



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR HCAI SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0782

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: ABB Inc.

Manufacturer's Technical Representative: Tyler Diomedi

Mailing Address: 6801 Industrial Drive, Mebane, NC 27302

Telephone: (540) 529-6284

Email: Tyler.diomedi@us.abb.com

Product Information

Product Name: Switchgear/Switchboards

Product Type: Switchgear - Low Voltage

Product Model Number: ReliaGear LV SG

General Description: Low Voltage Switchgear for industrial, utility, and commercial applications.

Mounting Description: Rigid, Floor Mounted

Tested Seismic Enhancements: None

Applicant Information

Applicant Company Name: WE Gundy & Associates, Inc

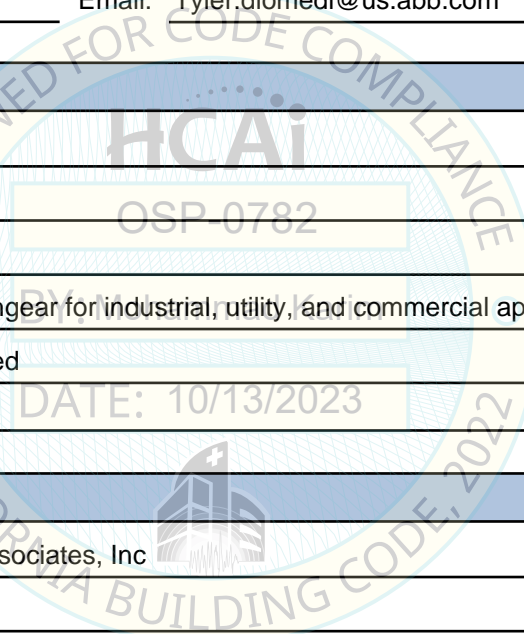
Contact Person: Travis Soppe

Mailing Address: PO Box 9121, Boise, ID 83707

Telephone: (208) 342-5989

Email: tsoppe@wegai.com

Title: President





**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION**

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

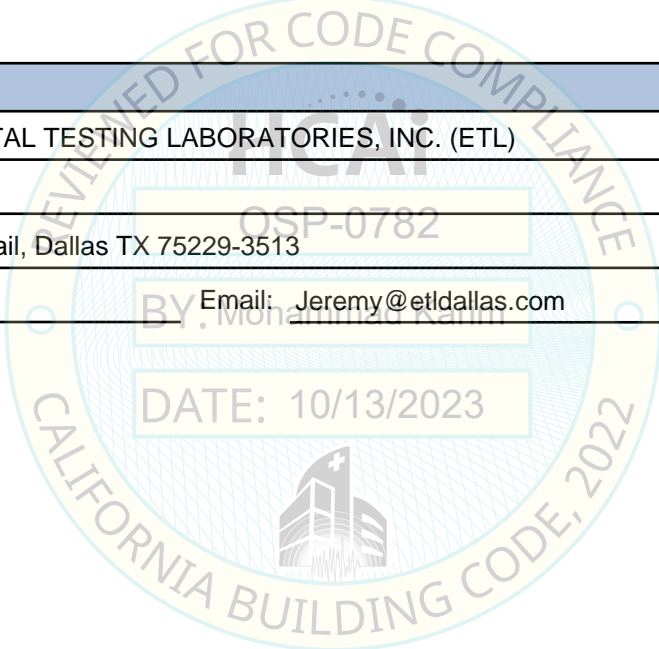
Company Name: W.E. GUNDY & ASSOCIATES INC.
Name: Travis Soppe California License Number: S6115
Mailing Address: P.O. Box 9121, Boise, ID 83707
Telephone: (208) 342-5989 Email: tsoppe@wegai.com

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





**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION**

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.50 for SDS = 2.0g at z/h = 1 and 1.13 for SDS = 2.5g at z/h = 0

SDS (Design spectral response acceleration at short period, g) = 2.00 (z/h = 1.0) and 2.50 (z/h = 0.0)

