



TECHNICAL STANDARDS
FOR
ELECTRONIC TABLE GAMES
(SINGAPORE)

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PREFACE

The purpose of this document is to establish the requirements for the design and operation of Electronic Table Games in the gaming industry in Singapore and to guide testing and certification bodies on the areas for technical compliance on such equipment.

An Electronic Table Game is used for the purpose of playing a game traditionally played at tables, and includes any electronic device through which bets may be placed on a table game. Technically, the Electronic Table Game would comprise a network of servers, devices and multiple Player Terminals that are used to conduct gaming in a fully or semi-automated manner, including but not limited to the automated collection of wagers and automated pay-out of winnings. Please note that a gaming product that does not automate the process of collecting wagers and paying out winnings (i.e. a product that still requires a live dealer to conduct wagering instrument transactions) is not considered an Electronic Table Game and thus is not subject to these technical standards.

As the Player Terminal of an Electronic Table Game is also a gaming machine, every Player Terminal is also subject to the Technical Standards for Electronic Gaming Machines (Singapore).

The intent of this document is to ensure that gaming on Electronic Table Games occur in a manner that is:-

- a. Honest;
- b. Secure;
- c. Reliable; and
- d. Auditable.

It is not the intent of this document to:-

- a. Mandate a single solution or method to realise an objective;
- b. Limit technology application to gaming equipment;
- c. Limit creativity and variety of choice;
- d. Limit any supplier or manufacturer of equipment; and
- e. Preclude research and development into new technologies or innovative ideas.

As far as possible, this document specifies what the minimum technical standards for Electronic Table Games are instead of how these standards should be met, and does not mandate a particular solution or method as the means to realise these standards.

Gambling Regulatory Authority of Singapore (the “Authority”) is the regulatory authority that supervises and regulates the activities of casinos in Singapore. Casino operators are required to be licensed by law and the gaming equipment deployed on the casino floor must comply with these technical standards as part of their licensing requirements.

Where applicable, the provisions in the Casino Control Act 2006 and its subsidiary legislation shall take precedence over these technical standards.

Technical Standards for Electronic Table Games (Singapore)

This document would be reviewed on an ongoing basis to take into account the evolution of technologies utilised in Electronic Table Games and the development of other casino related technologies that may require technical regulation.

Comments on this document can be forwarded to:-

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1. INTRODUCTION

1.1 Purpose

1.1.1 The purpose of this document is to:-

- a. Create a set of technical standards that would ensure that the operation of Electronic Table Games in casinos in Singapore is secure, reliable, auditable and operated appropriately;
- b. Establish the minimum integrity standards for Electronic Table Games;
- c. Construct a set of technical standards that are technology neutral wherever feasible; and
- d. Construct a set of technical standards that do not specify or approve any particular method or algorithm. The intent being to allow a wide range of methods to be used to conform to these standards as long as the methods are secure, reliable and consistent with the best practices of the day for the relevant technologies.

1.2 Scope

1.2.1 The scope of this set of technical standards covers the minimum standards required in the operation of an Electronic Table Game so that security, reliability and integrity of gaming equipment are achieved.

1.2.2 This set of technical standards should be read in conjunction with the Technical Standards for Electronic Gaming Machines (Singapore) as similar requirements will be imposed on components that are found in gaming machines.

1.3 Terminology

1.3.1 The following terminology used in this document is to be interpreted as follows:-

- a. **Shall:** The guideline defined is a mandatory requirement, and therefore must be complied with;
- b. **Should:** The guideline defined is a recommended requirement. Non-compliance shall be documented and approved by the Authority. Where appropriate, compensating controls shall be implemented; and
- c. **May:** The guideline defined is an optional requirement. The implementation of this guideline is determined by the operator's environmental requirements.

Technical Standards for Electronic Table Games (Singapore)

1.4 Definition of Terms

Terms	Explanation of Terms
ETG	Electronic Table Game
Semi-automated ETG	Games are conducted in a semi-automated manner, where a live dealer conducts the game play with the automation of wagering and payment.
Fully-automated ETG	Games are conducted in a fully-automated manner without a live dealer, where game play, wagering and payment are all automated.
Multigame ETG	An ETG that offers more than one type of game (e.g. Roulette and Baccarat) to the player through the same Player Terminal.
ETG Central Control System	A server or device (or a collection of servers and/or devices operating together) that is designed to:- a control the RNG mechanism (for Fully-automated ETG); b interface with physical dealing devices (for Semi-automated ETG); c control the timings of all phases of a game round; d record Central Control System related events; and e communicate game-related information to the Player Terminal(s).
Player Terminal	A terminal that is used by the player and provides minimally:- a. display of the game; b. acceptance of wagers; and c. payment of winnings.
Dealer announcement	Announcements that the ETG makes to signal a particular game phase, e.g. “Place your bets” and “No more bets”.

