BETTING, GAMING & LOTTERIES COMMISSION

TECHNICAL STANDARDS SERIES

BGLC1:

Gaming Devices in Gaming Establishments

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ABOUT THIS STANDARD

This Standard has been produced by the **Betting, Gaming and Lotteries Commission (hereafter** 'BGLC' or 'Commission') for the purpose of an approved testing laboratory conducting tests and providing independent certifications to suppliers where the requirements set forth herein under this Standard are complied with.

A supplier should submit equipment with a request to an approved testing laboratory that it be certified in accordance with this Standard. Upon certification from such an approved testing laboratory, the Betting, Gaming and Lotteries Commission will provide a certificate of compliance evidencing the certification to this Standard.

BGLC acknowledges with thanks the assistance provided by Gaming Laboratories International in the development of these Standards. The Standards are themselves the results of best practices adopted by Regulators from several jurisdictions involved in gaming regulation.

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CHAPTER 1

1.0 STANDARDS FOR GAMING DEVICES

1.1   Purpose of Technical Standards

1.1.1   Purpose. The Purpose of this Technical Standard is as follows:

a) To eliminate subjective criteria in analyzing and certifying gaming device operation.

b) To only test those criteria that impact the credibility and integrity of gaming device gaming from both the Revenue Collection and Player's play point of view.

c) To create a standard that will ensure that gaming devices in Casinos are fair, secure, and able to be audited and operated correctly.

d) 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.

e) To construct a standard that can be easily changed or modified to allow for new technology.

f) 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.

1.1.2   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.

1.2   Other Documents That May Apply

1.2.1   *Other Standards*. This standard covers the actual requirements for single player gaming devices in casinos. The following other standards may apply:

a) BGLC-2 Progressive Gaming Devices in Gaming Establishments;

b) BGLC-2 On-Line Monitoring and Control Systems (MCS) and Validation Systems in Gaming Establishments;

c) BGLC-6 Cashless Systems in Gaming Establishments;

d) BGLC-7 Bonusing Systems in Gaming Establishments;

e) BGLC-8 Promotional Systems in Casinos;

f) BGLC-10 Redemption Terminals; and

g) BGLC-11 Game Download System Series Game Download System – LAN.

These and other standards are in the process of being developed and will be published when completed.

1.3   Definition of a Gaming Device

1.3.1   General Statement.   A gaming device at a minimum will contain embodiment of randomness in determination of prizes, contain some form of activation to initiate the selection process, and contain a methodology for delivery of the determined outcome. The gaming device may be separated in parts, where some may be within or outside the Gaming Device (e.g., gaming devices that function with a system).

CHAPTER 2
2.0   SUBMISSION REQUIREMENTS

2.1   Introduction

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

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

Note: This Standard does not address submission requirements information for other gaming components, such as central monitoring systems and their components or linked progressive controllers.

2.2   Prototype (Full Submission) Submissions

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

a) <u>Submission Letter</u>. Each submission shall include a request letter, on company letterhead and signed by the appropriate person, dated within one (1) week of the date the submission is received by the test laboratory. The letter should include the following:

    i   The jurisdiction(s) for which you are requesting certification;

    ii   The items requested for certification. In the case of software, the submitting party shall include ID numbers and revision levels, if applicable. In the case of hardware, the submitting party shall indicate the manufacturer, supplier, and model number of the associated components of hardware; and

    iii A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

b) Software Utilities and Hardware: The manufacturer shall submit all hardware and software necessary for the collection of random data. It is highly recommended that RNG applications run on the identical hardware as will be used in the field environment. If this is not possible, please contact the laboratory prior to submission to discuss the collection method.

c) Source Code and Compilers: The manufacturer shall submit all source code and requisite materials necessary to compile the RNG application and obtain an identical version of the Programme that was submitted for testing. If this is not possible, please contact the laboratory prior to submission to discuss the compilation method.

d) Game Rules: Game parameters and rules including the number of selections within one game or draw, range and if the numbers are drawn with or without replacement, for example Keno, 20 numbers drawn from 1 through 80 without replacement;

e) RNG: A description of the RNG including seeding method, frequency and size of the seed, all key functions involved in the RNG process, and type and location of the RNG algorithm that is used. Also include an explanation of any differences between how the data is drawn for the test application and the production application.

f) Change List: A documented list of changes that have been made to the Programme since the last version that was submitted for the jurisdiction;

g) Software Signatures Laboratory Verify signatures or equivalent

h) Hardware: All hardware requirements and specifications, including pictures, schematics, and layout drawings;

i) Testing expectations;

j) Billing expectations; and

k) Intended recipients of RNG report.

2.2.2. Submission Media The manufacturer shall submit all of the above software and documentation on a physical CD, DVD or other suitable media with every submission. All additional documentation submitted via e-mail must be followed-up by a copy on CD or DVD. A secure, fully electronic submission method is acceptable with the concurrence of the laboratory.

2.2.3. RNG Implementation The application used to generate the random data must be as close to the final production application as possible with regard to the RNG implementation. Therefore, it should use the identical function(s), calls, variable, scaling methodology, etc, as the production software.   The manufacturer shall disclose any differences between the test application and production application.

Please note that for games that draw numbers from a very large range, it may take a significant amount of time to generate the data.

a) The RNG test software must be capable of generating data for any type of game that the manufacturer intends to submit.

b) The data may be collected using any suitable method pursuant to the guidelines herein. There are no specific requirements on the actual method that is used provided that it does not impact the actual RNG generation. Therefore, the data can be written to a hard drive or other media storage device or it can be collected by an auxiliary utility that is communicating with the application. Source code and a compiler must be supplied for any auxiliary utilities as well.

c) The RNG test software must allow the tester to specify the number of games or draws that will be collected. Typically, this value will be 3000 multiplied by the size of the range. For example, since the range for Keno is 1 through 80, 240,000 games or draws would be collected.

d) The data must be in an ASCII text file with one play or draw per line, including any bonus numbers. In the case where there may be a variable amount of numbers or selections as in the case with most card games, the maximum amount of numbers that could possibly be

drawn or selected must be provided. Please see the table below for common games. It is highly recommended to contact the laboratory prior to submission to confirm the parameters and the format of the data file. Each number must be separated by a space without any leading zeroes or additional characters. The data must be unsorted.

It is also recommended to submit a small data sample ahead of the primary submission to verify the format of the data.

Game Name	Selections	Range
Keno	20	1-80
Bingo	75	1-75
5 card draw poker	10	1-52

2.3 Machine or Hardware Submission Requirements – Prototype (Full Submission) Certification

2.3.1 *Presentation Of Equipment To The Test Laboratory; Identical Equipment*. Each item of gaming equipment supplied by a manufacturer to the field shall be functionally identical to the specimen tested and certified. For example, a gaming device supplied as a certified device shall not have different internal wiring, components, firmware, circuit boards, circuit board track cuts or circuit board patch wires from the certified specimen, unless that change is also certified, see also 'Submissions of Modifications (partial submissions) to a Previously Certified Item,' Section 2.7.'

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

a) If applicable, all UL, CSA, CE, AS3100, etc. or equivalent certification, see also 'Machine and Player Safety,' Section 3.2. This certification information may be supplied at a later date;
b) Any other equipment that may be used in the field in conjunction with the Submission;
c) Accompanying software, see also 'Software Submission Requirements', Section 2.5;

d) If the submitting party has specialized equipment which is needed by the test laboratory to test the submitted device, then the specialized equipment and all appropriate operation manuals for the equipment shall be included with the submission; and

e) If requested, extension cables for door photo-optic detectors and any other hardware should be provided, so that the machine may be tested with doors opened. In addition, where a processor board is oriented in a machine in such a way that it would be difficult to install a plug and cable from an emulator, extension cables should be provided to allow the board to be re-located. The use of such extension cables shall not adversely affect the machine's operation.

2.4 Software Submission Requirements – Prototype (Full Submission) Certification

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

a) Two sets of all EPROMs, CD-ROMs, or other storage media which contain identical contents. This includes all video, sound, printer, touchscreen, bill validator, card reader, RAM Clear, and game software. Where the test laboratory already has tested a software component, resubmission may not be necessary;

b) Percentage calculation sheets;

c) A written Statement of Verification that a previously certified random number generator is used within the submitted software;

d) A legible, color copy of the Payglass (if applicable);

e) Source Code, a Link Map and Symbol Table. In addition, if requested, explanation of all non-volatile RAM on the device with the non-volatile RAM locations described;

f) A manual explaining all diagnostic tests, meters, game configurations, error conditions and how to clear them;

g) RAM Clear procedures;

h) A general overview of the system, describing how the software and hardware are integrated, if required;

i) Programme block diagrams and flow charts for the game Programme, if required; and

j) For all software involved in control of gaming functions, provide an assembler, linker, formatter, or other computing utilities as is necessary to generate the installed gaming

software from the source code supplied. This requirement may be waived where Programme code is written in assembler and the listing file (showing the assembled and link code) is provided. If a non-PC-based platform development system is used, the manufacturer shall supply the test laboratory with the necessary computer equipment and software necessary to compile and verify the final executable Programme.

k) The manufacturer shall supply the test laboratory with all critical memory allocation addresses including how critical memory is checked and when it is checked. The methodology for critical memory checks must detect all RAM errors. In the case of a RAM error, the player's credits should be displayed to avoid player disputes.

l) The manufacturer shall supply the test laboratory the ability to download RAM in order to review the RAM data contents for cases where a forensic investigation is required. In addition, the manufacturer shall supply a method, which will allow the test laboratory to upload a copy of the RAM to another logic board populated with identical control Programme components. Upon the completion of this procedure the new logic board should allow the gaming device to reproduce the last known game state that was present on the submitted forensic logic board.

Note: In some cases, the test laboratory may have the wording on the payglass or game graphics translated to the English language or have the manufacturer supply an independent translator.

2.5   Software Programming Requirements and Compilation

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

a) Module Name;

b) Brief description of module function; and

c) Edit History, including who modified it, when and why.

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

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

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

2.6   Programme Storage Medium Identification

2.6.1 *General Statement* On the Programme medium that is submitted and subsequently placed in the field, where applicable, each Programme shall be uniquely identified, displaying:

a) Programme ID number;

b) Manufacturer;

c) Version number;

d) Type and size of medium (unless located on the medium as purchased unused from the supplier); and

e) Location of installation in gaming device, if potentially confusing.

Note: For EPROM based games, the identification label shall be placed over the UV window to avoid erasing or alterations of the Programme.

