

**PART 547 – MINIMUM TECHNICAL STANDARDS FOR GAMING EQUIPMENT USED WITH THE PLAY OF CLASS II GAMES**

- Sec.
- 547.1 What is the purpose of this part?
  - 547.2 How do these regulations affect state jurisdiction?
  - 547.3 What are the definitions for this part?
  - 547.4 How does a tribal government, TGRA, or tribal gaming operation comply with this part?
  - 547.5 What are the rules of interpretation and of general application for this part?
  - 547.6 What are the minimum technical standards for enrolling and enabling Class II gaming system components?
  - 547.7 What are the minimum technical hardware standards applicable to Class II gaming systems?
  - 547.8 What are the minimum technical software standards applicable to Class II gaming systems?
  - 547.9 What are the minimum technical standards for Class II gaming system accounting functions?
  - 547.10 What are the minimum standards for Class II gaming system critical events?
  - 547.11 What are the minimum technical standards for money and credit handling?
  - 547.12 What are the minimum technical standards for downloading on a Class II gaming system?
  - 547.13 What are the minimum technical standards for program storage media?
  - 547.14 What are the minimum technical standards for electronic random number generation?
  - 547.15 What are the minimum technical standards for electronic data communications between system components?
  - 547.16 What are the minimum standards for game artwork, glass, and rules?
  - 547.17 How does a TGRA grant a variance from these standards?

Authority: 25 U.S.C. 2706(b).

**§ 547.1 What is the purpose of this part?**

The Indian Gaming Regulatory Act, 25 U.S.C. 2703(7)(A)(i), permits the use of electronic, computer, or other technologic aids in connection with the play of Class II games. This part establishes the minimum technical standards governing the use of such aids.

**§ 547.2 How do these regulations affect state jurisdiction?**

Nothing in this part shall be construed to grant to a state jurisdiction over Class II gaming or to extend a state's jurisdiction over Class III gaming.

**§ 547.3 What are the definitions for this part?**

For the purposes of this part, the following definitions apply:

*Account access component.* A component within a Class II gaming system that reads or recognizes account access media and gives a patron the ability to interact with an account.

*Account access medium.* A magnetic stripe card or any other medium inserted into, or otherwise made to interact with, an account access component in order to give a patron the ability to interact with an account.

*Audit mode.* The mode where it is possible to view Class II gaming system accounting functions, statistics, etc. and perform non-player-related functions.

*Agent.* A person authorized by the gaming operation, as approved by the TGRA, to make decisions, tasks or actions on the behalf of the gaming operation. This definition permits the use of computer applications to perform the function(s) of an agent.

*Cancel credit.* An action initiated by the Class II gaming system where some or all of a player's credits are removed by an attendant and paid to the player.

*Cashless system.* A system that performs cashless transactions and maintains records of those cashless transactions.

*Cashless transaction.* A movement of funds electronically from one component to another, often to or from a patron deposit account, or promotional account.

*CD-ROM.* Compact Disc – Read Only Memory.

*Chairman.* The Chairman of the National Indian Gaming Commission.

*Class II game.* Class II gaming shall have the same meaning as defined in 25 U.S.C. 2703(7)(A).

*Class II gaming system.* All components, whether or not technologic aids in electronic, computer, mechanical, or other technologic form, that function together to aid the play of one or more Class II games, including accounting functions mandated by these regulations.

*Commission.* The National Indian Gaming Commission established by the Indian Gaming Regulatory Act, 25 U.S.C. 2701 *et seq.*

*Coupon.* A financial instrument of fixed wagering value, usually paper, that can only be used to acquire non-cashable credits through interaction with a voucher system. This does not include instruments such as printed advertising material that cannot be validated directly by a voucher system.

*Critical memory.* Memory locations storing data essential to the functionality of the Class II gaming system.

*DLL.* A Dynamic-Link Library file.

*Download package.* Approved data sent to a component of a Class II gaming system for such purposes as changing the component software.

*DVD.* Digital Video Disk or Digital Versatile Disk.

*EPROM.* Erasable Programmable Read Only Memory – a storage area that may be filled with data and information, that once written is not modifiable, and that is retained even if there is no power applied to the machine.

*Fault.* An event that when detected by a Class II gaming system causes a discontinuance of game play or other component functions.

*Financial instrument.* Any tangible item of value tendered in Class II game play, including, but not limited to, bills, coins, vouchers and coupons.

*Financial instrument acceptor.* Any component that accepts financial instruments, such as a bill validator.

*Financial instrument dispenser.* Any component that dispenses financial instruments, such as a ticket printer.

*Financial instrument storage component.* Any component that stores financial instruments, such as a drop box.

*Flash memory.* Non-volatile memory that retains its data when the power is turned off and that can be electronically erased and reprogrammed without being removed from the circuit board.

*Game software.* The operational program or programs that govern the play, display of results, and/or awarding of prizes or credits for Class II games.

*Gaming equipment.* All electronic, electro-mechanical, mechanical, or other physical components utilized in the play of Class II games.

*Hardware.* Gaming equipment.

*Interruption.* Any form of mis-operation, component failure, or interference to the Class II gaming equipment.

*Modification.* A revision to any hardware or software used in a Class II gaming system.

*Non-cashable credit.* Credits given by an operator to a patron; placed on an Class II gaming system through a coupon, cashless transaction or other approved means; and capable of activating play but not being converted to cash.

*Patron.* A person who is a customer or guest of the gaming operation and may interact with a Class II game. Also may be referred to as a “player”.

*Patron deposit account.* An account maintained on behalf of a patron, for the purpose of depositing and withdrawing cashable funds for the primary purpose of interacting with a gaming activity.

*Player interface.* Any component or components of a Class II gaming system, including an electronic or technologic aid (not limited to terminals, player stations, handhelds, fixed units, etc.), that directly enables player interaction in a Class II game.

*Prize schedule.* The set of prizes available to players for achieving pre-designated patterns in the Class II game.

*Program storage media.* An electronic data storage component, such as a CD-ROM, EPROM, hard disk, or flash memory on which software is stored and from which software is read.

*Progressive prize.* A prize that increases by a selectable or predefined amount based on play of a Class II game.

*Random number generator (RNG).* A software module, hardware component or combination of these designed to produce outputs that are effectively random.

