

BMM EVALUATION TEST REPORT

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Issued To: Black Chip Entertainment

Issued By: BMM Testlabs
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NGCB Registration #31758-01

Manufacturer: Black Chip Entertainment
400 Winters Ave.
Glenvil, NE 68941

Compliance Evaluation for:

Games: Pot Shot 21 Any Pair
Pot Shot 21 Bonus Wagers
Pot Shot 21 Flush Plus

Mathematical Pay Percentages:
See Page 2

Reference Numbers:

BMM: BLE.1004

Report Number: BLE10041_E

BMM EVALUATION TEST REPORT

Mathematical Pay Percentages for Pot Shot 21 Any Pair:

Variation	Decks	House Edge (%)	RTP (%)
Paytable – A1	2	12.45	87.55
Paytable – A2	2	10.45	89.55
Paytable – A3	2	6.45	93.55
Paytable – A4	2	12.85	87.15
Paytable – A5	2	10.85	89.15
Paytable – A6	2	6.85	93.15
Paytable – A7	6	8.63	91.37
Paytable – A8	6	6.01	93.99
Paytable – A9	6	3.38	96.62
Paytable – A10	6	9.15	90.85
Paytable – A11	6	6.53	93.47
Paytable – A12	6	3.91	96.09

Mathematical Pay Percentages for Pot Shot 21 Bonus Wagers:

Variation	Decks	House Edge (%)	RTP (%)
Option 1	2	10.17	89.83
Option 2	2	9.65	90.35
Option 3	2	12.28	87.72
Option 4	2	8.62	91.38

Mathematical Pay Percentages for Pot Shot 21 Flush Plus:

Variation	Decks	House Edge (%)	RTP (%)
Paytable – F1	2	11.77	88.23
Paytable – F2	2	6.27	93.73
Paytable – F3	2	10.34	89.66
Paytable – F4	2	10.49	89.51
Paytable – F5	2	10.45	89.55
Paytable – F6	2	12.35	87.65
Paytable – F7	2	11.18	88.82
Paytable – F8	6	13.39	86.61

BMM EVALUATION TEST REPORT

1. PURPOSE

Black Chip Entertainment has requested BMM Testlabs to perform a mathematical evaluation on the games: Pot Shot 21 Any Pair, Pot Shot 21 Bonus Wagers, and Pot Shot 21 Flush Plus. This evaluation tests the math for correct Return to Player (RTP) and the Top Award odds.

The mathematical evaluation calculated the theoretical RTP and Top Award odds assuming:

- § Each deck of cards consisted of 52 cards.
- § The game uses two (2) or six (6) decks.

2. GAME RULES AND PAYTABLE

2.1 Pot Shot 21 Any Pair

Pot Shot 21 Any Pair is an optional side bet to Blackjack. The rules and payable are given below:

- § A three (3) card poker hand is formed from the dealer up card and the first two (2) player cards.
- § The two (2) deck payable choices for the Pot Shot 21 bets are as follows:

	Paytable A1	Paytable A2	Paytable A3	Paytable A4	Paytable A5	Paytable A6
Hand	Pays (to 1)	Pays (to 1)	Pays (to 1)	Pays (to 1)	Pays (to 1)	Pays (to 1)
Three of a Kind	26	31	41	25	30	40
Pair	3	3	3	3	3	3

- § The six (6) deck payable choices for the Pot Shot 21 bets are as follows:

	Paytable A7	Paytable A8	Paytable A9	Paytable A10	Paytable A11	Paytable A12
Hand	Pays (to 1)	Pays (to 1)	Pays (to 1)	Pays (to 1)	Pays (to 1)	Pays (to 1)
Three of a Kind	16	21	26	15	20	25
Pair	3	3	3	3	3	3

2.2 Pot Shot 21 Bonus Wagers

Pot Shot 21 includes four (4) independent Bonus Wagers to Blackjack. The rules and payable are given below:

- § A three (3) card poker hand is formed from the dealer up card and the first two (2) player cards.
- § A player may make one (1) or more of the Bonus Wagers simultaneously.
- § Each Bonus Wager is independent of the others. For example, if the player makes a wager on Straight Flush and wins, the player does not also get paid for a Straight and vice versa. The player would need to make wagers on a Straight Flush and a Straight for the opportunity to get paid for both.