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) = 1 and 0

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

HCAI Approval (For Office Use Only) - Approval Expires on 10/13/2029

Date: 10/13/2023

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = See Above z/h = See Above

Condition of Approval (if applicable): DATE: 10/13/2023

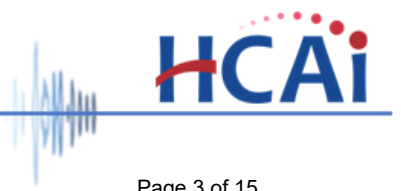
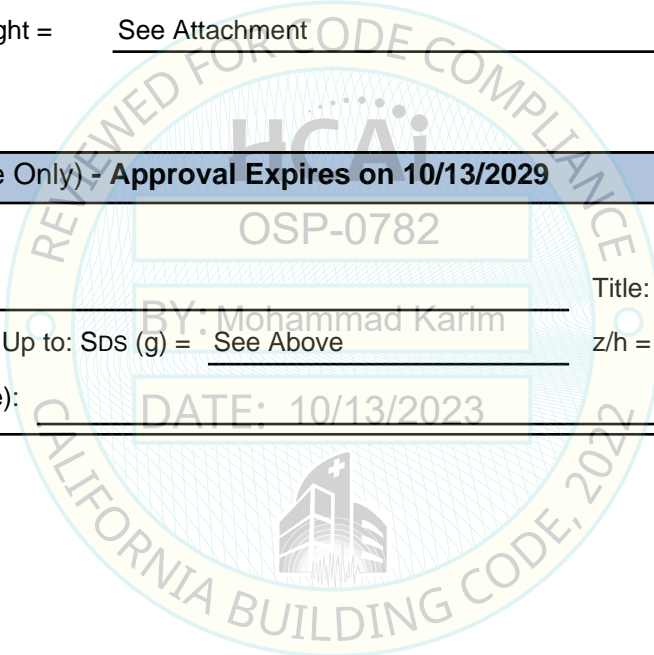




ABB RELIAGEAR LV SWITCHGEAR CERTIFIED PRODUCT LINE MATRIX

Table 1

Identification	Description	NEMA ²	Width (in)	Depth (in)	Height (in)	Max Weight (lbs)	Max COG (in)	Representative UUT ⁴
ReliaGear-4H	(4) 1200A Breakers	1	15	54	90	1045	48	UUT_z-1A
ReliaGear-AT	Auxilliary / Transition Section	1, 12, 3R	15 - 39	54 - 83	90 - 112	1100	49	interpolated
ReliaGear-1H	(1) 800A to 5000A Breaker	1, 12, 3R	15 - 38	54 - 83	90 - 112	1100	49	interpolated
ReliaGear-2H	(2) 800A to 5000A Breakers	1, 12, 3R	15 - 38	54 - 83	90 - 112	1100	49	interpolated
ReliaGear-3H	(3) 800A to 5000A Breakers	1, 12, 3R	15 - 38	54 - 83	90 - 112	1100	49	interpolated
ReliaGear-4H	(4) 800A to 5000A Breakers	1, 12, 3R	15 - 38	54 - 83	90 - 112	1100	49	interpolated
ReliaGear-AT	Auxilliary / Transition	1	30	60	90	1325	44	UUT_z-3A
ReliaGear-AT	Auxilliary / Transition	1	30	60	90	1454	44	UUT_z-3B
ReliaGear-AT	Auxilliary / Transition	1	39	78	96	1480	50	UUT_y-4B
ReliaGear-AT	Auxilliary / Transition Section	1, 12, 3R	22 - 39	54 - 83	90 - 112	2000	50	interpolated
ReliaGear-1H	(1) 800A to 5000A Breaker	1, 12, 3R	22 - 38	54 - 83	90 - 112	2800	48	interpolated
ReliaGear-2H	(2) 800A to 5000A Breakers	1, 12, 3R	22 - 38	54 - 83	90 - 112	2800	48	interpolated
ReliaGear-3H	(3) 800A to 5000A Breakers	1, 12, 3R	22 - 38	54 - 83	90 - 112	2800	48	interpolated
ReliaGear-4H	(4) 800A to 5000A Breakers	1, 12, 3R	22 - 38	54 - 83	90 - 112	2800	48	interpolated
ReliaGear-3H	(2) 2000A & (1) 3200A Breaker	1	22	54	90	2758	48	UUT_z-1B
ReliaGear-4H	(4) 800A to 5000A Breakers	1, 12, 3R	30 - 38	54 - 83	90 - 112	3000	50	interpolated
ReliaGear-1H	(1) 800A to 5000A Breaker	1, 12, 3R	30 - 38	54 - 83	90 - 112	3500	50	interpolated
ReliaGear-2H	(2) 800A to 5000A Breakers	1, 12, 3R	30 - 38	54 - 83	90 - 112	3500	50	interpolated
ReliaGear-3H	(3) 800A to 5000A Breakers	1, 12, 3R	30 - 38	54 - 83	90 - 112	3500	50	interpolated
ReliaGear-1H	(1) 6000A Breaker	1	50	78	96	3787	50	UUT_y-4A

