QUINEL

RGS EVALUATION TESTING REPORT

Compliance testing report

RNG, Version: 1.0

Reference regulation:

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

February 2, 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

J17060220_R001_RNG_rev. 2

B) Reference regulation

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

C) Test methods

QISI001 – Source code analysis
QIRT000 – RNG qualitative analysis
QIRT001 (UD01 / SI01 / RT01) - Uniform distribution, statistical independence, Runs tests
ERT001 – DIEHARD battery of tests
ERT002 – NIST (SP800-22rev1a) battery of tests
QIRT002 (SS01) – Statistical analysis on scaled/mapped/shuffled numbers (Gap test, Serial test, etc)
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), produced under "Fugaso" brand:

Test Item	Game Name	Version	Interface
R001	RNG	1.0	N.A.

Receipt date:
24/08/2017 – first submission for testing against UKGC regulation as per Section (B)

Inspection date:
30/08/2017 - 20/12/2017

F) Requester

GS TECHNOLOGY LIMITED
109b, High Street, Hemel Hempstead, Herts
England, HP1 3AH

G) Owner/Producer of the system/software

Ref. to Section F)

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. Nikolai Mazger.

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

N.A.

K) Specifications of the gaming system

Description:
The RNG is a wrapper for the Java SecureRandom library used to provide cryptographically strong Random numbers. The *fugaso-rng-1.0.0.jar* library provides methods to extract both Int32 and scaled number (0-n where $n < 2^{32}$) to games.
All statistical tests have been performed by collecting sequences of scaled random numbers using a simulator, which is a utility to call the same methods that are used by the games to get necessary random numbers and save the result to file, provided by the Requester, deployed directly on the Requester's server.

- Scaled integer within specific ranges used:
     [0,1]
     [0,36]
     [0,37]
     [0,39]
     [0,51]
     [0,99]
     [0,199]
     [0,249]

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

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 test details.

O) Testing activities applied

Internal procedure followed:
Rif. "IOP 02-02 TEST METHODS". The following testing methods were used:
- Randomness of the RNG through extraction of sequences of raw and scaled numbers
- Source code inspection

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:

SHA1	Critical	Type	Test item	File name
f57032abd267bb0873c31af7b1d13288f1b63281	Yes	Game	R001	fugaso-rng-1.0.0.jar

S) CERTIFICATION

Job ID: J17060220_R001_RNG_rev. 2
Date: February 2, 2018
Requester: GS TECHNOLOGY LIMITED
                 109b, High Street, Hemel Hempstead, Herts
                 England, HP1 3AH

Total Number of Pages: **15**

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

    R001:   **RNG**   version 1.0

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 reports for the full list of requirements satisfied.

T) CONDITIONS

None.

U) CONCLUSIONS

QUINEL Limited certifies that the RNG tested complies with the Technical Standards requested.

Date: February 2, 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: • 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	N.A.
		B	N.A.
		C	N.A.
		D	N.A.
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	N.A.
		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	N.A.
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	N.A.
RTS 7	To ensure that games and other virtual events operate fairly.	A	*PASS*
		B	N.A.
		C	N.A.
		D	N.A.
		E	N.A.
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	N.A.
		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	N.A.
		B	N.A.
		C	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.

Requirements			Result
RTS	**Aim**	**Req.**	**PASS / FAIL / 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– RNG test details

Mapping of the evaluation performed to the requirements sets by the "**Randomness - Regulatory strategy for testing and certification**" document, **Draft – November 2014**, made available to the Accredited Testing Facilities for UKGC technical standard testing.

