

## PROJECT ASSURE DIAMOND VERIFICATION INSTRUMENT STANDARD REPORT

### Summary Report for: IIDGR / SYNTHdetect™

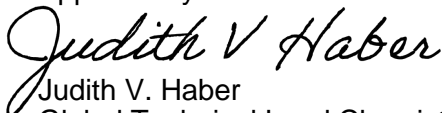


**Prepared For:** Lisa Levinson  
Diamond Producers Association Belgium ESV  
Hoveniersstraat 22  
Antwerp, 2018  
Belgium

Received Date: September 12, 2018  
Invid Number: 671333  
Assessment Dates: February 18, 2019 through February 23, 2019  
Preliminary Testing ID: 1903506S-B\*  
Assessment Testing ID: 1903506  
Report Issue Date: March 1, 2019

\*This report supersedes the report dated February 28, 2019. The report has been amended to include definitions for each category per the DPA's request.

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.

	IIDGR, SYNTHdetect™		
	Date:	March 1, 2019	Testing ID:

**Manufacturer's Name:** IIDGR  
**Instrument Model:** 3677  
**Serial Number:** 173  
**Software Version:** 1.4.221.1  
**Lab Manager:** Winson Wong  
**Analyst/Operator:** Colin McGuinness, Lawrence Scialdone

**Overview**

The stated instrument was evaluated to Diamond Verification Instrument Standard Part 2 – Diamond Verification Instrument for Screening Diamonds from Synthetic Diamonds and Diamond Simulants (30 January 2019) as referenced in sections 7.3 and 7.4 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, Synthetic diamonds and Diamond simulants
Stone Size Range	0.6 to 14.4 mm (0.001 – 10 ct.)
Stone Color Range	Stone Color D to J
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 from synthetic diamonds in the size range of 0.86 to 10.3 mm (0.003 to 0.2 ct.) and D to 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.

	IIDGR, SYNTHdetect™		
	Date:	March 1, 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 and 148 diamond simulants	☒	☒	☒
Supp. Set A (>2.00 mm, D-J colour) 249 diamonds	☒		
Supp. Set AB (>2.00 mm, D-J colour) 49 synthetic diamonds, 48 diamond simulants		☒	☒

### Results of instrument stone assessment testing of Primary and A&AB Combined - Expert

Test Property	Results for Loose, Polished Stone Test Sets
	Primary and A&AB Combined
Diamond accuracy (%)	99.3
Synthetic diamond accuracy (%)	na <sup>[1]</sup>
Diamond simulant accuracy (%)	na <sup>[1]</sup>
Diamond referral rate (%)	0.7
Synthetic diamond referral rate (%)	100.0 <sup>[2]</sup>
Diamond simulant referral rate (%)	100.0 <sup>[2]</sup>
Diamond false positive rate (%)	0.0
Synthetic diamond false positive rate (%)	0.0
Diamond simulant false positive rate (%)	0.0
Diamond false negative rate (%)	0.0
Synthetic diamond false negative rate (%)	0.0
Diamond simulant false negative rate (%)	0.0

#### 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'

*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.*

	IIDGR, SYNTHdetect™		
	Date:	March 1, 2019	Testing ID:

Results of instrument stone assessment testing of Primary and A&AB Combined - Novice

Test Property	Results for Loose, Polished Stone Test Sets
	Primary and A&AB Combined
Diamond accuracy (%)	98.6
Synthetic diamond accuracy (%)	na <sup>[1]</sup>
Diamond simulant accuracy (%)	na <sup>[1]</sup>
Diamond referral rate (%)	1.4
Synthetic diamond referral rate (%)	100.0 <sup>[2]</sup>
Diamond simulant referral rate (%)	100.0 <sup>[2]</sup>
Diamond false positive rate (%)	0.0
Synthetic diamond false positive rate (%)	0.0
Diamond simulant false positive rate (%)	0.0
Diamond false negative rate (%)	0.0
Synthetic diamond false negative rate (%)	0.0
Diamond simulant false negative rate (%)	0.0

