



**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-0825

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: ABB Inc.

Manufacturer's Technical Representative: Terry Neighbours

Mailing Address: 6801 Industrial Dr, Melbane, NC 27302

Telephone: (407) 314-6126

Email: terry.l.neighbours@us.abb.com

Product Information

Product Name: Advance and Safegear MV Switchgear

Product Model Number(s): See attachment

Product Category: Switchgear/Switchboards

Product Sub-Category: Switchgear - Medium Voltage

General Description: Metalclad switchgear that provides medium voltage circuit protection

Mounting Description: Base Mounted 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: W.E. GUNDY & ASSOCIATES INC.

Contact Person: Travis Soppe

Mailing Address: P.O. Box 9121, Boise, ID 83707

Telephone: (208) 342-5989

Email: tsoppe@wegai.com

Title: President





**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: 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

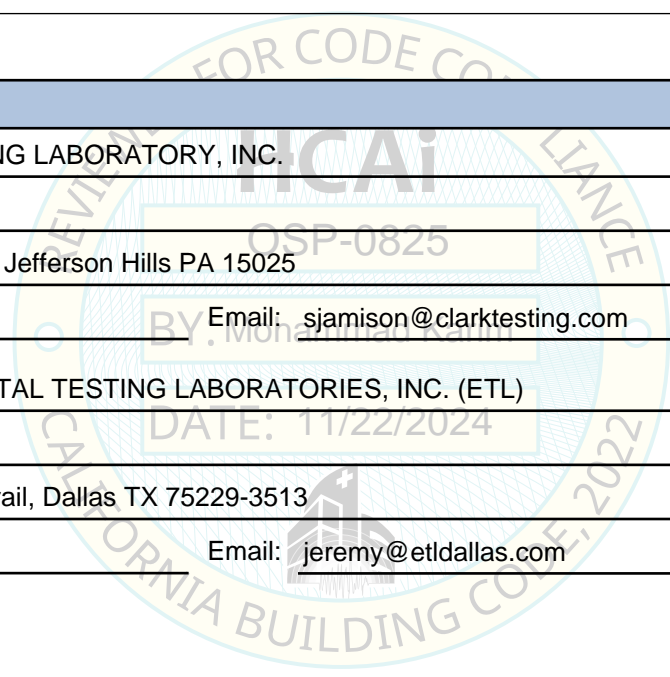
Certification Method

GR-63-Core ICC-ES AC156 IEEE 344 IEEE 693 NEBS 3
 Other (Please Specify): _____

Testing Laboratory

Company Name: CLARK TESTING LABORATORY, INC.
Contact Person: Scott Jamison
Mailing Address: 1801 Route 51, Jefferson Hills PA 15025
Telephone: (412) 387-1001 Email: sjamison@clarktesting.com

