



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT

APPLICATION FOR HCAI SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0634

HCAI Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Envirco

Manufacturer's Technical Representative: Halie Havener

Mailing Address: 101 McNeill Road, Sanford, NC 27330

Telephone: (919) 777-6330

Email: halie.g.havener@trioniaq.com

Product Information

Product Name: Fan Filter Unit

Product Model Number(s): MAC 10 IQ & LEDC

Product Category: Air Conditioning Units

Product Sub-Category: Air Conditioning Units - Inline Fan and Terminal

General Description: Ceiling suspended fan filter units

Mounting Description: Suspended Rigid -

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

Applicant Information

Applicant Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

Contact Person: Victoria Ahrens

Mailing Address: 233 SW Wilson Ave, Suite 101, Bend, OR 97702

Telephone: (541) 292-5820

Email: vahrens@structint.com

Title: Certification Engineer



**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT**

California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: STRUCTURAL INTEGRITY ASSOCIATES, INC.

Name: LACHEZAR HANDZHIYSKI

California License Number: S6515

Mailing Address: 5215 Hellyer Avenue, Suite 210, San Jose, CA 95138

Telephone: (669) 437-0200

Email: Lhandzhiyski@StructInt.com

Certification Method

☐ GR-63-Core

☒ ICC-ES AC156

☐ IEEE 344

☐ IEEE 693

☐ NEBS 3

☐ Other (Please Specify): _____

Testing Laboratory

Company Name: ENVIRONMENTAL TESTING LABORATORIES, INC. (ETL)

Contact Person: Jeremy Lange

Mailing Address: 11034 Indian Trail, Dallas TX 75229-3513

Telephone: (972) 247-9657

Email: Jeremy@etldallas.com

BY: Mohammad Karim

DATE: 07/09/2025



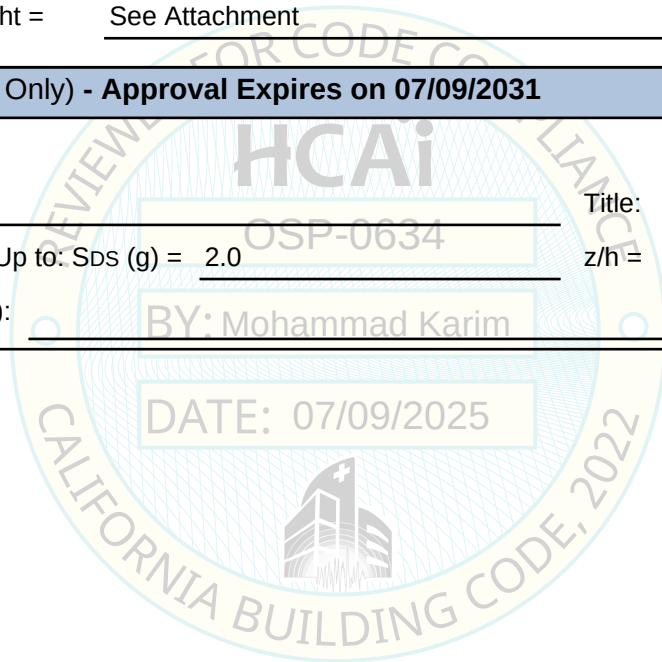
DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) =	1.50 (SDS = 2.00; z/h = 1); 1.125 (SDS = 2.50; z/h = 0)
SDS (Design spectral response acceleration at short period, g) =	2.00 (z/h = 1); 2.50 (z/h = 0)
a_p (Amplification factor) =	2.5
R_p (Response modification factor) =	6.0
Ω_0 (System overstrength factor) =	2.0
I_p (Importance factor) =	1.5
z/h (Height ratio factor) =	0 and 1
Natural frequencies (Hz) =	See Attachment
Overall dimensions and weight =	See Attachment

HCAI Approval (For Office Use Only) - Approval Expires on 07/09/2031

Date:	7/9/2025		
Name:	Mohammad Karim	Title:	Supervisor, Health Facilities
Special Seismic Certification Valid Up to:	SDS (g) = 2.0	z/h =	1
Condition of Approval (if applicable):			



SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1701485-CR-001-R3



Manufacturer: Envirco						TABLE 1	
Model Line: MAC 10 IQ & LEDC							
Certified Product Construction Summary: Stainless Steel Housing; MAC10 IQ: Forward Curved Fan Wheel; MAC10 LEDC: Backward Inclined Fan Wheel							
Certified Options Summary: Foam & Pleated Pre-filter (UUTs 2, 3, 4); HEPA, ULPA, PTFE Filter; Aluminum Duct Collar (UUT 5); Finger Guard (UUT 1); Stainless Steel or Aluminum Room Side Screen							
Mounting Configuration^{1,2}: Ceiling suspended/mounted - rigid							
¹ Note: Installed mounting must be of similar configuration and equivalent strength and stiffness to those tested.							
² Note: Units with maximum aspect ratios ≤ 1.5 are required to have (2) cable braces at each corner. See UUT Summary for cables configuration tested.							
Building Code: CBC 2022		Seismic Certification Limits:		$S_{DS}= 2.0\text{ g}$ $z/h=1.0$ $S_{DS}= 2.5\text{ g}$ $z/h=0.0$		$I_p= 1.5$	
Model Line	Model	Dimensions (in)			Weight (lbs.) ³	Notes	UUT
		Depth	Width	Height			
MAC10 IQ	<u>STD, 2x2, SST</u> Envirco: MQS Titus: FFDE Krueger: CRFF-E	23.63	23.63	14.70	66		Extrap.
	<u>RSR, 2x2, SST</u> Envirco: MQR Titus: FFDER Krueger: CRFF-E-ARS	23.93	23.93	16.81	70		Extrap.
	<u>RSRE, 2x2, SST</u> Envirco: MQRE Titus: FFDERA Krueger: CRFF-E-ARSM	23.93	23.93	16.81	70		Extrap.
	<u>RSRC, 2x2, SST</u> Envirco: MQRC Titus: FFDERC Krueger: CRFF-E-ARSC	23.63	23.63	17.82	70		Extrap.
	<u>STD, 2x3, SST</u> Envirco: MQS Titus: FFDE Krueger: CRFF-E	23.63	35.63	14.70	81		Extrap.
	<u>RSR, 2x3, SST</u> Envirco: MQR Titus: FFDER Krueger: CRFF-E-ARS	23.63	35.63	16.81	83		Extrap.
	<u>RSRE, 2x3, SST</u> Envirco: MQRE Titus: FFDERA Krueger: CRFF-E-ARSM	23.63	35.63	16.81	83		Extrap.
Notes 3. Weights listed correspond to weights of heaviest configuration.							

