



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP – 0031 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Edwards, A division of UTC Fire & Security America Corp., Inc.

Manufacturer's Technical Representative: Kyle Venzeio

Mailing Address: 8985 Town Center Parkway, Bradenton, FL 34202

Telephone: 941.739.4207

Email: Samuel.k.venzeio@fs.utc.com

Product Information

Product Name: EST3 & EST4 Fire Protection System

Product Type: Fire Protection Equipment

Product Model Number: Various (See Attachment)

(List all unique product identification numbers and/or part numbers)

General Description: Fire protection system including control cabinets, CPUs, detectors, pull stations, I/O modules, power supplies, speakers, strobes, and all associated hardware. Seismic enhancements made to the test units and modifications required to address anomalies observed during the tests shall be incorporated into production units.

Mounting Description: Panels are rigidly wall mounted. Duct detector is rigid mounted on ducting.

Applicant Information

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


Contact Person: Galen Reid

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

Telephone: 541-604-7225

Email: greid@structint.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant: 

Date: 10/31/2019

Title: Program Manager

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

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

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

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

Name: Andrew Coughlin, SE California License Number: S6082

Mailing Address: 5215 Hellyer Ave, Suite 210, San Jose, CA 94608

Telephone: (844) 878-0200 Email: acoughlin@structint.com

Supports and Attachments Preapproval

- ☐ Supports and attachments are preapproved under OPM-
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
- ☒ Supports and attachments are not preapproved

Certification Method

- ☒ Testing in accordance with: ☒ ICC-ES AC156
- ☐ Other (Please Specify): _____

Testing Laboratory

Company Name: Environmental Testing Laboratory (ETL)

Contact Name: Jeremy Lange

Mailing Address: 11034 Indian Trail, Dallas, TX 75229

Telephone: (972) 247-9657 Email: jeremy@etldallas.com

Company Name: ANCO Engineers, Inc.

Contact Name: Dr. Paul Ibanez

Mailing Address: 1965-A 33rd Street, Boulder, CO 80301

Telephone: (303) 443-7580 x223 Email: paul@ancoengineers.com

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components (F_p/W_p) = 1.16 ($S_{DS} = 1.54$); 1.11 ($S_{DS} = 2.46$)

S_{DS} (Design spectral response acceleration at short period, g) = 1.54 ($z/h = 1$); 2.46 ($z/h = 0$)

a_p (In-structure equipment or component amplification factor) = 2.5

R_p (Equipment or component response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1 ($S_{DS} = 1.54$); 0 ($S_{DS} = 2.46$)

Equipment or Component Natural Frequencies (Hz) = See Attachment

Overall dimensions and weight (or range thereof) = See Attachment

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: ☐ Yes ☒ No

Design Basis of Equipment or Components (V/W) = _____

S_{DS} (Design spectral response acceleration at short period, g) = _____

S_{D1} (Design spectral response acceleration at 1 second period, g) = _____

R (Response modification coefficient) = _____

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = _____

I_p (Importance factor) = 1.5

Height to Center of Gravity above base = _____

Equipment or Component Natural Frequencies (Hz) = _____

Overall dimensions and weight (or range thereof) = _____

Tank(s) designed in accordance with ASME BPVC, 2015: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

☒ Test Report(s) ☐ Drawings ☐ Calculations ☐ Manufacturer's Catalog

☒ Other(s) (Please Specify): Product Matrices

OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2025

Signature: _____

Date: January 17, 2020

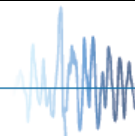
Print Name: Timothy J. Piland

Title: SSE

Special Seismic Certification Valid Up to: S_{DS} (g) = See Above

z/h = See Above

Condition of Approval (if applicable): _____





TRU PROJECT NO. 1900428

[illegible]

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX



TRU PROJECT NO. 1900428

Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.						TABLE 3	
Model Line: EST3 & EST4 Fire Protection System							
Certified Product Construction Summary: 16 gauge carbon steel enclosure							
Certified Options Summary: Surface or Semi-flush mount							
Mounting Configuration: Wall mounted - rigid Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.							
Building Code:		CBC 2019		Seismic Certification Limits:		$S_{DS} = 1.54 g \quad z/h=1.0$ $S_{DS} = 2.46 g \quad z/h=0.0$ $I_p = 1.5$	
Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
EST3 Annunciator Backbox Enclosures	RLCM/B	3.5	7.8	13.3	4.5		Extrap.
	RLCM/B-S	3.5	7.8	13.3	4.5		Extrap.
	4ANN/B	3.5	11.5	13.3	11.3		Extrap.
	4ANN/B-S	3.5	11.5	13.3	11.3		63
	6ANN/B	3.5	16.0	13.3	20.3		Interp.
	6ANN/B-S	3.5	16.0	13.3	20.3		Interp.
	10ANN/B	3.5	25.5	13.3	22.5		Interp.
	10ANN/B-S	3.5	25.5	13.3	22.5		1
EST4 Annunciator Backbox Enclosures	4-2ANNMT	4.3	10.0	13.8	10.5		62
	4-4ANNMT	5.0	14.5	13.8	19.0		Interp.
	4-6ANNMT	5.3	18.8	13.8	21.3		Interp.
	4-8ANNMT	9.8	17.0	24.0	42.0		Interp.
	4-16ANNMT	9.8	26.5	25.3	63.0		Interp.
	4-24ANNMT	9.8	30.0	43.5	94.0		61
Battery Cabinet	BC-1	7.3	18.3	14.0	82.5		18
Accessory Mounting Enclosure	MFC-A	3.5	8.0	14.0	5.5		54, 55

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX



TRU PROJECT NO. 1900428

Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.

Model Line: EST3 & EST4 Fire Protection System

TABLE 4

Certified Product Construction Summary:

18 gauge carbon steel enclosure

Certified Options Summary:

Surface or Semi-flush mount

Mounting Configuration:

Wall mounted - rigid

Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.

Building Code:

CBC 2019

Seismic Certification Limits:

$S_{DS} = 1.54 g$ $z/h=1.0$

$I_p = 1.5$

$S_{DS} = 2.46 g$ $z/h=0.0$

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Power Supply	BPS6A/230	3.8	13.3	17.5	30.5		Extrap.
	BPS6CAA	3.8	13.3	17.5	30.5	Different branding	Extrap.
	ADT-BPS6A	3.8	13.3	17.5	30.5	Different branding	Extrap.
	EBPS6A	3.8	13.3	17.5	30.5	Different branding	Extrap.
	EBPS6A/230	3.8	13.3	17.5	30.5	Different branding	Extrap.
	MIRBPS6A	3.8	13.3	17.5	30.5	Different branding	Extrap.
	MIRBPS6A/230	3.8	13.3	17.5	30.5	Different branding	Extrap.
	XLS-BPS6A	3.8	13.3	17.5	30.5	Different branding	Extrap.
	XLS-BPS6A/230	3.8	13.3	17.5	30.5	Different branding	Extrap.
	ZBPS6A	3.8	13.3	17.5	30.5	Different branding	Extrap.
	ZBPS6A/230	3.8	13.3	17.5	30.5	Different branding	Extrap.
	BPS10A	3.8	13.3	17.5	34.0		19
	BPS10A/230	3.8	13.3	17.5	34.0		Interp.
	BPS10CAA	3.8	13.3	17.5	34.0	Different branding	Interp.
	ADT-BPS10A	3.8	13.3	17.5	34.0	Different branding	Interp.
	EBPS10A	3.8	13.3	17.5	34.0	Different branding	Interp.
	EBPS10A/230	3.8	13.3	17.5	34.0	Different branding	Interp.
	MIRBPS10A	3.8	13.3	17.5	34.0	Different branding	Interp.
	MIRBPS10A/230	3.8	13.3	17.5	34.0	Different branding	Interp.
	XLS-BPS10A	3.8	13.3	17.5	34.0	Different branding	Interp.
	XLS-BPS10A/230	3.8	13.3	17.5	34.0	Different branding	Interp.
	ZBPS10A	3.8	13.3	17.5	34.0	Different branding	Interp.
	ZBPS10A/230	3.8	13.3	17.5	34.0	Different branding	Interp.

