

# 1. GAMING DEVICE SUBMISSION REQUIREMENTS (GLI-11)

## 1.1 Introduction

**1.1.1 General Statement.** This chapter shall govern the types of information that are required to be submitted by a submitting party in order to have equipment tested to the GLI-11 technical standard. Where the information has not been submitted, or is not otherwise in the possession of GLI, the submitting party shall be asked to supply additional information. Failure to supply the information can result in denial of the submission and/or lead to testing delays.

**1.1.2 Previous Submission.** Where the testing laboratory has been previously supplied with the information on a prior submission, duplicate documentation is not required, provided that the previous information is referred to by the submitting party, and those documents are easily located by the testing laboratory. Every effort shall be made to reduce the redundancy of submission information.

*NOTE: GLI-11 does not address submission requirements information for other gaming components and systems such as central monitoring systems, linked progressive controllers, etc. Please reference other applicable chapters of this document for additional GLI Standards.*

## 1.2 Prototype (Full Submission)

**1.2.1 General Statement.** A Prototype (full submission) is a first-time submission of a particular piece of hardware or software that has not previously been reviewed by GLI. For Modifications of previous submissions, including required changes to a previously submitted Prototype certification, whether certified or pending certification, see 'Submissions of Modifications' below. The following items shall be submitted with each Prototype (full submission):

- a) **Submission Letter.** Each submission shall include a request letter, on company letterhead, dated within one (1) week of the date the submission is received by GLI. The letter should include the following:
- i The jurisdiction(s) for which certification is being requested;
  - ii The items requested for certification. In the case of software, the submitting party shall include ID numbers and version numbers, as applicable. In the case of hardware, the submitting party shall indicate the manufacturer and model number of the associated components of hardware. If the hardware has undergone any electrical and/or safety certification, such as Underwriter's Laboratory or equivalent, the submitting party shall provide supporting documentation for same; and
  - iii A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.
- b) **Random Number Generator (RNG) Submission.** In some cases, the RNG shall be submitted with the prototype (full submission) request. An RNG shall be submitted for certification where:
- i. The RNG code has changed or the RNG implementation has changed; or
  - ii. Where a previously certified RNG is being implemented on a new hardware platform (i.e. change of microprocessor); or
  - iii. Where a previously certified RNG is generating numbers that are outside the range of numbers previously tested; or
  - iv. The RNG has never been certified before under this standard. In this case, the RNG will be certified as a part of the overall submission.

## **1.3 Random Number Generator**

**1.3.1 General Statement.** The Random Number Generator (RNG) is an integral part of gaming device software and must be carefully tested to ensure that it will meet the applicable technical standards defined in GLI-11. GLI has developed the methods necessary to test that the RNG and

its associated logic are suitable for its intended usage in the desired market. In order to analyze the RNG utilized by gaming device software in an accurate, efficient, and timely manner, GLI requests that the manufacturer read the overview below to understand the submission requirements which follow.

***1.3.2 RNG Analysis Overview.*** The RNG analysis contains three primary items: source code review, statistical data analysis, and software verification. The conclusion contained within the final GLI report will be based off the results of testing conducted within the source code review and the statistical data analysis. The conclusion will only be applicable to the RNG that is identified through software verification. If this identification changes, than the conclusion will no longer be applicable unless the reasons for the changes are also examined by GLI.

***1.3.3 Source Code Review.*** GLI will review the code associated with generating random numbers utilized in game play. The RNG and associated logic must be understood so that potential weaknesses may be addressed. In order to perform this area of testing, GLI requires submission of the final source code package associated with the RNG and game software. In the case that a test application is created to pull data from the RNG, the source code for the test application must also be provided such that GLI can confirm that it generates data in the same manner as the production software.

***1.3.4 Statistical Data Analysis.*** GLI will apply a battery of statistical tests to the data generated by the RNG. The data must be collected using methods that are as close as possible to those used when generating outcomes for game play in the field. If a hardware RNG is utilized in the field, it must also be utilized in data collection. Depending on testing scope, GLI may also collect binary data from the RNG that is not formatted for a specific game and apply a specific analysis adapted for that type of data.

***Example:***

Suppose the RNG is to be analyzed for its use in drawing 5 repeatable integer values from 1 to 49 inclusive (*picking 5 numbers with replacement*). GLI would need to be able

to generate, with the test application, a text file containing 51,000,000 records of 5 repeatable integers per record, drawn from a range of 49. The text file should be in a computer-parsable format. The data generated on each line should be generated in the exact manner a live game play would be conducted in the field.

In the case that multiple games and configurations are utilized by the RNG, GLI will examine the various games and determine which test cases to utilize in order to properly evaluate the RNG.

***1.3.5 Software Verification.*** For the final report, GLI will need to be able to uniquely identify the RNG that was tested. This means that GLI will record the key files and their respective checksums (SHA1, MD5, or SHA256) in the report.

*Example:*

As a basic example, suppose we have RNG.dll which pulls a seed from a hardware RNG. Next, suppose we have Game.exe which utilizes RNG.dll to generate random numbers in production for the 5 reel game example given earlier. Finally, suppose there exists Test.exe which calls RNG.dll to generate the test data described earlier as well. First, GLI will need to be able to verify that the source code provided for review was used to build Game.exe, RNG.dll, and Test.exe. In the simplest case, the manufacturer will send the source code and compiled files. GLI will then compile the files independently. A checksum is taken of the files compiled by the manufacturer and the ones compiled by GLI. If the signatures match, then it is assured that the supplied code was used to build the supplied compiled files. Alternatively, GLI can conduct a witnessed compile of the manufacturer's product and take the necessary signatures during compilation.

Second, GLI must identify the hardware generator seed source used during testing. GLI will need to confirm that the hardware generator is utilized in data collection and in generating gaming outcomes in the field.

In this example, the report would display the checksum of Game.exe and RNG.dll and an explanation of the usage of the hardware RNG. The goal of the software verification is to be able to uniquely identify the tested RNG and its associated source code.

A similar method will need to be developed based upon the manufacturer's RNG implementation and system architecture. The goal will be the same. GLI is open to suggestions on how this may be done for the system being submitted.

GLI can begin source code review after a local copy of the source code for the field application and test application are submitted.

In order to begin data analysis, GLI will need to have a clear understanding of all the calls made to the RNG and the specific parameters used by the game(s). The data sets will be based off of these calls. To provide efficient pricing and turnaround time for RNG evaluations, GLI may prefer to review the source code first to confirm that everything is in order before the data is collected and analyzed.

Software verification will become clearer during source code review.

**1.3.6 RNG Source Code.** Source code shall be final and no longer in testing or development stages. Source code shall be delivered in full along with the compiled binaries. Source code will be compiled by GLI and digital signatures will be taken during compile to ensure that the product being tested is the final release version that will be implemented in the field.

**1.3.7 RNG Final Outcome Collection Tool.** A data collection tool along with source code shall be available to allow GLI to collect data in a manner similar to the manner in which game data is produced in the final release version of the production application. This tool must utilize the same RNG and associated methods that are used to generate game outcomes. The tool shall allow the user to specify, at a minimum, the following input: number of draws/games. The collection tool shall output data in a computer-parsable format. Note: GLI's data collection requirements are large. Please expect that GLI may require hundreds of millions of draws, depending on game format. In most cases, the larger the game range, the larger the number of draws required. Depending on the implementation, data may be collected in hours, days, weeks, or months. If there are questions or concerns about this, please raise them immediately.

**1.3.8 Raw Output Collection Tool.** If required by scope of work, a binary data collection tool

shall be available to allow GLI to collect output from the RNG prior to scaling, shuffling, etc. The data collection should be capable of generating approximately 96 million bits of data written in binary format. Alternatively, the tool may output raw data (un-scaled) in ASCII format.

***1.3.9 RNG Description and Documentation.*** A technical description of the RNG shall be submitted. This may include appropriate documents detailing the RNG design and construction, as well as details related to methods that manipulate the RNG output (i.e., algorithms related to scaling, shuffling, selection, etc.).

***1.3.10 Game Description and Documentation.*** A document explaining the game rules, including help screens, pay tables, etc. shall be submitted.

***1.3.11 Technical Source Code Description and Documentation.*** A document explaining the source code shall be submitted. This document shall have sufficient documentation of the files and methods used so that one can follow the source code logic from the instantiation of the RNG to the generation of final outcome data.

## **1.4 Machine or Hardware Submission Requirements – Prototype (Full Submission) Certification**

**1.4.1 Presentation Of Identical Equipment To GLI.** Each item of gaming equipment supplied by a manufacturer to the field shall be functionally identical to the specimen tested and certified. For example, a gaming device supplied as a certified device shall not have different internal wiring, components, firmware, circuit boards, circuit board track cuts or circuit board patch wires from the certified specimen, unless that change is also certified. See also ‘Submissions of Modifications (partial submissions) to a Previously Certified Item,’ Section 1.8.’

**1.4.2 Accompanying Documentation.** All accompanying technical documents, manuals and schematics shall be submitted. In addition, the following items shall be provided:

- a) If applicable, all UL, CSA, EC, AS3100, etc. or equivalent certification, see also ‘Machine and Player Safety’ in GLI-11. This certification information may be supplied at a later date if unavailable, concurrent with testing by GLI;
- b) Any other equipment that may be used in the field in conjunction with the submission;
- c) Accompanying software, see also ‘Software Submission Requirements’, Section 1.5 in this document;
- d) If the submitting party has specialized equipment which is needed by GLI to test the submitted device, then the specialized equipment and all appropriate operation manuals for the equipment shall be included with the submission; and
- e) If requested, extension cables for door photo-optic detectors and any other hardware should be provided, so that the machine may be tested with doors open. In addition, where a processor board is oriented in a machine in such a way that it would be difficult to install a plug and/or cable for an emulator, extension cables should be provided to allow the board to be accessed or relocated. The use of such extension cables shall not adversely affect the machine's operation.

## **1.5 Software Submission Requirements – Prototype (Full Submission) Certification**

**1.5.1 General Statement.** Each submission of software shall contain the following:

- a) Two sets of all EPROMs, CD-ROMs, or other program storage media which contain identical contents. This includes all video, sound, printer, touchscreen, bill validator, NV memory clear, and game software. Where GLI already has tested a software component, resubmission may not be necessary;
- b) Percentage calculation sheets (i.e., PAR sheets);
- c) A written Statement of Verification that a previously certified Random Number Generator is used within the submitted software;
- d) A legible, color copy or digital image of the artwork (if applicable). NOTE: In some cases, GLI may have the wording on the artwork or game graphics translated to the English language, or have the manufacturer supply an independent translation;
- e) Source Code, a Link Map and Symbol Table. In addition, if requested, explanation of all Non-Volatile (NV) memory stored on the device with the NV memory locations described;
- f) A manual explaining all diagnostic tests, meters, game configurations, error conditions and how to clear them;
- g) NV memory clear procedures;
- h) Program block diagrams and flow charts for the game program, if applicable;
- i) For all software involved in the control of critical gaming functions, provide an assembler, linker, formatter, or other computing utility as is necessary to compile the gaming software from the source code supplied. This requirement may be waived where program code is written in machine code and the listing file (showing the assembled and linked code) is provided. If a non-PC-based platform development system is used, the manufacturer shall supply GLI with the necessary computer equipment and software necessary to compile and verify the final executable program. Any alternative to compilation by GLI (e.g., witnessing source code compilation) must be discussed prior to submission;

- k) The manufacturer shall supply GLI with all critical memory allocation addresses including how critical memory is checked and when it is checked; and 1) The manufacturer shall supply GLI the ability to download NV memory in order to review the NV memory data contents for cases where a forensic investigation is required. In addition, the manufacturer shall supply a method, which will allow GLI to upload a copy of the NV memory to another logic board populated with identical control program components. Upon the completion of this procedure, the new logic board should allow the gaming device to reproduce the last known game state that was present on the forensic logic board.

## **1.6 Software Programming Requirements and Compilation**

**1.6.1 General Statement.** The following items shall appear in all source code or related modules:

- a) Module Name;
- b) Brief description of module function; and
- c) Edit History, including who modified it, when and why.

**1.6.2 Source Code Commented.** All source code submitted shall be commented in an informative and useful manner.

**1.6.3 Source Code Completeness.** All source code submitted shall be correct, complete and able to be compiled. The result of the compiled object code shall be identical to that in the storage medium submitted for evaluation.

*NOTE: The addition of 'Date' and 'Time' stamps may cause additional differences in a compiled version. It is the manufacturer's responsibility to provide GLI with a method to compensate for, or resolve, these differences.*

## **1.7 Program Storage Device (PSD) Identification**

**1.7.1 General Statement.** A PSD shall be clearly labeled with sufficient information to identify the software and revision level of the information stored in the device. Each PSD shall be uniquely identified, as applicable, by the following information:

- a) Program ID number;
- b) Manufacturer identification;
- c) Version number, if applicable; and
- d) Location of installation in gaming device, if there are multiple locations possible.

*NOTE: For EPROM based games, the identification label shall be placed over the UV window to avoid erasing or alteration of the program.*

## **1.8 Submissions of Modifications (Partial Submissions) to a Previously Certified Item**

**1.8.1 General Statement.** For any updated submission (e.g., a revision to existing hardware or software that is currently under review, certified or has been reviewed and not certified), the following information shall be required to process the submission in addition to the requirements set forth in 'Submission Letter', Section 1.2.1.a. All modifications require re-testing, examination, and re-certification by GLI.

**1.8.2 Modification of Hardware.** Each hardware submission shall:

- a) Identify the individual items being submitted (including part number);
- b) Supply a complete set of schematics, diagrams, data sheets, etc. describing the modification along with the reason for the change(s); and
- c) Provide the updated or new device, a description and the method of connection to the original gaming device or hardware.

**1.8.3 Modification of Main Software Functions or Correction of Software Error.** The submitter should use the same requirements as in the ‘Software Submission Requirements – Prototype (Full Submission) Certification’ section listed above, except where the documentation has not changed. In this case, a resubmission of identical documents is not required. (e.g., if the payable and mathematics of the game are not changed, the submitting party may refer to previous documentation). However, the submission must include a description of the software change(s), modules affected, and new source code for the entire program. Source code is required for the entire program to allow for its verification.