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





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Seismic Parameters

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

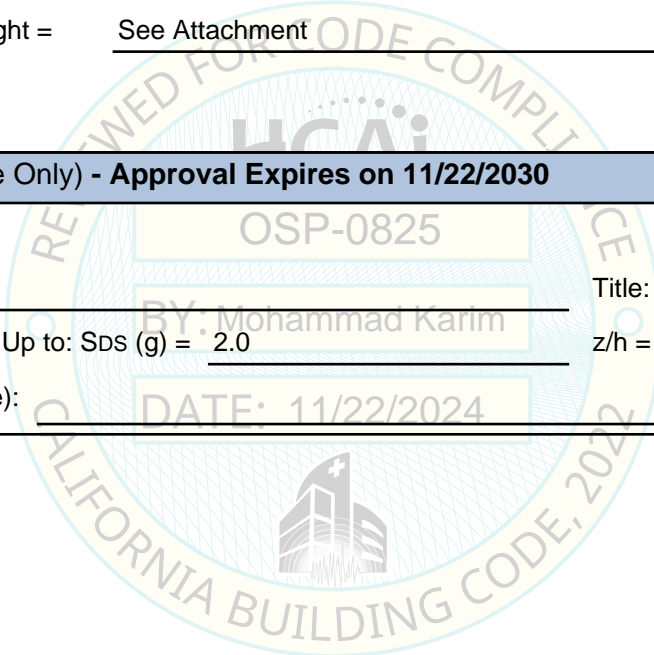
Ω_0 (System overstrength factor) = 2.5

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 11/22/2030

Date: 11/22/2024

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): DATE: 11/22/2024

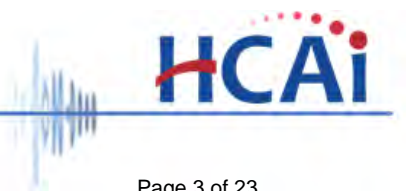


TABLE 1

**ABB MV SWITCHGEAR
SEISMIC CERTIFICATION PRODUCT LINE MATRIX**



¹ Switchgear Identification Section Type	Main Bus Amperage	² NEMA Rating	Main Enclosure Dimensions (in)			Max Height COG (in)	Weight (lbs) min - max	Representative UUT ⁴	
			Width	Depth	Height				
Advance ≤ 15 kV ≤ 63 kA	ADV-TR	1200 - 4000A	1 / 3R	18 / 20	85-110	76-122	52	1200 - 2100	interpolated
	ADV-AUX	1200 - 4000A	1 / 3R	36	85-110	76-122	54	1200 - 3200	interpolated
	ADV-UMC	1200 - 4000A	1 / 3R	36 / 60	85-110	76-122	54	1400 - 3400	interpolated
	ADV-1H	1200 - 4000A	1 / 3R	36	85-110	76-122	54	2300 - 3800	interpolated
	ADV-BR/AUX	4000A	1	36	92	95	56	3315	UUT _x -1B
	ADV-BR/AUX	3000A	1	35	92	102	36	3835	UUT _a -1C
	ADV-BR/AUX	2000A	1	36	102	95	41	3590	UUT _y -2B
	ADV-2H	1200 - 4000A	1 / 3R	36	85-110	76-122	54	3400 - 4000	interpolated
	ADV-2H	4000A	1	36	92	95	46	4000	UUT _x -1A
	ADV-BR/AUX	1200 - 4000A	1 / 3R	36	85-110	76-122	54	2600 - 4200	interpolated
ADV-BR/AUX	4000A	1	36	92	95	56	4135	UUT _x -1C	
Advance 27 kV ≤ 24 kA	ADV27-TR	1200 - 2000A	1 / 3R	18 / 20	92-110	76-122	52	1200 - 2100	interpolated
	ADV27-AUX	1200 - 2000A	1 / 3R	36	92-110	76-122	54	1300 - 4000	interpolated
	ADV27-AUX	2000A	3R	36	110	120	43	3980	UUT _b -2B
	ADV27-UMC	1200 - 2000A	1 / 3R	36 / 60	92-110	76-122	52	1400 - 5000	interpolated
	ADV27-UMC	1200A	1	60	102	95	43	4990	UUT _y -2A
	ADV27-1H	1200 - 2000A	1 / 3R	36	92-110	76-122	54	2400 - 4300	interpolated
	ADV27-2H	1200 - 2000A	1 / 3R	36	92-110	76-122	52	3500 - 5000	interpolated
	ADV27-BR/AUX	1200 - 2000A	1 / 3R	36	92-110	76-122	50	2700 - 5750	interpolated
	ADV27-BR/AUX	2000A	3R	36	110	120	38	5734	UUT _b -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 / 3R enclosures are constructed of carbon steel. NEMA 3R is designated as ODNWI by ABB
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:
a - 17325 / b - 17452 / x - EL10368 / y - 15979

TABLE 1	ABB MV SWITCHGEAR SEISMIC CERTIFICATION PRODUCT LINE MATRIX	 WEGAI <small>W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING</small>
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Switchgear Identification Section Type	Main Bus Amperage	² NEMA Rating	Main Enclosure Dimensions (in)			Max Height COG (in)	Weight (lbs) min - max	Representative UUT ⁴	
			Width	Depth	Height				
Safegear ≤ 15 kV ≤ 50 kA	SAFE-TR	1200 - 4000A	1	18 / 20	85-95	118-130	52	1200 - 2100	interpolated
	SAFE-TR	1200 - 4000A	1	20	95	125	60	1475	UUT _a -1A
	SAFE-1H	1200 - 4000A	1	36	85-93.5	118-130	54	2650 - 4250	interpolated
	SAFE-AUX	1200 - 4000A	1	36	85-93.5	118-130	52	2000 - 4600	interpolated
	SAFE-2H	1200 - 4000A	1	36	85-93.5	118-130	52	3950 - 4700	interpolated
	SAFE-2H	3000A	1	36	93.5	118	51	4615	UUT _x -2b
	SAFE-BR/AUX	1200 - 4000A	1	36	85-93.5	118-130	52	3000 - 5250	interpolated
	SAFE-BR/AUX	3000A	1	36	93.5	118	52	4935	UUT _x -2c
	SAFE-BR/AUX	3000A	1	36	93.5	130	50	4250	UUT _x -2a
	SAFE-BR/AUX	3000A	1	36	93.5	120	49	5215	UUT _a -1B