2.7   Submissions of Modifications (Partial Submissions) to a Previously Certified Item

2.7.1 *General Statement* For any update submission (e.g., a revision to an existing hardware or software that is currently under review, certified or has been reviewed and not certified), the following information shall be required to process the submission in addition to the requirements set forth in 'Submission Letter,' Section 2.2.1. This process is intended to speed the administrative burden of modification submissions. All modifications require re-testing, examination, and re-certification by the test laboratory.

2.7.2 *Modification of Hardware* Each hardware submission shall:

a) Identify the individual items being submitted (including part number);

b) Supply a complete set of schematics, diagrams, data sheets, etc. describing the modification along with the reason for the change(s); and

c) Provide the updated or new device, a description and the method of connection to the original gaming device or hardware.

2.7.3 Modification of Main Software Functions or to Correct Software Error The submitter should use the same requirements as in the 'Software Submission Requirements – Prototype (Full Submission) Certification' Section listed above, except where the documentation has not changed. In this case, a resubmission of identical documents is not required. (e.g., if the paytable and mathematics of the game are not changed, the submitting party may refer to previous documentation). However, the submission must include a description of the software change(s), modules affected and new source code for the entire Programme. Source code is required for the entire Programme to check compile and source code integrity.

2.7.4 Software Submission - Modification to Create New Game Personality For a game specific submission (e.g., a new game or a new game personality), the following information may be required to process the submission:

a) A complete description of the game, including documents that individually or collectively indicate the following:

    i. For Reel Games:
        A. The number of reels;
        B. The number of lines and description of each line;
        C. The maximum credits per line;
        D. All payglasses which show any game rules or paytable information;
        E. A list of each winning combination along with the pay amount and hits for each prize;
        F. A listing of the logical reel strips, indicating the exact symbols' sequence, if applicable;
        G. A listing of the physical reel strips, and the method of implementation used to obtain the virtual reel strips, if applicable;
        H. A summary of each symbols frequency, if applicable;

    I. A table to cross-reference each symbol type against the abbreviation, if abbreviations are used;

    J. For games that use technologies other than physical mapping or virtual reel mapping, a detailed description of the relationship and steps between the time the RNG value is determined and the symbol is selected and the relative odds of each symbol being selected via the method;

    K. The denomination; and

    L. The minimum and maximum bet.

  ii. For Blackjack Games:

    A. Dealer rules;

    B. Double-down rules;

    C. Pair-splitting rules.

    D. Insurance/surrender rules;

    E. Existence of any side bets;

    F. The denomination; and

    G. The minimum and maximum bet.

  iii. Poker Games:

    A. Poker style (e.g., Draw, Stud, etc.);

    B. Special rules (e.g., Wild Cards, etc.);

    C. Auto holding;

    D. Existence of any side bets;

    E. Any mathematical work indicating the payback return when using optimum play strategy, if applicable;

    F. The denomination; and

    G. The minimum and maximum bet.

  iv. Keno/Bingo Games:

    A. Number of balls/spots that can be selected;

    B. Number of balls drawn;

    C. Special rules (e.g., Wild Cards, etc.);

    D. The denomination; and

    E. The minimum and maximum bet.

  v. Craps Games:

    A. Odds for each spot;

    B. Number of player stations utilized with the game;

    C. Time frame (if any) for betting; and

    D. The minimum and maximum bet.

  vi. Roulette Games:

    A. Number of spots (use of '00' or not);

    B. Number of player stations utilized with the game;

    C. Time frame (if any) for betting; and

    D. The minimum and maximum bet.

2.8 Calculation Sheets

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

2.9 Player Options

2.10.1 ***General Statement*** Where different player options (e.g., number of credits bet) vary the paytable, a separate calculation for each option is required.

2.10 Player Strategy

2.10.1 ***General Statement*** Where a game requires or allows use of a player strategy that can affect the outcome of the game and the continuing actual player return, the manufacturer shall list the assumed player strategy used in the theoretical calculations of the player return and the source of said strategy. If the manufacturer fails to provide this information, the test laboratory will calculate the outcome prior to approval.

2.10.2 ***Field Results*** For games with player strategy, if available, actual game return statistics from development laboratories or field trials of the game in other jurisdictions shall be submitted.

2.11   Joint Venture Submissions

2.11.1 ***General Statement*** A gaming device is considered a joint venture when two or more companies are involved in the manufacturing of one platform. Due to the increasing number of joint venture submissions (more than one supplier involved in a product submission) and to alleviate any confusion to the suppliers and our the Laboratory, the Commission has set forth the following procedures for such submissions.

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

b) The company submitting an approval request should do so on their letterhead. The testing laboratory will delegate an internal file number in this company's name and will bill this company for all costs incurred throughout the approval process.

c) The primary contact will be called when questions arise. However, the testing laboratory engineers will work with all parties involved in order to complete the review.

d) All suppliers who are part of the submission "group" may need to be licensed or approved in Jamaica where the submission is expected to approved. As a courtesy to the supplier, the testing laboratory may inquire as to whom does not need to be licensed by the Commission. It should be noted that licensing questions should be handled directly with BGLC.

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

CHAPTER 3

3.0 MACHINE REQUIREMENTS – HARDWARE

3.1   Physical Security

3.1.1 <u>***General Statement***</u> A gaming device shall be robust enough to resist forced illegal entry.

3.2   Machine and Player Safety

3.2.1 <u>***General Statement***</u> Electrical and mechanical parts and design principals of the gaming device may not subject a player to any physical hazards. The gaming test laboratory shall NOT make any finding with regard to Safety and Electromagnetic Compatibility (EMC) testing, as that is the responsibility of the manufacturer of the goods or those that purchase the goods. Such Safety and EMC testing may be required under separate statute, regulation, law, or Act and should be researched accordingly, by those parties who manufacture or purchase said devices. The Gaming Test Laboratories shall not test for, be liable for, nor make a finding relating to these matters.

3.3   Environmental Effects on Game Integrity

3.3.1 <u>***Game Integrity Standard***</u>.   The Testing 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 the approved testing laboratory During the course of testing, the testing laboratory inspects for marks or symbols indicating that a device has undergone product safety compliance testing. The testing laboratory 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 Gaming Devices. Compliance to any such regulations related to the aforementioned testing is the sole responsibility of the device manufacturer. The testing

laboratory will claim no liability and will make no representations with respect to such non-gaming testing. The actual data showing the tests performed and the excluded tests are available upon written request to the testing laboratory.

A gaming device shall be able to withstand the following tests, resuming game play without operator intervention:

a) <u>Random Number Generator</u> 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) <u>Electro-Static Interference</u>. Protection against static discharges requires that the machine's conductive cabinets be earthed in such a way that static discharge energy shall not damage, or inhibit the normal operation of the electronics or other components within the gaming device.   Gaming devices 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 data information associated with the gaming device. The tests will be conducted with a severity level of a minimum of 27KV air discharge.

3.4   Hardware Requirements-Other

3.4.1   General Statement Each gaming device shall meet the following hardware requirements:

a) <u>Microprocessor Controlled</u> Be controlled by one (1) or more microprocessors or the equivalent in such a manner that the game outcome is completely controlled by the microprocessor or a mechanical device, as approved in Section 4.3, 'Mechanical and Electro-Mechanical Random Number Generators (RNG) Requirements';

b) <u>On/Off Switch</u> An on/off switch that controls the electrical current shall be located in a place which is readily accessible within the interior of the machine so that power cannot be disconnected from outside of the machine using the on/off switch. The on/off positions of the switch shall be labeled; and

c) <u>Temperature and Humidity</u> Gaming devices can be expected to operate in a variety of extreme environments. In the event that the designed operational parameters of a gaming device are exceeded, the machine, if incapable of continued proper operation, shall perform an orderly shutdown without loss of game status, accounting, and security event data. The

manufacturer should supply any documentation if the device has had temperature and humidity testing against any recognized standard.

3.5   Cabinet Wiring

3.5.1   General Statement The gaming device shall be designed so that power and data cables into and out of the gaming device can be routed so that they are not accessible to the general public. This is for game integrity reasons only, not for health and safety. Security-related wires and cables that are routed into a logic area shall not be able to be easily removed.

Note: The Laboratory will make no determination as to whether the machine installation conforms to local electrical codes, standards and practices.

3.6   Machine Identification

3.6.1   General Statement A gaming device shall have a not easily removable, without leaving evidence of tampering, identification badge, permanently affixed to the exterior of the cabinet by the manufacturer, and this badge shall include the following information:

a) The manufacturer;
b) A unique serial number;
c) The gaming device model number; and
d) The date of manufacture.

3.7   Tower Light

3.7.1   General Statement The gaming device shall have a light located conspicuously on top of the gaming device that automatically illuminates when a player has won an amount or is redeeming credits that the machine cannot automatically pay, an error condition has occurred (including 'Door Open'), or a 'Call Attendant' condition has been initiated by the player. For games such as the 'bar-top style', it is permissible for the tower light to be shared among other machines or be substituted by an audible alarm.

Note: The Laboratory will make no determination as to the required number of tower lights or to their color, relative position to one another, or their flash sequence.

3.8   Manipulation of Power Supply

3.8.1 Surges The machine shall not be adversely affected, other than resets, by surges or dips of ± 20% of the supply voltage.

Note: It is acceptable for the equipment to reset provided no damage to the equipment or loss or corruption of data is experienced in the field. Upon reset the game must return to its previous state. It is acceptable for the game to return to a game completion state provided the game history and all credit and accounting meters comprehend a completed game. In instances where there is a power reset while the game is awaiting player interaction, it is recommended that a player countdown timer be provided to alert the patron and that an auto-select sequence completes the game. If this is so, it is required that the payglass or video display disclose this feature to the player.

3.9   Diverter and Drop Box Requirements

3.9.1   Diverter For games that accept coins or tokens, the software shall ensure that the diverter directs coins to the hopper, or to the drop box when the hopper is full. The hopper full detector shall be monitored to determine whether a change in diverter status is required. If the state of the detector changes, the diverter shall operate as soon as possible, or within ten (10) games, after the state change, without causing a disruption of coin flow, or creating a coin jam. Hopper-less gaming devices shall always divert coins to the drop box.

3.9.2   Drop Box If the game is equipped to accept coins or tokens, then the following rules shall be met:

a) Each gaming device equipped to accept coins or tokens shall contain a separate slot drop bucket or slot drop box to collect and retain all such slot coins or tokens that are diverted into the drop box;

b) A slot drop bucket shall be housed in a locked compartment separate from any other compartment of the gaming device; and

c) There must be a method to monitor the drop box area, even if manufactured by a different company. It is preferred that the monitor method provide for notification to the on-line system, if applicable.

