

BMM EVALUATION TEST REPORT

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Issued To: M & M Entertainment, L.L.C

Issued By: BMM Testlabs
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Manufacturer: M & M Entertainment, L.L.C
1023 Cernan Drive
Bellwood, IL 60104

Math Evaluation for:

Game: Knockout 52

Mathematical Pay Percentage: See page 2

Reference Numbers:

BMM: FMG.1008

Report Number: FMG10081_E_MME

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Mathematical Pay Percentages:

Wager	Number of Decks	RTP	House Edge
Round 1 Match	1	96.46%	3.54%
Round 2 Match	1	91.78%	8.22%
Round 3 Match	1	90.18%	9.82%
Round 4 Match	1	90.63%	9.37%
All The Way PT1	1	82.81%	17.19%
All The Way PT2	1	90.93%	9.07%
Round 1 Match	2	96.74%	3.26%
Round 2 Match	2	91.58%	8.42%
Round 3 Match	2	89.46%	10.54%
Round 4 Match	2	89.65%	10.35%
All The Way PT1	2	80.96%	19.04%
All The Way PT2	2	88.90%	11.10%
Round 1 Match	4	96.88%	3.12%
Round 2 Match	4	91.51%	8.49%
Round 3 Match	4	89.07%	10.93%
Round 4 Match	4	89.04%	10.96%
All The Way PT1	4	79.96%	20.04%
All The Way PT2	4	87.80%	12.20%
Round 1 Match	6	96.92%	3.08%
Round 2 Match	6	91.46%	8.54%
Round 3 Match	6	88.99%	11.01%
Round 4 Match	6	88.84%	11.16%
All The Way PT1	6	79.86%	20.14%
All The Way PT2	6	87.69%	12.31%
Round 1 Match	8	96.96%	3.04%
Round 2 Match	8	91.42%	8.58%
Round 3 Match	8	88.91%	11.09%
Round 4 Match	8	88.66%	11.34%
All The Way PT1	8	79.69%	20.31%
All The Way PT2	8	87.51%	12.49%

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1. PURPOSE

M & M Entertainment, L.L.C. has requested BMM Testlabs to perform a mathematical evaluation on the game:

- Knockout 52

This evaluation tests the math for correct Return to Player (RTP) and Top Award odds.

The mathematical evaluation used 1 billion game simulations to estimate the theoretical RTP and Top Award odds.

2. KNOCKOUT 52 RULES AND PAYTABLE

Knockout 52 is a custom card game. The rules and paytables are given below:

- The game uses a standard 52-card deck with multiple deck options.
- The table has a layout with spaces for 52 cards; each space has a rank assigned to it with no suits. The spaces are laid out in four (4) rows of 13 and the top row is labeled with the ranks A, 2, 3, 4, 5, 6, 7, 8, 9, 10, J, Q, and K in that order.
- During the game, each card from the shuffled deck is dealt left to right onto the layout until a card matches the rank of its space.
- Before any cards are dealt, each player must place at least one (1) of the mandatory wagers defined below:
 - Round 1: A match will occur in the first 13 cards.
 - Round 2: A match will occur in the second 13 cards.
 - Round 3: A match will occur in the third 13 cards.
 - Round 4: A match will occur in the last 13 cards.
 - All the way: All the cards will be dealt without a match occurring.
- The payable choices for the Knockout 52 wagers are as follows:

Wager	PT 1 (to 1)	PT 2 (to 1)
Round 1 Match	0.5	0.5
Round 2 Match	3	3
Round 3 Match	10	10
Round 4 Match	30	30
All The Way	50	55

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3. EVALUATION DETAILS

The following table details the relevant information for the mathematical pay percentages for the game Knockout 52:

Game Details for Knockout 52 – 1 Deck – Round 1 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 1 Match	0.64309269	0.5	0.32154635
All others	0.35690731	-1	-0.35690731
House Edge			3.54%
RTP			96.46%

Note: The reported returns (RTP and House Edge) and probabilities match the client's PAR sheets.

Game Details for Knockout 52 – 1 Deck – Round 2 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 2 Match	0.22944826	3	0.68834478
All others	0.77055174	-1	-0.77055174
House Edge			8.22%
RTP			91.78%

Note: The reported returns (RTP and House Edge) and probabilities match the client's PAR sheets.

Game Details for Knockout 52 – 1 Deck – Round 3 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 3 Match	0.08198500	10	0.81985000
All others	0.91801500	-1	-0.91801500
House Edge			9.82%
RTP			90.18%

Note: The reported returns (RTP and House Edge) and probabilities match the client's PAR sheets.

