

TEST RESULTS and REPORT

for LIBUS PPE

AVIATOR

by



COLTS | Laboratories™

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Also Certified for testing by the Safety Equipment Institute

Z-LIB032116-02

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COLTS Laboratories

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**PRODUCT
RESULTS
SUMMARY**

A2LA Accredited Certificate # 1612.01

**LIBUS PPE
Z-LIB032116-02**

Project ID	Test/Models(s)	Results Pass / Fail	Reason	Page
Z-LIB032116-02-01	ANSI Z87.1-2015 High Impact Goggles - Base Model AVIATOR Clear Lens, Blue Frame with Black Strap	Pass		1
Z-LIB032116-02-02	ANSI Z87.1-2015 High Impact Goggles - Variant AVIATOR Smoke Lens, Blue Frame with Black Strap	Pass		7

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**Report
Summary**

A2LA Accredited Certificate # 1612.01

Report To:

LIBUS PPE
Calle 21 Nro. 1213
Berazategui, Bs.As.

Project

of Model(s): AVIATOR
Report of: ANSI Z87.1-2015 High Impact Goggles - Base Model
Project ID(s): Z-LIB032116-02-01



Attn: Miguel Caro

Date: April 18, 2016

Product Description: Clear Lens, Blue Frame with Black Strap

On March 21, 2016, COLTS Laboratories received Goggles: AVIATOR from LIBUS PPE. From March 21, 2016 through April 18, 2016 COLTS Laboratories tested these Goggles in accordance with ANSI Z87.1-2015.

Final Conclusion:

The Goggles: AVIATOR (Clear Lens, Blue Frame with Black Strap) do comply with ANSI Z87.1-2015 for the test(s) performed for ANSI Z87.1-2015 High Impact Goggles - Base Model.

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

Respectfully submitted,

COLTS Laboratories

Daryl Neely
Vice-President & COO

Dale Payne
Technical Services Manager

Report To: LIBUS PPE
 Project No: Z-LIB032116-02-01



Sample ID:
 AVIATOR
 Clear Lens, Blue Frame with Black Strap

A2LA Accredited Certificate # 1612.01

Report Date: 4/18/2016

Lab Temp (C): 24
 Lab Rh: 44

Report of: ANSI Z87.1-2015 High Impact Goggles - Base Model

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Optical Quality	5.1.1	When tested in accordance with Section 9.1, 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	When tested in accordance with Section 9.2, clear lenses shall have a luminous transmittance of not less than 85%. Luminous Transmittance Left Eye Right Eye	Acceptable 90.50% 90.20%	Pass Pass Pass
Haze - Clear Lenses Only	5.1.3	When tested in accordance with Section 9.3, clear plano lenses shall not exhibit more than 3% haze. Haze Left Eye Right Eye	Acceptable 0.27% 0.26%	Pass Pass Pass
Goggle Refractive Power, Astigmatism, Resolving Power, Prism and Prism Imbalance for Plano Protectors	5.1.4	When tested in accordance with Section 9.4, the tolerance on refractive power, astigmatism and resolving power shall be as indicated in Table 1. When tested in accordance with Section 9.5, the tolerance on prism and prism imbalance shall be as indicated in Table 2. Filter lenses of shade 9 or higher are exempt from this section. Refractive Power ($\pm 0.06D$) Left Eye Right Eye Astigmatism (0.06 Max) Left Eye Right Eye Resolving Power (20 Min) Left Eye Right Eye Complete Prism (0.25 Max) Left Eye Right Eye	Acceptable +0.03 +0.03 Acceptable 0.03 0.03 Acceptable Acceptable Acceptable Acceptable 0.100 0.071	Pass Pass Pass Pass Pass Pass Pass Pass Pass Pass Pass

