Certification Report.	PariPlay Game Audit Report - Bloodshot Rising Spirit
Report Identification	PRP-IM-200220-01-GC-R1
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Report prepared for	Pariplay Ltd Clinch's House, Lord Street Douglas IM99 1RZ Isle of Man
Jurisdiction	Gambling Supervision Commission Isle of Man
Technical Standards used for testing	Schedule 1 Requirements of The Online Gambling Regulation Act 2001, The Online Gambling (System Verification) (No. 2) Regulations 2007

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1 Notations

1.1 Confidentiality

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1.2 Disclaimer

ga has reported on what it has discovered through evaluation of the Pariplay's game Bloodshot Rising Spirit.

2 Administration

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2.2 Version

Version	Description	Date
V0.1	Initial draft – SALI	2020-02-13
V1.0	QA - BPHU	2020-02-20

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3 Executive Summary

3.1 Introduction

Pariplay Ltd (Pariplay) has requested Gaming Associates (**ga**) to test their game, Bloodshot Rising Spirit against the compliance requirements of the Isle of Man (IoM) Online Gambling Regulations 2007.

ga has tested Bloodshot Rising Spirit against Isle of Man Gambling Supervision Commission compliance requirements listed in Section 3.2. This report presents the results of testing performed by **ga** for the Bloodshot Rising Spirit game. Hashes of the game are listed in Annex A: SHA-1 Hashes.

3.2 Scope of Testing

The scope of testing is to verify compliance against the Schedule 1 Requirements of The Online Gambling Regulation Act 2001, The Online Gambling (System Verification) (No. 2) Regulations 2007.

This compliance evaluation has been performed against game related requirements and does not include evaluation of the Random Number Generator (RNG).

3.3 Testing Limitations due to the Stand-alone Game Testing Environment

The game has been tested in a stand-alone game testing environment. The following IoM requirements could not be tested in the stand-alone game testing environment and need to be verified when the game is integrated with a gaming platform:

- (2) Both the Online Gambling and financial transactions software must be congruent and secure.
- 7 (b) The System must be able to display for each Game or Lottery, as the case may be, the following information on the current page or on a page directly accessible from the current page via a hyperlink :- (b) restrictions on play;
- (8) All financial reports produced by the System must be readily reconcilable with Gaming or Lottery transaction reports (as relevant) and conversely. All such reports shall be freely available to the Commissioners.
- (9) The System must:-

(a) be capable of producing auditable and aggregated financial statements of Gaming and/or Lottery transactions (as relevant); and

(b) calculate accurately all excise of duty payable under the Act and other monies due to the Treasury under the Act.

- (11) The System must maintain information about significant events as follows:-

(a) large wins (as agreed by the Commissioners from time to time);

(b) transfers of funds (between Participants or between any Participant and the Operator) in excess of such amount as the Commissioners may from time to time direct by notice in writing to the Operator;

(c) material changes made by the Operator to Game and/or Lottery returns, disclosed under paragraph 7 above; and

(d) material fluctuations in theoretical/estimated statistical return to Participants.

3.4 Conclusions and Recommendations

Pariplay's game Bloodshot Rising Spirit complies with Schedule 1 Requirements of The Online Gambling Regulation Act 2001, The Online Gambling (System Verification) (No. 2) Regulations 2007. However, some requirements, identified in Section 3.3, need to be verified when the game is integrated with a gaming platform.

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ga recommends Bloodshot Rising Spirit to be approved for integration with platforms already approved by the IoM.

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4 Test Results

This section summarises the results of the tests performed on Bloodshot Rising Spirit. The tables in the following sub-sections provide the compliance status of the game against IoM requirements listed in [1]. Different values used in the compliance status column are described as follows:

Compliant: The game complies with the requirement.

Does Not Comply: The game does not comply with the requirement.

Acknowledged: The requirement is only a statement or information.

N/A: The requirement is not applicable to the game.

Out of scope: The requirement cannot be evaluated at this stage due to the current scope of testing or limitation of the test environment.