Req No.	Requirement Description	Compliance Status	Comments
2.1.1	General	POSITIVE	
2.1.2	Attributes	POSITIVE	
2.1.2.1	Software pRNGs		
a	*Unpredictability*	POSITIVE	
b	*Cycling and synchronization requirements*	POSITIVE	
c	*Initialization*	POSITIVE	
d	*Background cycling*	POSITIVE	
e	*Seeding*	POSITIVE	
2.1.2.2	Hardware RNGs		
a	*Decomposition*	N.A.	
b	*Alterations*	N.A.	
c	*Players' Interaction*	N.A.	
2.2	Mapping & Scaling	POSITIVE	
2.3	Use of random numbers		
2.3.1	Monitoring	Not implemented	Outcome will be monitored through the RTP live monitoring.
2.3.2	Security	POSITIVE	

A) Security

RNG output is used immediately and not stored in memory. Restarting of RNG is not performed programmatically and requires the entire platform to restart. Background cycling is implemented sharing the RNG instance among all the games.

B) Testing results for <u>raw</u> output of RNG

Data extraction scripts:
```
2D28051AE5DAB95C266FD199B6FAE76E32289B1D *fugaso-rng-tool-1.0.0.jar
```

Data sets (3 million outcomes each, raw 32-bit integers):
```
fdb293c3ec82426730a00596187ef971e7f98ef9 *RAW_3M_BATCH-1.txt
d950cf210ce614ae4016613df7ce92eb35d2152e *RAW_3M_BATCH-2.txt
131f2c9f62687bd13f9119373ba31ec9bcbfce14 *RAW_3M_BATCH-3.txt
```

<u>DIEHARD battery of tests</u>

<u>Overall results:</u>   POSITIVE

Test results:

BIRTHDAY SPACINGS TEST:	PASS
OVERLAPPING 5-PERMUTATION TEST:	PASS
BINARY RANK TEST for 31x31M:	PASS
BINARY RANK TEST for 32x32M:	PASS
BINARY RANK TEST for 6x8M:	PASS
BITSTREAM TEST:	PASS
OPSO, OQSO and DNA TESTS:	PASS
COUNT-THE-1's TEST (stream):	PASS
COUNT-THE-1's TEST (specific):	PASS
PARKING LOT TEST:	PASS
MINIMUM DISTANCE TEST:	PASS
3DSPHERES TEST:	PASS
SQEEZE TEST:	PASS
OVERLAPPING SUMS TEST:	PASS
RUNS TEST:	PASS
CRAPS TEST:	PASS

NIST battery of tests:

Overall results: POSITIVE

Test results:

Frequency:	PASS
BlockFrequency:	PASS
CumulativeSums:	PASS
Runs:	PASS
LongestRun:	PASS
Rank:	PASS
FFT:	PASS
NonOverlappingTemplate:	PASS
OverlappingTemplate:	PASS
Universal:	PASS
ApproximateEntropy:	PASS
RandomExcursions:	PASS
RandomExcursionsVariant:	PASS
Serial:	PASS
LinearComplexity:	PASS

C) Testing results for scaled data or shuffled decks data (section 3.6.2)

Data extraction scripts:
```
2D28051AE5DAB95C266FD199B6FAE76E32289B1D *fugaso-rng-tool-1.0.0.jar
```