3.10   External Doors/Compartments Requirements

3.10.1 <u>General Requirements</u>

a) Doors shall be manufactured of materials that are suitable for allowing only legitimate access to the inside of the cabinet (i.e., doors and their associated hinges shall be capable of withstanding determined illegal efforts to gain access to the inside of the gaming device and shall leave evidence of tampering if an illegal entry is made);

b) The seal between the cabinet and the door of a locked area shall be designed to resist the entry of objects;

c) All external doors shall be locked and monitored by door access sensors, which when opened shall cease game play (with the exception of a Drop box door), disable all acceptance, and enter an error condition, which at a minimum shall illuminate the tower light and send the error condition to the on-line system, if applicable;

d) It shall not be possible to insert a device into the gaming device that will disable a door open sensor when the machine's door is shut without leaving evidence of tampering;

e) The sensor system shall register a door as being open when the door is moved from its fully closed and locked position.

3.11   The Logic Door and Logic Area

3.11.1 <u>General Statement</u>   The logic area is a separately locked cabinet area (with its own locked door), which houses electronic components that have the potential to significantly influence the operation of the gaming device. There may be more than one (1) such logic area in a gaming device

3.11.2 <u>Electronic Components</u>   Electronic component items that are required to be housed in one (1) or more logic areas are:

a) CPUs and any Programme storage device that contains software that may affect the integrity of gaming, including but not limited to the game, accounting, system communication, and peripheral firmware devices involved in or which significantly influence the operation and calculation of game play, game display, game result determination, or game accounting, revenue, or security;

b) Communication controller electronics and components housing the communication Programme storage device; and

c) The back-up device shall be kept within a locked Logic Area.

3.12   Coin/Token and Currency Compartments

3.12.1 <u>General Statement</u>   The coin or token and currency compartments shall be locked separately from the main cabinet area. A separate coin/token compartment shall not be required for coins or tokens necessary to pay prizes in a machine that pays prizes through a drop hopper.

3.12.2 <u>Access to Currency</u>

a) Access to the currency storage area is to be secured via separate key locks and shall be fitted with sensors that indicate door open/close or stacker receptacle removed.

b) Access to the currency storage area is to be through two (2) levels of locks (the relevant outer door plus one other door or lock) before the stacker receptacle or currency can be removed.

3.13   Programme Memory, RAM and Non-Volatile Devices Used to Store Programme Memory

3.13.1 <u>Non-Volatile RAM Requirements</u>

a) The Gaming Device shall have the ability to retain data for the electronic meters and shall be capable of maintaining the accuracy of all information required for thirty (30) days after power is discontinued from the machine.

b) If the battery back-up is used as an 'off chip' battery source, it shall re-charge itself to its full potential in a maximum of twenty-four (24) hours. The shelf life shall be at least five (5) years;

c) Random access memory that uses an off-chip back-up power source to retain its contents when the main power is switched off shall have a detection system which will provide a method for software to interpret and act upon a low battery condition; and

d) Clearing non-volatile memory shall require access to the locked logic area.

3.13.2 <u>Function of RAM Reset</u>   Following the initiation of a RAM reset procedure (utilizing a certified RAM Clear method), the game Programme shall execute a routine, which initializes

each and every bit in RAM to the default state. For games that allow for partial RAM clears, the methodology in doing so must be accurate.

3.13.3 _Default Reel Position or Game Display_ The default reel position or game display immediately after a RAM reset shall not be the top award on any selectable line. The default game display, upon entering game play mode, shall also not be the top award. This applies to the base game only and not to any secondary bonus devices. This does not apply to games or paytables selected after the initial game play.

3.13.4 _Configuration Setting_ It shall not be possible to change a configuration setting that causes an obstruction to the electronic accounting meters without a RAM clear. Notwithstanding, a change to the denomination must be performed by a secure means, which includes access to the locked logic area or other secure method provided that the method can be controlled by the regulator. The monitoring of denomination changes will assist in preventing bill validator or card reader fraud.

3.13.5 _Programme Identification_ All Programme storage devices, including ROMs, EPROMs, FLASH ROMs, DVD, CD-ROM, Compact Flash, Thumb Drives and any other type of Programme mass storage devices which do not have the ability to be modified while installed in the gaming device shall be clearly marked with sufficient information to identify the software and revision level of the information stored in the devices. See also Section 2.6.1 for specific information.

3.14   Contents of Critical Memory

3.14.1 _General Statement_ Critical memory is used to store all data that is considered vital to the continued operation of the gaming device. This includes, but is not limited to:

a) All electronic meters required in 'Electronic Metering within the Gaming Device,' Section 4.9 including last bill data and power up and door open metering;

b) Current credits;

c) Gaming device/game configuration data;

d) Information pertaining to the last ten (10) plays with the RNG outcome (including the current game, if incomplete);

e) Software state (the last normal state, last status or tilt status the gaming device software was in before interruption);

f) Any paytable information residing in memory; and

g) It is recommended a log of the last 100 events be kept in critical memory.

Note: All of the above should be checked for corruption. If values are corrupt, game play should cease and at a minimum display an appropriate correlating error.

3.15   Maintenance of Critical Memory

3.15.1 ***General Statement***   Critical memory storage shall be maintained by a methodology that enables errors to be identified. This methodology may involve signatures, checksums, partial checksums, multiple copies, timestamps and/or effective use of validity codes.

3.15.2 ***Comprehensive Checks***   Comprehensive checks of critical memory shall be made during each gaming device restart (e.g., processor reset). Upon resumption, the integrity of all critical memory shall be checked. It is recommended that critical memory is continuously monitored for corruption or with comprehensive checks occurring at the start of game play. In addition, it is recommended that a triple redundancy check be implemented. Test methodology shall detect 99.99 percent of all possible failures including but not limited to items defined in section 3.14.1 and at a minimum enable errors to be identified.

3.15.3 ***General Statement***   An unrecoverable corruption of RAM shall result in a RAM error. The RAM should not be cleared automatically and should result in a tilt condition, which identifies the error and caused the gaming device to cease further function. An unrecoverable RAM error shall require a full RAM clear performed by an authorized person.

3.15.4 ***Control Programme***   It is recommended that the control Programme (software that operates the gaming device's functions) allow for the gaming device to continually ensure the integrity of all control Programme components residing in non-volatile memory.

3.15.5 <u>Programme Storage Devices (PSDs)</u> All PSDs (Programme storage devices) which contain control Programme components shall be validated and checked for corruption during the following conditions:

a) Any processor reset; (e.g. power up and soft reset); and

b) The first time the files are loaded for use (even if only partially loaded).

3.15.6 <u>RAM and PSD Space</u> Non-volatile memory space that is not critical to machine security (e.g., video or sound) is not required to be validated.

3.16   Programme Storage Device Requirements

3.16.1 <u>General Statement</u> All Programme Storage Devices, including EPROMs, ROMs, Flash-ROMs, DVD, CD-ROM, Compact Flash, Hard Drives, Thumb Drives and any other type of Programme Storage Devices shall:

a) Be housed within a locked logic compartment.

3.16.2. For Programme Storage Devices that are written to once (i.e., EPROM, CD), the following rules shall be met:

a) CD-ROM specific based Programme Storage shall:
   i. Not be a re-writeable disk; and
   ii. The "Session" shall be closed to prevent any further writing.

b) EPROM specific based Programme Storage:
   i. Shall be verified for possible corruption due to failure of the Programme storage media. The authentication may use a checksum; however, it is recommended that a Cyclic Redundancy Check (CRC) be used at a minimum (at least 16-bit).

c) Non-EPROM specific (including CD-ROM) Programme Storage shall meet the following rules:
   i. The software shall provide an internal mechanism for the detection of unauthorized and corrupt software elements, when accessed, and subsequently prevent the execution or usage of those elements by the gaming device.

ii. In the event of a failed authentication, after the game has been powered up, the Player Terminal should immediately enter an error condition with the appropriate tower light signal and display an appropriate error. This error shall require operator intervention to clear. The game shall display specific error information and shall not clear until; either the file authenticates properly, following the operator intervention, or the medium is replaced or corrected, and the device's memory is cleared, the game is restarted, and all files authenticate correctly.

NOTE: Each mechanism described in item (i) above will be evaluated on a case-by-case basis and certified by an approved independent testing laboratory based on industry standard security practice, and approved by the Commission.

3.16.3 <u>Alterable Programme Storage</u> Programme storage residing in the Gaming Device that is capable of being erased and re-Programmemed during normal operation of the gaming device shall meet the below requirements:

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

a) Maintain a log, in a form approved by the jurisdiction, of all information that is added, deleted, and modified;

b) Verify the validity of all data files, and Programmes which reside on the media using the methods listed in Section 3.16.2(c);

c) Contain appropriate security to prevent unauthorized modifications; and

d) Not allow game play while the media containing the critical data, files, and Programmes are in a modifiable stated.

Note: All means of write protection will be examined on a case-by-case basis. Gaming devices utilized in a Client-Server configuration will have to comply with the BGLC-11 Standard.

3.17   Control Programme Verification

The device 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 Programmes 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) or by having an interface port for a third-party device to authenticate the media. This integrity check will provide a means for field verification of the software to identify and validate the Programme. The test laboratory, prior to device approval, shall approve the integrity check method.

Note: If the authentication Programme is contained within the game software, the manufacturer must receive written approval from the test laboratory prior to submission.

3.18   Multi-Station Games

3.18.1 <u>*General Statement*</u>. A Multi-Station game is a Gaming Device unit that incorporates more than one (1) player terminal, and that only has one (1) random number generator, which is controlled by the master terminal. The master terminal, containing the game's Central Processing Unit (CPU), shall determine the outcome of the game and RNG results. The master terminal will house the game display which is shared among the player terminals. Each station shall meet the applicable technical standards outlined throughout this document including EGD identification and metering.

Note: There must be a method for each player to know when the next game will begin. Note also, that for purposes of the Betting Gaming and Lotteries (Amendment) Act 2010, a playing station is defined as a gaming device.

3.18.2 <u>*Gaming Devices*</u> If applicable, the Gaming Devices must meet the hardware requirements and software requirements of this document.