4.1 Systems Verification – Schedule1 Requirements with which Systems Must Comply for Gaming and Lotteries

IoM Requirements	System Compliance	GA Comments
SYSTEMS VERIFICATION		
SCHEDULE 1: REQUIREMENTS WITH WHICH SYSTEMS MUST COMPLY FOR GAMING AND LOTTERIES		
General		
(1) The System must:		
(a) follow the rules for Online Gambling published to the Participant or potential Participant prior to its placing any sums with the Operator for participation in Online Gambling; and,	Compliant	The game instructions are available and the game operates and interacts with the players in accordance with the game instructions.
(b) provide over specified periods no more than the house advantage (if any) agreed by the Commissioners with the Operator; and	Compliant	The game complies with return to player displayed in the game rules.
(c) integrate contingencies for loss of continuity of play; and	Compliant	The system always provides the incomplete game to players to complete upon reconnection.
(d) If utilised in any peer to peer game, ensure that over the specified periods that no one Player has any advantage over any other Player playing the same game.	N/A	The game is not a peer to peer game.
(2) Both the Online Gambling and financial transactions software must be congruent and secure.	Out of scope	Could not be verified because testing has been performed in a test environment where the game has not been integrated into a platform.
(7) The System must be able to display for each Game or Lottery, as the case may be, the following information on the current page or on a page directly accessible from the current page via a hyperlink: -		
(a) the name and rules of the Game and/or Lottery;	Compliant	The name of the game is displayed on the bet page. The game help file, containing game rules, has been provided by Pariplay for testing.
(b) restrictions on play;	Out of scope	The operator's responsibility. Could not be verified because testing has been performed in a test environment where the game has not been integrated into a platform.
(c) instructions on how to play, including a pay-table for all prizes and special features;	Compliant	Instructions on how to play, including pay tables for all prizes and special features are provided.
(d) the Participant's current account balance and currency or currencies utilised by the Participant to participate in the Game and/or Lottery;	Compliant	The current balance and currency are displayed on the bet page.
(e) unit and total sums permitted to be played by a Participant in relation to the Online Gambling;	Compliant	The unit bet and total bet are displayed on the bet page.
(f) the return to the Participant, disregarding any exercise of skill by him; and,	Compliant	Information on percentage return to the player of the game is provided in the game rules.

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IoM Requirements	System Compliance	GA Comments
(g) Pursuant to the testing of the System, the percentage of total sums returned to Participant in relation to all house Games or Lottery, as the case may be, offered by the Operator.	Compliant	Information on percentage return to the player of the game is provided in the game rules.
Reporting requirements		
(8) All financial reports produced by the System must be readily reconcilable with Gaming or Lottery transaction reports (as relevant) and conversely. All such reports shall be freely available to the Commissioners.	Out of scope	The operator's responsibility. Could not be verified because testing has been performed in a test environment where the game has not been integrated into a platform.
(9) The System must:- (a) be capable of producing auditable and aggregated financial statements of Gaming and/or Lottery transactions (as relevant); and (b) Calculate accurately all excise of duty payable under the Act and other monies due to the Treasury under the Act.	Out of scope	The operator's responsibility. Could not be verified because testing has been performed in a test environment where the game has not been integrated into a platform.
(10) The System must maintain information about all Games and/or Lotteries played, including:- (a) the identity of the Participant; (b) the time the Game began; (c) the balance on the Participant's account at the start of the Game or the start of the Participant's participation in the Lottery (as relevant); (d) the sums placed by Participant placed in the Game (timestamped); (e) the Game status (in progress, complete, etc.); (f) the result of the Game and/or Lottery (timestamped); (g) the time the Game ended; (h) amount won or lost by the Participant; (i) the balance on the Participant's account at the end of the Game and/or Lottery (as relevant); and (j) the currency or currencies utilised by the Participant.	Compliant	Testing has been performed in a test environment where the game has not been integrated into a platform. However, it has been verified that the game related information is available for the operator to record in its database and make available through its back office or website.
(11) The System must maintain information about significant events as follows:- (a) large wins (as agreed by the Commissioners from time to time); (b) transfers of funds (between Participants or between any Participant and the Operator) in excess of such amount as the Commissioners may from time to time direct by notice in writing to the Operator; (c) material changes made by the Operator to Game and/or Lottery returns, disclosed under paragraph 7 above; and (d) material fluctuations in theoretical/estimated statistical return to Participants (agreed with the Commissioners from time to time).	Out of scope	The operator's responsibility. Could not be verified because testing has been performed in a test environment where the game has not been integrated into a platform.

4.2 Game Rules

The following game rules have been verified through functional testing:

General information table:

Game Type	Video Slot
Number of Paylines	20 lines
Game Features	• Expanding Walking Wild - When the red Killshot marker appears on top of Bloodshot, he expands over the full reel and he becomes an expanded Wild. He then moves one position to the left, with each spin thereafter, until he exits the screen. • "Free Spins - When 3 or more scatter symbols land on any reels, it awards a choice of 3 different Free Spins missions: Rising Spirit, Desert Storm or Valley of Death. Each Free Spins option awards 12 free rounds initially."

Pay Model 1:

Return to Player	94%
Hit Rate	27.54%

Pay Model 2:

Return to Player	97%
Hit Rate	26.77%

Game Features

Expanding Walking Wild

The red Killshot marker moves across the reels on every spin.

If the red Killshot marker lands on Bloodshot, he expands over the full reel and becomes an expanded Wild.