Confidence level: 95%

1) Data sets of 3 million outcomes each, random extraction DOF = 1, range=[0,1] (included):
```
276e689c6373ddb9774bb5dcc5a11f8b4c25c5db *SCALED_3M_RANGE-0-1_BATCH-1.txt
f952395242acab5545b530b8aea1127fd392f3a0 *SCALED_3M_RANGE-0-1_BATCH-2.txt
1cac4d9cd56af100fba48291f5512e267b610478 *SCALED_3M_RANGE-0-1_BATCH-3.txt
5dfc7634445070e6c0d148b2f9a0ac1dcd574fb1 *SCALED_300K_RANGE-0-1_BATCH-1.txt
cca9a49d0345e1ded605d82f207d57a1468b8942 *SCALED_300K_RANGE-0-1_BATCH-2.txt
075bca24bd9b3c3cbcb8526f68b3342dba5c7fe9 *SCALED_300K_RANGE-0-1_BATCH-3.txt
3c1bea04bf81fec1b985583aefe8a203d6e4b7a4 *SCALED_300K_RANGE-0-1_BATCH-4.txt
bca2c9f336a79aaf5c168b89fabb6f4478f1ee89 *SCALED_300K_RANGE-0-1_BATCH-5.txt
ff2509580f24ce99cbf5499902f6b4762e84c092 *SCALED_300K_RANGE-0-1_BATCH-6.txt
2faab59465354f85d8028e729c931f36435ecfc9 *SCALED_300K_RANGE-0-1_BATCH-7.txt
e418478d21e48d5135878d85f7219cf982f3f6dc *SCALED_300K_RANGE-0-1_BATCH-8.txt
5276acb7f52941ed0da84b25a2001f5f79c303cf *SCALED_300K_RANGE-0-1_BATCH-9.txt
3fb2bfe7c32be1ff027f272a926512763d73bd32 *SCALED_300K_RANGE-0-1_BATCH-10.txt
99931a788c799e16b7b5b1304673c247546ca630 *concatenated 0-1.txt
```

2) Data sets of 3 million outcomes each, random extraction DOF = 37, range=[0,36] (included):
```
0ed3bd0dfdae9535ffa638506bc4b21eef4a19ec *SCALED_3M_RANGE-0-36_BATCH-1.txt
e6db6343779e7df24b267854ae65e8951ffed21b *SCALED_3M_RANGE-0-36_BATCH-2.txt
449cd461ba0a70551ce2b0bb9ff020fe4027ed33 *SCALED_3M_RANGE-0-36_BATCH-3.txt
46784bddbac4086c36462398e19cb91603c31064 *SCALED_300K_RANGE-0-36_BATCH-1.txt
55f33968ca264bd46a96efaeaff3550c63806124 *SCALED_300K_RANGE-0-36_BATCH-2.txt
1dcaf2bbece7465686e6f13b886de07fd02718ae *SCALED_300K_RANGE-0-36_BATCH-3.txt
75cc3c1842bb95ee3eef091cf5b101aa8948b049 *SCALED_300K_RANGE-0-36_BATCH-4.txt
a872b4e42c91d574757c2141398947f4546cf93e *SCALED_300K_RANGE-0-36_BATCH-5.txt
b20251e7eb00deac94c814d170b89a8745f4fc22 *SCALED_300K_RANGE-0-36_BATCH-6.txt
3a80f5ab0ff93493c2c504d62fa3436d36374f32 *SCALED_300K_RANGE-0-36_BATCH-7.txt
22ce472f9e7792fe8d981cf6c653263b85497b93 *SCALED_300K_RANGE-0-36_BATCH-8.txt
8e2829df43b74c2c4c8821683f5b9baedb8fd625 *SCALED_300K_RANGE-0-36_BATCH-9.txt
eaebd61cfc875d14268bc4c1c1c52d480159751b *SCALED_300K_RANGE-0-36_BATCH-10.txt
ce5f073bd95f83a86bd26fc8d1234758e86c853c *concatenated 0-36.txt
```

