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	Various cosmetic changes (Formating, spacing, grammatical, spelling and punctuation) were made throughout the document. References to "Bill Acceptors" were changed to "Bill Validators" throughout the document. References to "Tickets" were changed to "Ticket/Voucher" throughout the document. References to "Machines" were changed to "Gaming Devices" throughout the document.	
1.4.1 ***Other Standards***. This standard covers the actual requirements for single player gaming devices in casinos. The following other standards may apply: a)RESERVED; b)Progressive Gaming Devices in Casinos (GLI-12); and c)Standards for On-line Monitoring Systems in Casinos (GLI-13)	**1.4.1** ***Other Standards***. This standard covers the actual requirements for single player gaming devices in casinos. The following other standards may apply: a) RESERVED; b) GLI-12 Progressive Gaming Devices in Casinos; c) GLI-13 On-Line Monitoring and Control Systems (MCS) and Validation Systems in Casinos; d) GLI-16 Cashless Systems in Casinos; e) GLI-17 Bonusing Systems in Casinos; f) GLI-18 Promotional Systems in Casinos; g) GLI-20 Redemption Terminals; and h) GLI-21 Game Download System Series Game Download System – LAN.	**1.4.1** Added the reference to other GLI Standards that may apply, if the subject technology is being used.
3.0.1 ***Introduction***. 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 player terminal (e.g., gaming devices that function with a system).	***1.5.1*** ***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 player terminal (e.g., gaming devices that function with a system).	**3.0.1** Moved the introduction statement that defines a Gaming Device to a newly created section 1.5 since the definition would apply to the entire document, not just chapter 3. **1.5.1** Added new section for the definition of a gaming device. This was previously listed in section 3.0.1.
None	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 players credits should be displayed to avoid player disputes.	**2.5.1(k)** Was added to require the supplier to submit the necessary critical memory information needed to perform the critical memory tests**.**
None	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 program components. Upon the completion of this procedure the new logic board should allow the gaming device to reproduce the last known game state that was present on the submitted forensic logic board.	**2.5.1(l)** Was added to require the manufacturer to supply the ability to download RAM and supply a method to upload RAM contents to another logic board for cases of forensic evaluations**.**

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2.7.1 ***General Statement***. On the program medium that is submitted and subsequently placed in the field, each program shall be uniquely identified, displaying:	***2.7.1*** ***General Statement***. On the program medium that is submitted and subsequently placed in the field, **where applicable**, each program shall be uniquely identified, displaying:	**2.7.1** Changed the requirement for identifying the program where the information is to be supplied on the program medium to clarify this section only applies to program storage medium types that would apply (e.g., EPROM label vs. a Flash file).
3.1.1 ***General Statement***. A gaming device shall be robust enough to withstand forced illegal entry which would not leave behind evidence of the attempted entry, unless such entry causes a error code or is cleared at the commencement of a new play, and which does not affect the subsequent play or any other play, prize or aspect of the game.	***3.1.1*** ***General Statement***. A gaming device shall be robust enough to resist forced illegal entry.	**3.1.1** Modified the rule to clearly state the gaming device must be able to resist forced illegal entry. Removed exceptions.
3.2.1 ***General Statement***. The gaming test laboratory shall NOT make any finding with regard to Safety and EMC testing, as that is the responsibility of the manufacturer of the goods or those that purchase the goods	***3.2.1*** ***General Statement***. 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.	**3.2.1** Clarified EMC is the acronym for Electromagnetic Compatibility.
3.3.1 ***Game Integrity Standard***. The Laboratory will perform certain tests to determine whether or not outside influences affect game fairness to the player or create cheating opportunities. A gaming device shall be able to withstand the following tests, resuming game play without operator intervention: a) Random Number Generator. The random number generator and random selection process shall be impervious to influences from outside the device, including, but not limited to, electro-magnetic interference, electro-static interference, and radio frequency interference; **b) Electro-Magnetic Interference. Gaming devices shall not create electronic noise that affect the integrity or fairness of neighboring machines or associated equipment;** c) Electro-Static Interference. 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; **d) Radio Frequency Interference (RFI). Gaming devices shall not divert from normal operation by the application**	***3.3.1*** ***Game Integrity Standard***. The Laboratory will perform certain tests to determine whether or not outside influences affect game fairness to the player or create cheating opportunities. **This certification applies exclusively to tests conducted using current and retrospective methodology developed by Gaming Laboratories International, Inc. During the course of testing, Gaming Laboratories International, Inc. inspects for marks or symbols indicating that a device has undergone product safety compliance testing. Gaming Laboratories International, Inc. 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. Gaming Laboratories International, Inc. claims no liability and makes 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.** A gaming device shall be able to withstand the following tests, resuming game play without operator intervention: a) Random Number Generator. The random number generator and random selection process shall be impervious to influences from outside the device, including, but not limited to, electro-magnetic	**3.3.1** Removed the requirement for b)Electro-Magnetic Interference, d)Radio Frequency Interference, e)Magnetic Interference and f)Liquid Spills testing to be conducted by GLI and disclosed that it is the sole responsibility of the manufacturer to comply with any regulations related to the aforementioned. Added that GLI claims no liability and makes no representation with respect to such non-gaming testing.

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of RFI at a frequency range from twenty-seven (27) to one thousand (1000) MHZ with a field strength of three (3) volts per meter; **e) Magnetic Interference. Gaming devices shall not be adversely affected by magnetic interference. The manufacturer should supply any documentation if the device has had magnetic interference testing against any recognized standard; and** **f) Liquid Spills. Liquid spills applied to the outside of a gaming device shall not affect the normal operation of the machine, the integrity of the material or information stored inside the cabinet, or the safety of the players operating the equipment. If liquids are spilled into a coin acceptor or bill acceptor, the only degradation permitted is for the acceptor to reject all inputs or generate an error condition, see also 'Error Conditions,' Section 4.13. .**	interference, electro-static interference, and radio frequency interference; b) Electro-Static Interference. 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.	
3.7.1 General Statement. This requirement may be substituted for an audible alarm for machines such as the 'bar-top' style.	***3.7.1 General Statement.*** 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.	**3.7.1** Clarified that the Tower Light requirement for 'bar-top style' games may be shared among other machines or be substituted by an audible alarm.
3.10.1 General Requirements. a) The interior of the device should not be accessible when all doors are closed and locked; b) 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); c) The seal between the cabinet and the door of a locked area shall be designed to resist the entry of objects; d) There shall be a light on the top of the device that is clearly visible that automatically illuminates when the door to the gaming device, or doors to any devices connected to the gaming devices which may affect the operation of the gaming device, are opened. This requirement may be substituted for an audible alarm or a common candle for machines such as the 'bar-top' style; e) Bar-top Game Exception. All bar-top gaming devices shall have a light alarm, or an audio door alarm, installed. The alarm shall be designed to activate when the inside of the machine is accessed, with power on; f) All external doors shall be locked and monitored by door	***3.10.1 General Requirements.*** a) RESERVED; b) 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); c) The seal between the cabinet and the door of a locked area shall be designed to resist the entry of objects; d) RESERVED; e) RESERVED; f) 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; g) 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; h) RESERVED; and The sensor system shall register a door as being open when the	**3.10.1** Restructured this section and moved the requirement for the light on top of the device to illuminate when the door is opened and the reference to bar-top style games due to the change to only be referred to in (f) of this section. Previously there were numerous redundant references that may have been confusing.

