PROJECT ASSURE
DIAMOND VERIFICATION INSTRUMENT STANDARD REPORT

Summary Report for: IIDGR / Automated Melee Screening 2 (AMS2) Device
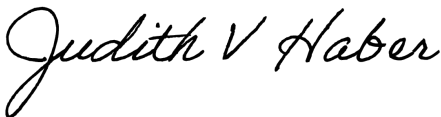

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Received Date:　　　　　September 12, 2018
Invid Number:　　　　　671337
Assessment Dates:　　　February 2, 2019 through February 11, 2019
Preliminary Testing ID:　1817171S-E*
Assessment Testing ID:　1817171
Report Issue Date:　　　March 1, 2019

*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

Judith V. Haber
Global Technical Lead Chemistry

	IIDGR, Automated Melee Screening 2 (AMS2) Device S/N 216		
	Date: March 1, 2019	Testing ID:	1817171S-E

Manufacturer's Name: IIDGR
Instrument Model: 3706
Serial Number: 216
Software Version: 1.10.6548.302178
Lab Manager: Winson Wong
Analyst/Operator: Anthony Tedeschi

Overview

The stated instrument was evaluated to Diamond Verification Instrument Standard Part 3 – Diamond Verification Instrument for Screening Diamonds, Synthetic Diamonds, and Diamond Simulants (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, Synthetic diamonds and Diamond Simulants
Stone Size Range	0.9 to 3.8 mm (0.0033 to 0.20 ct.)
Stone Color Range	Stone Color D to J
Loose / Mounted	Loose
Single / Batch Stone Testing	Batch Stone Testing
Automated / Manual Feed	Automated Feed

Summary of Assessment

The instrument has been verified to be able to screen loose, round brilliant cut diamonds, synthetic diamonds and simulant diamonds in the size range of 0.9 to 3.8 mm (0.0033 to 0.20 ct.) and D to J color range.

![UL logo]	IIDGR, Automated Melee Screening 2 (AMS2) Device S/N 216			
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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, 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) 50 synthetic diamonds, 47 diamond simulants	■	☒	☒

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 (%)	99.1
Synthetic diamond accuracy (%)	70.9
Diamond simulant accuracy (%)	99.0
Diamond referral rate (%)	0.7
Synthetic diamond referral rate (%)	29.1
Diamond simulant referral rate (%)	1.0
Diamond false positive rate (%)	0.0
Synthetic diamond false positive rate (%)	0.1
Diamond simulant false positive rate (%)	0.1
Diamond false negative rate (%)	0.2
Synthetic diamond false negative rate (%)	0.0
Diamond simulant false negative rate (%)	0.0

Notes:
None

Results of instrument testing speed assessment

Rate of Testing Speed Test Method	Average Test Result
☐ Test Method A: Fixed number of stones	
☒ Test Method B: Fixed time frame	2677 stones per hour
☐ 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 (%)	99.2	98.8	na	TBD	TBD	na
Synthetic diamond accuracy (%)	76.0	55.1	na	TBD	TBD	na
Diamond simulant accuracy (%)	98.6	100	na	TBD	TBD	na
Diamond referral rate (%)	0.7	0.8	na	TBD	TBD	na
Synthetic diamond referral rate (%)	24.0	44.9	na	TBD	TBD	na
Diamond simulant referral rate (%)	1.4	0.0	na	TBD	TBD	na
Diamond false positive rate (%)	0.0	0.0	na	TBD	TBD	na
Synthetic diamond false positive rate (%)	0.1	0.0	na	TBD	TBD	na
Diamond simulant false positive rate (%)	0.0	0.3	na	TBD	TBD	na
Diamond false negative rate (%)	0.1	0.4	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

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