**1.8.4 Software Submission - New Game Personality.** For a game-specific submission (e.g., a new game or a new game personality), the following information is required to process the submission:

- a) A complete description of the game, including documents that individually or collectively indicate the following:
  - i. For Reel Games:
    - A. The number of reels;
    - B. The number of lines and description of each line;
    - C. The maximum credits per line;
    - D. All artwork which shows any game rules or payable information;
    - E. A list of each winning combination along with the pay amount and hits for each prize;
    - F. A listing of the logical reel strips, indicating the exact symbols’ sequence, if applicable;
    - G. A listing of the physical reel strips, or the method of implementation used to obtain the virtual reel strips, as applicable;
    - H. A summary of each symbol’s frequency, if applicable;
    - I. A table to cross-reference each symbol type against the abbreviation, if abbreviations are used;
    - J. For games that use technologies other than physical mapping or virtual reel mapping, a detailed description of the relationship and steps between

- the time the RNG value is determined and the symbol is selected and the relative odds of each symbol being selected via the method;
- K. The denomination(s); and
  - L. The minimum and maximum bet.
- ii. For Blackjack Games:
- A. Dealer rules;
  - B. Double-down rules;
  - C. Pair-splitting rules.
  - D. Insurance/surrender rules;
  - E. Existence of any side bets;
  - F. All artwork which shows any game rules or pay information;
  - G. A list of pays for each type of win;
  - H. Number of decks;
  - I. The denomination(s); and
  - J. The minimum and maximum bet.
- iii. Poker Games:
- A. Poker style (e.g., Draw, Stud, etc.);
  - B. Special rules (e.g., Wild Cards, etc.);
  - C. Strategy for autohold, if allowed(indicate if auto-hold satisfies an optimal strategy, versus satisfying minimum RTP only);
  - D. Existence of any side bets;
  - E. Any mathematical work indicating the payback return when using optimum play strategy, if applicable;
  - F. All artwork which shows any game rules or pay information;
  - G. A list of pays for each type of win;
  - H.
  - I. The denomination(s); and
  - J. The minimum and maximum bet.
- iv. Keno/Bingo Games:
- A. Number of balls/spots that can be selected;
  - B. Number of balls drawn;

- C. Special rules (e.g., Wild Cards, etc.);
  - D. All artwork which shows any game rules or pay information;
  - E. A list of pays for each type of win;
  - F. The denomination(s); and
  - G. The minimum and maximum bet.
- v. Craps Games:
- A. Odds for each spot;
  - B. Number of player stations utilized with the game;
  - C. All artwork which shows any game rules or pay information;
  - D. A list of pays for each type of win;
  - E. Time frame (if any) for betting; and
  - F. The minimum and maximum bet.
- vi. Roulette Games:
- A. Number of spots (use of '00' or not);
  - B. Number of player stations utilized with the game;
  - C. All artwork which shows any game rules or pay information;
  - D. A list of pays for each type of win;
  - E. Time frame (if any) for betting; and
  - F. The minimum and maximum bet.
- vii. Games with Skill:
- A. Description of skill element(s) and how they impact return percentage for the game;
  - B. Description of Player vs. Player Advantage features, if applicable;
  - C. Description of Virtual Opponents, if supported;
  - D. Description of Player Advice features, if applicable;
  - E. Description of any “discovery features”, if supported;
  - F. Supporting information related to any “knowledge store” database used by the game design, for example, a trivia database;
  - G. Information on any special log files or metering that is supported, as applicable;

- H. If available, actual game return statistics from simulations or field trials of the game;
  - I. Assumed player strategy used for theoretical hold calculations and related details for same; and
  - J. If available, simulators or bots that may be used to facilitate mechanized testing, or any other specialized tools that may facilitate testing and analysis by GLI.
- viii. Virtual Event Wagering:
- A. Details of all virtual event wagering types to be provided including descriptions of the virtual events and wager types;
  - B. Copies of all proposed rules, including all prize tables or other such parameters, for each virtual event wagering type;
  - C. A description of how virtual event wagers are settled; and
  - D. A description of the in-play wagering process, if applicable, including selection of events, information offered to players in advance, dedicated technology, etc.

## **1.9 Calculation Sheets**

**1.9.1 General Statement.** For each game submitted, the manufacturer shall supply the calculation sheets (i.e., PAR sheets) that determine the theoretical return to the player (including the base game, double-up options, free games, bonus features, etc.).

## **1.10 Player Options**

**1.10.1 General Statement.** Where different player options (e.g., number of credits bet) result in variations to the payable, a separate calculation for each option is required.

## **1.11 Joint Venture Submissions**

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**1.11.1 General Statement.** A gaming device is considered a joint venture when two or more companies are involved in the manufacturing of one platform. Due to the increasing amount of joint venture submissions and to alleviate any confusion to the suppliers and regulator clients, GLI has set forth the following procedures for such a submission.

- a) One company will prepare and submit the entire submission, even if they are using parts from other suppliers, and must identify the part numbers of all components. This company will be the primary contact for the submission.
- b) The company submitting an approval request should do so on their letterhead. GLI will delegate an internal file number in this company's name and will bill this company for all costs incurred throughout the testing and approval process.
- c) The primary contact will be called when questions arise. However, GLI engineers will work with all parties involved in order to complete the review.
- d) Upon completion, the primary contact company will receive the approval letter, provided the submission meets the jurisdictional requirements. The primary contact company may then release copies of the approval letter to any associated manufacturer(s).

## **2. PROGRESSIVE SYSTEM SUBMISSION REQUIREMENTS (GLI-12)**

### **2.1 Introduction**

**2.1.1 General Statement.** This chapter shall govern the types of information that are required to be submitted by the submitting party in order to have equipment tested to the GLI-12 technical standard. Where the information has not been submitted, or is not otherwise in the possession of GLI, the submitting party shall be asked to supply additional information. Failure to supply the information can result in denial of the submission and/or lead to testing delays. This standard does not address submission requirement information for gaming devices or other gaming components, such as central monitoring systems. Please reference other applicable chapters of this document for additional GLI Standards.

### **2.2 Progressive Submission Requirements**

**2.2.1 General Statement.** The submission requirements throughout this chapter apply to all Progressive type submissions.

**2.2.2 Prototype Submissions.** A Prototype (full submission) submission is an initial submission of a particular piece of hardware or software that has not previously been reviewed by GLI. For modifications of previous submissions, including required changes to previously submitted Prototype certification, whether certified or pending certification, see also 'Documentation needed for Submissions of Modifications'.

*NOTE: The testing of the system may take place in the laboratory, or at the site of the submitter, or both, as determined by GLI.*

**2.2.3 Presentation of Identical Equipment to GLI.** Each item of gaming equipment, supplied by a manufacturer to the field, shall be functionally identical to the specimen tested and certified.

For example, a progressive system supplied as certified associated equipment shall not have different internal wiring, components, firmware, circuit boards, circuit board track cuts, or circuit board patch wires from the certified specimen, unless that change is also certified, see also ‘Documentation needed for Submissions of Modifications’.

*NOTE: This section shall not apply to wiring changes or component level changes, where wiring and components that are substituted, equate exactly to the previous approved configuration.*

**2.2.4 Accompanying Documentation.** All accompanying technical documents, manuals, and schematics shall be submitted. In addition, the following items shall be provided:

- a) If applicable, all UL, CSA, EC, AS3100, etc. or equivalent certification, see also ‘Hardware and Player Safety’, within GLI-12. This certification information may be supplied at a later date if unavailable concurrent with submission to GLI;
- b) Any other equipment that may be used in the field in conjunction with the submission.  
*NOTE: The testing of the system may take place in the laboratory, or at the site of the submitter, or both, as determined by GLI;*
- c) Accompanying software, see also ‘Progressive Software’ section below; and
- d) If the submitting party has specialized equipment that is needed by GLI to test the submitted device, then the specialized equipment and all appropriate operation manuals for the equipment shall be included with the submission.

**2.2.5 Submission Letter.** Each submission shall include a request letter, on company letterhead, dated within one week of the date the submission is received by GLI. The letter should include the following:

- a) The jurisdiction(s) for which you are requesting certification;
- b) The items requested for certification. In the case of software, the submitting party shall include ID numbers and revision levels, if applicable. In the case of hardware, the submitting party shall indicate the raw board, assembled board, and assembled unit

number for the hardware. If the hardware has undergone any electrical and/or safety certification, such as Underwriter's Laboratory or equivalent, the submitting party shall provide documentation for same;

- c) A list of all gaming devices compatible with the system and any other components; and
- d) A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

**2.2.6 Progressive Hardware.** Each submission shall include and identify the individual items (including part number) being submitted and be accompanied by schematics, operational and/or service manuals for each component along with the following:

- a) The Progressive Controller. The documentation accompanying the controller shall include the following:
  - i. The type of Progressive it controls (Stand-Alone, Linked, Multi-Site) and how to configure for each type;
  - ii. A description of how the controller board communicates with the game and provide the communications protocol;
  - iii. A description of the location of the controller and the housing unit;
  - iv. A description of how the jackpot value is displayed;
  - v. A listing of error conditions and tilts the controller supports;
  - vi. The number of displays which the controller can support; and
  - vii. A description of the events which occur when a jackpot is won.
- b) The Progressive Display and all accompanying schematics, operational, and/or service manuals. The documentation accompanying the display shall explain how the display drivers are interfaced to the controller and how the controller is interfaced to a gaming device. If the controller is provided for multi-tier jackpots, indicate the operation in this respect.

**2.2.7 Progressive Software.** Each submission shall include all software that controls each component of the Progressive system. In addition, all accompanying schematics, operational,

and/or service manuals shall be submitted. The documentation accompanying the software shall include and describe the programming procedures for:

- a) Two copies of all software needed to run the system and the source code, a link map, and symbol table for each program;

*NOTE: The source code may be reviewed, compiled and studied, either at the laboratory or at the supplier's place of business, as determined by the laboratory.*

- b) A general overview of the system, describing how the software and hardware are integrated, if requested;
- c) Program block diagrams and flow charts for the progressive system, if requested;
- d) All progressive jackpot features;
- e) The number of levels of progressive jackpots;
- f) The types of systems it is capable of handling (Stand-Alone, Linked, Multi-site, Random, etc.);
- g) The rules for winning each progressive jackpot;
- h) Each progressive parameter and description (max values, increment rates, etc.); and
- i) The NV Memory clear method.

*NOTE: In some cases, GLI may have the wording on the progressive display translated to the English language or have the manufacturer supply an independent translation.*

**2.2.8 Software Programming Requirements and Compilation.** The following items shall appear in all source code or related modules:

- a) Module Name;
- b) Brief description of module function;
- c) Edit History, including who modified it, when, and why;
- d) Source code comments in an informative and useful manner; and

- e) All source code submitted shall be correct, complete, and able to be compiled. The result of the compiled object code shall be identical to that in the storage media submitted for evaluation.

*NOTE: The addition of 'Date' and 'Time' stamps may cause additional differences in a compiled version. It is the manufacturer's responsibility to provide GLI with a method to compensate for, or resolve these differences; and the source code may be reviewed, compiled and studied either at the laboratory, or at the supplier's place of business as determined by the laboratory.*

**2.2.9 Program Storage Device (PSD) Identification.** On the Program Storage Device (PSD) that is submitted and subsequently placed in the field, each program shall be uniquely identified, where applicable, by the following:

- a) Program ID Number;
- b) Manufacturer identification;
- c) Version number, if applicable; and
- d) Location of installation, if there are multiple locations possible;

**2.2.10 Documentation Needed for Submissions of Modifications.** For any updated submission (e.g. a revision to an existing hardware or software that is currently under review, certified, or has been reviewed and not certified), the following information shall be required to process the submission. This process is intended to speed the administrative burden of modification submissions. All modifications require re-testing, examination and re-certification by GLI:

- a) **Modification of Hardware.** Each hardware submission shall:
  - i. Identify the individual items being submitted (including part number);
  - ii. Identify the previously approved hardware version;
  - iii. Explain what component it is modifying and how it was modified;
  - iv. Supply a complete set of schematics, diagrams, data sheets, etc. describing the modification along with the reason for the change(s); and

- v. Provide the updated or new device, a description and the method of connection to the original Progressive System.
- b) Modification of Software Functions or To Correct Software Error. The submitter should use the same requirements as in the [Progressive Software](#) section listed above, except where the documentation has not changed. In that case, a resubmission of identical documents is not required. In addition, the submission shall include:
- i. A description of the software change;
  - ii. Identification of the previously approved version;
  - iii. The modules affected; and
  - iv. The new source code for the entire program. Source code is required for the entire program to check compile and source code integrity.

*NOTE: The source code may be reviewed, compiled and studied either at the laboratory, or at the supplier's place of business as determined by the laboratory.*

*NOTE: Where the testing laboratory has been previously supplied with the information on a previous submission, submission of duplicate documentation is NOT required, provided that the previous information is referred to by the submitting party and those documents are easily located at the testing laboratory. Every effort shall be made to reduce the redundancy of submission information.*

### **3. MONITORING AND CONTROL SYSTEM SUBMISSION REQUIREMENTS (GLI-13)**

#### **3.1 Introduction**

**3.1.1 General Statement.** This chapter shall govern the types of information that are required to be submitted by the submitting party in order to have equipment tested to the GLI-13 technical standard. Where the information has not been submitted or is not otherwise in the possession of GLI, the submitting party shall be asked to supply additional information. Failure to supply the information can result in denial in whole or in part of the submission and/or lead to testing delays.

**3.1.2 Previous Submission.** Where the testing laboratory has been previously supplied with the information on a previous submission, duplicate documentation is not required, provided that the previous information is referred to by the submitting party, and those documents are easily located at the testing laboratory. Every effort shall be made to reduce the redundancy of submission information.

#### **3.2 Prototype (Full Submission) Submissions**

**3.2.1 General Statement.** A Prototype (full submission) submission is a first time submission of a particular piece of hardware or software that has not previously been reviewed by GLI. For Modifications of previous submissions, including required changes to previously submitted Prototype (full submission) certification, whether certified or pending certification, see [‘Submissions of Modifications \(partial submissions\) to a Previously Certified Item,’](#) Section 3.7.

*NOTE: Due to abnormal component complexity and/or excessive cost it is sometimes necessary for on-site testing of a system at the manufacturer’s facility. Regular upgrades normally preclude testing at the manufacturers’ facility except in the case of prototype submissions.*

**3.2.2 Submission Letter Requirements.** Each submission shall include a request letter, on company letterhead, dated within one (1) week of the date the submission is received by GLI. The letter should include the following:

- a) The jurisdiction(s) for which you are requesting certification;
- b) The items requested for certification. In the case of software, the submitting party shall include ID numbers and revision levels, if applicable. In the case of proprietary hardware, the submitting party shall indicate the manufacturer, model, and part and revision numbers of the associated components of hardware. If the hardware has undergone any electrical and/or safety certification, such as Underwriter's Laboratory or equivalent, the submitting party shall provide documentation for same; and
- c) A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

### **3.3 System Hardware Submission Requirements – Prototype (Full Submission) Certification**

**3.3.1 Presentation of Identical Equipment to GLI.** Each item of gaming equipment supplied by a manufacturer to the field shall be functionally identical to the specimen tested and certified. For example, an interface element supplied as a certified device shall not have different internal wiring, components, firmware, circuit boards, circuit board track cuts or circuit board patch wires from the certified specimen, unless that change is also certified, see also 'Submissions of Modifications (partial submissions) to a Previously Certified Item,' Section 3.7.

**3.3.2 Inventory of Equipment to GLI.** Each submission of hardware shall contain the following:

- a) Server, Database, Front End Controller, Data Collector and Ancillary Stations to include but not limited to: Jackpot/Fill functionality; Surveillance/Security monitor functionality; Gaming Device Management functionality; and Accounting/Reporting Functionality;
- b) Monitors, keyboards, mouse, printers, etc., to support the items listed above;

- c) Minimum of seven interface element devices with corresponding power connectors (if separate from harness), keypads, and displays;
- d) Minimum of one wiring harness for each Gaming Device type desired for operational approval with system where specific harnessing is required;
- e) Minimum of two of each type magnetic cards (or equivalent if an alternative media is used) used in the system, if applicable;
- f) Network cabling, hubs, switches and any wireless components that may be installed at a property; and
- g) Un-interruptible Power Supply (UPS) for critical components.

