



STANDARD SERIES

GLI-31:

Electronic Raffle Systems

Version: 1.0

Release Date: November 16, 2012



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ABOUT THIS STANDARD

This Standard has been produced by **Gaming Laboratories International (GLI)** for the purpose of providing independent test reports and/or certifications to regulators indicating the state of compliance of various suppliers' devices and systems with the requirements set forth herein.

This document is intended to be used by regulatory agencies, operators, and industry suppliers as a compliance guideline for technologies pertaining to electronic raffles. The creation of this document is in response to regulatory agencies which have requested technical compliance guidance regarding electronically conducted raffles. This standard is not intended to represent a set of rigid requirements that every raffle system must comply with, as the operation of raffles varies widely due to jurisdictional laws, varying levels of acceptable security measures and differing implementations of raffle technologies. This standard is also not intended to mandate specific operational practices, but rather provide a guideline regarding the technologies used to facilitate these raffles. It should be stressed that many of the technical guidelines addressed within this document may be satisfied through manual operational controls as approved by each regulatory agency. Any technical requirement not latently supported by a raffle system will be clearly disclosed to the regulatory agency in the certification report to ensure that sufficient internal controls are in place to achieve local regulatory objectives. This standard is intended to serve only as a starting point for regulatory agencies and may be supplemented with additional jurisdictional requirements as well as Minimum Internal Control Standards.

GLI-31 should be viewed as a living document that provides a level a guidance that will periodically be tailored to align with this developing industry over time as raffle implementations and operations evolve.

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Table of Contents

CHAPTER 1	7
1.0 STANDARD OVERVIEW	7
1.1 Introduction.....	7
1.2 Purpose of Standard.....	8
1.4 Phases of Testing	10
CHAPTER 2	11
2.0 RAFFLE MANAGEMENT REQUIREMENTS	11
2.1 Introduction.....	11
2.2 Raffle Configuration	11
2.3 Bearer Ticket Issuance.....	12
2.4 Counterfoil Requirements	12
2.5 Raffle Prize Display Requirements	13
2.6 Raffle Drawing Requirements	14
2.7 Winning Ticket Redemption	15
2.8 Electronic Accounting and Reporting.....	15
CHAPTER 3	17
3.0 RAFFLE SALES UNIT (RSU) REQUIREMENTS.....	17
3.1 Introduction.....	17
3.2 Raffle Sales Unit Operations and Security.....	17
3.3 Bearer Ticket Printers.....	18
3.4 Critical Memory Requirements	18
3.5 RSU Program Requirements.....	19
3.6 Independent Control Program Verification	20
CHAPTER 4	21
4.0 RANDOM NUMBER GENERATOR REQUIREMENTS	21
4.1 Introduction.....	21
4.2 Random Number Generator (RNG) Requirements	21
4.3 Electronic Random Number Generator Requirements.....	22
4.4 Mechanical Random Number Generator Requirements	24
CHAPTER 5	26
5.0 ELECTRONIC RAFFLE SYSTEM SERVERS.....	26
5.1 Introduction.....	26
5.2 General Operation & Server Security.....	26
5.3 System Clock Requirements	28
5.4 RSU Management Requirements.....	28
5.5 Significant Events.....	29
5.6 Backups and Recovery	30
5.7 Verification of System Software	31
CHAPTER 6	32
6.0 COMMUNICATION REQUIREMENTS	32
6.1 Introduction.....	32
6.2 System Security	33
6.3 Remote Access.....	34

6.4	<i>Wide Area Network Communications</i>	35
6.5	<i>Wireless Network Communications</i>	35
CHAPTER 7	36
7.0	SYSTEM ENVIRONMENTAL AND SAFETY REQUIREMENTS	36
7.1	<i>Introduction</i>	36
7.2	<i>Hardware and Player Safety</i>	36
7.3	<i>Environmental Effects on System Integrity</i>	36

CHAPTER 1

1.0 STANDARD OVERVIEW

1.1 Introduction

1.1.1 General Statement. Gaming Laboratories International, LLC (GLI) has been testing gaming devices since 1989. Over the years, we have developed numerous standards for jurisdictions all over the world. In recent years, many jurisdictions have opted to ask for the development of industry standards without creating their own standards documents. In addition, with technology changing almost monthly, new technology is not being incorporated quickly enough into existing standards due to the long process of administrative rule making. This document, GLI Standard 31, will set forth the technical Standards for Electronic Raffle Systems.

