

**PROJECT ASSURE  
DIAMOND VERIFICATION INSTRUMENT STANDARD REPORT**

**Summary Report for: Dharmanandan Research Centre's (DRC Techno) /  
J-Detect 9000**

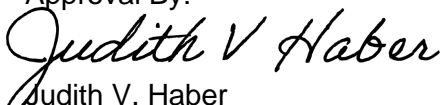


**Prepared For:** Lisa Levinson  
Diamond Producers Association Belgium ESV  
Hoveniersstraat 22  
Antwerp, 2018  
Belgium

Received Date: April 30, 2019  
Invid Number: 696435  
Assessment Dates: May 6, 2019 through May 8, 2019  
Testing ID Number: 1907908S-B\*  
Assessment Testing ID: 1907908-A  
Report Date: August 16, 2019

\*This report supersedes the test report dated May 23, 2019. The report was amended to correct the stone size to 0.86mm+(0.003 ct.+).

Approval By:

  
Judith V. Haber  
Global Technical Lead Chemistry

LETTERS & REPORTS: UL Verification Services, Inc. (UL) letters and reports are issued for the exclusive use of the clients to whom they are addressed. No quotations from reports or use of the UL name is permitted except as expressly authorized in writing. Letters and reports apply only to the specific materials, products or processes tested, examined or surveyed and are not necessarily indicative of the qualities of apparently identical or similar materials, products or processes. The liability of UL with respect to services rendered shall be limited to the amount of consideration paid for such service and not include any consequential damages. This report or certificate does not relieve sellers/suppliers from their contractual responsibility with regard to the quality/quantity of this delivery, nor does it prejudice clients' right to claim towards sellers/suppliers for compensation for any apparent and/or hidden defects not detected during our random inspection or testing. UL has not performed a complete analysis of the product. The results contained in this report indicate that the product has passed or failed the specific tests only. These test results, even if rated as "Passed," do not indicate or certify that the product is safe for commercial or consumer use.

	DRC Techno, J-Detect 9000		
	Date:	August 16, 2019	Testing ID:

**Manufacturer's Name:** DRC Techno  
**Instrument Model:** N/A  
**Serial Number:** 09D483003  
**Software Version:** 1.0.0.1  
**Lab Manager:** Winson Wong  
**Analyst/Operator:** Anthony Tedeschi, Vignesh Kevadiya

**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 Synthetic diamonds
Stone Size Range	0.86 mm+ (0.0.003 ct.+)
Stone Color Range	Color Range D to K
Loose / Mounted	Loose and Mounted
Single / Batch Stone Testing	Batch 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 that are loose in the size range of 0.86 to 3.7 mm (0.003 to 0.2 ct.) and D-J color range.

*LETTERS & REPORTS: UL Verification Services, Inc. (UL) letters and reports are issued for the exclusive use of the clients to whom they are addressed. No quotations from reports or use of the UL name is permitted except as expressly authorized in writing. Letters and reports apply only to the specific materials, products or processes tested, examined or surveyed and are not necessarily indicative of the qualities of apparently identical or similar materials, products or processes. The liability of UL with respect to services rendered shall be limited to the amount of consideration paid for such service and not include any consequential damages. This report or certificate does not relieve sellers/suppliers from their contractual responsibility with regard to the quality/quantity of this delivery, nor does it prejudice clients' right to claim towards sellers/suppliers for compensation for any apparent and/or hidden defects not detected during our random inspection or testing. UL has not performed a complete analysis of the product. The results contained in this report indicate that the product has passed or failed the specific tests only. These test results, even if rated as "Passed," do not indicate or certify that the product is safe for commercial or consumer use.*

	DRC Techno, J-Detect 9000		
	Date:	August 16, 2019	Testing ID:

**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, 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 - Expert

Test Property	Results for Loose, Polished Stone Test Sets	
	Primary and A&AB Combined	C and D&DE Combined
Diamond accuracy (%)	81.4	90.3
Synthetic diamond accuracy (%)	na <sup>[1]</sup>	na <sup>[1]</sup>
Diamond referral rate (%)	18.6	9.7
Synthetic diamond referral rate (%)	85.4 <sup>[2]</sup>	96.3 <sup>[2]</sup>
Diamond false positive rate (%)	14.6	3.7
Synthetic diamond false positive rate (%)	0.0	0.0
Diamond false negative rate (%)	0.0	0.0
Synthetic diamond false negative rate (%)	14.6	3.7


Notes:

na Not applicable per instrument manufacturer

[1] This instrument does not classify stones as 'Synthetic'

[2] This instrument classifies synthetic stones as 'Refer'

