

RGS EVALUATION TESTING REPORT

Game:

“Tiger Rush” – HTML5 (Desktop & Mobile)

Client rev: 1.0.3, Engine vers: 1.0.0, RNG vers: 3.5.0

Reference regulation:

Remote Technical and Operating Standards – Version 1.1.0 20/09/2012
Gibraltar Gambling Commissioner

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 behaviour to the software/code in commercial use
- Functionality made by the software in automatic test mode has a realistic behaviour

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 behaviour 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 would have to immediately hand all copies of this Report to QUINEL Limited and would not be able to use them.

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

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

A) Audit ID

GIB_THK009GAM_Tiger Rush_REV.1

B) Reference regulation

Remote Technical and Operating Standards – Version 1.1.0 20/09/2012
Gibraltar Gambling Commissioner

C) Test methods

QIVI001 – Visual inspection
QISI001 – Software source inspection method
QIAF001 – Accounting functionalities (bets vs winnings)
QIMT001 – Mathematical analysis

D) Auditor / Test lab

QUINEL Limited
Marina Court, Flat 8, Triq Giuseppe Cali’,
XBX 1421 Ta’ Xbiex - Malta
info@quinel.com.mt

E) Audit subject / Scope

Description: Compliance of the following test items (games):

<i>Test Item</i>	<i>Game Name</i>	<i>Revision</i>	<i>Interface</i>
G001	Tiger Rush	Client rev: 1.0.3, Engine vers: 1.0.0, RNG vers: 3.5.0	HTML5 (Desktop & Mobile)

Receipt date:
11/07/2018 – first submission for testing against the regulation as per Section (B)

Inspection date:
11/09/2018 - 19/09/2018

Note: compliance of the RNG used by the test items was certified through report with ID “GIB J16030078-R001 RNG V.3.5.0 rev.1”.

F) Requester

Thunderkick Malta Ltd
Level 5, The Mall Complex
Floriana, Malta

G) Owner of the system/software

Thunderkick AB
Vasagatan 11, 111 20 Stockholm,
Sweden

H) Companies and organizations involved in the process

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

I) Individuals involved in the process

On the Requester side: Mr. Sven Grip, Mr. Stéphane Redon, Mr. Johnny Aspelin, Mr. Daniel Gjørwell, Ms. Jeanette Karlsson.
On the Producer(s) / Integrator(s) side: same as for Requester
On the Licensee/Operator side: N.A.

J) Processes, rules and parameters of the games / Limitation of use

Evaluation of game rules was conducted to ensure that they satisfy the requirements as per the regulation in the Section (B). Refer to the Annex I for the full list of requirements satisfied.
Game / Test item type: **Slot Game**
Game(s) / Test item(s) use(s) Jackpot: N
Here follow the theoretical pay-outs of the test items:

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

K) Protocols and specifications of the gaming system

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/> (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 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_51, Apache Tomcat application server 7.0.50.

The difference between the Java JDK is negligible considered the change log and that the source code inspection could not find any specific binding to those releases nor dependencies on system APIs. Same considerations apply with regards to differences between QA and Live environment.

L) Security of the system

N.A.

M) Critical modules

Refer to the contents of Section Q)

N) Evaluation performed

The test evaluation was completed against the following requirements:
Remote Technical and Operating Standards – Version 1.1.0 20/09/2012
Gibraltar Gambling Commissioner

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

O) Testing activities applied

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

- Mathematical analysis for pay-out evaluation
- Fairness of the game and associated rules
- Requirements of the player’s interface
- Source code inspection

P) Additional information

None

Q) Product Tested

<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.

R) CERTIFICATION

Date: 20/09/2018
Requester: Thunderkick Malta Ltd
Level 5, The Mall Complex
Floriana, Malta

Total Number of Pages: **10**

QUINEL Limited certifies that the games / test items identified at section E):

“Tiger Rush” HTML5 (Desktop & Mobile)
Client rev: 1.0.3, Engine vers: 1.0.0, RNG vers: 3.5.0

comply with the Gibraltar Gambling Commissioner Remote Technical and Operating Standards –
Version 1.1.0 20/09/2012

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

S) CONDITIONS

None.

