Processing of submission for testing of gaming products (Information for applicants)

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Revision summary:

Several changes throughout the document to differentiate certain procedures from similar ones by the parent company.

Description of complaint and dispute resolution process available to clients.

1 Application (submission form SN715)

To initiate a testing / certification procedure for a gaming device with SIQ Conformity Assessment Africa (Pty) Ltd (from here on: SIQ), preferably the form SN715 (Application for testing / certification of gaming products) shall be used. Other forms can be used, providing that all information as requested in SN715 is covered. Latest issue of SN715 is always available on SIQ website, or upon request.

The applicant commits to complete functional identity of the supplied hardware and software to the supplied documented specification, and declares possession of copyright for all submitted items, including software source code.

The person signing the application form SN715 must be duly authorized to sign it.

1.1 Applicant, manufacturer

Besides the full name of the company (applicant) and address of the company seat, the registration number of the company's register (in many cases court register) shall be given. See Chapter 1 of SN715. An excerpt from the company's (or court) register shall be enclosed as well, if this is the applicant's first application, or if the registration has been changed in any way. This registry is known under various names in different countries, South Africa: Disclosure of the CIPC.

All contact persons, authorized by the applicant, who may be informed about the testing process and may participate in it and provide information necessary by the laboratory, shall be listed. If other authorized personnel are to be involved at later stages of the process, a written authorization from the applicant shall be required.

Applicant is in most cases also the gaming machine manufacturer. If the applicant is NOT the gaming machine manufacturer, its relation towards the manufacturer shall be specified, e.g. regional or local sales office or local representative, distributor, etc. See Chapter 2 of the SN715. The applicant shall then enclose:

- manufacturer's written and duly signed authorization to carry out testing or certification in manufacturer's name and behalf;
- the full name of the holder of test report / certificate which shall appear on the test report / certificate, e.g., the manufacturer name or the representative name;
- a separate manufacturer statement concerning functional identity of the gaming device with the documented specification, as well as the transfer of the copyright of the software (we will provide a form for this, WN116).

If software is developed and manufactured by a manufacturer other than the gaming machine (hardware) manufacturer, then a separate application form SN715 for software shall be submitted by the software manufacturer, or the applicant shall also attach:

- a separate software manufacturer statement concerning functional identity of the gaming device with the documented specification, as well as the transfer of the copyright of the software (we will provide a form for this, WN116),
- an excerpt from the company's register for the software manufacturer.

1.2 Short product description

Basic characteristics of the product submitted for testing / certification shall be given. For example, if only games are submitted, the relevant hardware platform for which games are intended shall also be mentioned. If more than one platform or game is applied for, all of them shall be listed. For details on what is required, see Chapter 3 of the application form SN715.

1.2.1 Hardware notes

Only the hardware elements listed in the application form (SN715) will be specified in the test report and / or certificate of conformity. If the applicant later wants to use additional elements, a new application shall

be made. It is therefore important to specify all the elements and variations for which the test report or certificate of conformity is sought. If for instance different types of cabinets, sizes of monitors, toppers, etc. need to be approved, all of them shall be listed. A description and differences shall be documented in the enclosed documentation. In most cases, it will not be necessary to have samples of all combinations sent to the laboratory for testing. Only one operating sample of the gaming device and exhaustive description of all variations shall be sufficient to test the complete (hardware) family of products.

1.2.2 Software notes

All software elements that are subject to testing or certification should be listed in the application form (SN715) or in the attached documents. Only the listed software elements will be specified in the test report and / or certificate of conformity.

1.2.3 Communication protocols

Any supported communication protocols for connection to the on-line / supervisory information / accounting systems or to other systems or devices shall be listed in the application form SN715, or in the included documentation.

2 Supplied documentation

2.1.1 Hardware documentation

Following items shall be documented and submitted (it is up to the manufacturer as to how these items are organized; it is possible to have everything covered with a single document):

- user manual / operating guide,
- technical description of the device,
- installation,
- maintenance,
- troubleshooting,
- wiring diagram,
- parts list,
- third party item manuals (e.g. bill acceptor / validator, coin acceptor, hopper, etc.)

2.1.2 Game documentation

For each submitted game, the following documents shall be supplied:

- detailed game description with playing rules, including bonus, feature, double up, risk, gamble games,
- game setup information,
- description of symbols, e.g. virtual reel layout, cards in a deck, number of decks used in the game, including what conditions need to be met for the deck(s) to be reshuffled, etc.,
- full paytable or win table,
- excel or other file with winning probability calculations (PAR sheets),
- for bonus or feature games, the winning probability calculation formulas, including the probability calculation for entering the bonus / feature games,
- pictures of game artwork.

2.1.3 Software documentation

Basic software description shall be included with the application form SN715, describing software structure, functions of each program module (e.g. EPROM or Flash ROM sets, executables and binaries on the hard disk, etc.), and setup possibilities. Further software documentation will typically be required subsequently during the testing process; for more details see the chapter about the software testing procedure below.

