

RGS EVALUATION TESTING REPORT

Compliance testing report

Game:

“Jaguar Temple” – HTML5 (Desktop & Mobile)

Client Revision: 1.0.4

Engine Version: 1.0.0

RNG Version: 3.5.0

Reference regulation:

UK Gambling Commission - *Remote gambling and software technical standards*, June 2017

September 17, 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.

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A) Audit ID

J18080424_G001_Jaguar Temple_REV.3

B) Reference regulation

UK Gambling Commission – Remote gambling and software Technical Standards, June 2017

C) Test methods

QIVI001 – Visual inspection
 QISI001 – Software source inspection method
 QIMT001 – Mathematical analysis
 QIAF001 – Accounting functionalities

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):

| Test Item | Game Name | Version | Interface |
|-----------|---------------|--|--------------------------|
| G001 | Jaguar Temple | Client rev: 1.0.4 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:
 24/08/2018 - 03/09/2018

Note: Compliance of the RNG used by the test items was certified through report with ID “MDI_02-08_J16030078_RNG_rev.1_UK” issued and signed by Quinel M. LTD, dated March 25th, 2016.

F) Requester

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

G) Owner/Producer of the system/software

Thunderkick AB
 Vasagatan 11, 111 20 Stockholm,
 Sweden

H) Companies and organizations involved in the process

Producer(s): Ref. to Section G)

Requester: Ref. to Section F)

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 / Test item use Jackpot: **N**
 Here follows the theoretical pay-out of the test item(s):

| <i>Test Item</i> | <i>Test Item / Game name</i> | <i>Theor. RTP [%]</i> |
|------------------|------------------------------|-----------------------|
| G001 | Jaguar Temple | 96.1% |

K) Specifications of the gaming system

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

Game was 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 for RNG 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_51, Apache Tomcat application server 7.0.50.

Simulation environment for game testing used a virtualized server with the same Linux distribution “Ubuntu 12.04.5 LT; Precise Pangolin” with Oracle Java JDK 1.7.0_76 – no application server was required.

The difference between the Java JDK is negligible considered the change log and that the source code inspection couldn’t 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 section R)

N) Evaluation performed

The test evaluation, required by the Requester, was completed against the “*Remote gambling and software Technical Standards*” – June 2017, to meet the requirements listed in the current “*Testing strategy for compliance with remote gambling and software technical standards*”

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

O) Testing activities applied

Internal procedure followed:
 Rif. “IOP 02-02 TEST METHODS”. The following testing methods were used:

- Mathematical calculation of the Pay out
- Fairness of the game and associated rules
- Requirements of the player’s interface
- Source code inspection
- Simulation and inspection for verification of the actual RTP

P) Additional information

None

Q) Setup and application/system architecture

Refer to section K)

R) Product Tested

The tests were performed on the files listed below:

| <i>SHA1:</i> | <i>Critical</i> | <i>Test Item</i> | <i>File name</i> |
|--|-----------------|------------------|---------------------------------------|
| 4e2a021dba5d46b5f08525ad6332c0b1fbcadc00 | Yes | G001 | gp-game-s1-g19.json |
| e4edd2a84961d62fc52b8bffa4ee72f79850c4e | Yes | G001 | gp-game-s1-g19-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.

S) CERTIFICATION

Job ID: J18080424_G001_Jaguar Temple_REV.3
Date: September 17, 2018
Requester: Thunderkick Malta LTD
Level 5, The Mall Complex,
Floriana, Malta

Total Number of Pages: **12**

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

G001: **Jaguar Temple** HTML5 (Desktop & Mobile)

comply with the UK Gambling Commission “*Remote gambling and software Technical Standards, June 2017*” reference standard based on the current “*Testing strategy for compliance with remote gambling and software technical standards*”.

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

T) CONDITIONS

None.

U) CONCLUSIONS

The games / test items identified at section E) are compliant with the abovementioned technical standards when integrated with the RNG certified and identified into compliance Report ID “*MDI_02-08_J16030078_RNG_rev.1_UK*” issued and signed by Quinel M. LTD, dated March 25th, 2016.

