

Policy and Guidance for Certification of Electronic Notation and Game Broadcasting Devices

Approved by the US Chess Executive Board on Feb 2, 2020

1. **Overview and Background.** This document provides US Chess policy and guidelines for reviewing candidate electronic notation and broadcasting devices for potential certification by US Chess for use in chess tournaments rated by the US Chess Federation. US Chess is deeply concerned about the potential use of electronic devices in tournaments for the purpose of cheating. Players who cheat, or attempt to do so, undermine the integrity of the game. While US Chess recognizes that no device is completely immune to having its functions altered for illicit purposes, we do believe it is feasible for manufacturers to create devices that not only comply with the Rules of Chess, but also are highly resistant to tampering—physically and electronically.

This policy covers any electronic device that can be used by a player, spectator or tournament official to record chess moves at the board during a game in progress (e.g. an electronic scoresheet / notation device), or to broadcast the progress of one or more ongoing games. It does not cover chess clocks, nor does it cover devices capable of voice or text communication (i.e. cell phone, walkie-talkies, pagers, etc.).

Devices that are certified by US Chess are approved for use in any rated US Chess tournament except when the Tournament Organizer or Chief Tournament Director (TD) expressly prohibit their use. In other words, certification allows these devices to be used, it does NOT mandate it. In cases where the Organizer or Chief TD does not allow general use, they have the authority to grant exceptions for persons with certain disabilities.

US Chess recognizes that the International Chess Federation (FIDE) has a process for certifying certain electronic devices. A manufacturer whose device already is approved by FIDE should submit proof of FIDE certification as part of their application for US Chess certification.

An electronic device designed to assist a player in keeping score, or to assist tournament staff with the live broadcasting of games, may be certified by US Chess if the candidate device meets the minimum requirements specified in this policy. At this writing, US Chess is moving toward a two-part certification process. Part 1 reviews a device for compliance with the Rules of Chess, while Part 2 assesses a device's vulnerabilities to various forms of tampering. Although US Chess has not yet implemented Part 2 (it is still in development), manufacturers should be aware of the DRAFT elements of Part 2 provided herein.

US Chess shall not be responsible for any costs associated with the assessment process for a candidate device. All costs for an assessment shall be borne by the manufacturer.

2. **Currently Approved Devices (as of Jan 29, 2020).** The following electronic notation and game-broadcasting capabilities have achieved certification by US Chess.
 - a. MonRoi Personal Chess Manager.
<http://www.uschess.org/docs/gov/reports/eScoresheets/MonRoi-cert1.pdf>