3) Data sets of 3 million outcomes each, random extraction DOF = 38, range=[0,37] (included):
```
e32b48b1966dbdd8a2c89b4fc8b4d5b9197e833f *SCALED_3M_RANGE-0-37_BATCH-1.txt
26b1008262a074b7afcf6738d92ac3ac8cb40123 *SCALED_3M_RANGE-0-37_BATCH-2.txt
9512166738cc87afc42d5e5cc8ad2e91b940e5ed *SCALED_3M_RANGE-0-37_BATCH-3.txt
31868d6266128796536241b33ba30b2531696921 *SCALED_300K_RANGE-0-37_BATCH-1.txt
571493f2fc96be6d0b8284bd84adb40cc05fac8f *SCALED_300K_RANGE-0-37_BATCH-2.txt
bbc3fc37dccfd6ae40f55c299d4125d82a4d323d *SCALED_300K_RANGE-0-37_BATCH-3.txt
723fdda72e01a137cb82e02ccdef6a77487d1521 *SCALED_300K_RANGE-0-37_BATCH-4.txt
e76362464a03be867f2e4cca5baced734b4efffb *SCALED_300K_RANGE-0-37_BATCH-5.txt
c0534d42262aae59af2a6b4921de91e0aae66c48 *SCALED_300K_RANGE-0-37_BATCH-6.txt
ec843e0537cef3f8e5fa416233bb58cfcc83eeb2 *SCALED_300K_RANGE-0-37_BATCH-7.txt
7fd3066efae75970c5c6698c27aef6302cfae76c *SCALED_300K_RANGE-0-37_BATCH-8.txt
304ae12a4bc76cbe1c9bf43b4f0b268ca372e258 *SCALED_300K_RANGE-0-37_BATCH-9.txt
4fcc19972458ee697ff0319d0f900bd1f0ee4e8e *SCALED_300K_RANGE-0-37_BATCH-10.txt
a7b11abbdae1a616757234bdd91718d6a5e06a7d *concatenated 0-37.txt
```

4) Data sets of 3 million outcomes each, random extraction DOF = 40, range=[0,39] (included):

```
64c985e2db5ccf1f39d5cb911fe97cf16a213762 *SCALED_3M_RANGE-0-39_BATCH-1.txt
fb278e874d076f56df7170db5d32e7a0d97b9eb2 *SCALED_3M_RANGE-0-39_BATCH-2.txt
02bcd1519a333e908a961c63e9115a805ba07431 *SCALED_3M_RANGE-0-39_BATCH-3.txt
7617dec0879b7dfa9de219db927851dc274faf00 *SCALED_300K_RANGE-0-39_BATCH-1.txt
c012ecd2e2f88813905ee20f0177ed3b0729159f *SCALED_300K_RANGE-0-39_BATCH-2.txt
5eb910f9c227e72b33bd3e90a19c6c72e093b2ac *SCALED_300K_RANGE-0-39_BATCH-3.txt
f5ec52b1833e23d9cb16f5d12f967b66fc3964c2 *SCALED_300K_RANGE-0-39_BATCH-4.txt
56da4ad1ad417e097a6b692890b6bed435163e25 *SCALED_300K_RANGE-0-39_BATCH-5.txt
8d40198b34854841ae9313c0027b1747198c24b7 *SCALED_300K_RANGE-0-39_BATCH-6.txt
f943c1d4e3bb509bbe5541c1a1425df538b84e01 *SCALED_300K_RANGE-0-39_BATCH-7.txt
272b1da9b55a1c5736dbce6b45a40285d634c2d7 *SCALED_300K_RANGE-0-39_BATCH-8.txt
00e7c96342b83f36076d9f0f3af62947b6b5895b *SCALED_300K_RANGE-0-39_BATCH-9.txt
e3ee2bc41f6fae8a97a624793e1a0cd321a802cd *SCALED_300K_RANGE-0-39_BATCH-10.txt
06c8378f8aa834a7d43f5321758ba0b354920fb6 *concatenated 0-39.txt
```

