General information on iTech Labs process for RTP evaluation

iTech Labs uses one of two methods for confirming game RTPs: 1) spreadsheet calculation, or 2) simulation.

1)                Spreadsheet calculation is preferred as it is both more accurate and more easily auditable.  Where all game outcomes and their probabilities can be identified, summing (win \* probability) gives expected value for the game which equals RTP.  Most table games, and some slot games can be calculated this way.

        Spreadsheets are based on client maths.  Wins are from provided paytables and game rules.  Probabilities are determined from game events and rules.

        Calculated RTP is compared against client provided RTP.  Inconsistencies are worked through until the results match.

2)            Where spreadsheet calculation is not possible (game requiring iteration, or strategy), or prohibitive (too complex), we use simulation.  Simulation relies on playing random games long enough to get a stable average return (RTP).  Most modern slot games, and most strategy games require simulation.

        Simulations are based on client maths, game rules and paytables.

        We use a Mersenne Twister RNG to provide good quality random numbers as input to the simulator.

        We run simulations long enough to get a stable RTP value to at least 2 decimals.  This is usually 1,000,000,000 games.

        We run 2 or more simulations to ensure that they converge to the same RTP value (to 2 decimals).

        Simulated RTP is compared against client provided RTP.  Inconsistencies are worked through until the results match.

**RTP reporting accuracy**: At the end of theoretical RTP review, we are confident that the game RTP is accurate to the decimal places provided.  For slot high variance slot games we recommend using 1 decimal e.g. 96.1%, as players would need more than 100 million games to approach this accuracy.  For low variance table games we recommend 2 decimals e.g. 98.76% as this allows comparison with literature giving player strategy and advice.

Specific RTP information for Galactic Girls slot game

Galactic Girls is a new game.  We have confirmed RTP using simulation.  A total of 1,000,000,000 games were simulated.  Here are the results.

|  |  |  |  |
| --- | --- | --- | --- |
|  | iTech simulation | Client provided maths | Delta |
| Total RTP | 96.608% | 96.624% | -0.016 |

Based on RTP simulations, we find the Eyecon provided value for total RTP to be accurate for publication.  We recommend 96.608%, but also accept Eyecon’s 96.624% as being accurate within the confidence limits of our simulation.