



STANDARD SERIES

GLI-24:

Electronic Table Game Systems

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ABOUT THIS STANDARD

This Standard has been produced by **Gaming Laboratories International, LLC** for the purpose of providing independent certifications to suppliers under this Standard and complies with the requirements set forth herein.

A supplier should submit equipment with a request that it be certified in accordance with this Standard. Upon certification, Gaming Laboratories International, LLC will provide a certificate of compliance evidencing the certification to this Standard.

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CHAPTER 1

1.0 STANDARD OVERVIEW

1.1 Introduction

1.1.1 General Statement. Gaming Laboratories International, LLC (GLI) has been testing gaming equipment 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 rulemaking. This document, *GLI Standard 24*, will set forth the technical Standards for Electronic Table Game Systems (ETGS).

1.1.2 Document History. This document is an essay from many standards documents from around the world. Some GLI has written; some, such as the Australian and New Zealand National Standard, were written by Industry Regulators with input from test laboratories and electronic table game manufacturers. We have taken each of the standards' documents, merged each of the unique rules together, eliminating some rules and updating others, in order to reflect both the change in technology and the purpose of maintaining an objective, factual standard. We have listed below, and given credit to, agencies whose documents we reviewed prior to writing this Standard. 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 Technical Standards

1.2.1 General Statement. The Purpose of this Technical Standard is as follows:

- a) To eliminate subjective criteria in analyzing and certifying Electronic Table Game Systems operation.
- b) To only test those criteria that impact the credibility and integrity of Electronic Table Game Systems from both the Revenue Collection and Player's perspective.
- c) To create a standard that will ensure that the Electronic Table Game 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 jurisdiction to set public policy with respect to gaming.
- e) To recognize that non-gaming testing (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 changed or modified to allow for new technology.
- g) To construct a standard that does not specify any particular 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 document 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 new technology is developed, we will review this standard, make changes and incorporate new minimum standards for the new technology.

1.3 Other Documents That May Apply

1.3.1 General Statement. The following other GLI standards may apply, depending on the features of the electronic table game system and references throughout this document. All GLI standards are available on our website at www.gaminglabs.com.

- a) GLI-11 Gaming Devices in Casinos;
- b) GLI-12 Progressive Gaming Devices in Casinos;
- c) GLI-13 On-Line Monitoring and Control Systems (MCS) and Validation Systems in Casinos;
- d) GLI-16 Cashless Systems in Casinos;
- e) GLI-17 Bonusing Systems in Casinos; and
- f) GLI-18 Promotional Systems in Casinos.

NOTE: This standard covers the Technical Specifications of the operation of Electronic Table Game Systems, as defined within section 1.4.1 below, where the table games are operated electronically without a live dealer. Please refer to GLI-25 for Electronic Table Game Systems that utilize a live dealer.

1.4 Defining Electronic Table Game Systems

1.4.1 General Statement. An Electronic Table Game System (ETGS) is the combination of a Central Server, Player Interface and all Interface Elements that function collectively for the purpose of electronically simulating table game operations. **This standard is to be used when there is no live dealer and the game plays without significant human interaction** including the initiation of game play, responsible for all monetary transactions including credit acceptance, collecting wagers, distributing winnings, and ensuring all wagers are registered properly. **This standard will not make assumptions as to the classification of a device in a particular jurisdiction as being a table game or a gaming device, as defined within the GLI-11 Gaming Devices in Casinos standard. Nor does GLI offer an opinion as to how many ‘devices’ the equipment encompasses.**

NOTE: For table game systems that utilize a live dealer please refer to the GLI Standard 25.

1.5 Phases of Testing

1.5.1 General Statement. Electronic Table Game submissions to the Test Laboratory will be performed in two phases:

- a) Within the laboratory setting; and
- b) On-site following the initial install of the system to ensure proper configuration of the security applications.