3.18.3 <u>*Master Terminal*</u> The master terminal, which contains the Random Number Generator, must meet the hardware requirements and software requirements of this document. Please note that the Coin, Bill Validator and Card Reader requirements would not apply to the Master Terminal.

3.19   Printed Circuit Board (PCB)

3.19.1 <u>PCB Identification Requirements</u>. Requirements for PCB identification:

a) Each printed circuit board (PCB) shall be identifiable by some sort of name (or number) and revision level. Where feasible, this identification should be readily viewed without removal of the PCB from the gaming device;

b) The top assembly revision level of the PCB shall be identifiable (if track cuts and/or patch wires are added to the PCB, then a new revision number or level shall be assigned to the assembly);

c) Manufacturers shall ensure that circuit board assemblies, used in their gaming devices, conform functionally to the documentation and the certified versions of those PCBs that were evaluated and certified by the test laboratory; and

d) The Manufacturers name or its symbol is recommended.

3.20   Patch Wires

3.20.1 <u>Documentation of Patch Wires & Track Cuts</u> All patch wires and track cuts shall be documented, in an appropriate manner, in the relevant service manual and/or service bulletin and shall be submitted to the test laboratory. This does not prohibit required repairs in the field.

3.21   Switches and Jumpers

3.21.1 <u>General Statement</u> If the game contains 'Switches and Jumpers,' the following rules shall be met:

a) All switches or jumpers shall be fully documented for evaluation by the test laboratory;

b) Hardware switches which may alter the jurisdictional specific configuration settings, paytables, game denomination, or payout percentages in the operation of the gaming device must meet 'Configuration Settings' Section 3.13.4 of this document and must be housed within a logic compartment of the gaming device. This includes top award changes (including progressives), selectable Blackjack settings, or any other option that would affect the payout percentage whether or not that percentage is within legal limits.

3.22   Mechanical Devices Used for Displaying of Game Outcomes

3.22.1 General Statement If the game has mechanical or electro-mechanical devices, which are used for displaying game outcomes, the following rules shall be observed:

a) Electro-mechanically controlled display devices (e.g. reels or wheels) shall have a sufficiently closed loop of control so as to enable the software to detect a malfunction, and/or any attempt to interfere with the correct operation of that device. This requirement is designed to ensure that if a reel or wheel is not in the position it is supposed to be in, an error condition will be generated;

b) Mechanical assemblies (e.g., reels or wheels) shall have some mechanism that ensures the correct mounting of the assembly's artwork, if applicable;

c) Displays shall be constructed in such a way that winning symbol combinations match up with pay lines or other indicators; and

d) A mechanical assembly shall be so designed that it is not obstructed by any other components.

3.23   Video Monitor/Touch Screens

3.23.1 General Statement All video monitor touch screens shall meet the following rules:

a) Touch screens (if applicable) shall be accurate and once calibrated, shall maintain that accuracy for at least the manufacturer's recommended maintenance period;

b) A touch screen (if applicable) should be able to be re-calibrated by venue staff without access to the machine cabinet other than opening the main door; and

c) There shall be no hidden or undocumented buttons/touch points (if applicable) anywhere on the screen, that affect game play, except as provided for by the game rules.

3.24   Coin or Token, Bill Validators, Card Readers and Other Methods of Inserting Monetary Values into the Gaming Device

3.24.1 Coin Or Token Acceptors If the gaming device uses a coin/token acceptor, the acceptor shall accept or reject the coin/token on the basis of metal composition, mass, composite makeup, or equivalent security. In addition, it shall meet the following rules:

a) Credit Meter Update on Coin/Token Insertion Each valid coin/token inserted shall register the actual monetary value or the appropriate number of credits received for the denomination

being used on the player's credit meter for the current game or bet meter. If registered directly as credits, the conversion rate shall be clearly stated, or be easily ascertainable from the gaming device;

b) Coin/Token Acceptor Security Features/Error Conditions   The coin acceptor shall be designed to prevent the use of cheating methods including, but not limited to slugging (counterfeit coins), stringing (coin pullback), the insertion of foreign objects and any other manipulation that may be deemed as a cheating technique.   Appropriate correlating error conditions should be generated and the coin acceptor should be disabled;

c) Rapidly Fed Coins The gaming device shall be capable of handling rapidly-fed coins/tokens or piggy backed coins/tokens so that occurrences of cheating are eliminated. Coins traveling too fast that do not register on the players credit meter should be returned to the player;

d) Direction Detectors   The gaming device shall have suitable detectors for determining the direction and the speed of coin/token travel in the receiver. If a coin/token traveling at too slow of a speed or improper direction is detected, the gaming device shall enter an error condition and display an error condition for at least thirty (30) seconds or be cleared by an attendant;

e) Invalid Coins/Tokens. Coins/tokens deemed invalid by the acceptor shall be rejected to the coin tray and shall not be counted as credits;

f) Coin Acceptor Error Conditions. Coin acceptors shall have a mechanism to allow software to interpret and act upon the following conditions:
   i.   Coin-In Jam;
   ii.   Coin-Out Jam;
   iii. Reverse Coin-In (coin traveling wrong way through acceptor); and
   iv.   Coin Too Slow.

Note: It is acceptable to report Coin-in-Jam, Reverse Coin-In and Coin Too Slow as a generic "Coin-In Error".

3.24.2 Bill Validators/Card Reader.   All paper currency acceptance devices shall be able to detect the entry of valid bills, coupons, Ticket/Vouchers, or other approved notes, if applicable, and provide a method to enable the gaming device software to interpret and act appropriately upon a valid or invalid input. The paper currency acceptance device(s) shall be electronically-

based and be configured to ensure that they only accept valid bills of legal tender. Bill validators/Card Reader may also accept coupons, Ticket/Vouchers, or other approved notes and must reject all others in a highly accurate manner. Ticket/Vouchers are paper slips (casino script) that are treated as a unit of currency, which may be redeemed for cash or exchanged for credits on the gaming device. Coupons are paper slips primarily used for promotional purposes, which may be of a cashable or non-cashable value. The bill input system shall be constructed in a manner that protects against vandalism, abuse, or fraudulent activity. In addition, bill acceptance device(s) shall meet the following rules for all acceptable types of medium:

a) Each valid bill, coupon, Ticket/Voucher or other approved note shall register the actual monetary value or the appropriate number of credits received for the denomination being used on the player's credit meter;

b) Credit Meter update upon Bill Insertion. Credits shall only be registered when:

    i. The bill or other note has passed the point where it is accepted and stacked; and

    ii. The acceptor has sent the "irrevocably stacked" message to the gaming device.

c) Bill Validator/Card Reader Security Features. Each bill validator/card reader shall be designed to prevent the use of cheating methods such as stringing, the insertion of foreign objects and any other manipulation that may be deemed as a cheating technique. A method for detection of counterfeit bills must be implemented;

d) Credit Acceptance Conditions. Acceptance of any Bills, Ticket/Vouchers, Coupons or other approved notes for crediting to the credit meter shall only be possible when the gaming device is enabled for play. Other states, such as error conditions, including door opens, audit mode and game play, shall cause the disabling of the Bill validator/card reader system; with the exception of allowing credit acceptance during game play for devices that allow players to place bets on upcoming events (e.g. horse racing wagering);

e) Bill Validator/Card Reader Error Conditions: Each gaming device and/or bill validator/card reader shall have the capability of detecting and displaying (for bill validators/card reader, it is acceptable to disable or flash lights) the following bill validator/card reader error conditions:

    i. Stacker Full (it is recommended that an explicit "stacker full" error message not be utilized since this may promote a security issue, rather "Bill Validator/Card Reader Malfunction" or equivalent);

    ii. Bill Jams;

iii. Bill Validator/Card Reader Door Open - where a bill validator/card reader door is the belly glass door, a door open signal is sufficient;

iv. Stacker Door Open;

v. Stacker Removed; and

vi. Bill Validator/Card Reader Malfunction not specified above.

3.24.3 *Communications* All bill validators/card readers shall communicate to the gaming device using a bi-directional protocol.

3.24.4 *Factory Set Bill Validators/Card Readers.* If bill validators/card readers are designed to be factory set only, it shall not be possible to access or conduct maintenance or adjustments to those bill validators/card readers in the field, other than:

a) The selection of desired acceptance for bills, coupons, Ticket/Vouchers, or other approved notes and their limits;

b) Changing of certified control Programme media or downloading of certified software;

c) Adjustment of the tolerance level for accepting bills or notes of varying quality should not be allowed externally to the machine. Adjustments of the tolerance level should only be allowed with adequate levels of security in place. This can be accomplished through lock and key, physical switch settings, or other accepted methods approved on a case-by-case basis;

d) Maintenance, adjustment, and repair per approved factory procedures; or

e) Options that set the direction or orientation of acceptance.

3.24.5 *Tokenization* For games that allow tokenization, the game shall receive monetary value from the bill or coin acceptor and post to the player's credit meter the entire amount inserted and not store fractional credits. It is acceptable for the device to store the fractional credits if:

a) The game maintains the credit meter in dollars and cents; or

b) The game informs the player that there are fractional credits stored on the device at an opportune time to avoid the possibility of the player walking away from the machine without such knowledge. For specifics on how residual credits should be handled/displayed, please refer to the Tokenization/Residual Credits Sections 4.9.2 and 4.10.

3.25   Machine Metering of Bill Validator/Card Reader Events

3.25.1 General Statement. A gaming device, which contains a bill validator/card reader device, shall maintain sufficient electronic metering to be able to report the following:

a) Total monetary value of all items accepted;

b) Total number of all items accepted; and

c) A breakdown of the bills accepted:

    i. For bills, the game shall report the number of bills accepted for each bill denomination; and

d) For all other notes (Ticket/Vouchers and Coupons), the game shall have a separate meter that reports the number of items accepted, not including bills.

3.25.2 Bill Validator/Card Reader Recall. A gaming device that uses a bill validator/card reader shall retain in its memory and display the information required in 3.25.1 of the last five (5) items accepted by the bill validator/card reader (i.e. Currency, Ticket/Vouchers, Coupons, etc.) The bill validator/card reader recall log may be combined or maintained separately by item type. If combined, the type of item accepted shall be recorded with the respective timestamp.

3.26   Acceptable Bill Validator/Card Reader Locations

3.26.1 Bill Validator/Card Reader Location If a gaming device is equipped with a bill validator/card reader, it shall be located in a locked area of the gaming device (e.g., require opening of the main door to access), but not in the logic area. Only the bill, Ticket/Voucher insertion area will be accessible by the player.