The expanded Wild Bloodshot reel then moves one position to the left, with each spin thereafter, until it exits the screen.

The feature must be played at the same bet amount that initiated the round. Changing the bet during the feature will cancel the Walking Wild. Returning to the intial bet amount will bring back the Walking Wild.

Free Spins

When 3 or more scatter symbols land on any reels, it awards a choice of one of three different Free Spins games: Rising Spirit, Desert Storm or Valley of Death.

Each Free Spins option awards 12 free rounds initially.

Collecting Wild symbols can award 5 extra Free Spins, once per Free Spins session.

Rising Spirit Free Spins

In Rising Spirit Free Spins there is a multiplier meter and whenever a Wild symbol lands anywhere on the reels, the multiplier increases by 1 and 1 additional Free Spin is awarded.

The multiplier meter starts at x1.

The multiplier meter goes up after the initial win evaluation. The multiplier is applied to the next winning spin.

When the multiplier meter fills up and reaches x16, 5 additional Free Spins are awarded. Any extra wilds that may have landed during that round are not added to the meter.

The extra Wild symbols that land anywhere on the reels after the meter is full, will award 1 additional Free Spin but the multiplier does not increase.

Desert Storm Free Spins

All wins in Desert Storm Free Spins are multiplied by 2.

Wild symbols become Walking Wilds and then moves one position to the left for each spin thereafter until they exit the screen.

During Desert Storm Free Spins, when one or more Wild symbols appear on each of the reels, it awards 5 extra Free Spins.

Valley of Death Free Spins

Wild symbols become Sticky Wild symbols during Valley of Death Free Spins.

Whenever 2 Wild symbols of the same kind land on the same reel, they turn into Double Multiplier Wild symbols.

Whenever 3 Wild symbols of the same kind land on the same reel, they turn into Triple Multiplier Wild symbols.

The transformation of Wild symbols into Double Multiplier or Triple Multiplier Wild symbols takes place before any wins are calculated.

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If a winning line has several multiplier Wild symbols, the multipliers are added together.

During Valley of Death Free Spins, when one or more Sticky Wild symbols appear on every reel, it awards 5 extra Free Spins.

Playing the Game

Betting

To play a round, configure your bet using the + / - buttons on either side of the **Spin** button and/or the **Coin Value + / -** buttons. Then, press the **Spin** button or the **Spacebar** to submit the bet and initiate the round.

Rounds can also be initiated by using the **Autospin** feature.

The **Total bet**, **Balance & Win** amounts can be displayed in coins or cash values. Switching between them can be done by clicking on the bottom UI bar.

Spin Options

Once the round is started, the player can fast-forward to the round result or skip the animations by pressing the **Skip/Stop** button that replaces the **Spin** button while the round is in progress.

To play rounds faster, the player can use the **Quick Spin** or **Turbo Spin** options (restrictions may apply due to regional jurisdictions):

Turbo Spin – the reels spin and stop faster with no extra animations.

Turbo Spin can be activated by:

- Holding the **Spacebar** on a desktop computer.
- Turning it on from the **Autospin** menu, and then initiating **Autospin** rounds.

Quick Spin Mode - the reels spin and stop faster however all extra animations are shown.

Quick Spin can be activated by:

- Turning it on through the **Sandwich** menu
- Turning it on from **Settings**
- Turning it on from the **Autospin** menu, and then initiating the **Autospin** rounds.

Payout Rules

- Winning combinations are paid per line in succession from the leftmost reel to the rightmost reel.
- Winning combinations and payouts are calculated according to the game's "Paytable", which can be accessed through the **Setting** button
- The prizes are calculated using the following formula:
  Bet amount, divided by 20, multiplied by the symbol payout multiplier. Only the scatter wins are multiplied by the total bet.
- Only the highest win per line is paid.
- Malfunction voids all pays.
- Simultaneous wins on different bet lines are added up.
- All wins occur on the selected (active) paylines, excluding scatter wins that pay for any position.

Payout rules in Features

- Free Spins are played at the same bet amount as the round that activated the Free Spins and with the same number of paylines.
- Free Spins wins are added to any initial wins.

- All open sessions, which are not concluded by the player, plus any future transactions for those sessions will be terminated, after a period of time, as defined by the respective regulator per jurisdiction

.COM	30 days
Italy	7 days
Spain	7 days
Denmark	90 days
Sweden	90 days
Romania	30 days
Portugal	90 days

Enables playing the game automatically for a predetermined number of rounds at the current bet configuration.

The Autospin menu is accessible through the Autospin button.