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Report Date: 4/18/2016

Lab Temp (C): 24
 Lab Rh: 44

Report of: ANSI Z87.1-2015 High Impact Goggles - Base Model

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Goggle Refractive Power, Astigmatism, Resolving Power, Prism and Prism Imbalance for Plano Protectors	5.1.4	When tested in accordance with Section 9.4, the tolerance on refractive power, astigmatism and resolving power shall be as indicated in Table 1.		
		When tested in accordance with Section 9.5, the tolerance on prism and prism imbalance shall be as indicated in Table 2. Filter lenses of shade 9 or higher are exempt from this section.		
		Prismatic Imbalance	Acceptable	Pass
		Vertical (0.125 Max)	0.05	Pass
		Horizontal Base In/Out (In 0.125 Max; Out 0.50 Max)	0.15 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 (Goggle)	5.2.2	When tested in accordance with Section 9.7, protectors shall not ignite or continue to glow once the rod is removed. Each externally exposed material (exclusive of textiles or elastic bands) shall be tested.		
		Lens	Acceptable	Pass
		Frame/Shell	Acceptable	Pass
		Housing	N/A	N/A
		Other	N/A	N/A
Corrosion Resistance of Metal Components	5.2.3	When tested in accordance with Section 9.8, 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
				No metal components
Minimum Coverage Area	5.2.4	The eyewire and lens shall cover an area not less than 40 mm wide and 33 mm high (elliptical) in front of each eye.		
		Frames designed for small head sizes (marked H) shall cover an area of not less than 34 mm wide and 28 mm high (elliptical).		
		Minimum Coverage Area	Acceptable	Pass

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Report of: ANSI Z87.1-2015 High Impact Goggles - Base Model

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Indirect Ventilation	5.4.1.2	The vented portion of the goggle shall be such that no direct straight-line passage from the exterior to the interior of the goggle exists. No direct straight-line passage	Acceptable	Pass
Replaceable Lenses - Goggles	5.5.1	Round lenses measuring 50 mm (1.97 in.) shall have a dimensional tolerance of ± 0.2 mm (0.008in.). Rectangular lenses measuring 51 x 108 mm (2.00 x 4.25 in.) shall have a dimensional tolerance of ± 0.8 mm (0.031 in.). Dimensions	N/A	N/A
Aftermarket Components and Accessories	5.6	All original equipment manufacturers (OEM) and non-OEM aftermarket components not sold with the original device shall be tested. Aftermarket Components and Accessories	Manufacturer requirement	Not testable
Protectors Marked for Impact Protection	6.1.1	Protectors and replaceable components marked for impact protection in accordance with Table 3 shall meet applicable requirements of Section 6. Impact requirements Marking requirements	Acceptable N/A	Pass N/A
Frames and Shells	6.1.2	Frames and shells shall meet the requirements for high mass impact and high velocity impact in order to be impact-rated. These components shall be tested as a complete device. For frames and shells to be used with prescription lenses, they shall be fitted with representative test lenses having a nominal plano power and the minimum lens thickness to be used by the manufacturer, in no case less than 2.0 mm (0.079 in.). Frames and shells are exempt from the penetration requirement Frames and Shells	Not assessed per customer request Acceptable	Pass
Lateral (Side) Coverage	6.1.3	When tested in accordance with Section 9.10, impact rated protectors shall provide continuous lateral coverage (i.e. no openings greater than 1.5mm (0.06 in.) in diameter) from the vertical plane of the lenses tangential to a point not less than 10 mm (0.39 in.) posterior to the corneal plane and not less than 10 mm (0.39 in.) in height (or 8 mm (0.32 in.) for the smaller headform) above and not less than 10 mm (0.39 in.) in height (or 8 mm (0.32 in.) for the smaller headform) below the horizontal plane centered on the eyes of the headform. The probe shall not contact the headform within the defined coverage area. Lateral (Side) Coverage	Acceptable	Pass

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 Project No: Z-LIB032116-02-01



