TEST RESULTS and REPORT

for

MCR Safety

Swagger® SR5 Series

by

COLTS | Laboratories™

Precision Testing. Definitive Results.

COLTS Laboratories maintains A2LA accreditation to ISO/IEC 17025 for the tests listed on Certificate # 1612.01.
Any tests not included on this certificate have been identified on the appropriate test result page.

Also Certified for testing by the Safety Equipment Institute

Z-MCR011422-01

- Unless otherwise stated, results in this report apply only to the samples tested and not to lots from which they were taken.
- This report shall not be reproduced, except in full, without written approval from COLTS Laboratories.
- Unless otherwise requested, test samples will be discarded 21 days from the report date.
- Decision Rule: COLTS makes all statements of conformity (Pass/Fail) based on actual values reported, unless otherwise stated.

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PRODUCT RESULTS SUMMARY

A2LA Accredited Certificate # 1612.01

MCR Safety
MCR011422-01

COLTS Project ID	Test/Models(s)	Results Pass / Fail	Reason	Page
Z-MCR011422-01-01	ANSI Z87.1-2020 Spectacle Base Model General Requirements Swagger® SR5 Series (SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X))	Pass		1
Z-MCR011422-01-02	ANSI Z87.1-2020 Spectacle Optional Claim (+,U) Swagger® SR5 Series (SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X))	Pass		5
Z-MCR011422-01-03	ANSI Z87.1-2020 6.2 Anti-Fog Properties (X) Tested with General Requirements Swagger® SR5 Series (SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X))	Pass		9
Z-MCR011422-01-04	ANSI Z87.1-2020 Spectacle Variant General Requirements Swagger® SR5 Series (SR512PF - Gray Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6L3X))	Pass		11
Z-MCR011422-01-05	ANSI Z87.1-2020 Spectacle Optional Claim (+,U,L) Swagger® SR5 Series (SR512PF - Gray Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6L3X))	Pass		15

Report Date: 01/27/2022

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Report Summary

A2LA Accredited Certificate # 1612.01

Report To:
MCR Safety
1255 Schilling Blvd West
Collierville, TN 38017

Attn: Glen Herald Jr
Date: January 27, 2022

Project
of Model(s): Swagger® SR5 Series
Report of: ANSI Z87.1-2020
Project ID(s): Z-MCR011422-01-01

Product Description: SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X)

On January 14, 2022, COLTS Laboratories received Spectacles: Swagger® SR5 Series from MCR Safety . From January 25, 2022 through January 27, 2022 COLTS Laboratories tested these Spectacles in accordance with ANSI Z87.1-2020 to the following test protocol: ANSI Z87.1-2020 Spectacle Base Model General Requirements.

Detailed test results are included.

Final Conclusion:

The Spectacles: Swagger® SR5 Series (SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X)) do comply with ANSI Z87.1-2020 for the test(s) included in this report.

Please contact us should you have any questions concerning this report.

Respectfully submitted,
COLTS Laboratories

Daryl Neely
Vice-President of Operations

Dale Payne
Technical Services Manager

Report To: MCR Safety
Project No: Z-MCR011422-01-01

COLTS™ Laboratories

Sample ID:
Swagger® SR5 Series
SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X)

A2LA Accredited Certificate # 1612.01

Report Date: 1/27/2022

Lab Temp (C): 23
Lab Rh: 51

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Optical Quality	5.1.1	Protector lenses shall be free of:		
		striae, bubbles, waves and other visible defects which would impair the wearer's vision.	Acceptable	Pass
Luminous Transmittance	5.1.2	Clear lenses shall have a luminous transmittance of not less than 85%.		
		Luminous Transmittance	Acceptable	Pass
		Left Eye	91.3%	Pass
		Right Eye	91.1%	Pass
Haze – Clear Lenses Only	5.1.3	Clear plano lenses shall not exhibit more than 3% haze.		
		Haze	Acceptable	Pass
		Left Eye	0.24%	Pass
		Right Eye	0.23%	Pass
Spectacle - Refractive Power, Astigmatism, Resolving Power, Prism and Prism Imbalance for Plano Protectors	5.1.4	The tolerance on refractive power, astigmatism, resolving power, prism and prism imbalance shall be as indicated below. Filter lenses of shade 9 or higher are exempt from this section.		
		Refractive Power (±0.06)	Acceptable	Pass
		Left Eye	+0.03	Pass
		Right Eye	+0.03	Pass
		Astigmatism (0.06 Max)	Acceptable	Pass
		Left Eye	0.02	Pass
		Right Eye	0.02	Pass
		Resolving Power (Pattern 20)	Acceptable	Pass
		Left Eye	Acceptable	Pass
		Right Eye	Acceptable	Pass
		Complete Prism (0.50 Max)	Acceptable	Pass
		Left Eye	0.158	Pass
		Right Eye	0.255	Pass
		Prismatic Imbalance	Acceptable	Pass
		Vertical (0.25 Max)	0.00	Pass
		Horizontal Base In/Out (In 0.25 Max; Out 0.50 Max)	0.40 out	Pass

Report To: MCR Safety
Project No: Z-MCR011422-01-01

COLTS™ Laboratories

Sample ID:
Swagger® SR5 Series
SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X)

A2LA Accredited Certificate # 1612.01

Report Date: 1/27/2022

Lab Temp (C): 23
Lab Rh: 51

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Physical Requirements	5.2	Protectors shall be free from:		
		projections, sharp edges or other defects which are likely to cause discomfort or injury during use.	Acceptable	Pass
Ignition (Spectacle)	5.2.2	Protectors shall not ignite or continue to glow once the rod is removed. Each externally exposed material (exclusive of metals, textiles or elastic bands) shall be tested.		
		Lens	Acceptable	Pass
		Front	Acceptable	Pass
		Temple	Acceptable	Pass
		Other	N/A	N/A
Corrosion Resistance of Metal Components	5.2.3	Metal components used in protectors shall be corrosion resistant to the degree that the function of the protector shall not be impaired by the corrosion and the protector can be worn as intended. Lenses and electrical components are excluded from these requirements.		
		Corrosion Resistant	N/A	N/A
Minimum Coverage Area	5.2.4	Protectors shall cover an area of not less than 40 mm in width and 33 mm in height (elliptical) in front of each eye, centered on the pupil centers of the test headform. Protectors designed for small head sizes shall cover an area of not less than 34 mm in width and 28 mm in height (elliptical), centered on the pupil centers of the test headform.		
		Minimum Coverage Area	Acceptable	Pass
Placement of Markings (Spectacles)	5.3.2	All protectors shall bear the permanent and legible markings in specified locations. Markings for lens type and use applications shall be required only when claims for protection against the hazard or indicated use are made by the manufacturer. Protector markings shall be placed in relatable proximity to each other on the product in the sequence specified below:		
		Markings permanent, legible and in relatable proximity and in the correct sequence.	Acceptable	Pass
		Markings representative of other standards shall not interfere with or be intermixed with the markings required by this standard.	Acceptable	Pass