*NOTE: In an effort to reduce system submission size, monitor and data switches may be used. Additionally, separate software may be housed in the same unit, as long as the functionality is not impaired and the software is identical to the field version.*

**3.3.3 Accompanying Documentation.** All accompanying technical documents, manuals, and schematics shall be submitted. In addition, the following items shall be provided:

- a) If applicable, all UL, CSA, EC, AS3100, etc. or equivalent certification. This certification information may be supplied at a later date;
- b) Any other proprietary equipment that may be used in the field in conjunction with the Submission, if necessary to test the requirements set forth;
- c) Accompanying software, see also 'System Software Submission Requirements – Prototype (Full Submission) Certification,' Section 3.4; and
- d) If the submitting party has specialized equipment and/or software which is needed by GLI to test submitted system, such as load/game simulators or test data files, then the specialized equipment and/or software and all appropriate operation and user manuals for the equipment and/or software shall be included with the submission.

*NOTE: Commercially available products are not required for submission unless omission will impact testing and proper operation of the system.*

### **3.4 System Software Submission Requirements – Prototype (Full Submission) Certification**

**3.4.1 General Statement.** Each submission of software shall contain the following:

- a) Two sets of all EPROMs, CD-ROMs, or other storage media which contain identical contents. This includes all program executables, system component firmware, bin files, etc. Where GLI already has tested a software component, resubmission may not be necessary;
- b) Source Code, a Link Map and Symbol Table for all primary software executables. In addition, if requested, explanation of all NV memory on any system device with the NV memory locations described;
- c) All user manuals in both hard and soft copy format to include a general overview of the system from a component level, software and hardware setup and integration, and system block diagrams and flow charts for the communication program, if required;
- d) If not included in the user manuals, a connectivity manual for all unique electronic Gaming Devices capable of being interfaced with system to include device model numbers and compatibility list, if applicable; wiring diagrams depicting connection points to devices, power, etc.; and identification by part number or some other scheme, any unique wiring harnesses, ancillary boards required for communication of a particular device;
- e) If not included in the user manuals, provide example reports for each standard report capable of being generated on the system with a formula summary detailing all reporting calculations including data types involved, mathematical operations performed, and field limit;
- f) If not included in the user manuals, a list of all supported communication protocols specifying version, if applicable;
- g) If utilizing a software verification algorithm provide a description of the algorithm, theoretical basis of the algorithm, results of any analyses or tests to demonstrate that the algorithm is suitable for the intended application, rules for selection of algorithm coefficients or "seeds", and means of setting the algorithm coefficients or "seeds;" and

- h) If completed by the manufacturer provide a system test plan and results to detail electronic Gaming devices and software versions tested with.

### **3.5 Software Programming Requirements and Compilation**

**3.5.1 General Statement.** The following items shall be contained within all submitted source code or related modules:

- a) Module Name;
- b) Brief description of module function; and
- c) Edit History, including who modified it, when and why.

**3.5.2 Source Code Commented.** All source code submitted shall be commented in an informative and useful manner.

**3.5.3 Source Code Completeness.** All source code submitted shall be correct, complete and able to be compiled.

### **3.6 Program Identification**

**3.6.1 Software Requirements.** On the primary system software components submitted and subsequently placed in the field, each program shall be uniquely identified and either display version information at all times or utilizing a user accessible function.

**3.6.2 Firmware Requirements.** On the system firmware submitted and subsequently placed in the field, each program, where applicable, shall be uniquely identified, displaying:

- a) Program ID ;
- b) Manufacturer identification;

- c) Version number; and
- d) Location of installation in interface element, if there are multiple locations possible.

*NOTE: For EPROM-based firmware, the identification label shall be placed over the UV window to avoid erasing or alteration of the program.*

### **3.7 Submissions of Modifications (Partial Submissions) to a Previously Certified Item**

**3.7.1 General Statement.** For any update submission (e.g., a revision to an existing hardware or software that is currently under review, certified or has been reviewed and not certified), the following information shall be required to process the submission in addition to the requirements set forth in '[Submission Letter Requirements](#),' Section 3.2.2. All modifications require re-testing, examination, and re-certification by GLI.

**3.7.2 Modification of Hardware.** Each hardware submission shall:

- a) Identify the individual items being submitted (including part number);
- b) Supply a complete set of schematics, diagrams, data sheets, etc. describing the modification along with the reason for the change(s); and
- c) Provide the updated or new hardware, a description and the method of connection to the original system or hardware components.

**3.7.3 Modification of System Software Functions or to Correct Software Error.** The submitter should use the same requirements as in the '[Software Submission Requirements – Prototype \(Full Submission\) Certification](#)' Section listed above, except where the documentation has not changed. In this case, a resubmission of identical documents is not required. However, the submission must include a description of the software change(s) and modules affected, and new source code for the entire program, if applicable.

**3.7.4 Software Submission - Modification to Existing or Create New System Functionality.**

For a system specific submission (e.g., new workstation software), the following information may be required to process the submission:

- a) If new, a complete description of the function, including amendment manual and user documents, and new source code if applicable; and
- b) If modifying, the submission must include a description of the software change(s), modules affected and new source code, if applicable.

**3.8 System Security Submission Requirements**

**3.8.1 General Statement.** Where a system requires the use of defined user roles with associated passwords or pin numbers, a default list of all users and passwords or pin numbers must be submitted including a method to access the database.

**3.9 Joint Venture Submissions**

**3.9.1 General Statement.** A system is considered a joint venture when two or more companies are involved in the manufacturing of one system. Due to the increasing amount of joint venture submissions (more than one supplier involved in a product submission) and to alleviate any confusion to the suppliers and regulator clients, GLI has set forth the following procedures for such a submission.

- a) One company will prepare and submit the entire submission, even if they are using parts from other suppliers, and must identify all part numbers of all components. This will be the primary contact for the submission.
- b) The company submitting an approval request should do so on their letterhead. GLI will delegate an internal file number in this company's name and will bill this company for all costs incurred throughout the approval process.

- c) The primary contact will be called when questions arise. However, GLI engineers will work with all parties involved, completing the review.
- d) All suppliers who are part of the submission “group” may need to be licensed in the jurisdiction(s) where the submission is being approved. As a courtesy to the supplier, GLI may inquire as to whom does not need to be licensed from the regulator client. It should be noted that licensing questions should be handled directly with the jurisdiction.
- e) Upon completion, it is the primary contact company that will receive the approval letter, provided the submission meets the jurisdictional requirements. The primary contact company may then release copies of the approval letter to the associated manufacturer(s).

## **4. FINITE SCRATCH TICKET AND PULL-TAB SYSTEM SUBMISSION REQUIREMENTS (GLI-14)**

### **4.1 Introduction**

**4.1.1 General Statement.** This chapter shall govern the types of information that are required to be submitted by the submitting party in order to have equipment tested to the GLI-14 technical standard. Where the information has not been submitted or is not otherwise in the possession of GLI, the submitting party shall be asked to supply additional information. Failure to supply the information can result in denial in whole or in part of the submission and/or lead to testing delays.

**4.1.2 Previous Submission.** Where the testing laboratory has been previously supplied with the information on a previous submission, duplicate documentation is not required, provided that the previous information is referred to by the submitting party, and those documents are easily located at the testing laboratory. Every effort shall be made to reduce the redundancy of submission information.

### **4.2 Prototype (Full Submission) Submissions**

**4.2.1 General Statement.** A Prototype (full submission) submission is a first time submission of a particular piece of hardware or software that has not previously been reviewed by GLI. For Modifications of previous submissions, including required changes to previously submitted Prototype (full submission) certification, whether certified or pending certification, see ‘Submissions of Modifications (partial submissions) to a Previously Certified Item,’ Section 4.7.

*NOTE: Due to abnormal component complexity and/or excessive cost it is sometimes necessary for on-site testing of a system at the manufacturer’s facility. Regular upgrades normally preclude testing at the manufacturers’ facility except in the case of prototype submissions.*

**4.2.2 Submission Letter Requirements.** Each submission shall include a request letter, on company letterhead, dated within one (1) week of the date the submission is received by GLI. The letter should include the following:

- a) The jurisdiction(s) for which you are requesting certification;
- b) The items requested for certification. In the case of software, the submitting party shall include ID numbers and revision levels, if applicable. In the case of proprietary hardware, the submitting party shall indicate the manufacturer, model, and part and revision numbers of the associated components of hardware. If the hardware has undergone any electrical and/or safety certification, such as Underwriter's Laboratory or equivalent, the submitting party shall provide documentation for same; and
- c) A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

### **4.3 System Hardware Submission Requirements – Prototype (Full Submission) Certification**

**4.3.1 Presentation of Identical Equipment to GLI.** Each item of gaming equipment supplied by a manufacturer to the field shall be functionally identical to the specimen tested and certified. For example, a Player Terminal supplied as a certified device shall not have different internal wiring, components, firmware, circuit boards, circuit board track cuts or circuit board patch wires from the certified specimen, unless that change is also certified, see also 'Submissions of Modifications (partial submissions) to a Previously Certified Item,' Section 4.7.

**4.3.2 Inventory of Equipment to GLI.** Each submission of hardware shall contain the following:

- a) Server, Associated Database(s), Game Controller and Ancillary Stations to include but not limited to: Jackpot functionality; Surveillance/Security monitor functionality; Management functionality; and Accounting/Reporting Functionality;

- b) Monitors, keyboards, mouse, printers, etc., to support the items listed above;
- c) Minimum of two Player Terminals and associated harnessing to connect to the Central System Computer; and
- d) Un-interruptible Power Supply (UPS) for critical components.

*NOTE: In an effort to reduce system submission size, monitor and data switches may be used. Additionally, separate software may be housed in the same unit, as long as the functionality is not impaired and the software is identical to the field version.*

**4.3.3 Accompanying Documentation.** All accompanying technical documents, manuals, and schematics shall be submitted. In addition, the following items shall be provided:

- a) If applicable, all UL, CSA, EC, AS3100, etc. or equivalent certification. This certification information may be supplied at a later date;
- b) Any other proprietary equipment that may be used in the field in conjunction with the Submission, if necessary to test the requirements set forth;
- c) Accompanying software, see also ‘System Software Submission Requirements – Prototype (Full Submission) Certification,’ Section 4.4; and
- d) If the submitting party has specialized equipment and/or software which is needed by GLI to test submitted system, such as load/game simulators or test data files, then the specialized equipment and/or software and all appropriate operation and user manuals for the equipment and/or software shall be included with the submission.

*NOTE: Commercially available products are not required for submission unless omission will impact testing and proper operation of the system.*

## **4.4 System Software Submission Requirements – Prototype (Full Submission) Certification**

**4.4.1 General Statement.** Each submission of software shall contain the following:

- a) Two sets of all EPROMs, CD-ROMs, or other storage media which contain identical contents. This includes all program executables, system component firmware, bin files, etc. Where GLI already has tested a software component, resubmission may not be necessary;
- b) Source Code, a Link Map and Symbol Table for all primary software executables. In addition, if requested, explanation of all NV memory on any system device with the NV memory locations described;
- c) All user manuals in both hard and soft copy format to include a general overview of the system from a component level, software and hardware setup and integration, and system block diagrams and flow charts for the communication program, if required;
- d) If not included in the user manuals, provide example reports for each standard report capable of being generated on the system with a formula summary detailing all reporting calculations including data types involved, mathematical operations performed, and field limit;
- e) If utilizing a software verification algorithm provide a description of the algorithm, theoretical basis of the algorithm, results of any analyses or tests to demonstrate that the algorithm is suitable for the intended application, rules for selection of algorithm coefficients or "seeds", and means of setting the algorithm coefficients or "seeds;" and
- f) If completed by the manufacturer provide a system test plan and results to detail results and software versions tested with.

## **4.5 Software Programming Requirements and Compilation**

**4.5.1 General Statement.** The following items shall be contained within all submitted source code or related modules:

- a) Module Name;
- b) Brief description of module function; and
- c) Edit History, including who modified it, when and why.

**4.5.2 Source Code Commented.** All source code submitted shall be commented in an informative and useful manner.

**4.5.3 Source Code Completeness.** All source code submitted shall be correct, complete and able to be compiled.

## **4.6 Program Identification**

**4.6.1 Software Requirements.** On the primary system software components submitted and subsequently placed in the field, each program shall be uniquely identified and either display version information at all times or utilizing a user accessible function.

**4.6.2 Firmware Requirements.** On the system firmware submitted and subsequently placed in the field, each program shall be uniquely identified, displaying:

- a) Program ID ;
- b) Manufacturer identification;
- c) Version number, if applicable; and
- d) Location of installation in interface element, if there are multiple locations possible.

*NOTE: For EPROM based firmware, the identification label shall be placed over the UV window to avoid erasing or alteration of the program.*

## **4.7 Submissions of Modifications (Partial Submissions) to a Previously Certified Item**

**4.7.1 General Statement.** For any update submission (e.g., a revision to an existing hardware or software that is currently under review, certified or has been reviewed and not certified), the following information shall be required to process the submission in addition to the requirements

set forth in ‘Submission Letter Requirements,’ Section 4.2.2. All modifications require re-testing, examination, and re-certification by GLI.

**4.7.2 Modification of Hardware.** Each hardware submission shall:

- a) Identify the individual items being submitted (including part number);
- b) Supply a complete set of schematics, diagrams, data sheets, etc. describing the modification along with the reason for the change(s); and
- c) Provide the updated or new hardware, a description and the method of connection to the original system or hardware components.

**4.7.3 Modification of System Software Functions or to Correct Software Error.** The submitter should use the same requirements as in the ‘Software Submission Requirements – Prototype (Full Submission) Certification’ Section listed above, except where the documentation has not changed. In this case, a resubmission of identical documents is not required. However, the submission must include a description of the software change(s) and modules affected, and new source code for the entire program, if applicable.

**4.7.4 Software Submission - Modification to Existing or Create New System Functionality.** For a system specific submission (e.g., new workstation software), the following information may be required to process the submission:

- a) If new, a complete description of the function, including amendment manual and user documents, and new source code if applicable; and
- b) If modifying, the submission must include a description of the software change(s), modules affected and new source code, if applicable.

## **4.8 System Security Submission Requirements**

**4.8.1 General Statement.** Where a system requires the use of defined user roles with associated passwords or pin numbers, a default list of all users and passwords or pin numbers must be submitted including a method to access the database.

## **4.9 Joint Venture Submissions**

**4.9.1 General Statement.** A system is considered a joint venture when two or more companies are involved in the manufacturing of one system. Due to the increasing amount of joint venture submissions (more than one supplier involved in a product submission) and to alleviate any confusion to the suppliers and regulator clients, GLI has set forth the following procedures for such submissions.

- a) One company will prepare and submit the entire submission, even if they are using parts from other suppliers, and must identify all part numbers of all components. This will be the primary contact for the submission.
- b) The company submitting an approval request should do so on their letterhead. GLI will delegate an internal file number in this company's name and will bill this company for all costs incurred throughout the approval process.
- c) The primary contact will be called when questions arise. However, GLI engineers will work with all parties involved, completing the review.
- d) All suppliers who are part of the submission "group" may need to be licensed in the jurisdiction(s) where the submission is being approved. As a courtesy to the supplier, GLI may inquire as to whom does not need to be licensed from the regulator client. It should be noted that licensing questions should be handled directly with the jurisdiction.
- e) Upon completion, it is the primary contact company that will receive the approval letter, provided the submission meets the jurisdictional requirements. The primary contact company may then release copies of the approval letter to the associated manufacturer(s).