*LETTERS & REPORTS: UL Verification Services, Inc. (UL) letters and reports are issued for the exclusive use of the clients to whom they are addressed. No quotations from reports or use of the UL name is permitted except as expressly authorized in writing. Letters and reports apply only to the specific materials, products or processes tested, examined or surveyed and are not necessarily indicative of the qualities of apparently identical or similar materials, products or processes. The liability of UL with respect to services rendered shall be limited to the amount of consideration paid for such service and not include any consequential damages. This report or certificate does not relieve sellers/suppliers from their contractual responsibility with regard to the quality/quantity of this delivery, nor does it prejudice clients' right to claim towards sellers/suppliers for compensation for any apparent and/or hidden defects not detected during our random inspection or testing. UL has not performed a complete analysis of the product. The results contained in this report indicate that the product has passed or failed the specific tests only. These test results, even if rated as "Passed," do not indicate or certify that the product is safe for commercial or consumer use.*

	DRC Techno, J-Detect 9000		
	Date:	August 16, 2019	Testing ID:

### Results of instrument stone assessment testing of Combined Stone Sets - Novice

Test Property	Results for Loose, Polished Stone Test Sets	
	Primary and A&AB Combined	C and D&DE Combined
Diamond accuracy (%)	85.5	84.5
Synthetic diamond accuracy (%)	na <sup>[1]</sup>	na <sup>[1]</sup>
Diamond referral rate (%)	14.5	15.5
Synthetic diamond referral rate (%)	93.0 <sup>[2]</sup>	99.0 <sup>[2]</sup>
Diamond false positive rate (%)	7.0	1.0
Synthetic diamond false positive rate (%)	0.0	0.0
Diamond false negative rate (%)	0.0	0.0
Synthetic diamond false negative rate (%)	7.0	1.0

Notes:

na Not applicable per instrument manufacturer

[1] This instrument does not classify stones as 'Synthetic'

[2] This instrument classifies synthetic stones as 'Refer'

### Results of instrument testing speed assessment - Expert

Rate of Testing Speed Test Method	Average Test Result
<input type="checkbox"/> Test Method A: Fixed number of stones	679 stones per hour
<input type="checkbox"/> Test Method B: Fixed time frame	
<input checked="" type="checkbox"/> Test Method C: Reduced number of stones	

### Results of instrument testing speed assessment - Novice

Rate of Testing Speed Test Method	Average Test Result
<input type="checkbox"/> Test Method A: Fixed number of stones	527 stones per hour
<input type="checkbox"/> Test Method B: Fixed time frame	
<input checked="" type="checkbox"/> Test Method C: Reduced number of stones	

### Results of instrument stone assessment testing of individual stone sets - Expert

**LETTERS & REPORTS:** UL Verification Services, Inc. (UL) letters and reports are issued for the exclusive use of the clients to whom they are addressed. No quotations from reports or use of the UL name is permitted except as expressly authorized in writing. Letters and reports apply only to the specific materials, products or processes tested, examined or surveyed and are not necessarily indicative of the qualities of apparently identical or similar materials, products or processes. The liability of UL with respect to services rendered shall be limited to the amount of consideration paid for such service and not include any consequential damages. This report or certificate does not relieve sellers/suppliers from their contractual responsibility with regard to the quality/quantity of this delivery, nor does it prejudice clients' right to claim towards sellers/suppliers for compensation for any apparent and/or hidden defects not detected during our random inspection or testing. UL has not performed a complete analysis of the product. The results contained in this report indicate that the product has passed or failed the specific tests only. These test results, even if rated as "Passed," do not indicate or certify that the product is safe for commercial or consumer use.

	DRC Techno, J-Detect 9000				
	Date:	August 16, 2019	Testing ID:	1907908S-B	

Test Property	Results for Loose, Polished Stone Test Sets					
	Primary	A & AB	B & AB	C <sup>[3]</sup>	D & DE <sup>[3]</sup>	E & DE
Diamond accuracy (%)	77.5	93.2	na	94.2	78.8	na
Synthetic diamond accuracy (%)	na <sup>[1]</sup>	na <sup>[1]</sup>	na	na <sup>[1]</sup>	na <sup>[1]</sup>	na
Diamond referral rate (%)	22.5	6.8	na	5.8	21.2	na
Synthetic diamond referral rate (%)	90.0 <sup>[2]</sup>	71.4 <sup>[2]</sup>	na	95.0 <sup>[2]</sup>	100.0 <sup>[2]</sup>	na
Diamond false positive rate (%)	10.0	28.6	na	5.0	0.0	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 (%)	10.0	28.6	na	5.0	0.0	na

Notes:

na Not applicable per instrument manufacturer

[1] This instrument does not classify stones as 'Synthetic'

[2] This instrument classifies synthetic stones as 'Refer'

[3] C Stone set, and DE Stone set deviates from the standard as a reduced number of stones were analyzed; Set C deviation – the standard calls for 900 mixed stones to be tested, 877 stones were tested; Set DE deviation – the standard calls for 52 synthetics to be tested, 51 stones were tested.