BMM EVALUATION TEST REPORT

§ The payable for the Pot Shot 21 Bonus Wagers are as follows:

Hand	Pays (to 1)
Option 1 - Straight Flush	425
Option 2 - 3 of a Kind	225
Option 3 – Straight Flush/Straight	25
Option 4 – Straight Flush/Flush	15

2.3 Pot Shot 21 Flush Plus

Pot Shot 21 Flush Plus is an optional side bet to Blackjack. The rules and payable are given below:

§ A three (3) card poker hand is formed from the dealer up card and the first two (2) player cards.

§ The two (2) deck payable choices for the Pot Shot 21 Flush Plus bets are as follows:

	Paytable F1	Paytable F2	Paytable F3	Paytable F4
Hand	Pays (to 1)	Pays (to 1)	Pays (to 1)	Pays (to 1)
Straight Flush	30	30	40	10
3 of a Kind	20	20	30	20
Straight	10	10	12	10
Flush	6	7	4	7

	Paytable F5
Hand	Pays (to 1)
Straight Flush	50
Straight	10
Flush	7

	Paytable F6
Hand	Pays (to 1)
Straight Flush	50
3 of a Kind	40
Flush	10

	Paytable F7
Hand	Pays (to 1)
Royal Flush	1000
Straight flush	200
3 of a kind	80

§ The six (6) deck payable choice for the Pot Shot 21 Flush Plus bets are as follows:

	Paytable F8
Hand	Pays (to 1)
Straight Flush	30
3 of a Kind	20
Straight	10
Flush	5

BMM EVALUATION TEST REPORT

3. COMPLIANCE EVALUATION DETAILS

The following table details the relevant information for the mathematical pay percentages for the game:
Pot Shot 21:

Pot Shot 21 Bonus: 2 Decks – A1 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.00399772	26	0.10394061
Pair	0.19189035	3	0.57567105
Others	0.80411194	-1	-0.80411194
House Edge			12.45%
RTP			87.55%

Pot Shot 21 Any Pair: 2 Decks – A2 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.00399772	31	0.12392918
Pair	0.19189035	3	0.57567105
Others	0.80411194	-1	-0.80411194
House Edge			10.45%
RTP			89.55%

Pot Shot 21 Any Pair: 2 Decks – A3 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.00399772	41	0.16390634
Pair	0.19189035	3	0.57567105
Others	0.80411194	-1	-0.80411194
House Edge			6.45%
RTP			93.55%

Pot Shot 21 Any Pair: 2 Decks – A4 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.00399772	25	0.09994289
Pair	0.19189035	3	0.57567105
Others	0.80411194	-1	-0.80411194

BMM EVALUATION TEST REPORT

Hand	Probability	Pay (to 1)	EV
		House Edge	12.85%
		RTP	87.15%

Pot Shot 21 Any Pair: 2 Decks – A5 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.00399772	30	0.11993147
Pair	0.19189035	3	0.57567105
Others	0.80411194	-1	-0.80411194
		House Edge	10.85%
		RTP	89.15%

Pot Shot 21 Any Pair: 2 Decks – A6 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.00399772	40	0.15990862
Pair	0.19189035	3	0.57567105
Others	0.80411194	-1	-0.80411194
		House Edge	6.85%
		RTP	93.15%

Pot Shot 21 Any Pair: 6 Decks – A7 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.00524842	16	0.08397469
Pair	0.20611970	3	0.61835909
Others	0.78863188	-1	-0.78863188
		House Edge	8.63%
		RTP	91.37%

BMM EVALUATION TEST REPORT

Pot Shot 21 Any Pair: 6 Decks – A8 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.00524842	21	0.11021678
Pair	0.20611970	3	0.61835909
Others	0.78863188	-1	-0.78863188
House Edge			6.01%
RTP			93.99%