## **5. ELECTRONIC BINGO AND KENO SYSTEM SUBMISSION REQUIREMENTS (GLI-15)**

### **5.1 Introduction**

**5.1.1 General Statement.** This chapter shall govern the types of information that are required to be submitted by the submitting party in order to have equipment tested to the GLI-15 technical standard. Where the information has not been submitted or is not otherwise in the possession of GLI, the submitting party shall be asked to supply additional information. Failure to supply the information can result in denial in whole or in part of the submission and/or lead to testing delays.

**5.1.2 Previous Submission.** Where the testing laboratory has been previously supplied with the information on a previous submission, duplicate documentation is not required, provided that the previous information is referred to by the submitting party, and those documents are easily located at the testing laboratory. Every effort shall be made to reduce the redundancy of submission information.

### **5.2 Prototype (Full Submission) Submissions**

**5.2.1 General Statement.** A Prototype (full submission) submission is a first time submission of a particular piece of hardware or software that has not previously been reviewed by GLI. For Modifications of previous submissions, including required changes to previously submitted Prototype (full submission) certification, whether certified or pending certification, see ‘Submissions of Modifications (partial submissions) to a Previously Certified Item,’ Section 5.7.

*NOTE: Due to abnormal component complexity and/or excessive cost it is sometimes necessary for on-site testing of a system at the manufacturer’s facility. Regular upgrades normally preclude testing at the manufacturers’ facility except in the case of prototype submissions.*

**5.2.2 Submission Letter Requirements.** Each submission shall include a request letter, on company letterhead, dated within one (1) week of the date the submission is received by GLI. The letter should include the following:

- a) The jurisdiction(s) for which you are requesting certification;
- b) The items requested for certification. In the case of software, the submitting party shall include ID numbers and revision levels, if applicable. In the case of proprietary hardware, the submitting party shall indicate the manufacturer, model, and part and revision numbers of the associated components of hardware. If the hardware has undergone any electrical and/or safety certification, such as Underwriter's Laboratory or equivalent, the submitting party shall provide documentation for same; and
- c) A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

### **5.3 System Hardware Submission Requirements – Prototype (Full Submission) Certification**

**5.3.1 Presentation of Identical Equipment to GLI.** Each item of gaming equipment supplied by a manufacturer to the field shall be functionally identical to the specimen tested and certified. For example, an interface element supplied as a certified device shall not have different internal wiring, components, firmware, circuit boards, circuit board track cuts or circuit board patch wires from the certified specimen, unless that change is also certified, see also 'Submissions of Modifications (partial submissions) to a Previously Certified Item,' Section 5.7.

**5.3.2 Inventory of Equipment to GLI.** Each submission of hardware shall contain the following:

- a) Server, Database, Front End Controller, and Ancillary Stations to include but not limited to: Cashier Station functionality; Callers Desk/Ball Draw functionality; System Configuration Parameters functionality; and Accounting/Reporting Functionality;
- b) Monitors, keyboards, mouse, printers, etc., to support the items listed above;
- c) A supply of card faces or blank keno ticket stock to facilitate testing; and
- d) Un-interruptible Power Supply (UPS) for critical components.

*NOTE: In an effort to reduce system submission size, monitor and data switches may be used. Additionally, separate software may be housed in the same unit, as long as the functionality is not impaired and the software is identical to the field version.*

**5.3.3 Accompanying Documentation.** All accompanying technical documents, manuals, and schematics shall be submitted. In addition, the following items shall be provided:

- a) If applicable, all UL, CSA, EC, AS3100, etc. or equivalent certification. This certification information may be supplied at a later date;
- b) Any other proprietary equipment that may be used in the field in conjunction with the Submission, if necessary to test the requirements set forth;
- c) Accompanying software, see also ‘System Software Submission Requirements – Prototype (Full Submission) Certification,’ Section 5.4; and
- d) If the submitting party has specialized equipment and/or software which is needed by GLI to test submitted system, such as load/game simulators or test data files, then the specialized equipment and/or software and all appropriate operation and user manuals for the equipment and/or software shall be included with the submission.

*NOTE: Commercially available products are not required for submission unless omission will impact testing and proper operation of the system.*

## **5.4 System Software Submission Requirements – Prototype (Full Submission) Certification**

**5.4.1 General Statement.** Each submission of software shall contain the following:

- a) Two sets of all EPROMs, CD-ROMs, or other storage media which contain identical contents. This includes all program executables, system component firmware, bin files, etc., unless other arrangements are made in advance of the submission. Where GLI already has tested a software component, resubmission may not be necessary;
- b) Source Code, a Link Map and Symbol Table for all primary software executables. In addition, if requested, explanation of all NV memory on any system device with the NV memory locations described;
- c) All user manuals in both hard and soft copy format to include a general overview of the system from a component level, software and hardware setup and integration, and system block diagrams and flow charts for the communication program, if required;
- d) If not included in the user manuals, a connectivity manual for all associated peripheral devices or remote sales or monitoring units;
- e) If not included in the user manuals, provide example reports for each standard report capable of being generated on the system with a formula summary detailing all reporting calculations including data types involved, mathematical operations performed, and field limit;
- f) If not included in the user manuals, a list of all supported communication protocols specifying version, if applicable; and
- g) If utilizing a software verification algorithm provide a description of the algorithm, theoretical basis of the algorithm, results of any analyses or tests to demonstrate that the algorithm is suitable for the intended application, rules for selection of algorithm coefficients or "seeds", and means of setting the algorithm coefficients or "seeds."

## **5.5 Software Programming Requirements and Compilation**

**5.5.1 General Statement.** The following items shall be contained within all submitted source code or related modules:

- a) Module Name;
- b) Brief description of module function; and
- c) Edit History, including who modified it, when and why.

**5.5.2 Source Code Commented.** All source code submitted shall be commented in an informative and useful manner.

**5.5.3 Source Code Completeness.** All source code submitted shall be correct, complete and able to be compiled.

## **5.6 Program Identification**

**5.6.1 Software Requirements.** On the primary system software components submitted and subsequently placed in the field, each program shall be uniquely identified and either display version information at all times or utilizing a user accessible function.

**5.6.2 Firmware Requirements.** On the system firmware submitted and subsequently placed in the field, each program shall be uniquely identified, displaying:

- a) Program ID ;
- b) Manufacturer identification;
- c) Version number, if applicable; and
- d) Location of installation in interface element, if there are multiple locations possible.

*NOTE: For EPROM based firmware, the identification label shall be placed over the UV window to avoid erasing or alteration of the program.*

## **5.7 Submissions of Modifications (Partial Submissions) to a Previously Certified Item**

**5.7.1 General Statement.** For any update submission (e.g., a revision to an existing hardware or software that is currently under review, certified or has been reviewed and not certified), the following information shall be required to process the submission in addition to the requirements set forth in ‘Submission Letter Requirements,’ Section 5.2.2. All modifications require re-testing, examination, and re-certification by GLI.

**5.7.2 Modification of Hardware.** Each hardware submission shall:

- a) Identify the individual items being submitted (including part number);
- b) Supply a complete set of schematics, diagrams, data sheets, etc. describing the modification along with the reason for the change(s) for any manufacturer designed and built component; and
- c) Provide the updated or new hardware, a description and the method of connection to the original system or hardware components.

**5.7.3 Modification of System Software Functions or to Correct Software Error.** The submitter should use the same requirements as in the ‘Software Submission Requirements – Prototype (Full Submission) Certification’ Section listed above, except where the documentation has not changed. In this case, a resubmission of identical documents is not required. However, the submission must include a description of the software change(s) and modules affected, and new source code for the entire program, if applicable.

**5.7.4 Software Submission - Modification to Existing or Create New System Functionality.**

For a system specific submission (e.g., new workstation software), the following information may be required to process the submission:

- a) If new, a complete description of the function, including amendment manual and user documents, and new source code if applicable; and

- b) If modifying, the submission must include a description of the software change(s), modules affected and new source code, if applicable.

## **5.8 System Security Submission Requirements**

**5.8.1 General Statement.** Where a system requires the use of defined user roles with associated passwords or pin numbers, a default list of all users and passwords or pin numbers must be submitted including a method to access the database. This will allow testing of the permissible access and to ensure no unauthorized access would be allowed for specific areas.

## **5.9 Joint Venture Submissions**

**5.9.1 General Statement.** A system is considered a joint venture when two or more companies are involved in the manufacturing of one system. Due to the increasing amount of joint venture submissions (more than one supplier involved in a product submission) and to alleviate any confusion to the suppliers and regulator clients, GLI, has set forth the following procedures for such a submission.

- a) One company will prepare and submit the entire submission, even if they are using parts from other suppliers, and must identify all part numbers of all components. This will be the primary contact for the submission;
- b) The company submitting an approval request should do so on their letterhead. GLI will delegate an internal file number in this company's name and will bill this company for all costs incurred throughout the approval process;
- c) The primary contact will be called when questions arise. However, GLI engineers will work with all parties involved, completing the review;
- d) All suppliers who are part of the submission "group" may need to be licensed in the jurisdiction(s) where the submission is being approved. As a courtesy to the supplier, GLI may inquire as to whom does not need to be licensed from the regulator client. It

should be noted that licensing questions should be handled directly with the jurisdiction;  
and

- e) Upon completion, it is the primary contact company that will receive the approval letter, provided the submission meets the jurisdictional requirements. The primary contact company may then release copies of the approval letter to the associated manufacturer(s).

### **5.10 Random Number Generator Submission Requirements (refer to GLI-11, applicable sections for RNG)**

## **6. CASHLESS SYSTEMS SUBMISSION REQUIREMENTS (GLI-16)**

### **6.1 Introduction**

**6.1.1 General Statement.** This chapter shall govern the types of information that are required to be submitted by the submitting party in order to have equipment tested to the GLI-16 technical standard. Where the information has not been submitted or is not otherwise in the possession of GLI, the submitting party shall be asked to supply additional information. Failure to supply the information can result in denial, in whole or in part, of the submission and may lead to testing delays.

**6.1.2 Previous Submission.** Where the testing laboratory has been previously supplied with the information on a previous submission, duplicate documentation is not required, provided that the previous information is referred to by the submitting party, and those documents are easily located at the testing laboratory. Every effort shall be made to reduce the redundancy of submission information.

### **6.2 Prototype (Full Submission) Submissions**

**6.2.1 General Statement.** A Prototype (full submission) submission is a first-time submission of a particular piece of hardware or software that has not previously been reviewed by GLI. For modifications of previous submissions, including required changes to previously submitted Prototype (full submission) certification, whether certified or pending certification, see ‘Submissions of Modifications (partial submissions) to a Previously Certified Item,’ Section 6.7.

*NOTE: Due to abnormal component complexity and/or excessive cost it is sometimes necessary for on-site testing of a system at the manufacturer’s facility. Regular upgrades normally preclude testing at the manufacturers’ facility except in the case of prototype submissions.*

**6.2.2 Submission Letter Requirements.** Each submission shall include a request letter, on company letterhead, dated within one (1) week of the date the submission is received by GLI. The letter should include the following:

- a) The jurisdiction(s) for which you are requesting certification;
- b) The items requested for certification. In the case of software, the submitting party shall include ID numbers and revision levels, if applicable. In the case of proprietary hardware, the submitting party shall indicate the manufacturer, model, and part and revision numbers of the associated components of hardware. If the hardware has undergone any electrical and/or safety certification, such as Underwriter's Laboratory or equivalent, the submitting party shall provide documentation for same; and
- c) A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

### **6.3 System Hardware Submission Requirements – Prototype (Full Submission) Certification**

**6.3.1 Presentation of Identical Equipment to GLI.** Each item of gaming equipment supplied by a manufacturer to the field shall be functionally identical to the specimen tested and certified. For example, an interface element supplied as a certified device shall not have different internal wiring, components, firmware, circuit boards, circuit board track cuts, or circuit board patch wires from the certified specimen, unless that change is also certified, see also 'Submissions of Modifications (partial submissions) to a Previously Certified Item,' Section 6.7.

**6.3.2 Inventory of Equipment to GLI.** Each submission of hardware shall contain the following:

- a) Server, Database, Front End Controller, Data Collector, and Ancillary Stations to include but not limited to: Jackpot/Fill functionality; Surveillance/Security monitor functionality; EGD Management functionality; and Accounting/Reporting Functionality;
- b) Monitors, keyboards, mouse, printers, etc., to support the items listed above;
- c) Minimum of seven interface element devices with corresponding power connectors (if separate from harness), keypads, displays, and card reader (or equivalent if an alternative media is used);
- d) Minimum of one wiring harness for each EGD type desired for operational approval with system where specific harnessing is required;
- e) Minimum of two of each type magnetic cards (or equivalent if an alternative media is used) used in the system, if applicable;
- f) Un-interruptible Power Supply (UPS) for critical components; and
- g) If not included in the user manuals, a connectivity manual for all unique electronic gaming devices capable of being interfaced with system to include device model numbers and compatibility list, if applicable; wiring diagrams depicting connection points to devices, power, etc.; and identification by part number or some other scheme, any unique wiring harnesses, ancillary boards required for communication of a particular device.

*NOTE: In an effort to reduce system submission size, monitor and data switches may be used. Additionally, separate software may be housed in the same unit, as long as the functionality is not impaired and the software is identical to the field version.*

**6.3.3 Accompanying Documentation.** All accompanying technical documents, manuals, and schematics shall be submitted. In addition, the following items shall be provided:

- a) If applicable, all UL, CSA, EC, AS3100, etc. or equivalent certification. This certification information may be supplied at a later date;
- b) Any other proprietary equipment that may be used in the field in conjunction with the Submission, if necessary to test the requirements set forth;
- c) Accompanying software, see also ‘System Software Submission Requirements – Prototype (Full Submission) Certification,’ Section 6.4; and

- d) If the submitting party has specialized equipment and/or software which is needed by GLI to test submitted system, such as load/game simulators or test data files, then the specialized equipment and/or software and all appropriate operation and user manuals for the equipment and/or software shall be included with the submission.

*NOTE: Commercially available products are not required for submission unless omission will impact testing and proper operation of the system.*

## **6.4 System Software Submission Requirements – Prototype (Full Submission) Certification**

**6.4.1 General Statement.** Each submission of software shall contain the following:

- a) Two sets of all EPROMs, CD-ROMs, or other storage media which contain identical contents. This includes all program executables, system component firmware, bin files, etc. Where GLI already has tested a software component, resubmission may not be necessary;
- b) Source Code, a Link Map, and Symbol Table for all primary software executables. In addition, if requested, explanation of all NV memory on any system device with the NV memory locations described;
- c) All user manuals in both hard and soft copy format to include a general overview of the system from a component level, software and hardware setup and integration, and system block diagrams and flow charts for the communication program, if required;
- d) If not included in the user manuals, provide example reports for each standard report capable of being generated on the system with a formula summary detailing all reporting calculations including data types involved, mathematical operations performed, and field limit;
- e) If not included in the user manuals, a list of all supported communication protocols specifying version, if applicable;
- f) If utilizing a software verification algorithm provide a description of the algorithm, theoretical basis of the algorithm, results of any analyses or tests to demonstrate that the

- algorithm is suitable for the intended application, rules for selection of algorithm coefficients or "seeds", and means of setting the algorithm coefficients or "seeds"; and
- g) If completed by the manufacturer, provide a system test plan and results to detail electronic gaming devices and software versions tested with.