3 Supplied accessories

3.1 Gaming device sample

An operating sample of a gaming device (or gaming system) is needed in the laboratory. It shall be equipped with:

- all necessary keys,
- highest priority passwords, setup cards and / or RAM reset keys,
- tokens,
- equipment for testing with door open, if needed,
- any other simulation accessories.

If only games are to be tested, we need a fully functional gaming device platform to test the games on.

3.2 Software

Principally, the binaries of all software components defining the game outcome, game functionality, accounting and external communication shall be delivered together with the application form SN715, either on their original media or as a data file. Further software submission requirements will typically be made subsequently during the testing process; for more details see the chapter about software testing procedure below.

4 Brief description of the testing procedure

Gaming test procedure is roughly divided into the following segments: functional tests; randomness of draw; payback ratio (return to player, RTP); software analysis.

4.1 Functional tests

The complete functionality of the gaming device is examined by performing functional tests. Functional tests typically include the following:

- verifying general hardware design requirements;
- verifying protection of unauthorized access to the gaming device (access to components, connections, gaming device settings, etc.);
- evaluating all applicable electronic and electro-mechanical meters;
- evaluating all critical settings that influence the behaviour of the gaming device or system;
- examining the behaviour of the gaming device, system or related technology in some specific situations according to the jurisdiction (e.g. opening the main door, stacker door, power cut, stacker removal, logic box doors, access inside the cabinet, etc.);
- reporting all the required events and meters to an online accounting, payment, progressive or other systems (if applicable).

Additional tests are performed in accordance with specific jurisdictional requirements.

4.2 Randomness of draw

For testing of randomness, the laboratory needs a possibility to collect a large number of RNG or game outcomes. The options to achieve this include the following:

- a special RNG auto-play program (e.g. a test EPROM, CompactFlash, binary...) to allow rerouting of the game results / outcomes (e.g. virtual reel positions, cards dealt during a poker game, etc) to a test port for the purpose of the RNG testing, with a description of the protocol used for the test port and look-up table between output numbers and symbols, or
- a possibility to log game outcomes during the auto-play sequence to a special log file, or,
- a possibility for game outcome acquisition via supervisory information system using standard communication protocol (has to be agreed between the applicant and the supervisory system manufacturer), or

- if none of the above is available, a possibility to simulate the complete game outcome determination algorithm on a computer will be discussed.

After the RNG results are collected in a file, a statistical analysis according to the regulation and/or to SIQ internal procedure is performed.

4.3 Payback ratio

The payback ratio tests can be performed in the following ways:

- mathematical calculation of the game (depends on the type and rules of the game);
- executing automated playing of the games (modern games may have very long game cycles, so it may not be possible to use this method as it would take too much time);
- emulating the game on a personal computer, using applicant's or SIQ's custom made software.

The first of the above options is usually the fastest.

Along with the payback ratio tests, game graphics, help screens, and player interface are also evaluated.

4.4 Software analysis

Initially, a detailed overview of the software platform is performed. This involves general understanding of the organization of the source code, implementation of the: RNG, paytable, game loop, the compile/build process, emulator use, etc. The most efficient way to achieve this is to organize a meeting between SIQ software engineers and manufacturer's developers. Such a meeting may typically take 1-3 working days, depending on the complexity of the software platform. During the platform software review at least one (possibly representative) game will be also analysed.

When additional games need to be verified, it is not necessary to analyse the platform software again, meaning that it will take much less time for approval of the game. This methodology assumes that the general software platform remains relatively unchanged over a period of time (over a number of games).

To arrange the meeting between SIQ software engineers, manufacturer's developers may visit SIQ, or SIQ engineers may visit the manufacturer. We recommend the latter option, because it is assumed that SIQ software engineers will have better support regarding various software aspects at manufacturer's premises. The former option means that if only one or two manufacturer's developers visit SIQ, they may not be able to answer all the questions adequately, or they may not have all the necessary tools to perform the required tests, therefore this option is less desirable (but still possible).

Software analysis of the games for already approved platform can be performed in the following ways:

- arranging the meeting between SIQ software engineers and manufacturer's developers and performing the software review, or
- SIQ engineers can perform the software review without the presence of manufacturer's developers.

The decision is made by SIQ based on the complexity of the games and is a result of communication between SIQ and manufacturer.

Upon completion of the software analysis, the source code (and potentially any other sensitive data) is stored in a special safe deposit box and/or in a separate room with special key and alarm code.

4.4.1 Required documentation for software analysis

- Complete documentation of gaming device functionality.
- Game flowchart(s), including boot sequence, main loop, bonus/gamble games, AutoPlay, log writing, error handling, Pay-In/Pay-Out, and communication with On-Line system (if implemented).
- RNG documentation, including the randomness principle, source code listing with comments, conversion principle from random number to game outcome, seeding mechanism.
- All major algorithm and data structure descriptions, including paytable, bonus/gamble game implementation, reels symbol sequences, etc.
- Game rules for the player, including bonus/gamble game rules.
- If the software accesses any external code, such as external libraries, database, operating system files (e.g. Registry), microcontrollers, etc, this functionality must be fully documented.