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Placement of Markings (Spectacles)	5.3.2	All protectors shall bear the permanent and legible markings in specified locations. Markings for lens type and use applications shall be required only when claims for protection against the hazard or indicated use are made by the manufacturer. Protector markings shall be placed in relatable proximity to each other on the product in the sequence specified below:		
		Replaceable Lens Markings	Acceptable	Pass
		Manufacturer's Mark or Logo	Acceptable	Pass
		+ Mark	Acceptable	Pass
		Lens Type (multiple claim sequence W,U,L,R,V,S)	Acceptable	Pass
		X Anti-Fog	Acceptable	Pass
		Spectacle Frame Front Markings	Acceptable	Pass
		Manufacturer's Mark or Logo	Acceptable	Pass
		Z87 Mark (Z87-2 for Rx)	Acceptable	Pass
		+ Mark	Acceptable	Pass
		At Least One Temple Marked	Acceptable	Pass
		Manufacturer's Mark or Logo	Acceptable	Pass
		Z87 Mark (Z87-2 for Rx)	Acceptable	Pass
		+ Mark	Acceptable	Pass
Aftermarket Components and Accessories	5.6	All original equipment manufacturers (OEM) and non-OEM aftermarket components or accessories not sold with the original device shall be tested. The entity claiming compliance of the component or accessory is responsible for testing the original complete device assembled with the components or accessories and shall provide evidence of compliance upon request.		
		Aftermarket Components and Accessories	Manufacturer requirement	Not testable

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Report Summary

A2LA Accredited Certificate # 1612.01

Report To:
MCR Safety
1255 Schilling Blvd West
Collierville, TN 38017

Attn: Glen Herald Jr
Date: January 27, 2022

Project
of Model(s): Swagger® SR5 Series
Report of: ANSI Z87.1-2020
Project ID(s): Z-MCR011422-01-02

Product Description: SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X)

On January 14, 2022, COLTS Laboratories received Spectacles: Swagger® SR5 Series from MCR Safety . From January 25, 2022 through January 27, 2022 COLTS Laboratories tested these Spectacles in accordance with ANSI Z87.1-2020 to the following test protocol: ANSI Z87.1-2020 Spectacle Optional Claim (+,U).

Detailed test results are included.

Final Conclusion:

The Spectacles: Swagger® SR5 Series (SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X)) do comply with ANSI Z87.1-2020 for the test(s) included in this report.

Please contact us should you have any questions concerning this report.

Respectfully submitted,
COLTS Laboratories

Daryl Neely
Vice-President of Operations

Dale Payne
Technical Services Manager

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Lateral (Side) Coverage	7.1.3	Impact-rated protectors shall provide continuous lateral coverage. The probe shall not contact the headform within the defined coverage area.		
		Lateral (Side) Coverage	Acceptable	Pass
High Mass Impact	7.1.4.2	The complete device shall meet the protector acceptance criteria when impacted by a pointed projectile weighing a minimum of 500 g (17.6 oz) dropped from a height of at least 127 cm (50.0 in.). The lens shall fail if any of the following occurs: • any part, fragment or material visible to the unaided eye becomes detached from the inner surface of any complete device, as determined by inspection of the device or of the contact paste; • fracture; • penetration of the inner surface either by the projectile passing completely through the lens, frame or housing component, or by rupture of the inner lens surface; • lens not retained		
		Left Eye Sample 1	Acceptable	Pass
		Left Eye Sample 2	Acceptable	Pass
		Right Eye Sample 3	Acceptable	Pass
		Right Eye Sample 4	Acceptable	Pass
High Velocity Impact (Spectacle)	7.1.4.3	The complete device shall meet the protector acceptance criteria when impacted by a 6.35 mm (0.25 in) diameter steel ball traveling at a minimum of 150 feet per second. When tested in accordance with this section, the lens shall fail if any of the following occurs: • any part, fragment or material visible to the unaided eye becomes detached from the inner surface of any complete device, as determined by inspection of the device or of the contact paste; • fracture; • penetration of the inner surface either by the projectile passing completely through the lens, frame or housing component, or by rupture of the inner lens surface; • lens not retained; • the unaided eye observes any piece adhering to the contact paste, or observes contact paste on the projectile or complete device.		
		Left Eye Center	152 fps	Pass
		Left Eye 30°	154 fps	Pass
		Right Eye Center	153 fps	Pass

Report To: MCR Safety
Project No: Z-MCR011422-01-02

COLTS™ Laboratories

Sample ID:
Swagger® SR5 Series
SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X)

A2LA Accredited Certificate # 1612.01

Report Date: 1/27/2022

Lab Temp (C): 23
Lab Rh: 51

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
High Velocity Impact (Spectacle)	7.1.4.3	The complete device shall meet the protector acceptance criteria when impacted by a 6.35 mm (0.25 in) diameter steel ball traveling at a minimum of 150 feet per second. When tested in accordance with this section, the lens shall fail if any of the following occurs: • any part, fragment or material visible to the unaided eye becomes detached from the inner surface of any complete device, as determined by inspection of the device or of the contact paste; • fracture; • penetration of the inner surface either by the projectile passing completely through the lens, frame or housing component, or by rupture of the inner lens surface; • lens not retained; • the unaided eye observes any piece adhering to the contact paste, or observes contact paste on the projectile or complete device.		
		Right Eye 30°	152 fps	Pass
		One Side 90° at 10mm Above (H - 8mm)	154 fps	Pass
		Opposite Side 90° at 10mm Below (H - 8mm)	154 fps	Pass
Penetration Test (lenses only)	7.1.4.4	Lenses for all complete devices shall meet the protector acceptance criteria when penetrated by a weighted needle with a minimum total weight of 44.2 g (1.56 oz) dropped from a height of at least 127 cm (50.0 in.).		
		Left Eye Sample 1	Acceptable	Pass
		Left Eye Sample 2	Acceptable	Pass
		Right Eye Sample 3	Acceptable	Pass
		Right Eye Sample 4	Acceptable	Pass