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access sensors, which shall detect and report all external door openings, both to the machine by the way of an error and to an on-line system. NOTE: the drop box door open does not have to cease game play; however, it must still illuminate the tower light or alarm and notify the on-line system; g) 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; h) RESERVED; and The sensor system shall register a door as being open when the door is moved from its fully closed and locked position.	door is moved from its fully closed and locked position.	
3.11.1 General Statement. The logic area is a 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.	***3.11.1 General Statement***. 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.	3.11.1 Clarified the logic area is a separately locked cabinet area.
3.11.2 Electronic Components. Electronic component items that are required to be housed in one (1) or more logic areas are: a) CPUs and other electronic components involved in the operation and calculation of game play (e.g., game controller electronics and components housing the game or system firmware program storage media); b) Electronics involved in the operation and calculation of game result determination; c) Electronics involved in the calculation of game display, and components housing display program storage medium (passive display equipment exempted); d) Communication controller electronics, and components housing the communication program storage media or, the communication board for the on-line system may reside outside the gaming device; and e) All flash memory devices that affect the game play function of the gaming device.	***3.11.2 Electronic Components***. Electronic component items that are required to be housed in one (1) or more logic areas are: a) CPUs and any program 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) RESERVED; c) RESERVED; d) Communication controller electronics and components housing the communication program storage device e) RESERVED; and f) The back-up device shall be kept within a locked Logic Area.	**3.11.2(a)** Revised the rule to better clarify the components that may effect the integrity of gaming. **3.11.2(d)** Modified the rule to remove the statement advising the communication controller program may reside outside the gaming device since the section refers to logic areas but does not specify where the logic area should be located. **3.11.2(f)** Added a requirement for the backup device to be kept within a locked Logic Area.
3.12 Coin and Currency Compartments ***3.12.1 General Statement***. The coin and currency compartments shall be locked separately from the main cabinet area, except that a separate cash compartment shall not be required for coins necessary to pay prizes in a machine that pays prizes through a drop hopper.	**3.12 Coin/Token and Currency Compartments** ***3.12.1 General Statement***. 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** References made to "Coin" were changed to "Coin/Token"
3.13.1 Non-Volatile RAM Requirements. The following are the requirements for RAM: a) Battery Back-up. A battery back-up, or an equivalent, shall be installed on the game for the electronic meters	***3.13.1 Non-Volatile RAM Requirements***. The following are the RAM requirements for Gaming Devices that are not a part of a 'thin client' Game-Download System (A **thin client** is a computer (client) in client-server architecture networks which depends	**3.13.1** Clarified that memory regulations for thin client gaming devices are outlined within GLI-21 and defined "thin client" herein.

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and shall be capable of maintaining the accuracy of all information required for thirty (30) days after power is discontinued from the machine. The back-up device shall be kept within the locked Logic Area; a) Clearing non-volatile memory shall only be able to be undertaken by accessing the logic area in which it is housed.	primarily on the central server for processing activities. The word "thin" refers to the small boot image which such clients typically require - perhaps no more than required to connect to a network and start up a dedicated web browser or "Remote Desktop" connection), which are outlined within GLI-21: 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. d) Clearing non-volatile memory shall require access to the locked logic area.	**3.13.1(a)** Removed the reference to the backup being stored within the logic area since the electronic components that are to be housed within the logic area are addressed within 3.11.2, to avoid duplicating the same requirement. **3.13.1(d)** Was updated to simplify the intent of the rule to require access to the logic area to perform a memory clear.
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, see also, Section 3.13.1(d). Notwithstanding, a change to the denomination must be done by a secure means, which includes access to the locked logic area	***3.13.4 Configuration Settings***. 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.	**3.13.4** Was updated to allow for other secure methods to change the denomination provided that the method can be controlled by the regulatory body**.**
3.13.5 Requirements for Program Storage Devices. All program storage devices, including ROMs, EPROMs, FLASH ROMs, DVD, CD-ROM, and any other type of program storage devices shall be clearly marked with sufficient information to identify the software and revision level of the information stored in the devices.	***3.13.5 Program Identification***. All program storage devices, including ROMs, EPROMs, FLASH ROMs, DVD, CD-ROM, **Compact Flash** and any other type of program storage devices shall be clearly marked with sufficient information to identify the software and revision level of the information stored in the devices. See also Section 2.7.1 for specifics.	**3.13.5** Changed the title of this section from "Requirements for Program Storage Devices" to "Program Identification" and added Compact Flash to the media types specified. Also referenced 2.7.1 for specifics.
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: d) Information pertaining to the last five (5) plays with the RNG outcome (including the current game, if incomplete); and e) Software state (the last normal state the gaming device software was in before interruption).	***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: d) Information pertaining to the last ten (10) plays with the RNG outcome (including the current game, if incomplete); and e) Software state (the last normal state, last status or tilt status the gaming device software was in before interruption). *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.*	**3.14.1 (d)** Changed requirement from "the last 5 plays" to "the last 10 plays" to be stored in critical memory. **3.14.1 (e)** Clarified the software state the gaming device software was in before interruption, to include "Last status" OR "tilt status". **3.14.1 Note** Added clause that all in this section should be checked for corruption and if corrupted defined how this should be handled.
3.15.2 Comprehensive Checks. Comprehensive checks of critical memory shall be made during each gaming device restart (e.g., power up cycle). Gaming device control programs (software that operates the gaming device's functions) shall test for possible	***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	**3.15.2** Clarified that critical memory integrity should be checked upon processor resets. Added recommendations of methods to be

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corruption caused by failure of the program storage medium and all critical game functions. Test methodology shall detect 99.99 percent of all possible failures.	memory is continuously monitored for corruption or comprehensive checks occur 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.	used. Clarified the test methodology is to include but not limited to items defined in section 3.14.1 and at a minimum enable errors to be identified.
3.15.4 PSDs. All PSDs (program storage devices), in the executable address space of a main processor, shall be validated during the following conditions: a) Any power up;	***3.15.4 Program Storage Devices (PSDs)***. All PSDs (program storage devices), in the executable address space of a main processor, shall be validated and checked for corruption during the following conditions: a) Any processor reset; (e.g. power up and soft reset)	**3.15.4** Changed the title of the section to define a PSD (Program Storage Device) and included "checked for corruption" during the specified conditions. **3.15.4 (a)** Changed any power up to any processor reset and defined as power up and soft reset
3.16.1 General Statement. An uncorrectable corruption of RAM shall result in a RAM error. The RAM should not be cleared automatically, but shall require a full RAM clear performed by an authorized person.	***3.16.1 General Statement***. An unrecoverable corruption of RAM shall result in a RAM error. The RAM should not be cleared automatically, **result in a tilt condition, which identifies the error and causes the gaming device to cease further function. It is recommended that the player's credits be displayed to avoid player disputes.** An unrecoverable RAM error shall require a full RAM clear performed by an authorized person.	**3.16.1** This was previously referenced as uncorrectable corruption and was clarified as unrecoverable corruption. Clarified that a tilt condition, identifying the error and causing the gaming device to cease further functions and that the players credits should be displayed to avoid player disputes is also required for unrecoverable corruption of RAM.