3.27   Bill Validator/Card Reader Stacker Requirements

3.27.1 General Statement Each bill validator/card reader shall have a secure stacker and all accepted bills shall be deposited into the secure stacker. The secure stacker is to be attached to the gaming device in such a manner so that it cannot be easily removed by physical force and shall meet the following rules:

a) The bill validator/card reader device shall have a 'stacker full' sensor; and

b) There shall be a separate keyed lock to access the stacker area. This keyed lock shall be separate from the main door. In addition, a separate keyed lock shall be required to remove the bills from the stacker; and (e.g. 2 levels of locks, plus the main door are 3 levels of locks).

3.28   Credit Redemption

3.28.1 <u>Credit Redemption</u>   Available credits may be collected from the gaming device by the player pressing the "COLLECT" (Cash Out) button at any time other than during:

a) A game being played;
b) Audit mode;
c) Any door open;
d) Test mode;
e) A Credit Meter or Win Meter incrementation, unless the entire amount is placed on the meters when the collect button is pressed; or
f) An error condition.

3.28.2 <u>Cancel Credit</u>   If credits are collected, and the total credit value is greater than or equal to a specific limit (e.g., Hopper Limit for hopper games, Printer Limit for printer games, etc.), the game shall lock up until the credits have been paid, and the handpay is cleared by an attendant.

Note: In certain situations the printing of multiple independent tickets, each below the ticket limit, is an acceptable alternative if approved by the laboratory.

3.29   Coin Hoppers

3.29.1 <u>General Statement</u>   If coin hoppers are used, they are to be monitored, in all game states, by the gaming device control Programme. Coin hoppers must have the ability to identify hopper coin jams, hopper empty and extra coin paid conditions. In addition, coin hoppers shall prohibit manipulation by the insertion of a light source or any foreign object and there shall not be an abnormal payout when exposed to higher levels of electro-static discharge or if power is lost at any time during a payout.

Note: Activity (i.e. the removal and re-insertion of the hopper) that result in the payout of a single extra coin is not considered an abnormal payout as long as it is treated as an extra coin paid.

3.29.2 Acceptable Hopper Locations If a gaming device is equipped with a hopper it shall be located in a locked area of the gaming device, but not in the logic area or the drop box. Access to the hopper shall require at a minimum opening of the main door.

3.29.3 Hopper Error Conditions A gaming device that is equipped with a hopper shall have mechanisms to allow software to interpret and act upon the following conditions:

a) Hopper empty or timed out;
b) Hopper Jam; and
c) Hopper runaway or extra Coin paid out.

3.30   Printers

3.30.1 <u>Payment By Ticket/Voucher Printers</u>. If the gaming device has a printer that is used to make payments, the gaming device may pay the player by issuing a printed Ticket/Voucher. The printer shall print on a Ticket/Voucher and provide the data to an on-line data system that records the following information regarding each payout Ticket/Voucher printed. The information listed below can be obtained from the gaming device, interface board, the on-line data management system, or another means:

a) Value of credits in local monetary units in numerical form;
b) Time of day the Ticket/Voucher was printed in twenty-four (24) hour format showing hours and minutes – printing of this information is not required, provided that storage of this information is in the database;
c) Date, in any recognized format, indicating the day, month, and year;
d) Gaming device number or machine number;
e) Unique validation number (including a copy of the validation number on the leading edge of the Ticket/Voucher),
f) Barcode (not required for Ticket/Vouchers that are non-redeemable at a gaming machine); and

g) If offline voucher issuance is supported, an offline authentication identifier must, at-a-minimum, be printed on the immediate next line following the leading edge Validation number that in no way overwrites, or otherwise compromises, the printing of the Validation number on the ticket (not required for Ticket/Vouchers that are non-redeemable at a gaming machine).

Note: To meet this standard, the gaming device shall either keep a duplicate copy or print only one (1) copy to the player but have the ability to retain the last twenty-five (25) Ticket/Voucher-out information * to resolve player disputes. In addition, an approved system shall be used to validate the payout Ticket/Voucher, and the Ticket/Voucher information on the central system shall be retained at least as long as the Ticket/Voucher is valid at that location.   If offline voucher issuance is supported, the gaming machine MUST mask all but the last 4 digits of the validation number as displayed in the twenty-five (25) Ticket/Voucher-out log.
(*The Ticket/Voucher-out log may contain ticket/vouchers and receipts.)

3.30.2 *Printer Location* If a gaming device is equipped with a printer, it shall be located in a locked area of the gaming device (e.g., require opening of the main door to access), but not in the logic area or the drop box. This requirement ensures that changing the paper does not require access to the drop (cash) or logic areas.

3.30.3 *Printer Error Conditions* A printer shall have mechanisms to allow software to interpret and act upon the following conditions:

a) Out of paper/paper low It is permissible for the gaming device to **not** lock up for these conditions; however, there should be a means for the attendant to be alerted;

b) Printer jam/failure; and

c) Printer disconnected It is permissible for the gaming device to detect this error condition when the game tries to print.

Note: Printer re-connection detection is not required.

3.31   Ticket/Voucher Validation

3.31.1 *Payment By Ticket/Voucher Printer* Payment by Ticket/Voucher printer as a method of credit redemption is only permissible when:

a) The gaming device is linked to a computerized 'Ticket/Voucher Validation System', which allows validation of the printed Ticket/Voucher. Validation approval or information shall come from the Ticket/Voucher Validation System in order to validate Ticket/Vouchers. Ticket/Vouchers may be validated at any location, as long as it meets the standards in this section. Provisions must be made if communication is lost, and validation information cannot be sent to the central system, thereby requiring the manufacturer to have an alternate method of payment. The validation system must be able to identify duplicate Ticket/Vouchers to prevent fraud by reprinting and redeeming a Ticket/Voucher that was previously issued by the gaming device; or

b) By use of an approved alternative method that includes the ability to identify duplicate Ticket/Vouchers to prevent fraud by reprinting and redeeming a Ticket/Voucher that was previously issued by the gaming device.

3.32   Ticket/Voucher Information

3.32.1 General Statement. A Ticket/Voucher shall contain the following printed information at a minimum:

a) Casino Name/Site Identifier (It is permissible for this information to be contained on the ticket stock itself);

b) Machine Number (or Cashier/Change Booth location number, if Ticket/Voucher creation, outside the Gaming Device is supported);

c) Date and Time (24hr format which is understood by the local date/time format);

d) Alpha and numeric dollar amount of the Ticket/Voucher;

e) Ticket/Voucher sequence number;

f) Validation number;

g) Bar code or any machine readable code representing the Validation number;

h) Type of transaction or other method or differentiating Ticket/Voucher types; (assuming multiple Ticket/Voucher types are available). Additionally, it is preferred that whenever the Ticket/Voucher type is itself a non-cashable item and/or just a receipt, that the ticket explicitly express that it has "no cash value";

i) Indication of an expiration period from date of issue, or date and time the Ticket/Voucher will expire (24hr format which is understood by the local date/time format). It is permissible

for this information to be contained on the back of the ticket stock itself. (e.g. "Expires in One Year"); and

j) If offline voucher issuance is supported, an offline authentication identifier must, at-a-minimum, be printed on the immediate next line following the leading edge Validation number, that in no way overwrites, or otherwise compromises, the printing of the Validation number on the ticket.

Note: Some of this information may also be part of the validation number or barcode. Multiple barcodes are allowed.

3.33 Ticket/Voucher Issuance and Redemption

3.33.1 Ticket/Voucher Issuance A Ticket/Voucher can be generated at an EGD through an internal document printer, at a player's request, by redeeming all credits. Ticket/Vouchers that reflect partial credits may be issued automatically from a Gaming Device. Additionally, cashier/change booth issuance is permitted if supported by the validation system.

3.33.2 Offline Ticket/Voucher Issuance* The EGD must meet the following minimum set of requirements to incorporate the ability to issue offline vouchers after a loss of communication has been identified by the EGD.

a) Rules for Issuance The EGD shall not issue more offline vouchers than has the ability to retain and display in the EGD maintained Ticket Out log.

b) Request for Re-Seeding The EGD shall not request validation numbers and seed, key, etc, values used in the issuance of vouchers until all outstanding offline voucher information has been fully communicated to the Ticket/Voucher Validation System.

c) Rules for Re-Seeding The EGD shall request a new set of validation numbers and seed, key, etc, values used in the issuance of online/offline voucher if the current list of validation numbers and seed, key, etc. values have the possibility of being compromised which include but are not limited to the following cases;

    i. After power has been recycled, and/or

    ii. Upon exit of a main door open condition.

*This rule does not apply to SAS vouchers.

3.33.3 ***<u>Online Ticket/Voucher Redemption</u>***   Ticket/Vouchers may be inserted in any Gaming Device participating in the validation system providing that no credits are issued to the Gaming Device prior to confirmation of Ticket/Voucher validity.   The patron may also redeem a Ticket/Voucher at a cashier/change booth or other approved validation terminal.

3.33.4 ***<u>Offline Ticket/Voucher Redemption</u>***.   The offline Ticket/Voucher redemption may be validated as an Internal Control process at the specific gaming device that issued the Ticket/Voucher. A manual handpay may be conducted for the offline Ticket/Voucher value.

CHAPTER 4

4.0 SOFTWARE REQUIREMENTS

4.1   Introduction

4.1.1 General Statement   This section of the document shall set forth the technical requirements for the Rules of Play of the game.

4.2   Rules of Play

4.2.1 Display.

a) Payglass/Video Display   Payglass or video displays shall be clearly identified and shall accurately state the rules of the game and the award that will be paid to the player when the player obtains a specific win. The payglass or video displays shall clearly indicate whether awards are designated in credits, currency, or some other unit. The gaming device 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 of the gaming device, and the game must clearly indicate as such. All paytable information should be able to be accessed by a player, prior to them committing to a bet. This includes unique game features, extended play, free spins, double-up, take-a-risk, autoplay, countdown timers, symbol transformations, and community style bonus awards. Payglass or video displays shall not be certified if the information is inaccurate.