*Reflexive software.* Any software that has the ability to manipulate and/or replace a randomly generated outcome for the purpose of changing the results of a Class II game or deprives a player of a prize to which the player is otherwise entitled based on the random outcome of the game.

*Removable/rewritable storage media.* Program or data storage components that can be removed from gaming equipment and be written to, or rewritten by, the gaming equipment or by other equipment designed for that purpose.

*Server.* A computer that controls one or more applications or environments within a Class II gaming system.

*Test/diagnostics mode.* A mode on a component that allows various tests to be performed on the Class II gaming system hardware and software.

*Testing laboratory.* An organization recognized by a TGRA pursuant to § 547.4(f).

*TGRA.* Tribal gaming regulatory authority, which is the entity authorized by tribal law to regulate gaming conducted pursuant to the Indian Gaming Regulatory Act.

*Voucher.* A financial instrument of fixed wagering value, usually paper, that can only be used to acquire an equivalent value of cashable credits or cash through interaction with a voucher system.

*Voucher system.* A component of the Class II gaming system or an external system that securely maintains records of vouchers and coupons; validates payment of vouchers; records successful or failed payments of vouchers and coupons; and controls the purging of expired vouchers and coupons.

**§ 547.4 How does a tribal government, TGRA, or tribal gaming operation comply with this part?**

(a) *Limited immediate compliance.* A TGRA shall:

(1) Require that all Class II gaming system software that affects the play of the Class II game and were in operation prior to November 10, 2008 be submitted, together with the signature verification required by § 547.8(f), to a testing laboratory recognized pursuant to paragraph (f) of this section.

(2) Require that the testing laboratory test the submission to the standards established by § 547.8(b), § 547.8(f), § 547.14, § 547.5(c), and to any additional technical standards adopted by the TGRA;

(3) Require that the testing laboratory provide the TGRA with a formal written report setting forth and certifying to the findings and conclusions of the test;

(i) The testing laboratory's written report shall note the submission of any other compliance with applicable federal laws or regulations.

(ii) [Reserved]

(4) Make a finding, in the form of a certificate provided to the supplier or manufacturer of the Class II gaming system, that the Class II gaming system qualifies for grandfather status under the provisions of this section, but only upon receipt of a testing laboratory's report that the Class II gaming system is compliant with § 547.8(b), § 547.8(f), § 547.5(c), § 547.14, and any other technical standards adopted by the TGRA. If the TGRA does not issue the

certificate, or if the testing laboratory finds that the Class II gaming system is not compliant with § 547.8(b), § 547.8(f), § 547.5(c), § 547.14, or any other technical standards adopted by the TGRA, then the gaming system shall immediately be removed from play and not be utilized.

(5) Retain a copy of any testing laboratory's report so long as the Class II gaming system that is the subject of the report remains available to the public for play;

(6) Retain a copy of any certificate of grandfather status so long as the Class II gaming system that is the subject of the certificate remains available to the public for play; and

(7) Require the supplier of any player interface to designate with a permanently affixed label each player interface with an identifying number and the date of manufacture or a statement that the date of manufacture was on or before the effective date of this part. The TGRA shall also require the supplier to provide a written declaration or affidavit affirming that the date of manufacture was on or before November 10, 2008.

(b) *Grandfather provisions.* All Class II gaming systems manufactured or placed in a tribal facility on or before the effective date of this part and certified pursuant to paragraph (a) of this section are grandfathered Class II gaming systems for which the following provisions apply:

(1) Grandfathered Class II gaming system shall be available for use at any tribal gaming facility subject to approval by the TGRA, which shall transmit its notice of that approval, identifying the grandfathered Class II gaming system and its components, to the Commission.

(2) As permitted by the TGRA, individual hardware or software components of a grandfathered Class II gaming system may be repaired or replaced to ensure proper functioning, security, or integrity of the grandfathered Class II gaming system.

(3) All modifications that affect the play of a grandfathered Class II gaming system must be approved pursuant to paragraph (c) of this section, except for the following:

(i) Any software modifications that the TGRA finds will maintain or advance the system's overall compliance with this part or any applicable provisions of part 543 of this chapter, after receiving a new testing laboratory report

that the modifications are compliant with the standards established by § 547.8(b), § 547.5(c), § 547.14, and any other standards adopted by the TGRA;

(ii) Any hardware modifications that the TGRA finds will maintain or advance the system's overall compliance with this part or any applicable provisions of part 543 of this chapter; and

(iii) Any other modification to the software of a grandfathered Class II gaming system that the TGRA finds will not detract from, compromise or prejudice:

(A) The proper functioning, security, or integrity of the Class II gaming system, and

(B) The gaming system's overall compliance with the requirements of this part or any applicable provisions of part 543 of this chapter.

(iv) No such modification may be implemented without the approval of the TGRA. The TGRA shall maintain a record of the modification so long as the Class II gaming system that is the subject of the modification remains available to the public for play and shall make the record available to the Commission upon request. The Commission will only make available for public review records or portions of records subject to release under the Freedom of Information Act, 5 U.S.C. 552; the Privacy Act of 1974, 5 U.S.C. 552a; or the Indian Gaming Regulatory Act, 25 U.S.C. 2716(a).

(c) *Submission, testing, and approval – generally.* Except as provided in paragraphs (b) and (d) of this section, no TGRA shall permit in a tribal gaming operation the use of any Class II gaming system, or any associated cashless system or voucher system or any modification thereto, unless:

(1) The Class II gaming system, cashless system, voucher payment system, or modification has been submitted to a testing laboratory;

(2) A TGRA shall require a testing laboratory to test the submission to the standards established by:

(i) This part;

(ii) Any applicable provisions of part 543 of this chapter that are testable by the testing laboratory; and

(iii) The TGRA;

(3) The testing laboratory provides a formal written report to the party making the submission, setting forth and certifying to its findings and conclusions; and

(4)(i) Following receipt of the testing laboratory's report, the TGRA makes a finding that the Class II gaming system, cashless system, or voucher system conforms to the standards established by:

(A) This part;

(B) Any applicable provisions of part 543 of this chapter that are testable by the testing laboratory; and

(C) The TGRA.