Date: September 17, 2018

Signed:



Davide De Nobile – Laboratory Technical Director
(QUINEL Limited)

ANNEX I – REQUIREMENTS SATISFIED

Definitions

| |
|---|
| Compensated games or events |
| Games or virtual events that adjust the likelihood of winning outcomes occurring based on previous payouts or intake. Sometimes referred to as adaptive behaviour or percentage compensation. |
| Easily accessible |
| This term generally means the facilities or information is either on the screen, or can be intuitively accessed via efficient navigation or other means |
| Game |
| A game of chance as defined in section 6(2) of the Act |
| Gambling |
| The Act defines gambling as: (a) gaming (within the meaning of sec.6) (b) betting (within the meaning of sec 9), and (c) participating in a lottery (within the meaning of sec. 14 and subject to sec 15) |
| Gaming session |
| A gaming session is the playing of any of the applicable activities (e.g. bingo or casino games) and commences when a player starts playing a game for real money. A gaming session ends when a player exits a game |
| High frequency lottery |
| A lottery in which any draw takes place less than one hour after a draw in a previous lottery promoted on behalf of the same non-commercial society or local authority or as part of the same multiple lottery scheme |
| Instant lottery |
| A lottery in which the draw takes place before any of the tickets in the lottery are offered for sale. |
| Lottery ticket |
| As described by section 253 of the Act and a reference in this document to a lottery ticket includes: <ul style="list-style-type: none"> • a lottery ticket which is sent by post following entry by means of remote communication • a message sent or displayed to a person electronically in a manner which enables him to (a) retain the message electronically or (b) print it. |
| Mapping |
| Is the process of selecting an outcome using the result from a Random Number Generator (RNG). For example, the result from a RNG is mapped to a reel strip symbol. |
| Peer-to-peer gambling |
| A type of gambling where customers gamble against each other rather than against the house. For example, equal chance gaming such as poker or peer-to-peer betting through betting exchanges. |
| Play-for-free |
| Also known as play-for-fun. Demonstration version of a real money game where the customer is not staking or winning any money or money's worth. |
| Progressive or progressive jackpot |
| An incremental prize that increases as a result of contributions from the monies staked within a game from pre-set base value. |
| Random Number Generator (RNG) |
| Refers to any item of hardware or software which is used to generate random numbers with the intended property of statistical randomness. |
| Restricted display device |

A device such as a mobile phone which has limited space on which to display information, when used to access gambling facilities that the operator intends a customer to use by means of such a device.

We expect that a player using a restricted display device would still have the ability to use all required responsible gambling tools, such as financial limits or self-exclusion. We would not consider it acceptable to require a player to login via, for example, the desktop website version of the gambling facilities in order to access responsible gambling tools. Such an approach would create unreasonable barriers and may deter or prevent mobile users from utilising the available tools.

Scaling

Scaling is the process used to convert the output from a RNG into the format required to produce a result for a particular gambling product. To illustrate, an RNG may produce a result of between 1 and 100,000 but these possible outcomes need to be scaled to the potential game outcomes of, for example, between 1 – 52 (i.e. to correspond to a standard pack of cards).

Seeding

Refers to the process used to determine the initial state of the RNG.

Subscription lottery

A series of lotteries (other than instant lotteries) promoted on behalf of the same non-commercial society or local authority in respect of which participants pay for participation in one or more future lotteries by regular subscription over a fixed or indefinite period.

Telephone gambling

Gambling which takes place via a telephone, without the use of visual displays, by interaction with a customer service agent or an automated system, such as intelligent voice recognition systems or touch tone.

Third Party Software

Refers to software that is separately available from the core software product and is designed to add optional features. It includes additional software, supplied, or used, by the gambling operator, or player, which wasn't part of the basic package.

Virtual

As described by s353(3) of the Act. Virtual event and virtual game are to be construed accordingly.