Note: Difference between 10A/6A is smaller heat sink on 6A. Difference between 120V/230V is assembly option on main board.

TRU Compliance, by Structural Integrity Associates, Inc.

TRU PROJECT NO. 1900428



TRU Compliance, by Structural Integrity Associates, Inc.

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1900428



Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc		Table Description: Doors		TABLE 5	
Model Line: EST3 & EST4 Fire Protection System					
Building Code: CBC 2019		Seismic Certification Limits: $S_{DS} = 1.54 g$ $z/h = 1.0$ $S_{DS} = 2.46 g$ $z/h = 0.0$		$I_p = 1.5$	
Component Type	Manufacturer	Model	Description	Notes	UUT
EST3 Doors	UTC	3-CAB7D	Door for 3-CAB7B		Extrap.
		XLS-CAB7D	Door for 3-CAB7B	Same as 3-CAB7D/Branding	Extrap.
		ADT-CAB7D	Door for 3-CAB7B	Same as 3-CAB7D/Branding	Extrap.
		3-CAB14D	Door for 3-CAB14B		2
		XLS-CAB14D	Door for 3-CAB14B	Same as 3-CAB14D/Branding	Interp.
		ADT-CAB14D	Door for 3-CAB14B	Same as 3-CAB14D/Branding	Interp.
		3-CAB21D	Door for 3-CAB21B		3, 58
		XLS-CAB21D	Door for 3-CAB21B	Same as 3-CAB21D/Branding	Interp.
		ADT-CAB21D	Door for 3-CAB21B	Same as 3-CAB21D/Branding	Interp.
		3-4ANN/D	Door for 4ANN/B		63
		3-6ANN/D	Door for 6ANN/B		Interp.
		3-10ANN/D	Door for 10ANN/B		1
EST4 Doors	UTC	4-2ANND	Door for 2-ANNMT		62
		4-4ANND	Door for 4-ANNMT		Interp.
		4-6ANND	Door for 6-ANNMT		Interp.
		4-CAB8DR	Door for 3-CAB5B or 4-8ANNMT backbox	Red color version of 4-CAB8D	Interp.
		4-CAB8D	Door for 3-CAB5B or 4-8ANNMT backbox		Interp.
		4-CAB16DR	Door for 3-CAB7B or 4-16ANNMT backbox	Red color version of 4-CAB16D	60
		4-CAB16D	Door for 3-CAB7B or 4-16ANNMT backbox		Interp.
		4-CAB24DR	Door for 3-CAB14B or 4-24ANNMT backbox	Red color version of 4-CAB24D	61
		4-CAB24D	Door for 3-CAB14B or 4-24ANNMT backbox		Interp.
		4-CAB24DRL	Door for 3-CAB21B backbox	Red color version of 4-CAB24DL	Interp.
		4-CAB24DL	Door for 3-CAB21B backbox		59

TRU Compliance, by Structural Integrity Associates, Inc.

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1900428



Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc		Table Description: Electrical Components		TABLE 6	
Model Line: EST3 & EST4 Fire Protection System					
Building Code: CBC 2019		Seismic Certification Limits: $S_{DS} = 1.54 g \quad z/h = 1.0$ $S_{DS} = 2.46 g \quad z/h = 0.0$		$I_p = 1.5$	
Component Type	Manufacturer	Model	Description	Notes	UUT
Annunciator / CPU	UTC	3-4ANN	Annunciator /w CPU, 2 of 3- ANNSM	Depopulated 3-10ANN	Interp.
		3-6ANN	Annunciator /w CPU, 2 of 3- ANNSM, 2 of 3-ANNBF	Depopulated 3-10ANN	Interp.
		ADT-6ANN	Annunciator /w CPU, 2 of 3- ANNSM, 2 of 3-ANNBF	Depopulated 3-10ANN	Interp.
		XLS-6ANN	Annunciator /w CPU, 2 of 3- ANNSM, 2 of 3-ANNBF	Depopulated 3-10ANN	Interp.
		3-10ANN	Annunciator /w CPU, 2 of 3-ANNSM, 6 of 3-ANNBF		1
		ADT-10ANN	Annunciator /w CPU, 2 of 3- ANNSM, 6 of 3-ANNBF	Identical to 3-10ANN/branding	Interp.
		XLS-10ANN	Annunciator /w CPU, 2 of 3- ANNSM, 6 of 3-ANNBF	Identical to 3-10ANN/branding	Interp.
Annunciator Display	UTC	3-ANNSM	Annunciator LED Display Support Module		1, 63
		ADT-LDCANN	Remote LCD Command Module	Identical to 3-ANNSM/branding	Interp.
		XLS-LCDANN	Remote LCD Command Module	Identical to 3-ANNSM/branding	Interp.
EST3 LED/Switch Module	UTC	3-12/S1GY	LED Display/Control Module		1, 2, 5, 58
		3-12/S1RY	LED Display/Control Module		1, 2, 5, 58
		3-12/S2Y	LED Display/Control Module		1,2,3,5, 58
		3-12RY	LED Display/Control Module		3, 5, 58
		3-12SG	LED Display/Control Module		3, 58, 63
		3-12SR	LED Display/Control Module		3, 58
		3-12SY	LED Display/Control Module		3, 5, 58

TRU Compliance, by Structural Integrity Associates, Inc.

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1900428



Manufacturer:		Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc			Table Description: Electrical Components		TABLE 6	
Model Line:		EST3 & EST4 Fire Protection System						
Building Code:		CBC 2019		Seismic Certification Limits:		$S_{DS} = 1.54\text{ g} \quad z/h = 1.0$ $S_{DS} = 2.46\text{ g} \quad z/h = 0.0 \quad I_p = 1.5$		
Component Type	Manufacturer	Model	Description			Notes		UUT
EST3 LED/Switch Module	UTC	3-24G	LED Display/Control Module					3, 5, 58
		3-24R	LED Display/Control Module					3, 5, 58
		3-24Y	LED Display/Control Module					3, 5, 58
		3-4/3SGYWR	LED Display/Control Module					63
		3-6/3S1G2Y	LED Display/Control Module					1, 2, 58
		3-6/3S1GYR	LED Display/Control Module					1,2,3,5, 58
EST4 LED/Switch module	UTC	4-24L	LED Display/Control Module			Mounts to EST4 UIRAIL on inner door.		59, 60, 61
		4-24L24S	LED Display/Control Module			Mounts to EST4 UIRAIL on inner door.		59, 60, 61
		4-24L18S	LED Display/Control Module			Mounts to EST4 UIRAIL on inner door.		59, 60, 61
		4-24L12S	LED Display/Control Module			Mounts to EST4 UIRAIL on inner door.		59, 60, 61
EST3 Display Module	UTC	3-LCD	LDC Display/Control Module					1,2,5
		3-LCDANN	LDC Display/Control Module					1, 63
		3-LCDXL1	LDC Display/Control Module					3
EST4 Display Module	UTC	4-LCD	LDC Display/Control Module					59,60,61, 62
		4-3LCD	LDC Display/Control Module					58
		4-LCDAUDEL	LDC Display/Control Module					59
EST3 Audio Module	UTC	3-ASU	Audio Source Unit					3
		3-ASU/FT	Audio Source Unit w/ Firefighter Phone					2
EST4 Audio Module	UTC	4-AUDELS	Audio, Telephone, 1Vrms, and A to D audio			Mounts to 4-CPU		58, 59, 60
		4-ANNAUDEL	Audio, A to D audio			Mounts to 4-ANNCPU		59
EST3 Telephone Module	UTC	3-FTCU	Firefighter Phone					2

