

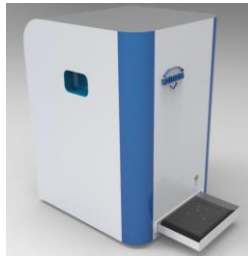


**DIAMOND
PRODUCERS
ASSOCIATION**



**PROJECT ASSURE
DIAMOND VERIFICATION INSTRUMENT STANDARD REPORT**

Summary Report for: Taidiam Technology (Zhengzhou) Co. Ltd. / Natural Synthetic DiamondDect™5



Prepared For: Lisa Levinson
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Hoveniersstraat 22
Antwerp, 2018
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Received Date: November 5, 2018
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Assessment Dates: January 17, 2019 through January 18, 2019
Testing ID: 1820527S-E*
Assessment Testing ID: 1820527
Report Issue Date: May 23, 2019

*This report supersedes test report dated March 14, 2019. The report has been amended to include the combined test results for C and D+DE stone sets. The stone stable has also been updated to include stone sets C and D+DE as requested by the DPA.

Approval By:

Judith V. Haber

Judith V. Haber
Global Technical Lead Chemistry

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	Taidiam Technology (Zhengzhou) Co. Ltd. / Natural Synthetic DiamondDect™5		
	Date:	May 23, 2019	Testing ID:

Manufacturer's Name: Taidiam Technology (Zhengzhou) Co. Ltd.
Instrument Model: DD5
Serial Number: N/A
Software Version: N/A
Lab Manager: Winson Wong
Analyst/Operator: Anthony Tedeschi, Joseph Tiburcio

Overview

The stated instrument was evaluated to Diamond Verification Instrument Standard Part 1 – Diamond Verification Instrument for Screening Diamonds from Synthetic Diamonds (30 January 2019) as referenced by the Diamond Verification Instrument Standard – General Requirements for Evaluation Diamond Verification Instruments (30 January 2019).


Manufacturer's Claims for Instrument Capability

Sample Composition	
Type of Stones	Diamonds and HPHT Synthetic diamonds
Stone Size Range	1.0 to 14.4 mm (0.005 to 10 ct.)
Stone Color Range	Stone Color D to J
Loose / Mounted	Loose and Mounted
Single / Batch Stone Testing	Batch
Automated / Manual Feed	Manual Feed

Summary of Assessment

The instrument has been verified to be able to screen loose and mounted, round, brilliant cut diamonds and synthetic diamonds in the size range of 1.0 to 3.7 mm (0.005 to 0.2 ct.) and D to J color range.

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Results of Performance Testing to the Diamond Verification Instrument Standard

Test Stone Sets used to Assess Performance

Loose, Polished Stone Test Sets	Diamond	Synthetic Diamond	Diamond Simulant
Primary Set (>2.00 mm, D-J colour) 748 diamonds and 150 synthetic diamonds	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Supp. Set A (>2.00 mm, D-J colour) 249 diamonds	<input checked="" type="checkbox"/>		
Supp. Set AB (>2.00 mm, D-J colour) 49 synthetic diamonds		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Supp. Set B (>2.00 mm, K-Z colour) 250 diamonds	<input type="checkbox"/>		
Supp. Set C (1.00-2.00 mm, D-J colour) 737 diamonds and 140 synthetic diamonds	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Supp. Set D (1.00-2.00 mm, D-J colour) 250 diamonds	<input checked="" type="checkbox"/>		
Supp. Set DE (1.00-2.00 mm, D-J colour) 51 synthetic diamonds		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Supp. Set E (0.10-2.00 mm, K-Z colour) 250 diamonds	<input type="checkbox"/>		

Results of instrument stone assessment testing of Combined Stone Sets

Test Property	Results for Loose, Polished Stone Test Sets	
	Primary and A&AB Combined	C and D&DE Combined
Diamond accuracy (%)	91.6	97.8
Synthetic diamond accuracy (%)	na ^[1]	na ^[1]
Diamond referral rate (%)	8.4	2.2
Synthetic diamond referral rate (%)	77.4 ^[2]	90.6
Diamond false positive rate (%)	22.6	9.4
Synthetic diamond false positive rate (%)	0.0	0.0
Diamond false negative rate (%)	0.0	0.0
Synthetic diamond false negative rate (%)	22.6	9.4


Notes:

na Not applicable per instrument manufacturer

[1] Does not apply because this instrument does not classify stones as ‘Synthetic diamond’

[2] This instrument is designed to classify synthetic diamonds as ‘Refer’

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Results of instrument testing speed assessment

Rate of Testing Speed Test Method	Average Test Result
<input type="checkbox"/> Test Method A: Fixed number of stones	557 stones per hour
<input checked="" type="checkbox"/> Test Method B: Fixed time frame	
<input type="checkbox"/> Test Method C: Reduced number of stones	

Results of instrument stone assessment testing of individual stone sets

Test Property	Results for Loose, Polished Stone Test Sets					
	Primary	A & AB	B & AB	C	D & DE	E & DE
Diamond accuracy (%)	94.1	83.9	na	97.8	97.6	na
Synthetic diamond accuracy (%)	na ^[1]	na ^[1]	na	na ^[1]	na ^[1]	na
Diamond referral rate (%)	5.9	16.1	na	2.2	2.4	na
Synthetic diamond referral rate (%)	76.7 ^[2]	79.6 ^[2]	na	92.1 ^[2]	86.3 ^[2]	na
Diamond false positive rate (%)	23.3	20.4	na	7.9	13.7	na
Synthetic diamond false positive rate (%)	0.0	0.0	na	0.0	0.0	na
Diamond false negative rate (%)	0.0	0.0	na	0.0	0.0	na
Synthetic diamond false negative rate (%)	23.3	20.4	na	7.9	13.7	na

Notes:

na Not applicable per instrument manufacturer

1] Does not apply because this instrument does not classify stones as ‘Synthetic diamond’

2] This instrument is designed to classify synthetic diamonds as ‘Refer’

Additional Notes from Assessment Findings


Below is a summary of an additional findings from assessment:

- No additional comments

Definitions

Diamond Accuracy	Defined as the fraction of test stones correctly classified by the specific diamond verification instrument as diamond.
Synthetic Diamond Accuracy	Defined as the fraction of test stones correctly classified by the specific diamond verification instrument as synthetic diamond.
Diamond Referral Rate	Defined as the fraction of diamonds that could not be classified by the specific diamond verification instrument and requires further.

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Synthetic Diamond Referral Rate	Defined as the fraction of synthetic diamonds that could not be classified by the specific diamond verification instrument and requires further testing.
Diamond False Positive Rate	Defined as the fraction of synthetic diamonds incorrectly classified as diamond by the specific diamond verification instrument.
Synthetic Diamond False Positive Rate	Defined as the fraction of diamonds incorrectly classified as synthetic diamonds by the specific diamond verification instrument.
Diamond False Negative Rate	Defined as the fraction of diamonds incorrectly classified as synthetic diamond by the specific diamond verification instrument.
Synthetic Diamond False Negative Rate	Defined as the fraction of synthetic diamonds incorrectly classified as diamond by the specific diamond verification instrument.
Rate of Testing Speed	Defined as the average speed at which the diamond verification instrument evaluates unknown stones.

***** End of Report *****

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