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3.17 Write Once Read Many (WORM) Program Storage ***3.17.1*** ***General Statement***. A WORM used as a program storage device shall only contain the program files that operate the game.	**3.17 Program Storage Device Requirements** ***3.17.1*** ***General Statement***. All Program Storage Devices, including EPROMs, ROMs, Flash-ROMs, DVD, CD-ROM, Compact Flash, Hard Drives and any other type of Program Storage Devices shall: a) Be clearly marked with sufficient information to identify the software and revision level of the information stored in the devices as specified in section 2.7.1 and shall only be accessible with access to the locked logic compartment. b) Perform an integrity check (authentication) of all Critical Files or Program Code that operate on the Player Terminal during: i. Any processor reset (e.g. power up and soft reset); and ii. The first time the files or program code are loaded for use (even if only partially loaded). ***NOTE****: RAM and PSD space that is not critical to machine security (e.g., video or sound ROM) are not required to be validated) Although GLI recommends a method be in place for the files to be tested for corruption. If any of the video or sound files contain payout amounts or other information deemed critical that is needed by the player, the files or program storage must have a secure method of verification, also see section 4.19 Software Verification.* c) The programs residing in the Player Terminal shall be contained in a storage medium, which cannot alter itself autonomously through use of the circuitry or programming of the Player Terminal. Alterations may only be performed via a secure means, by an authorized person; and d) Are housed within a locked logic compartment	**3.17** This section was previous called 'Write Once Read Many (WORM) Program Storage'. The title has been changed to 'Program Storage Device Requirements'. You will find many changes to this section of the standard. The new format is much easier understood and more clearly defines the regulations for Write-able and Non-Write-able Program Storage media. **3.17.1 (c)** Clarified that alterations on a Player Terminal can only be performed by a secure means, by authorized personnel.
3.17.2 ***Utilizing Integrity Check***. The control program shall utilize an integrity check, preferably a secured hashing method such as MD5 or SHA (please contact the test laboratory for further information) to authenticate that the program and/or support files have not been corrupted or altered prior to use/loading.	***3.17.2*** ***Write Once (Non-Writable) Program Storage***. For Program Storage Devices that are written to once (i.e., EPROM, CD), the following rules shall be met: a) CD-ROM specific based Program Storage shall: i. Not be a re-writeable disk; and ii. The "Session" shall be closed to prevent any further writing. b) Non-EPROM specific (including CD-ROM) Program Storage shall meet the following rules: i. The Control Program shall authenticate all Critical Files by employing a hashing algorithm which produces a 'Message Digest' output of at least 128 bits at minimum, as certified by the test laboratory and agreed upon by the	**3.17.2 (b) (ii)** Changed requirement to accommodate gaming devices that do not log authentication errors electronically.

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	jurisdiction. The Message Digest(s) shall be stored on a memory device (ROM-based or other medium) within the Player Terminal. Message Digests which reside on any other medium shall be encrypted, using a public/private key algorithm with a minimum of a 512 bit key. However, a 768 bit key is recommended, or an equivalent encryption algorithm with similar security certified by the test laboratory and agreed upon by the jurisdiction. ***NOTE:*** *For international jurisdictions, the minimum values outlined within this section may be substituted for the minimum values that would be applicable for that location.* ii. The Player Terminal shall authenticate all Critical Files against the stored Message Digest(s), as required in (i), above. 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. If the gaming device does not capture the details including date and time of the error in an electronic log, it is recommended that internal controls be established to record this information manually. 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**: the values in (i) and (ii), above will constantly be re-evaluated based on technology advancements and new security methods available.	
3.17.3 **RESERVED**	**3.17.3 Writable Program Storage**. The programs residing in the Player Terminal that are capable of being erased and re-programmed without being removed from the Player Terminal, bill changer or other equipment or related device shall meet the below requirements: a) Re-programmable Program Storage shall only be written to in cases where the media contains only data, files, and programs that are not critical to the basic operation of the game, such as marketing information. Notwithstanding the foregoing, such device may write to media containing critical data, files, and programs provided that the gaming equipment: i. Maintain a log of all information that is added,	

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	deleted, and modified that is stored on the media; ii. Verifies the validity of all data, files, and programs which reside on the media using the methods listed in Section 3.17.2(b), Non-EPROM specific requirements; iii. Contains appropriate security to prevent unauthorized modifications; and iv. Not allow game play while the media containing the critical data, files, and programs are in a modifiable state. **NOTE**: If the program storage does not comply with any of the above requirements and is a Hard Disk, the media is permissible provided a write-protected drive is used (SCSI Devices are preferred, as they provide a write-protect jumper which can be sealed in place by the regulating body. Any other type of drive will have the write line cut and verified in the field. Any other means of write protection will be examined on a case-by-case basis) unless the gaming device is used with a Game Download System, which in this case would have to comply with GLI-21 Standard.	
3.17.4 ***CD-ROM "Re-Writeable Disk"*** In the case of a CD-ROM, a re-writeable disk may not be used. ***3.17.5*** ***CD-ROM "Session Closed"*** In the case of a CD-ROM, "the Session" shall be closed to prevent any further writing. ***3.17.6*** ***Write Protection.*** In the case of a hard disk, a write-protected drive shall be used. SCSI Devices are preferred, as they provide a write protect jumper which can be sealed. Any other type drive will be required to have the write line cut and verified in the field, and any other means of write protection will be examined on a case-by-case basis. ***3.17.7*** ***Alternate Storage Medium***. The program residing in the gaming device shall be contained in a storage medium, which cannot be altered through use of the circuitry or programming of the gaming device itself. If the program is contained in any other medium, the following rules shall be met: a) The gaming device shall authenticate all critical game files including, but not limited to, executables, data, and operating system files and other files, which may affect the game outcome or operation, which reside on the medium. This authentication shall employ a hashing algorithm which produces a 'Message Digest' (the mathematical results/signature of the hashing algorithm) output of at least 128 bits (this value will constantly be re-evaluated, based on technology advancements and new security methods	None	Restructured within 3.17.1, 3.17.2 and 3.17.3

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available) at minimum, as certified by the test laboratory and agreed upon by the jurisdiction; b) The Message Digest(s) for all files as defined in (a) shall reside on a memory device (ROM- based or other medium) within the gaming device. Message Digests which reside on any other medium shall be encrypted, using a public/private key algorithm with a minimum of a 512 bit key (this value will constantly be re-evaluated based on technology advancements and new security methods available), or an equivalent encryption algorithm with similar security certified by the test laboratory and agreed upon by the jurisdiction. c) The gaming device shall authenticate all critical files** against the stored Message Digest(s). This authentication shall meet the requirements of 'PSDs' Section 3.15.4; ** critical files are those files which affect game play, operation, or outcome d) In the event of a failed authentication, after the game has been powered up, the gaming device should immediately enter an error condition with the appropriate tower light signal, and record the details, including time and date of the error in a log. This error shall require operator intervention. 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; and e) The device shall be capable of displaying the 'Message Digest' of any and all files on demand through the audit mode, see also 'Software Meter Information Access,' Section 4.10.8.		
3.18 Flash Memory Devices ***General Statement.*** Flash memory devices that contain the control program are allowed as long as the ability to 're-write' or 'flash' the device, while installed in the logic board, is physically disabled (i.e., write line cut on the logic board). Each use of flash memory devices will be assessed. NOTE: Use of any hardware switch to enable the Write Line will be reviewed on a case-by-case basis.	**3.18 RESERVED**	**3.18** Flash memory section was removed since included within the newly formatted section 3.17 which addresses all program storage media. Section 3.18 is now reserved.
3.19.1 General Statement. A Multi-Station game is a gaming device that incorporates more than one (1) player terminal, and only has one (1) random number generator, which is controlled by the master terminal. The master terminal, containing the games CPU, will house the game display, which is shared among the	***3.19.1 General Statement***. 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 games Central Processing Unit (CPU), which shall determine	**3.19.1** Was changed for Multi-Station games to better define the role of the Master Terminal and clarify that each of the player terminals must meet the applicable

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player terminals. Each station must meet the technical standards outlined throughout this document, including machine identification and metering. NOTE: There must be a method for each player to know when the next game will begin.	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. This rule does not apply to "Central Determined" type games. *NOTE: There must be a method for each player to know when the next game will begin.*	hardware and software requirements of this document. Also added rule is not applicable to Central Determined type games.
None	***3.19.2 Player Terminals***. If applicable, the player terminals must meet the hardware requirements and software requirements of this document, with the exception of the Random Number Generator, which would apply to the Master Terminal.	**3.19.2** Was added for player terminals to conform to hardware and software requirements outlined in this document if applicable and to clarify that the RNG requirements would not apply to Player Terminals but would apply to the Master Terminal.
None	***3.19.3 Master Terminal***. 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 and Bill Validator requirements would not apply to the Master Terminal.	**3.19.3** Was added to clarify that the Coin and Bill Validator requirements would not apply to the Master Terminal.
3.20.1 PCB Identification Requirements. Requirements for PCB identification: None	***3.20.1 PCB Identification Requirements***. Requirements for PCB identification: d) The Manufacturers name is recommended	**3.20.1(d)** Recommended that the Manufacturer's name be included as part of the PCB identification.
3.22.1 General Statement. If the game contains 'Switches and Jumpers,' the following rules shall be met: b) Hardware switches which may alter the paytables, game denomination, or payout percentages in the operation of the gaming device must meet the 'Configuration Settings' **section of this document** and must be housed within a logic **department** 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; and	***3.22.1 General Statement***. If the game contains 'Switches and Jumpers,' the following rules shall be met: 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; and	**3.22.1 (b)** Includes a correction to the reference to the logic "compartment" instead of "department", which was a typo and added clause for hardware switches that may alter "Jurisdictional specific configuration settings".
3.23.1 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, **or an 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;	***3.23.1 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;	**3.23.1 (a)** Clarified that both detecting malfunctions and any attempts to interfere with device's operation need to be controlled. **3.23.1 (b)** Changed wording from mounting of reels' artwork to mounting of the assembly's artwork since assemblies are not specific to reels.