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Ultraviolet Filter Lenses - Transmission Requirements	7.2.2.1.1	U.V. filters shall comply with requirements of Table 8. U.V. filters shall be tested directly in front of each eye and at the thinnest edge of the lens no closer than 5 mm from the lens edge. Edge measurements are allowed ± 1 scale number.		
		U.V. Near	Acceptable	Pass
		Left Eye	0.002%	Pass
		Left Eye Edge	0.002%	Pass
		Right Eye	0.001%	Pass
		Right Eye Edge	0.003%	Pass
		U.V. Far	Acceptable	Pass
		Left Eye	0.001%	Pass
		Left Eye Edge	0.000%	Pass
		Right Eye	0.000%	Pass
		Right Eye Edge	0.001%	Pass

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Report To:
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1255 Schilling Blvd West
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Attn: Glen Herald Jr
Date: January 27, 2022

Project
of Model(s): Swagger® SR5 Series
Report of: ANSI Z87.1-2020
Project ID(s): Z-MCR011422-01-03

Product Description: SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X)

On January 14, 2022, COLTS Laboratories received Spectacles: Swagger® SR5 Series from MCR Safety . From January 25, 2022 through January 27, 2022 COLTS Laboratories tested these Spectacles in accordance with ANSI Z87.1-2020 to the following test protocol: ANSI Z87.1-2020 6.2 Anti-Fog Properties (X) Tested with General Requirements.

Detailed test results are included.

Final Conclusion:

The Spectacles: Swagger® SR5 Series (SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X)) do comply with ANSI Z87.1-2020 for the test(s) included in this report.

Note: Also covered under this report is the following model: SR512PF - Gray Lens, Charcoal Frame and Temple.

Please contact us should you have any questions concerning this report.

Respectfully submitted,
COLTS Laboratories

Daryl Neely
Vice-President of Operations

Dale Payne
Technical Services Manager

Report To: MCR Safety
Project No: Z-MCR011422-01-03

COLTS™ Laboratories

Sample ID:
Swagger® SR5 Series
SR510PF - Clear Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6X)

A2LA Accredited Certificate # 1612.01

Report Date: 1/27/2022

Lab Temp (C): 23
Lab Rh: 50

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Anti-Fog Properties	6.2	Lenses of protectors marked as having anti-fog properties shall remain free from fogging for a minimum of 8 seconds. NOTE: This procedure applies to lenses only and does not assess resistance to fogging of the complete device. Four (4) representative lenses for each type of protector shall be tested.		
		Remain fog-free for a minimum of 8 seconds.	Acceptable	Pass
		Sample 1 - Left Eye	Acceptable	Pass
		Sample 1 - Right Eye	Acceptable	Pass
		Sample 2 - Left Eye	Acceptable	Pass
		Sample 2 - Right Eye	Acceptable	Pass

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Report To:
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1255 Schilling Blvd West
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Attn: Glen Herald Jr
Date: January 27, 2022

Project
of Model(s): Swagger® SR5 Series
Report of: ANSI Z87.1-2020
Project ID(s): Z-MCR011422-01-04

Product Description: SR512PF - Gray Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6L3X)

On January 14, 2022, COLTS Laboratories received Spectacles: Swagger® SR5 Series from MCR Safety . From January 25, 2022 through January 27, 2022 COLTS Laboratories tested these Spectacles in accordance with ANSI Z87.1-2020 to the following test protocol: ANSI Z87.1-2020 Spectacle Variant General Requirements.

Detailed test results are included.

Final Conclusion:

The Spectacles: Swagger® SR5 Series (SR512PF - Gray Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6L3X)) do comply with ANSI Z87.1-2020 for the test(s) included in this report.

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Respectfully submitted,
COLTS Laboratories

Daryl Neely
Vice-President of Operations

Dale Payne
Technical Services Manager

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Optical Quality	5.1.1	Protector lenses shall be free of:		
		striae, bubbles, waves and other visible defects which would impair the wearer's vision.	Acceptable	Pass
Spectacle - Refractive Power, Astigmatism, Resolving Power, Prism and Prism Imbalance for Plano Protectors	5.1.4	The tolerance on refractive power, astigmatism, resolving power, prism and prism imbalance shall be as indicated below. Filter lenses of shade 9 or higher are exempt from this section.		
		Refractive Power (±0.06)	Acceptable	Pass
		Left Eye	+0.03	Pass
		Right Eye	+0.03	Pass
		Astigmatism (0.06 Max)	Acceptable	Pass
		Left Eye	0.02	Pass
		Right Eye	0.02	Pass
		Resolving Power (Pattern 20)	Acceptable	Pass
		Left Eye	Acceptable	Pass
		Right Eye	Acceptable	Pass
		Complete Prism (0.50 Max)	Acceptable	Pass
		Left Eye	0.158	Pass
		Right Eye	0.206	Pass
		Prismatic Imbalance	Acceptable	Pass
		Vertical (0.25 Max)	0.00	Pass
		Horizontal Base In/Out (In 0.25 Max; Out 0.50 Max)	0.35 out	Pass
Physical Requirements	5.2	Protectors shall be free from:		
		projections, sharp edges or other defects which are likely to cause discomfort or injury during use.	Acceptable	Pass
Ignition (Spectacle)	5.2.2	Protectors shall not ignite or continue to glow once the rod is removed. Each externally exposed material (exclusive of metals, textiles or elastic bands) shall be tested.		
		Lens	Acceptable	Pass
		Front	Acceptable	Pass
		Temple	Acceptable	Pass
		Other	N/A	N/A

