indicate address wallet of the 5th sender as a referral when making the 6th deposit from the wallet 6</p>	Owner should receive only 5% commission fee	pass
33	Daily limit should increase daily			pass
34	Verify crediting of a bonus at the 400th day		User should receive a bonus 2 times more than an amount of deposit	pass

Link to executive

cases: <https://docs.google.com/spreadsheets/d/1Usj94doyz3g4QUNrOgF7P1EgPpvr-jUGBVcRw6WBLuM/edit#gid=1511536476>

Audit Results

Critical vulnerabilities: 0

Errors and issues: 0

Optimization capability: 1

A possibility to reduce transaction cost and number of code lines.

Notes and recommendations: 0

Optimization results: Algorithm of calculation the contract limits based on quadratic optimization was implemented. This allowed to avoid recursive computation and reduce transaction cost.

Conclusion on KASSA 200/50 Contract

Errors were not found during testing of 0x72fa6623cc0800bc180639d60c33c95426d76576 contract.

KASSA 100/30 Contract

Audit Results for

[0xb0601ee3d8ed87a7f7cd9264ec5d02fe5ae30c97](#) from 12/11/2018

KASSA 100/30 Program Description

Deposit lifetime: 100 days (income + 30% of a deposit amount)

Amount credited per day: 1.30%

Deductible fund for the project: 8%

Referrals to inviters: 7%

Minimal deposition amount: 0.25 ETH

Maximum deposition amount: 15 ETH

Deposition daily limit:

The limit increases every day by 2% up to 100 ETH and then stops. General limit of deposits to the system starts from 50 ETH and increases by 1% per day before reaching 100 ETH. There is a total threshold of limits which is removed when total deposit amount reaches 3000 ETH.

Referrals to inviters:

1 line: 7%

Executed Test Cases

Manual testing and automated testing with special scripts were performed for the contract. The contract has been tested in speed-up mode.

KASSA Fast				
1	Case	Steps	Expected Result	Status
2	Transfer of funds to a deposit account from one wallet with the minimum allowed amount	Transfer 1 ETH to a deposit account from the wallet indicating the referral	Funds are credited to the contract account	pass
3	Transfer of funds to a deposit account from one wallet below the minimum allowable amount (0.99)	Transfer 0.99 ETH from a wallet to a deposit account indicating the referral	The funds remains on the system account	pass
4	Transfer of funds in amount of 1 ETH to a deposit account first time indicating owner as a referral	After the wallet is activated, when you do first deposit, indicate owner as a referral	Funds are credited to the contract account. Commission and referral bonus are credited to the account owner	pass
5	Transfer of funds to a deposit account from one wallet with the maximum allowed amount, with an indication of a referral	Transfer 50 ETH from a wallet to a deposit account with an indication of a referral	Funds (50 ETH) are credited to the system account, 5% commission is credited to the account owner, 5% referral bonus is credited to a referral	pass
6	Transfer of funds to owner's deposit beyond the maximum amount	Transfer 10 ETH from a wallet to a deposit account with an indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
7	Transfer of funds to owner's deposit below the minimum amount	Transfer 0.99 ETH from a wallet to a deposit account with an indication of a referral	Funds remain on the system balance	pass
8	Request interest withdrawal immediately after deposit	Transfer 1 ETH from a wallet to a deposit account with an indication of a referral. Request withdrawal of payments.	Only commission for method call is charged.	pass
9	Deposit 0.99 ETH from one wallet	Transfer 0.99 ETH from a wallet to a deposit account with an indication of a referral	The amount is transferred to the system account, transaction fee is charged	pass
10	Add 50.001 ETH to a deposit account from one wallet	Transfer 50.01 ETH from a wallet to a deposit account with an indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
11	Add credit to a deposit account from several wallets to reach a daily	Transfer 10 ETH to a deposit account from 5 different wallets with an indication of a	For the 6th transfer, funds are returned to the user's account with a 10%	pass

	limit	referral	penalty	
12	Transfer 1 ETH to a deposit account without indication of a referral	Transfer 1 ETH from a wallet to a deposit account without indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
13	Funds transferred to a deposit account should be refunded by deducting 10% penalty if a user enters wrong referral link	Transfer 1 ETH from a wallet to a deposit account without indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
14	Make sure penalty does not exceed 10%	Transfer 1 ETH from a wallet to a deposit account without indication of a referral	Funds are returned to the user's account with a 10% penalty	pass
15	Make sure that user can receive several referral bonuses	Specify the same referral for multiple users	Referral bonuses are received from every deposit account	pass
16	Make sure that user can receive several referral bonuses of the same type (5%)	Specify the same referral for multiple users	Referral 5% are received from each new deposit account	pass
17	Make sure system fees do not exceed 5%	Send 10 ETH	System fees 0.5 ETH	pass
18	Make sure that referral bonus does not exceed 5%	Make multiple deposits from different wallets with an indication of the same referral	Referral fees from every deposit - 5%	pass
19	Daily limit should not exceed 50 ETH	Make multiple deposits totaling 51 ETH from different wallets with an indication of a referral	At the last deposit transfer, an automatic refund is made with a 10% penalty	pass
20	Check that daily limit will not be changed if a participant transfers funds exceeding the maximum allowed amount		A full refund is made with a penalty charge	pass
21	Automatic crediting of referral bonuses when the 0.015 ETH limit is reached		Funds are credited to the user account	pass
22	Payment request: transfer 0 ETH to the smart-contract address with the required amount of gas		User's account is credited with interest amount factored in time passed from the deposit	pass
23	Payment request: transfer 0 ETH to the smart contract address at the day		Only commission for method call is charged.	pass