Note: For games with minimum bets above one credit, it is acceptable for the payglass or video display to depict the pays at a single credit provided the payglass explicitly depicts the minimum bet in credits or currency and the minimum bet results in a line bet of one, e.g. multi-line games where the minimum bet results in multiple lines all bet a single credit.

b) Upcoming Wins   The game shall not advertise 'upcoming wins,' for example three (3) times pay coming soon. Notwithstanding the foregoing, a game may display such advertising if:
   i)   It is mathematically demonstrable that an award occurrence is upcoming (e.g. mystery bonus style games); and
   ii) The player is shown a graphical representation in the form of a progress indicator which accurately depicts the current progress towards such an award.

c) <u>Bonus Feature Information</u> Each game which offers a feature such as Free Games or a Fever Mode must display the number of feature games that are remaining, during each game; and

d) <u>Multiple Decks of Cards</u> Any games, which utilize multiple decks of cards, should alert the player as to the number of card decks in play.

e) <u>Player Choices</u> It is recommended that when a non-skill game offers the player a choice, the ratio between the pay resulting from the optimal selection and the pay resulting from the worst selection should be less than or equal to 100.5%. For example, if selection A has an expected pay (i.e. the average expected return from making a selection) of 215.48 credits and selection B has an expected pay of 214.41 credits, the ratio - 215.48/214.41 - results in 1.005 which is equal to 100.5 %. If the ratio is greater than 100.5%, it is recommended the game display additional information so that the player can make an informed decision regarding optimal play. This can be as simple as a flashing selection "Collect Now to Win" where otherwise making more selections will have a higher pay, but at the risk of a lower probability of winning.

Note: This additional information can considered as "hinting".

4.2.2 *Information to be displayed* A gaming device shall display, or shall have displayed on the glass the following information to the player at all times the machine is available for player input:

a) The player's current credit balance;

b) The current bet amount. This is only during the base game or if the player can add to the bet during the game;

c) All possible winning outcomes, or be available as a menu item or on the help menu;

d) Win amounts for each possible winning outcome, or be available as a menu or help screen item;

e) The amount won for the last completed game (until the next game starts or betting options are modified);

f) The player options selected (e.g., bet amount, lines played) for the last completed game (until the next game starts or a new selection is made);

g) The denomination being played clearly displayed; and

h) It is recommended that a disclaimer regarding "Malfunctions Void all Pays" be clearly displayed.

Note: It is acceptable for this information to be permanently affixed to the exterior of the machine chassis and not removable. Stickers attached to the exterior of the display screen are not allowed.

4.2.3 *Multi-Line Games*.

a) Each individual line to be played shall be clearly indicated by the gaming device so that the player is in no doubt as to which lines are being bet on;

b) The credits bet per line; and

c) The winning payline(s) shall be clearly discernable to the player. (e.g., on a video game it may be accomplished by drawing a line over the symbols on the payline(s) and/or the flashing of winning symbols and line selection box. Where there are wins on multiple lines, each winning payline may be indicated in turn. (This would not apply to mechanical reel slot games unless technology is used which implements paylines similar to those used on video displays, e.g. backlit reels flashing for each winning payline).

Note: It is acceptable that all winning paylines be displayes at the same time provided that game history display the winning paylines individually.

4.2.4 *Game Cycle* A game is considered complete when the final transfer to the player's credit meter takes place (in case of a win), or when all credits wagered are lost. The following are all considered to be part of a single game:

a) Games that trigger a free game feature and any subsequent free games;

b) "Second screen" bonus feature(s);

c) Games with player choice (e.g., Draw Poker or Blackjack);

d) Games where the rules permit wagering of additional credits (e.g., Blackjack insurance or the second part of a two-part Keno game); and

e) Double-up/Gamble features.

4.3   Random Number Generator (RNG) Requirements

4.3.1   *Game Selection Process*.

a) <u>All Combinations and Outcomes Shall Be Available</u>.   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) <u>No Near Miss</u> After selection of the game outcome, the gaming device 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. The game shall not substitute a particular type of loser to show to the player. This would eliminate the possibility of simulating a 'Near Miss' scenario where the odds of the top award symbol landing on the payline are limited but frequently appear above or below the payline;

c) <u>No Corruption from Associated Equipment</u> A gaming device shall use appropriate communication protocols to protect the random number generator and random selection process from influence by associated equipment, which may be communicating with the gaming device.

4.3.2   *Random Number Generator Requirements*   The use of an RNG results in the selection of game symbols or production of game outcomes. The selection shall:

a) Be statistically independent;

b) Conform to the desired random distribution;

c) Pass various recognized statistical tests; and

d) Be unpredictable.

4.3.3   *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) Equa-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.

4.3.4 ***Background RNG Activity Requirement*** 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.

4.3.5 ***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.

4.3.6 ***Live Game Correlation*** Unless otherwise denoted on the payglass, where the gaming device plays a game that is recognizable to be a simulation of a live casino game 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.

4.3.7. *__Symbol Probability__* For game types (such as spinning reel games or video spinning reel games), unless otherwise denoted on the payglass, the mathematical probability of a symbol appearing in a position for any game outcome shall be constant.

4.3.8 *__Card Games__* The consequences for games depicting cards being drawn from a deck are the following:

a) At the start of each game/hand, it is recommended that the first hand of cards shall be drawn fairly from a randomly-shuffled deck; the replacement cards shall not be drawn until needed;

b) Cards once removed from the deck shall not be returned to the deck except as provided by the rules of the game depicted; and

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 gaming device).

Note: It is acceptable to draw RNG's for replacement cards at the time of the first hand RNG draw provided the replacement card RNG's are sequentially used as needed.

4.3.9 *__Ball Drawing Games__* The consequences for games depicting balls being drawn from a barrel (e.g., Keno) are as follows:

a) At the start of each game, only balls applicable to the game are to be depicted. For games with bonus features and additional balls that are selected, they should be chosen from the original selection without duplicating an already chosen ball;

b) The barrel shall not be re-mixed except as provided by the Rules of the Game depicted; and

c) As balls are drawn from the barrel, they shall be immediately used as directed by the Rules of the Game (i.e., the balls are not to be discarded due to adaptive behavior by the gaming device).

4.3.10 *__Scaling Algorithms__*.

a) If a random number with a range shorter than that provided by the RNG is required for some purpose within the gaming device, the method of re-scaling, (i.e., converting the number to the lower range), is to be designed in such a way that all numbers within the lower range are equally probable.

b) If a particular random number selected is outside the range of equal distribution of re-scaling values, it is permissible to discard that random number and select the next in sequence for the purpose of re-scaling.

4.3.11 *__Mechanical Based RNG Games__* Mechanical based RNG games are games that use the laws of physics to generate the outcome of the game. All mechanical based RNG games must meet the requirements of this document with the exception of Sections 4.3.4, 4.3.5, and 4.3.10 that dictate the requirements for electronic random number generators. In addition, mechanical based RNG games must meet the following rules:

a) The test laboratory will test via PC communications multiple iterations to gather enough data to verify the randomness. In addition, the manufacturer may supply live data to assist in this evaluation;

b) The mechanical pieces must be constructed of materials to prevent decomposition of any component over time (e.g., a ball shall not disintegrate);

c) The properties of physical items used to chose the selection shall not be altered; and

d) The player shall not have the ability to physically interact or come into physical contact or manipulate the machine physically with the mechanical portion of the game.

Note: The laboratory reserves the right to require replacement parts after a pre-determined amount of time for the game to comply with Rule 4.3.11(b) above. In addition, the device(s) may require periodic inspections to ensure the integrity of the device. Each mechanical based RNG game shall be reviewed on a case-by-case basis.

4.4   Payout Percentages, Odds and Non-Cash Awards

4.4.1 *__Software Requirements for Percentage Payout__* Each game shall theoretically payout a minimum of seventy-five percent (75%) during the expected lifetime of the base game (e.g., the game percentage without any progressives, bonus systems, merchandise, etc.)

Note: The laboratory will provide the minimum and maximum theoretical payout percentage for the base game within the certification report, unless otherwise noted. Additional 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) <u>Optimum Play Used for Skill Games</u>. Gaming devices that may be affected by player skill shall meet the requirement of Section 4.4.1 when using a method of play that will provide the greatest return to the player over a period of continuous play.

b) <u>Minimum Percentage Requirement Met at All Times</u>. The minimum percentage requirement of 75% 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 paytable is not permissible). 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) <u>Double-up or Gamble</u>. The Double-up or Gamble options shall have a theoretical return to the player of one hundred percent (100%).

4.4.2 ***Multiple Percentages*** For games that offer multiple percentages, please refer to the 'Configuration Setting' requirements in section 3.13.4 of this document.

4.4.3 ***Merchandise Prizes in Lieu of Cash Awards***.

a) <u>Limitations</u> (annuities – lump sum or the payment plan) on the prize amount of Merchandise shall be clearly explained to the player on the game that is offering such a prize.

4.5   Bonus Games

4.5.1 ***Bonus Games*** Games that have awards that occur from game play within the base game's cycle made (e.g. bonus features, including free games) shall meet the following:

a) The game shall display clearly to the player which game rules apply to the current game state;

b) The game shall clearly display to the player possible win amount ranges, multiplier ranges, etc. that can be obtained from bonus play;

c) The game, other than those that occur randomly, shall display to the player sufficient information to indicate the current status towards the triggering of the next bonus game;

d) If the game requires obtaining several events/symbols toward a feature, the number of events/symbols needed to trigger the bonus shall be indicated along with the number of events/symbols collected at any point;

e) The game shall not adjust the likelihood of a bonus occurring, based on the history of prizes obtained in previous games (i.e., games shall not adapt their theoretical return to the player based on past payouts);

f) If a game's bonus is triggered after accruing a certain number of events/symbols or combination of events/symbols of a different kind, the probability of obtaining like events/symbols shall not deteriorate as the game progresses (e.g., for identical events/symbols it is not permitted that the last few events/symbols needed are more difficult to obtain than the previous events/symbols of that kind);

g) The game shall make it clear to the player that they are in this mode to avoid the possibility of the player walking away from the machine not knowing the game is in a bonus mode;

h) Bonus game awards are part of the game cycle with predetermined award values. Bonus play award contributions to the Programme payout percentage are calculated consistent with awards of the regular game cycle. Specifically, if the cycle for bonus play awards is different from the base game cycle, then the bonus play awards, occurring within the base game's cycle, will be calculated as part of the game's payout; and

i) Pursuant to the rules, the game shall display the Rules of Play for the bonus game awards, the rewards associated with each bonus play award, and the character combinations that will result in the specific payouts. For bonus play awards achieved by obtaining specific game results, the progress of the award shall be displayed.