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1701485-CR-001-R3



Manufacturer: Envirco						TABLE 1	
Model Line: MAC 10 IQ & LEDC							
Certified Product Construction Summary: Stainless Steel Housing; MAC10 IQ: Forward Curved Fan Wheel; MAC10 LEDC: Backward Inclined Fan Wheel							
Certified Options Summary: Foam & Pleated Pre-filter (UUTs 2, 3, 4); HEPA, ULPA, PTFE Filter; Aluminum Duct Collar (UUT 5); Finger Guard (UUT 1); Stainless Steel or Aluminum Room Side Screen							
Mounting Configuration^{1,2}: Ceiling suspended/mounted - rigid							
¹ Note: Installed mounting must be of similar configuration and equivalent strength and stiffness to those tested.							
² Note: Units with maximum aspect ratios ≤ 1.5 are required to have (2) cable braces at each corner. See UUT Summary for cables configuration tested.							
Building Code: CBC 2022		Seismic Certification Limits:		$S_{DS}= 2.0\text{ g}$ $z/h=1.0$ $S_{DS}= 2.5\text{ g}$ $z/h=0.0$		$I_p= 1.5$	
Model Line	Model	Dimensions (in)			Weight (lbs.) ³	Notes	UUT
		Depth	Width	Height			
MAC10 IQ	<u>RSRC, 2x3, SST</u> Envirco: MQRC Titus: FFDERC Krueger: CRFF-E-ARSC	23.63	35.63	17.82	83		Extrap.
	<u>STD, 2x3.5, SST</u> Envirco: MQS Titus: FFDE Krueger: CRFF-E	23.63	41.63	14.70	88		Extrap.
	<u>RSR, 2x3.5, SST</u> Envirco: MQR Titus: FFDER Krueger: CRFF-E-ARS	23.63	41.63	16.81	94		Extrap.
	<u>RSRE, 2x3.5, SST</u> Envirco: MQRE Titus: FFDERA Krueger: CRFF-E-ARSM	23.63	41.63	16.81	94		Extrap.
	<u>RSRC, 2x3.5, SST</u> Envirco: MQRC Titus: FFDERC Krueger: CRFF-E-ARSC	23.63	41.63	17.82	94		Extrap.
	<u>STD, 2x4, SST</u> Envirco: MQS Titus: FFDE Krueger: CRFF-E	23.63	47.63	14.70	99		Interp.
	<u>RSR, 2x4, SST</u> Envirco: MQR Titus: FFDER Krueger: CRFF-E-ARS	23.63	47.63	16.81	112	UUT: Foam pre-filter	2
Notes 3. Weights listed correspond to weights of heaviest configuration.							

TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1701485-CR-001-R3



Manufacturer: Envirco						TABLE 1	
Model Line: MAC 10 IQ & LEDC							
Certified Product Construction Summary: Stainless Steel Housing; MAC10 IQ: Forward Curved Fan Wheel; MAC10 LEDC: Backward Inclined Fan Wheel							
Certified Options Summary: Foam & Pleated Pre-filter (UUTs 2, 3, 4); HEPA, ULPA, PTFE Filter; Aluminum Duct Collar (UUT 5); Finger Guard (UUT 1); Stainless Steel or Aluminum Room Side Screen							
Mounting Configuration ^{1,2}: Ceiling suspended/mounted - rigid							
¹ Note: Installed mounting must be of similar configuration and equivalent strength and stiffness to those tested.							
² Note: Units with maximum aspect ratios ≤ 1.5 are required to have (2) cable braces at each corner. See UUT Summary for cables configuration tested.							
Building Code: CBC 2022		Seismic Certification Limits:		$S_{DS}= 2.0\text{ g}$ $z/h=1.0$ $S_{DS}= 2.5\text{ g}$ $z/h=0.0$		$I_p= 1.5$	
Model Line	Model	Dimensions (in)			Weight (lbs.) ³	Notes	UUT
		Depth	Width	Height			
MAC10 IQ	<u>RSRE, 2x4, SST</u> Envirco: MQRE Titus: FFDERA Krueger: CRFF-E-ARSM	23.63	47.63	16.81	105		Interp.
	<u>RSRC, 2x4, SST</u> Envirco: MQRC Titus: FFDERC Krueger: CRFF-E-ARSC	23.63	47.63	17.82	105		Interp.
MAC10 LEDC	<u>STD, 2x2, SST</u> Envirco: MDS Titus: FFDL Krueger: CRFF-L	23.63	23.63	14.70	66		Extrap.
	<u>RSR, 2x2, SST</u> Envirco: MDR Titus: FFDLR Krueger: CRFF-L-ARS	23.93	23.93	18.31	70		Extrap.
	<u>RSRE, 2x2, SST</u> Envirco: MDRE Titus: FFLDRA Krueger: CRFF-L_ARSM	23.93	23.93	18.31	70		Extrap.
	<u>RSRC, 2x2, SST</u> Envirco: MDRC Titus: FFLDRC Krueger: CRFF-L-ARSC	23.63	23.63	17.82	70		Extrap.
	<u>STD, 2x3, SST</u> Envirco: MDS Titus: FFDL Krueger: CRFF-L	23.63	35.63	14.70	81		Extrap.
Notes 3. Weights listed correspond to weights of heaviest configuration.							

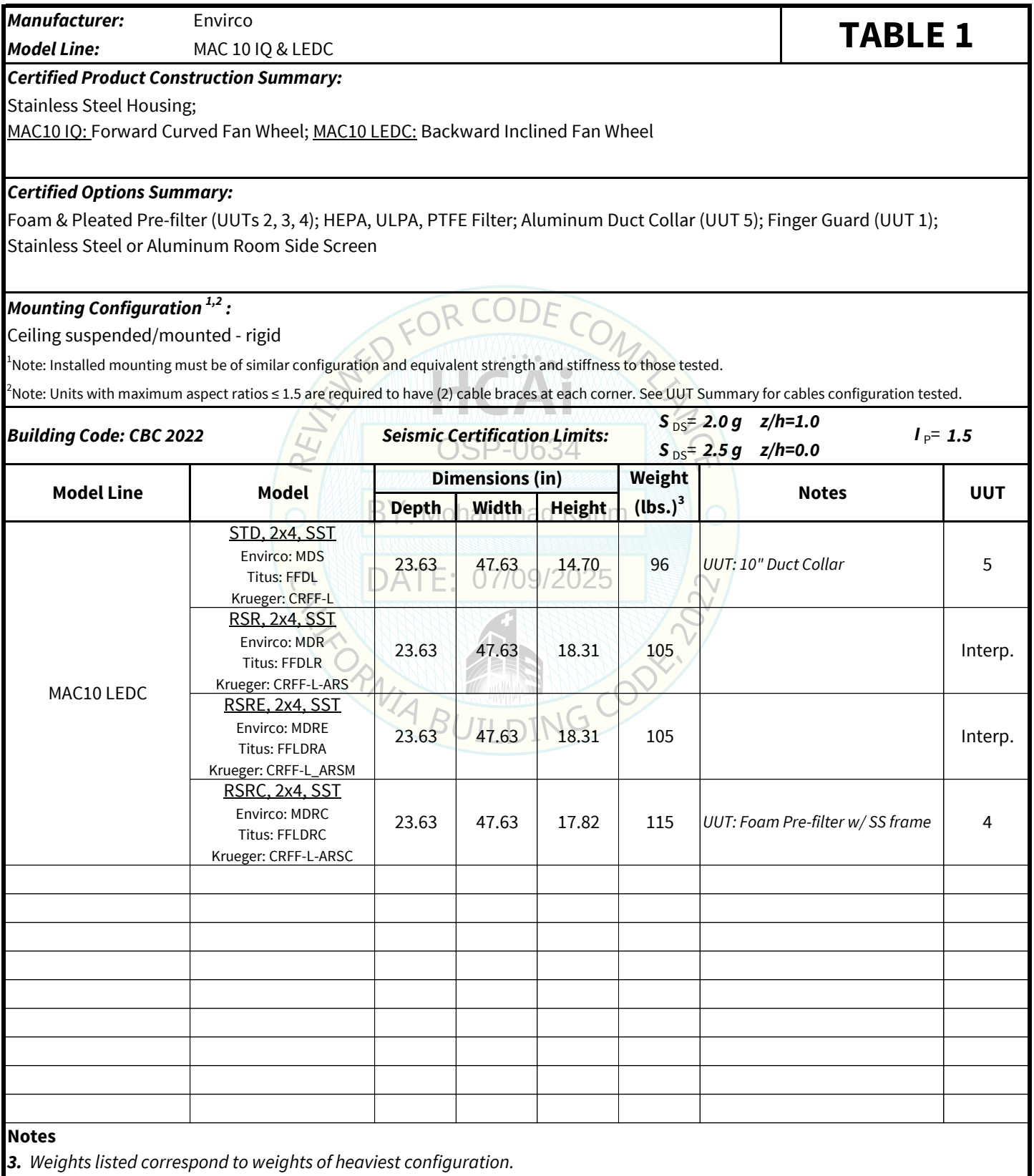
SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1701485-CR-001-R3