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1900428



Manufacturer:		Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc			Table Description: Electrical Components		TABLE 6			
Model Line:		EST3 & EST4 Fire Protection System								
Building Code:		CBC 2019		Seismic Certification Limits:		$S_{DS} = 1.54\text{ g} \quad z/h = 1.0$ $S_{DS} = 2.46\text{ g} \quad z/h = 0.0$			$I_P = 1.5$	
Component Type	Manufacturer	Model	Description			Notes			UUT	
EST4 Telephone Module	UTC	4-FT	Firefighter Phone			Mounts to EST4 UIRAIL on inner door			59, 60	
Telephone	UTC	6700-0061	Remote firefighter's telephone (Red)						59, 61	
		6700-0062	Remote firefighter's telephone (Black)			Same as 6700-0061 (color)			Interp.	
Telephone Receptacle	UTC	6702-0200	Receptacle for remote firefighter's telephone handset						59, 61	
Battery Shelf	UTC	3-BATS	Battery Shelf for Single 65AH Cell						4	
Battery Distribution	UTC	3-BTSEN	Battery Cabinet Power Distribution bus & 50A breaker						4	
Power Supply	UTC	3-PPS/M-120	Primary Power Supply 120V						2, 3, 58, 59, 60	
		3-PPS/M-220	Primary Power Supply 220V			Same hardware as 3-PPS/M-120			Interp.	
		3-BBC/M-120	Booster Power Supply 120V						2,5	
		3-BBC/M-220	Booster Power Supply 220V			Same hardware as 3-BBC/M-120			Interp.	
		3-BPS/M-120	Booster Power Supply 120V						5	
		3-BPS/M-220	Booster Power Supply 220V			Same hardware as 3-BPS/M-120			Interp.	
Chassis	UTC	3-CHASS4	Chassis Assy for 4 LRMs						3	
		3-CHAS5	Chassis for 5 LRMs						Interp.	
		3-CHAS7	Chassis Assy for 7 LRMs						2, 3, 5, 58, 59, 60, 63	
EST3 CPU	UTC	3-CPU3	Central Processor Module						2, 3, 5, 63	
		3-ANNCPU3	Annunciator CPU w/ RS485 Board						1, 63	

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1900428



Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc		Table Description: Electrical Components		TABLE 6	
Model Line: EST3 & EST4 Fire Protection System					
Building Code: CBC 2019		Seismic Certification Limits: $S_{DS} = 1.54\text{ g}$ $z/h = 1.0$ $S_{DS} = 2.46\text{ g}$ $z/h = 0.0$		$I_P = 1.5$	
Component Type	Manufacturer	Model	Description	Notes	UUT
EST4 CPU	UTC	4-CPU	Central Processor Module	Mounts to chassis, 3-CHAS7 or 3-CHAS5	58, 59, 60
		4-ANNCPU	EST4 Annunciator CPU		59, 61, 62
		4-NET-AD	Depopulated CPU	Depopulated version of 4-ANNCPU	58, 59, 61
		4-FWAL1	Depopulated CPU	Depopulated version of 4-ANNCPU	Interp.
		4-FWAL2	Depopulated CPU	Depopulated version of 4-ANNCPU	Interp.
		4-FWAL3	Depopulated CPU	Depopulated version of 4-ANNCPU	Interp.
		4-FWAL4	Depopulated CPU	Depopulated version of 4-ANNCPU	Interp.
EST3 Communication Card	UTC	3-FIBMB	Fiber Card, /w adaptor card, ribbon cable		3,5
		SMXHi	Single mode plug-in Transceiver- Long Range	Different frequency than MMXVR	Interp.
		SMXLO	Single mode plug-in Transceiver- Short Range	Different frequency than MMXVR	Interp.
		3-RS232	RS232 Communication Card		2,3,5
		3-RS485A	Network Communication Card, Class A		2, 63
		3-RS485B	Network Communication Card, Class B	Class A w/wiring change	Interp.
		3-MODCOM	Modem Communicator and Dialer	Software change from 3-MODCOMP	Interp.
		3-MODCOMP	Modem Communicator and Dialer	Optional pager	3
EST4 Communication Network Modules	UTC	4-NET-TP	Twisted Pair		58, 59
		4-NET-TP-HC	Twisted Pair		61, 62
		4-NET-CAT	Ethernet CAT5		58, 59, 60, 61, 62
		4-NET-SM	Single Mode fiber		58, 59
		4-NET-SMU	Single Mode fiber		58

TRU Compliance, by Structural Integrity Associates, Inc.

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1900428



Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc		Table Description: Electrical Components		TABLE 6	
Model Line: EST3 & EST4 Fire Protection System					
Building Code: CBC 2019		Seismic Certification Limits: $S_{DS} = 1.54 g$ $z/h = 1.0$ $S_{DS} = 2.46 g$ $z/h = 0.0$		$I_P = 1.5$	
Component Type	Manufacturer	Model	Description	Notes	UUT
EST4 Communication Network Modules	UTC	4-NET-SMD	Single Mode fiber		59
		4-NET-SMH	Single Mode fiber		58, 59
		4-NET-MM	Multimode fiber		58, 59
		4-FWAL-CAT	Ethernet CAT5-10	Same hardware as 4-NET-CAT	Interp.
		4-FWAL-SM	Single Mode fiber	Same hardware as 4-NET-SM	Interp.
		4-FWAL-SMU	Single Mode fiber	Same hardware as 4-NET-SMU	Interp.
		4-FWAL-SMD	Single Mode fiber	Same hardware as 4-NET-SMD	Interp.
		4-FWAL-SMH	Single Mode fiber	Same hardware as 4-NET-SMH	Interp.
		4-FWAL-MM	Multimode fiber	Same hardware as 4-NET-MM	Interp.
Communication 3rd Party Module	UTC	4-NET-XT	DHSL, Long distance CAT5 to twisted pair		58, 59
Common Relay Module	UTC	4-COMREL	Common relay board, mounted to 4-CPU		58, 59, 60
EST3 Microphone Module	UTC	3-REMICA	Remote Mic Unit - Ann Mount		1
		3-REMICP	Remote MIC Panel Mount		5
EST4 Microphone Module	UTC	4-MIC	Paging Microphone	Mounts to EST4 UIRAIL on inner door	59, 60
Device Circuit Module	UTC	3-IDC 8/4	Initiating / Indicating Device Circuit Module		3,58,59,60
Driver Module	UTC	3-LDSM	Annunciator Driver Module		3, 58
Signal Module	UTC	3-OPS	Off Premise Signal Module		5
Access Control Module	UTC	3-SAC	Security/Access Control Module		2

TRU Compliance, by Structural Integrity Associates, Inc.

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1900428



Manufacturer:		Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc			Table Description: Electrical Components		TABLE 6		
Model Line:		EST3 & EST4 Fire Protection System							
Building Code:		CBC 2019		Seismic Certification Limits:		$S_{DS} = 1.54 g \quad z/h = 1.0$ $S_{DS} = 2.46 g \quad z/h = 0.0$		$I_p = 1.5$	
Component Type	Manufacturer	Model	Description			Notes		UUT	
Loop Controller	UTC	3-AADC1	Analog Driver Controller			Firmware change from 3-SSDC1		Interp.	
		3-DSDC1	Signature Dual Driver Controller			Same as 3-SSDC1/branding		Interp.	
		3-SDC1	Signature Data Card for Controller					2,3,5	
		3-SDC1	Signature Data Card for Controller					3, 58, 59	
		3-SDDC1	Signature Dual Driver Controller					2, 3, 59	
		3-SSDC1	Signature Single Driver Controller					5, 58, 60	
Cabinet Tamper Switch	UTC	3-TAMP	EST3 Cabinet Tamper Switch			For use with 3-CAB7D,3-CAB14D, 3-CAB21D		2, 58	
		3-TAMP5	EST3 Cabinet Tamper Switch			For use with 4-CAB8D. Identical to 3-TAMP.		Interp.	
		3-TAMP RCC	EST3 Cabinet Tamper Switch			For use with 3-RCC7R,3-RCC14R,3-RCC21R. Identical to 3-TAMP.		Interp.	
		4-TAMP	EST4 Cabinet Tamper Switch			For use with 4-CAB16D,4-CAB24D,4-CAB24DL		59, 60	
Amplifier	UTC	3-ZA20A	20 Watt Zone Amplifier, Class A					58, 60	
		3-ZA20B	20 Watt Zone Amplifier, Class B					59	
		3-ZA30A	30 Watt Zoned Amplifier, Class A					Interp.	
		3-ZA30B	30 Watt Zoned Amplifier, Class B					Interp.	
		3-ZA40A	40 Watt Zoned Amplifier, Class A					2, 5, 58, 60	
		3-ZA40B	40 Watt Zoned Amplifier, Class B					58, 59	
		3-ZA95	95 Watt Zoned Amplifier					3, 58, 59	

TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1900428



Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc		Table Description: Electrical Components			TABLE 6
Model Line: EST3 & EST4 Fire Protection System					
Building Code: CBC 2019		Seismic Certification Limits: $S_{DS} = 1.54\text{ g}$ $z/h = 1.0$ $S_{DS} = 2.46\text{ g}$ $z/h = 0.0$		$I_p = 1.5$	
Component Type	Manufacturer	Model	Description	Notes	UUT
Accessories	UTC	MN-NETSW1	10/100 Ethernet Network Switching Hub		3,17
		FW-19LCDTS3W	19 Inch touch screen monitor		21
		MN-ABPM	Audio Bridge	25Vrms for MN-FVPN VoIP encoder/decoder	3,17
		FW4UL4	FireWork Computer		20
		PCWD2	FireWorks Computer watchdog Card		20, 21
		FW-SP4I	Four port FireWorks Serial Card		20, 21
		MN-BRKT1	Mounting Bracket for EST3 cabinet	1 chassis space	3,17
		4-BRKT-CS	EST4 chassis side mounting bracket		58
		4-BRKT-CB	EST4 chassis back mounting bracket		59
		4-MPLT	Mounting plate for various accessories		58, 61
		MMXVR	Multimode plug-in Transceiver		3,5
		MN-PASM	Pre-AMP Supervision Module		3,17
		MN-COM1S	TCP/IP to RS232 Interface Module		5
		MN-FVPN	VoIP Unit, audio encoder/decoder		3,17
		SIGA-CC1	Single Riser Output module	Depopulated SIGA-CC2	Interp.
		GSA-CC1	Riser Output module	Same as SIGA-CC1/branding	Interp.
		SIGA-CC1S	Single Riser Output module	Depopulated SIGA-CC2	Interp.
		GSA-CC1S	Riser Output module	Same as SIGA-CC1/branding	Interp.
		SIGA-CC2	Dual Riser Output module		19
		GSA-CC2	Riser Output module	Same as SIGA-CC2/branding	Interp.
		SIGA-MAB	Universal input or output module		55
		GSA-MAB	Universal input or output module	Same as SIGA-MAB/branding	Interp.

TRU Compliance, by Structural Integrity Associates, Inc.

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1900428



Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc		Table Description: Electrical Components		TABLE 6	
Model Line: EST3 & EST4 Fire Protection System					
Building Code: CBC 2019		Seismic Certification Limits: $S_{DS} = 1.54\text{ g}$ $z/h = 1.0$ $S_{DS} = 2.46\text{ g}$ $z/h = 0.0$		$I_P = 1.5$	
Component Type	Manufacturer	Model	Description	Notes	UUT
Accessories	UTC	SIGA-MCC1	Single output	Depopulated SIGA-MCC2	59, 61
		GSA-MCC1	Single output	Same as SIGA-MCC1/branding	Interp.
		SIGA-MCC1S	Single output, with Sync	Same as SIGA-MCC1	Interp.
		SIGA-MCC2	Dual Riser Output Module		55
		GSA-MCC2	OEM Branding, different functional feature set	Same hardware as SIGA-MCC2/branding	Interp.
		SIGA-MCC2A	Dual Riser Output Module class A		54
		SIGA-MCR	Relay		55
		GSA-MCR	Relay	Same as SIGA-MCR/branding	Interp.
		SIGA-MCRR	Relay	Same hardware as SIGA-MCR/diff. layout	Interp.
		GSA-MCRR	Relay	Same as SIGA-MCRR/branding	Interp.
		SIGA-MCT2	Dual input pre programmed		55, 61
		GSA-MCT2	Dual input	Same as SIGA-MCT2/branding	Interp.
		SIGA-MDM	Digital message module		54
		GSA-MDM	Digital message module	Same as SIGA-MDM/branding	Interp.
		SIGA-MIO	Input/output		55, 61
		SIGA-MM1	Dual input pre programmed	Same as SIGA-CT2	Interp.
		GSA-MM1	Dual input	Same as SIGA-CT2/branding	Interp.
		SIGA-MRM1	Riser monitor		54
		SIGA-RM1	Riser monitor		3
		SIGA-UIO2R	Two slot motherboard		54, 59, 61
		GSA-UIO2R	Two slot motherboard	Same as SIGA-UIO2R/branding	Interp.

TRU Compliance, by Structural Integrity Associates, Inc.