General Notes:

¹. All components are manufactured by ABB, Inc. unless noted. The part numbers listed uniquely identify the type of component, manufacturer, and material of construction for each sub-component with the tested units.

². NEMA 1/12/3R enclosures are constructed of carbon steel.

³. Standalone sections of switchgear are not seismically certified. A minimum of 2 mated sections is required for seismic certification.

⁴. Subscript indicates the test report in which the units were qualified:

y - 16763, z - 16617

ABB RELIAGEAR LV SWITCHGEAR CERTIFIED PRODUCT LINE MATRIX

Identification	Description	NEMA ²	Width (in)	Depth (in)	Height (in)	Max Weight (lbs)	Max COG (in)	Representative UUT ⁴
ReliaGear-1H	(1) 5000A Breaker	3R	38	83	112	3872	50	UUT_z-2B
ReliaGear-1H	(1) 800A to 5000A Breaker	1, 12, 3R	38	54 - 83	90 - 112	3900	50	interpolated
ReliaGear-3H	(3) 800A to 5000A Breakers	1, 12, 3R	38	54 - 83	90 - 112	3900	48	interpolated
ReliaGear-1H	(1) 6000A Breaker	1, 12, 3R	49	54 - 83	90 - 112	3900	50	interpolated
ReliaGear-2H	(2) 800A to 5000A Breakers	1, 12, 3R	38	54 - 83	90 - 112	4470	46	interpolated
ReliaGear-2H	(2) 800A to 5000A Breakers	1, 12, 3R	38	74 - 83	90 - 112	4470	50	interpolated
ReliaGear-2H	(2) 4000A Breakers	3R	38	83	112	4473	50	UUT_z-2A

General Notes:

¹ All components are manufactured by ABB, Inc. unless noted. The part numbers listed uniquely identify the type of component, manufacturer, and material of construction for each sub-component with the tested units.

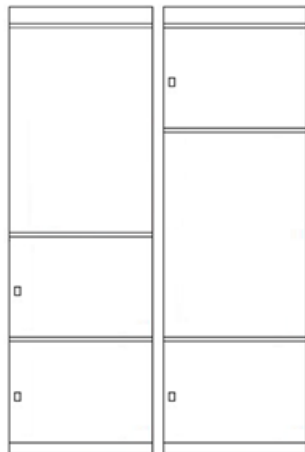
² NEMA 1/12/3R enclosures are constructed of carbon steel.

³ Standalone sections of switchgear are not seismically certified. A minimum of 2 mated sections is required for seismic certification.

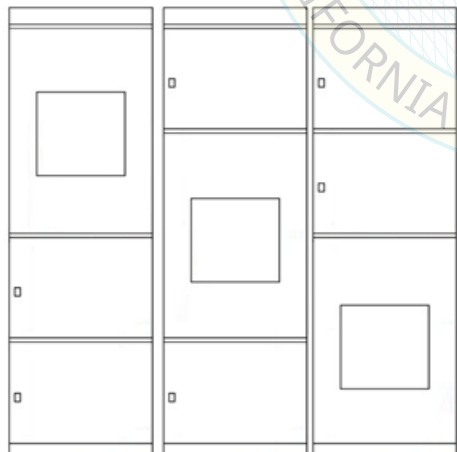
⁴ Subscript indicates the test report in which the units were qualified:

y - 16763, z - 16617

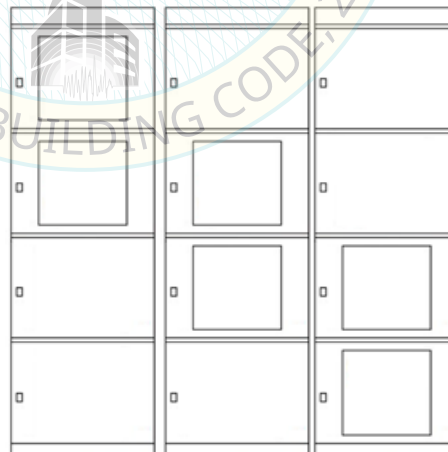
BY: Mohammad Karim
DATE: 10/13/2023



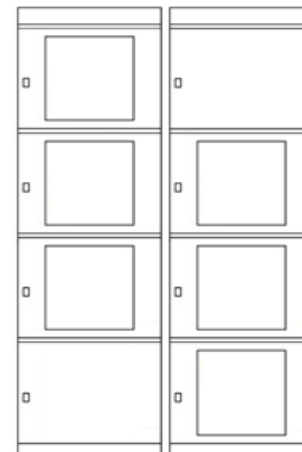
ReliaGear-AT



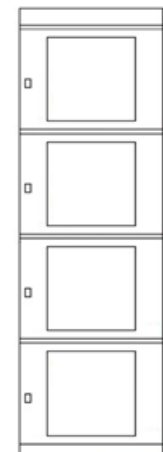
ReliaGear-1H



ReliaGear-2H



ReliaGear-3H



ReliaGear-4H



Table 2	ABB RELIAGEAR LV SWITCHGEAR CERTIFIED SUBCOMPONENT MATRICES			 W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING	
ID/Catalog Number	Manufacturer	Description	Weight (lbs)	Representative UUT ¹	
SACE Emax 2 Circuit Breakers					
Emax E1.2		1200A Drawout 3P	90	UUT _z -1A	
Emax E1.2	ABB	800A-1200A Drawout 3P-4P	90-103	interpolated	
Emax E2.2		2000A Drawout 3P	130	UUT _z -1B	
Emax E2.2		800A-2000A Drawout 3P-4P	130-240	interpolated	
Emax E4.2		3200A Drawout 3P	300	UUT _z -1B	
Emax E4.2		800A-3200A Drawout 3P-4P	260-380	interpolated	
Emax E6.2		4000A Drawout 3P	490	UUT _z -2A	
Emax E6.2		5000A Drawout 3P	490	UUT _z -2B	
Emax E6.2		3200A-5000A Drawout 3P-4P	490-620	interpolated	
Emax E6.2		6000A Drawout 3P	820	UUT _y -4A	
Surge Protective Device (SPD)					
TPHE277Y12SG	GE	TVSS / SPD	24	UUT _z -2B	
TPHE*			24	interpolated	
TPHE277Y30SG			24	UUT _z -2B	
Transformers					
9T58K2812	GE / ABB	Control Power Transformers	18	UUT _z -3B	
9T*			18 - 110	interpolated	
9T22B4311			85	UUT _z -3A/B	
9T22B4313			110	UUT _z -3B	
567TL-202	GE ITI / ABB	Current Transformer	4	UUT _z -3A	
56*			4 - 12	interpolated	
568TL-502			6	UUT _z -3A	
568TL-802			12	UUT _z -3A	
0344A8615P002			8	UUT _z -3A	
3VTL460-480	GE	Power Transformer 3PH-100VA	24	UUT _z -3A	
3VTL*			24	interpolated	
3VTL460-600			24	UUT _z -3B	
PPW 7526A04G04	ABB	Auxiliary Power Transformer	9	UUT _z -1B	
PP*			9 - 19	interpolated	
PPM 7526A10G02			19	UUT _z -2A/B	
General Notes: ¹ Subscript indicates the test report in which the units were qualified: _y - 16763, _z - 16617					