Sample ID:
 AVIATOR
 Clear Lens, Blue Frame with Black Strap

A2LA Accredited Certificate # 1612.01

Report Date: 4/18/2016

Lab Temp (C): 24
 Lab Rh: 44

Report of: ANSI Z87.1-2015 High Impact Goggles - Base Model

Test/Property	Paragraph	Requirement	Test Results	Acceptance
High Mass Impact	6.2.2	When tested in accordance with Section 9.11, 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.).		
		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 (Goggles)	6.2.3	When tested in accordance with Section 9.12, the complete device shall meet the protector acceptance criteria when impacted by a 6.35 mm (0.25 in) diameter steel ball traveling at 250 feet per second.		
		Left Eye Center	247 fps	Pass
		Left Eye 30°	251 fps	Pass
		Right Eye Center	247 fps	Pass
		Right Eye 30°	250 fps	Pass
		One Side 90° at 10mm Above (H - 8mm)	248 fps	Pass
		Opposite Side 90° at 10mm Below (H - 8mm)	250 fps	Pass
Penetration Test (lenses only)	6.2.4	When tested in accordance with Section 9.13, 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
Devices with Lift Fronts	6.2.7	Complete devices with lift fronts shall meet the applicable requirements of Section 6 with the lift front in the "up" position.		
		Lift front in "up" position	N/A	N/A
Protectors with Clear Lenses	7.1	When tested in accordance with Section 9.2, clear plano, reader, magnifier and prescription lenses shall have a luminous transmission of not less than 85%. Representative test lenses of plano power may be substituted for prescription, reader or magnifier lenses in this test.		
		Transmittance	Acceptable	Pass

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Summary**

A2LA Accredited Certificate # 1612.01

Report To:

LIBUS PPE
Calle 21 Nro. 1213
Berazategui, Bs.As.

Attn: Miguel Caro

Date: April 18, 2016

Product Description: Smoke Lens, Blue Frame with Black Strap

Project

of Model(s): AVIATOR
Report of: ANSI Z87.1-2015 High Impact Goggles - Variant
Project ID(s): Z-LIB032116-02-02



On March 21, 2016, COLTS Laboratories received Goggles: AVIATOR from LIBUS PPE. From March 21, 2016 through April 18, 2016 COLTS Laboratories tested these Goggles in accordance with ANSI Z87.1-2015.

Final Conclusion:

The Goggles: AVIATOR (Smoke Lens, Blue Frame with Black Strap) do comply with ANSI Z87.1-2015 for the test(s) performed for ANSI Z87.1-2015 High Impact Goggles - Variant.

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

Respectfully submitted,

COLTS Laboratories

Daryl Neely
Vice-President & COO

Dale Payne
Technical Services Manager

Report To: LIBUS PPE
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Sample ID:
 AVIATOR
 Smoke Lens, Blue Frame with Black Strap

A2LA Accredited Certificate # 1612.01

Report Date: 4/18/2016

Lab Temp (C): 24
 Lab Rh: 44

Report of: ANSI Z87.1-2015 High Impact Goggles - Variant

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Optical Quality	5.1.1	When tested in accordance with Section 9.1, protector lenses shall be free of: striae, bubbles, waves and other visible defects which would impair the wearer's vision.	Acceptable	Pass
Goggle Refractive Power, Astigmatism, Resolving Power, Prism and Prism Imbalance for Plano Protectors	5.1.4	When tested in accordance with Section 9.4, the tolerance on refractive power, astigmatism and resolving power shall be as indicated in Table 1. When tested in accordance with Section 9.5, the tolerance on prism and prism imbalance shall be as indicated in Table 2. Filter lenses of shade 9 or higher are exempt from this section.		
		Refractive Power ($\pm 0.06D$)	Acceptable	Pass
		Left Eye	+0.02	Pass
		Right Eye	+0.04	Pass
		Astigmatism (0.06 Max)	Acceptable	Pass
		Left Eye	0.03	Pass
		Right Eye	0.03	Pass
		Resolving Power (20 Min)	Acceptable	Pass
		Left Eye	Acceptable	Pass
		Right Eye	Acceptable	Pass
		Complete Prism (0.25 Max)	Acceptable	Pass
		Left Eye	0.158	Pass
		Right Eye	0.112	Pass
		Prismatic Imbalance	Acceptable	Pass
		Vertical (0.125 Max)	0.10	Pass
		Horizontal Base In/Out (In 0.125 Max; Out 0.50 Max)	0.25 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 (Goggle)	5.2.2	When tested in accordance with Section 9.7, protectors shall not ignite or continue to glow once the rod is removed. Each externally exposed material (exclusive of textiles or elastic bands) shall be tested.		
		Lens	Acceptable	Pass
		Frame/Shell	Acceptable	Pass