GLI-11 V1.3 Rule	GLI-11 V2.0 Rule	Reason for Change
b) Mechanical assemblies (e.g., reels or wheels) shall have some mechanism that ensures the correct **mounting of reels' artwork**, if applicable;	b) Mechanical assemblies (e.g., reels or wheels) shall have some mechanism that ensures the correct **mounting of the assembly's artwork**, if applicable;	
3.24.1 General Statement. All **video games** shall meet the following rules:	***3.24.1 General Statement***. All **video monitor touch screens** shall meet the following rules:	**3.24.1** Clarified this section pertains to video Monitor Touch Screens not video games
3.26.1 Coin Or Token Acceptors. If the gaming device uses a coin acceptor, the acceptor shall accept or reject a coin on the basis of metal composition, mass, composite makeup, or equivalent security. In addition, it shall meet the following rules: e) Coin Acceptance Conditions. Acceptance of coins 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 coin acceptor system;	***3.26.1 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 Acceptance Conditions. Acceptance of any Coins or Tokens 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 coin acceptor system;	**3.26.1** Changed references to "coin" to "coin/token throughout this section. **3.26.1 (a)** The heading for this section was changed from "Coin Acceptor Security Features/Error Conditions" (formerly e))to "Credit Acceptance Conditions"
f) Credit Meter Update on Coin Insertion. Each coin inserted shall register the actual monetary value or a number of credits 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; and	b) 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.	**3.26.1 (b** "Credit Meter Update on Coin/Token Insertion" was changed from f) to b). Clarified that the monetary value or credits are based on the denomination being used for incrementing the player's credit meter.
a) Coin Acceptor Security Features/Error Conditions. The coin acceptor shall be designed to prevent the use of cheating methods such as slugging (counterfeit coins), stringing (coin pullback), the insertion of foreign objects and other manipulation;	c)Coin/Token Acceptor Security Features/Error Conditions. The coin acceptor shall be designed to prevent the use of cheating methods such as, 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;	**3.26.1 (c)** Coin/Token Acceptor Security Features/Error Conditions was changed from a) to c). Clarified cheating methods should not be limited to examples indicated. Added clauses to require appropriate error condition functions and that the acceptor be disabled.
b) Rapidly Fed Coins. The gaming device shall be capable of handling rapidly-fed coins or piggy backed coins so that occurrences of cheating are eliminated;	d) 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;	**3.26.1 (d)** Rapidly Fed Coins was changed from b) to d). Added clause to require coins traveling too fast and do not register as credits should be returned to the player.
None	h) 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) iv) Coin Too Slow	**3.26.1 (h)** Added Coin Acceptor error conditions to this section where some of the information was previously listed within other sections.

GLI-11 V1.3 Rule	GLI-11 V2.0 Rule	Reason for Change
3.26.2 Bill Acceptors. All acceptance devices shall be able to detect the entry of valid bills, coupons, paper tokens, 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 acceptance device(s) shall be electronically-based and be configured to ensure that they only accept valid bills of legal tender. Bill acceptors may also accept coupons, paper tokens, or other approved notes and reject all others in a highly accurate manner. 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:	***3.26.2 Bill Validators.*** 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 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 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:	**3.26.2** The bill acceptor requirements were changed to refer to Ticket/Voucher instead of Paper Tokens, to remain consistent throughout the document and defined Ticket/Voucher and Coupons
a) RESERVED	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 players credit meter.	**3.26.2 (a)** Added that the monetary value or credits are based on the denomination being used for incrementing the player's credit meter
None	c) Bill Validator Security Features. Each bill validator 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.	**3.26.2 (c)** Added Bill Validator Security Features section where some of the information was previously listed within other sections
None	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 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.)	**3.26.2(d)** Was added to reflect that credit issuance was not permitted during other states (such as error conditions, including door opens, audit mode and game play, etc…) Exempted games that allow players to wager on upcoming events such as horse racing games.
None	e)Bill Validator Error Conditions: Each gaming device and/or bill validator shall have the capability of detecting and displaying (for bill validators, it is acceptable to disable or flash light(s)) the following bill Validator error conditions: i. Stacker Full (it is recommended that an implicit "stacker full" error message not be utilized since this may cause a security issue) ii. Bill Jams iii. Bill Validator Door Open - where a bill validator door	**3.26.2 (e)** Added Bill Validator Error Conditions requirements section with the information that was previously listed within 3.28. The comment that the game should not generate an error message for a stacker full has been added. This was recommended since the display of this information may cause a security issue. However,

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	is the belly glass door, a door open signal is sufficient iv. Stacker Door Open v. Stacker Removed vi. Bill Validator Malfunction not specified above.	the recommendation is not a technical specification.
3.26.4 Factory Set Bill Acceptors. If bill acceptors are designed to be factory set only, it shall not be possible to access or conduct maintenance or adjustments to those bill acceptors in the field, other than: a) The selection of bills, coupons, paper tokens, or other approved notes and their limits;	***3.26.4 Factory Set Bill Validators.*** If bill validators are designed to be factory set only, it shall not be possible to access or conduct maintenance or adjustments to those bill validators in the field, other than: a) The selection of desired acceptance for bills, coupons, Ticket/Vouchers, or other approved notes and their limits;	**3.26.4** The bill acceptor requirements were changed to refer to Ticket/Voucher instead of Paper Tokens, to remain consistent throughout the document. a) Clarified this applies to the desired acceptance for bills rather then just the selection of bills.
3.26.5 Tokenization. For games that allow tokenization, the game shall receive from the bill acceptor and post to the player the entire amount inserted.	***3.26.5 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 knowledge. For specifics on how residual credits should be handled/displayed, please refer to the Tokenization/Residual Credits Sections 4.10.4 and 4.11	**3.26.5** was changed to clarify that games with tokenization must maintain the fractional credits on a credit meter and not 'store' the credits, exempting when residuals are exhibited to the player at an appropriate time or the credit meter is in dollars and cents.
3.27.2 Bill Acceptor Recall. A gaming device that uses a bill acceptor shall retain in its memory and display the denomination of the last five (5) bills inserted.	***3.27.2 Bill Validator Recall***. A gaming device that uses a bill validator shall retain in its memory and display the information required in 3.27.1 of the last five (5) items accepted by the bill validator (i.e. Currency, Ticket/Vouchers, Coupons, etc.) The bill validator 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.	**3.27.2** Changed the requirement for the Bill Acceptor Recall to clarify the 'items accepted' as meaning US currency, Ticket/Vouchers, Coupons. Previously, the rule did not specify the types of notes that are needed to be included within the recall data stored. Added that the recall log may be combined with some requirements or maintained separately.
3.28.1 Error Conditions. Each gaming device and/or bill acceptor shall have the capability of detecting and displaying (for bill acceptors, it is acceptable to disable or flash a light or lights) the following bill acceptor error conditions:	***3.28.1 Bill Validator Location***. If a gaming device is equipped with a bill validator, 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.	**3.28** Added Acceptable Bill Validator locations section. This was previously the Bill Validator error conditions section which is now contained in section 3.26.2 (e)
3.29 Bill Acceptor Requirements	RESERVED	**3.29** is now RESERVED. This section used to contain Bill Validator Requirements which was moved to section 3.26.2

