

PROJECT ASSURE
DIAMOND VERIFICATION INSTRUMENT STANDARD REPORT

Summary Report for: Presidium Instruments Pte Ltd / ARI by Presidium

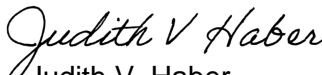


Prepared For: Lisa Levinson
Natural Diamond Council
Hoveniersstraat 22
Antwerp, 2018
Belgium


Received Date: September 14, 2020
Invid Number: 747617
Assessment Dates: September 17, 2020 through September 21, 2020
Testing ID Number: 2013311S-A
Assessment Testing ID: 2013311
Report Issue Date: February 9, 2021 September 29, 2020

*This report supersedes the test report dated September 29, 2020. The report has been amended to add a statement for stones that are likely to be outside the parameters of the instrument for table size.

Approval By:


Judith V. Haber
Technical Manager CRS

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	Presidium Instruments Pte Ltd / ARI by Presidium		
	Date:	February 9, 2021	Testing ID:

Manufacturer's Name: Presidium Instruments Pte Ltd
Instrument Model: ARI by Presidium
Serial Number: PTD200036
Software Version: Not Applicable
Lab Manager: Winson Wong
Analyst/Operator: Julie Mason

Overview

The stated instrument was evaluated to Diamond Verification Instrument Standard Part 1 – Diamond Verification Instrument for Screening Diamonds from Synthetic Diamonds (23 September 2020) as referenced by the Diamond Verification Instrument Standard – General Requirements for Evaluation Diamond Verification Instruments (23 September 2020).


Manufacturer's Claims for Instrument Capability

Sample Composition	
Type of Stones	Diamonds and Synthetic diamonds
Stone Size Range	1.7 mm and above (0.02 ct. and above)
Stone Color Range	Stone Color D to J
Loose / Mounted	Loose and Mounted (in all types of setting)
Single / Batch Stone Testing	Single Stone Testing
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 1.7 to 3.7 mm (0.02 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) 747 diamonds, 150 synthetic diamonds and 148 diamond simulants	<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, 47 diamond simulants		<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, 140 synthetic diamonds and 145 diamond simulants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supp. Set D (1.00-2.00 mm, D-J colour) 250 diamonds	<input type="checkbox"/>		
Supp. Set DE (1.00-2.00 mm, D-J colour) 51 synthetic diamonds, 47 diamond simulants		<input 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 Primary and A&AB Combined

Test Property	Results for Loose, Polished Stone Test Sets
	Primary and A&AB Combined
Diamond accuracy (%)	95.5
Synthetic diamond accuracy (%)	na ^[1]
Diamond referral rate (%)	4.5
Synthetic diamond referral rate (%)	94.0 ^[2]
Diamond false positive rate (%)	6.0 ^[3]
Synthetic diamond false positive rate (%)	0.0
Diamond false negative rate (%)	0.0
Synthetic diamond false negative rate (%)	6.0

Notes:


na Not applicable per instrument manufacturer

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

[2] This instrument classifies synthetic stones as ‘Refer’

[3] As some of the test stones likely fall outside the instrument parameter for table size, it is possible that the Diamond false positive rate is somewhat compromised by the inclusion of stones that are out of the instrument parameters.

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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	185 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 ^[3]	A & AB	B & AB	C	D & DE	E & DE
Diamond accuracy (%)	95.3	96.0	na	na	na	na
Synthetic diamond accuracy (%)	na ^[1]	na ^[1]	na	na	na	na
Diamond referral rate (%)	4.7	4.0	na	na	na	na
Synthetic diamond referral rate (%)	93.3 ^[2]	95.9 ^[2]	na	na	na	na
Diamond false positive rate (%)	6.7 ^[4]	4.1	na	na	na	na
Synthetic diamond false positive rate (%)	0.0	0.0	na	na	na	na
Diamond false negative rate (%)	0.0	0.0	na	na	na	na
Synthetic diamond false negative rate (%)	6.7	4.1	na	na	na	na

Notes:

na Not applicable per instrument manufacturer

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

[2] This instrument classifies synthetic stones as ‘Refer’

[3] Primary Stone set deviates from the standard as a reduced number of stones were analyzed; Primary set deviation – the standard call for 748 diamonds to be tested, only 747 diamonds were tested.


[4] As some of the test stones likely fall outside the instrument parameter for table size, it is possible that the Diamond false positive rate is somewhat compromised by the inclusion of stones that are out of the instrument parameters.

Additional Notes from Assessment Findings

Below is a summary of an additional findings from assessment:

- No additional comments

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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.
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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