1.1.2 Document History. It is the policy of Gaming Laboratories International, LLC to update this document as often as possible to reflect changes in technology, testing methods, or cheating methods. This document will be distributed without charge to all those who request it. It may be obtained by downloading it from our website at www.gaminglabs.com or by writing to us at:

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1.2 Purpose of Standard

1.2.1 General Statement. The purpose of this technical standard is:

- a) To eliminate subjective criteria in analyzing and certifying electronic raffle systems and ticket distribution components.
- b) To only test those criteria which impact the credibility and integrity of the electronic raffle system from both the revenue collection and participant's point of view.
- c) To create a standard that will ensure that electronic raffle systems are fair, secure, and able to be audited and operated correctly.
- d) To distinguish between local public policy and laboratory criteria. At GLI, we believe that it is up to each local regulatory body to set their public policy with respect to the electronic raffle system.
- e) To recognize that testing which does not impact the credibility and integrity of the electronic raffle system (such as Electrical Testing) should not be incorporated into this standard but left to appropriate test laboratories that specialize in that type of testing. Except where specifically identified in the standard, testing is not directed at health or safety matters. These matters are the responsibility of the manufacturer, purchaser, and operator of the equipment.
- f) To construct a standard that can be easily updated, changed, or modified to allow for new technology.
- g) To construct a standard that does not specify any particular technology, method or algorithm. The intent is to allow a wide range of methods to be used to conform to the standards, while at the same time, to encourage new methods to be developed.

1.2.2 No Limitation of Technology. One should be cautioned that this standard should not be read in such a way that limits the use of future technology. The document should not be interpreted that if the technology is not mentioned, then it is not allowed. Quite to the contrary, as technology evolves, the standard will be updated to make accommodations for the new technology.

1.3 Definitions

1.3.1 General Statement. The following are commonly used terms in describing the operation of Raffles that are used throughout this standard.

- a) Electronic Raffle System is defined as computer software and related equipment used by raffle licensees to sell tickets, account for sales, and facilitates the drawing of tickets to determine the winners.
- b) Multi-Event Raffle is defined as a raffle conducted over the course of more than one day and/or more than one event and/or location.
- c) Single Event Raffle is defined as a raffle conducted on the same day at the same event.
- d) Discounted Ticket(s) is/are defined as a raffle ticket sold in groups containing a specific number of draw numbers at a discounted price (e.g. 3 for \$10, 10 for \$5)
- e) Draw Number(s) is/are defined as a number that is provided to the purchaser which may be selected as the winning number for the raffle.
- f) Bearer Ticket(s) is/are defined as an electronic or paper ticket that contains one or more draw numbers purchased.
- g) Validation Number(s) is/are defined as a unique number which may represent one or more draw numbers that will be used to validate the winning number for the raffle.
- h) Counterfoil is defined as an electronic record or paper ticket stub, also known as a barrel ticket, which will be drawn to determine a winner and contains a player's draw number matching the bearer ticket purchased and may, depending on the type of raffle, contain the name, address, or telephone number of the player.
- i) Raffle Sales Unit (RSU) is defined as a portable and/or wireless device, a remote hard-wired connected device or a standalone cashier station that is used as a point of sale for raffle tickets.

1.4 Phases of Testing

1.4.1 General Statement. The approval of an Electronic Raffle System will be certified in two phases:

- a) Initial laboratory testing, where the laboratory will test the integrity of the system in conjunction with Raffle Sales Units, in the laboratory setting with the equipment assembled; and
- b) As required by the regulatory body, on-site testing following the initial install of the system to ensure proper configuration of the security applications. This may include, but is not limited to conducting event simulations with and without challenges to system operations, testing the stability of the system at maximum anticipated loads, verifying the internal controls and IT infrastructure at the venue, and any other tests as mandated by the regulatory agency.

CHAPTER 2

2.0 RAFFLE MANAGEMENT REQUIREMENTS

2.1 Introduction

2.1.1 General Statement. Each electronic raffle system shall have a device or facility that provides for the sale of raffle tickets and the collection and accounting tools needed to track all sales initiated through the raffle system. The system must have the ability to support all Raffle Sales Units (RSUs) whether they are wirelessly or hard-wire connected to ensure that each unit sends or transmits all ticket sales to the system.

2.2 Raffle Configuration

2.2.1 Prize Limitations. The electronic raffle system software must be capable of being configured with a limit or cap on the prize of a raffle drawing which may apply to the maximum amount that may be won.

2.2.2 Time Limits. The electronic raffle system software shall have the ability to set time limits for which tickets may be purchased for a raffle drawing.

2.2.3 Configuration Changes. Once a raffle has commenced, configuration changes shall not be allowed until the completion of the raffle.

2.3 Bearer Ticket Issuance

2.3.1 Bearer Tickets. After the payment of a fee, participants shall receive a bearer ticket for a chance to win a raffle drawing. The bearer ticket (i.e. participant ticket) shall contain the following information (at minimum):

- a) Name of organization conducting the raffle
- b) Event Identifier or Location;
- c) The draw number(s) for each purchased ticket.
- d) Issued date and time (in twenty-four (24) hour format showing hours and minutes);
- e) RSU identifier from which the ticket was generated;
- f) Value or cost of the raffle ticket;
- g) Unique validation number or barcode; and
- h) License number, if applicable;

2.3.2 Validation Numbers. The algorithm or method used by the electronic raffle system to generate the bearer ticket validation number must be unpredictable and ensure against duplicate validation numbers for the raffle currently in progress.