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Corrosion Resistance of Metal Components	5.2.3	Metal components used in protectors shall be corrosion resistant to the degree that the function of the protector shall not be impaired by the corrosion and the protector can be worn as intended. Lenses and electrical components are excluded from these requirements.		
		Corrosion Resistant	N/A	N/A
Minimum Coverage Area	5.2.4	Protectors shall cover an area of not less than 40 mm in width and 33 mm in height (elliptical) in front of each eye, centered on the pupil centers of the test headform. Protectors designed for small head sizes shall cover an area of not less than 34 mm in width and 28 mm in height (elliptical), centered on the pupil centers of the test headform.		
		Minimum Coverage Area	Acceptable	Pass
Placement of Markings (Spectacles)	5.3.2	All protectors shall bear the permanent and legible markings in specified locations. Markings for lens type and use applications shall be required only when claims for protection against the hazard or indicated use are made by the manufacturer. Protector markings shall be placed in relatable proximity to each other on the product in the sequence specified below:		
		Markings permanent, legible and in relatable proximity and in the correct sequence.	Acceptable	Pass
		Markings representative of other standards shall not interfere with or be intermixed with the markings required by this standard.	Acceptable	Pass
		Replaceable Lens Markings	Acceptable	Pass
		Manufacturer's Mark or Logo	Acceptable	Pass
		+ Mark	Acceptable	Pass
		Lens Type (multiple claim sequence W,U,L,R,V,S)	Acceptable	Pass
		X Anti-Fog	Acceptable	Pass
		Spectacle Frame Front Markings	Acceptable	Pass
		Manufacturer's Mark or Logo	Acceptable	Pass
		Z87 Mark (Z87-2 for Rx)	Acceptable	Pass
		H Mark (Coverage - small head sizes)	Acceptable	Pass
		At Least One Temple Marked	Acceptable	Pass
		Manufacturer's Mark or Logo	Acceptable	Pass
		Z87 Mark (Z87-2 for Rx)	Acceptable	Pass
		+ Mark	Acceptable	Pass

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Aftermarket Components and Accessories	5.6	All original equipment manufacturers (OEM) and non-OEM aftermarket components or accessories not sold with the original device shall be tested. The entity claiming compliance of the component or accessory is responsible for testing the original complete device assembled with the components or accessories and shall provide evidence of compliance upon request.		
		Aftermarket Components and Accessories	Manufacturer requirement	Not testable

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Report Summary

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Report To:
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Attn: Glen Herald Jr
Date: January 27, 2022

Project
of Model(s): Swagger® SR5 Series
Report of: ANSI Z87.1-2020
Project ID(s): Z-MCR011422-01-05

Product Description: SR512PF - Gray Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6L3X)

On January 14, 2022, COLTS Laboratories received Spectacles: Swagger® SR5 Series from MCR Safety . From January 25, 2022 through January 27, 2022 COLTS Laboratories tested these Spectacles in accordance with ANSI Z87.1-2020 to the following test protocol: ANSI Z87.1-2020 Spectacle Optional Claim (+,U,L).

Detailed test results are included.

Final Conclusion:

The Spectacles: Swagger® SR5 Series (SR512PF - Gray Lens with MAX6 Anti-Fog, Charcoal Frame and Temple (+U6L3X)) do comply with ANSI Z87.1-2020 for the test(s) included in this report.

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Respectfully submitted,
COLTS Laboratories

Daryl Neely
Vice-President of Operations

Dale Payne
Technical Services Manager

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Lateral (Side) Coverage	7.1.3	Impact-rated protectors shall provide continuous lateral coverage. The probe shall not contact the headform within the defined coverage area.		
		Lateral (Side) Coverage	Acceptable	Pass
High Mass Impact	7.1.4.2	The complete device shall meet the protector acceptance criteria when impacted by a pointed projectile weighing a minimum of 500 g (17.6 oz) dropped from a height of at least 127 cm (50.0 in.). The lens shall fail if any of the following occurs: • any part, fragment or material visible to the unaided eye becomes detached from the inner surface of any complete device, as determined by inspection of the device or of the contact paste; • fracture; • penetration of the inner surface either by the projectile passing completely through the lens, frame or housing component, or by rupture of the inner lens surface; • lens not retained		
		Left Eye Sample 1	Acceptable	Pass
		Left Eye Sample 2	Acceptable	Pass
		Right Eye Sample 3	Acceptable	Pass
		Right Eye Sample 4	Acceptable	Pass
High Velocity Impact (Spectacle)	7.1.4.3	The complete device shall meet the protector acceptance criteria when impacted by a 6.35 mm (0.25 in) diameter steel ball traveling at a minimum of 150 feet per second. When tested in accordance with this section, the lens shall fail if any of the following occurs: • any part, fragment or material visible to the unaided eye becomes detached from the inner surface of any complete device, as determined by inspection of the device or of the contact paste; • fracture; • penetration of the inner surface either by the projectile passing completely through the lens, frame or housing component, or by rupture of the inner lens surface; • lens not retained; • the unaided eye observes any piece adhering to the contact paste, or observes contact paste on the projectile or complete device.		
		Left Eye Center	154 fps	Pass
		Left Eye 30°	154 fps	Pass
		Right Eye Center	154 fps	Pass

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
High Velocity Impact (Spectacle)	7.1.4.3	The complete device shall meet the protector acceptance criteria when impacted by a 6.35 mm (0.25 in) diameter steel ball traveling at a minimum of 150 feet per second. When tested in accordance with this section, the lens shall fail if any of the following occurs: • any part, fragment or material visible to the unaided eye becomes detached from the inner surface of any complete device, as determined by inspection of the device or of the contact paste; • fracture; • penetration of the inner surface either by the projectile passing completely through the lens, frame or housing component, or by rupture of the inner lens surface; • lens not retained; • the unaided eye observes any piece adhering to the contact paste, or observes contact paste on the projectile or complete device.		
		Right Eye 30°	154 fps	Pass
		One Side 90° at 10mm Above (H - 8mm)	154 fps	Pass
		Opposite Side 90° at 10mm Below (H - 8mm)	154 fps	Pass
Penetration Test (lenses only)	7.1.4.4	Lenses for all complete devices shall meet the protector acceptance criteria when penetrated by a weighted needle with a minimum total weight of 44.2 g (1.56 oz) dropped from a height of at least 127 cm (50.0 in.).		
		Left Eye Sample 1	Acceptable	Pass
		Left Eye Sample 2	Acceptable	Pass
		Right Eye Sample 3	Acceptable	Pass
		Right Eye Sample 4	Acceptable	Pass