NOTE: In addition to the on-site testing of the system, the Test Laboratory shall provide training on this new technology to the local regulators, recommended field auditing procedures, and assistance with the compilation of Internal Controls, if requested.

CHAPTER 2

2.0 ELECTRONIC TABLE GAME SYSTEM REQUIREMENTS

2.1 Introduction

2.1.1 General Statement. This chapter would apply to the overall system operations to ensure the security, accountability and integrity of the equipment.

2.2 Table Game System Requirements

2.2.1 System Clock. The system must maintain an internal clock that reflects the current time (24hr format - which is understood by the local date/time format) and date 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 configuration changes.

2.2.2 Synchronization Feature. If multiple clocks are supported, the system shall have a facility whereby it is able to synchronize those clocks in each system component, whereby conflicting information could not occur.

2.3 System Security

2.3.1 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.

2.3.2 Firewall Audit Logs. The firewall application must maintain an audit log of the following information and must disable all communications and generate an error event if the audit log becomes full:

- 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.

2.3.3 Surveillance/Security Functionality. The system shall provide for interrogation that enables on-line comprehensive searching of the significant event log.

2.3.4 Access Control. The system must support either a hierarchical role structure whereby user name and password define program access or individual menu item access or logon program /device security based strictly on user name and password or PIN. The system shall not permit the alteration of any significant log information without supervised access control. There shall be a provision for system administrator notification and user lockout or audit trail entry after a set number of unsuccessful login attempts. The system shall record: Date and Time of the Login attempt, username supplied, and success or failure. The use of generic user accounts on servers is not permitted.

2.3.5 Data Alteration. The system shall not permit the alteration of any accounting or significant event log information without supervised access controls. In the event financial data is changed, an audit log must be capable of being produced to document:

- 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).

2.4 Remote Access

2.4.1 Remote Access defined. Remote Access defines any access made by a component outside the ‘trusted’ network.

2.4.2 General Statement. Remote access where permitted, shall authenticate all computer systems based on the authorized settings of the electronic table game and firewall application that establishes a connection with the electronic table game as long as the following requirements are met:

- a) Remote Access User Activity log is maintained by both the property and the manufacturer, depicting: authorized by, purpose, logon name, time/date, duration, and activity while logged in;
- b) No unauthorized remote user administration functionality (adding users, changing permissions, etc.);
- c) No unauthorized access to database;
- d) No unauthorized access to operating system; and
- e) If remote access is to be on a continuous basis then a network filter (firewall) must be installed to protect access (Dependent upon jurisdictional approval).

2.4.3 Self Monitoring. The system must implement self monitoring of all critical Interface Elements (e.g. Central hosts, network devices, firewalls, links to third parties, etc.) and shall have the ability to effectively notify the system administrator of any error condition, provided the

condition is not catastrophic. The system shall be able to perform this operation with a frequency of at least once in every 24-hour period and during each power-up and power reset.

2.5 Backups and Recovery

2.5.1 System Redundancy, Backup & Recovery. The system shall have sufficient redundancy and modularity so that if any single component or part of a component fails, gaming can continue. There shall be redundant copies of each log file or system database or both on the system with open support for backups and restoration.

2.5.2 Backup & Recovery. In the event of a catastrophic failure when the system cannot be restarted in any other way, it shall be possible to reload the system from the last viable backup point and fully recover the contents of that backup, recommended to consist of at least the following information:

- a) Significant events;
- b) Accounting information;
- c) Auditing information; and
- d) Specific site information such as Device file, employee file, game profiles, etc

2.6 Communication Protocol

2.6.1 General Statement. Each component of an electronic table game system must function as indicated by the communication protocol implemented. All protocols must use communication techniques that have proper error detection and/or recovery mechanisms which are designed to prevent unauthorized access or tampering, employing Data Encryption Standards (DES) or equivalent encryption with secure seeds or algorithms. Any alternative measures will be reviewed on a case-by-case basis, with regulator approval.