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 / 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:
a - 17325 / b - 17452 / x - EL10368 / y - 15979

TABLE 2

**ABB MV SWITCHGEAR
CERTIFIED SUBCOMPONENT MATRIX**



ID/Catalog Number	Manufacturer	Description	Weight (lbs)	Representative UUT
AMVAC Circuit Breakers				
MA4H1	ABB Inc.	5/15kV-1200A-25-31.5kA	334	UUT _y -2B
MA4A1/B1/G1/H1 MB4A1/B1/G1/H1	ABB Inc.	5/15kV-1200A-25-31.5kA	334	interpolated
MA4C1/P1/J1/Q1 MB4C1/P1/J1/Q1	ABB Inc.	5/15kV-1200A-40kA 27kV-1200A-16/25kA	410	interpolated
MA4A2/B2/C2/D2/G2 MB4A2/B2/C2/D2/G2 MA4H2/J2/K2/P2/Q2 MB4H2/J2/K2/P2/Q2	ABB Inc.	5/15kV-2000A-25-50kA 27 kV-2000A-16-25 kA	419	interpolated
MA4H2	ABB Inc.	5/15kV-2000A-25-50kA	419	UUT _x -2B
MA4H2	ABB Inc.	5/15kV-2000A-25-50kA	419	UUT _x -1A
MA4Q2	ABB Inc.	27 kV-2000A-16-25 kA	419	UUT _b -2A
MA4K1 : MB4K1	ABB Inc.	5/15kV-1200A-50kA	430	interpolated
MA4A3/B3/C3/G3/H3/J3 MB4A3/B3/C3/G3/H3/J3	ABB Inc.	5/15kV-3000A-25-40kA	460	interpolated
MA4D3/K3 : MB4D3/K3	ABB Inc.	5/15kV-3000A-50kA	480	interpolated
MA4K3	ABB Inc.	5/15kV-3000A-50kA	480	UUT _a -1B
ADVAC Circuit Breakers				
AA4A1/B1/G1/H1 AB4A1/B1/G1/H1	ABB Inc.	5/15kV - 1200A - 25-31.5kA	298	extrapolated
AA4C1/J1 : AB4C1/J1	ABB Inc.	5/15kV - 1200A - 40kA	364	extrapolated
AA4A2/B2/C2/D2/G2/H2/J2 AB4A2/B2/C2/D2/G2/H2/J2	ABB Inc.	5/15kV - 2000A - 25-40kA	364	extrapolated
AA4D1/K1 : AB4D1/K1	ABB Inc.	5/15kV - 1200A - 50kA	419	extrapolated
AA4A3/B3/C3/G3/H3/J3 AB4A3/B3/C3/G3/H3/J3	ABB Inc.	5/15kV - 3000A - 25-40kA	419	extrapolated
AA4D2/K2 : AB4D2/K2	ABB Inc.	5/15kV - 2000A - 50kA	441	extrapolated
AA4D2	ABB Inc.	5/15kV - 2000A - 50kA	441	UUT _x -1A/B
AA4D2	ABB Inc.	5/15kV - 2000A - 50kA	441	UUT _x -2B/C
AA3U1/U2/M1/M2/V1/V2 AB3U1/U2/M1/M2/V1/V2 BA3T1/T2/M1/M2 BB3T1/T2/M1/M2	ABB Inc.	5/15 kV 1200/2000 A - 63 kA	445	interpolated
AA4D3/K3 : AB4D3/K3	ABB Inc.	5/15kV - 3000A - 50kA	463	interpolated
AA4D3	ABB Inc.	5/15kV - 3000A - 50kA	463	UUT _x -1C
AA3U3/V3/M3 : AB3U3/V3/M3 BA3T3/M3 : BB3T3/M3	ABB Inc.	5/15 kV - 3000 A - 63 kA	489	interpolated
AA3V3	ABB Inc.	5/15 kV - 3000 A - 63 kA	489	UUT _a -1C
AA3V3	ABB Inc.	5/15 kV - 3000 A - 63 kA	489	UUT _x -2A