5) Data sets of 3 million outcomes each, random extraction DOF = 52, range=[0,51] (included):

```
7dbb6ce1dde6b5644db4bc29c58a6bf9e9da2cdd *SCALED_3M_RANGE-0-51_BATCH-1.txt
98ed7dcfebf2434578764ce2783f6af47f169a7d *SCALED_3M_RANGE-0-51_BATCH-2.txt
ad08146755894bae3f378545b649df41819c4d01 *SCALED_3M_RANGE-0-51_BATCH-3.txt
e36f92d4ccd03b72199be89e1677ad362117e805 *SCALED_300K_RANGE-0-51_BATCH-1.txt
150952526c8ea5e0fe7250142189058ac66e9292 *SCALED_300K_RANGE-0-51_BATCH-2.txt
8dafd450d9578deed7800a473ecb75468e6d6975 *SCALED_300K_RANGE-0-51_BATCH-3.txt
f54ba500534f17b3d68a3b59b0bfe5356e8ef3a3 *SCALED_300K_RANGE-0-51_BATCH-4.txt
10ce1e95eb5d0e2347fa1b86209e5903215c24d1 *SCALED_300K_RANGE-0-51_BATCH-5.txt
a45c35297130435d25a03154f50156df93d6aa61 *SCALED_300K_RANGE-0-51_BATCH-6.txt
d5ccbdc020d078f5087cfe894edd96ad3eb9262d *SCALED_300K_RANGE-0-51_BATCH-7.txt
e149f7a0d3fa5a41b481937b71627ff077a1e537 *SCALED_300K_RANGE-0-51_BATCH-8.txt
8381546cfbd7f2bb89c80042f12ecc9ab0d96bed *SCALED_300K_RANGE-0-51_BATCH-9.txt
d130da3afc1477a6209c316cc2de204107567d1e *SCALED_300K_RANGE-0-51_BATCH-10.txt
a3d026a09958393a3d85314118587af91147f4f2 *concatenated 0-51.txt
```

6) Data sets of 3 million outcomes each, random extraction DOF = 100, range=[0,99] (included):

```
b24fd566af731d88ae45cf54f4bf694a47267202 *SCALED_3M_RANGE-0-99_BATCH-1.txt
ced84d3df6489abad22786cc82d000459267b9c9 *SCALED_3M_RANGE-0-99_BATCH-2.txt
d612b31ba5fe48f0c9f5c49f3086ff4987df9adc *SCALED_3M_RANGE-0-99_BATCH-3.txt
5fc42c56e6be5a79daf3489f697a93aa429c3750 *SCALED_300K_RANGE-0-99_BATCH-1.txt
7c6cb8920aa2b0011a084cbd66aeeb1bc853bc97 *SCALED_300K_RANGE-0-99_BATCH-2.txt
67df01b2f30c8ad80e206f55df4ba35d862362aa *SCALED_300K_RANGE-0-99_BATCH-3.txt
13c2c109039e7244968947d53a2b3c28f36575d7 *SCALED_300K_RANGE-0-99_BATCH-4.txt
e0ad87a9bd2a8be0712094a926e5fcf958c22a9d *SCALED_300K_RANGE-0-99_BATCH-5.txt
241b2b264f8f99cbdfb16eb97391537b9f8b81c2 *SCALED_300K_RANGE-0-99_BATCH-6.txt
1ad01e4bd4c0f22fb6dfa418537d6381b91abf73 *SCALED_300K_RANGE-0-99_BATCH-7.txt
0f9d12bdba5611b8b579faf8ce5eb75b36047bd1 *SCALED_300K_RANGE-0-99_BATCH-8.txt
32f22da50dfe77762f83c2e199085f7869d30737 *SCALED_300K_RANGE-0-99_BATCH-9.txt
11f42254f9f3883e9b520d43dfeb81ba00b8d4f5 *SCALED_300K_RANGE-0-99_BATCH-10.txt
3f997c61e12143f2178ce91e03076e716d6d393d *concatenated 0-99.txt
```