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a) The bill acceptor device shall have a 'stacker full' sensor;	a) The bill validator device shall have a 'stacker full' sensor; (it is recommended that an implicit "stacker full" error message not be utilized since this may cause a security issue)	**3.30.1 (a)** Added recommendation that an implicit stacker full error message not be utilized for security reasons.
b) There shall be a separate key to access the stacker area. This key shall be separate from the main door. In addition, a separate key shall be required to remove the bills from the stacker; 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)	**3.30.1 (b)** Clarified separate "keyed locks" are required instead of "separate keys" and access to remove the stacker is under 3 levels of locks.
3.32.1 ***Hoppers & Hopper Error Conditions***. There shall be under no circumstances, an abnormal payout from the hopper (if one exists) when the hopper is exposed to higher levels of electro-static discharge or if power is lost at any time during a payout. The hopper shall be interfaced in such a way as to allow the gaming device control program to monitor the hopper mechanism, in all game states, to identify at least the following events and shall meet the rules in 'Error Conditions,' Section 4.13: a) Extra coin paid; b) RESERVED; and c) Hopper jam or empty. NOTE: The hopper shall be resistant to manipulation by the insertion of a light source or any foreign object.	***3.32.1*** ***General Statement***. If coin hoppers are used, they are to be monitored, in all game states, by the gaming device control program. 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.	**3.32.1** The rules pertaining to Hoppers & Hopper Error Conditions have been renamed to 'Coin Hoppers'. This section was changed to clarify the requirement for the coin hopper to have the ability to identify the conditions where the control program would have the responsibility to respond with an Error Condition.
3.32.2 RESERVED	***3.32.2 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.	**3.32.2** Added acceptable hopper location section.
None	***3.32.3 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 c) Hopper runaway or extra Coin paid out; *NOTE: The error conditions within this section shall also comply with 'Error Conditions', Section* ***4.13*** *unless otherwise noted.*	**3.32.3** Added hopper error conditions section. Expanded on the requirements since only some of this information was previously contained in section 3.32.1
f) Unique validation number, or barcode.	f) Unique validation number (including a copy of the validation number on the leading edge of the Ticket/Voucher), and g) Barcode (not required for Ticket/Vouchers that are non-redeemable at a gaming machine).	**3.33.1 (f)** Added requirement so the unique validation number appears on the leading edge of the Ticket/Voucher and a Barcode is included. **(g)**Clarified that the barcode is not required for Ticket/Vouchers that are not redeemable at an EGD.
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 ***thirty-five (35)*** *ticket information to*	*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*	**3.33 Note** the requirement for retention of the last thirty-five (35) Ticket/Voucher-out information to

GLI-11 V1.3 Rule	GLI-11 V2.0 Rule	Reason for Change
resolve player disputes. In addition, an approved system shall be used to validate the payout ticket, and the ticket information on the central system shall be retained at least as long as the ticket is valid at that location.	*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.*	resolve player disputes was changed to the last twenty-five (25).
3.33.3 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; c) Printer disconnected which may only be detected when the software tries to print.	***3.33.3 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. c) Printer disconnected – it is permissible for the gaming device to detect this error condition when the game tries to print.	**3.33.3(a)** Added clause to clarify that it is permissible for the gaming device to not lock up for these conditions but the attendant must be alerted. **3.33.3(c)** Added clause to clarify that it is permissible for the gaming device to detect a disconnected printer at the time the game tries to print and not immediately
a) the gaming device is linked to a computerized system, which allows validation of the printed ticket. Validation approval or information shall come from the central system in order to validate tickets. Tickets 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 tickets to prevent fraud by reprinting and redeeming a ticket that was previously issued by the gaming device; or b) by use of an approved alternative method that includes the ability to identify duplicate tickets to prevent fraud by reprinting and redeeming a ticket that was previously issued by the gaming device.	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.	**3.34.1 (a) & (b)** References to "System" were changed to "Ticket/Voucher Validation System" for clarity.
None	**3.35 Ticket/Voucher Information** ***3.35.1 General Statement***. A Ticket/Voucher shall contain the following printed information at a minimum: a) Casino Name/Site Identifier; 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	**3.35** Added entire section for "Ticket/Voucher Information" requirements, which was moved from GLI-13 and a note that this section will be re-evaluated and revised once the G2S protocol has been adopted and becomes utilized by the gaming device suppliers

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	Validation number; h) Type of transaction or other method or differentiating Ticket/Voucher types; (assuming multiple Ticket/Voucher types are available) and 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). *NOTE: Some of this information may also be part of the validation number or barcode.* ***3.35.2 Ticket/Voucher Types***. If Gaming Device Ticket/Voucher generation is supported while not connected to the validation system, the Ticket/Voucher system must generate two different types of Ticket/Vouchers at minimum. On-line and off-line types are denoted respectively by Ticket/Voucher generation either when the validation system and gaming device are properly communicating or the validation system and gaming device is not communicating properly. When a patron cashes out of an EGD that has lost communication with the validation system, the EGD may print an off-line Ticket/Voucher or lock up in a handpay condition where a handpay receipt may be generated. The off-line Ticket/Voucher or handpay receipt must be visually distinct from an on-line Ticket/Voucher either in format or content while still maintaining all information requirements. *NOTE: This section will be re-evaluated and revised once the G2S protocol has been adopted and becomes utilized by the gaming device suppliers.*	
None	**3.36 Ticket/Voucher Issuance and Redemption** ***3.36.1 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 allowed if supported by the validation system. ***3.36.2 Online Ticket/Voucher Redemption***. 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. ***3.36.3 Offline Ticket/Voucher Redemption***. 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. *NOTE: This section will be re-evaluated and revised once the G2S*	**3.36** Added entire section for "Ticket/Voucher Issuance and Redemption" and a note that this section will be re-evaluated and revised once the G2S protocol has been adopted and becomes utilized by the gaming device suppliers

GLI-11 V1.3 Rule	GLI-11 V2.0 Rule	Reason for Change
	protocol has been adopted and becomes utilized by the gaming device suppliers.	
c) Fever Mode. Each game which features a "fever" mode (a mode which gives the player an opportunity for the following 'X' number of hands to achieve a certain winning combination with the pay-off being some number of bonus credits) should include the number of hands remaining for the "fever" mode pay-off during each game that fever mode is present. The same shall apply to free games awarded as a result of a previous event; and	c) Extended Feature Information. Each game which offers an extended feature (i.e., Free Games, Re-Spins, Bonus Paytable during the next 'x' games, etc.) must display the number of feature games that are remaining, during each game; and	**4.2.1 (c)** Removed' Fever Mode' section since it is now defined as 'Extended Feature Game Information' since these rules would apply to Free Games, Re-Spins, etc. Also, the rule was modified to read more clearly.
None	e) Player Choices. 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%, the game must then display additional information so that the player can make an informed decision regarding optimal play.	**4.2.1 (e)** Added Player Choices section in its entirety.
None	g) The denomination being played shall be clearly displayed. h) A disclaimer regarding Malfunctions Void all Pays should also be clearly displayed is recommended.	**4.2.2 (g) and (h)** Added requirements for the payglass to include the denomination being played to be displayed and a disclaimer that malfunctions void all pays.
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; and	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; the credits bet per line and	**4.2.3 (a)** Changed wording to clarify that an indication of the credits bet per line should be displayed to the player.
4.2.4 Game Cycle. A game is considered completed when the final transfer to the player's credit meter takes place (in case of a win), or when all credits wagered or won that have not been transferred to the credit meter, are lost.	***4.2.4 Game Cycle***. A game is considered completed when the final transfer to the player's credit meter takes place (in case of a win), or when all credits wagered are lost.	**4.2.4** Clarified when a game is considered completed
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 95%. These tests may include, but are not limited to:	***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:	**4.3.3** Increased the RNG confidence level from 95% to 99%
4.3.6 Live Game Correlation. Unless otherwise denoted on the payglass, where the gaming device plays a game that is recognizable such as Poker, Blackjack, Roulette, etc., the same probabilities associated with the live game shall be evident in the simulated game. For example, the odds of getting any particular number in Roulette where there is a single zero (0) and a double zero (00) on the wheel, shall be 1 in 38; the odds of drawing a	***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	**4.3.6** Clarified that live game correlation rules apply to games that are recognizable to be a simulation of a live casino game