Table 2		ABB RELIAGEAR LV SWITCHGEAR CERTIFIED SUBCOMPONENT MATRICES		 WEGAI <small>W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING</small>	
ID/Catalog Number	Manufacturer	Description	Weight (lbs)	Representative UUT ¹	
Transformers					
0173B4776P004	Amran	Current Transformer	5	UUT _z -1B	
0173B4776P*			5	interpolated	
0173B4776P014			5	UUT _z -1B	
0173B4776P015			5	UUT _z -1B	
0275B9556P005			6	UUT _z -2A/B	
0275B9556*			6	interpolated	
0275B9440P018			9	UUT _z -1B	
0275B9440*			9	interpolated	
0275B9556P006			10	UUT _z -2A/B	
279B1396P003			12	UUT _y -4A	
Communication					
RX3I	Emerson	Rx3I Controller	8	UUT _z -3B	
Auto Charge Trip Devices					
CTDB-6-120	GE ITI / ABB	120 VAC Input	1	UUT _z -3B	
CTDB-6-240		240 VAC Input	1	UUT _z -3B	
Power Management Systems					
11 RT G2 1kVA	ABB	UPS, PowerValue 1kVA	50	UUT _z -3B	
11 RT G2 1-3kVA		UPS, PowerValue 1.5/2kVA	70	interpolated	
11 RT G2 3kVA		UPS, PowerValue 3kVA	101	UUT _z -3A	
Neutral Sensor Frames					
ZE1NCT1PCT	ABB	E2.2 Neutral Sensor	2	UUT _z -1B	
ZE*		E1.2, E2.2, E4.2, E6.2 Neutral Sensor	2 - 5	interpolated	
ZE6NCTF1PCT		E6.2 Neutral Sensor	5	UUT _z -2B	
General Notes:					
¹ Subscript indicates the test report in which the units were qualified: _y - 16763, _z - 16617					

UUT_z-1A

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Rigid floor mounted with (4) ½” Grade 5 bolts



Manufacturer: ABB, Inc.	Test Location: ETL (Dallas, TX)
Component: ReliaGear LV Switchgear	Test Date: July 2022
Model Number: ReliaGear-4H	Report Number: 16617
UUT Function: Synchronization of multiple power sources to main bus for distribution of electricity	
UUT Description: NEMA 1 carbon steel enclosure with four Emax E1.2 1200A circuit breakers	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
1,045	15	54	90	6.2	4.9	18.9

SEISMIC TEST PARAMETERS

Building Code / Test Criteria	S _{DS} (g)	z / h	I _p	A _{AFLX-H} (g)	A _{ARIG-H} (g)	A _{AFLX-V} (g)	A _{ARIG-V} (g)
CBC 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0.0	1.5	-	-	1.67	0.67

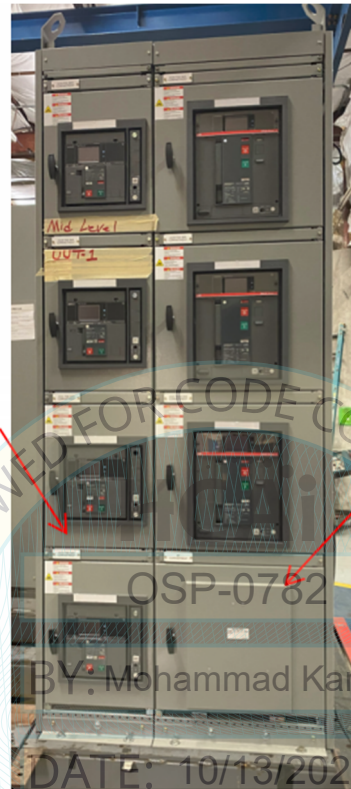
Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_z-1B

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Rigid floor mounted with (4) ½” Grade 5 bolts



Manufacturer: ABB, Inc.	Test Location: ETL (Dallas, TX)
Component: ReliaGear LV Switchgear	Test Date: July 2022
Model Number: ReliaGear-3H	Report Number: 16617
UUT Function: Synchronization of multiple power sources to main bus for distribution of electricity	
UUT Description: NEMA 1 carbon steel enclosure with (2) Emax E2.2 2000A breakers and (1) Emax E4.2 3200A circuit breaker, 0173B4776P004/14/15 and 0275B9440P018 current transformers, PPW 7526A04G04 aux transformer, and ZE1NCT1PCT E2.2 neutral sensor	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
2,758	22	54	90	6.2	4.9	18.9

SEISMIC TEST PARAMETERS

Building Code / Test Criteria	S _{DS} (g)	z / h	I _p	A _{AFLX-H} (g)	A _{ARIG-H} (g)	A _{AFLX-V} (g)	A _{ARIG-V} (g)
CBC 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0.0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_{Z-2A}