Autospin Limits

- Loss Limit - Allows you to control your combined losses by entering a numeric value that will stop the Autospin function and trigger a popup message when the loss limit is reached. Calculated as follows:
  (Sum of bets) - (Sum of wins) >= (Loss Limit amount).
- Single Win - Will stop the Autospin function and a popup message will be displayed when a single win payout is >= the 'Single Win' value entered.
- Win Limit - Allows you to control your combined wins by entering a numeric value that will stop the Autospin function and trigger a popup message when the win limit is reached. Calculated as follows:
  (Sum of wins) - (Sum of bets) >= (Win Limit amount).
- On a Win - The Autospin will stop and a popup message will appear on any win within a single round. A free spins feature is considered as one round for this limit setting and the Autospin will only stop after all the free spins are finished.
- On a Feature - The Autospin will stop and a popup message will appear when the game reaches any feature round, including but not limited to: free spins round, bonus games and mini games, with exception to random wilds features.

When the limit's conditions are met, the Autospin will stop and the relevant popup message will appear in the middle of the screen.

PAYTABLE

EXPANDING WALKING WILD

The red Killshot marker moves across the reels with each spin during the base game. If it lands on Bloodshot himself, he expands over the entire reel to become a Walking Wild.

FREE SPINS

When 3 or more scatter symbols land on any reels, it awards a choice of one of three different Free Spins games: Rising Spirit, Desert Storm or Valley of Death. All options award 12 free rounds initially. If 5 scatter symbols land in the same spin, it awards 1000X the total bet.

RISING SPIRIT FREE SPINS

The multiplier meter increases by 1 whenever a Wild lands, plus 1 additional Free Spin is awarded. If the multiplier meter fills up to x16, an additional 5 Free Spins are awarded.

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VALLEY OF DEATH FREE SPINS
X3
WILD
Wild symbols become Sticky Wilds. If 2 or 3 Wild symbols of the same kind land on the same reel, they turn into Double or Triple Multiplier Wild symbols.

DESERT STORM FREE SPINS
WILD
Wild symbols become Walking Wilds after landing and move left with every subsequent spin. All wins are multiplied by 2.

WILD
WILD
WILD
WILD
Substitutes for all paying symbols, except for Scatter symbols.

SYMBOL PAYOUTS
5x = 80
4x = 40
3x = 16
5x = 120
4x = 60
3x = 24
5x = 200
4x = 80
3x = 32
5x = 300
4x = 100
3x = 40

4.3 Return to Player

The test environment has been configured with two pay-model variations for testing purposes. Pariplay advised that in the production environment, Pariplay will offer an operator the choice of the two variations but only one will be enabled for players.

ga has verified return to player (RTP) for two pay-model variations. The theoretical return to player (RTP) for Pariplay's game Bloodshot Rising Spirit is:

- Pay Model 1: 94.00%
- Pay Model 2: 97.00%

A game simulator was run to play the Bloodshot Rising Spirit game and the actual RTP was calculated as follows:

Pay Model	Number of games played (Millions)	RTP%
Pay Model 1	10	93.96%
Pay Model 2	10	96.81%

which is close to the theoretical RTP.

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5 References

1. *Schedule 1 - The Online Gambling Regulation Act 2001, The Online Gambling (System Verification) (No. 2) Regulations 2007.*
2. *RNG Certificate "246RN-400-PAY-19-02-246 - PariPlay CSRNG, Version 1.0.pdf", version 1.0, date15/05/2019.*
3. *Maths spread sheet "Bloodshot945.xlsx", no version, no date.*
4. *Maths spread sheet "Bloodshot970.xlsx", no version, no date.*
5. *Game Description File "Bloodshot Rising Spirit - PRD.pdf", no version, no date.*

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Annex A : SHA-1 hashes

Game Name	Pay Model	Critical Component	SHA-1 Hashes
Bloodshot Rising Spirit	94.00%	Pariplay.GamesEngine.Slot.VS067.dll	4BDB5107B7B49B1F4C6B2C15D3514BB2CF4743AB
	97.00%	Pariplay.GamesEngine.Slot.VS055.dll	34A221C1713808763176FE3D7559B624928E896D
RNG	Pariplay.GamesEngine.Common.Analyst.dll		8C0C166E37557707DA034348A5CB1CB80FA2B71F
	Pariplay.GamesEngine.Common.Definitions.dll		EE64E660D3EAE3A7B3937C27B3904164FAE49E95
	Pariplay.GamesEngine.Common.Logic.dll		8EB3B3CFE1DFA82E59E0437BAADEC14B14BCEE22
	Pariplay.GamesEngine.Common.RandomGeneratorAlgorithm.dll		AF1591B2756C7145F5D2087C570D3EF3AACDCE53
	Pariplay.GamesEngine.Slot.Definitions.dll		E405F7CB3D7317EF8EF82E7255B2E9FEF2AB1B17
	Pariplay.GamesEngine.Slot.Logic.dll		577FF288A4683885B34B3004B300553CD08CF247

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