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specific card or cards in Poker shall be the same as in the live game. For other gaming devices (such as spinning reel games or video spinning reel games), the mathematical probability of a symbol appearing in a position in any game outcome shall be constant.	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. For other game types (such as spinning reel games or video spinning reel games), the mathematical probability of a symbol appearing in a position for any game outcome shall be constant.	
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 game, including bonus games, see also 'Bonus Games,' Section 4.5. In addition, the game must meet the following rules:	***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, bonusing 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.*	**4.4.1** Revised the wording to more clearly explain that the theoretical payout percentage is calculated on the base game information (not including bonusing systems, progressives, merchandise, etc.) and created a note in this section (in italic) to better clarify the reporting of the theoretical payout percentage by GLI within our certification documents and future modification to games in the field, will require a re-evaluation.
4.4.2 Progressive Game Calculations. Whenever a progressive handpay is offered as part of the gaming device payout, the base amount (the lowest starting value possible) shall be included in the theoretical payout percentage for purposes of satisfying the minimum percentage requirements. The test laboratory shall provide the base amount in the certification letter as the lowest configuration. This rule shall not supersede the rules in 'Merchandise Prizes In Lieu Of Cash Awards,' Section 4.4.5, and see also, GLI-12 Progressive Gaming Devices in Casinos.	***4.4.2 RESERVED***	**4.4.2** Section is now reserved since removed the Progressive game calculations from this section because the theoretical payout percentage rule is now within section 4.4.1 and the Note now addresses this information.
4.4.4 Odds. The highest single advertised payout on each gaming device shall occur, statistically, at least once in 50,000,000 games. This does not apply to multiple awards won together on the same game play where the aggregate prize is not advertised. This odds rule shall not apply to games which make it possible for a player to win the highest win multiple times through the use of free games. This rule does apply to each wager that wins the maximum award.	***4.4.4 Odds***. The highest single advertised payout on each gaming device shall occur, statistically, at least once in 50,000,000 games. This does not apply to multiple awards won together on the same game play where the aggregate prize is not advertised. This odds rule shall not apply to games which make it possible for a player to win the highest win, multiple times through the use of free games. This rule does apply to each wager that wins the maximum award. If the highest advertised award can occur within a bonus or free game feature, the odds calculation shall include the odds of obtaining the bonus round including the odds to achieve the top award.	**4.4.4** Added GLI's new method of calculating the top award odds if the highest advertised award can occur within a bonus or free game feature, the odds calculation shall include the odds of obtaining the bonus round including the odds to achieve the top award.
a) Payout Percentage. No payout of any merchandise or thing of value shall be included in determining whether a gaming device meets the established minimum payout requirement unless the player is given an option to claim a single, lump sum cash prize. In that case, aforementioned cash prize will be used to compute the payout percentage.	a) RESERVED;	**4.4.5(a)** Removed the game calculation section where Merchandise is awarded, since the theoretical payout percentage rule within section 4.4.1 and the NOTE now addresses this information.
ii) Gaming devices which are linked to offer the same	c) Gaming devices which are linked to offer the same merchandise	**4.4.5(c)** Revised the rule to reference

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merchandise handpay shall have the same probability of hitting the combination (adjusted for denomination of play and number of coins bet) that will award that handpay. See also, GLI-12 Progressive Gaming Devices in Casinos.	prize, shall have the same probability of hitting the winning combination (adjusted for denomination of play and number of coins bet) that will award that prize. See also, GLI-12 Progressive Gaming Devices in Casinos.	merchandise prizes instead of merchandise handpays since the reference to handpay was inaccurate.
4.5.1 Bonus Games. If the game contains a 'bonus feature' including a game within a game, the following rules shall be met:	***4.5.1 Bonus Games.***: Games that have an award calculated, occurring from game play within the base game's cycle made upon the completion of a series of random occurrences, (e.g. bonus features, including free games) shall meet the following:	**4.5.1** Changed wording to reflect a "game within a game" refers to "free games"
None	b) The game shall clearly display to the player all possible win amounts, multiplier ranges, etc. that can be obtained from bonus play.	**4.5.1 (b)** Added this new clause to require win amounts, multiplier ranges, etc. that are obtainable from bonus play to be disclosed to the player.
4.6 Extended Play	***4.6 RESERVED***	**4.6** Section is now RESERVED. This was previously the "Extended Play" section where the rules were combined with section 4.5 since they were all applicable to bonus games.
4.8 Bonus Game's Return ***4.8.1 General Statement***. The game's player return over the cycle of both the bonus and non-bonus part of the game shall conform to the minimum theoretical return to player.	**4.8 Mystery Awards** ***4.8.1 General Statement***. 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** This section was changed from Bonus Games Return to Mystery awards since the Bonus Games return requirements are now under 4.5.1. The Mystery award requirements were added in their entirety.
e) The player shall not be forced to play a game just by selecting that game. The player shall be able to return to the main menu.	e) 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.	**4.9.1 (e)** Clarified that this rule pertains when multiple games are offered and added exception for game play to commence by selected a game title.
f) It should not be possible to 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) 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.	**4.9.1 (f)** Clarified it should not be possible to select or start a new game until the current game completes. Previously it was just stated as start a new game.
4.10.2 Credit Meter Units and Display. The credit meter shall be maintained in credits or cash value (i.e. applicable local currency).	***4.10.2 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	**4.10.2** Clarified that the credit meter shall at all times indicate all credits or cash available for the player to wager or cashout. This should be displayed to the player with the

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	screen item. This should be displayed to the player unless a tilt condition or malfunction exists.	exception of when the player is viewing an informational screen such as a menu or help screen item or unless a tilt condition or malfunction exists
4.10.5 Credit Meter – Incrementing. The value of every prize (at end of game) shall be added to the player's credit meter, except all handpays or merchandise, see also 'Merchandise Prizes In Lieu Of Cash Awards,' Section 4.4.5.	***4.10.5 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 4.4.5. The credit meter shall also increment with the value of all valid coins, tokens, bills, Ticket/Vouchers, coupons or other approved notes accepted.	**4.10.5** Clarified that the credit meter shall also increment with the value of all valid coins, tokens, bills, Ticket/Vouchers, coupons or other approved notes accepted.
4.10.6 Progressives. Progressives may be added to the credit meter if either: a) The credit meter is maintained in the local currency amount; or b) The progressive meter is incremented to whole credit amounts; or c) The prize in the local currency amount is converted to credits on 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. See also, GLI-12 Progressive Gaming Devices in Casinos.	***4.10.6 Progressives***. Progressives 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. See also, GLI-12 Progressive Gaming Devices in Casinos.	**4.10.6** Wording changes were made to improve clarity for incrementing credit meter on progressive awards.
4.10.7 Collect Meter. There shall be the facility for a collect meter which will show the number of credits or cash collected by the player (the number of credits or cash collected shall be subtracted from the player's credit meter and added to the collect meter).	***4.10.7 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 or may not include handpays.	**4.10.7** Clarified that the collect meter shall at all times indicate credits or cash the player has cashed out and that this should be displayed to the player unless a tilt condition or malfunction exists. Also added the meter may or may not include handpays.
4.10.8 Software Meter Information Access. The software meter information shall be accessible by an authorized person.	***4.10.8 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.	**4.10.8 C**larified meter access must have the ability for on-demand display and only via a secure means.
4.10.9 Electronic Accounting and Occurrence Meters. Electronic accounting meters shall be at least **eight (8) digits** in length. If the meter is being used in dollars and cents, at least eight (8) digits must be used for the dollar amount. The meter must roll over to zero upon the next occurrence, any time the meter is eight (8) digits or higher and after 99,999,999 has been reached or any other value that is logical. Occurrence meters shall be at least three **(3) digits** in length and roll over to zero upon the next occurrence, any time the meter is higher that the maximum number of digits for that meter. The required electronic meters are as follows	***4.10.9 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.	**4.10.9** Restructured this entire section and changed various metering requirements.