4.6   Extra Credits Wagered during Bonus Games

4.6.1   General Statement   If a bonus or feature game requires extra credits to be wagered during the bonus and the game accumulates all winnings (from the trigger and the feature) to a temporary "win" meter (rather than directly to the credit meter), the game shall:

a) Provide a means where winnings on the temporary meter can be bet (via the credit meter) to allow for instances where the player has an insufficient credit meter balance to complete the feature;

b) Transfer all credits on the temporary meter to the credit meter upon completion of the feature;

c) Not exceed the max bet limit, if one is set; and

d) Provide the player an opportunity <u>NOT</u> to participate.

4.7   Mystery Awards

4.7.1   <u>General Statement</u> It is acceptable for games to offer a 'Mystery Award' (an award that is not specifically called out on the payglass or game screen) however, the game must indicate the maximum amount the player could potentially win. If the minimum amount that could potentially be awarded is not displayed, it will be assumed to be '0'. In addition, both a minimum and maximum amount must be displayed for any Mystery Award if the method to receive the award involves strategy or skill.   This would include methods where the value of the paytable is used in order to make decisions that could increase the return to the player (i.e. Video Poker).

4.8   Multiple Games on the Gaming Device

4.8.1   <u>Selection of Game For Display</u>.

a) The methodology employed by a player to select or to discard a particular game for play on a multi-game gaming device shall be clearly explained to the player on the gaming device, and be easily followed.

b) The gaming device shall be able to clearly inform the player of all games, their rules and/or the paytables, before the player must commit to playing them.

c) The player shall at all times be made aware of which game has been selected for play and is being played, as applicable.

d) When multiple games are offered for play, the player shall not be forced to play a game by just selecting a game title, unless the game screen clearly indicates the game selection is unchangeable. If not disclosed, the player shall be able to return to the main menu.

e) It should not be possible to select or start a new game before the current play is completed and all relevant meters have been updated (including features, gamble and other options of the game) unless the action to start a new game terminates the current play in an orderly manner.

f) The set of games offered to the player for selection, or the paytable, can be changed only by a secure certified method which includes turning on and off games available for play through a

video screen interface. The rules outlined in 'Configuration Setting' of this document shall govern the RAM clear control requirements for these types of selections. However, for games that keep the previous paytable's (the paytable just turned off) data in memory, a RAM clear is not required.

g) No changes to the set of games offered to the player for selection (or to the paytable) are permitted while there are credits on the player's credit meter or while a game is in progress.

4.9 Electronic Metering within the Gaming Device

4.9.1 Credit Meter Units and Display. The credit meter shall be maintained in credits or cash value (i.e. applicable local currency) and shall at all times indicate all credits or cash available for the player to wager or cashout with the exception of when the player is viewing an informational screen such as a menu or help screen item. This should be displayed to the player unless a tilt condition or malfunction exists.

4.9.2 Tokenization If the current local currency amount is not an even multiple of the tokenization factor for a game or the credit amount has a fractional value, the credits displayed for that game may be displayed and played as a truncated amount, (i.e., fractional part removed). However, the fractional credit amount shall be made available to the player when the truncated credit balance is zero. The fractional amount is also known as 'Residual Credit,' see also, 'Tokenization–Residual Credits,' Section 4.10.

4.9.3 Credit Meter – Incrementing The value of every prize (at end of a game) shall be added to the player's credit meter, except for handpays or merchandise, see also 'Merchandise Prizes In Lieu Of Cash Awards,' Section 4.4.4. The credit meter shall also increment with the value of all valid coins, tokens, bills, Ticket/Vouchers, coupons or other approved notes accepted.

4.9.4 Progressives Progressive awards may be added to the credit meter if either:

a) The credit meter is maintained in the local currency amount format; or

b) The progressive meter is incremented to whole credit amounts; or

c) The progressive prize in local currency amount format is converted properly to credits upon transfer to the player's credit meter in a manner that does not mislead the player (i.e., make

unqualified statement "wins meter amount" and then rounds down on conversion or cause accounting imbalances.

Standards for Progressive Gaming Devices in Gaming Establishments will be made available under separate cover.

4.9.5   _Collect Meter_ There shall be the facility for a collect meter, which will show the number of credits or cash, collected by the player upon a cashout**.** This should be displayed to the player unless a tilt condition or malfunction exists (the number of credits or cash collected shall be subtracted from the player's credit meter and added to the collect meter).   This meter may include handpays.

4.9.6   _Software Meter Information Access_   The software meter information shall only be accessible by an authorized person and must have the ability to be displayed on demand using a secure means.

4.9.7 _Electronic Accounting and Occurrence Meters_ Electronic accounting meters shall be at least ten (10) digits in length. These meters shall be maintained in credit units equal to the denomination, or in dollars and cents. If the meter is being used in dollars and cents format, eight (8) digits must be used for the dollar amount and two (2) digits used for the cent amount. Devices configured for multi-denomination play shall display the units in dollars and cents. The meter must roll over to zero upon the next occurrence, any time the meter exceeds ten (10) digits and after 9,999,999,999 has been reached or any other value that is logical. Occurrence meters shall be at least eight (8) digits in length however, are not required to automatically roll over. Meters shall be labeled so they can be clearly understood in accordance with their function. All gaming devices shall be equipped with a device, mechanism or method for retaining the value of all meter information specified in this section (4.9) which must be preserved for a minimum of 72 hours in the event of power loss to the gaming device. The required electronic meters are as follows (accounting meters are designated with an asterisk '*'):

a) Coin In* The machine must have a meter that accumulates the total value of all wagers, whether the wagered amount results from the insertion of coins, tokens, currency, deduction from a credit meter or any other means. This meter shall:

     i.   Not include subsequent wagers of intermediate winnings accumulated during game play sequence such as those acquired from "double up" games;

     ii.   For multi-game and multi-denomination/multi-game gaming devices, provide the information necessary, on a per paytable basis, to calculate a weighted average theoretical payback percentage; and

     iii.   For gaming devices which are considered slot machines and which contain paytables with a difference in theoretical payback percentage which exceeds 4 percent between wager categories, it is recommended that the device maintain and display coin in meters and the associated theoretical payback percentage, for each wager category with a different theoretical payback percentage, and calculate a weighted average theoretical payback percentage for that paytable.

Note: This does not apply to Keno or Skill Games.

b) <u>Coin Out*</u> The machine must have a meter that accumulates the total value of all amounts directly paid by the machine as a result of winning wagers, whether the payout is made from the hopper, to a credit meter or by any other means. This meter will not record amounts awarded as the result of an external bonusing system or a progressive payout;

c) <u>Coin Drop*</u> The machine must have a meter that accumulates the total value of coins or tokens diverted to the drop;

d) <u>Attendant Paid Jackpots*</u> The machine must have a meter that accumulates the total value of credits paid by an attendant resulting from a single winning alignment or combination, the amount of which is not capable of being paid by the machine itself. This does not include progressive amounts or amounts awarded as a result of an external bonusing system. This meter is only to include awards resulting from a specifically identified amount listed in the manufacturer's par sheet;

e) <u>Attendant Paid Cancelled Credits*</u> The machine must have a meter that accumulates the total value paid by an attendant resulting from a player initiated cash-out that exceeds the physical or configured capability of the machine to make the proper payout amount;

f) <u>Physical Coin In*</u> The machine must have a meter that accumulates the total value of coins or tokens inserted into the machine;

g) <u>Physical Coin Out*</u> The machine must have a meter that accumulates the value of all coins or tokens physically paid by the machine;

h) <u>Bill In*</u>   The machine must have a meter that accumulates the total value of currency accepted. Additionally, the machine must have a specific meter for each denomination of currency accepted that records the number of bills accepted of each denomination;

i) <u>Ticket/Voucher Voucher In*</u>   The machine must have a meter that accumulates the total value of all slot machine wagering vouchers accepted by the machine; (A.K.A. Ticket-in);

j) <u>Ticket/Voucher Voucher Out*</u>   The machine must have a meter that accumulates the total value of all slot machine wagering vouchers and payout receipts issued by the machine; (A.K.A. Ticket-Out)

k) <u>Electronic Funds Transfer In* (EFT In)</u> The machine must have a meter that accumulates the total value of cashable credits electronically transferred from an MCS to the machine when using EFT commands in the function of bonusing, promotions or cashless wagering.

l) <u>Cashless Account Transfer In* (AFT In)</u> (A.K.A. WAT In-Wagering Account Transfer In) The machine must have a meter that accumulates the total value of cashable credits electronically transferred to the machine from a wagering account by means of an external connection between the machine and a cashless wagering system;

m) <u>Cashless Account Transfer Out* (AFT Out)</u> (A.K.A. WAT Out-Wagering Account Transfer Out) The machine must have a meter that accumulates the total value of cashable credits electronically transferred from the machine to a wagering account by means of an external connection between the machine and a cashless wagering system;

n) <u>Non-Cashable Electronic Promotion In*</u>   The machine must have a meter that accumulates the total value of non-cashable credits electronically transferred to the machine from a promotional account by means of an external connection between the machine and a cashless wagering system;

o) <u>Cashable Electronic Promotion In</u> The machine must have a meter that accumulates the total value of cashable credits electronically transferred to the machine from a promotional account by means of an external connection between the machine and a cashless wagering system;

p) <u>Non-Cashable Electronic Promotion Out*</u> The machine must have a meter that accumulates the total value of non-cashable credits electronically transferred from the machine to a

promotional account by means of an external connection between the machine and a cashless wagering system;

q) <u>Cashable Electronic Promotion Out*</u> The machine must have a meter that accumulates the total value of cashable credits electronically transferred from the machine to a promotional account by means of an external connection between the machine and a cashless wagering system;

r) <u>Coupon Promotion In*</u> The machine must have a meter that accumulates the total value of all slot machine promotional coupons accepted by the machine;

s) <u>Coupon Promotion Out*</u> The machine must have a meter that accumulates the total value of all slot machine promotional coupons issued by the machine;

t) <u>Machine Paid External Bonus Payout*</u> The machine must have a meter that accumulates the total value of additional amounts awarded as a result of an external bonusing system and paid by the slot machine;

u) <u>Attendant Paid External Bonus Payout*</u> The machine must have a meter that accumulates the total value of amounts awarded as a result of an external bonusing system paid by an attendant;

v) <u>Attendant Paid Progressive Payout*</u> The machine must have a meter that accumulates the total value of credits paid by an attendant as a result of progressive awards that are not capable of being paid by the machine itself;

w) <u>Machine Paid Progressive Payout*</u> The machine must have a meter that accumulates the total value of credits paid as a result of progressive awards paid directly by the machine. This meter does not include awards paid as a result of an external bonusing system;

x) <u>Games-played</u> The machine must have meters that accumulates the number of games played
    i. Since power reset;
    ii. Since door close; and
    iii. Since game initialization (RAM clear);
y) <u>Bill validator/card reader door</u>. (i.e. stacker door) The machine must have a meter that accumulates the number of times the Bill Validator/Card Reader door has been opened since the last RAM Clear; and

z) <u>Progressive Occurrence</u>   The machine must have a meter that accumulates the number of times each progressive meter is activated. *(Standards for Progressive Gaming Devices in Gaming Establishments will be made available under separate cover.)*

4.9.8 ***Multi-Game Game Specific Meters***   In addition to the one set of master Electronic Accounting Meters required above, each individual game available for play shall have the period meters "Credits Bet" and "Credits Won" in either credits or dollars. Even if a 'double up or gamble' game is lost, the initial win amount/credits bet amount shall be recorded in the game specific meters. Alternatively, there can be separate meters that accounts for the double-up or gamble information, see also, Section 4.9.9.   Either way, the method of metering must be understood on the screen.