(ii) The TGRA shall retain a copy of the testing laboratory's report so long as the Class II gaming system, cashless system, voucher system, or modification thereto that is the subject of the report remains available to the public for play in its gaming operation.

(d) *Emergency hardware and software modifications.*

(1) A TGRA, in its discretion, may permit modified hardware or software to be made available for play without prior laboratory testing or review if the modified hardware or software is:

(i) Necessary to correct a problem affecting the fairness, security, or integrity of a game or accounting system or any cashless system, or voucher system; or

(ii) Unrelated to game play, an accounting system, a cashless system, or a voucher system.

(2) If a TGRA authorizes new or modified software or hardware to be made available for play or use without prior testing laboratory review, the TGRA shall thereafter require the hardware or software manufacturer to:

(i) Immediately advise other users of the same hardware or software of the importance and availability of the update;

(ii) Immediately submit the new or modified hardware or software to a testing laboratory for testing and verification of compliance with this part and any applicable provisions of part 543 of this chapter that are testable by the testing laboratory; and

(iii) Immediately provide the TGRA with a software signature verification tool meeting the requirements of § 547.8(f) for any new or modified software.

(3) If a TGRA authorizes a software or hardware modification under this paragraph, it shall maintain a record of the modification and a copy of the testing laboratory report so long as the Class II gaming system that is the subject of the modification remains available to the public for play and shall make the record available to the Commission upon request. The Commission will only make available for public review records or portions of records subject to release under the Freedom of Information Act, 5 U.S.C. 552; the Privacy Act of 1974, 5 U.S.C. 552a; or the Indian Gaming Regulatory Act, 25 U.S.C. 2716(a).

(e) *Compliance by charitable gaming operations.* This part shall not apply to charitable gaming operations, provided that:

- (1) The tribal government determines that the organization sponsoring the gaming operation is a charitable organization;
  - (2) All proceeds of the charitable gaming operation are for the benefit of the charitable organization;
  - (3) The TGRA permits the charitable organization to be exempt from this part;
  - (4) The charitable gaming operation is operated wholly by the charitable organization's employees or volunteers;
- and

(5) The annual gross gaming revenue of the charitable gaming operation does not exceed \$1,000,000.

(f) *Testing laboratories.* (1) A testing laboratory may provide the examination, testing, evaluating and reporting functions required by this section provided that:

- (i) It demonstrates its integrity, independence and financial stability to the TGRA.
- (ii) It demonstrates its technical skill and capability to the TGRA.
- (iii) If the testing laboratory is owned or operated by the tribe, the testing laboratory must be independent from the manufacturer and gaming operator for whom it is providing the testing, evaluating, and reporting functions required by this section.
- (iv) The TGRA:

(A) Makes a suitability determination of the testing laboratory based upon standards no less stringent than those set out in §§ 533.6(b)(1)(ii) through (v) of this chapter and based upon no less information than that required by § 537.1 of this chapter, or

(B) Accepts, in its discretion, a determination of suitability for the testing laboratory made by any other gaming regulatory authority in the United States.

(v) After reviewing the suitability determination and the information provided by the testing laboratory, the TGRA determines that the testing laboratory is qualified to test and evaluate Class II gaming systems.

(2) The TGRA shall:

(i) Maintain a record of all determinations made pursuant to paragraphs (f)(1)(iii) and (f)(1)(iv) of this section for a minimum of three years and shall make the records available to the Commission upon request. The Commission will only make available for public review records or portions of records subject to release under the Freedom of Information Act, 5 U.S.C. 552; the Privacy Act of 1974, 5 U.S.C. 552a; or the Indian Gaming Regulatory Act, 25 U.S.C. 2716(a).

(ii) Place the testing laboratory under a continuing obligation to notify it of any adverse regulatory action in any jurisdiction where the testing laboratory conducts business.

(iii) Require the testing laboratory to provide notice of any material changes to the information provided to the TGRA.

#### **§ 547.5 What are the rules of interpretation and of general application for this part?**

(a) *Minimum standards.* A TGRA may establish and implement additional technical standards that are as stringent as, or more stringent than, those set out in this part.

(b) *Only applicable standards apply.* Gaming equipment and software used with Class II gaming systems shall meet all applicable requirements of this part. For example, if a Class II gaming system lacks the ability to print or accept vouchers, then any standards that govern vouchers do not apply.

(c) *Fairness*. No Class II gaming system shall cheat or mislead users. All prizes advertised shall be available to win during the game. Test laboratory shall calculate and/or verify the mathematical expectations of game play, where applicable, in accordance with the manufacturer stated submission. The results shall be included in the test laboratory's report to the TGRA.

(d) *Approved equipment and software only*. All gaming equipment and software used with Class II gaming systems shall be identical in all respects to a prototype reviewed and tested by a testing laboratory and approved for use by the TGRA pursuant to § 547.4(a) through (c). Unapproved software shall not be loaded onto or stored on any program storage medium used in a Class II gaming system, except as provided in § 547.4(d).

(e) *Proper functioning*. All gaming equipment and software used with Class II gaming systems shall perform according to the manufacturer's design and operating specifications.

(f) *No Limitation of Technology*. This part should not be interpreted to limit the use of technology or to preclude the use of technology not specifically referenced.

(g) *Severability*. If any provision of this part is declared invalid by a court of competent jurisdiction, such decision shall not affect the remainder of this part.

**§ 547.6 What are the minimum technical standards for enrolling and enabling Class II gaming system components?**

(a) *General requirements*. Class II gaming systems shall provide a method to:

- (1) Enroll and unenroll system components;
- (2) Enable and disable specific system components.

(b) *Specific requirements*. Class II gaming systems shall:

- (1) Ensure that only enrolled and enabled system components participate in gaming; and
- (2) Ensure that the default condition for components shall be unenrolled and disabled.

**§ 547.7 What are the minimum technical hardware standards applicable to Class II gaming systems?**

(a) *Printed circuit boards*.

(1) Printed circuit boards that have the potential to affect the outcome or integrity of the game, and are specially manufactured or proprietary and not off-the-shelf, shall display a unique identifier such as a part number and/or revision number, which shall be updated to reflect new revisions or modifications of the board.