## **6.5 Software Programming Requirements and Compilation**

**6.5.1 General Statement.** The following items shall be contained within all submitted source code or related modules:

- a) Module name;
- b) Brief description of module function; and
- c) Edit History, including who modified it, when, and why.

**6.5.2 Source Code Commented.** All source code submitted shall be commented in an informative and useful manner.

**6.5.3 Source Code Completeness.** All source code submitted shall be correct, complete, and able to be compiled.

## **6.6 Program Identification**

**6.6.1 Software Requirements.** On the primary system software components submitted and subsequently placed in the field, each program shall be uniquely identified and either display version information at all times or utilize a user accessible function.

**6.6.2 Firmware Requirements.** On the system firmware submitted, each program shall be uniquely identified, displaying:

- a) Program ID ;
- b) Manufacturer identification;
- c) Version number, if applicable; and
- d) Location of installation in interface element device, if there are multiple locations possible.

*NOTE: For EPROM based firmware, the identification label shall be placed over the UV window to avoid erasing or alternating the program.*

## **6.7 Submissions of Modifications (Partial Submissions) to a Previously Certified Item**

**6.7.1 General Statement.** For any update submission (e.g., a revision to an existing hardware or software that is currently under review, certified, or has been reviewed and not certified), the following information shall be required to process the submission in addition to the requirements set forth in ‘Submission Letter Requirements’, Section 6.2.2. All modifications require re-testing, examination, and re-certification by GLI.

**6.7.2 Modification of Hardware.** Each hardware submission shall:

- a) Identify the individual items being submitted (including part number);
- b) Supply a complete set of schematics, diagrams, and data sheets, etc., describing the modification along with the reason for the change(s); and
- c) Provide the updated or new hardware with a description and the method of connection to the original system or hardware components.

**6.7.3 Modification of System Software Functions or to Correct Software Error.** The submitter should use the same requirements as in the ‘Software Submission Requirements – Prototype (Full Submission) Certification’ Section listed above, except where the documentation has not changed. In this case, a resubmission of identical documents is not required. However,

the submission must include a description of the software change(s) and modules affected and new source code for the entire program, if applicable.

#### **6.7.4 Software Submission - Modification to Existing or Create New System Functionality.**

For a system specific submission (e.g., new workstation software), the following information may be required to process the submission:

- a) If new, a complete description of the function, including amendment manual and user documents, and new source code if applicable; and
- b) If modifying, the submission must include a description of the software change(s), modules affected and new source code, if applicable.

### **6.8 System Security Submission Requirements**

**6.8.1 General Statement.** Where a system requires the use of defined user roles with associated passwords or PIN numbers, a default list of all users and passwords or PIN numbers must be submitted including a method to access the database.

### **6.9 Joint Venture Submissions**

**6.9.1 General Statement.** A system is considered a joint venture when two or more companies are involved in the manufacturing of one system. Due to the increasing amount of joint venture submissions (more than one supplier involved in a product submission) and to alleviate any confusion to the suppliers and regulator clients, GLI has set forth the following procedures for such a submission:

- a) One company will prepare and submit the entire submission, even if they are using parts from other suppliers, and must identify all part numbers of all components. This will be the primary contact for the submission.

- b) The company submitting an approval request should do so on their letterhead. GLI will delegate an internal file number in this company's name and will bill this company for all costs incurred throughout the approval process.
- c) The primary contact will be called when questions arise. However, GLI engineers will work with all parties involved while completing the review.
- d) All suppliers who are part of the submission "group" may need to be licensed in the jurisdiction(s) where the submission is being approved. As a courtesy to the supplier, GLI may inquire as to who does not need to be licensed from the regulator client. It should be noted that licensing questions should be handled directly with the jurisdiction.
- e) Upon completion, it is the primary contact company that will receive the approval letter, provided the submission meets the jurisdictional requirements. The primary contact company may then release copies of the approval letter to the associated manufacturer(s).

## **7. BONUSING SYSTEMS SUBMISSION REQUIREMENTS (GLI-17)**

### **7.1 Introduction**

**7.1.1 General Statement.** This chapter shall govern the types of information that are required to be submitted by the submitting party in order to have equipment tested to the GLI-17 technical standard. Where the information has not been submitted or is not otherwise in the possession of GLI, the submitting party shall be asked to supply additional information. Failure to supply the information can result in denial in whole or in part of the submission and/or lead to testing delays.

**7.1.2 Previous Submission.** Where the testing laboratory has been previously supplied with the information on a previous submission, duplicate documentation is not required, provided that the previous information is referred to by the submitting party, and those documents are easily located at the testing laboratory. Every effort shall be made to reduce the redundancy of submission information.

### **7.2 Prototype (Full Submission) Submissions**

**7.2.1 General Statement.** A Prototype (full submission) submission is a first time submission of a particular piece of hardware or software that has not previously been reviewed by GLI. For Modifications of previous submissions, including required changes to previously submitted Prototype (full submission) certification, whether certified or pending certification, see ‘Submissions of Modifications (partial submissions) to a Previously Certified Item,’ Section 7.7.

*NOTE: Due to abnormal component complexity and/or excessive cost it is sometimes necessary for on-site testing of a system at the manufacturer’s facility. Regular upgrades normally preclude testing at the manufacturers’ facility except in the case of prototype submissions.*

**7.2.2 Submission Letter Requirements.** Each submission shall include a request letter, on company letterhead, dated within one (1) week of the date the submission is received by GLI. The letter should include the following:

- a) The jurisdiction(s) for which you are requesting certification;
- b) The items requested for certification. In the case of software, the submitting party shall include ID numbers and revision levels, if applicable. In the case of proprietary hardware, the submitting party shall indicate the manufacturer, model, and part and revision numbers of the associated components of hardware. If the hardware has undergone any electrical and/or safety certification, such as Underwriter's Laboratory or equivalent, the submitting party shall provide documentation for same; and
- c) A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

### **7.3 System Hardware Submission Requirements – Prototype (Full Submission) Certification**

**7.3.1 Presentation of Identical Equipment to GLI.** Each item of gaming equipment supplied by a manufacturer to the field shall be functionally identical to the specimen tested and certified. For example, an interface element supplied as a certified device shall not have different internal wiring, components, firmware, circuit boards, circuit board track cuts or circuit board patch wires from the certified specimen, unless that change is also certified, see also 'Submissions of Modifications (partial submissions) to a Previously Certified Item,' Section 7.7.'

**7.3.2 Inventory of Equipment to GLI.** Each submission of hardware shall contain the following:

- a) Server, Database, Front End Controller, Data Collector and Ancillary Stations to include but not limited to: Surveillance/Security monitor functionality; EGD Management

- functionality; and Accounting/Reporting Functionality; Bonus Award Configuration Management functionality;
- b) Monitors, keyboards, mouse, printers, etc., to support the items listed above;
  - c) Minimum of seven interface element devices with corresponding power connectors (if separate from harness), keypads, displays, and card reader (or equivalent if an alternative media is used);
  - d) Minimum of one wiring harness for each EGD type desired for operational approval with system where specific harnessing is required;
  - e) Minimum of two of each type magnetic cards (or equivalent if an alternative media is used) used in the system, if applicable; and
  - f) Un-interruptible Power Supply (UPS) for critical components.

*NOTE: In an effort to reduce system submission size, monitor and data switches may be used. Additionally, separate software may be housed in the same unit, as long as the functionality is not impaired and the software is identical to the field version.*

**7.3.3 Accompanying Documentation.** All accompanying technical documents, manuals, and schematics shall be submitted. In addition, the following items shall be provided:

- a) If applicable, all UL, CSA, EC, AS3100, etc. or equivalent certification. This certification information may be supplied at a later date;
- b) Any other proprietary equipment that may be used in the field in conjunction with the Submission, if necessary to test the requirements set forth;
- c) Accompanying software, see also ‘System Software Submission Requirements – Prototype (Full Submission) Certification,’ Section 7.4;
- d) RNG algorithm and associated internal test documentation, including data collection used for mathematical analysis (hard and soft copies), if applicable; and
- e) If the submitting party has specialized equipment and/or software which is needed by GLI to test submitted system, such as load/game simulators or test data files, then the specialized equipment and/or software and all appropriate operation and user manuals for the equipment and/or software shall be included with the submission.

*NOTE: Commercially available products are not required for submission unless omission will impact testing and proper operation of the system.*

## **7.4 System Software Submission Requirements – Prototype (Full Submission) Certification**

**7.4.1 General Statement.** Each submission of software shall contain the following:

- a) Two sets of all EPROMs, CD-ROMs, or other storage media which contain identical contents. This includes all program executables, system component firmware, bin files, etc. Where GLI already has tested a software component, resubmission may not be necessary;
- b) Source Code, a Link Map and Symbol Table for all primary software executables. In addition, if requested, explanation of all NV memory on any system device with the NV memory locations described;
- c) All user manuals in either hard or soft copy format to include a general overview of the system from a component level, software and hardware setup and integration, and system block diagrams and flow charts for the communication program, if required;
- d) If not included in the user manuals, a connectivity manual for all unique electronic gaming devices capable of being interfaced with system to include device model numbers and compatibility list, if applicable; wiring diagrams depicting connection points to devices, power, etc.; and identification by part number or some other scheme, any unique wiring harnesses, ancillary boards required for communication of a particular device;
- e) If not included in the user manuals, provide example reports for each standard report capable of being generated on the system with a formula summary detailing all reporting calculations including data types involved, mathematical operations performed, and field limit;
- f) If not included in the user manuals, a list of all supported communication protocols specifying version, if applicable;

- g) If utilizing a software verification algorithm, provide a description of the algorithm, theoretical basis of the algorithm, results of any analyses or tests to demonstrate that the algorithm is suitable for the intended application, rules for selection of algorithm coefficients or "seeds", and means of setting the algorithm coefficients or "seeds";
- h) If not included in the user manuals, provide concise instructions for configuration of all applicable parameters of bonus activity; and
- i) If completed by the manufacturer, provide a system test plan and results to detail electronic gaming devices and software versions tested with.

## **7.5 Software Programming Requirements and Compilation**

**7.5.1 General Statement.** The following items shall be contained within all submitted source code or related modules:

- a) Module Name;
- b) Brief description of module function; and
- c) Edit History, including who modified it, when and why.

**7.5.2 Source Code Commented.** All source code submitted shall be commented in an informative and useful manner.

**7.5.3 Source Code Completeness.** All source code submitted shall be correct, complete and able to be compiled.

## **7.6 Program Identification**

**7.6.1 Software Requirements.** On the primary system software components submitted and subsequently placed in the field, each program shall be uniquely identified and either display version information at all times or via a user accessible function.

**7.6.2 Firmware Requirements.** On the system firmware submitted and subsequently placed in the field, each program shall be uniquely identified, displaying:

- a) Program ID ;
- b) Manufacturer identification;
- c) Version number, if applicable; and
- d) Location of installation in interface element device, if there are multiple locations possible.

*NOTE: For EPROM based firmware, the identification label shall be placed over the UV window to avoid erasing or alteration of the program.*

## **7.7 Submissions of Modifications (Partial Submissions) to a Previously Certified Item**

**7.7.1 General Statement.** For any update submission (e.g., a revision to an existing hardware or software that is currently under review, certified or has been reviewed and not certified), the following information shall be required to process the submission in addition to the requirements set forth in ‘Submission Letter Requirements,’ Section 7.2.2. All modifications require re-testing, examination, and re-certification by GLI.

**7.7.2 Modification of Hardware.** Each hardware submission shall:

- a) Identify the individual items being submitted (including part number);
- b) Supply a complete set of schematics, diagrams, data sheets, etc. describing the modification along with the reason for the change(s); and
- c) Provide the updated or new hardware, a description and the method of connection to the original system or hardware components.

**7.7.3 Modification of System Software Functions or to Correct Software Error.** The submitter should use the same requirements as in the ‘Software Submission Requirements – Prototype (Full Submission) Certification’ Section 7.4 listed above, except where the documentation has not changed. In this case, a resubmission of identical documents is not required. However, the submission must include a description of the software change(s) and modules affected and new source code for the entire program, if applicable.

**7.7.4 Software Submission - Modification to Existing or Create New System Functionality.** For a system specific submission (e.g., new workstation software), the following information may be required to process the submission:

- a) If new, a complete description of the function, including amendment manual and user documents, and new source code, if applicable; and
- b) If modifying, the submission must include a description of the software change(s), modules affected and new source code, if applicable.

## **7.8 System Security Submission Requirements**

**7.8.1 General Statement.** Where a system requires the use of defined user roles with associated passwords or pin numbers, a default list of all users and passwords or pin numbers must be submitted including a method to access the database.

## **7.9 Joint Venture Submissions**

**7.9.1 General Statement.** A system is considered a joint venture when two or more companies are involved in the manufacturing of one system. Due to the increasing amount of joint venture submissions (more than one supplier involved in a product submission) and to alleviate any confusion to the suppliers and regulator clients, GLI has set forth the following procedures for such submissions:

- a) One company will prepare and submit the entire submission, even if they are using parts from other suppliers, and must identify all part numbers of all components. This will be the primary contact for the submission;
- b) The company submitting an approval request should do so on their letterhead. GLI will delegate an internal file number in this company's name and will bill this company for all costs incurred throughout the approval process;
- c) The primary contact will be called when questions arise. However, GLI engineers will work with all parties involved, completing the review;
- d) All suppliers who are part of the submission "group" may need to be licensed in the jurisdiction(s) where the submission is being approved. As a courtesy to the supplier, GLI may inquire as to who does not need to be licensed from the regulator client. It should be noted that licensing questions should be handled directly with the jurisdiction; and
- e) Upon completion, the primary contact company will receive the approval letter, provided the submission meets the jurisdictional requirements. The primary contact company may then release copies of the approval letter to the associated manufacturer(s).

## **8. PROMOTIONAL SYSTEMS SUBMISSION REQUIREMENTS (GLI-18)**

### **8.1 Introduction**

**8.1.1 General Statement.** This chapter shall govern the types of information that are required to be submitted by the submitting party in order to have equipment tested to the GLI-18 technical standard. Where the information has not been submitted or is not otherwise in the possession of GLI, the submitting party shall be asked to supply additional information. Failure to supply the information can result in denial in whole or in part of the submission and/or lead to testing delays.

**8.1.2 Previous Submission.** Where the testing laboratory has been previously supplied with the information on a previous submission, duplicate documentation is not required, provided that the previous information is referred to by the submitting party, and those documents are easily located at the testing laboratory. Every effort shall be made to reduce the redundancy of submission information.

### **8.2 Prototype (Full Submission) Submissions**

**8.2.1 General Statement.** A Prototype (full submission) submission is a first time submission of a particular piece of hardware or software that has not previously been reviewed by GLI. For Modifications of previous submissions, including required changes to previously submitted Prototype (full submission) certification, whether certified or pending certification, see ‘Submissions of Modifications (partial submissions) to a Previously Certified Item,’ Section 8.7.