2.7 System Integrity

2.7.1 General Statement. The Laboratory will perform certain tests to determine whether or not outside influences affect game fairness to the player 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 electronic table game systems. Compliance to any such regulations related to the aforementioned testing is the sole responsibility of the device manufacturer. GLI claims no liability and makes no representations with respect to such non-gaming testing. An electronic table game system shall be able to withstand the following tests, resuming game play without operator intervention:

- a) Random Number Generator If implemented, the random number generator and random selection process shall be impervious to influences from outside the device, including, but not limited to, electro-magnetic interference, electro-static interference, and radio frequency interference;
- b) Electro-Static Interference. Protection against static discharges requires that the table game's conductive cabinets be earthed in such a way that static discharge energy shall not permanently damage or permanently inhibit the normal operation of the electronics or other components within the electronic table game. The electronic table game 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 play without loss or corruption of any control or critical data information associated with the electronic table game. The tests will be conducted with a severity level of a maximum of 27KV air discharge;

2.7.2 Physical Security. The server or system component(s) must reside in a secure area where access is limited to authorized personnel. It is recommended that logical access to the game be logged on the system or on a computer or other logging device that resides outside the secure area and is not accessible to the individual(s) accessing the secure area. The logged data should include the time, date, and the identity of the individual accessing the secure area. The resulting logs should be kept for a minimum of 90 days.

2.8 Random Number Generator

2.8.1 General Statement. The Random Number Generator (RNG) is the selection of game symbols or production of game outcomes. The regulations within this section are only applicable to electronic table games that utilize an RNG, which shall:

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

2.8.2 Game Selection Process.

- a) All Combinations and Outcomes Shall Be Available. Each possible permutation or combination of game elements that produces winning or losing game outcomes shall be available for random selection at the initiation of each play, unless otherwise denoted by the game.
- b) No Near Miss. After selection of the game outcome, the electronic table game shall not make a variable secondary decision, which affects the result shown to the player. For instance, the random number generator chooses an outcome that the game will be a loser.
- c) No Corruption from Associated Equipment. An electronic table game shall use appropriate protocols that effectively protect the random number generator and random

selection process from influence by associated equipment, which may be communicating with the electronic table game.

2.8.3 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.

2.8.4 Background RNG Activity. The RNG shall be cycled continuously in the background between games and during game play at a speed that cannot be timed by the player. 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.

2.8.5 RNG Seeding. The first seed shall be randomly determined by an uncontrolled event. After every game 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 games will not synchronize.

2.8.6 Live Game Correlation. Unless otherwise denoted on the pay glass/display, where the electronic table game plays a game that is recognizable such as Poker, Blackjack, Roulette, etc., the same probabilities associated with the live game shall be evident in the simulated game. For example, the odds of getting any particular number in Roulette where there is a single zero (0) and a double zero (00) on the wheel, shall be 1 in 38; the odds of drawing a specific card or cards in Poker shall be the same as in the live game.

2.8.7 Card Games. The requirements for games depicting cards being drawn from a deck are the following:

- a) At the start of each game/hand, the cards shall be drawn fairly from a randomly-shuffled deck; the replacement cards shall not be drawn until needed, and in accordance with game rules, to allow for multi-deck and depleting decks;
- b) Cards once removed from the deck shall not be returned to the deck except as provided by the rules of the game depicted;
- c) As cards are removed from the deck they shall be immediately used as directed by the Rules of the Game (i.e., the cards are not to be discarded due to adaptive behavior by the electronic table game system)

*NOTE: It is acceptable to draw **random numbers** for replacement cards at the time of the first hand random number draw. Provided the replacement cards are sequentially used as needed.*

2.9 Maintenance of Critical Memory

2.9.1 General Statement. Critical memory storage may be maintained by the player terminal or the system, where applicable. Critical memory shall be maintained by a methodology that enables errors to be identified. This methodology may involve signatures, checksums, partial checksums, multiple copies, timestamps and/or effective use of validity codes.