(2) Switches or jumpers on all circuit boards that have the potential to affect the outcome or integrity of any game, progressive award, financial instrument, cashless transaction, voucher transaction, or accounting records shall be capable of being sealed.

(b) *Electrostatic discharge.* Class II gaming system components accessible to the public shall be constructed so that they exhibit immunity to human body electrostatic discharges on areas exposed to contact. Static discharges of  $\pm 15$  kV for air discharges and  $\pm 7.5$  kV for contact discharges may not cause damage, or inhibit operation or integrity of the Class II gaming system.

(c) *Physical enclosures.* Physical enclosures shall be of a robust construction designed to resist determined illegal entry. All protuberances and attachments such as buttons, identification plates, and labels shall be sufficiently robust to avoid unauthorized removal.

(d) *Player interface.* The player interface shall include a method or means to:

- (1) Display information to a player; and
- (2) Allow the player to interact with the Class II gaming system.

(e) *Account access components.* A Class II gaming system component that reads account access media shall be located within a secure, locked or tamper-evident area or in a cabinet or housing that is of a robust construction designed to resist determined illegal entry and to protect internal components. In addition, the account access component:

- (1) Shall be constructed so that physical tampering leaves evidence of such tampering; and
- (2) Shall provide a method to enable the Class II gaming system to interpret and act upon valid or invalid input or error condition.

(f) *Financial instrument storage components.* Any Class II gaming system components that store financial instruments and that are not designed to be operated under the direct control of a gaming operation employee or

agent shall be located within a secure and locked area or in a locked cabinet or housing that is of a robust construction designed to resist determined illegal entry and to protect internal components.

(g) *Financial instrument acceptors.* (1) Any Class II gaming system components that handle financial instruments and that are not designed to be operated under the direct control of an agent shall:

(i) Be located within a secure, locked and tamper-evident area or in a locked cabinet or housing that is of a robust construction designed to resist determined illegal entry and to protect internal components;

(ii) Be able to detect the entry of valid or invalid financial instruments and to provide a method to enable the Class II gaming system to interpret and act upon valid or invalid input or error condition; and

(iii) Be constructed to permit communication with the Class II gaming system of the accounting information required by § 547.9(a) and by applicable provisions of any Commission and tribal gaming regulatory regulations governing minimum internal control standards.

(2) Prior to completion of a valid financial instrument transaction by the Class II gaming system, no monetary amount related to that instrument shall be available for play. For example, credits shall not be available for play until currency or coupon inserted into an acceptor is secured in the storage component.

(3) The monetary amount related to all valid financial instrument transactions by the Class II gaming system shall be recorded as required by § 547.9(a) and the applicable provisions of any Commission and TGRA regulations governing minimum internal control standards.

(h) *Financial instrument dispensers.*

(1) Any Class II gaming system components that dispense financial instruments and that are not designed to be operated under the direct control of a gaming operation employee or agent shall:

(i) Be located within a secure, locked and tamper-evident area or in a locked cabinet or housing that is of a robust construction designed to resist determined illegal entry and to protect internal components;

(ii) Provide a method to enable the Class II gaming system to interpret and act upon valid or invalid input or error condition; and

(iii) Be constructed to permit communication with the Class II gaming system of the accounting information required by § 547.9(a) and by applicable provisions of any Commission and tribal gaming regulatory regulations governing minimum internal control standards.

(2) The monetary amount related to all valid financial instrument transactions by the Class II gaming system shall be recorded as required by § 547.9(a), the applicable provisions of part 543 of this chapter, and any TGRA regulations governing minimum internal control standards.

(i) *Game Outcome Determination Components.* Any Class II gaming system logic components that affect the game outcome and that are not designed to be operated under the direct control of a gaming operation employee or agent shall be located within a secure, locked and tamper-evident area or in a locked cabinet or housing that is of a robust construction designed to resist determined illegal entry and to protect internal components. DIP switches or jumpers that can affect the integrity of the Class II gaming system must be capable of being sealed by the TGRA.

(j) *Door access detection.* All components of the Class II gaming system that are locked in order to meet the requirements of this part shall include a sensor or other methods to monitor an open door. A door open sensor, and its components or cables, shall be secure against attempts to disable them or interfere with their normal mode of operation.

(k) *Separation of functions/no limitations on technology.* Nothing herein shall prohibit the account access component, financial instrument storage component, financial instrument acceptor, and financial instrument dispenser from being included within the same component, or separated into individual components.

#### **§ 547.8 What are the minimum technical software standards applicable to Class II gaming systems?**

This section provides general software standards for Class II gaming systems for the play of Class II games, including, where applicable, games similar to bingo.

(a) *Player interface displays.* (1) If not otherwise provided to the player, the player interface shall display the following:

(i) The purchase or wager amount;

(ii) Game results; and

(iii) Any player credit balance.

(2) Between plays of any game and until the start of the next play, or until the player selects a new game option such as purchase or wager amount or card selection, whichever is earlier, if not otherwise provided to the player, the player interface shall display:

(i) The total purchase or wager amount and all prizes and total credits won for the last game played;

(ii) The final results for the last game played; and

(iii) Any default purchase or wager amount for the next play.

(b) *Game initiation and play.* (1) Each game played on the Class II gaming system shall follow and not deviate from a constant set of rules for each game provided to players pursuant to § 547.16.

(2) The Class II gaming system shall not alter or allow to be altered the card permutations used for play of a Class II game unless specifically chosen by the player prior to commitment to participate in the game. No duplicate cards shall be sold for any common draw.

(3) No game play shall commence and, no financial instrument or credit shall be accepted on the affected player interface, in the presence of any fault condition that affects the outcome of the game, open door, or while in test, audit, or lock-up mode.

(4) The player must choose to participate in the play of a game.

(c) *Audit Mode.* (1) If an audit mode is provided, the Class II gaming system shall provide, for those components actively involved in the audit:

(i) All accounting functions required by § 547.9, by applicable provisions of any Commission regulations governing minimum internal control standards, and by any internal controls adopted by the tribe or TGRA;

(ii) Display player interface identification; and

(iii) Display software version or game identification;

(2) Audit mode shall be accessible by a secure method such as an employee or agent PIN, key or other auditable access control.

(3) Accounting function data shall be accessible by an agent at any time, except during a payout, during a handpay, or during play.