- b. DGT Projects Electronic Chessboard (current model, April 2006 or later). If the DGT chessboard is interfaced to a computer for display or transmittal purposes, that computer must be under the direct control or supervision of the event organizer or tournament director.
 - c. Plycount LLC, Plycounter®
www.uschess.org/docs/gov/reports/eScoresheets/Plycounter-cert1.pdf
 - d. ChessNoteЯ by Black Mirror Studio, LLC,
https://new.uschess.org/sites/default/files/media/documents/chessnoter-n6-n9_approval2july2019.pdf
 - e. ChessKast Chess Game Broadcasting System (*ChessKast must be furnished by the organizer to be used in a US Chess event.*)
http://www.uschess.org/docs/gov/reports/eScoresheets/ChessKast_approval_letter_from_US_Chess.pdf
3. **Process to Apply for Certification—Guidance for Manufacturers.** Manufacturers shall follow the process detailed below to have their candidate devices reviewed for potential certification by US Chess.
- a. The manufacturer initiates the process by **contacting the US Chess Office in writing** to request their device be reviewed for certification. Phone requests serve only as an introduction and must be followed-up in writing. If the request is for a device previously certified by US Chess, please see paragraph 2g below.
 - b. When a device is undergoing its first-time review by US Chess, the manufacturer shall provide at least three test devices to the US Chess Office. If the candidate is a game broadcasting system, only one device is necessary. All devices submitted by the manufacturer for testing must be usable out-of-the-box, with the loaded and functional application ready to run. If a charger is required, the manufacturer shall provide one charger per device. The manufacturer shall provide any batteries necessary for testing. In addition, a complete user manual and instructions is required for each device. In other words, **US Chess should receive what the manufacturer intends to market and provide to an end-user of their device.**
 - c. The manufacturer shall provide a means for the US Chess Office and the reviewing parties to pay the cost of mailing the devices between US Chess and the persons/organization who will perform the device reviews. This can be done using pre-paid mailing labels, or by providing an account number and appropriate instructions for billing to that account.
 - d. The US Chess Office will send the candidate devices to a minimum of three members (called Reviewers) designated by the Chair of the US Chess Rules Committee. The Reviewers shall examine the device in accordance with the specifications of the Part 1 (Rules of Chess) review. Upon completion of Part 1, Reviewers return their devices to the US Chess Office and the Rules Committee Chair provides a signed and dated original Part 1 Review Report. During the Part 1 analysis, the Reviewers may communicate with the manufacturer only through the US Chess Office. **Independent un-monitored communications between the manufacturer and a Reviewer, a surrogate for the Reviewer, or the Chair of the Rules Committee is not authorized** without the express permission of the US Chess Office. If the candidate device fails the Part 1 review, the approval process ends and all devices will be returned to the manufacturer by US Chess without further review or testing. If this happens US Chess shall provide the manufacturer a copy of the completed Part 1 Review Report showing why the device failed the certification process.
 - e. (*To be implemented at a later date*) After a device passes the Part 1 review, the US Chess Office will inform the manufacturer by email and then send the devices to the designated organization for Part 2 testing. The organization responsible for these tests (the Tester) will evaluate the device in accordance with the specifications of Part 2 of this policy. When Part 2 testing is complete, the Tester will return all devices to the US Chess Office along with a signed and dated original Part 2 Review Report. During Part 2 the

Tester may communicate with the manufacturer only through the US Chess Office. Independent un-monitored communications with the manufacturer by the Tester or a surrogate for the Tester is not authorized without the express permission of the US Chess Office. If the device fails Part 2 testing, the approval process ends and all devices will be returned to the manufacturer by US Chess along with a copy of the completed Part 2 Review Report showing why the device failed.

- f. When a device successfully completes the Part 1 review (and, later, the Part 2 assessment), US Chess shall notify the manufacturer, return their devices, prepare an appropriate Certification Letter, send the Certification Letter to the manufacturer, and post a copy of the Certification Letter in an appropriate place on the US Chess website. The US Chess Certification Letter will contain the name of the device and its manufacturer, as well as, the device's model number, software version, and firmware version. US Chess shall retain the original, signed versions of the Part 1 and Part 2 reports.
- g. In cases where a device previously certified by US Chess has undergone ***a major hardware or software upgrade***:
 - 1) US Chess will work with the manufacturer to determine the details of the re-review (e.g. number of devices to be reviewed, review schedule, etc.). It is quite possible the review of the upgraded device may not need to cover all steps listed in Parts 1 and 2.
 - 2) The manufacturer must understand that any of their customers who receive an upgraded device, or upgrade it on their own, are henceforth using a device that is no longer certified. The upgraded or new version of the device is NOT granted automatic approval—it must go through the review process again and receive an updated Certification Letter from US Chess. Therefore, US Chess strongly urges manufacturers to communicate with US Chess when they upgrade their devices in order to determine the need for re-certification and the parameters of the re-certification process. Manufacturers also should forewarn their customers, as appropriate.

4. **Part 1 Review—Rules of Chess.** A device passes the Part 1 Review when it successfully meets the tests listed below. For candidate electronic scoresheets, the review shall be performed *by at least three persons* designated by the Chair of the US Chess Rules Committee. Candidate game-broadcasting systems need only be reviewed by one person designated by the Chair of the Rules Committee.

a. **Basic Security Review:** 3 Evaluation Criteria

- 1) When turned-on, the device displays an appropriate Manufacturer's information page or logo, the Device Serial Number, and Software Version as part of the start-up process. If the Serial Number and Software Version are not part of the start-up process, there is a menu option to allow for easy viewing of this information. The information in the start-up screen shall match physical information visible on the exterior of the device (e.g. the Serial Number).
- 2) Upon start-up, the device is password protected
- 3) The device allows the owner to record their own personal information (e.g. name, address, phone number). Changing this information is protected by a password, passphrase or other suitable security measures.