844-TRU-0200 | info@trucompliance.com

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

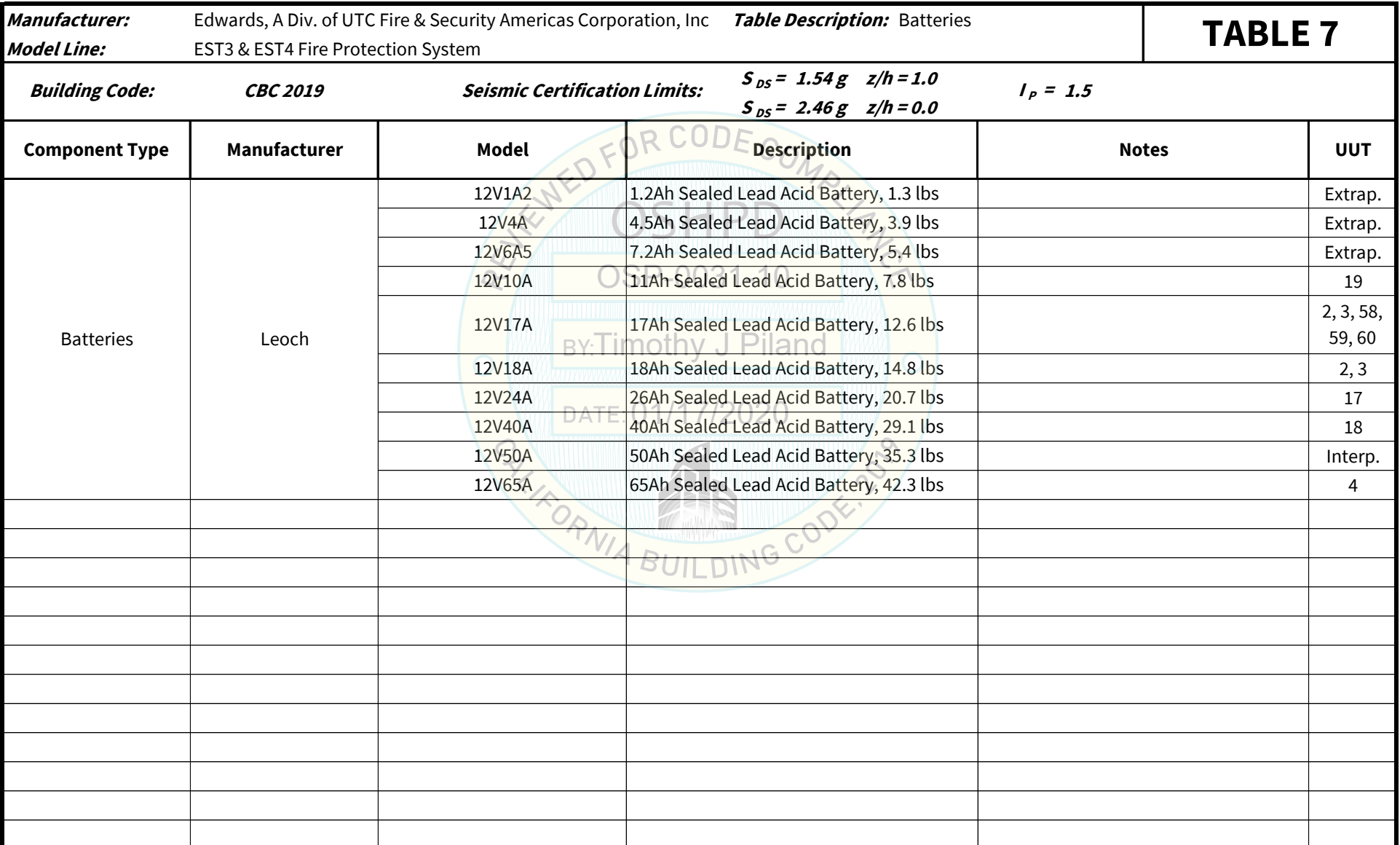
TRU PROJECT NO. 1900428



Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc		Table Description: Electrical Components		TABLE 6	
Model Line: EST3 & EST4 Fire Protection System					
Building Code: CBC 2019		Seismic Certification Limits: $S_{DS} = 1.54 g \quad z/h = 1.0$ $S_{DS} = 2.46 g \quad z/h = 0.0$		$I_P = 1.5$	
Component Type	Manufacturer	Model	Description	Notes	UUT
Accessories	UTC	SIGA-UIO6	Six slot motherboard		55
		GSA-UIO6	Six slot motherboard	Same as SIGA-UIO6/branding	Interp.
		SIGA-UIO6R	Six slot motherboard, riser version	Same hardware as SIGA-UIO6/diff. layout	61
		GSA-UIO6R	Six slot motherboard, riser version	Same as SIGA-UIO6R/branding	Interp.
		SIGA-UM	Universal input or output module		19
		GSA-UM	Universal input or output module	Same as SIGA-UM/branding	Interp.
		SIGA-WTM	Dual input pre programmed	Same hardware as SIGA-CT2	Interp.
		GSA-WTM	Dual input pre programmed	Same as SIGA-UM/branding	Interp.
		4-USBHUB	USB ports / RS485 communication for coded output module 3-CDR3	Isolated and non-isolated USB ports.	58, 59, 61
		CDR3	Coded output module		59
Filler Plate	UTC	3-ANNBF	Filler plate		1
		3-LRMF	Filler plate		3,5
		3-XFP	Filler plate	Same as 3-LRFM	Interp.
		4-FIL	Filler plate		59, 60
Flex Cables	UTC	4-CABL0502	4-LCD to 4-CPU or 4-ANNCPU		59-62
		4-CABL0504	4-LCD or 4-LCDAUDEL to 4-ANNCPU		59,60
		4-CABL0505	Door Rail to Rail		59-62
		4-CABL0507	Door Rail to Rail		Interp.
		4-CABL0509	4-LCDAUDEL to 4-ANNCPU		59,60
		4-CABL0541	4-3LCD to 4-CPU		58
		4-CABL0542	4-CPU or 4-ANNCPU w/out LCD to inner door		Interp.

TRU Compliance, by Structural Integrity Associates, Inc.

TRU PROJECT NO. 1900428



UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1900428



Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.

Model Line: EST3 & EST4 Fire Protection System

UUT	Unit Description	Report Number	Testing Laboratory	S _{DS}	z/h	I _p
1	10ANN/B-S	3295.02	ANCO Engineers, Inc.	1.54 2.46	1.0 0.0	1.5
2	3-CAB14B	3295.02	ANCO Engineers, Inc.	1.54 2.46	1.0 0.0	1.5
3	3-CAB21B	3295.02	ANCO Engineers, Inc.	1.54 2.46	1.0 0.0	1.5
4	3-RCC14R	3295.02	ANCO Engineers, Inc.	1.54 2.46	1.0 0.0	1.5
5	3-RCC21R	3295.02	ANCO Engineers, Inc.	1.54 2.46	1.0 0.0	1.5
17	APS10A	3295.02	ANCO Engineers, Inc.	1.54 2.46	1.0 0.0	1.5
18	BC-1	3295.02	ANCO Engineers, Inc.	1.54 2.46	1.0 0.0	1.5
19	BPS10A	3295.02	ANCO Engineers, Inc.	1.54 2.46	1.0 0.0	1.5
20	FW4UL4	3295.02	ANCO Engineers, Inc.	1.54 2.46	1.0 0.0	1.5
21	FW-19LCDTS3W	3295.02	ANCO Engineers, Inc.	1.54 2.46	1.0 0.0	1.5
54	SIGA-UIO2R	3295.02	ANCO Engineers, Inc.	1.54 2.46	1.0 0.0	1.5
55	SIGA-UIO6	3295.02	ANCO Engineers, Inc.	1.54 2.46	1.0 0.0	1.5
58	EST3: 3-CAB21B (backbox) with 3-CAB21D (door)	15371 Rev. 1	Environmental Testing Laboratory (ETL)	2.00 3.20	1.0 0.0	1.5
59	EST4: 3-CAB21B (backbox) with 4-CAB24DL (door)	15371 Rev. 1	Environmental Testing Laboratory (ETL)	2.00 3.20	1.0 0.0	1.5
60	EST4: 3-CAB7B (backbox) with 4- CAB16DR (door)	15371 Rev. 1	Environmental Testing Laboratory (ETL)	2.00 3.20	1.0 0.0	1.5
61	EST4: 4-24ANNMT (backbox) with 4-CAB24DR (door)	15371 Rev. 1	Environmental Testing Laboratory (ETL)	2.00 3.20	1.0 0.0	1.5

Notes:

TRU PROJECT NO. 1900428



Notes:

UNIT UNDER TEST (UUT) SUMMARY SHEET



TRU PROJECT NO. 1900428

Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 1
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	10ANN/B-S	
Serial Number:		N/A

Product Construction Summary:

16 gauge carbon steel enclosure

Options/Subcomponent Summary:

3-ANNCPU3; 3-LCD; 3-ANNBF blank filler plate; 3-REMICA remote mic unit; 3-12/S1GY Led strip w/3-ANNSM; 3-12/S1RY Led strip w/3-ANNSM; 3-12/S2Y Led strip w/3-ANNSM; 3-6/3S1G2Y Led strip w/3-ANNSM; 3-6/3S1GYR Led strip w/3-ANNSM

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
22.5	3.5	25.5	13.3	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 2019	ICC-ES AC156 (2015)	1.54 2.46	1.0 0.0	1.5	2.46	1.85	1.64	0.66

Test Mounting Details:



The unit was rigid wall mounted using two ungraded 3/16" toggle bolts through a 5/8" drywall covered wall fixture. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

TRU Compliance, by Structural Integrity Associates, Inc.

UNIT UNDER TEST (UUT) SUMMARY SHEET



TRU PROJECT NO. 1900428

Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 2
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	3-CAB14B	
Serial Number:		N/A

Product Construction Summary:

14 gauge carbon steel enclosure

Options/Subcomponent Summary:

3-CAB14D Door; 3-CHAS7 Chassis assembly; 3-CPU3 Central Processor Module; 3-SDDC1 Signature Dual Driver Controller; 3-SDC1 Signature Data Card for Controller; 3-SAC Security/Access Control Module; 3-ZA40A 40W Zoned Amplifier; 3-RS485A Network Communication Card; 3-RS232 Communication Card; 3-ASU/FT Audio Source w/Firefighter Telephone; 3-LCD Liquid Crystal Display Module; 3-PPS/M-120 Primary Power Supply 120V; 3-BBC/M-120 Booster Power Supply 120V; 3-12/S1GY, 3-12/S1RY, 3-12/S2Y LED Display/Control Modules; 3-6/3S1G2Y, 3-6/3S1GYR LED Groups; 18Ah Lead Acid Battery.