*NOTE: Due to abnormal component complexity and/or excessive cost it is sometimes necessary for on-site testing of a system at the manufacturer’s facility. Regular upgrades normally preclude testing at the manufacturers’ facility except in the case of prototype submissions.*

**8.2.2 Submission Letter Requirements.** Each submission shall include a request letter, on company letterhead, dated within one (1) week of the date the submission is received by GLI. The letter should include the following:

- a) The jurisdiction(s) for which you are requesting certification;
- b) The items requested for certification. In the case of software, the submitting party shall include ID numbers and revision levels, if applicable. In the case of proprietary hardware, the submitting party shall indicate the manufacturer, model, and part and revision numbers of the associated components of hardware. If the hardware has undergone any electrical and/or safety certification, such as Underwriter's Laboratory or equivalent, the submitting party shall provide documentation for same; and
- c) A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

### **8.3 System Hardware Submission Requirements – Prototype (Full Submission) Certification**

**8.3.1 Presentation of Equipment to GLI; Identical Equipment.** Each item of gaming equipment supplied by a manufacturer to the field shall be functionally identical to the specimen tested and certified. For example, an interface element supplied as a certified device shall not have different internal wiring, components, firmware, circuit boards, circuit board track cuts or circuit board patch wires from the certified specimen, unless that change is also certified, see also 'Submissions of Modifications (partial submissions) to a Previously Certified Item,' Section 8.7.'

**8.3.2 Inventory of Equipment to GLI.** Each submission of hardware shall contain the following:

- a) Server, Database, Front End Controller, Data Collector and Ancillary Stations to include but not limited to: Surveillance/Security monitor functionality; EGD Management functionality; and Accounting/Reporting Functionality; Promotional Award Configuration Management functionality;
- b) Monitors, keyboards, mouse, printers, etc., to support the items listed above;
- c) Minimum of seven interface element devices with corresponding power connectors (if separate from harness), keypads, displays, and card reader (or equivalent if an alternative media is used);
- d) Minimum of one wiring harness for each EGD type desired for operational approval with system where specific harnessing is required;
- e) Minimum of two of each type magnetic cards (or equivalent if an alternative media is used) used in the system, if applicable; and
- f) Un-interruptible Power Supply (UPS) for critical components.

*NOTE: In an effort to reduce system submission size, monitor and data switches may be used. Additionally, separate software may be housed in the same unit, as long as the functionality is not impaired and the software is identical to the field version.*

**8.3.3 Accompanying Documentation.** All accompanying technical documents, manuals, and schematics shall be submitted. In addition, the following items shall be provided:

- a) If applicable, all UL, CSA, EC, AS3100, etc. or equivalent certification. This certification information may be supplied at a later date;
- b) Any other proprietary equipment that may be used in the field in conjunction with the Submission, if necessary to test the requirements set forth;
- c) Accompanying software, see also ‘System Software Submission Requirements – Prototype (Full Submission) Certification,’ Section 8.4; and
- d) If the submitting party has specialized equipment and/or software which is needed by GLI to test submitted system, such as load/game simulators or test data files, then the specialized equipment and/or software and all appropriate operation and user manuals for the equipment and/or software shall be included with the submission.

*NOTE: Commercially available products are not required for submission unless omission will impact testing and proper operation of the system.*

## **8.4 System Software Submission Requirements – Prototype (Full Submission) Certification**

**8.4.1 General Statement.** Each submission of software shall contain the following:

- a) Two sets of all EPROMs, CD-ROMs, or other storage media which contain identical contents. This includes all program executables, system component firmware, bin files, etc. Where GLI already has tested a software component, resubmission may not be necessary;
- b) Source Code, a Link Map and Symbol Table for all primary software executables. In addition, if requested, explanation of all NV memory on any system device with the NV memory locations described;
- c) All user manuals in either hard or soft copy format to include a general overview of the system from a component level, software and hardware setup and integration, and system block diagrams and flow charts for the communication program, if required;
- d) If not included in the user manuals, a connectivity manual for all unique electronic gaming devices capable of being interfaced with system to include device model numbers and compatibility list, if applicable; wiring diagrams depicting connection points to devices, power, etc.; and identification by part number or some other scheme, any unique wiring harnesses, ancillary boards required for communication of a particular device;
- e) If not included in the user manuals, provide example reports for each standard report capable of being generated on the system with a formula summary detailing all reporting calculations including data types involved, mathematical operations performed, and field limit;
- f) If not included in the user manuals, a list of all supported communication protocols specifying version, if applicable;

- g) If not included in the user manuals, provide concise instructions for configuration of all applicable parameters of promotional activity;
- h) If utilizing a software verification algorithm, provide a description of the algorithm, theoretical basis of the algorithm, results of any analyses or tests to demonstrate that the algorithm is suitable for the intended application, rules for selection of algorithm coefficients or "seeds", and means of setting the algorithm coefficients or "seeds"; and
- i) If completed by the manufacturer, provide a system test plan and results to detail electronic gaming devices and software versions tested with.

## **8.5 Software Programming Requirements and Compilation**

**8.5.1 General Statement.** The following items shall be contained within all submitted source code or related modules:

- a) Module Name;
- b) Brief description of module function; and
- c) Edit History, including who modified it, when and why.

**8.5.2 Source Code Commented.** All source code submitted shall be commented in an informative and useful manner.

**8.5.3 Source Code Completeness.** All source code submitted shall be correct, complete and able to be compiled.

## **8.6 Program Identification**

**8.6.1 Software Requirements.** On the primary system software components submitted and subsequently placed in the field, each program shall be uniquely identified and either display version information at all times or via a user accessible function.

**8.6.2 Firmware Requirements.** On the system firmware submitted and subsequently placed in the field, each program shall be uniquely identified, displaying:

- a) Program ID ;
- b) Manufacturer identification;
- c) Version number, if applicable; and
- d) Location of installation in interface element device, if there are multiple locations possible.

*NOTE: For EPROM based firmware, the identification label shall be placed over the UV window to avoid erasing or alteration of the program.*

## **8.7 Submissions of Modifications (Partial Submissions) to a Previously Certified Item**

**8.7.1 General Statement.** For any update submission (e.g., a revision to an existing hardware or software that is currently under review, certified or has been reviewed and not certified), the following information shall be required to process the submission in addition to the requirements set forth in ‘Submission Letter Requirements,’ Section 8.2.2. All modifications require re-testing, examination, and re-certification by GLI.

**8.7.2 Modification of Hardware.** Each hardware submission shall:

- a) Identify the individual items being submitted (including part number);
- b) Supply a complete set of schematics, diagrams, data sheets, etc. describing the modification along with the reason for the change(s); and
- c) Provide the updated or new hardware, a description and the method of connection to the original system or hardware components.

**8.7.3 Modification of System Software Functions or to Correct Software Error.** The submitter should use the same requirements as in the ‘Software Submission Requirements – Prototype (Full Submission) Certification’ Section 8.4 listed above, except where the documentation has not changed. In this case, a resubmission of identical documents is not required. However, the submission must include a description of the software change(s) and modules affected and new source code for the entire program, if applicable.

**8.7.4 Software Submission - Modification to Existing or Create New System Functionality.** For a system specific submission (e.g., new workstation software), the following information may be required to process the submission:

- a) If new, a complete description of the function, including amendment manual and user documents, and new source code, if applicable; and
- b) If modifying, the submission must include a description of the software change(s), modules affected and new source code, if applicable.

## **8.8 System Security Submission Requirements**

**8.8.1 General Statement.** Where a system requires the use of defined user roles with associated passwords or pin numbers, a default list of all users and passwords or pin numbers must be submitted including a method to access the database.

## **8.9 Joint Venture Submissions**

**8.9.1 General Statement.** A system is considered a joint venture when two or more companies are involved in the manufacturing of one system. Due to the increasing amount of joint venture submissions (more than one supplier involved in a product submission) and to alleviate any confusion to the suppliers and regulator clients, GLI has set forth the following procedures for such a submission:

- a) One company will prepare and submit the entire submission, even if they are using parts from other suppliers, and must identify all part numbers of all components. This will be the primary contact for the submission;
- b) The company submitting an approval request should do so on their letterhead. GLI will delegate an internal file number in this company's name and will bill this company for all costs incurred throughout the approval process;
- c) The primary contact will be called when questions arise. However, GLI engineers will work with all parties involved, completing the review;
- d) All suppliers who are part of the submission "group" may need to be licensed in the jurisdiction(s) where the submission is being approved. As a courtesy to the supplier, GLI may inquire as to who does not need to be licensed from the regulator client. It should be noted that licensing questions should be handled directly with the jurisdiction; and
- e) Upon completion, the primary contact company will receive the approval letter, provided the submission meets the jurisdictional requirements. The primary contact company may then release copies of the approval letter to the associated manufacturer(s).

## **9. INTERACTIVE GAMING SYSTEM SUBMISSION REQUIREMENTS (GLI-19)**

### **9.1 Introduction**

**9.1.1 General Statement.** This chapter shall govern the types of information that are, or may be required to be submitted by the submitting party in order to have elements or components of an Interactive Gaming System tested to the GLI-19 Technical Standard. Where the information has not been submitted or is not otherwise in the possession of GLI, the submitting party shall be asked to supply additional information. Failure to supply the information can result in denial in whole or in part of the submission and/or lead to testing delays.

**9.1.2 Previous Submission.** Where GLI has been previously supplied with the information on a prior submission, duplicate documentation is not required, provided that the previous information is referred to by the submitting party, and those documents are easily located at the testing laboratory. Every effort shall be made to reduce the redundancy of submission information.

### **9.2 Prototype (Full Submission) Submissions**

**9.2.1 General Statement.** A Prototype (full submission) submission is a first time submission of a particular piece of hardware or software that has not previously been reviewed by GLI. For Modifications of previous submissions, including required changes to previously submitted Prototype (full submission) certification, whether certified or pending certification, see ‘Submissions of Modifications (partial submissions) to a Previously Certified Item’.

*NOTE: Due to abnormal component complexity and/or excessive cost it is sometimes necessary for on-site testing of a system at the manufacturer’s facility. Regular upgrades normally preclude testing at the manufacturers’ facility except in the case of prototype submissions.*

**9.2.2 Submission Letter Requirements.** Each submission shall include a request letter, on company letterhead, dated within one (1) week of the date the submission is received by the testing laboratory. The letter should include the following:

- a) The jurisdiction(s) for which you are requesting certification;
- b) The items requested for certification. In the case of software, the submitting party shall include ID numbers and revision levels, if applicable. In the case of proprietary hardware, the submitting party shall indicate the manufacturer, model, and part and revision numbers of the associated components of hardware; and
- c) A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

**9.2.3 Test Environment – Supervised Build and Install.** Before commencing testing, GLI will supervise the build / compilation of the source code into software. In this context, “supervise” means that a consultant from GLI must be present, in person, or via a remote connection while the source code is being built / compiled.

- a) The control-version(s) of the software, created as a result of the supervised build / compilation, must then be installed onto a suitable test environment. GLI and the software supplier must ensure that the software which is installed is the same version as was built / compiled under the GLI’s supervision. Particular attention will be given to any configuration performed to the test environment to accommodate the software that has been installed. GLI must obtain a copy of any necessary configuration files.
- b) Where an Interactive Gaming System requires the use of accounts with associated passwords or PIN numbers to remotely access the games, a sufficient number of user accounts and passwords or PIN numbers must be submitted including a method to access the test environment.

**9.2.4 Gaming Platform Submission Requirements.** The “Gaming Platform” includes the Gaming Platform components which provide features common to all of the games, including game configuration, logging, communications, and reporting functions. The gaming platform provides the operator with the means to review player accounts, enable / disable games, generate

various gaming / financial transaction and account reports, input game outcomes for sports betting events, enable / disable player accounts, and set any configurable parameter. Refer to GLI-13 for the submission requirements for a Gaming Platform. In addition, the following documentation must be submitted for the gaming platform evaluation:

- a) Details of the physical location of each component of the Gaming Platform;
- b) A list of all games hosted / offered on the gaming platform;
- c) An all-inclusive functional description of the gaming platform (including the gaming website home page and all gaming website peripheral pages), to include a general overview of the Gaming Platform from a component level, software and hardware setup and integration, and Gaming Platform block diagrams and flow charts for the communication program;
- d) Detailed functional descriptions of the following technical functionality available on the gaming platform:
  - i. Logging Capability,
  - ii. Communications Capability, including supported communication protocols,
  - iii. Operator Interface to Player Accounting,
  - iv. Gaming Platform Accounting and Financial Reporting Capabilities,
  - v. Gaming Platform Payment Systems & Financial Institution Interfacing, and
  - vi. Geolocation & Player Identity Verification Software.
- e) Details of each class of account required to operate the Gaming Platform in a production environment (e.g. System Administrator, Operator, Hotline, Network support), including the privileges required to perform the duties associated with that account;
- f) Copies of all standard reports produced by the Gaming Platform and a description of how these are generated, including details of any reconciliation reports; and
- g) If not included in the user manuals, concise instructions for the configuration of all applicable parameters of bonus activity.

**9.2.5 Player Account Management Submission Requirements.** The “Player Account Management” includes the components of the Gaming Platform which form the primary

interface for the player. The Player Account Management interface provides the player with the means to register an account, log in / out of their account, modify their account information, deposit and withdraw funds to / from their account, request account activity statements / reports, and close their account. In addition, any web pages displayed to the player which relate to gaming, but which are not an actual game screen, are considered to be part of the Player Account Management components. Refer to GLI-16 for the submission requirements for Player Account Management components. In addition, the following documentation must be submitted for the evaluation of the Player Account Management components:

- a) Detailed functional description of the Player Account Management components (including the gaming website home page and all gaming website peripheral pages);
- b) Detailed descriptions of the following technical functionality available on the gaming platform:
  - i. Player Account Registration,
  - ii. Player Account Login (Username & Password),
  - iii. Player Interface to Player Account,
  - iv. Responsible Gaming Features,
  - v. Privacy Policy, and
  - vi. Player Account Deactivation.
- c) Detailed description of how player verification information is protected from unauthorized access;
- d) Detailed description of player authentication (i.e. how registered player identify themselves to the Gaming Platform each time they connect);
- e) Description of how player registration and account information (including credit card information) is to be protected from unauthorized access;
- f) Description of the register of unclaimed prize monies and how it is maintained; and
- g) Description of the treatment of revenue from expired, unclaimed wins.

**9.2.6 Game Submission Requirements.** “Game” refers to gaming platform software which is specific to each individual game that is hosted / offered on the gaming platform. Each game is to

be treated as a separate and distinct entity. Any information and materials required to be submitted with respect to the games must be submitted for each individual game hosted / offered on the gaming platform. Refer to GLI-11 for the submission requirements for a Game. In addition, the following additional documentation must be submitted for each individual game hosted / offered on the gaming platform:

- a) Details of the game information recorded on the gaming platform backend;
- b) Details of how end player devices are polled to implement timeouts and player protection features, if applicable; and
- c) Where the evaluation involves event-based wagering, the following submission materials will be required:
  - i. Details of all event-based wagering types to be provided including descriptions of the events and bet types.
  - ii. Copies of all proposed rules, including all prize tables or other such parameters, for each event wagering type.
  - iii. A description of the commission structure.
  - iv. A description of how the operator obtains and publishes reliable official results for wagering events.
  - v. A description of links to any external computer systems participating in the event wagering.
  - vi. A description of how wagers are settled.
  - vii. A description of the in-running betting process, if applicable, including selection of events, information offered to players in advance, dedicated technology, etc.

**9.2.7 Random Number Generator (RNG) Submission Requirements.** "RNG" refers to the gaming platform software and / or hardware which determines random outcomes for use by all of the games hosted / offered on the gaming platform. Refer to GLI-11 for the submission requirements for an RNG.