2.3.3 Voiding a Ticket. If a ticket is voided, the appropriate information shall be recorded, which includes the draw numbers and the validation number pertaining to the voided ticket. Voided draw numbers shall not be able to be resold or reissued.

2.4 Counterfoil Requirements

2.4.1 Counterfoils. All counterfoils used in a raffle drawing, in which an electronic random number generator is not utilized, to determine a winner must be the same size, shape, and weight. A counterfoil shall be printed or stored electronically for each purchased draw number. If an electronic random number generator is used to determine the winner of the raffle drawing, a

printed counterfoil is not required. A counterfoil must only contain one draw number and shall contain the following information, which matches the bearer ticket issued to the player:

- a) Event Identifier or Location;
- b) The draw number
- c) Issued date and time (in twenty-four (24) hour format showing hours and minutes);
- d) Value or cost of the raffle ticket; and
- e) Unique validation number or barcode;

NOTE: It may be permissible for some or all of this information to be contained on the ticket stock itself.

2.4.2 Printer Error Conditions. Where printed counterfoils are in use, the printer mechanism shall be able to detect and indicate the following error conditions:

- a) Out of paper - It is permissible for the system to detect this error condition when it tries to print.
- b) Paper low - It is permissible for the system to not lock up for these conditions; however, there should be a means for the attendant to be alerted;
- c) Buffer Overrun Detected;
- d) Printer jam/failure; and
- e) Printer disconnected - It is permissible for the system to detect this error condition when it tries to print.

2.5 Raffle Prize Display Requirements

2.5.1 Raffle Prize Displays. For systems that support a raffle prize display that is intended to be viewed by participants of the raffle, that display shall indicate the raffle prize in local monetary value using a calculation deemed acceptable by the regulatory body and represents the

current progression of the prize. It is recommended that the displayed prize value account for voided tickets.

***NOTE:** It is accepted that, depending on the medium, communication delays are variable and beyond the knowledge or control of the operator.*

2.5.2 Alternating Displays. If applicable, it is sufficient to have multiple raffle awards displayed in an alternating fashion.

2.6 Raffle Drawing Requirements

2.6.1 General Statement. A raffle drawing shall be held at a date, time, place, and in a manner determined by the operator and/or regulatory agency.

2.6.2 Closing the Raffle Purchase Period. The system must be capable of closing off the sale of raffle tickets at a time determined by the operator. No sales of tickets may occur after the raffle purchase period has been closed. A raffle drawing shall only be conducted after:

- a) The close of the raffle; and
- b) All sales and voided sales for the particular raffle purchase period have been reconciled.

2.6.3 Winner Determination. The operator shall conduct a manual, electronic, or other approved draw procedure which ensures a randomly selected draw number as a winner from all tickets sold. Each drawn counterfoil shall be verified as a sold and valid ticket. Voided tickets shall not be qualified toward any prize. This process shall be repeated for each advertised prize.

2.6.4 Official Drawing Results. Results of the drawing become official and final after the drawn number is verified as a winning raffle ticket for the respective drawing, and is presented to the participants of the raffle. The system shall display the winning draw number on all capable

display devices that are intended to be viewed by participants. Operators may utilize any additional methods in presenting the winning draw number(s) to the participants as deemed necessary (i.e. public address announcement, etc).

2.7 Winning Ticket Redemption

2.7.1 Winner Verification. Winning tickets shall be verified prior to payout. Participants must present the raffle ticket to an authorized agent for validation with the system. The system must be capable of verifying the winning draw numbers and shall allow for the validation of draw numbers either manually or through the use of a bar code scanner or equivalent.

NOTE: Amounts won that exceed any jurisdictional specified limit shall require the appropriate documentation to be completed before the winning participant is paid.

2.8 Electronic Accounting and Reporting

2.8.1 System Reporting Requirements. The system or other equipment shall be capable of producing general accounting reports to include the following information:

- a) Data required to be maintained for each raffle drawing, including:
 - i. Date and time of event.
 - ii. Organization running the event.
 - iii. Sales information (sales totals, refunds, etc).
 - iv. Prize value awarded to participant
 - v. Prize distribution (total raffle sales vs. prize value awarded to participant)
 - vi. Refund totals by event.
 - vii. Draw numbers-in-play count.
 - viii. Winning number(s) drawn (including draw order, call time, and claim status).

- b) Exception Report. A report which includes system exception information, including, but not limited to, changes to system parameters, corrections, overrides, and voids.
- c) Bearer Tickets Report. A report which includes a list of all bearer tickets sold including all associated draw numbers, selling price, and RSU identifier.
- d) Sales by RSU. A report which includes a breakdown of each RSU's total sales (including draw numbers sold) and any voided and misprinted tickets.
- e) Voided Draw Number Report. A report which includes a list of all draw numbers that have been voided including corresponding validation numbers.
- f) RSU Event Log. A report which lists all events recorded for each RSU, including the date and time and a brief text description of the event and/or identifying code.
- g) RSU Corruption Log. A report which lists all RSUs unable to be reconciled to the system, including the RSU identifier, RSU operator, and the money collected.