Manufacturer: Envirco						TABLE 1	
Model Line: MAC 10 IQ & LEDC							
Certified Product Construction Summary: Stainless Steel Housing; MAC10 IQ: Forward Curved Fan Wheel; MAC10 LEDC: Backward Inclined Fan Wheel							
Certified Options Summary: Foam & Pleated Pre-filter (UUTs 2, 3, 4); HEPA, ULPA, PTFE Filter; Aluminum Duct Collar (UUT 5); Finger Guard (UUT 1); Stainless Steel or Aluminum Room Side Screen							
Mounting Configuration ^{1,2}: Ceiling suspended/mounted - rigid							
¹ Note: Installed mounting must be of similar configuration and equivalent strength and stiffness to those tested.							
² Note: Units with maximum aspect ratios ≤ 1.5 are required to have (2) cable braces at each corner. See UUT Summary for cables configuration tested.							
Building Code: CBC 2022		Seismic Certification Limits:		$S_{DS}= 2.0 g$ $z/h=1.0$ $S_{DS}= 2.5 g$ $z/h=0.0$		$I_p= 1.5$	
Model Line	Model	Dimensions (in)			Weight (lbs.) ³	Notes	UUT
		Depth	Width	Height			
MAC10 LEDC	<u>RSR, 2x3, SST</u> Envirco: MDR Titus: FFDLR Krueger: CRFF-L-ARS	23.63	35.63	18.31	83		Extrap.
	<u>RSRE, 2x3, SST</u> Envirco: MDRE Titus: FFLDRA Krueger: CRFF-L_ARSM	23.63	35.63	16.81	83		Extrap.
	<u>RSRC, 2x3, SST</u> Envirco: MDRC Titus: FFLDRC Krueger: CRFF-L-ARSC	23.63	35.63	17.82	83		Extrap.
	<u>STD, 2x3.5, SST</u> Envirco: MDS Titus: FFDL Krueger: CRFF-L	23.63	41.63	14.70	88		Extrap.
	<u>RSR, 2x3.5, SST</u> Envirco: MDR Titus: FFDLR Krueger: CRFF-L-ARS	23.63	41.63	18.31	94		Extrap.
	<u>RSRE, 2x3.5, SST</u> Envirco: MDRE Titus: FFLDRA Krueger: CRFF-L_ARSM	23.63	41.63	18.31	94		Extrap.
	<u>RSRC, 2x3.5, SST</u> Envirco: MDRC Titus: FFLDRC Krueger: CRFF-L-ARSC	23.63	41.63	17.82	94		Extrap.
Notes 3. Weights listed correspond to weights of heaviest configuration.							

1701485-CR-001-R3



SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1701485-CR-001-R3



Manufacturer: Envirco						TABLE 2	
Model Line: MAC 10 IQ & LEDC							
Certified Product Construction Summary: Aluminum Housing; MAC10 IQ: Forward Curved Fan Wheel; MAC10 LEDC: Backward Inclined Fan Wheel							
Certified Options Summary: Foam & Pleated Pre-filter (UUTs 2, 3, 4); HEPA, ULPA, PTFE Filter; Aluminum Duct Collar (UUT 5); Finger Guard (UUT 1); Stainless Steel or Aluminum Room Side Screen							
Mounting Configuration ^{1,2}: Ceiling suspended/mounted - rigid							
¹ Note: Installed mounting must be of similar configuration and equivalent strength and stiffness to those tested.							
² Note: Units with maximum aspect ratios ≤ 1.5 are required to have (2) cable braces at each corner. See UUT Summary for cables configuration tested.							
Building Code: CBC 2022		Seismic Certification Limits:		$S_{DS}= 2.0\text{ g}$ $z/h=1.0$ $S_{DS}= 2.5\text{ g}$ $z/h=0.0$		$I_p= 1.5$	
Model Line	Model	Dimensions (in)			Weight (lbs.) ³	Notes	UUT
		Depth	Width	Height			
MAC10 IQ	<u>STD, 2x2, Al</u> Envirco: MQS Titus: FFDE Krueger: CRFF-E	23.63	23.63	14.32	66		Extrap.
	<u>RSR, 2x2, Al</u> Envirco: MQR Titus: FFDER Krueger: CRFF-E-ARS	23.93	23.93	16.43	57		Extrap.
	<u>RSRE, 2x2, Al</u> Envirco: MQRE Titus: FFDERA Krueger: CRFF-E-ARSM	23.93	23.93	16.43	57		Extrap.
	<u>RSRC, 2x2, Al</u> Envirco: MQRC Titus: FFDERC Krueger: CRFF-E-ARSC	23.63	23.63	17.44	57		Extrap.
	<u>STD, 2x3, Al</u> Envirco: MQS Titus: FFDE Krueger: CRFF-E	23.63	35.63	14.32	68		Extrap.
	<u>RSR, 2x3, Al</u> Envirco: MQR Titus: FFDER Krueger: CRFF-E-ARS	23.63	35.63	16.43	70		Extrap.
	<u>RSRE, 2x3, Al</u> Envirco: MQRE Titus: FFDERA Krueger: CRFF-E-ARSM	23.63	35.63	16.43	70		Extrap.
Notes 3. Weights listed correspond to weights of heaviest configuration.							

TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1701485-CR-001-R3



Manufacturer: Envirco						TABLE 2	
Model Line: MAC 10 IQ & LEDC							
Certified Product Construction Summary: Aluminum Housing; MAC10 IQ: Forward Curved Fan Wheel; MAC10 LEDC: Backward Inclined Fan Wheel							
Certified Options Summary: Foam & Pleated Pre-filter (UUTs 2, 3, 4); HEPA, ULPA, PTFE Filter; Aluminum Duct Collar (UUT 5); Finger Guard (UUT 1); Stainless Steel or Aluminum Room Side Screen							
Mounting Configuration^{1,2}: Ceiling suspended/mounted - rigid							
¹ Note: Installed mounting must be of similar configuration and equivalent strength and stiffness to those tested.							
² Note: Units with maximum aspect ratios ≤ 1.5 are required to have (2) cable braces at each corner. See UUT Summary for cables configuration tested.							
Building Code: CBC 2022		Seismic Certification Limits:		$S_{DS}= 2.0 g$ $z/h=1.0$ $S_{DS}= 2.5 g$ $z/h=0.0$		$I_p= 1.5$	
Model Line	Model	Dimensions (in)			Weight (lbs.) ³	Notes	UUT
		Depth	Width	Height			
MAC10 IQ	<u>RSRC, 2x3, Al</u> Envirco: MQRC Titus: FFDERC Krueger: CRFF-E-ARSC	23.63	35.63	17.44	70		Extrap.
	<u>STD, 2x3.5, Al</u> Envirco: MQS Titus: FFDE Krueger: CRFF-E	23.63	41.63	14.32	75		Extrap.
	<u>RSR, 2x3.5, Al</u> Envirco: MQR Titus: FFDER Krueger: CRFF-E-ARS	23.63	41.63	16.43	81		Extrap.
	<u>RSRE, 2x3.5, Al</u> Envirco: MQRE Titus: FFDERA Krueger: CRFF-E-ARSM	23.63	41.63	16.43	81		Extrap.
	<u>RSRC, 2x3.5, Al</u> Envirco: MQRC Titus: FFDERC Krueger: CRFF-E-ARSC	23.63	41.63	17.44	81		Extrap.
	<u>STD, 2x4, Al</u> Envirco: MQS Titus: FFDE Krueger: CRFF-E	23.63	47.63	14.32	86		Interp.
	<u>RSR, 2x4, Al</u> Envirco: MQR Titus: FFDER Krueger: CRFF-E-ARS	23.63	47.63	16.43	88		Interp.
Notes 3. Weights listed correspond to weights of heaviest configuration.							

TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1701485-CR-001-R3



Manufacturer: Envirco						TABLE 2	
Model Line: MAC 10 IQ & LEDC							
Certified Product Construction Summary: Aluminum Housing; MAC10 IQ: Forward Curved Fan Wheel; MAC10 LEDC: Backward Inclined Fan Wheel							
Certified Options Summary: Foam & Pleated Pre-filter (UUTs 2, 3, 4); HEPA, ULPA, PTFE Filter; Aluminum Duct Collar (UUT 5); Finger Guard (UUT 1); Stainless Steel or Aluminum Room Side Screen							
Mounting Configuration^{1,2}: Ceiling suspended/mounted - rigid							
¹ Note: Installed mounting must be of similar configuration and equivalent strength and stiffness to those tested.							
² Note: Units with maximum aspect ratios ≤ 1.5 are required to have (2) cable braces at each corner. See UUT Summary for cables configuration tested.							
Building Code: CBC 2022		Seismic Certification Limits:		$S_{DS}= 2.0\text{ g}$ $z/h=1.0$ $S_{DS}= 2.5\text{ g}$ $z/h=0.0$		$I_p= 1.5$	
Model Line	Model	Dimensions (in)			Weight (lbs.) ³	Notes	UUT
		Depth	Width	Height			
MAC10 IQ	<u>RSRE, 2x4, Al</u> Envirco: MQRE Titus: FFDERA Krueger: CRFF-E-ARSM	23.63	47.63	16.43	88		Interp.
	<u>RSRC, 2x4, Al</u> Envirco: MQRC Titus: FFDERC Krueger: CRFF-E-ARSC	23.63	47.63	17.44	89	UUT: Finger Guard	1
MAC10 LEDC	<u>STD, 2x2, Al</u> Envirco: MDS Titus: FFDL Krueger: CRFF-L	23.63	23.63	14.32	66		Extrap.
	<u>RSR, 2x2, Al</u> Envirco: MDR Titus: FFDLR Krueger: CRFF-L-ARS	23.93	23.93	17.93	57		Extrap.
	<u>RSRE, 2x2, Al</u> Envirco: MDRE Titus: FFDLRA Krueger: CRFF-L-ARSM	23.93	23.93	17.93	57		Extrap.
	<u>RSRC, 2x2, Al</u> Envirco: MDRC Titus: FFDLRC Krueger: CRFF-L-ARSC	23.63	23.63	17.44	57		Extrap.
	<u>STD, 2x3, Al</u> Envirco: MDS Titus: FFDL Krueger: CRFF-L	23.63	35.63	14.32	68		Extrap.
Notes 3. Weights listed correspond to weights of heaviest configuration.							

TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1701485-CR-001-R3

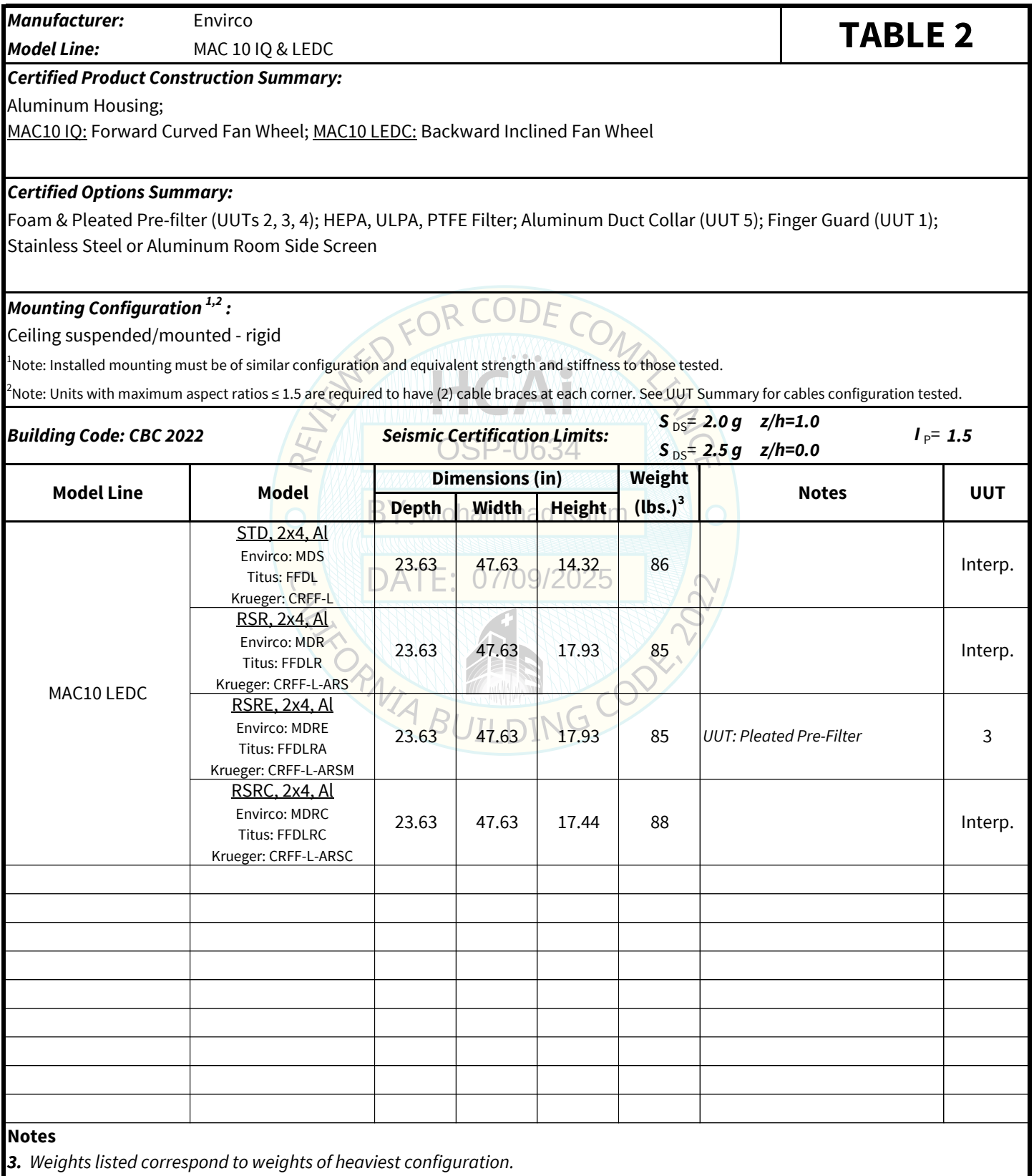


Manufacturer: Envirco						TABLE 2	
Model Line: MAC 10 IQ & LEDC							
Certified Product Construction Summary: Aluminum Housing; MAC10 IQ: Forward Curved Fan Wheel; MAC10 LEDC: Backward Inclined Fan Wheel							
Certified Options Summary: Foam & Pleated Pre-filter (UUTs 2, 3, 4); HEPA, ULPA, PTFE Filter; Aluminum Duct Collar (UUT 5); Finger Guard (UUT 1); Stainless Steel or Aluminum Room Side Screen							
Mounting Configuration^{1,2}: Ceiling suspended/mounted - rigid							
¹ Note: Installed mounting must be of similar configuration and equivalent strength and stiffness to those tested.							
² Note: Units with maximum aspect ratios ≤ 1.5 are required to have (2) cable braces at each corner. See UUT Summary for cables configuration tested.							
Building Code: CBC 2022		Seismic Certification Limits:		$S_{DS}= 2.0 g$ $z/h=1.0$ $S_{DS}= 2.5 g$ $z/h=0.0$		$I_p= 1.5$	
Model Line	Model	Dimensions (in)			Weight (lbs.) ³	Notes	UUT
		Depth	Width	Height			
MAC10 LEDC	<u>RSR, 2x3, Al</u> Envirco: MDR Titus: FFDLR Krueger: CRFF-L-ARS	23.63	35.63	17.93	70		Extrap.
	<u>RSRE, 2x3, Al</u> Envirco: MDRE Titus: FFDLRA Krueger: CRFF-L-ARSM	23.63	35.63	17.93	70		Extrap.
	<u>RSRC, 2x3, Al</u> Envirco: MDRC Titus: FFDLRC Krueger: CRFF-L-ARSC	23.63	35.63	17.44	70		Extrap.
	<u>STD, 2x3.5, Al</u> Envirco: MDS Titus: FFDL Krueger: CRFF-L	23.63	41.63	14.32	75		Extrap.
	<u>RSR, 2x3.5, Al</u> Envirco: MDR Titus: FFDLR Krueger: CRFF-L-ARS	23.63	41.63	17.93	81		Extrap.
	<u>RSRE, 2x3.5, Al</u> Envirco: MDRE Titus: FFDLRA Krueger: CRFF-L-ARSM	23.63	41.63	17.93	81		Extrap.
	<u>RSRC, 2x3.5, Al</u> Envirco: MDRC Titus: FFDLRC Krueger: CRFF-L-ARSC	23.63	41.63	17.44	81		Extrap.
Notes 3. Weights listed correspond to weights of heaviest configuration.							

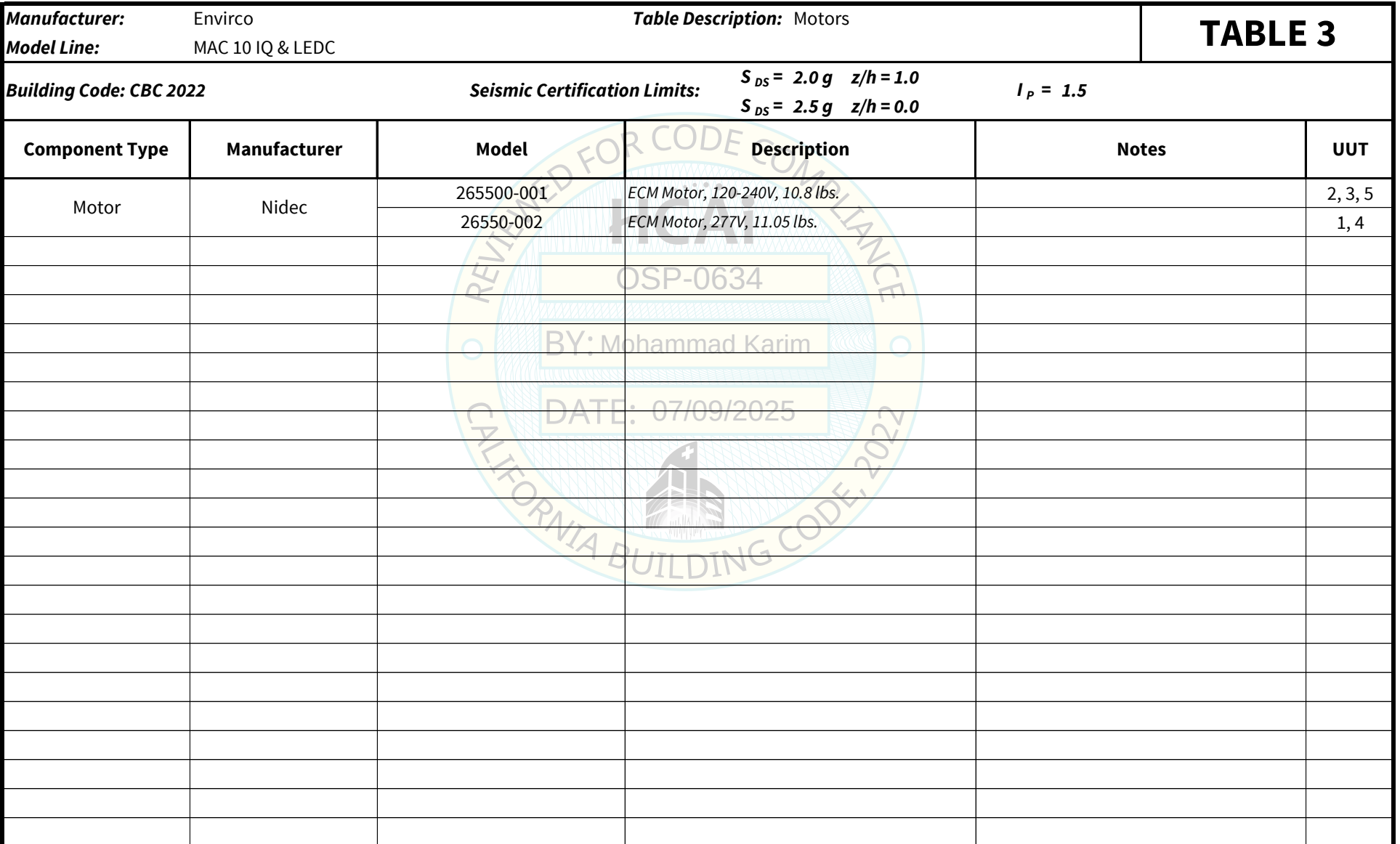
TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com

1701485-CR-001-R3



1701485-CR-001-R3



SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1701485-CR-001-R3



Manufacturer: Envirco		Table Description: Filters			TABLE 4
Model Line: MAC 10 IQ & LEDC					
Building Code: CBC 2022		Seismic Certification Limits:		$S_{DS} = 2.0 g \quad z/h = 1.0$ $S_{DS} = 2.5 g \quad z/h = 0.0$	$I_P = 1.5$
Component Type	Manufacturer	Model	Description	Notes	UUT
STD HEPA Filter	Camfil	69600S-XXXXXXX	2X2, 53 mm pack, 17.25 lbs.		Extrap.
			2X3, 53 mm pack, 22.75 lbs.		Extrap.
			2X3.5, 53 mm pack, 25.5 lbs.		Extrap.
			2X4, 53 mm pack, 28 lbs.		Extrap.
		69514-XXX	2X2, 70 mm pack, 17.5 lbs.		Extrap.
			2X3, 70 mm pack, 23.5 lbs.		Extrap.
			2X3.5, 70 mm pack, 26.5 lbs.		Extrap.
			2X4, 70 mm pack, 29 lbs.		Extrap.
STD ULPA Filter	Camfil	69600S-XXXXXXX	2X2, 53 mm pack, 17.75 lbs.		Extrap.
			2X3, 53 mm pack, 23.75 lbs.		Extrap.
			2X3.5, 53 mm pack, 26.75 lbs.		Extrap.
			2X4, 53 mm pack, 29.25 lbs.		Extrap.
		69514-XXX	2X2, 70 mm pack, 18 lbs.		Extrap.
			2X3, 70 mm pack, 24 lbs.		Extrap.
			2X3.5, 70 mm pack, 27.25 lbs.		Extrap.
			2X4, 70 mm pack, 29.75 lbs.		5
STD PTFE Filter	Camfil	69549-XXX	2X2, 45mm pack, 16.75 lbs.		Extrap.
			2X3, 45mm pack, 23.25 lbs.		Extrap.
			2X3.5, 45mm pack, 22.75 lbs.		Extrap.
			2X4, 45mm pack, 25.25 lbs.		Extrap.
GSF HEPA Filter	Camfil	69601-XXXX	2X2, 53 mm pack, 10.5 lbs.		Extrap.
			2X3, 53 mm pack, 15.5 lbs.		Extrap.
			2X3.5, 53 mm pack, 17.5 lbs.		Extrap.
			2X4, 53 mm pack, 19.75 lbs.		Extrap.

TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1701485-CR-001-R3

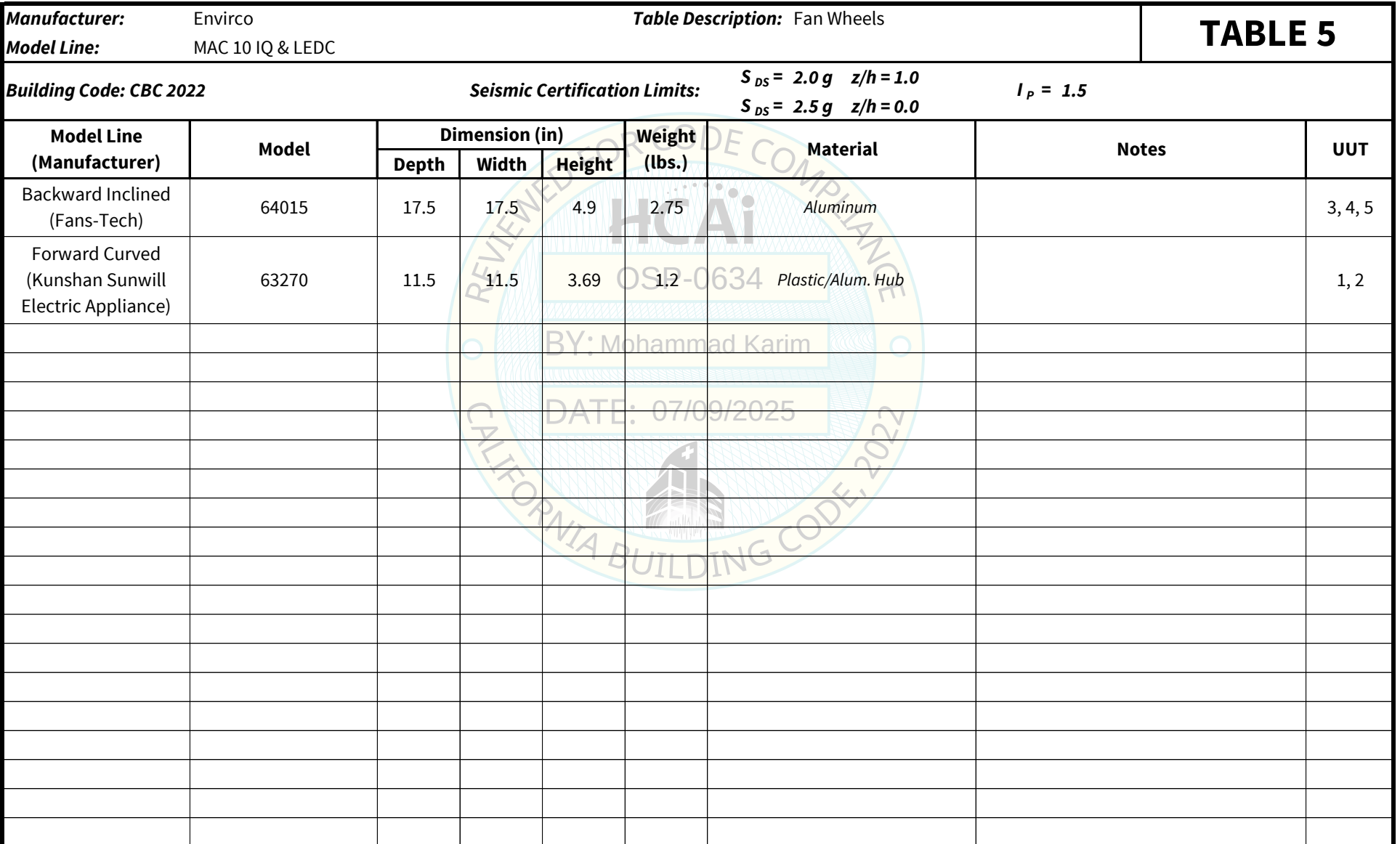


Manufacturer: Envirco		Table Description: Filters			TABLE 4
Model Line: MAC 10 IQ & LEDC					
Building Code: CBC 2022		Seismic Certification Limits:		$S_{DS} = 2.0\text{ g}$ $z/h = 1.0$ $S_{DS} = 2.5\text{ g}$ $z/h = 0.0$	$I_P = 1.5$
Component Type	Manufacturer	Model	Description	Notes	UUT
GSF HEPA Filter	Camfil	93997-XXX	2X2, 70 mm pack, 10.75 lbs.		Extrap.
			2X3, 70 mm pack, 16 lbs.		Extrap.
			2X3.5, 70 mm pack, 18.25 lbs.		Extrap.
			2X4, 70 mm pack, 20.5 lbs.		Extrap.
		69617-XXXX	2X2, 100 mm pack, 11.25 lbs.		Extrap.
			2X3, 100 mm pack, 15.25 lbs.		Extrap.
			2X3.5, 100 mm pack, 17.5 lbs.		Extrap.
			2X4, 100 mm pack, 20.75 lbs.		3
GSF ULPA Filter	Camfil	69601-XXXX	2X2, 53 mm pack, 11.5 lbs.		Extrap.
			2X3, 53 mm pack, 15.5 lbs.		Extrap.
			2X3.5, 53 mm pack, 17.75 lbs.		Extrap.
			2X4, 53 mm pack, 21.25 lbs.		Extrap.
		93997-XXX	2X2, 70 mm pack, 13.5 lbs.		Extrap.
			2X3, 70 mm pack, 19.5 lbs.		Extrap.
			2X3.5, 70 mm pack, 22.25 lbs.		Extrap.
			2X4, 70 mm pack, 25.25 lbs.		Extrap.
		69617-XXXX	2X2, 100 mm pack, 13.75 lbs.		Extrap.
			2X3, 100 mm pack, 19.75 lbs.		Extrap.
			2X3.5, 100 mm pack, 22.75 lbs.		Interp.
			2X4, 100 mm pack, 25.75 lbs.		1
GSF PTFE Filter	Camfil	69615-XXX	2X2, 36 mm pack, 11.75 lbs.		Extrap.
			2X3, 36 mm pack, 14.75 lbs.		Extrap.
			2X3.5, 36 mm pack, 16.75 lbs.		Extrap.
			2X4, 36 mm pack, 20.25 lbs.		2, 4

TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com

1701485-CR-001-R3



SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1701485-CR-001-R3

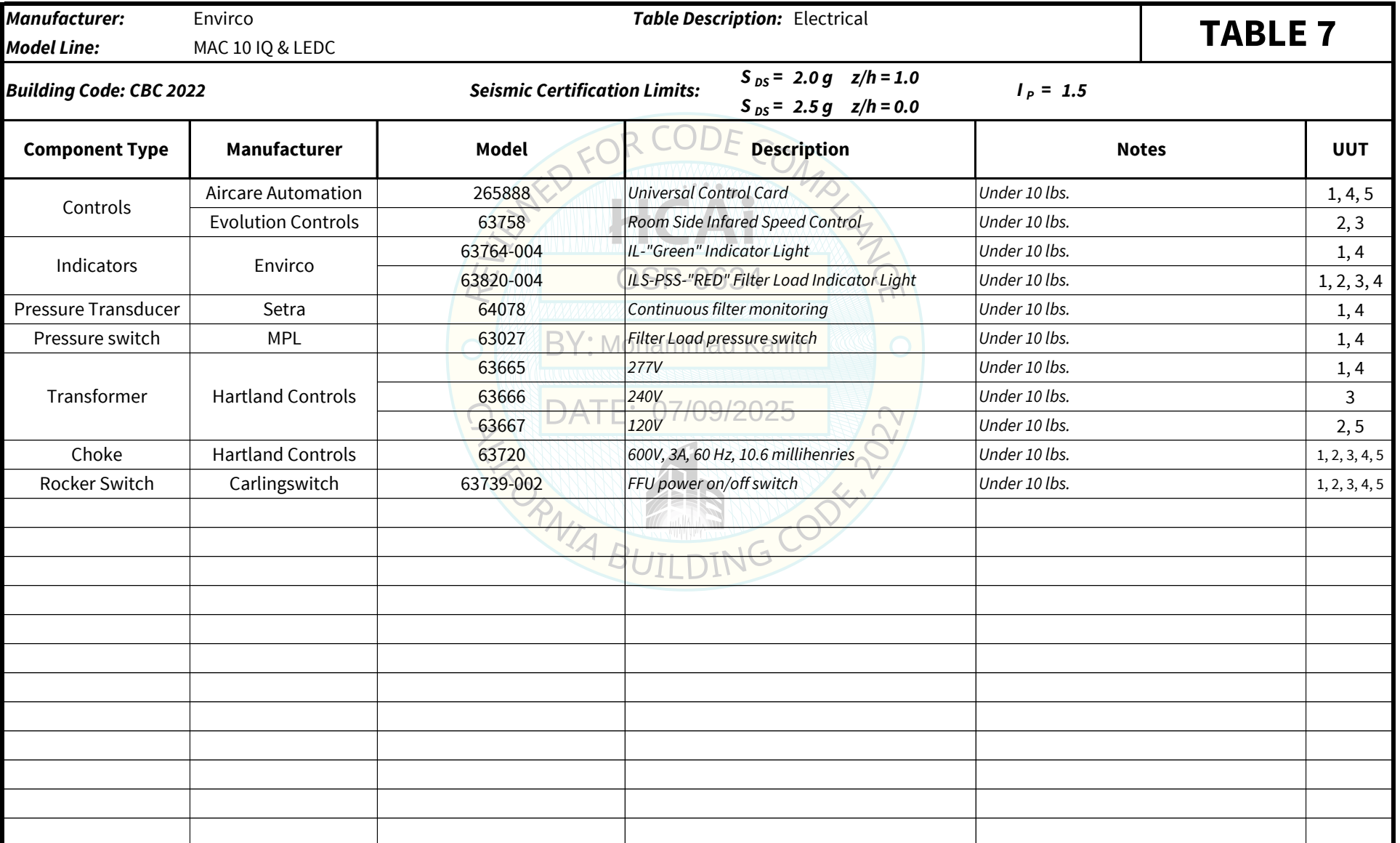


Manufacturer: Envirco		Table Description: Screens			TABLE 6	
Model Line: MAC 10 IQ & LEDC						
Building Code: CBC 2022		Seismic Certification Limits: $S_{DS} = 2.0\text{ g}$ $z/h = 1.0$ $S_{DS} = 2.5\text{ g}$ $z/h = 0.0$			$I_P = 1.5$	
Component Type	Manufacturer	Model	Description	Notes	UUT	
Screen	Envirco	38521-XXX	2x2 Aluminum, 1.62 lbs.	Mounted w/ screws on RSR & RSRE	Extrap.	
			2x3 Aluminum, 2.5 lbs.		Extrap.	
			2x3.5 Aluminum, 2.9 lbs.		Extrap.	
			2x4 Aluminum, 3.3 lbs.		3	
			2x2 Stainless Steel, 3.6 lbs.		Interp.	
			2x3 Stainless Steel, 5.5 lbs.		Interp.	
			2x3.5 Stainless Steel, 6.5 lbs.		Interp.	
			2x4 Stainless Steel, 7.4 lbs.		2	
			2x2 Aluminum, 2.27 lbs.		Extrap.	
		269528-XXX	2x3 Aluminum, 3.15 lbs.	Extrap.		
			2x3.5 Aluminum, 3.55 lbs.	Extrap.		
			2x4 Aluminum, 3.95 lbs.	Quarter turn latch w/ safety cable - Standard on RSRC, optional for RSR/RSRE	1	
			2x2 Stainless Steel, 4.27 lbs.	Interp.		
			2x3 Stainless Steel, 6.15 lbs.	Interp.		
			2x3.5 Stainless Steel, 7.15 lbs.	Interp.		
			2x4 Stainless Steel, 8.05 lbs.	4		

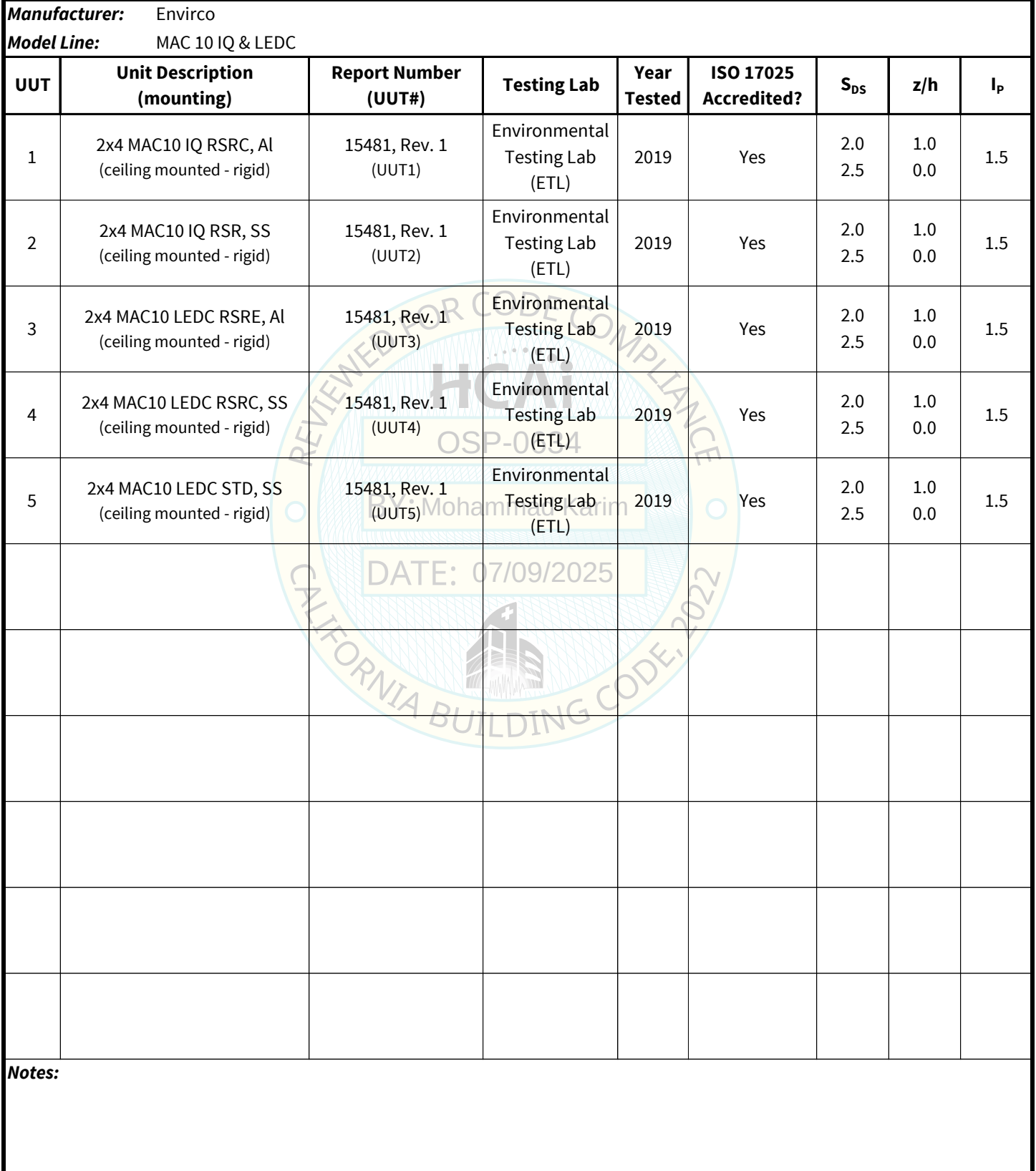
TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com