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Ultraviolet Filter Lenses - Transmission Requirements	7.2.2.1.1	U.V. filters shall comply with requirements of Table 8. U.V. filters shall be tested directly in front of each eye and at the thinnest edge of the lens no closer than 5 mm from the lens edge. Edge measurements are allowed ± 1 scale number.		
		U.V. Near	Acceptable	Pass
		Left Eye	0.001%	Pass
		Left Eye Edge	0.001%	Pass
		Right Eye	0.001%	Pass
		Right Eye Edge	0.001%	Pass
		U.V. Far	Acceptable	Pass
		Left Eye	0.000%	Pass
		Left Eye Edge	0.000%	Pass
		Right Eye	0.000%	Pass
		Right Eye Edge	0.000%	Pass
				See charts
Visible Light Filter Lenses - Transmission Requirements	7.2.2.1.1	Visible light filters shall comply with requirements of Table 10 and 7.2.2.1.2. Visible light filters shall be tested directly in front of each eye and at the thinnest edge of the lens no closer than 5 mm from the lens edge. Edge measurements are allowed ± 1 scale number.		
		Visible Light	Acceptable	Pass
		Left Eye	15.28%	Pass
		Left Eye Edge	17.28%	Pass
		Right Eye	13.39%	Pass
		Right Eye Edge	14.35%	Pass
				See charts

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Visible Light Filters	7.2.2.1.2	Visible light filters in the range of L1.3 through L3 shall also meet the transmittance requirements of Table 4 of ANSI Z80.3-2018, including traffic signal recognition and UV transmittance (high and prolonged exposure). Visible light filters in the range of L4 through L10 are too dark to be used for driving, but shall meet the UV transmittance (high and prolonged exposure) requirements of Table 4 of ANSI Z80.3-2018. Visible light filters shall be tested directly in front of each eye and at the thinnest edge of the lens no closer than 5 mm from the lens edge.		
		Traffic Signal Recognition - Color Limits and Chromaticity Coordinates	Acceptable	Pass
		Left Eye	Acceptable	Pass
		Left Eye Edge	Acceptable	Pass
		Right Eye	Acceptable	Pass
		Right Eye Edge	Acceptable	Pass
		Traffic Signal Recognition - Red Signal 8% Minimum	Acceptable	Pass
		Left Eye	17.3%	Pass
		Left Eye Edge	19.3%	Pass
		Right Eye	15.3%	Pass
		Right Eye Edge	16.3%	Pass
		Traffic Signal Recognition - Yellow Signal 6% Minimum	Acceptable	Pass
		Left Eye	15.7%	Pass
		Left Eye Edge	17.7%	Pass
		Right Eye	13.8%	Pass
		Right Eye Edge	14.7%	Pass
		Traffic Signal Recognition - Green Signal 6% Minimum	Acceptable	Pass
		Left Eye	14.6%	Pass
		Left Eye Edge	16.5%	Pass
		Right Eye	12.7%	Pass
		Right Eye Edge	14.0%	Pass

Report of: ANSI Z87.1-2020

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Visible Light Filters	7.2.2.1.2	Visible light filters in the range of L1.3 through L3 shall also meet the transmittance requirements of Table 4 of ANSI Z80.3-2018, including traffic signal recognition and UV transmittance (high and prolonged exposure). Visible light filters in the range of L4 through L10 are too dark to be used for driving, but shall meet the UV transmittance (high and prolonged exposure) requirements of Table 4 of ANSI Z80.3-2018. Visible light filters shall be tested directly in front of each eye and at the thinnest edge of the lens no closer than 5 mm from the lens edge.		
		Mean UVB 1% Maximum	Acceptable	Pass
		Left Eye	0.00%	Pass
		Left Eye Edge	0.00%	Pass
		Right Eye	0.00%	Pass
		Right Eye Edge	0.00%	Pass
		Mean UVA 0.5% Luminous Transmittance Maximum	Acceptable	Pass
		Left Eye	0.00%	Pass
		Left Eye Edge	0.00%	Pass
		Right Eye	0.00%	Pass
		Right Eye Edge	0.00%	Pass
				See charts

COLTS™ Laboratories

Spectral Analysis For:

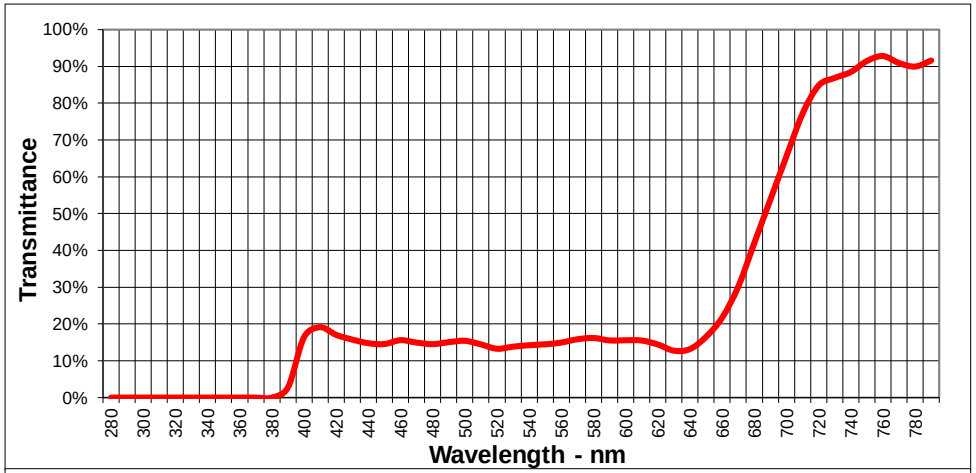
Luminous (L) and Ultraviolet (U) Claims

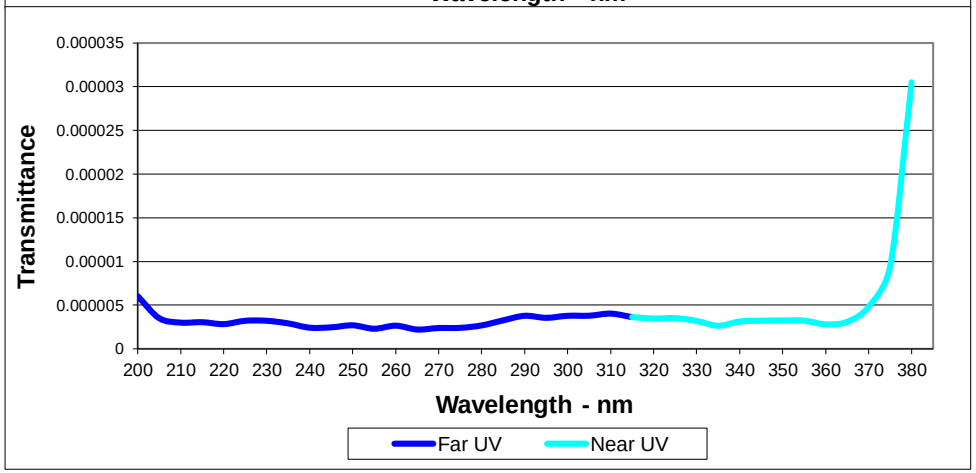
Spectrophotometer: Cary 60

Visible Light Claim:	L	3		
UV Claim:	U	6		
ANSI Z87.1 Results	**Trans.**	**Result**	**Max%**	**Min%**
Iluminate A (Z87.1)	15.28%	Pass	18.0%	8.500%
Near UV =	0.001%	Pass	0.10%	
Far UV =	0.000%	Pass	0.01%	

ANSI Z80.3 Results	**Red**	**Yellow**	**Green**	**D65**		**Trans.**	**Result**
Traffic Signal Transmittance	17.3%	15.7%	14.6%	15.0%	UVA 315 - 380nm	0.00%	Pass
Traffic Signal Trans Results	Pass	Pass	Pass	Pass	UVB 280 - 315nm	0.00%	Pass
Chromaticity (x)	NA	0.5825	0.2108	0.3193	Spectral Transmittance	12.52%	Pass
Chromaticity (y)	NA	0.4164	0.3922	0.3237	Iluminate C (Z80.3)	15.01%	NA
Color Limits Results	NA	Pass	Pass	Pass	Solar Blue Light	15.44%	NA

nm	%T	nm	%T
200	0.0006%	450	14.554%
205	0.0004%	460	15.610%
210	0.0003%	470	14.949%
215	0.0003%	480	14.530%
220	0.0003%	490	15.055%
225	0.0003%	500	15.438%
230	0.0003%	510	14.452%
235	0.0003%	520	13.273%
240	0.0002%	530	13.843%
245	0.0002%	540	14.238%
250	0.0003%	550	14.494%
255	0.0002%	560	14.954%
260	0.0003%	570	15.857%
265	0.0002%	580	16.199%
270	0.0002%	590	15.538%
275	0.0002%	600	15.582%
280	0.0003%	610	15.512%
285	0.0003%	620	14.434%
290	0.0004%	630	12.744%
300	0.0004%	640	13.195%
310	0.0004%	650	16.527%
320	0.0003%	660	21.732%
330	0.0003%	670	30.161%
340	0.0003%	680	42.043%
350	0.0003%	690	53.858%
360	0.0003%	700	65.624%
370	0.0005%	710	77.178%
380	0.003%	720	84.810%
390	2.779%	730	86.876%
400	16.431%	740	88.475%
410	19.134%	750	91.469%
420	17.036%	760	92.812%
430	15.764%	770	90.904%
440	14.772%	780	89.965%





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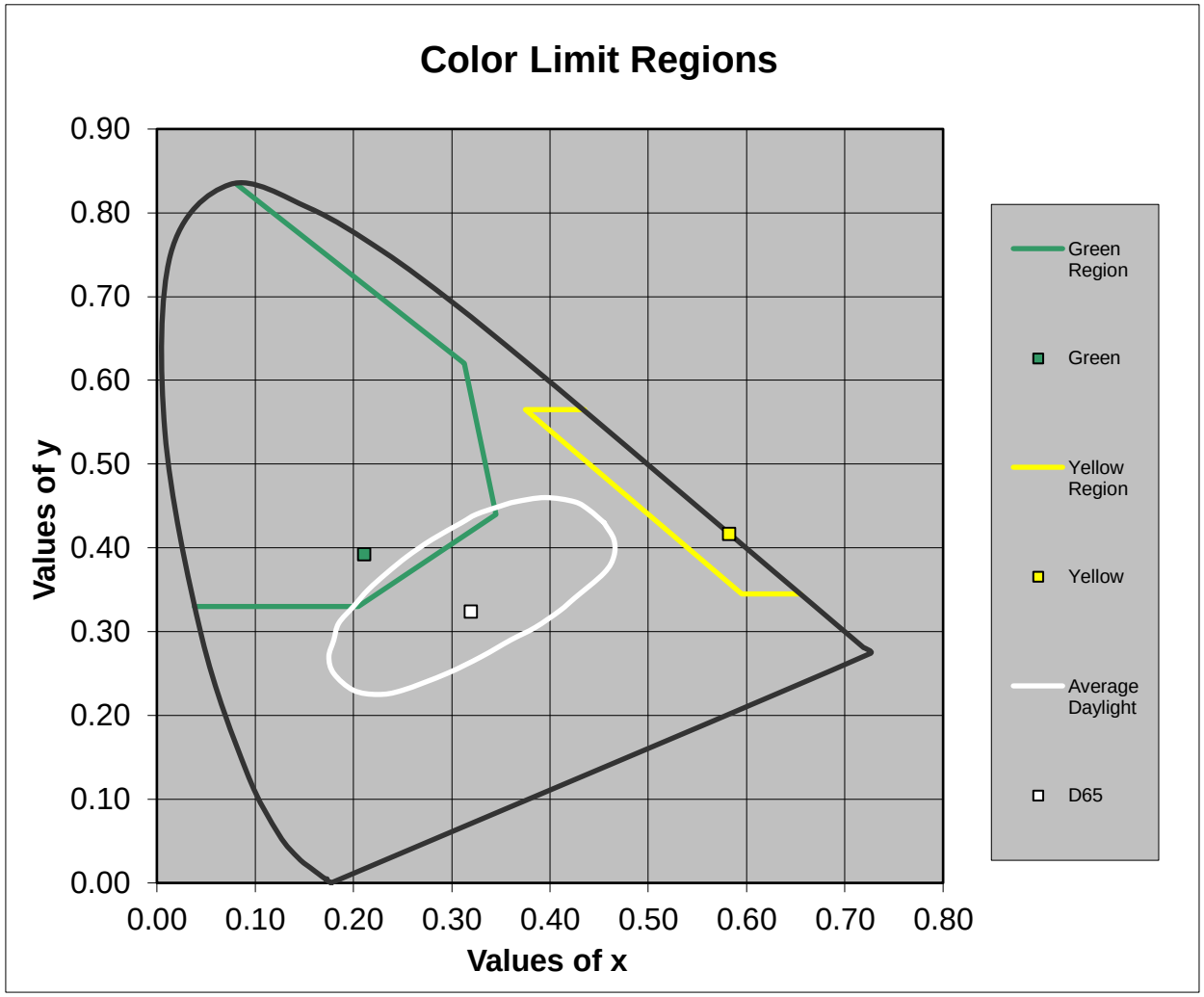