CHAPTER 3

3.0 RAFFLE SALES UNIT (RSU) REQUIREMENTS

3.1 Introduction

3.1.1 General Statement. After the payment of a fee, participants shall receive a chance to win a raffle drawing. A chance to win a raffle drawing may be purchased either from an attendant-operated Raffle Sales Unit (RSU) or, as allowed by the regulatory body, a player-operated RSU. Any other methods will be reviewed on a case-by-case basis, as allowed by the regulatory body.

- a) **Attendant-Operated Raffle Sales Unit:** A participant may purchase a raffle ticket from an attendant-operated RSU by providing payment for the ticket(s) to the attendant. Upon receiving payment, the attendant will provide the participant the corresponding bearer ticket(s) purchased by the participant.
- b) **Player-Operated Raffle Sales Unit:** A participant may purchase a raffle ticket from a player-operated RSU by following the instructions appearing on the screen of the RSU and providing payment for the ticket(s). Upon payment for the ticket(s), the RSU will issue the corresponding bearer ticket(s) purchased by the participant.

3.2 Raffle Sales Unit Operations and Security

3.2.1 Access Controls. Access to raffle sales software shall be controlled by a secure logon procedure. It is recommended that the software have the ability to automatically lock up or logoff after an operator specified amount of inactivity.

3.2.2 Touch Screens. Touch screens shall be accurate once calibrated and shall maintain that accuracy for at least the manufacturer's recommended maintenance period;

3.2.3 Communications. A Raffle Sales Unit must be designed or programmed such that it may only communicate with authorized Electronic Raffle Systems components.

3.2.4 Wireless Raffle Sales Units. Communication must only occur between the RSU and the Electronic Raffle System via authorized access points.

3.3 Bearer Ticket Printers

3.3.1 Printing Bearer Tickets. If the RSU connects to a printer that is used to produce bearer tickets, the bearer ticket shall include information as indicated in section 2.3.1. It may be permissible for some of this information to be contained on the ticket stock itself. If the unit is capable of reprinting a ticket, the reprinted ticket shall clearly indicate that it is a reprint of the original ticket.

3.4 Critical Memory Requirements

3.4.1 Critical Memory Defined. Critical memory is used to store all data that is considered vital to the continued operation of the RSU. Critical memory shall be maintained for the purpose of storing and preserving critical data. This includes, but is not limited to:

- a) When not communicating with the system, recall of all tickets sold including, at minimum, draw numbers and validation numbers; and
- b) RSU configuration data.

NOTE: Critical memory may be maintained by any component(s) of the Electronic Raffle System.

3.4.2 Maintenance of Critical Memory. Critical memory storage shall be maintained by a methodology that enables errors to be identified. This methodology may involve signatures,

checksums, partial checksums, multiple copies, time stamps and/or effective use of validity codes.

3.4.3 Comprehensive Checks. It is recommended that critical memory is continuously monitored for corruption, and shall detect failures with an extremely high level of accuracy.

3.4.4 Unrecoverable Critical Memory. An unrecoverable corruption of critical memory shall result in an error. Upon detection, the raffle sales unit shall cease to function.

3.4.5 Backup Requirements. The RSU must have a backup or archive utility, which allows the recovery of critical data should a failure occur.

3.5 RSU Program Requirements

3.5.1 Identification. All programs shall contain sufficient information to identify the software and revision level of the information stored on the RSU, which may be displayed via a display screen.

NOTE: The process used in the identification of the software and revision level will be evaluated on a case-by-case basis.

3.5.2 Detection of Corruption. RSU programs shall be capable of detecting program corruption and cause the RSU to cease operations until corrected.

NOTE: Program verification mechanisms will be evaluated on a case-by-case basis and approved by the independent test laboratory based on industry-standard security practices.

3.5.3 Verification of Updates. Prior to execution of the updated software, the software must be successfully authenticated on the RSU.

3.6 Independent Control Program Verification

3.6.1 General Statement. The RSU shall have the ability to allow for an independent integrity check of the RSU's software from an outside source and is required for all software that may affect the integrity of the raffle. This must be accomplished by being authenticated by a third-party device, or by allowing for removal of the media such that it can be verified externally. Other methods shall be evaluated on a case-by-case basis. This integrity check will provide a means for field verification of the software to identify and validate the program. The test laboratory, prior to device approval, shall evaluate the integrity check method.

***NOTE:** If the authentication program is within the RSU software, the manufacturer must receive written approval from the regulatory body prior to submission and testing by the test laboratory.*

CHAPTER 4

4.0 RANDOM NUMBER GENERATOR REQUIREMENTS

4.1 Introduction

4.1.1 General Statement. The selection process for the winning number shall be random. This may be accomplished through the use of an approved random number generator. The regulations within this section are only applicable to electronic raffle systems in which a Random Number Generator is utilized.