4.9.9 ***Double Up or Gamble Meters***   For each type of Double-up or Gamble feature offered, there shall be sufficient meters to determine the feature's actual return percentage, which should increment accurately every time a Double-up or Gamble play concludes. If the gaming device does not supply accounting for the Double-Up or Gamble information, the feature must not be enabled for use.

4.10   Tokenization – Residual Credits

4.10.1 ***General Statement***   If residual credits exist, the manufacturer may provide a residual credit removal feature or allow a cancelled credit or Ticket/Voucher print to remove the residual credits or return the gaming device to normal game play (i.e., leave the residual credits on the player's credit meter for betting). In addition:

a)   Residual credits bet on the residual credit removal play shall be added to the Coins-In meter;

b)   If the residual credit removal play is won, the value of the win shall either:

  i.   Increment the player's credit meter; or

  ii.   Be automatically dispensed, and the value of the coin(s) added to the Coins-Out meter;

c)   All other appropriate gaming device meters shall be appropriately updated;

d)   If the residual credit removal play is lost, all residual credits are to be removed from the credit meter;

e) If the residual credits are cancelled rather than wagered, the gaming device shall update the relevant meters (e.g., cancelled credit) and the last play information;

f) The residual credit removal play feature shall return at least seventy-five percent (75%) to the player;

g) The player's current options and/or choices shall be clearly indicated electronically or by video display. These options shall not be misleading;

h) If the residual credit removal play offers the player a choice to complete the game (e.g., select a hidden card), the player shall be also given the option of exiting the residual credit removal mode and returning to the previous mode;

i) It shall not be possible to confuse the residual credit removal play with any other game feature (e.g., Double-up or Gamble);

j) If the residual credit removal play is offered on a multi-game gaming device, the play shall (for meter purposes of each individual game) either be considered to be a part of the game from which the play was invoked, or be treated as a separate game; and

k) The Last Game Recall shall either display the residual credit removal play result or contain sufficient information (e.g., updated meters) to derive the result.

4.11   Communications Protocol

4.11.1 General Statement   For gaming devices that are required to communicate with an on-line system, the device must accurately function as indicated by the communication protocol that is implemented. *Standards for On-line Monitoring and Control Systems (MCS) and Validation Systems in Gaming Establishments will be made available upon completion*.

4.12   Error Conditions

4.12.1 General Statement   Gaming devices shall be capable of detecting and displaying the following error conditions and illuminate the tower light for each or sound an audible alarm. Error conditions should cause the gaming device 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, if applicable: Where there is an error to a player card this should also be reported to the Commission by the licensee.

COIN ACCEPTOR ERRORS:

*Please reference section **3.24.1(f)***

HOPPER ERRORS:

*Please reference section **3.29.3***

BILL VALIDATOR/CARD READERS ERRORS:

*Please reference section **3.27.1(a)**.*

PRINTER ERRORS:

*Please reference section **3.30.3***

DOOR OPEN ERROR CONDITIONS:

a) All external doors (i.e. Main, Belly, Top Box);

b) Drop box door;

c) Bill validator/card reader door.(i.e. Stacker door); and

d) Any other currency storage area that have a door.

OTHER ERROR CONDITIONS:

a) RAM error*;

b) Low RAM battery, for batteries external to the RAM itself or low power source;

c) Programme error or authentication mismatch*;

d) Reel spin errors. The specific reel number shall be identified in the error code. This should be detected under the following conditions:

    i. A mis-index condition for rotating reels, that affects the outcome of the game;

    ii. In the final positioning of the reel, if the position error exceeds one-half of the width of the smallest symbol excluding blanks on the reel strip; and

    iii. Microprocessor controlled reels shall be monitored to detect malfunctions such as a reel which is jammed, or is not spinning freely, or any attempt to manipulate their final resting position.

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

4.13   Programme Interruption & Resumption

4.13.1 <u>Interruption</u> After a Programme interruption (e.g., processor reset), the software shall be able to recover to the state it was in immediately prior to the interruption occurring. If a power failure occurs during acceptance of a bill or other note, the bill validator/card reader shall give proper credits or return the note, notwithstanding that there may be a small window of time where power may fail and credit may not be given. In this case, the window shall be less than one (1) second.

4.13.2. <u>Restoring Power</u> If a gaming device is powered down while in an error condition, then upon restoring power, the specific error message shall still be displayed and the gaming device shall remain locked-up. This is unless power down is used as part of the error reset procedure, or if on power up or door closure, the gaming device checks for the error condition and detects that the error is no longer in existence.

4.13.3 <u>Simultaneous Inputs</u>   The Programme shall not be adversely affected by the simultaneous or sequential activation of the various inputs and outputs, such as 'play buttons', which might, whether intentionally or not, cause malfunctions or invalid results.

4.13.4 <u>Resumption</u> On Programme resumption, the following procedures shall be performed as a minimum requirement:

a) Any communications to an external device shall not begin until the Programme resumption routine, including self-tests, is completed successfully;

b) Gaming device control Programmes shall test themselves for possible corruption due to failure of the Programme storage media as outlined in sections 3.15 & 3.16;

c) The integrity of all critical memory shall be checked; and

d) The bill validator/card reader device shall perform a self-test at each power up. In the event of a self-test failure, the bill validator/card reader shall automatically disable itself (i.e., enter bill reject state) until the error state has been cleared.

4.13.5 *__Microprocessor Controlled Reel__*. (e.g., stepper motor reels) shall re-spin automatically to the last valid play-mode result when the play mode is re-entered, and the reel positions have been altered (e.g., the main door is closed, power is restored, audit mode is exited, or an error condition cleared).

4.14   Door Open/Close

4.14.1 *__Required Door Metering__*   The software shall be able to detect access to the following doors or secure areas:

a)   All external doors (i.e. Main, Belly, Top Box);

b)   Drop box door;

c)   Bill validator door/card reader.(i.e. stacker door); and

d)   Any other currency storage areas that have a door.

4.14.2 *__Door Open Procedures__*   When the gaming device's main door is opened, the game shall cease play, enter an error condition, display an appropriate error message, disable coin acceptance and bill acceptance, and either sound an alarm or illuminate the tower light or both.

4.14.3 *__Door Close Procedures__*   When the gaming device's main door is closed, the game shall return to its original state and display an appropriate error message, until the next game has ended.

4.15   Taxation Reporting Limits

4.15.1 *__General Statement__* The game shall be capable of entering a lock up condition if a single event is in excess of a limit that is required *in the future* by the tax authorities.

4.16   Test/Diagnostic Mode (Demo Mode)

4.16.1 *__General Statement__*   If the gaming device is in a test, diagnostic or demo mode, any test that incorporates credits entering or leaving the gaming device (e.g., a hopper test) shall be completed on resumption of normal operation. In addition, there shall not be any mode other than normal operation (ready for play) that increments any of the electronic meters. Any credits

on the gaming device that were accrued during the test, diagnostic or demo mode shall be automatically cleared before the mode is exited. Specific meters are permissible for these types of modes provided the meters indicate as such.

4.16.2 Entry To Test/Diagnostics Mode The main cabinet door of the gaming device may automatically place the gaming device in a service or test/diagnostic mode. Test/diagnostics mode may also be entered, via an appropriate instruction, from an attendant during an audit mode access. These modes should not be accessible to the player.

4.16.3 Exiting From Test/Diagnostic Mode When exiting from test-diagnostic mode, the game shall return to the original state it was in when the test mode was entered.

4.16.4 Test Games If the device is in a game test mode, the machine shall clearly indicate that it is in a test mode, not normal play.

4.17   Game History Recall

4.17.1 Number Of Last Plays Required Information on at least the last ten (10) games 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.

4.17.2 Last Play Information Required Last play information shall provide all information required to fully reconstruct the last ten (10) plays. All values shall be displayed; including the initial credits, credits bet, and credits won, payline symbol combinations 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).

4.17.3 Bonus Rounds The ten (10) game recall 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. The recall shall also reflect position dependent events if the outcome results in an award. Gaming devices

offering games with a variable number of free games, per base game may satisfy this requirement by providing the capability to display the last 15 free games in addition to each base game.

4.18   Software Verification

*Please reference sections **3.16.2 (c) and 3.17.***

CHAPTER 5
5.0 SLOT TOURNAMENTS

5.1   Tournament Description

5.1.1 <u>General Statement</u> A slot tournament is an organized event that permits a player to either purchase or be awarded the opportunity to engage in competitive play against other players.

5.2   Tournament Programme

5.2.1 <u>General Statement</u> Each gaming device may be equipped with a certified Programme, which allows for tournament mode play. The tournament option should default to disabled. If tournament is an option, it shall be enabled by a switch key (reset feature) and/or total replacement of the logic board with a certified tournament board.

5.3   Tournament - Hardware

5.3.1 <u>General Statement</u> The game shall comply with the requirements set forth in Chapter 3 of this document, if applicable.

5.4   Tournament - Software

<u>***General Statement***</u> No gaming device, while enabled for tournament play shall accept credits from any source, nor pay out credits in anyway, but shall utilize credit points only. Tournament credits shall have no cash value. These games shall not increment any mechanical or electro-mechanical meters, and shall not communicate any accounting information to the system. The percentage requirements as addressed in Section 4.4 are waived for tournament games.

<u>***Gaming Device Settings***</u> All gaming devices used in a single tournament shall utilize the same electronics and machine settings as other gaming devices involved in the tournament, including reel speed settings.