

Spillemyndigheden's Certification Programme

Testing Standards for Lotteries

SCP.01.06.EN.1.1

**Spillemyndigheden's Certification Programme
Testing Standards for Lotteries**

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1 Objectives of the testing standards

The testing standards for lotteries are set out to ensure that the gambling functionality of the gambling system operates in a suitable manner. The presentation of gambling functionality towards the customer can be distorted if the functionality does not operate in a manner that is true to what the customer can rightly expect. Therefore the gambling system's gambling functionality shall be tested to ensure that it operates in a manner consistent with what is being presented to the customer. The same consideration must be made to sales terminals to ensure that they generate random tickets.

1.1 Scope of this document

This document contains the requirements specifying how testing organisations obtain accreditation for conducting certification of the gambling system, business processes and business systems of the licence holder as well as instructions on how to conduct the certification. The requirements concerning accreditation of the testing organisation and certification of the licence holder can be found in section 2 "Certification".

The random number generator(s) in the gambling system of the licence holder shall be tested to ensure that they are truly random and that the games are running independently from the device of the customer. Furthermore, testing to ensure that the offer of games without stakes on the same platform as games with stakes does not distort the customer's impression of the chance to win is also required. At the end a number of requirements regarding rollovers and the management hereof are set out. These tests are described in section 3 "Requirements for the testing of gambling functionality (Online and land-based)".

1.2 Version

Spillemyndigheden will continuously revise the certification programme and the latest version will at all times be accessible at Spillemyndigheden's website.

Date	Version	Description
2015.12.21	1.0	First version of testing standards for lotteries
2018.01.01	1.1	Changes completed because of liberalization of online bingo, betting on horse- and dog races and betting on pigeon races.

Spillemyndigheden will publish guidelines regarding the validation of existing certifications together with previously performed inspections and tests, when new versions of the certification programme is released.

It is important to emphasise that only the Danish version is legally binding and that the English version holds the status of guidance only.

1.3 Applicability

Testing standards for lotteries are applicable for offering of:

- Lotteries (§ 6 Gambling act)

2 Certification

2.1 Certification frequency

The licence holder is responsible to ensure to be certified in accordance with the requirements in this document with an interval of maximum of 12 months.

2.1.1 Initial certification

The licence holder must, as a rule, be certified before a licence to offer games can be issued, unless Spillemyndigheden has informed otherwise.

2.1.2 Renewed certification

The licence holder must, as a rule, have completed a new certification within 12 months of the latest certification. The standard report must reflect when the certification has been renewed.

The licence holder can choose to postpone the certification up to two months from the time where a new certification should have been completed. The new certification must be finalised no later than 14 months after the latest certification and the standard report must be submitted to Spillemyndigheden within the same deadline. Use of this postponement requires that the testing is commenced within 12 months of the latest certification.

Spillemyndigheden must be notified before the certification is postponed.

The deadline for renewal of certification is shortened with the equally amount of time the former 12 month deadline has been postponed. Meaning that if you for instance make use of the maximum two months postponement, then the next certification is due 10 months later. The time for the next certification shall be reflected in the standard report.

A renewal of the certification may be based on sampling, spot checks and compliance with the requirements set out in the document "SCP06.00.EN - Change Management Programme". The certification shall clearly state whether this method has been used.

2.2 Accredited testing organisations

Testing organisations shall attain ISO/IEC 17020 accreditation and/or ISO/IEC 17025 accreditation based on the criteria described in the following sections. The scope of the accreditation shall be extended to include 'Spillemyndigheden's certification programme – SCP.01.06.DK.1.1' or 'Spillemyndigheden's certification programme – SCP.01.03.DK.1.2'.

The accreditation will be undertaken by DANAK, the Danish Accreditation Fund, or a similar accreditation body being covered by the multilateral agreement on reciprocal recognition of the European Co-operation for Accreditation or a member of the International Laboratory Accreditation Cooperation.