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
130.0	5.8	26.5	37.5	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 2019	ICC-ES AC156 (2015)	1.54 2.46	1.0 0.0	1.5	2.46	1.85	1.64	0.66

Test Mounting Details:



Unistrut was rigid mounted to a 5/8" fire-rated drywall covered wall fixture using (6) ungraded 3/16" toggle bolts. The unit was rigid wall mounted to unistrut using (4) ungraded 1/4" bolts into spring nuts.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

TRU Compliance, by Structural Integrity Associates, Inc.

UNIT UNDER TEST (UUT) SUMMARY SHEET



TRU PROJECT NO. 1900428

Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 3
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	3-CAB21B	
Serial Number:		N/A

Product Construction Summary:

14 gauge carbon steel enclosure

Options/Subcomponent Summary:

3-CAB21D, One 3-CHAS7, One 3-CHAS4, One 3-CPU3, One 3-SDDC1, Two 3-DC1, One 3-IDC 8/4, One 3-MODCOMP, One 3-OPS, One 3-LDSM, One 3LRMF, One 3-ZA95, One 3-RS232, One 3-FIBMB, Two MMXVR, One 3ASU/FT, One MN-NETSW1, One MN-FVPN, One MN-ABPM, One MNPASM, One MN-BRKT1, One MN-COM1S, One 3-LCDXL1, One 3PPS/M-120, One 3-12/S2Y, One 3-12RY, One 3-6/3S1GYR, One 312SY, One 3-24G, One 3-24R, One 3-24Y, Two 12V18A

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
156.5	5.8	26.5	48.0	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 2019	ICC-ES AC156 (2015)	1.54 2.46	1.0 0.0	1.5	2.46	1.85	1.64	0.66

Test Mounting Details:



Unistrut was rigid mounted to a 5/8" fire-rated drywall covered wall fixture using (6) ungraded 3/16" toggle bolts. The unit was rigid wall mounted to unistrut using (4) ungraded 1/4" bolts into spring nuts.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

TRU Compliance, by Structural Integrity Associates, Inc.

UNIT UNDER TEST (UUT) SUMMARY SHEET



TRU PROJECT NO. 1900428

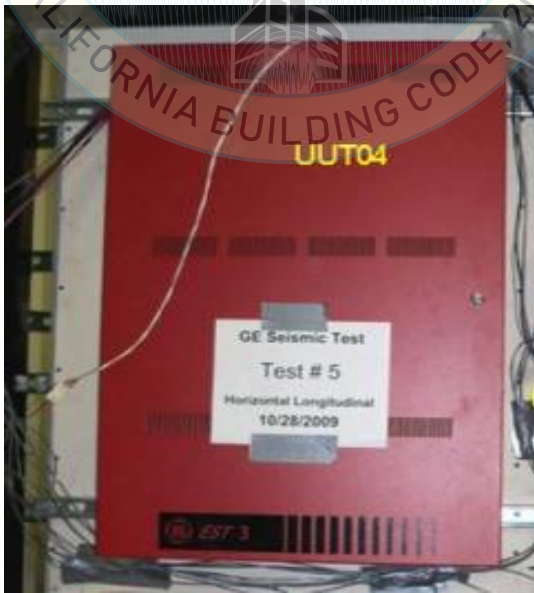
Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 4
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	3-RCC14R	
Serial Number:		N/A

Product Construction Summary:
Backbox: 14 gauge carbon steel; Door: 16 gauge carbon steel

Options/Subcomponent Summary:
(1) 3-BTSEN; (1) 3-BATS; (2) 12V-65Ah Batteries

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back		Side-Side		Vertical		
160.0	6.8	25.5	36.0	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 2019		ICC-ES AC156 (2015)		1.54	1.0	1.5	2.46	1.85	1.64	0.66
				2.46	0.0					

Test Mounting Details:



Unistrut was rigid mounted to a 5/8" fire-rated drywall covered wall fixture using (6) ungraded 3/16" toggle bolts. The unit was rigid wall mounted to unistrut using (4) ungraded 1/4" bolts into spring nuts.
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



TRU PROJECT NO. 1900428

Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 5
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	3-RCC21R	
Serial Number:		N/A

Product Construction Summary:
Backbox: 14 gauge carbon steel; Door: 16 gauge carbon steel

Options/Subcomponent Summary:
Three - 3-CHAS7, One 3-CPU3, One 3-LRMF, Eleven 3-ZA40A, One 3-RS232, One 3-FIBMB, Two MMXVR, One 3-REMICP, One 3-LCD, One 3-PPS/M-120, Two 3-BPS/M-120, One 3-BBC/M-120, Two 3-12/S1GY, Two 3-12/S1RY, One 3-12/S2Y, One 3-12RY, One 3-12SG, One 3-12SR, One 3-12SY, One 3-24G, One 3-24R, One 3-24Y, One 3-6/3S1G2Y, One 3-6/3S1GYR, Two 12V-26Ah Batteries

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
169.5	6.8	25.0	48.0	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 2019		ICC-ES AC156 (2015)		1.54	1.0	1.5	2.46	1.85	1.64	0.66
				2.46	0.0					

Test Mounting Details:



Unistrut was rigid mounted to a 5/8" fire-rated drywall covered wall fixture using (9) ungraded 3/16" toggle bolts. The unit was rigid wall mounted to unistrut using (6) ungraded 1/4" bolts into spring nuts.
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



TRU PROJECT NO. 1900428

Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 17
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	APS10A	
Serial Number:		N/A

Product Construction Summary:
16 gauge carbon steel enclosure

Options/Subcomponent Summary:
MN-NETSW1, MN-FVPN, MN-ABPM, MN-PASM, MN-BRKT, SIGA-CT2, SIGA-IO & (2) 12V24A Batteries

UUT Properties									
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)					
	Depth	Width	Height	Front-Back	Side-Side	Vertical			
73.5	5.3	15.3	26.5	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 2019		ICC-ES AC156 (2015)	1.54	1.0	1.5	2.46	1.85	1.64	0.66
			2.46	0.0					

Test Mounting Details:



Unistrut was rigid mounted to a 5/8" fire-rated drywall covered wall fixture using (4) ungraded 3/16" toggle bolts. The unit was rigid wall mounted to unistrut using (4) ungraded 1/4" bolts into spring nuts. 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



TRU PROJECT NO. 1900428

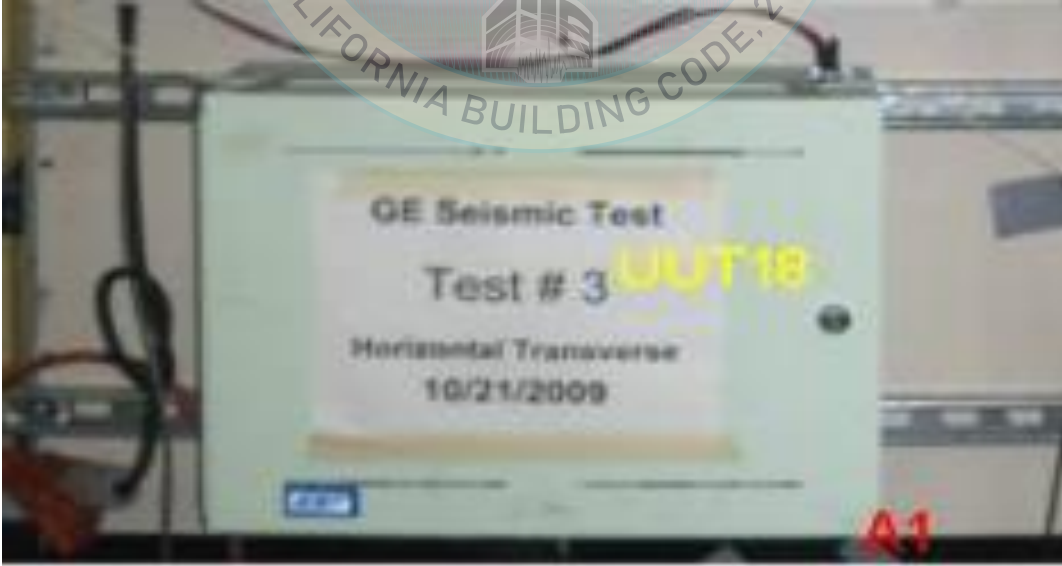
Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 18
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	BC-1	
Serial Number:		N/A