(4) The Class II gaming system shall disable financial instrument acceptance on the affected player interface while in audit mode, except during financial instrument acceptance testing.

(d) *Last bingo game play recall*. The last bingo game play recall function shall:

(1) Be retrievable at all times, other than when the recall component is involved in the play of a game, upon the operation of an external key-switch, entry of an audit card, or a similar method;

(2) Display the results of recalled bingo game play as originally displayed or in text representation so as to enable the TGRA or operator to clearly identify the bingo game play sequences and results that occurred;

(3) Allow the Class II gaming system component providing bingo game play recall, upon return to normal game play mode, to restore any affected display to the positions, forms and values displayed before access to the bingo game play recall information; and

(4) Provide the following information for the current and previous four bingo game plays and shall display:

(i) Play start time, end time, and date;

(ii) The total number of credits at the start of play;

(iii) The purchase or wager amount;

(iv) The total number of credits at the end of play; and

(v) The total number of credits won as a result of the bingo game play recalled, and the value in dollars and cents for progressive prizes, if different.

(vi) For bingo games and, where applicable, games similar to bingo, also display:

(A) The card(s) used by the player;

(B) The identifier of the game played;

(C) The numbers or other designations drawn, in the order that they were drawn;

(D) The numbers or other designations and prize patterns covered on each card;

(E) All prizes won by the player, including winning patterns, if any; and

(F) The unique identifier of the card on which prizes were won;

(vii) For pull-tab games only, also display:

(A) The result(s) of each pull-tab, displayed in the same pattern as on the tangible pull-tab;

(B) All prizes won by the player;

(C) The unique identifier of each pull tab; and

(D) Any other information necessary to fully reconstruct the current and four previous plays.

(e) *Voucher and credit transfer recall.* Notwithstanding the requirements of any other section in this part, a Class II gaming system shall have the capacity to:

(1) Display the information specified in § 547.11(b)(5)(ii) through (vi) for the last five vouchers or coupons printed and the last five vouchers or coupons accepted; and

(2) Display a complete transaction history for the last five cashless transactions made and the last five cashless transactions accepted.

(f) *Software signature verification.* The manufacturer or developer of the Class II gaming system must provide to the testing laboratory and to the TGRA an industry-standard methodology, acceptable to the TGRA, for verifying the Class II gaming system game software. By way of illustration, for game software stored on rewritable media, such methodologies include signature algorithms and hashing formulas such as SHA-1.

(g) *Test, diagnostic, and demonstration modes.* If test, diagnostic, and/or demonstration modes are provided, the Class II gaming system shall, for those components actively involved in the test, diagnostic, or demonstration mode:

(1) Clearly indicate when that component is in the test, diagnostic, or demonstration mode;

(2) Not alter financial data on that component other than temporary data;

(3) Only be available after entering a specific mode;

(4) Disable credit acceptance and payment unless credit acceptance or payment is being tested; and

(5) Terminate all mode-specific functions upon exiting a mode.

(h) *Multigame.* If multiple games are offered for player selection at the player interface, the player interface shall:

- (1) Provide a display of available games;
- (2) Provide the means of selecting among them;
- (3) Display the full amount of the player's credit balance;
- (4) Identify the game selected or being played; and
- (5) Not force the play of a game after its selection.

(i) *Program interruption and resumption.* The Class II gaming system software shall be designed so that upon resumption following any interruption, the system:

- (1) Is able to return to a known state;
- (2) Shall check for any fault condition upon resumption;
- (3) Shall verify the integrity of data stored in critical memory;
- (4) Shall return the purchase or wager amount to the player in accordance with the rules of the game; and
- (5) Shall detect any change or corruption in the Class II gaming system software.

(j) *Class II gaming system components acting as progressive controllers.* This paragraph applies to progressive controllers and components acting as progressive controllers in Class II gaming systems.

(1) Modification of progressive parameters shall be conducted in a secure manner approved by the TGRA. Such parameters may include:

- (i) Increment value;
- (ii) Secondary pool increment(s);
- (iii) Reset amount(s);
- (iv) Maximum value(s); and
- (v) Identity of participating player interfaces.

(2) The Class II gaming system component or other progressive controller shall provide a means of creating a progressive balancing report for each progressive link it controls. At a minimum, that report shall provide balancing of the changes of the progressive amount, including progressive prizes won, for all participating player interfaces

versus current progressive amount(s), plus progressive prizes. In addition, the report shall account for, and not be made inaccurate by, unusual events such as:

- (i) Class II gaming system critical memory clears;
- (ii) Modification, alteration, or deletion of progressive prizes;
- (iii) Offline equipment; or
- (iv) Multiple site progressive prizes.

(k) *Critical memory*. (1) Critical memory may be located anywhere within the Class II gaming system. Critical memory is any memory that maintains any of the following data:

- (i) Accounting data;
  - (ii) Current credits;
  - (iii) Configuration data;
  - (iv) Last game play recall information required by § 547.8(d);
  - (v) Game play recall information for the current game play, if incomplete;
  - (vi) Software state (the last normal state software was in before interruption);
  - (vii) RNG seed(s), if necessary for maintaining integrity;
  - (viii) Encryption keys, if necessary for maintaining integrity;
  - (ix) Progressive prize parameters and current values;
  - (x) The five most recent financial instruments accepted by type, excluding coins and tokens;
  - (xi) The five most recent financial instruments dispensed by type, excluding coins and tokens; and
  - (xii) The five most recent cashless transactions paid and the five most recent cashless transactions accepted.
- (2) Critical memory shall be maintained using a methodology that enables errors to be identified and acted upon.

All accounting and recall functions shall be verified as necessary to ensure their ongoing integrity.

- (3) The validity of affected data stored in critical memory shall be checked after each of the following events:
- (i) Every restart;
  - (ii) Each attendant paid win;

- (iii) Each attendant paid progressive win;
- (iv) Each sensed door closure; and
- (v) Every reconfiguration, download, or change of prize schedule or denomination requiring operator

intervention or action.

(l) Secured access. Class II gaming systems that use a logon or other means of secured access shall include a user account lockout after a predetermined number of consecutive failed attempts to access system.

**§ 547.9 What are the minimum technical standards for Class II gaming system accounting functions?**

This section provides standards for accounting functions used in Class II gaming systems.