TABLE 2

ABB MV SWITCHGEAR CERTIFIED SUBCOMPONENT MATRIX



ID/Catalog Number	Manufacturer	Description	Weight (lbs)	Representative UUT
Drawout PT's and Fuses				
92127103	ABB Inc.	19" Tall module (1 set of 3 PTs) 5-15kV	487	UUT _x -1/2C
925006	ABB Inc.	38" Tall module(1 set of 3 PTs) 27kV	650	interpolated
92127103	ABB Inc.	38" Tall module (2 sets of 3 PTs) 5-15kV	837	UUT _a -1B
Drawout CPT and Fuses				
92127104	ABB Inc.	38" w/15kVA, 1ph CPT 5-15 kV	1140	UUT _y -2B
Fixed Mounted CPTs				
460939V	AFP	15kV, 112.5kVA, 3ph, Fixed Mtd. CPT	1450	UUT _b -2A
Current Transformers				
SAB-1	ABB Inc.	600 volt, indoor, 10kV BIL	35	UUT _x -1B
SAB-1	ABB Inc.	600 volt, indoor, 10kV BIL	35	UUT _x -2B
SAB-2	ABB Inc.	600 volt, indoor, 10kV BIL	35	UUT _x -1C
SAB-2	ABB Inc.	600 volt, indoor, 10kV BIL	35	UUT _x -2A
SAB-1D	ABB Inc.	600 volt, indoor, 10kV BIL	65	interpolated
SAB-2D	ABB Inc.	600 volt, indoor, 10kV BIL	65	UUT _a -1C
Bar Mounted Current Transformers				
MCB-5A	Piedmont B&I	5kV, 50-5A, C20	30	UUT _a -1B
MCB-15A	Piedmont B&I	15kV, 4000A, C200	60	UUT _a -1B
Fixed Mounted Bus CTs (non-UMC)				
KIR-60	ABB Inc.	5kV, 60kV BIL Indoor, 5-200/300-1200A	35	UUT _b -2A
KIR-75	ABB Inc.	8.3kV, 75kV BIL Indoor, 5-200/300-1200A	38	interpolated
KIT-60	ABB Inc.	5kV, 60kV BIL Indoor, 800-4000A	40	UUT _a -1C
KIT-75	ABB Inc.	8.7kV, 75kV BIL Indoor, 800-4000A	43	interpolated
KIT-11	ABB Inc.	15kV, 110kV BIL Indoor, 800-4000A	47	UUT _a -1C
KIT-15	ABB Inc.	25kV, 150kV BIL Indoor, 800-4000A	52	interpolated
KIR-11	ABB Inc.	15kV, 110kV BIL Indoor, 5-200/300-1200A	61	UUT _b -2A
Fixed Mounted PTs (non-UMC)				
VIY-60	ABB Inc.	5kV, Indoor, 2400/4160GY	32	UUT _b -2A
VIZ-11	ABB Inc.	14400-120V, 110kV BIL	67	UUT _x -1C
VIZ-11	ABB Inc.	14400-120V, 110kV BIL	67	UUT _x -2C
VIZ-11	ABB Inc.	14400-120V, 110kV BIL	67	UUT _a -1B
VIZ-75	ABB Inc.	8.7kV, 75kV BIL, Indoor, 2400-14400V	69	interpolated
VIZ-15	ABB Inc.	25kV, 150kV BIL, Indoor, 12000-34500V	120	interpolated
VIZ-15G	ABB Inc.	27kV class, 12000/20780GY	120	UUT _y -2A
VIZ-15G	ABB Inc.	27kV class, 12000/20780GY	120	UUT _b -2A