GLI-11 V1.3 Rule	GLI-11 V2.0 Rule	Reason for Change
(accounting meters are designated with an asterisk '*'): a) The coins-in* (OR cash in) meter shall cumulatively count the total amounts wagered during game play, except credits that are won during the game that are subsequently risked in a double up mode. b) The coins-out* (OR credit out) meter shall cumulatively count all amounts won by the player at the end of the game, that were not paid by an attendant, including amounts paid by a ticket printer. This meter must not increment for bills inserted and cashed out (used as a change machine). c) The drop* meter shall maintain a cumulative count of the number of coins that have been diverted into a drop bucket and credit value of all bills and tickets/coupons inserted into the bill acceptor for play. NOTE: It is acceptable to have separate 'drop' meters for coins, bills, tickets and coupons. d) The handpays* meter shall reflect the cumulative amounts paid by an attendant for progressive and non-progressive handpays. e) The games-played meter shall display the cumulative number of games played since the last RAM clear. f) A cabinet door meter shall display the number of times the front cabinet door was opened since the last RAM clear. g) The drop door meter shall display the number of times the drop door or the bill acceptor door was opened since the last RAM clear. h) The cancelled credit* meter shall reflect the cumulative amounts paid by an attendant that are in excess of the credit limit and residual credits that are collected. NOTE: printer games do not require a cancelled credit meter unless, a 'printer limit' option exists on the game. i) The progressive occurrence meter shall count the number of times each progressive meter is activated. See also *GLI-12 Progressive Gaming Devices in Casinos.*	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 (4.10) 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 rule does not apply to Keno or Skill Games.* b) Coin Out* 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) Coin Drop*. The machine must have a meter that accumulates the total value of coins or tokens diverted to the drop; d) Attendant Paid Jackpots*. 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	

GLI-11 V1.3 Rule	GLI-11 V2.0 Rule	Reason for Change
	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) Cancelled Credits*. 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) Physical Coin In*. The machine must have a meter that accumulates the total value of coins or tokens inserted into the machine; g) Physical Coin Out*. The machine must have a meter that accumulates the value of all coins or tokens physically paid by the machine; h) Bill In*. 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) Ticket/Voucher Voucher In*. 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) Ticket/Voucher Voucher Out*. 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) Electronic Funds Transfer In* (EFT In). 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) Cashless Account Transfer In* (AFT In). (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) Cashless Account Transfer Out* (AFT Out). (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	

GLI-11 V1.3 Rule	GLI-11 V2.0 Rule	Reason for Change
	machine and a cashless wagering system; n) Non-Cashable Electronic Promotion In*. 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) Cashable Electronic Promotion In. 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) Non-Cashable Electronic Promotion Out*. 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) Cashable Electronic Promotion Out*. 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) Coupon Promotion In*. The machine must have a meter that accumulates the total value of all slot machine coupons accepted by the machine; s) Coupon Promotion Out*. The machine must have a meter that accumulates the total value of all slot machine coupons issued by the machine; t) Machine Paid External Bonus Payout*. 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) Attendant Paid External Bonus Payout*. 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) Attendant Paid Progressive Payout*. 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) Machine Paid Progressive Payout*. 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; and x) Games-played. The machine must have meters that	

GLI-11 V1.3 Rule	GLI-11 V2.0 Rule	Reason for Change
	accumulates the number of games played i)Since power reset; ii)Since door close; and iii)Since game initialization (RAM clear). y) External Doors. The machine must have meters that accumulates the number of times the any external cabinet door that allows access to the logic area or currency compartment which was opened since the last RAM clear. aa) Bill validator door. (i.e. stacker door) The machine must have a meter that accumulates the number of times the Bill Validator door has been opened since the last RAM Clear bb) Progressive Occurrence The machine must have a meter that accumulates the number of times each progressive meter is activated See also *GLI-12 Progressive Gaming Devices in Casinos*.	
4.10.10 Multi-Game Game Specific Meters. In addition to the Electronic Accounting Meters required above, each individual game available for play shall have at least "Credits Bet" and "Credits Won" meters 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 4.10.11. Either way, the method of metering must be understood on the screen.	***4.10.10 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 4.10.11. Either way, the method of metering must be understood on the screen.	**4.10.10** Clarified that for multi-games only one set of master meters are required but, period meters "Credits Bet" and "Credits Won" for each game available are additionally required.
4.10.11 Double-Up or Gamble Meters. For each type of Double-up or Gamble offered, there shall be two meters to indicate the amount doubled and the amount won, which should increment every time a Double-up or Gamble occurs. If the gaming device does not supply accounting for the Double-Up or Gamble information, the feature must not be enabled for use.	***4.10.11 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.	**4.10.11** Changed requirement for two meters to sufficient meters to determine the feature's actual RTP. Clarified meters should increment upon feature conclusion.
4.12.1 General Statement. For gaming devices that are required to communicate with an on-line electronic game management system, please refer to the *GLI-13 Standards for On-line Monitoring and Control Systems (MCS) and Validation Systems in Casinos*.	***4.12.1 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. In addition, please refer to the *GLI-13 Standards for On-line Monitoring and Control Systems (MCS) and Validation Systems in Casinos*.	**4.12.1** Added a disclaimer to the Communication Protocol section that requires the device to accurately function as indicated by the communication protocol that is implemented.
4.13.1 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. They shall be cleared either by an attendant or upon initiation of a new play sequence and be communicated to an on-line monitoring and control system, if applicable:	***4.13.1 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	**4.13.1** Clarified that error conditions should cause the gaming device to lock up and require attendant intervention except as noted. Denoted errors deemed as critical, which will require further evaluation.