To ensure that the necessary qualifications are in place during the certification the testing organisation and their staff shall fulfil the following requirements. Documentation that the requirements are fulfilled shall be enclosed with the certification.

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2.2.1 Requirements for accredited testing organisations

The accrediting testing organisation:

- a) Shall have at least three years' experience in testing gambling systems or a similar closely related subject area,
- b) Shall work on the basis of the ISO/IEC 17020 accreditation and/or ISO/IEC 17025 accreditation, which refers to the requirements of SCP.01.06.DK.1.1 or SCP.01.03.DK.1.1, and
- c) Shall ensure that staff with sufficient qualifications will carry through the certification.

2.2.2 Requirements for personnel at the accredited testing organisations

The certification shall be carried out by staff with sufficient qualifications cf. sections 2.2.1 above. Work done in relation to the certification shall be supervised and the declaration of certification shall be attested by one or more persons who warrant(s) that the work has been carried out to adequate professional standards. These persons shall meet the following requirements:

- a) For the testing of the Random Number Generator the supervisor shall have a relevant master's or PhD degree or in other ways be able to prove relevant qualifications,
- b) For the testing of other gambling functions the supervisor shall have a relevant educational background or in other ways be able to prove relevant qualifications, and
- c) The supervisor referred to in a) or b) above shall have five years of professional experience in testing gambling systems or a similar closely related subject area.

Guidance: Testing, supervision and attestation can be carried out by staff who in conjunction fulfil the requirements.

3 Requirements for the testing of gambling functionality (Online and land-based)

3.1 RNG Requirements

3.1.1 Random Number Generator suitability for generating results

1	The generation of results in games with an element of chance shall be based on a certified Random Number Generator (RNG) and related functionality (seeding, mapping, shuffling, etc.).
2	The RNG shall be generally recognised as being a cryptographically strong source for drawing random numbers.
3	The RNG output shall pass the following statistical tests: <ul style="list-style-type: none">• The DIEHARD test suite (Marsaglia),• The NIST (National Institute of Standards and Technology) Statistical Test Suite, or• A similar test suite of the same level. The tests shall be conducted on a data set, which the accredited testing organisation considers to

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	be sufficient for securing statistical valid results.
4	The RNG output shall be statistically independent.
5	The RNG output shall have a correct statistical standard deviation.
6	The RNG output shall be unpredictable without knowledge of its algorithm, implementation and the current value of the seed.
7	The RNG shall pass all tests during maximum load. Guidance: Maximum load is defined by the licence holder as the load level where the gambling system automatically rejects customer input

3.1.2 Random Number Generator suitability for functionality other than generating results

1	Functionality with an element of chance but not used for generating results shall be based on a certified Random Number Generator (RNG) and related functionality (seeding, mapping, shuffling, etc.). Guidance: E.g. this could be generation of random tickets in the gambling system or sales terminal.
2	The RNG shall be generally recognised as being a cryptographically strong source for drawing random numbers.
3	The RNG output shall pass the following statistical tests: <ul style="list-style-type: none"> • The DIEHARD test suite (Marsaglia), • The NIST (National Institute of Standards and Technology) Statistical Test Suite, or • A similar test suite of the same level. <p>The tests shall be conducted on a data set, which the accredited testing organisation considers to be sufficient for securing statistical valid results.</p>
4	The RNG output shall be statistically independent.
5	The RNG output shall have a correct statistical standard deviation.
6	The RNG output shall be unpredictable without knowledge of its algorithm, implementation and the current value of the seed.
7	The RNG shall pass all tests during maximum load. Guidance: Maximum load is defined by the licence holder as the load level where the gambling system automatically rejects customer input

3.1.3 Degrees of freedom and mapping

1	Drawings from an RNG shall be distributed uniformly. Statistical tests should demonstrate a normal distribution.
2	The series of numbers selected by the RNG shall be adequate to provide a sufficient likely chance that the outcome achieved corresponds to the desired and expected return to player.
3	Mapping and scaling of the RNG for symbols or events shall ensure that the output can be approved through the corresponding randomness tests of the RNG they were taken from. Guidance: The scaled sequence of numbers shall pass the same statistical tests that apply to the sequence of numbers produced by the RNG; scaled algorithms are not permitted to lead to bias or result in the creation of patterns.