**9.2.8 Information Systems Security (ISS) Submission Requirements.** “ISS” refers to the physical, environmental, administrative and technical features implemented to maintain the security and integrity of the gaming environment. The following documentation must be submitted for an ISS evaluation:

- a) A copy of the Information Security Policy, including:
  - i. Details of the physical security processes implemented to protect the production gaming environment;
  - ii. Details of where and how each category of information (e.g. critical, important, not important) is stored in the Gaming Platform, and the risk assessment and protection measures implemented for each category of information;
  - iii. Details of the password protection systems and associated algorithms utilized by the Gaming Platform;
  - iv. Details of the method of transaction logging used;
  - v. Details of how self-monitoring is implemented;
  - vi. Details of the encryption methods used for the secure storage of critical information;
  - vii. Controls to prevent unauthorized use of operator consoles or accounts, and for the prevention of unauthorized access to information which may aid unauthorized access to the operator consoles or accounts (such as usernames, IP addresses or passwords);
  - viii. Details of the incident management system implemented by the operator;
  - ix. Details of the disaster recovery plan implemented by the operator;
  - x. Details of audit reports available from the Gaming Platform; and
  - xi. Reports showing how often the Information Security Policy is reviewed.
- b) A general overview of the Gaming Platform design;
- c) Details and functional specifications of all Gaming Platform components in the production environment including, but not limited to:
  - i. Platform Hardware, such as:
    - Servers,

- Firewalls and Intrusion Detection Systems,
  - Operator Consoles (local and remote),
  - Gateways and Access Points,
  - Remote Controllers,
  - Remote Access Servers,
  - Multiplexing Equipment,
  - Switching Equipment,
  - Monitoring Equipment,
  - Hubs, Switches and Routers, and
  - Repeaters.
- ii. Operating Systems,
  - iii. Applications,
  - iv. Audit Subsystems, including any built-in functionality of the operating systems and applications used for audit purposes,
  - v. Duplication Strategy,
  - vi. Disk Subsystem, and
  - vii. Back-up facilities.
- d) A network architecture diagram, including the following:
- i. Network topology,
  - ii. Devices used to create the network,
  - iii. Internal and external IP addresses for all devices,
  - iv. Controls to prevent unauthorized modification to device configurations,
  - v. Local Area Network (LAN) and Virtual Local Area Network (VLAN) design, including all functional subnets and firewalls,
  - vi. Details of the gaming platform connections to the Internet, and
  - vii. Details of any remote connections (e.g. Internet, wide area network, dial-up) used to support Gaming Platform operations.
- e) A list of all non-production systems (e.g. MIS) and third party systems that will connect to the Gaming Platform. For each external system provide:
- i. The connection method (e.g. dial-up, X.25, leased line, Internet).

- ii. Details of the information to be transferred in each direction.
  - iii. The entity that initiates the information transfer.
  - iv. The protocol used to perform the transfer.
  - v. Controls to prevent access to other information on the Gaming Platform.
  - vi. Controls to prevent unauthorized use of the connection.
  - vii. Controls to prevent eavesdropping on communications between non-production systems and the Gaming Platform.
- f) Details of any Network Management system associated with the internal production network, including:
- i. Physical location of the Network Management system.
  - ii. Class of personnel authorized to use Network Management system.
  - iii. Locations from where network management functions can be executed.
  - iv. Network management protocol.
  - v. The devices to be managed on a read only basis.
  - vi. The devices to be managed on a read/write basis.
  - vii. Controls to prevent unauthorized access to network management functions.
  - viii. Controls to audit the use of network management functions.
  - ix. Controls to detect unauthorized connections to the network.
  - x. Controls to detect connection of unauthorized equipment to the network.
  - xi. Describe the locations and physical and logical security arrangements associated with secondary DNS servers.
- g) For the data encryption and communications between the Gaming Platform and the end player device, the following information must be supplied:
- i. Details of the message authentication algorithm used:
    - Description of the algorithm,
    - Theoretical basis of the algorithm,
    - Results of any analyses or tests to demonstrate that the algorithm is suitable for the intended application,
    - Rules for the selection of keys,
    - Rules for changing keys,

- Means of generating and protecting keys.
- ii. Details of the encryption to be used during game play, including:
  - Encryption algorithm,
  - Size of encryption keys,
  - Key generation process,
  - Key storage process,
  - Key exchange procedure at session start-up,
  - Subsequent key exchanges,
  - Key revocation process in the event keys are compromised, and
  - Details of any information that is not encrypted for transmission.

### **9.3 Submissions of Modifications (Partial Submissions) to a Previously Certified Item**

**9.3.1 General Statement.** For any update submission (e.g., a revision to existing hardware or software that is currently under review, certified or has been reviewed and not certified), the following information shall be required to process the submission in addition to the requirements set forth in ‘Submission Letter Requirements’. All modifications require re-testing, examination, and re-certification by GLI.

*NOTE: Modifications to the supporting environment which do not impact the functionality of the component(s) under evaluation need not be resubmitted as these elements are not evaluated in our laboratory in the first place, and are only required to provide the supporting environment for the component under test. However, any environmental changes which in any way change the functionality of the component(s) under evaluation must be re-certified. Where there is some doubt over whether a Gaming Platform should be resubmitted then these situations will be considered on a case by case basis.*

**9.3.2 Modification of Hardware.** Each hardware submission shall:

- a) Identify the individual items being submitted (including part number);
- b) Supply a complete set of schematics, diagrams, data sheets, etc. describing the modification along with the reason for the change(s); and
- c) Provide the updated or new hardware, a description and the method of connection to the original system or hardware components.

**9.3.3 Modification of Software.** The submitter should use the same requirements as in the ‘Software Submission Requirements – Prototype (Full Submission) Certification’ Section listed above, except where the documentation has not changed. In this case, a resubmission of identical documents is not required. However, the submission must include a description of the software change(s), modules affected, and new source code for the entire program. Source code is required for the entire program to allow for its verification.

## **9.4 Joint Venture Submissions**

**9.4.1 General Statement.** A system is considered a joint venture when two or more companies are involved in the manufacturing of one system. Due to the increasing amount of joint venture submissions (more than one supplier involved in a product submission) and to alleviate any confusion to the suppliers and regulator clients, GLI has set forth the following procedures for such a submission.

- a) One company will prepare and submit the entire submission, even if they are using parts from other suppliers, and must identify all part numbers of all components. This will be the primary contact for the submission.
- b) The company submitting an approval request should do so on their letterhead. GLI will delegate an internal file number in this company’s name and will bill this company for all costs incurred throughout the approval process.
- c) The primary contact will be called when questions arise. However, GLI engineers will work with all parties involved, completing the review.
- d) All suppliers who are part of the submission “group” may need to be licensed in the jurisdiction(s) where the submission is being approved. As a courtesy to the supplier,

GLI may inquire as to whom does not need to be licensed from the regulator client. It should be noted that licensing questions should be handled directly with the jurisdiction.

- e) Upon completion, it is the primary contact company that will receive the approval letter, provided the submission meets the jurisdictional requirements. The primary contact company may then release copies of the approval letter to the associated manufacturer(s).

## 10. KIOSK SUBMISSION REQUIREMENTS (GLI-20)

### 10.1 Introduction

**10.1.1 General Statement.** This chapter shall govern the types of information that are, or may be required to be submitted by the submitting party in order to have equipment tested to the GLI-20 Standard. Where the information has not been submitted or is not otherwise in the possession of GLI, the submitting party shall be asked to supply additional information. Failure to supply the information can result in denial in whole or in part of the submission and/or lead to testing delays.

### 10.2 Kiosk Submissions

**10.2.1 General Statement.** A Prototype (full submission) submission is a first time submission of a particular piece of hardware or software that has not previously been reviewed by GLI. For Modifications of previous submissions, whether certified or pending certification, see ‘Modifications to a Prototype Submission,’ Section 9.2.6.

*NOTE: Due to abnormal component complexity and/or excessive cost it is sometimes necessary for on-site testing of a system at the manufacturer’s facility. Regular upgrades normally preclude testing at the manufacturer’s facility except in the case of prototype submissions.*

**10.2.2 Presentation of Identical Equipment to GLI.** Each item of gaming equipment supplied by a manufacturer to the field shall be functionally identical to the specimen tested and certified. For example, an interface element supplied as a certified device shall not have different internal wiring, components, firmware, circuit boards, circuit board track cuts or circuit board patch wires from the certified specimen, unless that change is also certified.

**10.2.3 Submission Letter Requirements.** Each submission shall include a request letter, on company letterhead, dated within one (1) week of the date the submission is received by GLI. The letter should include the following:

- a) The jurisdiction(s) for which you are requesting certification;
- b) The items requested for certification. In the case of software, the submitting party shall include ID numbers and revision levels, if applicable. In the case of proprietary hardware, the submitting party shall indicate the manufacturer, model, and part and revision numbers of the associated components of hardware. If the hardware has undergone any electrical and/or safety certification, such as Underwriter's Laboratory or equivalent, the submitting party shall provide documentation for same; and
- c) A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

**10.2.4 Inventory of Equipment to GLI.** Each ticket voucher Kiosk submission must include all components needed to configure the Kiosk with the system(s) it's compatible with, as it would be configured in a live environment. This includes all communication, bill acceptor, printer, etc. hardware and software.

**10.2.5 Accompanying Documentation/Components.** The following items shall accompany each Kiosk submission:

- a) If applicable, all UL, CSA, EC, AS3100, etc. or equivalent certification. This certification information may be supplied at a later date;
- b) Any other proprietary equipment that may be used in the field in conjunction with the Submission, if necessary to test the requirements set forth, unless the laboratory already possesses;
- c) Two sets of all EPROMs, CD-ROMs, or other storage media which contain identical contents. This includes all program executables, system component firmware, bin files,

- etc. Where GLI already has tested a software component, resubmission may not be necessary;
- d) Documentation pertaining to all available options and instructions on configuring each option;
  - e) Documentation describing how to add the Kiosk to the Validation System. Include any specific flags or fields used to identify the Kiosk separately from gaming devices. (e.g., “Kiosk is entered as a gaming device with a number greater than 9999” or “Kiosk is entered as a slot machine with flag called ‘calculation type’ set to Other,” etc.);
  - f) Source Code, a Link Map and Symbol Table for all primary software executables. In addition, if requested, explanation of all NV memory on any system device with the NV memory locations described;
  - g) All user manuals in both hard and soft copy format to include a general overview of the system from a component level, software and hardware setup and integration, and system block diagrams and flow charts for the communication program, if required;
  - h) If not included in the user manuals, a connectivity manual for all unique Validation Systems capable of being interfaced if applicable; wiring diagrams depicting connection points to devices, power, etc.; and identification by part number or some other scheme, any unique wiring harnesses, and ancillary boards required for communication of a particular device;
  - i) If not included in the user manuals, a list of all supported communication protocols specifying version, if applicable;
  - j) If utilizing a software verification algorithm provide a description of the algorithm, theoretical basis of the algorithm, results of any analyses or tests to demonstrate that the algorithm is suitable for the intended application, rules for selection of algorithm coefficients or "seeds", and means of setting the algorithm coefficients or "seeds;" and
  - k) If completed by the manufacturer, provide a system test plan and results to detail gaming devices and software versions the Kiosk was tested with.

*NOTE: Where the testing laboratory has been previously supplied with the information on a previous submission, duplicate documentation is not required, provided that the previous information is referred to by the submitting party, and those documents are easily located at the*

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*testing laboratory. Every effort shall be made to reduce the redundancy of submission information.*

**10.2.6 Modifications to a Prototype Submission.** Submissions of modifications to the Prototype submission, including hardware changes and/or software changes, shall include, if applicable:

- a) The jurisdiction(s) for which you are requesting certification;
- b) The items requested for certification. In the case of software, the submitting party shall include ID numbers and revision levels, if applicable. In the case of proprietary hardware, the submitting party shall indicate the manufacturer, model, and part and revision numbers of the associated components of hardware. If the hardware has undergone any electrical and/or safety certification, such as Underwriter's Laboratory or equivalent, the submitting party shall provide documentation for same;
- c) A list of the system(s) the kiosk will be connected to, including the minimum supported system version number(s). A description of any system application(s) needed to interface to the system(s), including the minimum supported system application version numbers; and
- d) A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

## **10.3 Software Programming Requirements and Compilation**

**10.3.1 General Statement.** The following items shall be contained within all submitted source code or related modules:

- a) Module Name;
- b) Brief description of module function; and
- c) Edit History, including who modified it, when and why.

**10.3.2 Source Code Commented.** All source code submitted shall be commented in an informative and useful manner.

**10.3.3 Source Code Completeness.** All source code submitted shall be correct, complete and able to be compiled.

## **10.4 Program Identification**

**10.4.1 Firmware Requirements.** On the system firmware submitted and subsequently placed in the field, each program shall be uniquely identified, displaying:

- a) Program ID ;
- b) Manufacturer identification;
- c) Version number, if applicable; and
- d) Location of installation in interface element device, if there are multiple locations possible.

*NOTE: For EPROM-based firmware, the identification label shall be placed over the UV window to avoid erasing or alteration of the program.*

## **10.5 Joint Venture Submissions**

**10.5.1 General Statement.** A system is considered a joint venture when two or more companies are involved in the manufacturing of one system. Due to the increasing amount of joint venture submissions (more than one supplier involved in a product submission) and to alleviate any confusion to the suppliers and regulator clients, GLI has set forth the following procedures for such a submission:

- a) One company will prepare and submit the entire submission, even if they are using parts from other suppliers, and must identify all part numbers of all components. This will be the primary contact for the submission;
- b) The company submitting an approval request should do so on their letterhead. GLI will delegate an internal file number in this company's name and will bill this company for all costs incurred throughout the approval process;
- c) The primary contact will be called when questions arise. However, GLI engineers will work with all parties involved, completing the review;
- d) All suppliers who are part of the submission "group" may need to be licensed in the jurisdiction(s) where the submission is being approved. As a courtesy to the supplier, GLI may inquire as to whom does not need to be licensed from the regulator client. It should be noted that licensing questions should be handled directly with the jurisdiction; and
- e) Upon completion, it is the primary contact company that will receive the approval letter, provided the submission meets the jurisdictional requirements. The primary contact company may then release copies of the approval letter to the associated manufacturer(s).

## **11. CLIENT SERVER SYSTEM SUBMISSION REQUIREMENTS (GLI-21)**

**11.1 Refer to GLI-11 for applicable CSS Client Terminal Submission Requirements**

**11.2 Refer to GLI-13 for CSS Server, Interface Element and Communication Protocol Submission Requirements**

## **12. VIDEO LOTTERY TERMINAL SUBMISSION REQUIREMENTS (GLI-21)**

### **12.1 Refer to GLI-11 for applicable Video Lottery Terminal (VLT) Submission Requirements**

### **13. ELECTRONIC TABLE GAME SYSTEM SUBMISSION REQUIREMENTS (GLI-24)**

Due to the variant ranges of systems and potential sizing limitations, each Electronic Table Game System (ETGS) will have to be reviewed on an individual basis for custom submission requirements. It is GLI's recommendation that the Submission Requirements outlined within this document for GLI-13 be observed as a guideline for ETGS submissions.