4.2 Random Number Generator (RNG) Requirements

4.2.1 Game Selection Process. A random number generator shall reside on a Program Storage Device secured in the logic board of the system. The numbers selected by the random number generator for each drawing shall be stored in the system's memory and be capable of being output to produce a winning number.

- a) **All Outcomes Shall Be Available.** Each valid, sold raffle number shall be available for random selection at the initiation of each drawing;
- b) **No Corruption from Associated Equipment.** An electronic raffle system shall use appropriate protocols to protect the random number generator and random selection process from influence by associated equipment, which may be communicating with the electronic raffle system.
- c) **RNG Integrity Standard.** The random number generator and random selection process shall be impervious to influences from outside the electronic raffle system, including, but not limited to, electro-magnetic interference, electro-static interference, and radio frequency interference.

4.3 Electronic Random Number Generator Requirements

4.3.1 General Statement. The use of an RNG results in the selection of raffle outcomes in which the selection shall:

- a) Be statistically independent;
- b) Conform to the desired random distribution;
- c) Pass various recognized statistical tests; and
- d) Be unpredictable.

4.3.2 Applied Tests. The test laboratory may employ the use of various recognized tests to determine whether or not the random values produced by the random number generator pass the desired confidence level of 99%. These tests may include, but are not limited to:

- a) Chi-square test;
- b) Equi-distribution (frequency) test;
- c) Gap test;
- d) Overlaps test;
- e) Poker test;
- f) Coupon collector's test;
- g) Permutation test;
- h) Kolmogorov-Smirnov test;
- i) Adjacency criterion tests;
- j) Order statistic test;
- k) Runs tests (patterns of occurrences should not be recurrent);
- l) Interplay correlation test;
- m) Serial correlation test potency and degree of serial correlation (outcomes should be independent of the previous game);
- n) Tests on subsequences; and
- o) Poisson distribution.

***NOTE:** The independent test lab will choose the appropriate tests on a case by case basis depending on the RNG under review.*

4.3.3 Period. The period of the RNG, in conjunction with the methods of implementing the RNG outcomes, must be sufficiently large to ensure that all valid, sold numbers are available for random selection.

4.3.4 Range. The range of raw values produced by the RNG must be sufficiently large to provide adequate precision and flexibility when scaling and mapping.

4.3.5 Background RNG Cycling/Activity Requirement. In order to ensure that RNG outcomes cannot be predicted, adequate background cycling / activity must be implemented at a speed that cannot be timed. The rate of background cycling / activity must be sufficiently random in and of itself to prevent prediction.

***NOTE:** The test laboratory recognizes that some time during the game, the RNG may not be cycled when interrupts may be suspended. The test laboratory recognizes this but shall find that this exception shall be kept to a minimum.*

4.3.6 RNG Seeding/Re-Seeding. The methods of seeding or re-seeding implemented in the RNG must ensure that all seed values are determined securely, and that the resultant sequence of outcomes is not predictable.

- a) The first seed shall be randomly determined by an uncontrolled event. If a multi-event raffle, after every raffle ticket draw, there shall be a random change in the RNG process (new seed, random timer, delay, etc.). This will verify the RNG doesn't start at the same value, every time. It is permissible not to use a random seed; however, the manufacturer must ensure that the selection process will not synchronize.
- b) Unless proven to have no adverse effect on the randomness of the RNG outcomes, or actually improve the randomness of the RNG outcomes, seeding and re-seeding must be

kept to an absolute minimum. If a multi-event raffle and if for any reason the background cycling / activity of the RNG is interrupted, the next seed value for the RNG must be a function of the value produced by the RNG immediately prior to the interruption.

4.3.7 Winning Number Draw. The winning number selection shall only be produced from sold raffle ticket numbers from the current drawing to be available for selection.

- a) For raffles which offer multiple awards or drawings with separate buy-ins for each, the winning number selection shall only be produced from sold raffle ticket numbers corresponding with each applicable award or drawing. As winning numbers are drawn, they shall be immediately used as governed by the rules of the raffle (i.e. the raffle tickets are not to be discarded due to adaptive behavior).

4.3.8 Scaling Algorithms. The methods of scaling (i.e. converting raw RNG outcomes of a greater range into scaled RNG outcomes of a lesser range) must be linear, and must not introduce any bias, pattern or predictability. The scaled RNG outcomes must be proven to pass various recognized statistical tests.

- a) If a random number with a range shorter than that provided by the RNG is required for some purpose within the raffle system, the method of re-scaling, (i.e., converting the number to the lower range), is to be designed in such a way that all numbers within the lower range are equally probable.
- b) If a particular random number selected is outside the range of equal distribution of re-scaling values, it is permissible to discard that random number and select the next in sequence for the purpose of re-scaling.