NOTE: The “Maintenance of Critical Memory” section is not intended to preclude the use of alternate storage media types, such as hard disk drives, for the retention of critical data. Such alternate storage media is still expected to maintain critical data integrity in a manner consistent with the requirements in this section, as applicable to the specific storage technology implemented.

2.9.2 Comprehensive Checks. Comprehensive checks of critical memory shall be made following game initiation but prior to display of game outcome to the player. It is recommended that critical memory is continuously monitored for corruption. Test methodology shall detect failures with an extremely high level of accuracy.

2.9.3 Unrecoverable Critical Memory. An unrecoverable corruption of critical memory shall result in an error. The memory error shall not be cleared automatically and shall result in a tilt condition, which facilitates the identification of the error and causes the electronic table game to cease further function. *The critical memory error shall also cause any communication external to the electronic table game to immediately cease.* An unrecoverable critical memory error shall require a full non-volatile memory clear performed by an authorized person.

2.9.4 Non-volatile Memory and Program Storage Device Space. Non-volatile memory space that is not critical to the electronic table game operations are not required to be validated.

2.10 Program Storage Device Requirements

2.10.1 General Statement. The term *Program Storage Device* is defined to be the media or an electronic device that contains the critical control program components. Device types include but are not limited to EPROMs, compact flash cards, optical disks, hard drives, solid state drives, USB drives, etc. This partial list may change as storage technology evolves. All program storage devices shall:

- a) Be housed within a fully enclosed and locked logic compartment;
- b) Be clearly marked with sufficient information to identify the software and revision level of the information stored in the device. In the case of media types on which multiple programs may reside it is acceptable to display this information via the attendant menu.
- c) Validate themselves during each processor reset; and
- d) Validate themselves the first time they are used; and
- e) CD-ROM, DVD, and other optical disk-based Program Storage shall:
 - i. Not be a re-writeable disk; and
 - ii. The “Session” shall be closed to prevent any further writing.

2.11 Control Program Requirements

2.11.1 Control Program Verification.

- a) EPROM-based Program Storage:
 - i. Electronic table games which have control programs residing in one or more EPROMs must employ a mechanism to verify control programs and data. The mechanism must use at a minimum a checksum; however, it is recommended that a Cyclic Redundancy Check (CRC) be used (at least 16-bit).
- b) Non-EPROM Program Storage shall meet the following rules:
 - i. The software shall provide a mechanism for the detection of unauthorized and corrupt software elements, upon any access, and subsequently prevent the

execution or usage of those elements by the electronic table game. The mechanism must employ a hashing algorithm which produces a message digest output of at least 128 bits.

- ii. In the event of a failed authentication, after the game has been powered up, the electronic table game should immediately enter an error condition and display an appropriate error. This error shall require operator intervention to clear and shall not clear until; the data authenticates properly, following the operator intervention, or the media is replaced or corrected, and the electronic table game's memory is cleared.

NOTE: Control Program Verification Mechanisms may be evaluated on a case-by-case basis and approved by the regulator and the independent testing laboratory based on industry standard security practices.

- c) Alterable Media shall meet the following rules in addition to the requirements outlined in 2.11.1(b):
 - i. Employ a mechanism which tests unused or unallocated areas of the alterable media for unintended programs or data and tests the structure of the media for integrity. The mechanism must prevent further play of the electronic table game if unexpected data or structural inconsistencies are found.
 - ii. Employ a mechanism for keeping a record anytime a control program component is added, removed, or altered on any alterable media. The record shall contain a minimum of the last ten (10) modifications to the media and each record must contain that date and time of the action., identification of the component affected, the reason for the modification and any pertinent validation information.

NOTE: Alterable Program Storage does not include memory devices typically considered to be alterable which have been rendered "read-only" by either a hardware or software means.