b. **Capabilities of the Device Once a Game Begins and During Play:** Up to 16 Evaluation Criteria

- 1) The player may record only the chess moves actually played and the time displayed on the players' chess clock. The device shall not permit addition of graphical or text-based commentary other than the symbols for check, checkmate or the words "draw offered" or "draw offer by opponent"

- 2) The player is able to record moves on the device either using an accepted form of written chess notation, or using a graphical representation of the chess board.
- 3) The device shall not emit any sounds. This includes, but is not limited to audible “clicks” or tones when entering information, and warning sounds, buzzing or vibrating when the player selects an invalid menu option, plays an illegal move, reaches a three-fold repetition of position situation, etc.
- 4) The device shall display the game, in its entirety, in an accepted form of chess notation (symbolic algebraic, character algebraic or descriptive) that emulates a manual scoresheet. Options that provide notation in different languages are permitted, but English is required. NOTE: If other languages are available, the device must be reviewed by Reviewers fluent in the other languages. Additional Reviewers are subject to approval by the Chair of the Rules Committee. When this option is exercised, the Committee Chair shall inform the US Chess Office by email of the names and point-of-contact information for those reviewers.
- 5) The device owner can easily place the display in “scoresheet mode” to mimic the opponent requesting to borrow the scoresheet to review the moves recorded. If the device is recording notation in a language other than English, it must be easy for the device owner to place the device in English mode.
- 6) The device prohibits the player from entering or assessing variations by making optional moves using the device interface. If possible future moves are made on the device during a game, those moves shall be stored by the device and recorded as one or more “variations.”
- 7) The device shall prohibit the player from viewing previous games or positions stored on the device. This includes games belonging to the owner, any other person, or stored in a database on the device.
- 8) The device cannot be used to contact external sources other than those sources under the direct control of the tournament director (TD) or the organizer.
- 9) The device does not contain, nor can it access, a chess engine, chess openings or analysis contained within the electronics of the device or available through remote means.
- 10) The device does not provide information, visual or audible, about the legality or validity of either player’s moves. This specification includes claims initiated by either player such as an illegal move, check, checkmate, stalemate, 50-move rule, three-fold repetition of the position, or any other move-based claim.
- 11) Unless the device contains the actual chess clock being used by both players during the game, it cannot be used by either player to initiate claims regarding the time elapsed, time remaining, or to make any time-based claim such as a forfeit or failure to achieve a time control.
- 12) The device is capable of holding a charge with sufficient battery life to run for at least 6 consecutive hours. The device gives ample warning when a low battery situation occurs (e.g. less than 30 minutes of battery life remains).
- 13) The display screen for recording and showing moves, whether graphical or text-based, should remain “on” for the entire game. If the screen has a dimming feature (e.g. to conserve battery power) the screen must instantly restore when touched.
- 14) Turning off the device requires a deliberate action by the player, making it difficult for a player to turn it off “by mistake.” This functionality applies to devices that use a manual or graphical On-Off Switch, or a sequence of steps in the software.
- 15) (***Optional, for game-broadcasting devices***) The device or its associated broadcast system has the capability to set a move transmission delay of at least 10 minutes or two move-pairs.

- 16) (**Optional, for game broadcasting devices**) The device provides both players with simultaneous notation-recording capabilities, either through input from an attached electronic chessboard or by manual input.

c. **After the Game Ends:** 2 Evaluation Criteria

- 1) The device provides a way for both players to sign the completed scoresheet. Signatures may be electronic (on the device) or manual (on the printout).
- 2) The device has the ability to deliver a completed score of the game to the tournament director or organizer. This may be in any form, such as a print-out or electronic download (e.g. a “.PGN” file).

5. **Part 2 Review—Vulnerability Assessment.** AT THIS WRITING THE PART 2 REVIEW IS IN **DRAFT** FORM. THE PROCEDURES AND SPECIFICATIONS DESCRIBED OR OUTLINED HERE FOR THE PART 2 REVIEW ARE NOT READY FOR IMPLEMENTATION. US CHESS IS PUBLISHING THIS INFORMATION TO ENSURE MANUFACTURERS ARE AWARE OF REVIEW PROCEDURES AND DEVICE SPECIFICATIONS THAT MAY AFFECT THE CERTIFICATION OF DEVICES IN THE FUTURE.