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Rigid floor mounted with (4) 1/4" thick by 12" long fillet welds



Manufacturer: ABB, Inc.	Test Location: ETL (Dallas, TX)
Component: ReliaGear LV Switchgear	Test Date: July 2022
Model Number: ReliaGear-2H	Report Number: 16617
UUT Function: Synchronization of multiple power sources to main bus for distribution of electricity	
UUT Description: NEMA 3R carbon steel enclosure with (2) Emax E6.2 4000A circuit breakers, 0275B9556P005/6 current transformers, and PPM 7526A10G02 aux transformer.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
4,473	38	83	112	5.0	4.1	13.2

SEISMIC TEST PARAMETERS

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	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0.0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_z-2B

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Rigid floor mounted with (4) 1/4" thick by 12" long fillet welds



DATE: 10/13/2023

Manufacturer: ABB, Inc.	Test Location: ETL (Dallas, TX)
Component: ReliaGear LV Switchgear	Test Date: July 2022
Model Number: ReliaGear-1H	Report Number: 16617
UUT Function: Synchronization of multiple power sources to main bus for distribution of electricity	
UUT Description: NEMA 3R carbon steel enclosure with (1) Emax E6.2 5000A circuit breaker, 0275B9556P005/6 current transformers, PPM 7526A10G02 aux transformer, ZE6NCTF1PCT E6.2 neutral sensor, and TPHE277Y12/30 surge protective devices.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
3,872	38	83	112	5.0	4.1	13.2

SEISMIC TEST PARAMETERS

Building Code / Test Criteria	S _{DS} (g)	z / h	I _p	A _{AFLX-H} (g)	A _{ARIG-H} (g)	A _{AFLX-V} (g)	A _{ARIG-V} (g)
CBC 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0.0	1.5	-	-	1.67	0.67

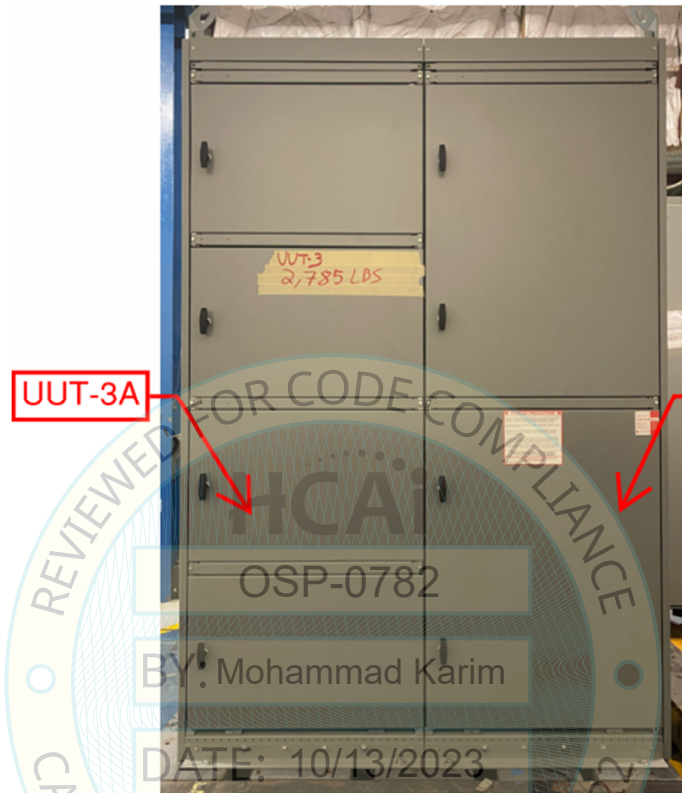
Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_Z-3A

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Rigid floor mounted with (4) 1/2" Grade 5 bolts



Manufacturer: ABB, Inc.	Test Location: ETL (Dallas, TX)
Component: ReliaGear LV Switchgear	Test Date: July 2022
Model Number: ReliaGear-AT	Report Number: 16617
UUT Function: Synchronization of multiple power sources to main bus for distribution of electricity	
UUT Description: NEMA 1 carbon steel enclosure with 567TL-202 / 568TL-502/802 / 0344A8615P002 current transformers, 3VTL460-480 power transformer, PPM7526A10G02 aux transformer, 9T22B4311 control power transformer, and 11 RT GT 3kVA UPS.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
1,325	30	60	90	14.7	7.5	17.7