2.11.2 Program Identification. Program storage devices, which do not have the ability to be modified while installed in the electronic table game during normal operation, shall be clearly

marked with sufficient information to identify the software and revision level of the information stored in the devices.

2.11.3 Independent Control Program Verification. The system server(s) and each component of the electronic table game that would have an effect on the integrity of the electronic table game shall have the ability to allow for an independent integrity check of the device's software from an outside source and is required for all control programs that may affect the integrity of the game. This must be accomplished by being authenticated by a third-party device, which may be embedded within the game software (see NOTE below), by having an interface port for a third-party device to authenticate the media, or by allowing for removal of the media such that it can be verified externally. 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 contained within the game software, the manufacturer must receive written approval from the test laboratory prior to submission.

2.12 Player Interface Terminal Requirements

2.12.1 General Statement. Player interface terminals may either be a display mechanism where the system performs all operations of the game (Thin Client), or contain its own logic function in conjunction with the electronic table game system (Thick Client). In either case, the player interface terminal(s) must meet the hardware and software requirements outlined within each jurisdiction's applicable requirements for gaming devices, to ensure security and player safety. In the absence of these jurisdictional specific requirements, the GLI-11 requirements should be used.

2.13 Rules of Play

2.13.1 Display.

- a) A placard or video display used to convey game play information shall be clearly identified and shall accurately state the house rules of the game, game profile and rake (collection) schedule, and the award that will be paid to the player when the player obtains a specific win.
- b) The placard or video display shall clearly indicate whether awards are designated in denominational units, currency, or some other unit.
- c) The table game shall reflect any change in award value, which may occur in the course of play. This may be accomplished with a digital display in a conspicuous location to the table game, and the table game must clearly indicate such.
- d) All payable information should be available to the player, prior to them committing to a bet. This includes unique game features, extended play, free spins, double-up, take-a-risk, auto play, countdown timers, symbol transformations, and community style bonus awards.
- e) Placard or video displays shall not be certified if the information is inaccurate.
- f) Any table game which utilizes multiple decks of cards should alert the player to the number of card decks in play.

2.13.2 Multi-Wager Games.

- a) Each individual wager to be played shall be clearly indicated on the player interface so that the player is in no doubt as to which wagers have been made; and
- b) The winning outcome(s) shall be clearly discernable to the player. (e.g., on an Electronic terminal it may be accomplished by highlighting the symbol(s) or wagers and/or the flashing of winning symbol(s) or wagers. Where there are wins on multiple wagers, each winning wager may be indicated in turn.)

2.14 Software Requirements for Percentage Payout

2.14.1 General Statement. Each Electronic Table Game System shall theoretically payout a minimum of seventy-five percent (75%) during the expected lifetime of the game (i.e., progressives, bonus systems, merchandise, etc. shall not be included in the percentage payout if they are external to the game).

NOTE: The laboratory will provide the minimum and maximum theoretical payout percentage for the game within the certification report, unless otherwise noted. Additional external awards added to a game will require a re-evaluation of the theoretical payout percentage, considering the value of the award and possibly other factors. The laboratory will re-evaluate a game's theoretical payout percentage when requested.

- a) Optimum Play Used for Skill Games. Electronic Table Game Systems that may be affected by player skill shall be calculated using a method of play that will provide the greatest return to the player over a period of continuous play.
- b) Minimum Percentage Requirement Met at All Times. The minimum percentage requirement shall be met at all times. The minimum percentage requirement shall be met when playing at the lowest end of a non-linear paytable (i.e., if a game is continuously played at a minimum bet level for its total game cycle and the theoretical RTP is lower than the minimum percentage, then the game is unacceptable). This example also extends to games such as Keno, whereby the continuous playing of any spot combination results in a theoretical return to player lower than the minimum percentage.
- c) Double-up or Gamble. The Double-up or Gamble options shall have a theoretical return to the player of one hundred percent (100%).
- d) Additional or Optional Wagers. If these wagers can only be made by participating in the base game, the minimum and maximum payback percentage will be included with calculations of the base game.