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COLTS™ Laboratories

Spectral Analysis For:

Luminous (L) and Ultraviolet (U) Claims

Spectrophotometer: Cary 60

Visible Light Claim: L 3
UV Claim: U 6

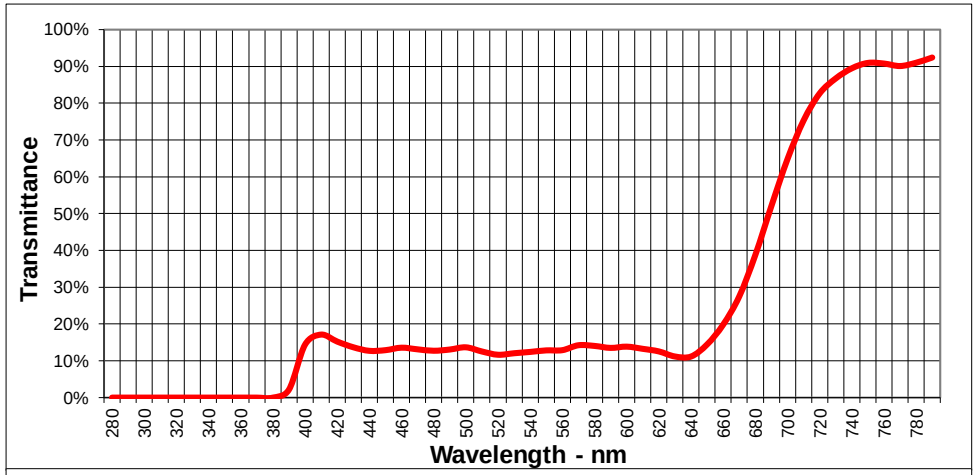
ANSI Z87.1 Results

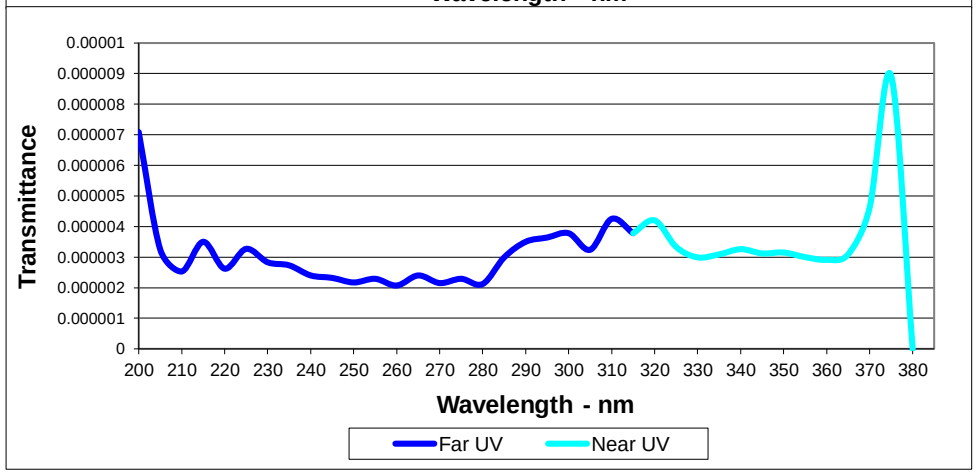
	Trans.	Result	Max%	Min%
Iluminate A (Z87.1)	13.39%	Pass	18.0%	8.500%
Near UV =	0.001%	Pass	0.10%	
Far UV =	0.000%	Pass	0.01%	

ANSI Z80.3 Results

	Red	Yellow	Green	D65		Trans.	Result
Traffic Signal Transmittance	15.3%	13.8%	12.7%	13.1%	UVA 315 - 380nm	0.00%	Pass
Traffic Signal Trans Results	Pass	Pass	Pass	Pass	UVB 280 - 315nm	0.00%	Pass
Chromaticity (x)	NA	0.5829	0.2109	0.3195	Spectral Transmittance	10.84%	Pass
Chromaticity (y)	NA	0.4160	0.3923	0.3237	Iluminate C (Z80.3)	13.14%	NA
Color Limits Results	NA	Pass	Pass	Pass	Solar Blue Light	13.52%	NA

nm	%T	nm	%T
200	0.0007%	450	12.890%
205	0.0003%	460	13.563%
210	0.0003%	470	13.117%
215	0.0004%	480	12.730%
220	0.0003%	490	13.066%
225	0.0003%	500	13.662%
230	0.0003%	510	12.531%
235	0.0003%	520	11.645%
240	0.0002%	530	12.058%
245	0.0002%	540	12.412%
250	0.0002%	550	12.834%
255	0.0002%	560	12.890%
260	0.0002%	570	14.230%
265	0.0002%	580	14.039%
270	0.0002%	590	13.505%
275	0.0002%	600	13.848%
280	0.0002%	610	13.255%
285	0.0003%	620	12.551%
290	0.0004%	630	11.173%
300	0.0004%	640	11.156%
310	0.0004%	650	14.439%
320	0.0004%	660	19.827%
330	0.0003%	670	27.501%
340	0.0003%	680	38.777%
350	0.0003%	690	52.093%
360	0.0003%	700	64.824%
370	0.0005%	710	75.306%
380	0.000%	720	82.657%
390	2.170%	730	86.733%
400	14.397%	740	89.484%
410	17.124%	750	90.953%
420	15.223%	760	90.772%
430	13.681%	770	90.101%
440	12.709%	780	91.001%