The Part 2 Review assesses the hardware and software of a candidate device to identify actual or potential vulnerabilities someone may exploit for the purpose of gaining an advantage over their opponent—e.g. cheating. The Part 2 assessment shall be completed by US Chess, as well as, an external organization approved by US Chess (e.g. approved by the Executive Director) to conduct such reviews. US Chess shall not be responsible for any costs associated with the Vulnerability Assessment—the manufacturer shall bear all costs.

a. **Hardware Vulnerability Assessment:** 4 DRAFT evaluation criteria. Unless specified otherwise, all criteria are evaluated by the external organization designated by US Chess.

- 1) **Appearance:** This criterion shall be assessed by a person designated by the Chair of the US Chess Rules Committee. The device contains distinctive external markings or other design properties allowing a Tournament Director, Organizer and Opponent to easily discriminate the device from similar-looking technologies (e.g. cell phones, tablets, etc.). The external markings or design properties must be a permanent part of the device, of a variety difficult to emulate, and applied by manufacturer. Decals, labels, or user-created markings are not acceptable.
- 2) **Tamper Resistance:** The device casing resists tampering. The internal electronics are encased in a manner such that If the case is opened, then the device will cease to function (e.g. it turns off or displays an impassable error message), forcing the owner to return the device to the manufacturer for repair or re-initialization. This restriction does not apply to portions of the casing designed to be opened to replace batteries, to use charging ports, or to access authorized interface ports (e.g. micro-USB, etc.).
- 3) **Re-Programming via Internal or External Access Ports:** Any internal or external ports allowing access to a device’s internal hardware shall not allow someone to alter the authorized program settings or install new software, except when performed directly by the manufacturer or the user via an official software / firmware “upgrade” process distributed and strictly controlled by the manufacturer. Such software / firmware updates, when complete, must update the device’s current software revision or version number as shown on the device’s “about this device” information page or another readily accessible information page.
- 4) **Re-Programming via Graphical User Interface:** The device’s graphical user interface or screen, if present, cannot be used to re-program the device.

- b. **Hardware Vulnerability Assessment:** Up to 10 DRAFT evaluation criteria based on the features present in the candidate device.
- 1) During a game the device does not broadcast signals that can be received and interpreted by an unauthorized party. (See also #7 below.)
 - 2) During a game the device does not receive signals from an unauthorized party. (See also #8 below.)
 - 3) During a game any signals sent by the player's device to the Tournament Director's (TD) receiver are protected using industry standard encryption methods to safeguard data so that the TD's receiver provides the only means to correctly interpret the information sent by the player's device.
 - 4) During a game any signals sent by the TD's transmitter to the player's device are protected using industry standard encryption methods to safeguard data so that the player's device provides the only means to correctly interpret information sent by the TD's transmitter.
 - 5) During a game the player's device shall not access an internal or external chess analysis or position evaluation engine.
 - 6) The player's device or TD control station cannot be re-programmed through use of an external signal such as Bluetooth, infrared, sound, vibrations, or other waveforms except as performed directly by the manufacturer or user via an official software / firmware update process distributed by the manufacturer. Such updates, when complete, also shall update the device's current software revision or version number as shown on the device's "about this device" information page. (See also #3.)
 - 7) The "version number" of the installed software is clearly displayed upon accessing the appropriate "about this device" page on the device or another appropriate information page.
 - 8) The device shall use passwords, finger mazes, fingerprint recognition, or other modern security technologies/ measures to help protect the owner's device from use by unauthorized persons.
 - 9) If present, open source software or software components used by the device does not present an unacceptable risk of device compromise.
 - 10) The Manufacturer has active procedures to monitor their device(s) for new vulnerabilities and has a functioning means for device owners to report vulnerabilities (e.g. web-based reporting form, hotline or help-desk phone number).

Revised February 5, 2020

July 9, 2020: Updated certification letter for ChessNoteR

July 21, 2020: Section 2f deleted.