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	Guidance: Methods for mapping and scaling shall be linear. There may be clear exceptions for games which temporarily change character during the game and events where the mapped outcome is proportional to the turnover.
4	The licence holder shall be able to verify that the results of the RNG are the same as those found in the gambling system or sales terminal after the event.
5	If the rules of the game require a sequence or mapping of units or events to be set up in advance (e.g. location of hidden objects within a labyrinth), it is not permitted to assign a new sequence or new mapping to the units or events unless this is stated in the rules.
6	Unless it is stated in the game rules, the events based on randomness in the game shall be independent of (not related to) other events in the game or events in previous games.
7	Random outcomes that decide games shall not be affected or controlled by anything else than number values produced in an approved manner by the verified RNG combined with the rules of the game. Guidance: This does not exclude permissibility of games which temporarily change character while they are ongoing or jackpots decided by anything else than simple game results.

3.1.4 Error control procedures

1	If a hardware RNG is being used, the gambling system shall use a fail-safe mechanism to deactivate the game in the event of errors in the unit. Guidance: It is possible to use software RNG as backup to a hardware RNG, provided that the software RNG also fulfils the requirements for RNG mentioned in this document.
2	If a software RNG is used, the gambling system or the sales terminal shall apply dynamic monitoring of output and deactivate games in the event of RNG output failure.

3.1.5 Seeding

1	The gambling system or sales terminal shall secure the RNG output by applying an appropriate and efficient method for seeding and re-seeding. Guidance: This requirement applies to all technological aspects of the re-seeding method, not process components.
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3.1.6 Security

1	RNG output which is mapped and scaled for a symbol or an event shall be applied immediately and in accordance with the game rules. Guidance: This does not prevent games which temporarily change character while ongoing from being played in accordance with the game rules of these games.
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3.2 Gambling functionality

3.2.1 General

1	Games shall be independent of the characteristics of the customer's equipment and/or communication channel.
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3.2.2 Games without stakes

1	Games without stakes (free games, games for fun, trial games etc.) shall present the chance of winning in a correct and balanced way so as not to create an impression that the chance of winning is bigger than it actually is in games with stakes.
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3.2.3 Accurate representation of chance

1	Games shall give customers fair expectations of their chances of winning by correctly presenting all outcomes and/or events on which the games are based. Guidance: Concepts such as "near-miss" are not regarded to be fair in this connection.
2	Games shall give a fair impression of whether a customer is able to affect the outcome. Guidance: Games which give the customers the impression that they have control over the outcome of the game when they do not (i.e. the result is completely random) are not permitted.
3	The gambling system shall ensure that all games which are being presented as being based on random outcomes actually have the same likely chance of producing a given combination each time the game is played. Guidance: The return to player shall not be manipulated by the system or by manual interference to maintain a constant return to player to the player. Guidance: The games are not allowed to adjust to the behaviour of the player.
4	Games which involve the simulation of a physical object (dice, roulette wheels, etc.) shall provide true and fair outcomes in accordance with expectations to this physical object. Guidance: If a game is presented as a direct or indirect simulation of a physical object, the simulation shall be identical with the expected behaviour of the physical object.

3.2.4 Return to player percentage

1	Games shall have a return to player percentage of at least 45 %
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3.3 Rollover

3.3.1 General

1	The gambling system shall ensure that the actual funds transferred to a rollover correspond to what is stated in the rules governing the rollover in question. Guidance: If there is a maximum amount on a rollover, all further contributions after this maximum has been reached shall be credited to another pool.
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