T) CONCLUSIONS

QUINEL Limited certifies that the games/test items identified at section E) and integrated with the RNG certified and identified into compliance Report ID: “GIB J16030078-R001_RNG_V.3.5.0_rev.1”

Date: 20/09/2018

Signed:



Davide De Nobile – Laboratory Technical Director
(QUINEL Limited)

ANNEX I – REQUIREMENTS SATISFIED

Unless differently specified, the results are related to all the test items.

CHAPTER	SCOPE / Requirement	OUTCOME N.A./FAIL/PASS	NOTES
STANDARD 2	REGISTRATION OF PARTICIPANTS AND ADMINISTRATION	N.A.	
STANDARD 3	PRESENTATION OF RULES AND CUSTOMER INFORMATION		
	3.1 General	PASS	Limited to the game UI
	3.2 Terms & Conditions	N.A.	
	3.3 Safeguarding of information	N.A.	
	3.4 Game rules and information		
	3	PASS	Limited to the game UI
	4	PASS	
	5	N.A.	
	6	PASS	
	7	PASS	
	8	PASS	
	9	N.A.	License holder's responsibility
	10	PASS	Limited to the game UI
	11	PASS	
	12	N.A.	
	13	N.A.	
	3.5 Jackpots	N.A.	
	3.6 Multi-customer games	N.A.	
	3.7. Monitoring of Rules	N.A.	
	3.8 Licensing Information to be displayed on webpages	N.A.	
STANDARD 4	RESPONSIBLE GAMBLING AWARENESS AND PROVISION OF INFORMATION	N.A.	
STANDARD 5	GAMBLING MANAGEMENT FACILITIES	N.A.	
STANDARD 6	PREVENTING UNDERAGE GAMBLING	N.A.	
STANDARD 7	FAIR GAMBLING		
	7.1 Game fairness		
	1	N.A.	
	2	N.A.	
	3	PASS	
	4	N.A.	

CHAPTER	SCOPE / Requirement	OUTCOME N.A./FAIL/PASS	NOTES
	5	PASS	
	6	N.A.	
	7	N.A.	
	8	PASS	
	7.2. 'Play for Free' Games		
	1	PASS	
	2	PASS	
	3	N.A.	
	4	N.A.	
	7.3. Compensated or adaptive games	PASS	
	7.4. No forced game play	PASS	
	7.5. Auto-play	PASS	
	7.6. Game control	N.A.	
	7.7. Incomplete games	PASS	
	7.8. Game / website design	PASS	The functions of all buttons are described in the rules, easily accessible from the game.
	7.9. Poker / P2P Games	N.A.	
	7.10. Sports betting and integrity	N.A.	
STANDARD 8	INFORMATION AND DATA SECURITY	N.A.	
STANDARD 9	BUSINESS CONTINUITY	N.A.	
STANDARD 10	COMPLAINTS	N.A.	
STANDARD 11	RANDOMNESS		
	11.1 RNG and Game Randomness	N.A.	Game logic and Entropy engine were verified against the rules provided
	11.2 Mechanical RNGs	N.A.	
	11.3 RNG Failure	N.A.	
	11.4 Verifiably fair		
	1	N.A.	License holder's responsibility
	2	N.A.	License holder's responsibility
STANDARD 12	COMPLIANCE AND TESTING		
	12.1 Compliance	N.A.	
	12.2 RNG testing		
	1	N.A.	
	2	N.A.	
	3	N.A.	

CHAPTER	SCOPE / Requirement	OUTCOME N.A./FAIL/PASS	NOTES
	4	N.A.	
	5	N.A.	
	12.3 Game engine testing		
	1	PASS	RNG Report ID: "GIB J16030078- R001_RNG_V.3.5.0_rev.1"
	2	N.A.	
	3	N.A.	
	4	N.A.	
	12.4 Ongoing monitoring	N.A.	
	12.5 Further testing	N.A.	
	12.6 Software development and maintenance	N.A.	

**END
OF
COMPLIANCE
REPORT**