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

| Requirements | | | Result |
|--------------|--|------|--------------------------------------|
| RTS | Aim | Req. | PASS / FAIL / N.A. |
| RTS 1 | To provide customers with easily accessible information about their current balances and facilities that enable them to review previous gambling and account transactions. | A | N.A. |
| | | B | N.A. |
| | | C | N.A. |
| RTS 2 | To enable the customer to understand the value and content of their transactions. | A | N.A. |
| | | B | N.A. |
| | | C | N.A. |
| | | D | N.A. |
| RTS 3 | To enable customers to make informed decisions about whether to gamble based on their chances of winning, the way the game, lottery or event works, the prizes or payouts on offer and the current state of multi-state games or events. | A | PASS (Strictly limited to UI) |
| | | B | PASS (Strictly limited to UI) |
| | | C | PASS (Strictly limited to UI) |
| | | D | PASS (Strictly limited to UI) |
| RTS 4 | To reduce the risk that customers are unfairly disadvantaged by technical factors that may affect speed of response, and to ensure customers are made aware of the risk | A | PASS (Speed does not affect game) |
| | | B | N.A. |
| RTS 5 | To ensure that the gambling system implements the operator's rules, game rules and betting rules as they are described to the customer. | A | PASS |
| RTS 6 | To minimise the risk that customers are misled about the likelihood of winning due to the behaviour of play-for-free games | A | PASS (Strictly limited to UI) |
| RTS 7 | To ensure that games and other virtual events operate fairly. | A | N.A. (ref. to RNG report) |
| | | B | PASS |
| | | C | PASS |
| | | D | PASS |
| | | E | PASS |
| RTS 8 | To ensure that the customer is still in control of the gambling where auto-play functionality is provided and to minimise the risk that the functionality disadvantages a customer or that auto-play or other strategy advice is misleading. | A | PASS (Strictly limited to UI) |
| | | B | N.A. |
| RTS 9 | To ensure that progressive jackpot systems operate fairly | A | N.A. |
| | | B | N.A. |
| RTS 10 | To ensure that customers are treated fairly in the event of interrupted play or betting and that they are aware of how they will be treated if interruptions occur | A | PASS (Strictly limited to UI) |
| | | B | PASS (Strictly limited to UI) |
| | | C | N.A. |

| Requirements | | | Result |
|--------------|--|------|--------------------|
| RTS | Aim | Req. | PASS / FAIL / N.A. |
| RTS 11 | To reduce the risk that cheating or collusion by players unfairly disadvantages another player and to inform customers about the risks posed | A | N.A. |
| | | B | N.A. |
| RTS 12 | To provide customers with facilities that may assist them in sticking to their personal budgets for gambling with the operator. Customers must be also be given the option to set financial limits at an account level. | A | N.A. |
| | | B | N.A. |
| RTS 13 | To provide customers with facilities to assist them to keep track of the time they spend gambling. | A | N.A. |
| | | B | N.A. |
| RTS 14 | To ensure that products are designed responsibly and to minimise the likelihood that they exploit or encourage problem gambling behaviour. | A | N.A. |
| RTS 15 | To make the customer aware that they may not have the latest information available when betting on live events, and that they may be at a disadvantage to operators or other customers who have more up-to-date information | A | N.A. |
| RTS 16 | To make customers in peer-to-peer gambling aware that they may be gambling against a software program (designed to automatically participate in gambling within certain parameters, sometimes referred to as a bot), or a human aided by third party software. | A | N.A. |
| | | B | N.A. |
| | | C | N.A. |
| RTS 17 | To ensure that live dealer operations are fair | A | N.A. |

ANNEX II– simulation details for game compliance

A) Environment used / Setup information

Simulation and verification of the correspondence of the files certified vs file deployed was completed following the information at Section K) of the compliance report.

B) Simulation outcomes

| <i>Test Item</i> | <i>Game name</i> | <i>Theor. RTP</i> | <i>Real RTP</i> | <i>No. spins</i> | <i>Absolute deviation</i> | <i>Result</i> |
|------------------|------------------|-------------------|-----------------|------------------|---------------------------|---------------|
| G001 | Jaguar Temple | 96.1% | 96.15% | 529G | 0.05% | PASS |

| <i>Test Item</i> | <i>Game name</i> | <i>Sha1of simulation results log file</i> |
|------------------|------------------|---|
| G001 | Jaguar Temple | Jaguar Temple - Simulation Summary.pdf - 6be7cecf0b4a292772d9a159f6ed5974ecc632fd |

END
OF
COMPLIANCE
REPORT