4.4 Mechanical Random Number Generator Requirements

4.4.1 Mechanical Based RNG. If applicable, mechanical based RNGs use the laws of physics to generate the outcome of the game. All mechanical based RNGs must meet the requirements

of this document with the exception of the requirements for electronic random number generators. Inherent to their physical nature, the performance of mechanical based RNGs can deteriorate over time. The failure of a mechanical based RNG could have serious consequences for the raffle as raffles may become predictable or exhibit non-fair distribution. In addition, mechanical based RNG drawings must meet the following rules:

- a) The test laboratory will test, via PC communications, multiple iterations to gather enough data to verify the randomness. In addition, the manufacturer may supply live data to assist in this evaluation;
- b) The mechanical pieces must be constructed of materials to prevent decomposition of any component over time (e.g., a raffle ticket shall not disintegrate);
- c) The properties of physical items used to choose the selection shall not be altered; and
- d) No one shall be able to physically interact or come into physical contact or manipulate the device physically housing the mechanical RNG.
- e) Some form of dynamic / active, real-time testing of the output is required in the software, such that game play is disabled when an output testing failure is detected.

***NOTE:** The laboratory reserves the right to require replacement parts after a pre-determined amount of time. In addition, the device(s) may require periodic inspections to ensure the integrity of the device. Each mechanical based RNG game shall be reviewed on a case-by-case basis.*

CHAPTER 5

5.0 *ELECTRONIC RAFFLE SYSTEM SERVERS*

5.1 Introduction

5.1.1 General Statement. The Electronic Raffle System Server(s) may be located locally, within a single facility or may be remotely located outside of the facility through a Wide Area Network (WAN) as allowed by the regulatory body.

5.2 General Operation & Server Security

5.2.1 Security. The Servers shall be housed in a secure location. All server locations shall have sufficient physical and logical intrusion protection against unauthorized access. It is recommended that the system require cooperative access between the manufacturer and Regulatory Authority.

5.2.2 Access Control. The Electronic Raffle System shall be logically secured through the use of passwords, biometrics, or other means as agreed upon between the regulatory body and the operator. The storage of passwords and PINs shall be secure. The Raffle System must have multiple security access levels to control and restrict different classes of access to the electronic raffle system. Additionally, it is recommended there be a provision for system administrator notification and user lockout or audit trail entry, after a set number of unsuccessful login attempts.

5.2.3 Security from Alteration, Tampering, or Unauthorized Access. The Electronic Raffle System shall provide a physical and electronic means for securing the raffle data against alteration, tampering, or unauthorized access. The following rules also apply to the raffle data within the Electronic Raffle System:

- a) No equipment shall have a mechanism whereby an error will cause the raffle data to automatically clear. Data shall be maintained at all times regardless of whether the server is being supplied with power.
- b) Data shall be stored in such a way as to prevent the loss of the data when replacing parts or modules during normal maintenance.

5.2.4 Data Alteration. The Electronic Raffle System shall not permit the alteration of any accounting, reporting or significant event data without supervised access controls. In the event any data is changed, the following information shall be documented or logged:

- a) Data element altered;
- b) Data element value prior to alteration;
- c) Data element value after alteration;
- d) Time and date of alteration; and
- e) Personnel that performed alteration (user login).

5.2.5 Server Programming. There shall be no means available for an Operator to conduct programming on the server in any configuration (e.g. the Operator should not be able to perform SQL statements to modify the database). However, it is acceptable for Network Administrators to perform authorized network infrastructure maintenance with the sufficient access rights, which would include the use of SQL statements that were already resident on the system.

5.2.6 Virus Protection. It is recommended all servers and RSUs have adequate virus protection, where applicable.

5.2.7 Copy Protection. Copy protection to prevent unauthorized duplication or modification of software, for servers or RSUs, may be implemented provided that:

- a) The method of copy protection is fully documented and provided to the Test Laboratory, who will verify that the protection works as described; or

- b) The program or component involved in enforcing the copy protection can be individually verified by the methodology described in section 5.7.1.

5.3 System Clock Requirements

5.3.1 System Clock. An Electronic Raffle System must maintain an internal clock that reflects the current date and time (in twenty-four (24) hour format showing hours and minutes) that shall be used to provide for the following:

- a) Time stamping of significant events;
- b) Reference clock for reporting; and
- c) Time stamping of all sales and draw events.

5.3.2 Synchronization Feature. If multiple clocks are supported the system shall have a facility to synchronize clocks within all system components.

5.4 RSU Management Requirements

5.4.1 RSU Management Functionality. An Electronic Raffle System must have a master list of each authorized RSU in operation, including at minimum the following information for each entry:

- a) A unique RSU identification number or corresponding hardware identifier (i.e. MAC);
- b) Operator identification; and
- c) Tickets issued for sale, if applicable.

NOTE: *If these parameters can be retrieved directly from the RSU, sufficient controls must be in place to ensure accuracy of the information.*

5.4.2 RSU Validation. It is recommended that RSUs be validated at pre-defined time intervals with at least one method of authentication. This time interval shall be configurable based on jurisdictional requirements. The system shall have the ability to remotely disable the RSU after the threshold of unsuccessful validation attempts has been reached.