Technical Standards for Electronic Table Games (Singapore)

1.5 Testing

- 1.5.1 Testing of Electronic Table Games by Approved Test Service Providers (ATSPs) shall be aimed at determining compliance with these technical standards. Areas of non-compliance shall be reported in the test/certification report. Where, in the opinion of the ATSP, these technical standards are insufficient, inappropriate or not pertinent to the design and operation of Electronic Table Games, the ATSP shall seek direction and further clarification from the Authority before proceeding to testing/certification.

1.6 Consistency of Interpretation

- 1.6.1 The Authority recognises that these technical standards may be subject to different interpretation by manufacturers, casino operators and ATSPs. As such, any feedback interpretation of any provision of these technical standards should be directed to the Authority for clarification.

2. TECHNICAL REQUIREMENTS

2.1 Applicability of EGM Standards

- 2.1.1 A Player Terminal shall be reckoned as an Electronic Gaming Machine (EGM) and shall comply with the requirements stipulated in the Technical Standards for Electronic Gaming Machines (Singapore) (EGM Standards) wherever applicable.
- 2.1.2 In addition to Section 2.11 Tilt Conditions of the EGM Standards, the ETG shall become disabled and display a clear notification whenever:-
- a. There is unauthorised physical access to the ETG Central Control System; or
 - b. There is a malfunction in the operation of the ETG Central Control System.
- 2.1.3 Intentionally left blank.

2.2 Live Game Correlation

- 2.2.1 Unless otherwise denoted in the artwork, where the ETG plays a game that is recognisable as an existing table game the same probabilities associated with the live game shall be evident in the simulated game.

Technical Standards for Electronic Table Games (Singapore)

2.3 System Clock

2.3.1 The ETG shall maintain a consistent date and time, synchronised to the Slot Management System, within an accuracy of sixty (60) seconds for the following:-

- a. Time stamping of logged events;
- b. Reference clock for reporting; and
- c. Time stamping of configuration changes.

2.3.2 Intentionally left blank.

2.4 Reporting Requirements

2.4.1 ETG Central Control System logged events shall include minimally the following (inclusive of timestamps):-

- a. System power on and off;
- b. User login and logout;
- c. Game start and game end;
- d. Game void;
- e. Game results;
- f. System errors; and
- g. Configuration(s) changes.

2.4.2 ETG Central Control System shall not allow the alteration of any logged information.

Technical Standards for Electronic Table Games (Singapore)

2.5 Access Control for ETG Central Control System

- 2.5.1 Role Based Access Control whereby users are only allowed access to programs and menu items related to their job functions shall be supported.
- 2.5.2 A record of all privileges allocated to user accounts shall be maintained.
- 2.5.3 All passwords, PINs, biometrics or other electronic forms of information, if used as part of the authentication method, shall be encrypted in storage.
- 2.5.4 Intentionally left blank.

2.6 Displayed Messages

- 2.6.1 Dealer announcements shall be unambiguously worded and displayed to the player on the Player Terminal in a timely, clear and conspicuous manner.
- 2.6.2 The Player Terminal will display an appropriate notification to the player when a wager is rejected or when only part of the wager is accepted. The notification shall be immediate, clear, conspicuous and unambiguously worded.
- 2.6.3 Text used for displaying dealer announcements and wager-related notifications must be at least 7mm high when measured directly off the Player Terminal display.
- 2.6.4 If audio messages are used in addition to visual messages, both the audio and visual messages shall be time synchronised (using similar text and speech).
- 2.6.5 Dealer announcements and wager-related notifications shall remain for at least three (3) seconds on Player Terminal(s).

Technical Standards for Electronic Table Games (Singapore)

2.7 Game Play

- 2.7.1 Minimum and maximum wager limits (in dollars and cents) for all wager options shall be displayed clearly and accurately to the player on the Player Terminal. If the information is not displayed on the main wagering screen, the player shall be directed easily to the information.
- 2.7.2 Maximum table limit (in dollars and cents) that caps the total wager that can be made by a player per game round shall be displayed clearly and accurately to the player on the Player Terminal. Minimum table limit (also based on per game round), if different from the minimum wager limit, shall be displayed likewise.
- 2.7.3 Rules of acceptance/rejection of wagers (including instances where only part of the wager is accepted) shall be included as part of the displayed game rules.
- 2.7.4 The game shall allow a player to cancel any wager but only during the time that new wagers can be accepted.
- 2.7.5 A Multigame ETG shall:-
- a. Clearly indicate the active game (once selected by the player) on each Player Terminal; and
 - b. Prevent the player from changing to a different game if there are existing wagers for the active game.

3 OPERATIONAL REQUIREMENTS

3.1 Multigame ETGs

- 3.1.1 A Multigame ETG may offer both Semi-automated ETG and Fully-automated ETG game(s) on the same Player Terminal, provided that the actual return-to-player percentage (based on turnover and win meter values) of each game is auditable.
- 3.1.2 A Multigame ETG must not allow more than one game to be played at the same time on a single Player Terminal.