Product Construction Summary:
16 gauge carbon steel enclosure

Options/Subcomponent Summary:
(2) 40Ah Batteries

UUT Properties									
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)					
	Depth	Width	Height	Front-Back	Side-Side	Vertical			
82.5	7.3	18.3	14.0	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 2019		ICC-ES AC156 (2015)	1.54	1.0	1.5	2.46	1.85	1.64	0.66
			2.46	0.0					

Test Mounting Details:



Unistrut was rigid mounted to a 5/8" fire-rated drywall covered wall fixture using (6) ungraded 3/16" toggle bolts. The unit was rigid wall mounted to unistrut using (4) ungraded 1/4" bolts into spring nuts.
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



TRU PROJECT NO. 1900428

Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 19
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	BPS10A	
Serial Number:		N/A

Product Construction Summary:
18 gauge carbon steel enclosure

Options/Subcomponent Summary:
(2) 12V 10Ah Batteries

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
34.0	3.8	13.3	17.5	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 2019		ICC-ES AC156 (2015)		1.54	1.0	1.5	2.46	1.85	1.64	0.66
				2.46	0.0					

Test Mounting Details:



Unistrut was rigid mounted to a 5/8" fire-rated drywall covered wall fixture using (4) ungraded 3/16" toggle bolts. The unit was rigid wall mounted to unistrut using (4) ungraded 1/4" bolts into spring nuts.
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



TRU PROJECT NO. 1900428

Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.
Model Line: EST3 & EST4 Fire Protection System
Model Number: FW4UL4 **Serial Number:** N/A

UUT 20

Product Construction Summary:

Fireworks controller PC Mounted using sliding RETMA rack rails.

Options/Subcomponent Summary:

FW-SP4I, PCWD2, FW-RACKPC, FW-RACKSD, FW-19LCDT3RACK

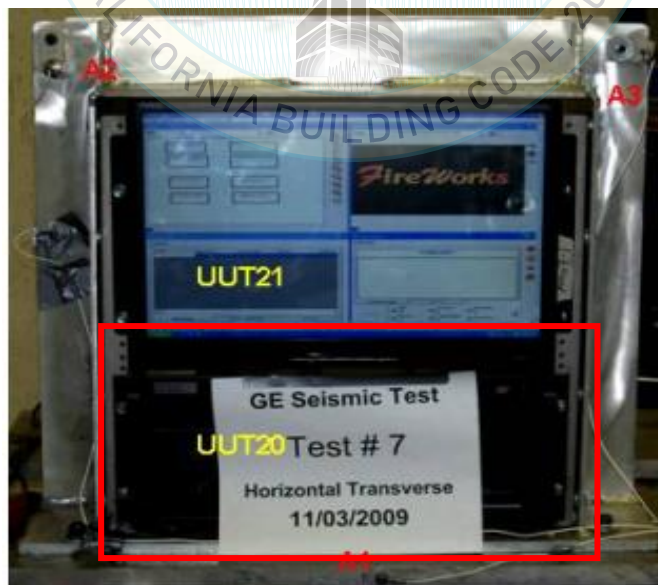
UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
43.0	7.0	17.0	20.0	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 2019	ICC-ES AC156 (2015)	1.54 2.46	1.0 0.0	1.5	2.46	1.85	1.64	0.66

Test Mounting Details:



The unit was rigid wall mounted to the test fixture in the only possible configuration using (4) ungraded #10-32 screws. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

TRU Compliance, by Structural Integrity Associates, Inc.

UNIT UNDER TEST (UUT) SUMMARY SHEET



TRU PROJECT NO. 1900428

Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.
Model Line: EST3 & EST4 Fire Protection System
Model Number: FW-19LCDS3W **Serial Number:** N/A

UUT 21

Product Construction Summary:

Designed to mount directly to a standard RETMA cabinet.

Options/Subcomponent Summary:

FW-SP4I, PCWD2, FW-RACKPC, FW-RACKSD, FW-19LCDT3RACK

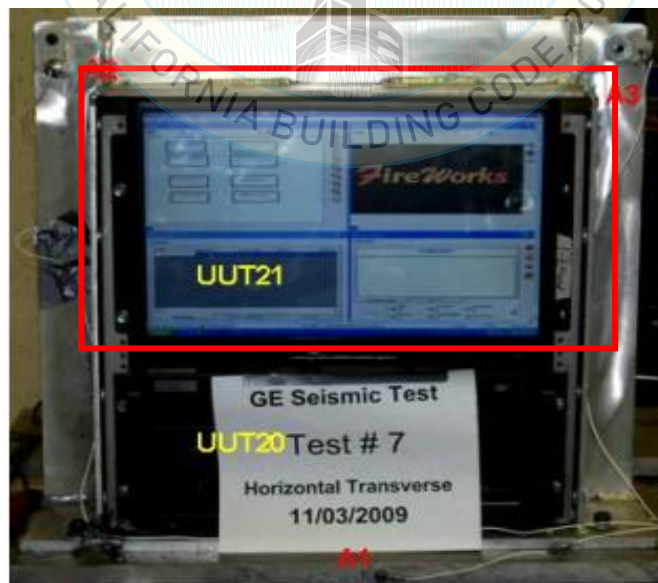
UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
16.0	2.8	17.3	11.5	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 2019	ICC-ES AC156 (2015)	1.54 2.46	1.0 0.0	1.5	2.46	1.85	1.64	0.66

Test Mounting Details:



The unit was rigid wall mounted to the test fixture in the only possible configuration using (4) ungraded #10-32 screws. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

TRU Compliance, by Structural Integrity Associates, Inc.

UNIT UNDER TEST (UUT) SUMMARY SHEET



TRU PROJECT NO. 1900428

Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 54
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	SIGA-UIO2R	
Serial Number:		N/A

Product Construction Summary:
Interface board fastened to an MFC-A wall mounting box

Options/Subcomponent Summary:
SIGA-UIO2R populated with: SIGA-MCC2A (Dual Output Signal Module); SIGA-MDM (Digital Message Module)

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
3.6	3.5	7.8	13.8	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 2019		ICC-ES AC156 (2015)		1.54	1.0	1.5	2.46	1.85	1.64	0.66
				2.46	0.0					

Test Mounting Details:



The unit was rigid wall mounted using two ungraded 3/16" toggle bolts through a 5/8" drywall covered wall fixture. 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



TRU PROJECT NO. 1900428

Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 55
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	SIGA-UIO6	
Serial Number:		N/A

Product Construction Summary:
Interface board fastened to an MFC-A wall mounting box

Options/Subcomponent Summary:
SIGA-UIO6 populated with: SIGA-MIO (Digital Message Module); SIGA-MCC2 (Dual Output); SIGA-MRM1 (Rider Monitor); SIGA-MCT2 (Dual Input); SIGA-MCR (Relay); SIGA-MAB (Universal)

UUT Properties									
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)					
	Depth	Width	Height	Front-Back	Side-Side	Vertical			
5.5	3.5	7.8	13.8	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 2019		ICC-ES AC156 (2015)	1.54	1.0	1.5	2.46	1.85	1.64	0.66
			2.46	0.0					

Test Mounting Details:



The unit was rigid wall mounted using two ungraded 3/16" toggle bolts through a 5/8" drywall covered wall fixture. 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



TRU PROJECT NO. 1900428

Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 58
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	3-CAB21B	
Serial Number:		N/A

Product Construction Summary:
EST3, 14 gauge carbon steel lobby enclosure (3-CAB21B backbox with 3-CAB21D door).