(a) *Required accounting data.* The following minimum accounting data, however named, shall be maintained by the Class II gaming system.

(1) Amount In: The total value of all financial instruments and cashless transactions accepted by the Class II gaming system. Each type of financial instrument accepted by the Class II gaming system shall be tracked independently per financial instrument acceptor, and as required by applicable requirements of the TGRA regulations governing minimum internal control standards.

(2) Amount Out: The total value of all financial instruments and cashless transactions paid by the Class II gaming system, plus the total value of attendant pay. Each type of financial instrument paid by the Class II Gaming System shall be tracked independently per financial instrument dispenser, and as required by applicable requirements of the TGRA regulations governing minimum internal control standards.

(b) *Accounting data storage.* If the Class II gaming system electronically maintains accounting data:

(1) Accounting data shall be stored with at least eight decimal digits.

(2) Credit balances shall have sufficient digits to accommodate the design of the game.

(3) Accounting data displayed to the player may be incremented or decremented using visual effects, but the internal storage of this data shall be immediately updated in full.

(4) Accounting data shall be updated upon the occurrence of the relevant accounting event.

(5) Modifications to accounting data shall be recorded, including the identity of the person(s) making the modifications, and be reportable by the Class II gaming system.

(c) *Rollover.* Accounting data that rolls over to zero shall not corrupt data.

(d) *Credit balance display and function.* (1) Any credit balance maintained at the player interface shall be prominently displayed at all times except:

(i) In audit, configuration, recall and test modes; or

(ii) Temporarily, during entertaining displays of game results.

(2) Progressive prizes may be added to the player’s credit balance provided:

(i) The player credit balance is maintained in dollars and cents;

(ii) The progressive accounting data is incremented in number of credits; or

(iii) The prize in dollars and cents is converted to player credits or transferred to the player’s credit balance in a manner that does not mislead the player or cause accounting imbalances.

(3) If the player credit balance displays in credits, but the actual balance includes fractional credits, the Class II gaming system shall display the fractional credit when the player credit balance drops below one credit.

**§ 547.10 What are the minimum standards for Class II gaming system critical events?**

This section provides standards for events such as system critical faults, deactivation, door open or other changes of states, and lockup within the Class II gaming system.

(a) *Fault events.* (1) The following events are to be treated as described below:

Events	Definition and action to be taken
(i) Component fault	Reported when a fault on a component is detected. When possible, this event message should indicate what the nature of the fault is.
(ii) Financial storage component full	Reported when a financial instrument acceptor or dispenser includes storage, and it becomes full. This event message should indicate what financial storage component is full.
(iii) Financial output component empty	Reported when a financial instrument dispenser is empty. The event message should indicate which financial output component is affected, and whether it is empty.

(iv) Financial component fault	Reported when an occurrence on a financial component results in a known fault state.
(v) Critical memory error	Some critical memory error has occurred. When a non-correctable critical memory error has occurred, the data on the Class II gaming system component can no longer be considered reliable. Accordingly, any game play on the affected component shall cease immediately, and an appropriate message shall be displayed, if possible.
(vi) Progressive communication fault	If applicable; when communications with a progressive controller component is in a known fault state.
(vii) Program storage medium fault	<p>The software has failed its own internal security check or the medium itself has some fault.</p> <p>Any game play on the affected component shall cease immediately, and an appropriate message shall be displayed, if possible.</p>

(2) The occurrence of any event identified in paragraph (a)(1) of this section shall be recorded.

(3) Upon clearing any event identified in paragraph (a)(1) of this section, the Class II gaming system shall:

- (i) Record that the fault condition has been cleared;
- (ii) Ensure the integrity of all related accounting data; and
- (iii) In the case of a malfunction, return a player's purchase or wager according to the rules of the game.

(b) *Door open/close events.* (1) In addition to the requirements of paragraph (a)(1) of this section, the Class II gaming system shall perform the following for any component affected by any sensed door open event:

- (i) Indicate that the state of a sensed door changes from closed to open or opened to closed;
- (ii) Disable all financial instrument acceptance, unless a test mode is entered;
- (iii) Disable game play on the affected player interface;
- (iv) Disable player inputs on the affected player interface, unless test mode is entered; and
- (v) Disable all financial instrument disbursement, unless a test mode is entered.

(2) The Class II gaming system may return the component to a ready to play state when all sensed doors are closed.

(c) *Non-fault events.* (1) The following non-fault events are to be treated as described below, if applicable:

Events	Definition and action to be taken
(i) Player interface power off during play	This condition is reported by the affected component(s) to indicate power has been lost during game play.
(ii) Player interface power on	This condition is reported by the affected component(s) to indicate it has been turned on.
(iii) Financial instrument storage component container/ stacker removed	This condition is reported when a financial instrument storage container has been removed. The event message should indicate which storage container was removed.

**§ 547.11 What are the minimum technical standards for money and credit handling?**

This section provides standards for money and credit handling by a Class II gaming system.

(a) *Credit acceptance, generally.* (1) Upon any credit acceptance, the Class II gaming system shall register the correct number of credits on the player’s credit balance.

(2) The Class II gaming system shall reject financial instruments deemed invalid.

(b) *Credit redemption, generally.* (1) For cashable credits on a player interface, players shall be allowed to cash out and/or redeem those credits at the player interface except when that player interface is:

- (i) Involved in the play of a game;
- (ii) In audit mode, recall mode or any test mode;
- (iii) Detecting any sensed door open condition;
- (iv) Updating the player credit balance or total win accounting data; or
- (v) Displaying a fault condition that would prevent cash-out or credit redemption. In this case a fault indication shall be displayed.

(2) For cashable credits not on a player interface, the player shall be allowed to cash out and/or redeem those credits at any time.

(3) A Class II gaming system shall not automatically pay an award subject to mandatory tax reporting or withholding.

(4) Credit redemption by voucher or coupon shall conform to the following:

(i) A Class II gaming system may redeem credits by issuing a voucher or coupon when it communicates with a voucher system that validates the voucher or coupon.

(ii) A Class II gaming system that redeems credits by issuing vouchers and coupons shall either:

(A) Maintain an electronic record of all information required by paragraphs (b)(5)(ii) through (vi) of this section;

or

(B) Generate two identical copies of each voucher or coupon issued, one to be provided to the player and the other to be retained within the machine for audit purposes.

