

RGS EVALUATION TESTING REPORT

Reference regulation:

Republic of Estonia - Estonian Tax and custom board, Gambling Supervision

Gambling Act

Passed 15.10.2008 - RT I 2008, 47, 261

(with amendments adopted by Parliament up to 07.06.2017 RT I, 26.06.2017, 1)

Game: Tiger Rush (Slot Game)

Version:

1.0.3, HTML5 (Desktop & Mobile)

1.0.0, (Server)

3.5.0, (RNG)

20/09/2018

INTRODUCTION

The findings reported in this summary are the results of a broader set of documents and testing activities results archived in QUINEL Limited's facilities. It is intended that the requester declares that:

- Any Hardware provided or described for analysis and testing is configured identically to hardware in commercial use
- Game software/ function provided for the testing and code review is declared by the customer to have the same behavior to the software/code in commercial use
- Functionality made by the software in automatic test mode has a realistic behavior

and that

- all the files and modules,
- the database schemas and all the specific programming resources,
- all the parameters contained into any databases and/or configuration file

that have been subject to the audit process guarantee the same behavior of what is going to be published/deployed according to this audit results.

The Recipient, by accepting and using this Report, declares to be aware and accept unconditionally all the terms and conditions set forth. If the Applicant and / or the Recipient does not agree on the terms and conditions set forth, QUINEL Limited reserves the right to cancel the certification provided with this Report, it follows therefore that the Recipient must immediately return all copies to QUINEL Limited of this Report and cannot use them nor refer to.

Any copy of this test reports and calibration certificates must also include the page number and total number of pages.

Copy of this test report must not be reproduced except in full, without written approval of the laboratory.

A) Audit ID

ET_THK010GAM_REV.1

B) Scope / Document type

GAME evaluation testing report

C) Reference regulation

Republic of Estonia – Estonian Tax and custom board, Gambling Supervision

Gambling Act Passed 15.10.2008 - RT I 2008, 47, 261

(with amendments adopted by Parliament up to 07.06.2017 RT I, 26.06.2017, 1)

Technical and functional requirements for the game software and communication equipment for remote gambling:

- “Organisation of Remote Gambling”, section 2 clause 8 (<https://www.emta.ee/eng/business-client/excise-duties-assets-gambling/organisation-remote-gambling>)

D) Test methods

Ref. to Operative Instruction “IOP 02-02 test Methods” for definitions

Randomness:

QIRT000/1/2, ERT001/2, QIMT001

Visual inspection

QIVI001

Software Source Inspection:

QISI001

Accounting and Financials:

QIAF001

E) Auditor / Test lab

QUINEL Limited

Reference contact:

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F) Audit subject

Description: compliance of the following test items			
Test Items: <u>Games (video slot games)</u>			
<i>Test Item</i>	<i>Game Name</i>	<i>Version</i>	<i>Interface</i>
G001	Tiger Rush	release: 1.0.3 server: 1.0.0 RNG: 3.5.0	HTML5 (Desktop & Mobile)
Receipt date: 11/07/2018 – submission for testing against current regulation as per Section (C) of all items			
Inspection date: 11/09/2018 - 19/09/2018			
Note 1: Compliance of the RNG used by the test items was certified through report with ID “J16030078_RNG_rev.1_ESTONIA” issued and signed by Quinel M. LTD, dated March 25 th , 2016.			

G) Requester

Thunderkick Malta LTD Level 5, The Mall Complex, Floriana, Malta
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H) Owner of the system/software

Thunderkick AB Vasagatan 11, 111 20 Stockholm, Sweden

I) Companies and organizations involved in the process

Producer(s) / Integrator(s): Ref. to Section H)
Requester: Ref. to Section G)
Licensee/Operator: N.A.

J) Individuals involved in the process

On the Producer(s) / Integrator(s) side: Mr. Sven Grip (CEO), Stéphane Redon (Software architect and developer), Johnny Aspelin (Software architect and developer), Daniel Gjørwell (Software architect and developer)

On the Requester side: same as for Producer

On the Licensee/Operator side: N.A.

On QUINEL Limited side: Mr. Davide De Nobile

K) Processes, rules and parameters of the games (if applicable)

Here follows the theoretical payout of the test items:

<i>Test Item</i>	<i>Test Item / Game name</i>	<i>Theor. RTP [%]</i>
G001	Tiger Rush	96.3%

L) Protocols and specifications of the gaming system (if applicable)

Both games (server side logic) and platform are developed entirely with the Java Language.