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a) Coin-in jam; b) Coin-out jam; c) Hopper empty or timed out; d) Hopper runaway or extra Coin paid out, see also 'Hoppers,' Section 3.32; e) RAM error; f) Low RAM battery, for batteries external to the RAM itself or low power source; g) Currency-in jam; h) Program error or authentication mismatch; i) Door open (including bill acceptor); j) Reverse coin-in (coin traveling wrong way through acceptor); k) Reel spin errors, including a mis-index condition for rotating reels, that affects the outcome of the game: i. The specific reel number shall be identified in the error code; 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. l) Power reset. NOTE: This rule also applies to the 'Bill Acceptor Error Conditions' listed in Section 3.28 and the 'Printer Error Conditions' listed in Section 3.33.	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: **COIN ACCEPTOR ERRORS:** a) Coin-in jam; b) Coin-out jam; c) Reverse Coin-In (coin traveling wrong way through acceptor) d) Coin Too Slow *NOTE: The error conditions within this section shall also comply with 'Error Conditions', Section **3.26** unless otherwise noted.* *NOTE: It is acceptable to report Coin-in jam, Reverse Coin-in and Coin Too Slow errors as a generic "Coin-In Error" condition provided the gaming device level requirements specified in 4.13.1 are met.* **HOPPER ERRORS** a) Hopper empty or timed out; b) Hopper Jam c) Hopper runaway or extra Coin paid out; *NOTE: The error conditions within this section shall also comply with 'Error Conditions', Section **3.32** unless otherwise noted.* **BILL VALIDATOR ERRORS**- It is acceptable to disable the validator or flash light(s) for the following bill Validator error conditions: a) Stacker Full (it is recommended that an implicit "stacker full" error message not be utilized since this may cause a security issue) b) Bill Jams c) Bill Validator Door Open - where a bill validator door is the belly glass door, a door open signal is sufficient d) Stacker Door Open e) Stacker Removed f) Bill Validator Malfunction not specified above *NOTE: The error conditions within this section shall also comply with 'Error Conditions', Section **3.26** unless otherwise noted.* **PRINTER ERRORS** 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.	Categorized errors by device so they are all in one central location. **4.13.1** Coin Acceptor Errors – removed Invalid Coin since we require return to the player. Added note to allow reporting of a generic "Coin-In Error" condition. **4.13.1** Printer Errors - it is permissible for the gaming device to **not** lock up for out of paper/paper low however, there should be a means for the attendant to be alerted **4.13.1** Other Error Conditions d) Reel Spin Errors. Clarified the conditions for when the error should be generated and what the error should generate

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	*NOTE: The error conditions within this section shall also comply with 'Error Conditions', Section **3.33** unless otherwise noted.* **DOOR OPEN ERROR CONDITIONS** a) All external doors (i.e. Main, Belly, Top Box); b) Drop box door; c) RESERVED; d) Bill validator door.(i.e. Stacker door) e) Any other currency storage area that have a door *NOTE: The error conditions within this section shall also comply with 'Error Conditions', Section **4.15** unless otherwise noted.* **OTHER ERROR CONDITIONS** a) RAM error*; (In the case of this malfunction, the players credits should be displayed to avoid player disputes) b) Low RAM battery, for batteries external to the RAM itself or low power source; c) Program 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. e) Power reset.	
4.14.1 Interruption. After a program interruption (e.g., power down), the software shall be able to recover to the state it was in immediately prior to the interruption occurring.	***4.14.1 Interruption***. After a program 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 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.	**4.14.1** Clarified that if a power failure occurs during acceptance of a bill or other note, the bill validator 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.
None	d) The bill validator device shall perform a self-test at each power up. In the event of a self-test failure, the bill validator shall automatically disable itself (i.e., enter bill reject state) until the	**4.14.4 (d)** Added clause indicating that the bill validator device shall perform a self-test at each power up.

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	error state has been cleared.	In the event of a self-test failure, the bill validator shall automatically disable itself (i.e., enter bill reject state) until the error state has been cleared.
4.15.1 Required Door Metering. The software shall be able to detect and meter access to the following doors or secure areas: a) All external doors; b) Drop box door; c) RESERVED; and d) Bill acceptor door.	***4.15.1 Required Door Metering***. The software shall be able to detect and possess specific occurrence meters of access as specified in 4.10.9 to the following doors or secures areas: a) All external doors (i.e. Main, Belly, Top Box); b) Drop box door; c) RESERVED; and d) Bill validator door.(i.e. stacker door) e) Any other currency storage area that have a door	**4.15.1 (a)** Clarified the intention of "All External Doors" **4.15.1 (d)** Clarified Bill validator door is synonymous for stacker door **4.15.1 (e)** Added any other currency storage area that have a door
4.16.1 General Statement. The game shall be capable of entering a lock up condition if a win creates a manual handpay that is required by a taxing jurisdiction.	***4.16.1 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 by a taxing jurisdiction.	**4.16.1** Was changed to clarify that the game shall lock up if a single event is in excess of a limit that is required by a taxing jurisdiction. Previously, there was no reference to 'single event', meaning one game.
4.17 Test/Diagnostic Mode ***4.17.1 General Statement***. If in a test 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 test mode that increments any of the electronic meters. Any credits on the gaming device that were accrued during the test mode shall be cleared before the test mode is exited. Test meters are permissible provided the meter indicates as such.	**4.17 Test/Diagnostic Mode (Demo Mode)** ***4.17.1 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.	**4.17** Clarified that Diagnostic Mode would also include (Demo mode).
4.17.2 Entry To Test/Diagnostics Mode. The main cabinet door of the gaming device may automatically place the gaming device in a service or test-mode. Test/diagnostics mode may also be entered, via an appropriate instruction, from an attendant during an audit mode access.	***4.17.2 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.	**4.17.2** Clarified that Test, Diagnostics or Demo modes should not be accessible to the player.
4.18.1 Number Of Last Plays Required. Information on at least the last five (5) 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.	***4.18.1 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.	**4.1.8.1** Increased the number of last plays required in game history recall from 5 to 10.
4.18.2 Last Play Information Required. Last play information shall provide all information required to fully reconstruct the last five (5) plays. All values shall be displayed, including the initial credits, credits bet, credits won, and credits paid. If a progressive	***4.18.2 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	**4.18.2** Clarified that the payline symbol combination should be included in game recall and the requirement regarding the

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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, the results of Double-up or Gamble (if applicable).	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, the results of Double-up or Gamble (if applicable).	information to be displayed is not dependent upon a win or loss. Also clarified that the information can be represented in graphical or text format and clarified the requirement for bonus game recall
4.18.3 Bonus Rounds. The five (5) 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, if the outcome results in an award. The recall shall also reflect position dependent events if the outcome results in an award. For games that may have infinite free games, there shall be a minimum of fifty (50) games recallable.	***4.18.3 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 intermediate play steps per game may satisfy this requirement by providing the capability to display the last 50 play steps in addition to each base game.	**4.18.3** Indicated that history is to be retained regardless if the game results in a win or loss. Clarified requirement for games with a variable number of free games.
4.19.1 General Statement. The device shall have the ability to allow for an independent integrity check of the device's software from an outside source. This can be accomplished by the medium being able to be removed and authenticated by a third-party device, or having an interface port for a third-party device to authenticate the media. This integrity check will provide a means for field testing the software to identify and validate the program. The test laboratory, prior to device approval, shall approve the integrity check method.	***4.19.1 General Statement***. 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 programs that may affect the integrity of the game. This must be accomplished by being authenticated by a third-party device, which may be embedded within the game software (see NOTE below) or 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 program. The test laboratory, prior to device approval, shall approve the integrity check method. ***NOTE****: If the authentication program is contained within the game software, the manufacturer must receive written approval from the test laboratory prior to submission.*	**4.19** modified the software verification rule to allow for the authentication program to be contained within the game software provided; the method of implementation is approved, in writing. Clarified that all controls programs that affect game integrity must be verifiable from an outside source.
5.2.1 General Statement. Each gaming device may be equipped with a certified program which allows for tournament mode play. 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.	***5.2.1 General Statement***. Each gaming device may be equipped with a certified program, 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.	**5.2.1** Clarified rule to state the Tournament feature, if supported should default to disabled.
5.4.1 General Statement. No machine, while enabled for tournament play, shall accept coins or tokens, nor pay out coins or tokens, but shall utilize credit points only. Tournament credits shall have no cash value. These machines shall not increment any mechanical or electro-mechanical meters, and all machines in the tournament shall be identical. The percentage requirements as addressed in Section 4.4 are waived for tournament games.	***5.4.1 General Statement***. 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.	**5.4.1** Changed the tournament statement from referencing coins where the game shall not accept coins or pay out coins since there are other sources of consideration. The rule was changed to indicate that the game shall not accept or payout credits of any source (bills, coins,

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		etc.) In addition, the reference to the games playing in the tournament being identical has been removed since reference later within this section. In its place, a statement was added that precludes the game from communicating any accounting information to the system. This was changed to ensure that games offering both regular and tournament modes accurately communicate to the on-line system where tournament bet credits would offset the accounting for that machine.