(5) Valid vouchers and coupons shall contain the following:

(i) Gaming operation name and location;

(ii) The identification number of the Class II gaming system component or the player interface number, as applicable;

(iii) Date and time of issuance;

(iv) Alpha and numeric dollar amount;

(v) A sequence number;

(vi) A validation number that:

(A) Is produced by a means specifically designed to prevent repetition of validation numbers; and

(B) Has some form of checkcode or other form of information redundancy to prevent prediction of subsequent validation numbers without knowledge of the checkcode algorithm and parameters;

(vii) For machine-readable vouchers and coupons, a bar code or other form of machine readable representation of the validation number, which shall have enough redundancy and error checking to ensure that 99.9% of all misreads are flagged as errors;

(viii) Transaction type or other method of differentiating voucher and coupon types; and

(ix) Expiration period or date.

(6) Transfers from an account may not exceed the balance of that account.

(7) For Class II gaming systems not using dollars and cents accounting and not having odd cents accounting, the Class II gaming system shall reject any transfers from voucher payment systems or cashless systems that are not even multiples of the Class II gaming system denomination.

(8) Voucher redemption systems shall include the ability to report redemptions per redemption location or user.

**§ 547.12 What are the minimum technical standards for downloading on a Class II gaming system?**

This section provides standards for downloading on a Class II gaming system.

(a) *Downloads.* (1) Downloads are an acceptable means of transporting approved content, including but not limited to software, files, data, and prize schedules.

(2) Downloads of software, games, prize schedules, or other download packages shall be conducted only as authorized by the TGRA.

(3) Downloads shall use secure methodologies that will deliver the download data without alteration or modification, in accordance with § 547.15(a).

(4) Downloads conducted during operational periods shall be performed in a manner that will not affect game play.

(5) Downloads shall not affect the integrity of accounting data.

(6) The Class II gaming system or the TGRA shall log each download of any download package. Each log record shall contain as a minimum:

(i) The time and date of the initiation of the download;

(ii) The time and date of the completion of the download;

(iii) The Class II gaming system components to which software was downloaded;

(iv) The version(s) of download package and any software downloaded. Logging of the unique software signature will satisfy this requirement;

(v) The outcome of any software verification following the download (success or failure); and

(vi) The name and identification number, or other unique identifier, of any individual(s) conducting or scheduling a download.

(b) *Verifying downloads.* Downloaded software on a Class II gaming system shall be verified by the Class II gaming system using a software signature verification method that meets the requirements of § 547.8(f).

### **§ 547.13 What are the minimum technical standards for program storage media?**

This section provides minimum standards for removable, (re-)writable, and nonwritable storage media in Class II gaming systems.

(a) *Removable program storage media.* All removable program storage media shall maintain an internal checksum or signature of its contents. Verification of this checksum or signature is to be performed after every restart. If the verification fails, the affected Class II gaming system component(s) shall lock up and enter a fault state.

(b) *Nonrewritable program storage media.* (1) All EPROMs and Programmable Logic Devices (PLDs) that have erasure windows shall be fitted with covers over their erasure windows.

(2) All unused areas of EPROMs shall be written with the inverse of the erased state (*e.g.*, zero bits (00 hex) for most EPROMs), random data, or repeats of the program data.

(3) Flash memory storage components intended to have the same logical function as ROM, *i.e.* not to be dynamically written, shall be write-protected or otherwise protected from unauthorized modification.

(4) The write cycle shall be closed or finished for all CD-ROMs such that it is not possible to write any further data to the CD.

(5) Write protected hard disks are permitted if the hardware means of enabling the write protect is easily viewable and can be sealed in place. Write protected hard disks are permitted using software write protection verifiable by a testing laboratory.

(c) *Writable and rewritable program storage media.* (1) Writable and rewritable program storage, such as hard disk drives, Flash memory, writable CD-ROMs, and writable DVDs, may be used provided that the software stored thereon may be verified using the mechanism provided pursuant to § 547.8(f).

(2) Program storage shall be structured so there is a verifiable separation of fixed data (*e.g.* program, fixed parameters, DLLs) and variable data.

(d) *Identification of program storage media.* All program storage media that is not rewritable in circuit, (*e.g.* EPROM, CD-ROM) shall be uniquely identified, displaying:

- (1) Manufacturer;
- (2) Program identifier;
- (3) Program version number(s); and
- (4) Location information, if critical (*e.g.* socket position 3 on the printed circuit board).

**§ 547.14 What are the minimum technical standards for electronic random number generation?**

This section provides minimum standards for electronic RNGs in Class II gaming systems.

(a) *Properties.* All RNGs shall produce output having the following properties:

- (1) Statistical randomness;
- (2) Unpredictability; and
- (3) Non-repeatability.

(b) *Statistical Randomness.* (1) Numbers or other designations produced by an RNG shall be statistically random individually and in the permutations and combinations used in the application under the rules of the game. For example, if a bingo game with 75 objects with numbers or other designations has a progressive winning pattern of the five numbers or other designations on the bottom of the card and the winning of this prize is defined to be the five numbers or other designations are matched in the first five objects drawn, the likelihood of each of the 75C5 combinations are to be verified to be statistically equal.

(2) Numbers or other designations produced by an RNG shall pass the statistical tests for randomness to a 99% confidence level.

(i) Mandatory statistical tests for randomness to include:

- (A) Chi-square test;

(B) Runs test (patterns of occurrences shall not be recurrent); and

(C) Serial correlation test potency and degree of serial correlation (outcomes shall be independent from the previous game).

(ii) Optional statistical tests for randomness may include:

(A) Equi-distribution (frequency) test;

(B) Gap test;

(C) Poker test;

(D) Coupon collector's test;

(E) Permutation test;

(F) Spectral test; or

(G) Test on subsequences.

(c) *Unpredictability*. (1) It shall not be feasible to predict future outputs of an RNG, even if the algorithm and the past sequence of outputs are known.

(2) Unpredictability shall be ensured by reseeding or by continuously cycling the RNG, and by providing a sufficient number of RNG states for the applications supported.