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Test/Property	Paragraph	Requirement	Test Results	Acceptance
Ignition (Goggle)	5.2.2	When tested in accordance with Section 9.7, protectors shall not ignite or continue to glow once the rod is removed. Each externally exposed material (exclusive of textiles or elastic bands) shall be tested.		
		Housing	N/A	N/A
		Other	N/A	N/A
Corrosion Resistance of Metal Components	5.2.3	When tested in accordance with Section 9.8, 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 No metal components
Minimum Coverage Area	5.2.4	The eyewire and lens shall cover an area not less than 40 mm wide and 33 mm high (elliptical) in front of each eye.		
		Frames designed for small head sizes (marked H) shall cover an area of not less than 34 mm wide and 28 mm high (elliptical).		
		Minimum Coverage Area	Acceptable	Pass
Required Protector Markings (Goggles)	5.3	All protectors shall bear the permanent and legible markings in specified locations as shown in Table 3. 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: <ul style="list-style-type: none"> - Manufacturer's marks or logos - Designation of standard (Z87 or Z87-2, for prescription devices) - Individual claims of compliance <ul style="list-style-type: none"> - impact-rated marking (+) - lens type - use applications 		
		Manufacturer's marks or logos are exempt from the proximity requirement if they are clearly present elsewhere on the product. Markings permanent, legible and in relatable proximity	N/A	N/A

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Report of: ANSI Z87.1-2015 High Impact Goggles - Variant

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Required Protector Markings (Goggles)	5.3	All protectors shall bear the permanent and legible markings in specified locations as shown in Table 3. 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:		
		- Manufacturer's marks or logos		
		- Designation of standard (Z87 or Z87-2, for prescription devices)		
		- Individual claims of compliance		
		- impact-rated marking (+)		
		- lens type		
		- use applications		
		Manufacturer's marks or logos are exempt from the proximity requirement if they are clearly present elsewhere on the product.		
		Complete Device Markings		N/A
Sequence Correct		N/A	N/A	
Mfg Mark or Logo		N/A	N/A	
Z87 Mark		N/A	N/A	
+ Mark		N/A	N/A	
H Mark (Coverage - small head sizes)		N/A	N/A	
Lens Type (multiple claim sequence W,U,L,R,V,S)		N/A	N/A	
Use (multiple claim sequence D3,D4,D5)		N/A	N/A	
Markings representative of other standards shall not interfere with or be intermixed with the markings required by this standard.		N/A	N/A	
			Not assessed per customer request	
Vented Goggles	5.4.1	If the goggle is equipped with adjustable ventilation, the protector shall be tested in the maximum open position.		
		Maximum open position	N/A	N/A
Direct Ventilation	5.4.1.1	The vented portion of the goggle shall be such that the openings exclude spherical objects 1.5 mm (0.06 in.) in diameter or greater.		
		1.5 mm spherical object excluded	N/A	N/A
Indirect Ventilation	5.4.1.2	The vented portion of the goggle shall be such that no direct straight-line passage from the exterior to the interior of the goggle exists.		
		No direct straight-line passage	Acceptable	Pass

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Report of: ANSI Z87.1-2015 High Impact Goggles - Variant

Test/Property	Paragraph	Requirement	Test Results	Acceptance
Replaceable Lenses - Goggles	5.5.1	Round lenses measuring 50 mm (1.97 in.) shall have a dimensional tolerance of ± 0.2 mm (0.008in.).		
		Rectangular lenses measuring 51 x 108 mm (2.00 x 4.25 in.) shall have a dimensional tolerance of ± 0.8 mm (0.031 in.).		
		Dimensions	N/A	N/A
Aftermarket Components and Accessories	5.6	All original equipment manufacturers (OEM) and non-OEM aftermarket components not sold with the original device shall be tested.		
		Aftermarket Components and Accessories	Manufacturer requirement	Not testable
Protectors Marked for Impact Protection	6.1.1	Protectors and replaceable components marked for impact protection in accordance with Table 3 shall meet applicable requirements of Section 6.		
		Impact requirements	Acceptable	Pass
		Marking requirements	N/A	N/A
			Not assessed per customer request	
Frames and Shells	6.1.2	Frames and shells shall meet the requirements for high mass impact and high velocity impact in order to be impact-rated. These components shall be tested as a complete device. For frames and shells to be used with prescription lenses, they shall be fitted with representative test lenses having a nominal plano power and the minimum lens thickness to be used by the manufacturer, in no case less than 2.0 mm (0.079 in.). Frames and shells are exempt from the penetration requirement		
		Frames and Shells	Acceptable	Pass
Lateral (Side) Coverage	6.1.3	When tested in accordance with Section 9.10, impact rated protectors shall provide continuous lateral coverage (i.e. no openings greater than 1.5mm (0.06 in.) in diameter) from the vertical plane of the lenses tangential to a point not less than 10 mm (0.39 in.) posterior to the corneal plane and not less than 10 mm (0.39 in.) in height (or 8 mm (0.32 in.) for the smaller headform) above and not less than 10 mm (0.39 in.) in height (or 8 mm (0.32 in.) for the smaller headform) below the horizontal plane centered on the eyes of the headform. The probe shall not contact the headform within the defined coverage area.		
		Lateral (Side) Coverage	Acceptable	Pass
High Mass Impact	6.2.2	When tested in accordance with Section 9.11, 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.).		
		Left Eye Sample 1	Acceptable	Pass
		Left Eye Sample 2	Acceptable	Pass