4.4.2 Required hardware & tools for software analysis

- All EPROMs, microcontrollers, and other non-volatile memory types (hard disks excluded), containing the compiled source code, graphics, sound, animation data, etc.
- An option to edit, compile and test the source code. Testing can be done in any of the following ways:
    - run the code on a development platform - PC,
    - run the code on a development platform - emulator,
    - copy the code to a target data carrier (e.g. EPROM, CompactFlash, hard disk...), install it into the tested gaming device and run the game.

4.4.3 Required items for gaming information systems testing

For testing the systems (such as remote / internet gaming systems, on-line supervisory / accounting systems, cashless / ticketing payment systems, etc.), the following requirements apply:

- Complete development environment (virtual machine, e.g. VMWare, Virtual PC, VirtualBox, etc.).
- Complete source code and executable files.
- Network equipment settings description.
- System security documentation.
- Account management documentation (administrator / operator, player authentication and authorization).
- Complete documentation of system functionality (with references to where individual functionalities are implemented in the source code / system).
- Complete system flowchart(s), including boot sequence, player sessions, player account management, main loop, bonus/gamble games, AutoPlay, log writing, error handling, and communication with other systems and devices.
- Detailed description of database(s) structure and store procedures / source code in database(s).

5 Non-gaming tests (e.g. electrical safety, electromagnetic compatibility, environmental)

For jurisdictions where only gaming tests are specified in the gaming regulations, SIQ will only perform gaming tests. For jurisdictions where also non-gaming tests are specified within the gaming regulation, the applicant has an option to:

- order these tests to be performed by SIQ Ljubljana – parent company (this may involve separate, non-gaming related SIQ departments), or
- order SIQ test reports containing a comment, that SIQ does not cover these requirements, or
- provide the applicable test reports, to be reviewed by SIQ (subject to certain conditions, such as validity of test reports and specific jurisdictional requirements).

The above choice is reflected on the application form SN715.

If testing of electromagnetic compatibility (EMC) and/or electrical safety (LVD) is ordered to be performed by SIQ, a complete device sample and the following documentation is required:

- user manuals (operator manual as well as a manual for maintenance / servicing),
- mounting instructions,
- schemes and PCB layouts,
- complete safety reports from an accredited laboratory for critical parts (power supply, monitor, UPS) according to a valid IEC/EN standard,
- specifications of other critical parts (power cords, terminal blocks, motors, PCBs, EMI filters, transformers, plastic materials, ...),
- complete parts list.

6 Applicability of other supplied gaming test reports

Should the applicant supply any gaming test reports from other laboratories, these reports may be considered by SIQ and may decrease the time and cost of the testing process, if the target jurisdiction (of the supplied test report as well as of the SIQ application) is South Africa. The following additional conditions need to be met:

- Test laboratory is accredited according to ISO/IEC 17025 by SANAS and dully licensed registered by one of the Provincial Licensing Authorities under the Gaming Act of South Africa.
- The supplied test report presents clear and unambiguous test results, test conditions and test procedures used. Only the particular requirements which were actually tested and reported can be skipped / omitted by SIQ.
- The supplied test report refers to exactly the same hardware / software versions as applied for at SIQ. It should be possible to authenticate the binaries of the software using an appropriate authentication / hash codes, as agreed with the other laboratory; or the other laboratory can send tested binaries directly to SIQ.

7 Subcontracting

The applicant consents that SIQ Africa uses the laboratory of the parent company, SIQ Ljubljana, if practical, for certain products and jurisdictions, and in case of mechanical measurements (such as dimensions and weight) the third party subcontracted laboratories. SIQ will, upon request, inform the applicant about the involvement of the parent company or a subcontractor and disclose its identity. SIQ only uses accredited calibration laboratories to perform mechanical measurements.

8 Confidentiality of information

SIQ warrants complete confidentiality of all sensitive information disclosed to it for the purpose of testing, as agreed within a separately signed NDA. SIQ offers a generic form of NDA, which may further be adapted by the applicant (in agreement with SIQ) to serve applicant's particular needs.

9 Resolution of complaint or dispute

SIQ Africa is committed to provide its services to clients to their full satisfaction an in a way that provides real value to them. Every complaint, oral or written, will therefore be addressed with our full attention.

All complaints received will be recorded and investigated. If possible, the person who was involved will try to resolve it. The complaint may be a consequence of misunderstanding or misinterpretation, but it may be based due to the error performed in testing, delays or deviations from agreed process.

If for some reason complaint cannot be solved in direct communication, it should be taken over by the head of testing. If the head of testing cannot resolve it, complaint shall be reviewed by the Director.

In that case analysis shall be performed to determine justification of the complaint. If justified, further steps shall be defined to compensate for the damages caused to the client (e.g. perform some tests free of charge) and to complete the service in shortest time and in a satisfactory way.

Internally root cause that led to the complaint shall be analysed and appropriate corrective actions taken, as necessary.

10 Contacts

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