Games were provided through the following URLs on a QA environment:

<https://quinel.thunderkick.com/games/index.html> (player’s interface)
<https://qa-int-backoffice.thunderkick.com> (Back office / Admin interface)
<http://ext-qa-gameservice.thunderkick.com> (Runtime game configuration)

The QA environment used for testing relies on a Linux environment hosted by Amazon’s cloud services and runs on Oracle Java JDK 1.7.0_09, Apache Tomcat application server 7.0.42

Live environment is reachable at the following IPs (primary site, secondary site omitted):

Game traffic: 37.114.73.113
 API: 37.114.73.114
 Back office 37.114.73.115
 Firewall 37.114.73.120

Live environment servers are running Linux “Ubuntu 12.04.5 LT; Precise Pangolin”, with Oracle Java JDK 1.7.0_76 – no application server was detected.

M) Security of the system

N.A.

N) Evaluation performed

The test evaluation, required by the Requested, was completed against the following requirements:

*Republic of Estonia – Estonian Tax and custom board, Gambling Supervision
Gambling Act Passed 15.10.2008 - RT I 2008, 47, 261 (with amendments adopted by Parliament up to 07.06.2017 RT I, 26.06.2017, 1)*

Refer to the Annex I report for a full detailed list of requirements tested.

O) Evaluation auxiliary informations

N.A.

P) Testing activities applied and product / test items references

Internal procedure followed:
Rif. “IOP 02-02 TEST METHODS”

Tests were performed against the following files:

<i>SHA1:</i>	<i>Critical</i>	<i>Test Item</i>	<i>File name</i>
e0d59194f18c87e7c39a7a24e597279a7a2e8fce	Yes	G001	gp-game-s1-g18.json
1941f747b6a1e25517acf738dc623a3e34979ce0	Yes	G001	gp-game-s1-g18-core-1.0.0-RELEASE.jar
d5e01a5f41deae3b63b46b2ccb7125278e3ebc29	Yes	All (*)	MersenneTwister32.java
ea8940a1cd7d561eb944c42f101ddfd7cce2ec7	Yes	All (*)	RandomNumberGenerator.java
f2dcd4e8ed46eb5653d99ff54f60c4e4047ad4ec	Yes	All	gp-rng-3.5.0-RELEASE.jar
ea01386be069745202580bd50c3de32c33f3553f	Yes	All	gp-rng-api-3.5.0-RELEASE.jar

(*) RNG main source code files.

Q) Critical modules affecting the behavior of the test items

Refer to Section P, column “Critical”

R) Additional information

N.A.

S) Setup and application/system architecture tested

Refer to section L

T) Payout (if applicable)

Refer to section K
No specific conditions / strategy to obtain the declared payout are to be considered.

U) CERTIFICATION

Date: 20/09/2018 Total Number of Pages: 8
Requester: Thunderkick Malta LTD
Level 5, The Mall Complex - Floriana, Malta
Licensee: N.A.

QUINEL Limited certifies that the games

G001: "Tiger Rush"

Revision: 1.0.3, HTML5 (Desktop & Mobile)

Server version: 1.0.0

RNG version: 3.5.0

examined and identified at Section F) comply with the Gambling Act - Republic of Estonia Passed 15.10.2008 - RT I 2008, 47, 261 with amendments adopted by Parliament up to 11.02.2015 RT I, 04.03.2015, 3. Ref. to Section C for full regulatory scope).

Refer to Annex I for the full list of requirements satisfied.

V) CONDITIONS AND VALIDITY

Conditions: none

Extents set by the State Gambling Commission: none

Validity period: upon next changes to critical files listed in section P)

W) CONCLUSIONS

QUINEL Limited certifies that the games tested complies with the Technical Standards requested when integrated with the RNG certified and identified into compliance Report ID "J16030078_RNG_rev.1_ESTONIA" issued and signed by Quinel M. Ltd, dated March 25th, 2016 and recommends for approval.

Date: 20/09/2018

Signed:



Davide De Nobile – Laboratory Technical Director
(QUINEL Limited)

ANNEX REPORT - I

Requirements		Notes	Result (PASS / FAIL / N.A.)
Code	Req.		
<i>Section 2</i>	<i>Organisation of Remote Gambling Requirements</i>		
Clause 2	The software and hardware to be used for organising remote gambling must ensure that an average sum of prizes made for gamblers as a result of gambling is exceeding 80 per cent of all credits.	The theoretical RTP of the game is 96.1%.	<u>PASS</u>
Clause 8. (1)	Randomness of determining the outcome of a game cannot be influenced	-	<u>PASS</u>
Clause 8. (2)	Data of significant importance shall be stored if the game is interrupted	-	<u>PASS</u>
Clause 8. (3)	Interruptions of a game, results and any alterations in the gaming system shall be recorded	-	<u>PASS</u>
Clause 8.1	Record in a log file the entry into the system and exit from the system and the time of making of alterations and the maker of alteration to the system	-	<u>PASS</u>
Clause 8.2	The data specified in sub clauses 2 and 3 of clause 8 shall be stored at least five years	-	<u>PASS</u>

END
OF
COMPLIANCE
REPORT