*****Please be advised, the above rules regarding payback percentage are not applicable for non-house banked Electronic Table Game Systems*****

2.15 Player Interface Error Conditions

2.15.1 General Statement. The Player Interface, where applicable, shall be capable of detecting and displaying the following error conditions and illuminating a light system for each, or sound an audible alarm. Error conditions should cause the electronic table game to lock up and require attendant intervention except as noted within this section. Error conditions shall be cleared either by an attendant or upon initiation of a new play sequence after the error has cleared except for those denoted by an “*” which will require further evaluation since deemed as a critical error. Error conditions shall be communicated to an on-line monitoring and control system, where applicable:

2.15.2 Door Open Error Conditions.

- a) All external doors on the electronic table game;
- b) Drop box door;
- c) Stacker door; and
- d) Any other currency storage areas that have a door.

2.15.3 Other Error Conditions.

- a) NV memory error (for any critical memory)*;
- b) Low NV memory battery for batteries external to the NV memory itself or low power source;
- c) Program error or authentication mismatch*;

2.15.4 Error Codes. For games that use error codes, a description of electronic table game error codes and their meanings shall be affixed inside the device. This does not apply to video-based games; however, video based games shall display meaningful text as to the error conditions.

2.16 Door Open/Close

2.16.1 Required Door Metering. The system or components of the system shall be able to detect and meter access to the following secure areas provided power is supplied to the device:

- a) All external doors on the electronic table game;
- b) Drop box door;
- c) Stacker door; and
- d) Any other currency storage areas that have a door.

2.17 Taxation Reporting Limits

2.17.1 General Statement. The game shall be capable of entering a lock up condition if any awards from a single game cycle are in excess of a limit that is required by a taxing jurisdiction. Notwithstanding the foregoing, it is permissible to provide a mechanism to accrue W2G eligible winnings to a separate meter. This meter must not provide for the ability to place wagers and when collected by the player must lockup as required by a taxing jurisdiction.

2.18 Play History

2.18.1 Number Of Last Games Required. For the purpose of settling disputes between players or players versus the house, the electronic table game system shall maintain the historical data for the play history. Information on at least the last ten (10) games/hands played is to be always retrievable on the operation of a suitable external key-switch, or another secure method that is not available to the player.

2.18.2 Last Play Information Required. Last play information shall provide all information required to fully reconstruct the last ten (10) games/hands played. All values shall be displayed, including the initial credits or ending credits, credits bet, credits won, and credits paid whether the outcome resulted in a win or loss. This information can be represented in graphical or text format. If a progressive was awarded, it is sufficient to indicate the progressive was awarded and not display the value. This information should include the final game outcome, including all player choices and bonus features. In addition, include the results of double-up or gamble (if applicable). For games that do not re-shuffle the cards at the beginning of each game, there must be secure procedures to permit a forced ‘re-shuffle’ following access to the play history. These procedures are to be included in the system submission to the Test Laboratory.

NOTE: For “Last Play Information” stated above, it is allowable to display values in currency in place of ‘credits’.

2.18.3 Bonus Rounds. The last play information shall reflect bonus rounds in their entirety. If a bonus round lasts ‘x number of events,’ each with separate outcomes, each of the ‘x events’ shall be displayed with its corresponding outcome, regardless if the result is a win or loss. Electronic table games offering games with a variable number of free games, per base game, may satisfy this requirement by providing the capability to display the last 50 free games in addition to each base game.