TABLE 2

**ABB MV SWITCHGEAR
CERTIFIED SUBCOMPONENT MATRIX**



ID/Catalog Number	Manufacturer	Description	Weight (lbs)	Representative UUT
UFES Primary Switchging Elements				
QRU-100	ABB Inc.	UFES Electronic Tripping Unit (TU)	10	UUT _a -1C
U1-175-63	ABB Inc.	PSE, 17.5 kV / 63kA Max, Qty.1	12	UUT _a -1C
U1-270-40	ABB Inc.	PSE, 27 kV / 40kA Max, Qty.1	12	UUT _a -1C
UMC PT's				
VIY-60	ABB Inc.	Set of 3 Sm.Rev PTs	108	UUT _b -2A
VIZ-15G	ABB Inc.	Set of 3 Lg. Rev PTs	122	UUT _b -2A
UMC CT's				
CTWH7-150T20012201	ABB Inc.	Set of 3 Lg.Rev CTs	84	UUT _y -2A
UMC Switch				
VK3B1514U	ABB Inc.	5-15kV VersaRupter Sw w/Mech	75	UUT _b -2B
VK3A0524N	ABB Inc.	5-15kV VersaRupter Sw w/Mech	210	interpolated
VK3D2714N	ABB Inc.	27kV VersaRupter Sw w/Mech	235	UUT _y -2A
Ground CT's				
BYZ-S	ABB Inc.	BYZ-S, Single GCT, 11.3" x 11.0"	52	UUT _a -1C
BYZ-0	ABB Inc.	BYZ-0, Single GCT, 10.6" x 16.6"	110	interpolated
BYZ-L	ABB Inc.	BYZ-L, Single GCT, 25.4" x 14.0"	150	UUT _a -1C
Lightning/Surge Arresters				
XPI-III	Hitachi-ABB	Intermediate Class, set of 3	7	UUT _a -1B
POLIM-D	Hitachi-ABB	Distribution Class, set of 3, 3 kV	7	interpolated
POLIM-D	Hitachi-ABB	Distribution Class, set of 3, 27 kV	12	interpolated
XPI-III	Hitachi-ABB	Intermediate Class, set of 3, 27kV	14	interpolated
POLIM-S	Hitachi-ABB	Station Class, set of 3, 3kV	17	interpolated
POLIM-S	Hitachi-ABB	Station Class, set of 3, 27kV	33	interpolated
XPS	Hitachi-ABB	Station Class, set of 3, 27kV	62	UUT _a -1B
Voltage Sensors				
KEVA 17.5 B21	ABB Inc.	5/15 KV Class, set of 3	5	UUT _b -2A
KEVA 24 B21	ABB Inc.	27 kV Class, set of 3	6	UUT _a -1B
KEVA 17.5 B41	ABB Inc.	5/15 KV Class, set of 3	6	UUT _b -2A
Current Sensors				
KECA 80	ABB Inc.	KECA 80 C184, Set of 3	2	UUT _a -1B
AC/DC Panelboards				
AQF2232MB	ABB Inc.	Reliagear RQ125A Lighting Panelboard	64	UUT _b -2A
P2C42FX250ATS	Siemens	250A Type P2 Panelboard	126	UUT _a -1C

Notes:

TABLE 2

**ABB MV SWITCHGEAR
CERTIFIED SUBCOMPONENT MATRIX**



ID/Catalog Number	Manufacturer	Description	Weight (lbs)	Representative UUT
Roof Bushings				
41A03312-6	WARCO INC.	Porcelain, 15kV, 1200A, 110kV BIL	44	UUT _b -2A
41A6231-20	WARCO INC.	Porcelain, 27kV, 3300A, 150kV BIL	90	UUT _b -2A
353125-SN	FOSTORIA	Porcelain, 15kV, 1200A, 110kV BIL	45	UUT _b -2A
Batteries with Racks				
12AVR200ET	HBL	125 VDC, VRLA, 10 batteries + rack	1280	UUT _b -2B
Battery Chargers				
ATEV1130016F2	MDS Power	Type A Tevo Series	211	UUT _b -2B
Switchgear Internal Bushings				
931682	ABB Inc.	2000A (6) Porcelain Breaker Bushings	20	UUT _b -2A
931666	ABB Inc.	2000A (1) Porcelain Bus Support	27	UUT _b -2A/B
963336	ABB Inc.	3000A, 63kA Epoxy Bus Support	82	UUT _a -1B/C
BBCTM-2	ABB Inc.	3000A CT Support Bus Bushings	85	UUT _a -1C
963242	ABB Inc.	3000A Epoxy Primary Breaker Bushings	115	UUT _a -1B/C
LV Components - Protective Relays				
SEL-751	SEL	Feeder Protection Relay	6	UUT _a -1C
SEL-587Z	SEL	High-Impedance Differential Relay	9	UUT _a -1C
SEL-3530	SEL	Real- Time Automation Controller (RTAC)	12	UUT _b -2A
REX 640	ABB	Relion protection and control relays	19	UUT _a -1B
SWICOM	ABB	monitoring and diagnostic unit	10	UUT _a -1B
REF-615	ABB	Feeder Protection	9	UUT _a -1B
BE1-25	BASLER	Synch Check Relay	14	UUT _b -2A
LV Components - Metering Devices				
ION9200	Schneider	PowerLogic Energy/Power Quality Meter	3	UUT _a -1C
CM4000T	Schneider	PowerLogic Circuit Monitor	4	interpolated
ION7300 series	Schneider	PowerLogic power-monitoring units	4	interpolated
ION7550 / ION7650	Schneider	Utility networks, mains, or critical loads	4	interpolated
ION8650	Schneider	PowerLogic Advance Utility Metering	15	UUT _b -2B
EPM 9700	GE	Multilin Advanced Power Quality Meter	5	UUT _b -2A
EMS60	TransData	Energy Meter Mark-V series	12	UUT _b -2A
Nexus 1262/1272	Hubbell	Revenue Energy Meters w/ Power Quality	16	UUT _b -2B
PM174	SATEC	Powermeter and Power Quality Analyzer	3	UUT _a -1B

Notes:

TABLE 2	ABB MV SWITCHGEAR CERTIFIED SUBCOMPONENT MATRIX	 WEGAI <small>W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING</small>
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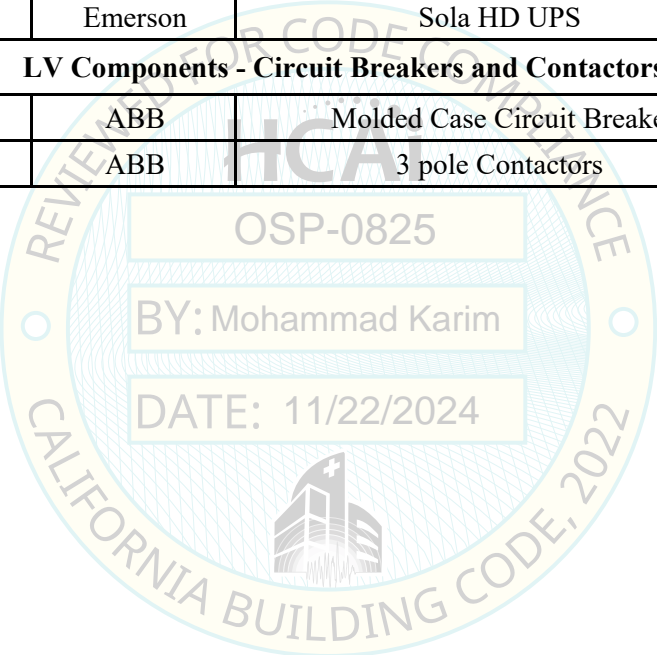
ID/Catalog Number	Manufacturer	Description	Weight (lbs)	Representative UUT
LV Components - Ethernet Switches				
GREYHOUND 105/106 Series	Hirschmann	Managed Industrial Ethernet Switch	10	UUT _b -2A
RUGGEDCOM RSG2100NC	SIEMENS	Managed Industrial Ethernet Switch	12	UUT _b -2A
PT-7726-F-48-48	MOXA	PT-7728 Series Ethernet modules	13	UUT _a -1C
LV Components - IR Window				
FLUKE-CV400	FLUKE	IR Windows Type CV400, Size 4"	1	UUT _a -1C
IRISS-VPT-75	IRISS	Infrared Inspection Window 75mm (3")	1	UUT _a -1C
LV Components - UPS				
SDU850B	Emerson	Sola HD UPS	12	UUT _a -1B
LV Components - Circuit Breakers and Contactors				
Tmax XT5	ABB	Molded Case Circuit Breaker	9	UUT _b -2A
AF205	ABB	3 pole Contactors	6	UUT _b -2B

Notes:

OSP-0825

BY: Mohammad Karim

DATE: 11/22/2024

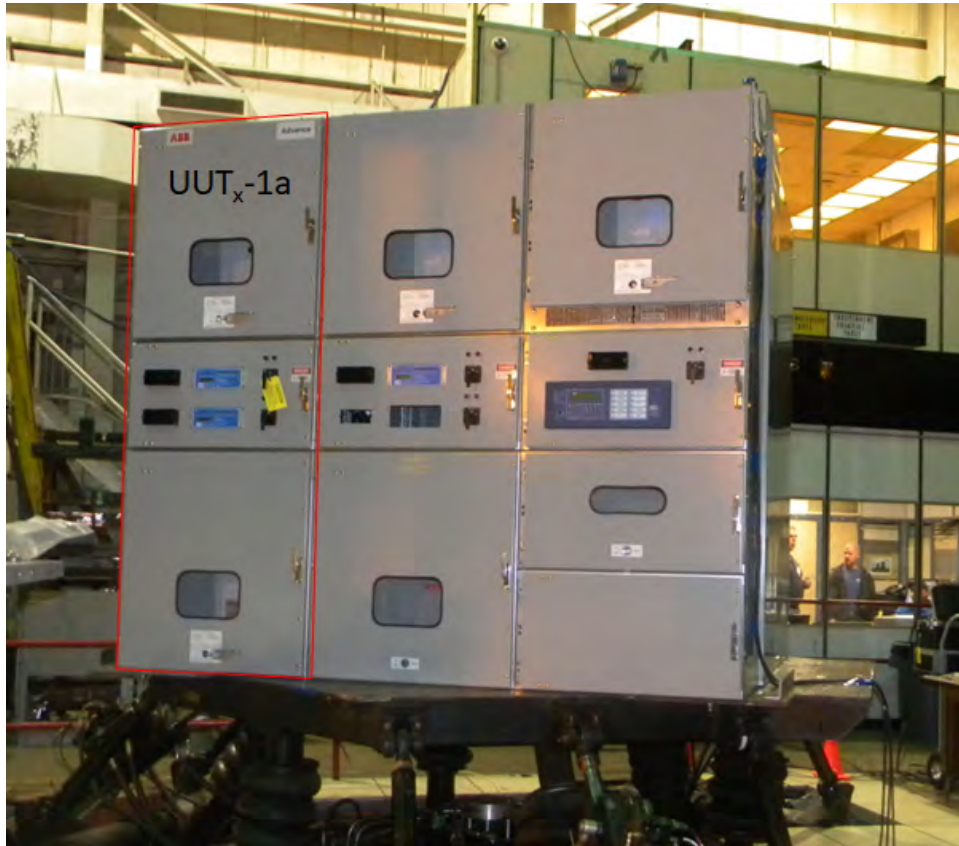


UUT_x-1A

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



Mounting Details: Rigid floor mounted with (6) 1/2" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: Clark Testing Laboratory, PA
Product Line: Medium Voltage Switchgear	Test Date: October 2012
Component: ADV-2H	Report Number: EL:10368
UUT Function: Control, protection, and isolation of electrical equipment	
UUT Description: Double high breaker NEMA 1 frame with 4000A main bus, 2000A ADVAC circuit breaker, and 2000A AMVAC circuit breaker.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
4,000	36	92	95	33.0	10.3	10.2

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	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_x-1B

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



Mounting Details: Rigid floor mounted with (6) 1/2" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: Clark Testing Laboratory, PA
Product Line: Medium Voltage Switchgear	Test Date: October 2012
Component: ADV-BR/AUX	Report Number: EL:10368

UUT Function: Control, protection, and isolation of electrical equipment

UUT Description: Combined breaker and auxiliary NEMA 1 frame with 4000A main bus, 2000A ADVAC circuit breaker, and SAB-1 CT's.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
3,315	36	92	95	33.0	10.3	10.2

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	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_x-1C

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



Mounting Details: Rigid floor mounted with (6) 1/2" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: Clark Testing Laboratory, PA
Product Line: Medium Voltage Switchgear	Test Date: October 2012
Component: ADV-BR/AUX	Report Number: EL:10368
UUT Function: Control, protection, and isolation of electrical equipment	
UUT Description: Combined breaker and auxiliary NEMA 1 frame with 4000A main bus, 3000A ADVAC circuit breaker, 19" drawout PT/Fuse, VIZ-11 fixed PT, and SAB-2 CT's.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
4,135	36	92	95	33.0	10.3	10.2