Notes:

na Not applicable per instrument manufacturer

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

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


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	TBD stones per hour
<input type="checkbox"/> Test Method B: Fixed time frame	
<input type="checkbox"/> Test Method C: Reduced number of stones	

Notes:

TBD To Be Determined

*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.*

	IIDGR, SYNTHdetect™				
	Date:	March 1, 2019	Testing ID:	1903506S-B	

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

Test Property	Results for Loose, Polished Stone Test Sets					
	Primary	A & AB	B & AB	C	D & DE	E & DE
Diamond accuracy (%)	99.1	100.0	na	TBD	TBD	na
Synthetic diamond accuracy (%)	na <sup>[1]</sup>	na <sup>[1]</sup>	na	TBD	TBD	na
Diamond simulant accuracy (%)	na <sup>[1]</sup>	na <sup>[1]</sup>	na	TBD	TBD	na
Diamond referral rate (%)	0.9	0.0	na	TBD	TBD	na
Synthetic diamond referral rate (%)	100.0 <sup>[2]</sup>	100.0 <sup>[2]</sup>	na	TBD	TBD	na
Diamond simulant referral rate (%)	100.0 <sup>[2]</sup>	100.0 <sup>[2]</sup>	na	TBD	TBD	na
Diamond false positive rate (%)	0.0	0.0	na	TBD	TBD	na
Synthetic diamond false positive rate (%)	0.0	0.0	na	TBD	TBD	na
Diamond simulant false positive rate (%)	0.0	0.0	na	TBD	TBD	na
Diamond false negative rate (%)	0.0	0.0	na	TBD	TBD	na
Synthetic diamond false negative rate (%)	0.0	0.0	na	TBD	TBD	na
Diamond simulant false negative rate (%)	0.0	0.0	na	TBD	TBD	na

### 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	D & DE	E & DE
Diamond accuracy (%)	98.4	99.2	na	TBD	TBD	na
Synthetic diamond accuracy (%)	na <sup>[1]</sup>	na <sup>[1]</sup>	na	TBD	TBD	na
Diamond simulant accuracy (%)	na <sup>[1]</sup>	na <sup>[1]</sup>	na	TBD	TBD	na
Diamond referral rate (%)	1.6	0.8	na	TBD	TBD	na
Synthetic diamond referral rate (%)	100.0 <sup>[2]</sup>	100.0 <sup>[2]</sup>	na	TBD	TBD	na
Diamond simulant referral rate (%)	100.0 <sup>[2]</sup>	100.0 <sup>[2]</sup>	na	TBD	TBD	na
Diamond false positive rate (%)	0.0	0.0	na	TBD	TBD	na
Synthetic diamond false positive rate (%)	0.0	0.0	na	TBD	TBD	na
Diamond simulant false positive rate (%)	0.0	0.0	na	TBD	TBD	na
Diamond false negative rate (%)	0.0	0.0	na	TBD	TBD	na
Synthetic diamond false negative rate (%)	0.0	0.0	na	TBD	TBD	na
Diamond simulant false negative rate (%)	0.0	0.0	na	TBD	TBD	na

Notes:


na Not applicable per instrument manufacturer

TBD To Be Determined

[1] Does not apply because this instrument does not classify stones as 'Synthetic diamond' or 'Diamond simulant'

[2] This instrument is designed to classify synthetic diamonds and diamond simulants 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.

	IIDGR, SYNTHdetect™		
	Date:	March 1, 2019	Testing ID:

### Additional Notes from Assessment Findings

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 Simulant Accuracy</b>	Defined as the fraction of test stones correctly classified by the specific diamond verification instrument as diamond simulant.
<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>Simulant Referral Rate</b>	Defined as the fraction of diamond simulants 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 Simulant False Positive Rate</b>	Defined as the fraction diamond and/or synthetic diamonds incorrectly classified as diamond simulants 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.

*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.*

	IIDGR, SYNTHdetect™		
	Date:	March 1, 2019	Testing ID:

<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>Diamond Simulant False Negative Rate</b>	Defined as the fraction of diamond simulants incorrectly classified as diamond and/or synthetic diamond 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.*