Options/Subcomponent Summary:
4-3LCD, 3-12/S1GY, 3-12/S1RY, 3-12/S2Y, 3-12RY, 3-12SG, 3-12SR, 3-12SY, 3-24G, 3-24R, 3-24Y, 3-6/3S1G2Y, 3-6/3S1GYR, 4-CPU w/ 4-AUDTELS, 3-PPS/M, 3-SSDC1 w/ 3-SDC1, 3-LDSM, 3-IDC 8/4, 3-ZA20A, 3-ZA40A, 3-ZA40B, 3-BPS/M, 3-ZA40, 3-LDSM, 3-ZA95, 4-NET-AD, 4-USBHUB, 4-NET-XT, 4-COMREL, 4-NET-MM, 4-NET-SM, 4-NET-SMU, 4-NET-SMH, 3-TAMP, 3-PPS, 3-CHAS7, 3-CHAS7, 4-MPLT, Batteries 12V17AH, 4-NET-AD mounted on 4-BRKT-CS, 4-NET-CAT, 4-NET-T.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
149.0	5.8	28.0	52.0	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 2019		ICC-ES AC156 (2015)		2.00	1.0	1.5	3.20	2.40	2.13	0.85
				3.20	0.0					

Test Mounting Details:

UUT 58 was rigid mounted to a wall fixture using six (6) 1/4" ungraded bolts and flat washers. 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



TRU PROJECT NO. 1900428

Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 59
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	3-CAB21B	
Serial Number:		N/A

Product Construction Summary:
EST4, 14 gauge carbon steel lobby enclosure (3-CAB21B backbox with 4-CAB24DL door).

Options/Subcomponent Summary:
4-LCD, 4-24L24S, 4-24L18S, 4-24L12S, 4-24L, 4-LCDAUTEL, 4-FT, 4-MIC, 4-FIL, 4-CPU w/ 4-AUDTELS, 3-PPS/M, 3-SDDC1 w/ 3-SDC1 x2, 3-IDC 8/4, 3-ZA20B, 3-ZA40B, 3-OPS, 3-ZA95, 4-NET-AD, 4-NET-XT, 4-COMREL, 4-NET-MM, 4-NET-SM, 4-NET-CAT, 4-NET-TP, 4-NET-SMU, 4-NET-SMH, 3-PPS, 4-ANNCPU W/ANNAUDTEL mounted on 4-BRKT-CB, 3-CHAS7, 4-MPLT, Batteries 12V17AH.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
166.5	5.8	28.0	52.0	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 2019		ICC-ES AC156 (2015)		2.00	1.0	1.5	3.20	2.40	2.13	0.85
				3.20	0.0					



UUT 59 was rigid mounted to a wall fixture using six (6) 1/4" ungraded bolts and flat washers. 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



TRU PROJECT NO. 1900428

Manufacturer:	Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.	UUT 60
Model Line:	EST3 & EST4 Fire Protection System	
Model Number:	3-CAB7B	
Serial Number:		N/A

Product Construction Summary:
EST4, 14 gauge carbon steel lobby enclosure (3-CAB7B backbox with 4-CAB16DR door).

Options/Subcomponent Summary:
4-LCD, 4-24L24S, 4-24L18S, 4-24L12S, 4-24L, 4-FIL, 4-FT, 4-MIC, 4-CPU w/ 4-AUDTELS, 3-PPS/M, 3-IDC 8/4, 3-SSDC1, 3-ZA20A, 3-ZA40A, 4-COMREL, 4-NET-CAT, 3-PPS, 12V17AH Battery, 3-CHAS.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
99.5	5.8	28.0	26.0	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 2019		ICC-ES AC156 (2015)		2.00	1.0	1.5	3.20	2.40	2.13	0.85
				3.20	0.0					

Test Mounting Details:



UUT 60 was rigid mounted to a wall fixture using four (4) 1/4" ungraded bolts and flat washers. 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



TRU PROJECT NO. 1900428

Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.
Model Line: EST3 & EST4 Fire Protection System
Model Number: 4-24ANNMT **Serial Number:** N/A

UUT 61

Product Construction Summary:

EST4, 16 gauge carbon steel annunciator enclosure (4-24ANNMT backbox with 4-CAB24DR door).

Options/Subcomponent Summary:

4-LCD, 4-24L18S, 4-24L12S, 4-24L, 4-LCDAUTEL, 4-FT, 4-MIC, 4-24L24S, 4-ANNCPU, 4-NET-AD, 4-ANNCPU W/4-annaudtels, SIGA-UIO2R, SIGA-UIO6R, 4-USBHUB, 4-NET-CAT, 4-NET-TP-HC.

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
94.0	9.8	30.0	43.5	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 2019	ICC-ES AC156 (2015)	2.00	1.0	1.5	3.20	2.40	2.13	0.85
		3.20	0.0					

Test Mounting Details:



UUT 61 was rigid mounted to a wall fixture using six (6) 3/16" ungraded bolts and flat washers. 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



TRU PROJECT NO. 1900428

Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.
Model Line: EST3 & EST4 Fire Protection System
Model Number: 4-2ANNMT **Serial Number:** N/A

UUT 62

Product Construction Summary:

EST4, 16 gauge carbon steel annunciator enclosure (4-2ANNMT backbox with 4-2ANND door).

Options/Subcomponent Summary:

4-LCD, 4-ANNCPU, 4-NET-CAT, 4-NET-TP-HC.

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
10.5	4.3	10.3	13.8	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 2019	ICC-ES AC156 (2015)	2.00 3.20	1.0 0.0	1.5	3.20	2.40	2.13	0.85

Test Mounting Details:



UUT 62 was rigid mounted to a wall fixture using four (4) 3/16" ungraded bolts and flat washers. 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



TRU PROJECT NO. 1900428

Manufacturer: Edwards, A Div. of UTC Fire & Security Americas Corporation, Inc.
Model Line: EST3 & EST4 Fire Protection System
Model Number: 3-4ANN/B **Serial Number:** N/A

UUT 63

Product Construction Summary:

EST3, 16 gauge carbon steel annunciator enclosure (3-4ANN/B backbox with 3-4ANND door).

Options/Subcomponent Summary:

3-LCDANN, 3-12SG, 3-4/3SGYWR, 3-ANNCPU w/3-RS485A, 3-ANNSM.

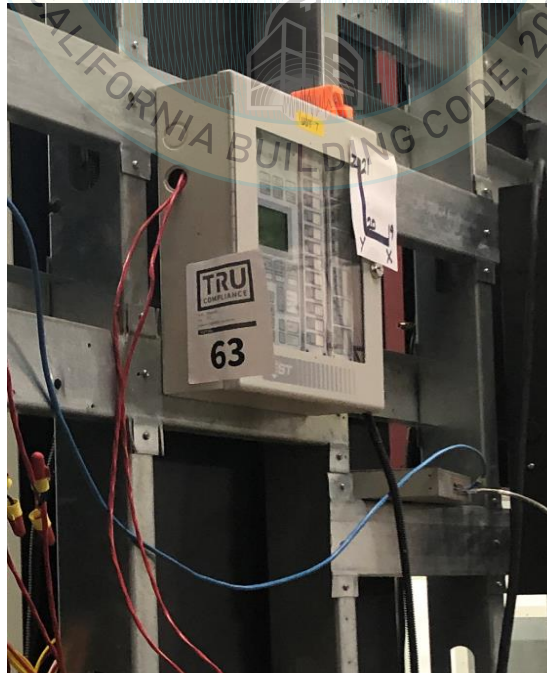
UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
11.3	3.5	11.5	13.3	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 2019	ICC-ES AC156 (2015)	2.00	1.0	1.5	3.20	2.40	2.13	0.85
		3.20	0.0					

Test Mounting Details:



UUT 63 was rigid mounted to a wall fixture using four (4) 3/16" ungraded bolts and flat washers. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.