1701485-CR-001-R3



1701485-CR-001-R3



UNIT UNDER TEST (UUT) SUMMARY SHEET

1701485-CR-001-R3



Manufacturer: Envirco Model Line: MAC 10 IQ & LEDC Model Number: 2x4 MAC10 IQ RSRC, AI Serial Number: 69617-001U						UUT 1			
Test Report: 15481, Rev. 1 (UUT1)									
UUT Properties									
Weight (lbs.)	Dimension (in)			Lowest Natural Frequency (Hz)					
	Depth	Width	Height	Front-Back	Side-Side	Vertical			
89	24.0	48.0	17.0	N/A	N/A	N/A			
UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)	
CBC 2022	ICC-ES AC156	2.0	1.0	1.5	3.20	2.40	1.67	0.67	
		2.5	0.0						
Product Construction Summary:					Test Mounting Details:				
Aluminum Housing 2x4 RSRC Finger Guard					 UUT1 was ceiling mounted - rigid to test fixture using four (4) 3/8" threaded rods w/ rod stiffeners & four (4) Mason SCB-0/SCBH-0 cable assemblies (1 rod/cable at each corner) with pre-stretched gal. aircraft cable 3/32"φ. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.				
Options/Subcomponent Summary:									
Description	Mfr.	Part Number							
Choke	Hartland Controls	63720							
Controls	Aircare Automation	265888							
Fan Wheel (Forward Curved)	Kunshan Sunwill Electric Appliance	63270							
Filter (GSF ULPA 2x4, 100mm)	Camfil	69617-XXXX							
Indicator Lights (IL-"Green")	Envirco	63764-004							
Indicator Lights (ILS-"Red" Filter Load)	Envirco	63820-004							
Motor (277V ECM Motor)	Nidec	26550-002							
Pressure Switch	MPL	63027							
Pressure Transducer	Setra	64078							
Rocker Switch	Carlingswitch	63739-002							
Screen (2x4 AI Quarter Turn)	Envirco	269528-XXX							
Transformer (277V)	Hartland Controls	63665							

1701485-CR-001-R3



UUT2 was ceiling mounted - rigid to test fixture using four (4) 3/8" threaded rods w/ rod stiffeners & four (4) Mason SCB-0/SCBH-0 cable assemblies (1 rod/cable at each corner) with pre-stretched gal. aircraft cable 3/32" ϕ .
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

1701485-CR-001-R3



UUT3 was ceiling mounted - rigid to test fixture using four (4) 3/8" threaded rods w/ rod stiffeners & four (4) Mason SCB-0/SCBH-0 cable assemblies (1 rod/cable at each corner) with pre-stretched gal. aircraft cable 3/32" φ.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1701485-CR-001-R3



Manufacturer: Envirco Model Line: MAC 10 IQ & LEDC Model Number: 2x4 MAC10 LEDC RSRC, SS Serial Number: 69615-001						UUT 4			
Test Report: 15481, Rev. 1 (UUT4)									
UUT Properties									
Weight (lbs.)	Dimension (in)			Lowest Natural Frequency (Hz)					
	Depth	Width	Height	Front-Back	Side-Side	Vertical			
115	24.0	48.0	18.0	N/A	N/A	N/A			
UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)	
CBC 2022	ICC-ES AC156	2.0	1.0	1.5	3.20	2.40	1.67	0.67	
		2.5	0.0						
Product Construction Summary:					Test Mounting Details:				
Stainless Steel Housing Le Groupe PNF Foam Pre-Filter w/ Stainless Steel Frame									
Options/Subcomponent Summary:									
Description	Mfr.	Part Number	UUT4 was ceiling mounted - rigid to test fixture using four (4) 3/8" threaded rods w/ rod stiffeners & four (4) Mason SCB-0/SCBH-0 cable assemblies (1 rod/cable at each corner) with pre-stretched gal. aircraft cable 3/32"φ. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.						
Choke	Hartland Controls	63720							
Controls	Aircare Automation	265888							
Fan Wheel (Backward Inclined)	Fans-Tech	64015							
Filter (GSF PTFE 2x4, 36mm)	Camfil	69615-XXX							
Indicator Lights (IL-"Green")	Envirco	63764-004							
Indicator Lights (ILS-"RED" Filter Load)	Envirco	63820-004							
Motor (277V ECM Motor)	Nidec	26550-002							
Pressure Switch	MPL	63027							
Pressure Transducer	Setra	64078							
Rocker Switch	Carlingswitch	63739-002							
Screen (2x4 SS Quarter Turn)	Envirco	269528-XXX							
Transformer (277V)	Hartland Controls	63665							

UNIT UNDER TEST (UUT) SUMMARY SHEET

1701485-CR-001-R3



Manufacturer: Envirco Model Line: MAC 10 IQ & LEDC Model Number: 2x4 MAC10 LEDC STD, SS Serial Number: 69619S-001USSXX						UUT 5			
Test Report: 15481, Rev. 1 (UUT5)									
UUT Properties									
Weight (lbs.)	Dimension (in)			Lowest Natural Frequency (Hz)					
	Depth	Width	Height	Front-Back	Side-Side	Vertical			
96	24.0	48.0	15.0	N/A	N/A	N/A			
UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)	
CBC 2022	ICC-ES AC156	2.0	1.0	1.5	3.20	2.40	1.67	0.67	
		2.5	0.0						
Product Construction Summary: Stainless Steel Housing Trion/Envirco 10" Aluminum Duct Collar					Test Mounting Details:				
Options/Subcomponent Summary:					 UUT5 was ceiling mounted - rigid to test fixture using four (4) 3/8" threaded rods w/ rod stiffeners & four (4) Mason SCB-0/SCBH-0 cable assemblies (1 rod/cable at each corner) with pre-stretched gal. aircraft cable 3/32"φ. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.				
Description	Mfr.	Part Number							
Choke	Hartland Controls	63720							
Controls	Aircare Automation	265888							
Fan Wheel (Backward Inclined)	Fans-Tech	64015							
Filter (STD ULPA 2x4, 70mm)	Camfil	69514-XXX							
Motor (120V ECM Motor)	Nidec	265500-001							
Rocker Switch	Carlingswitch	63739-002							
Transformer (120V)	Hartland Controls	63667							