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Test/Property	Paragraph	Requirement	Test Results	Acceptance	
High Mass Impact	6.2.2	When tested in accordance with Section 9.11, 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.). Right Eye Sample 3	Acceptable	Pass	
			Acceptable	Pass	
High Velocity Impact (Goggles)	6.2.3	When tested in accordance with Section 9.12, the complete device shall meet the protector acceptance criteria when impacted by a 6.35 mm (0.25 in) diameter steel ball traveling at 250 feet per second. Left Eye Center	250 fps	Pass	
			Left Eye 30°	252 fps	Pass
			Right Eye Center	248 fps	Pass
			Right Eye 30°	251 fps	Pass
			One Side 90° at 10mm Above (H - 8mm)	249 fps	Pass
			Opposite Side 90° at 10mm Below (H - 8mm)	248 fps	Pass
Penetration Test (lenses only)	6.2.4	When tested in accordance with Section 9.13, 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
Devices with Lift Fronts	6.2.7	Complete devices with lift fronts shall meet the applicable requirements of Section 6 with the lift front in the "up" position. Lift front in "up" position	N/A	N/A	

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Test/Property	Paragraph	Requirement	Test Results	Acceptance
Special Purpose Filter Lenses - Transmission Requirements	7.2.1.1	When tested in accordance with Section 9.2, plano, reader, magnifier and prescription lenses that are marked as special purpose filters shall meet the requirements of Table 10. Representative test lenses of plano power may be substituted for prescription, reader or magnifier lenses in this test.		
		Tinted Lenses (8% - 85%)	Acceptable	Pass
		Left Eye	20.50%	Pass
		Right Eye	20.60%	Pass
		Ratio (0.90 - 1.10)	0.995	Pass

APPENDIX 1
ANSI Z87.1 - 2015 Measurement Uncertainty Values

Section	Requirement	Uncertainty
5.1.2	Luminous Transmittance	0.41%
5.1.3	Haze	0.41%
5.1.4	Refractive Power & Astigmatism	0.007D
5.1.4	Prism	0.01Δ
5.4.3.1	Welding Protectors – Transmittance of Non-Lens Area	0.000017%
5.1.5	Refractive Power & Astigmatism and Prism for Rx Protectors and Magnifiers	See 5.1.4
5.4.5	Minimum Lens Thickness	0.1 mm
5.5.1	Replaceable Lenses – Goggles	0.1 mm
5.5.2	Replaceable Lenses – Welding Helmets and Handshields	0.1 mm
7.2.1.1	Transmission Requirements	Table 6 (Welding Filters) See 7.3 Table 7 EFUV 0.0000551% NUV 0.0000576% Table 8 (IR) 0.010395% Table 9 (VIS) See 7.1.3 W1.3 – W10 Table 10 Tinted 0.41% Extra Dark 0.0001944%
7.2.1.2	Visible Light Filters	Visible Light 0.41% UVA 0.0000576% UVB 0.0000551%
7.2.2	Transmittance of Non-lens Components	0.000017%
7.3	Automatic Darkening Welding Filter Lenses	W1.3 – W3.0 0.41% W4 0.0018287% W5 0.0003283% W6 0.0003605% W7 0.0000961% W8 0.0001944% W9 0.0000459% W10 0.0000706% W11 0.0000068% W12 0.0000055% W13 0.0000028% W14 0.0000017% EFUV 0.0000551% NUV 0.0000576% IR 0.010395%
7.3.3	Switching Index	0.0192 mSec