(3) Re-seeding may be used where the re-seeding input is at least as statistically random as, and independent of, the output of the RNG being re-seeded.

(d) *Non-repeatability*. The RNG shall not be initialized to reproduce the same output stream that it has produced before, nor shall any two instances of an RNG produce the same stream as each other. This property shall be ensured by initial seeding that comes from:

(1) A source of "true" randomness, such as a hardware random noise generator; or

(2) A combination of timestamps, parameters unique to a Class II gaming system, previous RNG outputs, or other, similar method.

(e) *General requirements*. (1) Software that calls an RNG to derive game outcome events shall immediately use the output returned in accordance with the game rules.

(2) The use of multiple RNGs is permitted as long as they operate in accordance with this section.

(3) RNG outputs shall not be arbitrarily discarded or selected.

(4) Where a sequence of outputs is required, the whole of the sequence in the order generated shall be used in accordance with the game rules.

(5) The Class II gaming system shall neither adjust the RNG process or game outcomes based on the history of prizes obtained in previous games nor use any reflexive software or secondary decision that affects the results shown to the player or game outcome. In no event shall the Class II gaming system deprive a player of a prize to which the player is otherwise entitled based on the random outcome of the game. Nothing in this paragraph shall prohibit the use of entertaining displays.

(f) *Scaling algorithms and scaled numbers.* An RNG that provides output scaled to given ranges shall:

(1) Be independent and uniform over the range;

(2) Provide numbers scaled to the ranges required by game rules, and notwithstanding the requirements of paragraph (e)(3) of this section, may discard numbers that do not map uniformly onto the required range but shall use the first number in sequence that does map correctly to the range; and

(3) Be capable of producing every possible outcome of a game according to its rules.

**§ 547.15 What are the minimum technical standards for electronic data communications between system components?**

This section provides minimum standards for electronic data communications with gaming equipment or components used with Class II gaming systems.

(a) *Sensitive data.* Communication of sensitive data shall be secure from eavesdropping, access, tampering, intrusion or alteration unauthorized by the TGRA. Sensitive data shall include, but not be limited to:

(1) RNG seeds and outcomes;

(2) Encryption keys, where the implementation chosen requires transmission of keys;

(3) PINs;

- (4) Passwords;
- (5) Financial instrument transactions;
- (6) Transfers of funds;
- (7) Player tracking information;
- (8) Download Packages; and
- (9) Any information that affects game outcome.

(b) *Wireless communications.* (1) Wireless access points shall not be accessible to the general public.

(2) Open or unsecured wireless communications are prohibited.

(3) Wireless communications shall be secured using a methodology that makes eavesdropping, access, tampering, intrusion or alteration impractical. By way of illustration, such methodologies include encryption, frequency hopping, and code division multiplex access (as in cell phone technology).

(c) Methodologies shall be used that will ensure the reliable transfer of data and provide a reasonable ability to detect and act upon any corruption of the data.

(d) Class II gaming systems shall record detectable, unauthorized access or intrusion attempts.

(e) Remote communications shall only be allowed if authorized by the TGRA. Class II gaming systems shall have the ability to enable or disable remote access, and the default state shall be set to disabled.

(f) Failure of data communications shall not affect the integrity of critical memory.

(g) The Class II gaming system shall log the establishment, loss, and re-establishment of data communications between sensitive Class II gaming system components.

#### **§ 547.16 What are the minimum standards for game artwork, glass, and rules?**

This section provides standards for the display of game artwork, the displays on belly or top glass, and the display and disclosure of game rules, whether in physical or electronic form.

(a) *Rules, instructions, and prize schedules, generally.* The following shall at all times be displayed or made readily available to the player upon request:

- (1) Game name, rules, and options such as the purchase or wager amount stated clearly and unambiguously;
- (2) Denomination;
- (3) Instructions for play on, and use of, the player interface, including the functions of all buttons; and
- (4) A prize schedule or other explanation, sufficient to allow a player to determine the correctness of all prizes

awarded, including;

- (i) The range and values obtainable for any variable prize;
- (ii) Whether the value of a prize depends on the purchase or wager amount; and
- (iii) The means of division of any pari-mutuel prizes; but
- (iv) For Class II Gaming Systems, the prize schedule or other explanation need not state that subsets of winning

patterns are not awarded as additional prizes (*e.g.* five in a row does not also pay three in a row or four in a row), unless there are exceptions, which shall be clearly stated.

(b) *Disclaimers*. The Class II gaming system shall continually display:

- (1) “Malfunctions void all prizes and plays” or equivalent; and
- (2) “Actual Prizes Determined by Bingo [or other applicable Class II game] Play. Other Displays for

Entertainment Only.” or equivalent.

**§ 547.17 How does a gaming operation apply for a variance from the standards of this part?**

(a) Variance.

(1) Should a TGRA grant a variance to any provision of these standards, the TGRA shall deliver a notice of the same to the Commission within ten (10) days of such approval.

(i) The notice shall contain a complete copy of the information presented to the TGRA and the variance as granted.

(ii) The notice shall be forwarded to the Commission within ten (10) days of the granting of the Variance.

(2) During a thirty (30) day period when the Commission first receives the notice required by this subpart, the Chairman may request additional information from the TGRA concerning the subject of variance. Such request shall suspend the thirty (30) day period until the Chairman receives the TGRA response.

(b) Commission Review.

(1) Within the thirty (30) day review period, the Commission may:

(i) Advise the TGRA, in writing, that it has no objection.

(ii) Provide the TGRA a written statement itemizing its objections.

(iii) Take no action, in which case, the TGRA's variance shall be final.

(2) If the Commission has provided the TGRA a statement itemizing objections to the variance:

(i) The TGRA shall reconsider the variance taking into account the objections itemized by the Commission.

(ii) The TGRA may seek reconsideration by submitting a request to the Chairman and members of the Commission.

(iii) Upon receipt of a request for reconsideration, the Commission shall conduct an informal hearing with the TGRA within 30 days, which may be conducted in person or through the exchange of documents, as requested by the TGRA.

(iv) After the informal hearing, the Commission must issue a written decision within 14 days. If the Commission disapproves the variance, such written decision must include an explanation of why the requested variance creates an imminent threat to the integrity of the tribal gaming operation.