## **14. DEALER CONTROLLED ELECTRONIC TABLE GAMES (GLI-25)**

Due to the variant ranges of systems and potential sizing limitations, each Electronic Table Game (ETG) will have to be reviewed on an individual basis for custom submission requirements. It is GLI's recommendation that the Submission Requirements outlined within this Composite Submission Requirements document for GLI-11 and GLI-13 be observed as a guideline for ETG submissions.

## **15. WIRELESS GAMING SYSTEM SUBMISSION REQUIREMENTS (GLI-26)**

**15.1 Refer to GLI-11 for Client Device Submission Requirements**

**15.2 Refer to GLI-13 for Server, Gateway Submission Requirements**

**15.3 Refer to GLI-16 for Cashless Systems Submission Requirements**

**15.4 Refer to GLI-21 for Server-Based Game Download Systems  
Submission Requirements**

## 16. NETWORK SECURITY SUBMISSION REQUIREMENTS (GLI-27)

### 16.1 Network Security Submission Requirements

**16.1.1 Network Security Submission Requirements.** Due to the unique nature of network security certification (i.e. essential phases of certification will occur within the gaming property) submission requirements for these system types will be handled on a case-by-case basis between the parties requesting certification and GLI. These submission requirements may include, but will not be limited to:

- a) Hardware and software components needed to build the network for testing purposes;
- b) Application source code;
- c) Build instructions;
- d) Database scripts;
- e) Installation policies and procedures;
- f) Network diagrams; and
- g) Identification of system components which may vary between installations.

*NOTE: Nothing in this document, nor any of the above unique submission requirements are intended to invalidate any prior standards-based certification. If a network has previously been certified under another GLI standard (which typically has its own unique submission requirements), then nothing in this best practices document should negate or invalidate that prior certification. Any recommendations provided in GLI-27 should be viewed as additive or supplemental to any standards-based certification, and must only be enforced as applicable and appropriate to the specific network in question.*

It is also important to acknowledge here that any certification of a network's security would typically require a multi-phase analysis approach. For example, GLI could evaluate certain

network components such as modems, bridges, routers, servers, etc., on a standalone basis to determine if the specific component satisfies certain network security guidelines. However, in most cases, it is expected that a second phase of analysis would be required, using the actual live network. Analysis of the overall network, with all components properly configured is the ultimate test-bed for any network security certification.

Should the network being certified, participate in functions covered by other GLI standards, the submission requirements within those documents may apply.

## **17. PLAYER USER INTERFACE SYSTEM SUBMISSION REQUIREMENTS (GLI-28)**

### **17.1 System Supplier Submission to the Lab**

**17.1.1 General Statement.** The following items are required to accompany a Player User Interface (PUI) system submission:

- a) A request letter that includes the requested jurisdictions;
- b) The PUI System that operates the System Window functions shall be submitted along with all supporting operators' manuals and technical specifications. If the PUI System is comprised of components from various manufacturers, then each manufacturer shall submit their own component which may be done independently;
- c) The supporting documents must include all possible functional options, system capabilities, communication protocols used, and display recall information;
- d) Video mixing hardware and software with the exception of equipment that was previously submitted and approved under this standard;
- e) Source code for any re-mapping of the Game Window display program or component;
- f) Software verification procedures and tools, if other than an industry standard tool; and
- g) The PUI System supplier shall supply the needed tools to validate the requirements of this standard, if required.

## **18. CARD SHUFFLER AND DEALER SHOE SUBMISSION REQUIREMENTS (GLI-29)**

**18.1 Refer to GLI-11 for Device Submission Requirements**

**18.2 If applicable, Refer to GLI-24 for Electronic Table Game Systems Submission Requirements**

**18.3 If applicable, Refer to GLI-25 for Dealer Controlled Electronic Table Game Systems Submission Requirements**

## **19. ELECTRONIC RAFFLE SYSTEM SUBMISSION REQUIREMENTS (GLI-31)**

### **19.1 Introduction**

**19.1.1 General Statement.** Due to the variant ranges of systems and potential sizing limitations, each Electronic Raffle System will have to be reviewed on an individual basis for custom submission requirements. It is GLI's recommendation that the Submission Requirements outlined within this chapter be observed as a guideline for Electronic Raffle System submissions. This chapter shall govern the types of information that are, or may be required to be submitted by the submitting party in order to have equipment tested to the GLI-31 technical standard. Where the information has not been submitted or is not otherwise in the possession of the test laboratory, the submitting party shall be asked to supply additional information. Failure to supply the information can result in denial in whole or in part of the submission and/or lead to testing delays.

**19.1.2 Previous Submission.** Where the testing laboratory has been previously supplied with the information on a previous submission, duplicate documentation is not required, provided that the previous information is referred to by the submitting party, and those documents are easily located at the testing laboratory. Every effort shall be made to reduce the redundancy of submission information.

### **19.2 Prototype (Full Submission) Submissions**

**19.2.1 General Statement.** A Prototype (full submission) submission is a first time submission of a particular piece of hardware or software that has not previously been reviewed by the test laboratory. For Modifications of previous submissions, including required changes to previously submitted Prototype (full submission) certification, whether certified or pending certification, see 'Submissions of Modifications (partial submissions) to a Previously Certified Item,' Section 19.7.

*NOTE: Due to abnormal component complexity and/or excessive cost it is sometimes necessary for on-site testing of a system at the manufacturer's facility. Regular upgrades normally preclude testing at the manufacturers' facility except in the case of prototype submissions.*

**19.2.2 Submission Letter Requirements.** Each submission shall include a request letter, on company letterhead, dated within one (1) week of the date the submission is received by the test laboratory. The letter should include the following:

- a) The jurisdiction(s) for which you are requesting certification;
- b) The items requested for certification. In the case of software, the submitting party shall include ID numbers and revision levels, if applicable. In the case of proprietary hardware, the submitting party shall indicate the manufacturer, model, and part and revision numbers of the associated components of hardware; and
- c) A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

### **19.3 System Hardware Submission Requirements – Prototype (Full Submission) Certification**

**19.3.1 Presentation of Equipment to The Test Laboratory; Identical Equipment.** Each item of raffle equipment supplied by a manufacturer to the field shall be functionally identical to the specimen tested and certified. For example, an interface element supplied as a certified device shall not have different internal wiring, components, firmware, circuit boards, circuit board track cuts or circuit board patch wires from the certified specimen, unless that change is also certified, see also 'Submissions of Modifications (partial submissions) to a Previously Certified Item,' Section 19.7.

**19.3.2 Inventory of Equipment to The Test Laboratory.** Each submission of hardware shall contain the following:

- a) Server, Associated Database(s), Front End Controller, Data Collector and Ancillary Stations to include but not limited to: System Configuration Parameters functionality; Surveillance/Security monitor functionality; Raffle Sales Unit Management functionality; and Accounting/Reporting Functionality; Raffle Configuration Management functionality;
- b) Monitors, keyboards, mouse, printers, etc., to support the items listed above;
- c) A supply of preprinted tickets or blank raffle ticket stock to facilitate testing; and
- d) Minimum of seven interface element devices with corresponding power connectors (if separate from harness), keypads, and displays;
- e) Minimum of one wiring harness for each component type desired for operational approval with system where specific harnessing is required;
- f) Minimum of two of each type magnetic cards (or equivalent if an alternative media is used) used in the system, if applicable;
- g) Network cabling, hubs, switches and any wireless components that may be installed at a casino property; and
- h) Un-interruptible Power Supply (UPS) for critical components.
- i) If not included in the user manuals, a connectivity manual for all unique electronic components capable of being interfaced with system to include device model numbers and compatibility list, if applicable; wiring diagrams depicting connection points to devices, power, etc.; and identification by part number or some other scheme, any unique wiring harnesses, ancillary boards required for communication of a particular device.

*NOTE: In an effort to reduce system submission size, monitor and data switches may be used. Additionally, separate software may be housed in the same unit, as long as the functionality is not impaired and the software is identical to the field version.*

**19.3.3 Accompanying Documentation.** All accompanying technical documents, manuals, and schematics shall be submitted. In addition, the following items shall be provided:

- a) If applicable, all UL, CSA, EC, AS3100, etc. or equivalent certification. This certification information may be supplied at a later date;
- b) Any other proprietary equipment that may be used in the field in conjunction with the Submission, if necessary to test the requirements set forth;
- c) Accompanying software, see also ‘System Software Submission Requirements – Prototype (Full Submission) Certification,’ Section 19.4; and
- d) RNG algorithm and associated internal test documentation, including data collection used for mathematical analysis (hard and soft copies), if applicable; and
- e) If the submitting party has specialized equipment and/or software which is needed by the test laboratory to test submitted system, such as load/raffle simulators or test data files, then the specialized equipment and/or software and all appropriate operation and user manuals for the equipment and/or software shall be included with the submission.

*NOTE: Commercially available products are not required for submission unless omission will impact testing and proper operation of the system.*

## **19.4 System Software Submission Requirements – Prototype (Full Submission) Certification**

**19.4.1 General Statement.** Each submission of software shall contain the following:

- a) Two sets of all CD-ROMs, or other storage media which contain identical contents. This includes all program executables, system component firmware, bin files, etc., unless other arrangements are made in advance of the submission. Where the test laboratory already has tested a software component, resubmission may not be necessary;
- b) Source Code, a Link Map and Symbol Table for all primary software executables. In addition, if requested, explanation of all NV memory on any system device with the NV memory locations described;
- c) All user manuals in both hard and soft copy format to include a general overview of the system from a component level, software and hardware setup and integration, and system block diagrams and flow charts for the communication program, if required;

- d) If not included in the user manuals, a connectivity manual for all associated peripheral devices or remote sales or monitoring units; wiring diagrams depicting connection points to devices, power, etc.; and identification by part number or some other scheme, any unique wiring harnesses, ancillary components required for communication of a particular device;
- e) If not included in the user manuals, provide example reports for each standard report capable of being generated on the system with a formula summary detailing all reporting calculations including data types involved, mathematical operations performed, and field limit;
- f) If not included in the user manuals, a list of all supported communication protocols specifying version, if applicable;
- g) If utilizing a software verification algorithm provide a description of the algorithm, theoretical basis of the algorithm, results of any analyses or tests to demonstrate that the algorithm is suitable for the intended application, rules for selection of algorithm coefficients or "seeds", and means of setting the algorithm coefficients or "seeds;" and
- h) If not included in the user manuals, provide concise instructions for configuration of all applicable parameters of raffle activity;
- i) If completed by the manufacturer provide a system test plan and results to detail system components and software versions tested with.

## **19.5 Software Programming Requirements and Compilation**

**19.5.1 General Statement.** The following items shall be contained within all submitted source code or related modules:

- a) Module Name;
- b) Brief description of module function; and
- c) Edit History, including who modified it, when and why.

**19.5.2 Source Code Commented.** All source code submitted shall be commented in an informative and useful manner.

**19.5.3 Source Code Completeness.** All source code submitted shall be correct, complete and able to be compiled.

## **19.6 Program Identification**

**19.6.1 Software Requirements.** On the primary system software components submitted and subsequently placed in the field, each program shall be uniquely identified and either display version information at all times or utilizing a user accessible function.

**19.6.2 Firmware Requirements.** On the system firmware submitted and subsequently placed in the field, each program, where applicable, shall be uniquely identified, displaying:

- a) Program ID ;
- b) Manufacturer identification;
- c) Version number, if applicable; and
- d) Location of installation, if there are multiple locations possible.

## **19.7 Submissions of Modifications (Partial Submissions) to a Previously Certified Item**

**19.7.1 General Statement.** For any update submission (e.g., a revision to an existing hardware or software that is currently under review, certified or has been reviewed and not certified), the following information shall be required to process the submission in addition to the requirements set forth in ‘Submission Letter Requirements,’ Section 19.2.2. All modifications require re-testing, examination, and re-certification by GLI.

**19.7.2 Modification of Hardware.** Each hardware submission shall:

- a) Identify the individual items being submitted (including part number);
- b) Supply a complete set of schematics, diagrams, data sheets, etc. describing the modification along with the reason for the change(s) for any manufacturer designed and built component; and
- c) Provide the updated or new hardware, a description and the method of connection to the original system or hardware components.

***19.7.3 Modification of System Software Functions or to Correct Software Error.*** The submitter should use the same requirements as in the ‘Software Submission Requirements – Prototype (Full Submission) Certification’ Section listed above, except where the documentation has not changed. In this case, a resubmission of identical documents is not required. However, the submission must include a description of the software change(s) and modules affected, and new source code for the entire program, if applicable.

***19.7.4 Software Submission - Modification to Existing or Create New System Functionality.*** For a system specific submission (e.g., new workstation software), the following information may be required to process the submission:

- a) If new, a complete description of the function, including amendment manual and user documents, and new source code if applicable; and
- b) If modifying, the submission must include a description of the software change(s), modules affected and new source code, if applicable.

## **19.8 System Security Submission Requirements**

***19.8.1 General Statement.*** Where a system requires the use of defined user roles with associated passwords or pin numbers, a default list of all users and passwords or pin numbers must be submitted including a method to access the database. This will allow testing of the permissible access and to ensure no unauthorized access would be allowed for specific areas.

## 19.9 Joint Venture Submissions

**19.9.1 General Statement.** A system is considered a joint venture when two or more companies are involved in the manufacturing of one system. Due to the increasing amount of joint venture submissions (more than one supplier involved in a product submission) and to alleviate any confusion to the suppliers, our regulator clients and our firm, GLI has set forth the following procedures for such submissions.

- a) One company will prepare and submit the entire submission, even if they are using parts from other suppliers, and must identify all part numbers of all components. This will be the primary contact for the submission.
- b) The company submitting an approval request should do so on their letterhead. GLI will delegate an internal file number in this company's name and will bill this company for all costs incurred throughout the approval process.
- c) The primary contact will be called when questions arise. However, GLI engineers will work with all parties involved, completing the review.
- d) All suppliers who are part of the submission "group" may need to be licensed in the jurisdiction(s) where the submission is being approved. As a courtesy to the supplier, GLI may inquire as to whom does not need to be licensed from the regulator client. It should be noted that licensing questions should be handled directly with the jurisdiction.
- e) Upon completion, it is the primary contact company that will receive the approval letter, provided the submission meets the jurisdictional requirements. The primary contact company may then release copies of the approval letter to the associated manufacturer(s).

## 19.10 Random Number Generator Submission Requirements

**19.10.1 General Statement.** In some cases, where the system utilizes an electronic Random Number Generator (RNG), the electronic RNG shall be submitted with the prototype (full submission) request. RNGS shall be submitted for certification where:

- a) The random number generator code has changed or the implementation of the random number has changed; or
- b) Where a previously certified random number generator is being implemented on a new hardware platform (i.e. change of microprocessor); or
- c) Where a previously certified random number generator is generating numbers that are outside the range of numbers previously tested; or
- d) The random number generator has never been certified before under these standards. In this case, the random number generator will be certified as a part of the overall submission.

**19.11 Hardware Requirements for RNG Testing Random Number Generator Submission Requirements (refer to GLI-11, applicable sections for RNG)**

## 20. REVISION HISTORY

Date Revised: September 21, 2016, *Version 1.2*. Revised Chapter 1 to reflect update to GLI-11 V3.0. Added baseline submission requirements unique to “games with skill” and “virtual event wagering”. Revised RNG submission requirements for GLI-11 to better reflect current practices. Added previously missing chapter content for GLI-19, GLI-23, and GLI-31. Made other formatting, grammatical, and structural changes throughout the document.

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