5.5 Significant Events

5.5.1 Event Logging. Significant events shall be communicated and logged on the electronic raffle system, which may include:

- a) Power reset or failure of an RSU or any component of the system;
- b) Critical memory corruption of any component of the system.
- c) Counterfoil Printer errors:
 - i. Printer empty/paper low;
 - ii. Printer disconnect/failure; and
 - iii. Print buffer overflow.
- f) Establishment and failure of communications between sensitive Electronic Raffle System components.
- g) Significant event buffer full;
- h) Program error or authentication mismatch;
- i) Firewall audit log full, where supported.
- j) Remote access, where supported; and
- k) Any other significant events as specified by the regulatory agency.

5.5.2 Surveillance/Security Functionality. Each significant event conveyed to the electronic raffle system must be stored. An Electronic Raffle System shall provide an interrogation program that enables on-line comprehensive searching of the significant events through recorded data. The interrogation program shall have the ability to perform a search based at least on the following:

- a) Date and time range;
- b) Unique component identification number; and
- c) Significant event identifier.

5.6 Backups and Recovery

5.6.1 Storage Medium Backup. The electronic raffle system shall have sufficient redundancy and modularity so that if any single component or part of a component fails, the raffle can continue. Redundant copies of critical data shall be kept on the electronic raffle system with open support for backups and restoration.

- a) All storage shall be through an error checking, nonvolatile physical medium, or an equivalent architectural implementation, so that should the primary storage medium fail, the functions of the electronic raffle system and the process of auditing those functions can continue with no critical data loss.
- b) The database shall be stored on redundant media so that no single failure of any portion of the system would cause the loss or corruption of data.

5.6.2 Recovery Requirements. In the event of a catastrophic failure when the electronic raffle system cannot be restarted in any other way, it shall be possible to reload the electronic raffle system from the last viable backup point and fully recover the contents of that backup, including, but not limited to:

- a) Significant Events;
- b) Accounting information;
- c) Reporting information; and
- d) Specific site information such as employee file, raffle set-up, etc.

5.7 Verification of System Software

5.7.1 General Statement. System software components and modules shall be verifiable by a secure means at the system level denoting Program ID and version. The system shall have the ability to allow for an independent integrity check of the components and modules from an outside source and is required for all software that may affect the integrity of the system. This must be accomplished by being authenticated by a third-party device, or by allowing for removal of the media such that it can be verified externally. Other methods may be evaluated on a case-by-case basis. This integrity check will provide a means for field verification of the system components and modules to identify and validate the programs or files. The test laboratory, prior to system approval, shall approve the integrity check method.

***NOTE:** If the authentication program is contained within the Electronic Raffle System software, the manufacturer must receive written approval from the test laboratory prior to submission.*

CHAPTER 6

6.0 COMMUNICATION REQUIREMENTS

6.1 Introduction

6.1.1 General Statement. This chapter will discuss the various communication methods including, but not limited to wireless communications protocol commonly known as 802.11(x) and will extend these methodologies to other wireless interfaces such as Bluetooth, infrared (IR), and cellular (i.e. HSPA+, LTE, etc). The requirements of this chapter shall also apply if communications are performed across a public or third party network, as allowed by the regulatory agency.

6.1.2 Communication Protocol. Each component of an electronic raffle system must function as indicated by the communication protocol implemented. An electronic raffle system must provide for the following:

- a) Communication between all system components must provide mutual authentication between the component and the server.
- b) All protocols must use communication techniques that have proper error detection and recovery mechanisms, which are designed to prevent eavesdropping and tampering. Any alternative implementations will be reviewed on a case-by-case basis, with regulatory approval; and
- c) All data communications critical to the raffle shall employ encryption. The encryption algorithm shall employ variable keys, or similar methodology to preserve secure communication.

6.1.3 Connectivity. Only authorized devices shall be permitted to establish communications between any system components. Electronic raffle systems shall provide a method to:

- a) Verify that the system component is being operated by an authorized user;
- b) Enroll and un-enroll system components;
- c) Enable and disable specific system components.
- d) Ensure that only enrolled and enabled system components participate in the raffle; and
- e) Ensure that the default condition for components shall be un-enrolled and disabled.

6.1.4 Loss of Communications. Raffle sales units (RSUs) may continue to sell tickets when not in communication with the system, as allowed by the regulatory body. Sales taking place on the RSU during a loss of communication with the system shall be logged on the device. The RSU shall deactivate upon detecting the limit of its buffer overflow. Upon the re-establishment of communication, the system shall require the RSU to re-authenticate with the server(s). All tickets sold during communication loss shall be transmitted to the system. Loss of communications shall not affect the integrity of critical memory.

6.2 System Security

6.2.1 General Statement. All communications, including remote access, must pass through at least one approved application-level firewall and must not have a facility that allows for an alternate network path. Any alternate network path existing for redundancy purposes must also pass through at least one application-level firewall.