Results of instrument stone assessment testing of individual stone sets - Novice

Test Property	Results for Loose, Polished Stone Test Sets					
	Primary	A & AB	B & AB	C <sup>[3]</sup>	D & DE <sup>[3]</sup>	E & DE
Diamond accuracy (%)	83.6	91.2	na	88.6	72.4	na
Synthetic diamond accuracy (%)	na <sup>[1]</sup>	na <sup>[1]</sup>	na	na <sup>[1]</sup>	na <sup>[1]</sup>	na
Diamond referral rate (%)	16.4	8.8	na	11.4	27.6	na
Synthetic diamond referral rate (%)	94.0 <sup>[2]</sup>	89.8 <sup>[2]</sup>	na	98.6 <sup>[2]</sup>	100.0 <sup>[2]</sup>	na
Diamond false positive rate (%)	6.0	10.2	na	1.4	0.0	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 (%)	6.0	10.2	na	1.4	0.0	na

Notes:

na Not applicable per instrument manufacturer

[1] This instrument does not classify stones as 'Synthetic'

[2] This instrument classifies synthetic stones as 'Refer'

[3] C Stone set, and DE Stone set deviates from the standard as a reduced number of stones were analyzed; Set C deviation – the standard calls for 900 mixed stones to be tested, 877 stones were tested; Set DE deviation – the standard calls for 52 synthetics to be tested, 51 stones were tested.

**Additional Notes from Assessment Findings**

*LETTERS & REPORTS: UL Verification Services, Inc. (UL) letters and reports are issued for the exclusive use of the clients to whom they are addressed. No quotations from reports or use of the UL name is permitted except as expressly authorized in writing. Letters and reports apply only to the specific materials, products or processes tested, examined or surveyed and are not necessarily indicative of the qualities of apparently identical or similar materials, products or processes. The liability of UL with respect to services rendered shall be limited to the amount of consideration paid for such service and not include any consequential damages. This report or certificate does not relieve sellers/suppliers from their contractual responsibility with regard to the quality/quantity of this delivery, nor does it prejudice clients' right to claim towards sellers/suppliers for compensation for any apparent and/or hidden defects not detected during our random inspection or testing. UL has not performed a complete analysis of the product. The results contained in this report indicate that the product has passed or failed the specific tests only. These test results, even if rated as "Passed," do not indicate or certify that the product is safe for commercial or consumer use.*

	DRC Techno, J-Detect 9000		
	Date:	August 16, 2019	Testing ID:

Below is a summary of an additional findings from assessment:

- No additional comments

**Definitions**

<b>Diamond Accuracy</b>	Defined as the fraction of test stones correctly classified by the specific diamond verification instrument as diamond.
<b>Synthetic Diamond Accuracy</b>	Defined as the fraction of test stones correctly classified by the specific diamond verification instrument as synthetic diamond.
<b>Diamond Referral Rate</b>	Defined as the fraction of diamonds that could not be classified by the specific diamond verification instrument and requires further.
<b>Synthetic Diamond Referral Rate</b>	Defined as the fraction of synthetic diamonds that could not be classified by the specific diamond verification instrument and requires further testing.
<b>Diamond False Positive Rate</b>	Defined as the fraction of synthetic diamonds and/or diamond simulants incorrectly classified as diamond by the specific diamond verification instrument.
<b>Synthetic Diamond False Positive Rate</b>	Defined as the fraction of diamonds and/or diamond simulants incorrectly classified as synthetic diamonds by the specific diamond verification instrument.
<b>Diamond False Negative Rate</b>	Defined as the fraction of diamonds incorrectly classified as synthetic diamond and/or diamond simulant by the specific diamond verification instrument.
<b>Synthetic Diamond False Negative Rate</b>	Defined as the fraction of synthetic diamonds incorrectly classified as diamond and/or diamond simulant by the specific diamond verification instrument.
<b>Rate of Testing Speed</b>	Defined as the average speed at which the diamond verification instrument evaluates unknown stones.

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

*LETTERS & REPORTS: UL Verification Services, Inc. (UL) letters and reports are issued for the exclusive use of the clients to whom they are addressed. No quotations from reports or use of the UL name is permitted except as expressly authorized in writing. Letters and reports apply only to the specific materials, products or processes tested, examined or surveyed and are not necessarily indicative of the qualities of apparently identical or similar materials, products or processes. The liability of UL with respect to services rendered shall be limited to the amount of consideration paid for such service and not include any consequential damages. This report or certificate does not relieve sellers/suppliers from their contractual responsibility with regard to the quality/quantity of this delivery, nor does it prejudice clients' right to claim towards sellers/suppliers for compensation for any apparent and/or hidden defects not detected during our random inspection or testing. UL has not performed a complete analysis of the product. The results contained in this report indicate that the product has passed or failed the specific tests only. These test results, even if rated as "Passed," do not indicate or certify that the product is safe for commercial or consumer use.*