Pot Shot 21 Any Pair: 6 Decks – A9 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.00524842	26	0.13645887
Pair	0.20611970	3	0.61835909
Others	0.78863188	-1	-0.78863188
House Edge			3.38%
RTP			96.62%

Pot Shot 21 Any Pair: 6 Decks – A10 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.00524842	15	0.07872627
Pair	0.20611970	3	0.61835909
Others	0.78863188	-1	-0.78863188
House Edge			9.15%
RTP			90.85%

Pot Shot 21 Any Pair: 6 Decks – A11 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.00524842	20	0.10496836
Pair	0.20611970	3	0.61835909
Others	0.78863188	-1	-0.78863188
House Edge			6.53%
RTP			93.47%

BMM EVALUATION TEST REPORT

Pot Shot 21 Any Pair: 6 Decks – A12 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.00524842	25	0.13121046
Pair	0.20611970	3	0.61835909
Others	0.78863188	-1	-0.78863188
House Edge			3.91%
RTP			96.09%

Top Award Details: Pot Shot 21 Any Pair

Variation	Top Award (to 1)	Top Award Odds	Top Award Description
2 Decks – A1	26	1 in 251	Three of a Kind
2 Decks – A2	31	1 in 251	
2 Decks – A3	41	1 in 251	
2 Decks – A4	25	1 in 251	
2 Decks – A5	30	1 in 251	
2 Decks – A6	40	1 in 251	
6 Decks – A7	16	1 in 191	
6 Decks – A8	21	1 in 191	
6 Decks – A9	26	1 in 191	
6 Decks – A10	15	1 in 191	
6 Decks – A11	20	1 in 191	
6 Decks – A12	25	1 in 191	

Pot Shot 21 Bonus Wagers: 2 Decks – Option 1 Details:

Hand	Probability	Pay (to 1)	EV
Straight Flush	0.00210869	425	0.89619119
Other	0.99789132	-1	-0.99789132
House Edge			10.17%
RTP			89.83%

Pot Shot 21 Bonus Wagers: 2 Decks – Option 2 Details:

Hand	Probability	Pay (to 1)	EV
Three of a Kind	0.0039977	225	0.89948601
Other	0.9960023	-1	-0.9960023

BMM EVALUATION TEST REPORT

Hand	Probability	Pay (to 1)	EV
House Edge			9.65%
RTP			90.35%

Pot Shot 21 Bonus Wagers: 2 Decks – Option 3 Details:

Hand	Probability	Pay (to 1)	EV
Straight Flush	0.00210869	25	0.05271713
Straight	0.03163028	25	0.79075693
Other	0.96626104	-1	-0.96626104
House Edge			12.28%
RTP			87.72%

Pot Shot 21 Bonus Wagers: 2 Decks – Option 4 Details:

Hand	Probability	Pay (to 1)	EV
Straight Flush	0.00210869	15	0.03163028
Flush	0.05500154	15	0.82502306
Other	0.94288978	-1	-0.94288978
House Edge			8.62%
RTP			91.38%

Top Award Details: Pot Shot 21 Bonus Wagers

Variation	Top Award (to 1)	Top Award Odds	Top Award Description
2 Decks Option 1	425	1 in 475	Straight Flush
2 Decks Option 2	225	1 in 251	Three of a Kind
2 Decks Option 3	25	1 in 30	Straight Flush or Straight
2 Decks Option 4	15	1 in 18	Straight Flush or Flush

Pot Shot 21 Flush Plus: 2 Decks – F1 Details:

Hand	Probability	Pay (to 1)	EV
Straight Flush	0.00210869	30	0.06326055
Three of a Kind	0.00399772	20	0.07995431

BMM EVALUATION TEST REPORT

Hand	Probability	Pay (to 1)	EV
Straight	0.03163028	10	0.31630277
Flush	0.05500154	6	0.33000923
Other	0.90726178	-1	-0.90726178
House Edge			11.77%
RTP			88.23%

Pot Shot 21 Flush Plus: 2 Decks – F2 Details:

Hand	Probability	Pay (to 1)	EV
Straight Flush	0.00210869	30	0.06326055
Three of a Kind	0.00399772	20	0.07995431
Straight	0.03163028	10	0.31630277
Flush	0.05500154	7	0.38501076
Other	0.90726178	-1	-0.90726178
House Edge			6.27%
RTP			93.73%

Pot Shot 21 Flush Plus: 2 Decks – F3 Details:

Hand	Probability	Pay (to 1)	EV
Straight Flush	0.00210869	40	0.08434741
Three of a Kind	0.00399772	30	0.11993147
Straight	0.03163028	12	0.37956333
Flush	0.05500154	4	0.22000615
Other	0.90726178	-1	-0.90726178
House Edge			10.34%
RTP			89.66%

Pot Shot 21 Flush Plus: 2 Decks – F4 Details:

Hand	Probability	Pay (to 1)	EV
Straight Flush	0.00210869	10	0.02108685
Three of a Kind	0.00399772	20	0.07995431
Straight	0.03163028	10	0.31630277

BMM EVALUATION TEST REPORT

Hand	Probability	Pay (to 1)	EV
Flush	0.05500154	7	0.38501076
Other	0.90726178	-1	-0.90726178
House Edge			10.49%
RTP			89.51%

Pot Shot 21 Flush Plus: 2 Decks – F5 Details:

Hand	Probability	Pay (to 1)	EV
Straight Flush	0.00210869	50	0.10543426
Straight	0.03163028	10	0.31630277
Flush	0.05500154	7	0.38501076
Other	0.9112595	-1	-0.9112595
House Edge			10.45%
RTP			89.55%

Pot Shot 21 Flush Plus: 2 Decks – F6 Details:

Hand	Probability	Pay (to 1)	EV
Straight Flush	0.00210869	50	0.10543426
Three of a Kind	0.00399772	40	0.15990862
Flush	0.05500154	10	0.55001538
Other	0.93889206	-1	-0.93889206
House Edge			12.35%
RTP			87.65%

Pot Shot 21 Flush Plus: 2 Decks – F7 Details:

Hand	Probability	Pay (to 1)	EV
Royal Flush	0.00017572	1000	0.17572376
Straight flush	0.00193296	200	0.38659228
Three of a kind	0.00399772	80	0.31981725
Other	0.99389360	-1	-0.9938936
House Edge			11.18%
RTP			88.82%

BMM EVALUATION TEST REPORT

Pot Shot 21 Flush Plus: 6 Decks – F8 Details:

Hand	Probability	Pay (to 1)	EV
Straight Flush	0.00206809	30	0.06204272
Three of a Kind	0.00524842	20	0.10496836
Straight	0.03102136	10	0.31021359
Flush	0.05842356	5	0.29211780
Other	0.90323857	-1	-0.90323857
House Edge			13.39%
RTP			86.61%

Top Award Details: Pot Shot 21 Flush Plus

Variation	Top Award (to 1)	Top Award Odds	Top Award Description
2 Decks – F1	30	1 in 475	Straight Flush
2 Decks – F2	30	1 in 475	Straight Flush
2 Decks – F3	40	1 in 475	Straight Flush
2 Decks – F4	20	1 in 251	Three of a Kind
2 Decks – F5	50	1 in 475	Straight Flush
2 Decks – F6	50	1 in 475	Straight Flush
2 Decks – F7	1000	1 in 5,691	Royal Flush
6 Decks – F8	30	1 in 484	Straight Flush

4. CHECKLISTS USED

The following table details the testing checklists used:

Checklist Number	Version	Checklist Description
AMS-NAM-CH-259	1.5	Math Checklist
AMS-NAM-CH-382	1.4	Math Evaluation Test Checklist
AMS-NAM-MO-382	1.4	Math Evaluation Method

BMM EVALUATION TEST REPORT

5. PROJECT HISTORY

The following table details milestone dates of the project;

Date	Description
28/12/2016	Original Submitted Date
28/12/2016	Testing Start Date
16/01/2017	Testing Completion Date

BMM EVALUATION TEST REPORT

6. 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,



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BMM Testlabs

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