7) Data sets of 3 million outcomes each, random extraction DOF = 150, range=[0,199] (included):

```
71a926654cc92d9cf22864ddac2d064aaf62411d *SCALED_3M_RANGE-0-199_BATCH-1.txt
5a8eb361b31ec8754cd3ea9237118c5083bd0e4e *SCALED_3M_RANGE-0-199_BATCH-2.txt
cc35a0bb0de1a966eafb54227684262aedb96ee2 *SCALED_3M_RANGE-0-199_BATCH-3.txt
4c59028cd96efbc4d55bbeac176df9d624911545 *SCALED_300K_RANGE-0-199_BATCH-1.txt
76b4711e6fdb3e7ffa739e2938bee95509b38c47 *SCALED_300K_RANGE-0-199_BATCH-2.txt
1e40746f8eb3564c57591a0dc9012f12fcb12fd5 *SCALED_300K_RANGE-0-199_BATCH-3.txt
54c169b27d964876bc770f7e5e74767054be38e3 *SCALED_300K_RANGE-0-199_BATCH-4.txt
```

```
079edae90a57088d51b85ae21b0068bcac827796 *SCALED_300K_RANGE-0-199_BATCH-5.txt
d89105a8f3ba9d6d609cbfe05d8a0e4315abcf8a *SCALED_300K_RANGE-0-199_BATCH-6.txt
627e15cf122f77f64944e95d20479902571b8a89 *SCALED_300K_RANGE-0-199_BATCH-7.txt
31e42bb3734718b48f62e2d2b25dbf9bcb21efe4 *SCALED_300K_RANGE-0-199_BATCH-8.txt
2384150bbff8b55558ee620f394f490801cbff2c *SCALED_300K_RANGE-0-199_BATCH-9.txt
4bff0432a6cac919427c8acf86f58d9500019a11 *SCALED_300K_RANGE-0-199_BATCH-10.txt
2eaa0c460453003e03d3bd644b1a489547940b52 *concatenated 0-199.txt
```

8) Data sets of 3 million outcomes each, random extraction DOF = 200, range=[0,249] (included):

```
8629573c9d4c12db7414b50fee8a83dd2c936183 *SCALED_3M_RANGE-0-249_BATCH-1.txt
07c9cb7a024ec33069ee0c861a4df3c876ebec69 *SCALED_3M_RANGE-0-249_BATCH-2.txt
7f601540c193399594521e85a5918becbc656316 *SCALED_3M_RANGE-0-249_BATCH-3.txt
7c96fa2baba07a5be4d4b808b7112639ea46770b *SCALED_300K_RANGE-0-249_BATCH-1.txt
08dd02e5cfdc95bb1e10e8890dce6cd54944714e *SCALED_300K_RANGE-0-249_BATCH-2.txt
eac816b79f29146857a6ad6d1956a9bea4da80a6 *SCALED_300K_RANGE-0-249_BATCH-3.txt
0760de294e265b6a046f3d3360b0662b95dd12ae *SCALED_300K_RANGE-0-249_BATCH-4.txt
e8f6adca43b4ef7c7f1fd402ff2be577a59f3890 *SCALED_300K_RANGE-0-249_BATCH-5.txt
f449a1b94dc6753de96f0915f0d9c72cbc0cc867 *SCALED_300K_RANGE-0-249_BATCH-6.txt
e3c82708caff22d49ad142b69d38b7729c181fae *SCALED_300K_RANGE-0-249_BATCH-7.txt
84e696e892a0c0b843984ded187097ef6b6f09f4 *SCALED_300K_RANGE-0-249_BATCH-8.txt
0c31c016edfd730fcc514d0b9cbedda2d5a1beef *SCALED_300K_RANGE-0-249_BATCH-9.txt
eebd909310ec40de65c8d8b4ba59e59bb51f3386 *SCALED_300K_RANGE-0-249_BATCH-10.txt
ab8ea4224ca2209c202b1c41b700cbd1e32b405a *Concatenated 0-249.txt
```

Overall results: POSITIVE

Test results:

UNIFORM DISTRIBUTION / FREQUENCY:	PASS
STATISTICAL INDEPENDENCE (Chi square):	PASS
RUNS TESTS:	PASS
SELF-CORRELATION:	PASS
CROSS-CORRELATION:	PASS

```
END
OF
COMPLIANCE
REPORT
```