2.19 Significant Logs and Events

2.19.1 General Statement. Significant events are generated at the electronic table game and sent directly to the backend utilizing an approved Communication Protocol, as described in the earlier part of this document. All Significant Events that take place at each table will be monitored and recorded in an Event History. The Event History may be divided into sections (e.g. accounting, security, finance, errors, etc.); these events will be logged by date, time and event, and should be filterable. Each event must be stored in a database(s) which includes the following:

- a) Date and time which the event occurred;
- b) Identity of the electronic table game system component that generated the event;
- c) A unique number/code that defines the event; or
- d) A brief text that describes the event in the local language.

2.19.2 Significant Events Defined. The following events must be conveyed to the backend where a mechanism must exist for timely notification:

- a) Power resets of any device;
- b) Loss of communication with any device;
- c) Error Conditions on any critical interface element;
- d) Critical memory/control program corruption of any critical component.
- e) Cashless account transactions,
- f) Jackpots (W2G Reportable Events or Large Win Events)
- g) Game start
- h) Game stop
- i) Software signature check and result (if supported)
- j) Connection by authorized devices
- k) Attempted connection by unauthorized devices

2.20 Accounting Information

2.20.1 General Statement. There shall be a method to accurately maintain the accounting information that is needed for proper revenue reporting and auditing. For electronic table game systems that do not maintain this information electronically, operational procedures are to be included with the system submission. Electronic table game systems that do maintain electronic accounting information shall effectively collect and store the information in a secure manner.

2.20.2 Clearing Meters. The clearing of stored Accounting Information may only be performed by authorized personnel via secure system controls or approved internal controls.

2.20.3 Backup Requirements. Data recorded by electronic meters shall be preserved after a power loss to an interface component and shall be maintained for a period of at least thirty (30) days.

2.21 Reports

2.21.1 General Statement. For electronic table game systems that maintain Significant Event and Accounting Information reports shall subsequently be available on demand. The reports must be generated accurately and provide effective information for the purpose of security and accounting auditing. For electronic table game systems that have the ability to communicate the Significant Event and Accounting Information to a separate Monitoring Control System it must be via a secure communication protocol.

2.21.2 Cashless Transactions. The following reports are required for electronic table game systems that provide for cashless transactions unless properly communicated to a separate Monitoring Control System

- a) **Patron Account Summary and Detail Reports.** These reports shall include beginning and ending account balance, transaction information depicting machine number, amount, date/time and are to be immediately available to a patron upon request.
- b) **Liability Report.** This report is to include previous day's starting value of outstanding Cashless Liability, aggregate Cashless-In and out totals (Including rake, jackpot and amount in play), and ending Cashless liability, if applicable.
- c) **Cashless Meter Reconciliation Summary and Detail Reports.** These reports will reconcile each participating device's cashless Meter(s) against the Electronic Table Game System's cashless activity. (including Cashless in and Cashless out)

- d) Cashier Summary and Detail Reports. To include patron account, Deposits and cash-out, amount of transaction, date and time of transaction, and cashier starting and ending balances, session start and end date/time (etc.) by cashier.
- e) Device Transaction Summary and Detail Reports. Wagering, issuance, voids by device, date/time, account number, and transaction number.
- f) Cashless Wagering System Activity Report. Deposits, transfers to and from electronic table game system, withdrawals, adjustments and balances, by wagering account.
- g) Electronic Table Game System Performance Report. Hands per hour, total hands played, number of hours of operation, dollars played, dollars contributed and average number of players.
- h) Cashless Wagering Account Adjustment Report. For each individual adjustment made to a cashless wagering account or a promotional account, a summary of the adjustment to include:
 - i. Patron name and account number, or specific promotion, as applicable;
 - ii. Amount of, and explanation for, the adjustment; and
 - iii. Identification of the user completing and/or authorizing the adjustment.

2.22 Electronic Table Game Identification

2.22.1 General Statement. A electronic table game shall have an identification badge affixed to the exterior of the table by the manufacturer, that is not removable without leaving evidence of tampering and this badge shall include the following information:

- a) The manufacturer;
- b) A unique serial number;
- c) The electronic table game model number; and
- d) The date of manufacture.