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Game Details for Knockout 52 – 1 Deck – Round 4 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 4 Match	0.02923602	30	0.87708060
All others	0.97076398	-1	-0.97076398
House Edge			9.37%
RTP			90.63%

Note: The reported returns (RTP and House Edge) and probabilities match the client's PAR sheets.

Game Details for Knockout 52 – 1 Deck – All The Way Wager – PT 1:

Outcome	Probability	Pay (to 1)	EV
All The Way	0.01623803	50	0.81190150
All others	0.98376197	-1	-0.98376197
House Edge			17.19%
RTP			82.81%

Note: The reported returns (RTP and House Edge) and probabilities match the client's PAR sheets.

Game Details for Knockout 52 – 1 Deck – All The Way Wager – PT 2:

Outcome	Probability	Pay (to 1)	EV
All The Way	0.01623803	55	0.89309165
All others	0.98376197	-1	-0.98376197
House Edge			9.07%
RTP			90.93%

Note: The reported returns (RTP and House Edge) and probabilities match the client's PAR sheets.

Game Details for Knockout 52 – 2 Deck – Round 1 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 1 Match	0.64490218	0.5	0.32245109
All others	0.35509782	-1	-0.35509782
House Edge			3.26%
RTP			96.74%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

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Game Details for Knockout 52 – 2 Deck – Round 2 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 2 Match	0.22899550	3	0.68698650
All others	0.77100450	-1	-0.77100450
House Edge			8.42%
RTP			91.58%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 2 Deck – Round 3 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 3 Match	0.08132771	10	0.81327710
All others	0.91867229	-1	-0.91867229
House Edge			10.54%
RTP			89.46%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 2 Deck – Round 4 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 4 Match	0.02887071	30	0.86612130
All others	0.97112929	-1	-0.97112929
House Edge			10.35%
RTP			89.65%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

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Game Details for Knockout 52 – 2 Deck – All The Way Wager – PT 1:

Outcome	Probability	Pay (to 1)	EV
All The Way	0.01590390	50	0.79519500
All others	0.98409610	-1	-0.98409610
House Edge			19.04%
RTP			80.96%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 2 Deck – All The Way Wager – PT 2:

Outcome	Probability	Pay (to 1)	EV
All The Way	0.01590390	55	0.87471450
All others	0.98409610	-1	-0.98409610
House Edge			11.10%
RTP			88.90%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 4 Deck – Round 1 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 1 Match	0.64581340	0.5	0.32290670
All others	0.35418660	-1	-0.35418660
House Edge			3.12%
RTP			96.88%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

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Game Details for Knockout 52 – 4 Deck – Round 2 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 2 Match	0.22874054	3	0.68622162
All others	0.77125946	-1	-0.77125946
House Edge			8.49%
RTP			91.51%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 4 Deck – Round 3 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 3 Match	0.08101542	10	0.81015420
All others	0.91898458	-1	-0.91898458
House Edge			10.93%
RTP			89.07%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 4 Deck – Round 4 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 4 Match	0.02869498	30	0.86084940
All others	0.97130502	-1	-0.97130502
House Edge			10.96%
RTP			89.04%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

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Game Details for Knockout 52 – 4 Deck – All The Way Wager – PT 1:

Outcome	Probability	Pay (to 1)	EV
All The Way	0.01573565	50	0.78678250
All others	0.98426435	-1	-0.98426435
House Edge			20.04%
RTP			79.96%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 4 Deck – All The Way Wager – PT 2:

Outcome	Probability	Pay (to 1)	EV
All The Way	0.01573565	55	0.86546075
All others	0.98426435	-1	-0.98426435
House Edge			12.20%
RTP			87.80%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 6 Deck – Round 1 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 1 Match	0.64612444	0.5	0.32306222
All others	0.35387556	-1	-0.35387556
House Edge			3.08%
RTP			96.92%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

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Game Details for Knockout 52 – 6 Deck – Round 2 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 2 Match	0.22866312	3	0.68598936
All others	0.77133688	-1	-0.77133688
House Edge			8.54%
RTP			91.46%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 6 Deck – Round 3 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 3 Match	0.08090980	10	0.80909800
All others	0.91909020	-1	-0.91909020
House Edge			11.01%
RTP			88.99%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 6 Deck – Round 4 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 4 Match	0.02862711	30	0.85881330
All others	0.97137289	-1	-0.97137289
House Edge			11.16%
RTP			88.84%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

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Game Details for Knockout 52 – 6 Deck – All The Way Wager – PT 1:

Outcome	Probability	Pay (to 1)	EV
All The Way	0.01567554	50	0.78377700
All others	0.98432446	-1	-0.98432446
House Edge			20.14%
RTP			79.86%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 6 Deck – All The Way Wager – PT 2:

Outcome	Probability	Pay (to 1)	EV
All The Way	0.01567554	55	0.86215470
All others	0.98432446	-1	-0.98432446
House Edge			12.31%
RTP			87.69%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 8 Deck – Round 1 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 1 Match	0.64630941	0.5	0.32315471
All others	0.35369059	-1	-0.35369059
House Edge			3.04%
RTP			96.96%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

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Game Details for Knockout 52 – 8 Deck – Round 2 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 2 Match	0.22858502	3	0.68575506
All others	0.77141498	-1	-0.77141498
House Edge			8.58%
RTP			91.42%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 8 Deck – Round 3 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 3 Match	0.08084953	10	0.80849530
All others	0.91915047	-1	-0.91915047
House Edge			11.09%
RTP			88.91%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 8 Deck – Round 4 Match Wager:

Outcome	Probability	Pay (to 1)	EV
Round 4 Match	0.02860706	30	0.85821180
All others	0.97139294	-1	-0.97139294
House Edge			11.34%
RTP			88.66%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

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Game Details for Knockout 52 – 8 Deck – All The Way Wager – PT 1:

Outcome	Probability	Pay (to 1)	EV
All The Way	0.01564898	50	0.78244900
All others	0.98435102	-1	-0.98435102
House Edge			20.31%
RTP			79.69%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Game Details for Knockout 52 – 8 Deck – All The Way Wager – PT 2:

Outcome	Probability	Pay (to 1)	EV
All The Way	0.01564898	55	0.86069390
All others	0.98435102	-1	-0.98435102
House Edge			12.49%
RTP			87.51%

Note: The reported returns (RTP and House Edge) match the client's PAR sheets.

Note: The reported probabilities are estimated from the results of 1 billion simulations.

Top Award Details for Knockout 52:

Wager	Number of Decks	Top Award (to 1)	Top Award Odds	Top Award Description
Round 1 Match	1	0.5	1 in 2	Round 1 Match
Round 2 Match	1	3	1 in 5	Round 2 Match
Round 3 Match	1	10	1 in 13	Round 3 Match
Round 4 Match	1	30	1 in 35	Round 4 Match
All The Way PT 1	1	50	1 in 62	All The Way
All The Way PT 2	1	55	1 in 62	All The Way
Round 1 Match	2	0.5	1 in 2	Round 1 Match
Round 2 Match	2	3	1 in 5	Round 2 Match
Round 3 Match	2	10	1 in 13	Round 3 Match
Round 4 Match	2	30	1 in 35	Round 4 Match

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Wager	Number of Decks	Top Award (to 1)	Top Award Odds	Top Award Description
All The Way PT 1	2	50	1 in 63	All The Way
All The Way PT 2	2	55	1 in 63	All The Way
Round 1 Match	4	0.5	1 in 2	Round 1 Match
Round 2 Match	4	3	1 in 5	Round 2 Match
Round 3 Match	4	10	1 in 13	Round 3 Match
Round 4 Match	4	30	1 in 35	Round 4 Match
All The Way PT 1	4	50	1 in 64	All The Way
All The Way PT 2	4	55	1 in 64	All The Way
Round 1 Match	6	0.5	1 in 2	Round 1 Match
Round 2 Match	6	3	1 in 5	Round 2 Match
Round 3 Match	6	10	1 in 13	Round 3 Match
Round 4 Match	6	30	1 in 35	Round 4 Match
All The Way PT 1	6	50	1 in 64	All The Way
All The Way PT 2	6	55	1 in 64	All The Way
Round 1 Match	8	0.5	1 in 2	Round 1 Match
Round 2 Match	8	3	1 in 5	Round 2 Match
Round 3 Match	8	10	1 in 13	Round 3 Match
Round 4 Match	8	30	1 in 35	Round 4 Match
All The Way PT 1	8	50	1 in 64	All The Way
All The Way PT 2	8	55	1 in 64	All The Way

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4. TERMS AND CONDITIONS

BMM Testlabs (“BMM”) has conducted a level of testing of the gaming product which has historically been adequate for a submission of this type. However, inherent in testing in a laboratory environment are the unavoidable limitations of not being able to verify the effects of all possible configurations and environments that occur in actual gaming venues.

This evaluation report is for use by the client for the jurisdiction (“Jurisdiction”) referenced in the report (the “Report”) and only verifies, as of the date stated, the gaming product described in the Report subject to any conditions or limitations set forth therein.

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Please feel free to contact BMM Testlabs if you have any questions in regards to this evaluation report.

Yours sincerely,



Travis Foley
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BMM Testlabs

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