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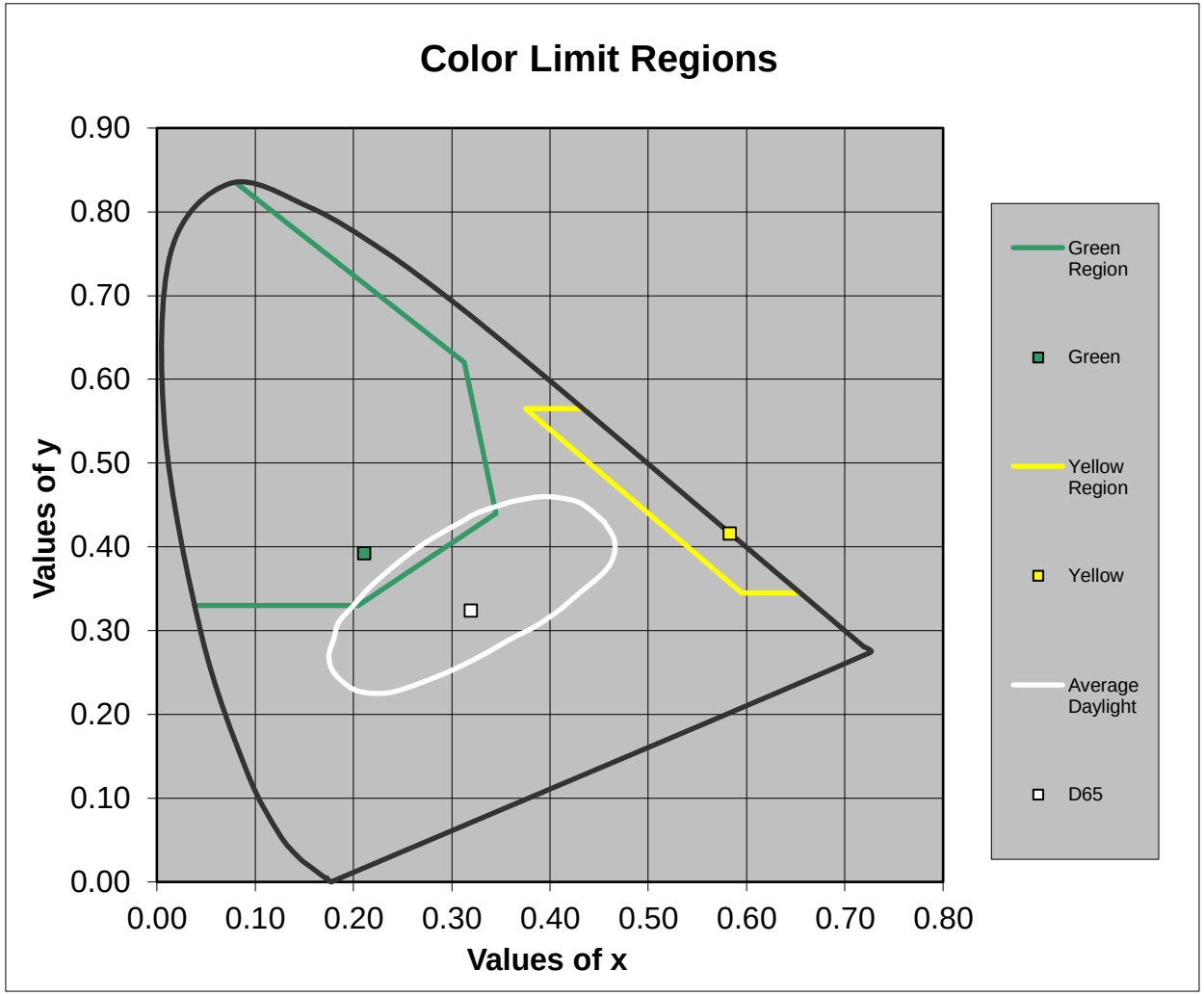

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APPENDIX 1

ANSI Z87.1 - 2020 Measurement Uncertainty Values

Section	Requirement	Uncertainty
5.1.2	Luminous Transmittance	0.19%
5.1.3	Haze	0.08%
5.1.4	Refractive Power	0.018D
	Astigmatism	0.018D
	Prism	0.048Δ
5.4.5	Minimum Lens Thickness	0.012 mm
5.5.1	Replaceable Lenses – Goggles	0.17 mm
5.5.2	Replaceable Lenses – Welding Helmets and Handshields	0.17 mm
6.1	Relaxed Optics Level	See 5.1.4
6.2	Anti-Fog Properties	1.79%
7.2.1	Optical Radiation - Clear Lenses	See 5.1.2
7.2.2.1.1	Transmission Requirements	
	Table 7 (Welding Filters)	
	W1.3 – W3.0	See 5.1.2
	W4	0.0018287%
	W5	0.0003283%
	W6	0.0003605%
	W7	0.0000961%
	W8	0.0001944%
	W9	0.0000459%
	W10	0.0000707%
	W11	0.0000163%
	W12	0.0000055%
	W13	0.0000029%
	W14	0.0000017%
	EFUV	0.0000551%
	NUV	0.0000576%
	IR	0.010395%
	Table 8 (UV Filters)	
	EFUV	0.0000551%
	NUV	0.0000576%
	Table 9 (IR Filters)	0.010395%
	Table 10 (VIS Filters)	See 7.2.2.1.1 W1.3 – W10
	Table 11 Tinted	See 5.1.2
	Extra Dark	See 5.1.2
7.2.2.1.2	Visible Light Filters	
	Visible Light (L1.3 - L3)	See 5.1.2
	UVA	See Table 7 NUV
	UVB	See Table 7 EFUV
7.2.2.2	Transmittance of Non-lens Components	See 7.2.2.1.1 Table 7, 8 & 9
7.2.3.1	Automatic Darkening Welding Filter Lenses - Luminous Transmittance	See 7.2.2.1.1 Table 7
7.2.3.2	Automatic Darkening Welding Filter Lenses - UV/IR Transmittance	See 7.2.2.1.1 Table 7
7.2.3.3	Switching Index	0.0192 mSec
7.2.3.5	Angular dependence of luminous transmittance	See 7.2.2.1.1 Table 7