6.2.2 Firewall Audit Logs. The firewall application must maintain an audit log and must disable all communications and generate a significant event which meets the requirements as specified in section 5.5, Significant Events, of this standard if the audit log becomes full. The audit log shall contain:

- a) All changes to configuration of the firewall;
- b) All successful and unsuccessful connection attempts through the firewall; and
- c) The source and destination IP Addresses, Port Numbers and MAC Addresses.

***NOTE:** A configurable parameter ‘unsuccessful connection attempts’ may be utilized to deny further connection requests should the predefined threshold be exceeded. The system administrator must also be notified.*

6.3 Remote Access

6.3.1 General Statement. Remote access is defined as any access from outside the system or system network including any access from other networks within the same establishment. Remote access shall only be allowed if authorized by the regulatory body and shall have the option to be disabled. Where allowed, remote access shall accept only the remote connections permissible by the firewall application and electronic raffle system settings. Remote access security will be reviewed on a case-by-case basis, in conjunction with the implementation of the current technology and approval from the local regulatory agency. In addition, there shall be:

- a) No unauthorized remote user administration functionality (adding users, changing permissions, etc.);
- b) No unauthorized access to any database other than information retrieval using existing functions; and
- c) No unauthorized access to the operating system.

***NOTE:** GLI acknowledges that the system manufacturer may, as needed, remotely access the Electronic Raffle System and its associated components for the purpose of product and user support, as permitted.*

6.3.2 Remote Access Auditing. The electronic raffle system must maintain an activity log which updates automatically depicting all remote access information, to include:

- a) Log on name;
- b) Time and date the connection was made;
- c) Duration of connection; and

- d) Activity while logged in, including the specific areas accessed and changes that were made.

6.4 Wide Area Network Communications

6.4.1 General Statement. Wide Area Network (WAN) communications are permitted as allowed by the regulatory body and shall meet the following requirements:

- a) The communications over the WAN are secured from intrusion, interference and eavesdropping via techniques such as use of a Virtual Private Network (VPN), encryption, etc; and
- b) Only functions documented in the communications protocol shall be used over the WAN. The protocol specification shall be provided to the Testing Laboratory.

6.5 Wireless Network Communications

6.5.1 General Statement. Should a wireless communication solution be utilized, it is recommended to adhere to the applicable portions of the chapter pertaining to wireless networks in the GLI-27 Standard ‘Network Security Best Practices.’

***NOTE:** Due to continuous changes and improvement in wireless technology the information in this document is considered current as of the publication date. Therefore, it is imperative for organizations to review and update internal control policies and procedures to ensure the electronic raffle system is secure and threats and vulnerabilities are addressed accordingly. GLI recommends the use of a private independent IT security company to plan, inspect and verify the integrity of the wireless network.*

CHAPTER 7

7.0 *SYSTEM ENVIRONMENTAL AND SAFETY REQUIREMENTS*

7.1 Introduction

7.1.1 General Statement. This chapter shall govern the environmental and safety requirements for all system components submitted for review.

7.2 Hardware and Player Safety

7.2.1 General Statement. Electrical and mechanical parts and design principals of the electronic associated hardware may not subject a user to any physical hazards. The test laboratory shall NOT make any finding with regard to Safety and EMC testing as that is the responsibility of the manufacturer of the goods or those that purchase the goods. Such safety and EMC testing may be required under separate statute, regulation, law or act and should be researched, accordingly, by those parties who manufacture or purchase said hardware. The test laboratory shall not test for, be liable for, nor make a finding relating to these matters.

7.3 Environmental Effects on System Integrity

7.3.1 Integrity Standard. The test laboratory will perform certain tests to determine whether or not outside influences affect raffle fairness to the participant or create cheating opportunities. This certification applies exclusively to tests conducted using current and retrospective methodology developed by Gaming Laboratories International, LLC (GLI). During the course of testing, GLI inspects for marks or symbols indicating that a device has undergone product safety compliance testing. Gaming Laboratories International, LLC also performs, where possible, a cursory review of submissions and information contained therein related to Electromagnetic

Interference (EMI), Radio Frequency Interference (RFI), Magnetic Interference, Liquid Spills, Power Fluctuations and Environmental conditions. Electrostatic Discharge Testing is intended only to simulate techniques observed in the field being used to attempt to disrupt the integrity of the system. Compliance to any such regulations related to the aforementioned testing is the sole responsibility of the system manufacturer. Gaming Laboratories International, LLC claims no liability and makes no representations with respect to such testing. A system shall be able to withstand the following tests, resuming operation without operator intervention:

- a) Electro-static Interference. Protection against static discharges requires that the system's hardware be earthed in such a way that static discharge energy shall not damage or inhibit the normal operation of the electronics or other components within the System. Systems may exhibit temporary disruption when subjected to a significant electro-static discharge greater than human body discharge, but they shall exhibit a capacity to recover and complete any interrupted function without loss or corruption of any control or data information associated with the System. The tests will be conducted with a severity level of up to 27KV air discharge.

***NOTE:** For commercial components involved in functions covered by this standard that are affected (e.g. a PC monitor), there must be a method to determine the state the system was in if any of the components fail from static discharge.*