SEISMIC TEST PARAMETERS

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	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0.0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_z-3B

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Rigid floor mounted with (4) 1/2" Grade 5 bolts



Manufacturer: ABB, Inc.	Test Location: ETL (Dallas, TX)
Component: ReliaGear LV Switchgear	Test Date: July 2022
Model Number: ReliaGear-AT	Report Number: 16617
UUT Function: Synchronization of multiple power sources to main bus for distribution of electricity	
UUT Description: NEMA 1 carbon steel enclosure with 9T58K2811/12/13 control power transformers, 3VTL460-600 power transformer, RX3I controller, CTDB-6-120/240 trip devices, and 11RT G2 1kA UPS.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
1,454	30	60	90	14.7	7.5	17.7

SEISMIC TEST PARAMETERS

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	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0.0	1.5	-	-	1.67	0.67

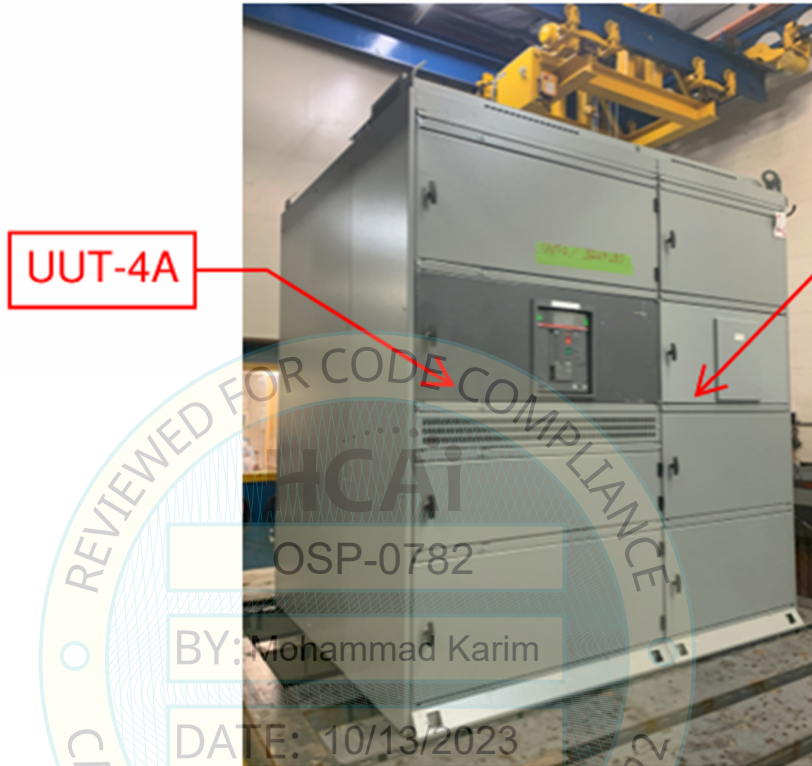
Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_z-4A

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Rigid floor mounted with (6) 1/2" Grade 5 bolts



Manufacturer: ABB, Inc.	Test Location: ETL (Dallas, TX)
Component: ReliaGear LV Switchgear	Test Date: December 2022
Model Number: ReliaGear-1H	Report Number: 16763
UUT Function: Synchronization of multiple power sources to main bus for distribution of electricity	
UUT Description: NEMA 1 carbon steel enclosure with Emax 6.2 6000A circuit breaker and 279B1396P003 current transformers.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
3,787	50	78	96	6.2	9.1	16.4

SEISMIC TEST PARAMETERS

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	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0.0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_z-4B

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Rigid floor mounted with (4) 1/2" Grade 5 bolts



UUT-4B

Manufacturer: ABB, Inc.	Test Location: ETL (Dallas, TX)
Component: ReliaGear LV Switchgear	Test Date: December 2022
Model Number: ReliaGear-AT	Report Number: 16763
UUT Function: Synchronization of multiple power sources to main bus for distribution of electricity	
UUT Description: NEMA 1 carbon steel enclosure with future breaker compartment.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
1,480	39	78	96	6.2	9.1	16.4

SEISMIC TEST PARAMETERS

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	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	0.0	1.5	-	-	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.