	of deposit replenishment			
24	Payment request with insufficient funds on the smart contract balance		Error returns: revert Not enough balance. Please retry later.	pass
25	Referral System Verification - Level 1			pass
26	Verification of dynamic maximum limit for 1 transfer	Transfer 50.01 ETH at the 10th day	Amount is successfully transferred to system balance	pass
27	Verification of daily dynamic maximum transaction limit	Transfer 50.5 ETH at the 10th day	Amount is successfully transferred to system balance	pass
28	Deposit is over but somebody makes deposit and specifies this wallet as a referral		Deposit is credited to the account of a new user, referral bonuses are credited	pass
29	User must receive deposit refund by deducting 10% penalty when they enter their wallet as a referral		Money are refunded to a user, penalty is charged from the system balance	pass
30	User must receive deposit refund by deducting 10% penalty when they enter their wallet as a referral, including the case when deposit has expired		Money are refunded to a user, penalty is charged from the system balance	pass
31	Verify referral bonus in amount of (5%/1%/1%/1%/2%) is credited for the basic contract	<p>1 - Specify owner's wallet as a referral when making the first deposit</p> <p>2 - Indicate wallet 1 of the previous sender as a referral when making the 2nd deposit from the wallet 2</p> <p>3 - Indicate address wallet of the 2nd sender as a referral when making the 3rd deposit from the wallet 3</p> <p>4 - Indicate address wallet of the 3rd sender as a referral when making the 4th deposit from the wallet 4</p> <p>5 - Indicate address wallet of the 4th sender as a referral when making the 5th deposit from the wallet 5</p> <p>6 - Indicate address wallet of the 5th sender as a referral</p>	<p>1) Owner should receive a 5% bonus of the amount of a deposit + 5% commission fee</p> <p>2) Holder of the 1st wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 1% of a deposited amount + 5% commission fee</p> <p>3) Holder of the 2nd wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 1% of a deposited amount + 5% commission fee</p> <p>4) Holder of the 3rd</p>	pass

		when making the 6th deposit from the wallet 6	wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 1% of a deposited amount + 5% commission fee 5) Holder of the 4th wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 2% of a deposited amount + 5% commission fee 6) Holder of the 5th wallet should receive a bonus in the amount of 5% of a deposited amount and the owner should be credited with 2% of a deposited amount + 5% commission fee	
32	Owner should not receive referral bonus after level 5	1 - Specify owner's wallet as a referral when making the first deposit 2 - Indicate wallet 1 of the previous sender as a referral when making the 2nd deposit from the wallet 2 3 - Indicate address wallet of the 2nd sender as a referral when making the 3rd deposit from the wallet 3 4 - Indicate address wallet of the 3rd sender as a referral when making the 4th deposit from the wallet 4 5 - Indicate address wallet of the 4th sender as a referral when making the 5th deposit from the wallet 5 6 - Indicate address wallet of the 5th sender as a referral when making the 6th deposit from the wallet 6	Owner should receive only 5% commission fee	pass
33	Daily limit should increase daily			pass
34	Verify crediting of a bonus at the 400th day		User should receive a bonus 2 times more than an amount of deposit	pass

Link to executive cases:

<https://docs.google.com/spreadsheets/d/1Usj94doyz3g4QUNrOgF7P1EgPpvr-jUGBVcRw6WBLuM/edit#gid=0>

Audit Results

Critical vulnerabilities: 0

Errors and issues: 0

Optimization capability: 1

A possibility to reduce transaction cost and number of code lines.

Notes and recommendations: 0

Optimization results: Algorithm of calculation the contract limits based on quadratic optimization was implemented. This allowed to avoid recursive computation and reduce transaction cost.

Conclusion on KASSA 100/30 Contract

Errors were not found during testing of 0xb0601ee3d8ed87a7f7cd9264ec5d02fe5ae30c97 contract.

Summary on Audit Results

Critical vulnerabilities and backdoors were not found in these contracts. Contracts functionality is safe and can be used for cryptocurrency cycle.

The contract code doesn't show any mechanisms for changing the contract code after it is published.

It should be noted that an ability to pay commission from each of the contracts listed depends on a deposit amount credited to a wallet and an amount of payment obligations. If there is not enough cryptocurrency funds on the contract balance payment will be denied. This is coded in the contracts logic.

Note:

This audit is for informational purposes only and does not encourage to participate in the project. Audit estimates technical quality of the source code and compliance of the code with technical specification.