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	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_x-2A

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



Mounting Details: Rigid floor mounted with (6) 1/2" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: Clark Testing Laboratory, PA
Product Line: Medium Voltage Switchgear	Test Date: October 2012
Component: SAFE-BR/AUX	Report Number: EL:10368

UUT Function: Control, protection, and isolation of electrical equipment

UUT Description: Combined breaker and auxiliary NEMA 1 frame with 3000A main bus, 3000A ADVAC circuit breaker, low voltage compartment, and SAB-2 CT's.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
4,250	36	93.5	129.5	33.0	14.5	32.0

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	1.5	-	-	1.67	0.67

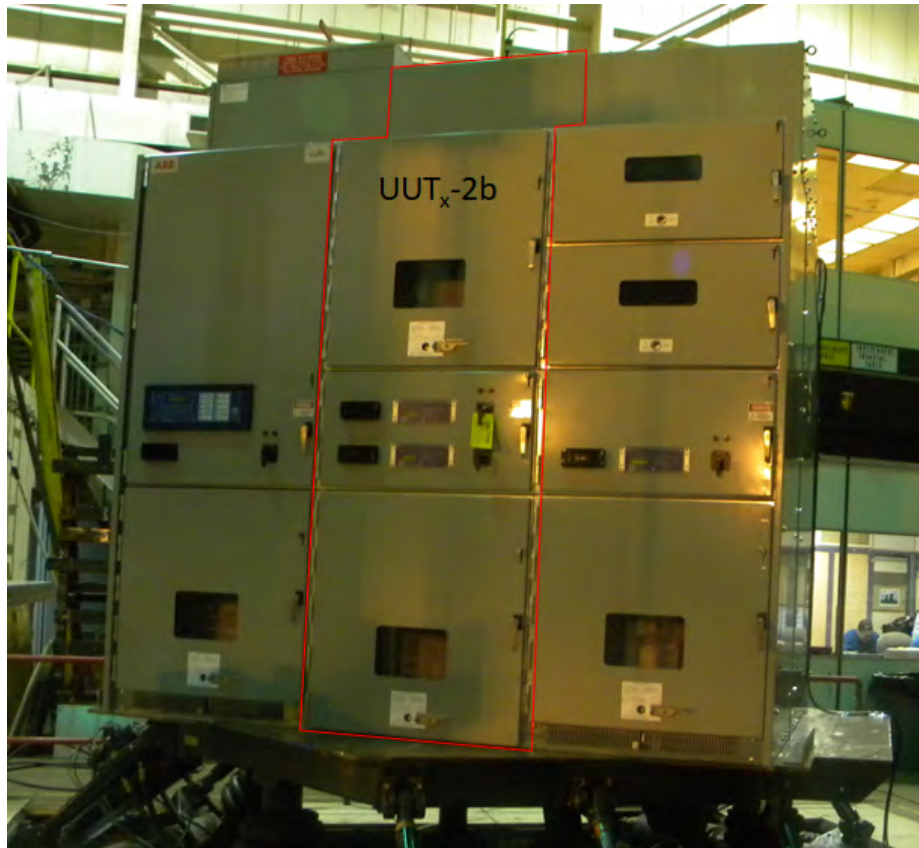
Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_x-2B

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



Mounting Details: Rigid floor mounted with (6) 1/2" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: Clark Testing Laboratory, PA
Product Line: Medium Voltage Switchgear	Test Date: October 2012
Component: SAFE-2H	Report Number: EL:10368

UUT Function: Control, protection, and isolation of electrical equipment

UUT Description: Double high breaker NEMA 1 frame with 3000A main bus, 2000A AMVAC circuit breaker, 2000A ADVAC circuit breaker, low voltage compartment, and SAB-1 CT's.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
4,615	36	93.5	118.0	33.0	14.5	32.0

SEISMIC TEST PARAMETERS

Building Code / Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLEX-H} (g)	A _{RIG-H} (g)	A _{FLEX-V} (g)	A _{RIG-V} (g)
CBC 2022 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
	2.50	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_x-2C

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



Mounting Details: Rigid floor mounted with (6) 1/2" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: Clark Testing Laboratory, PA
Product Line: Medium Voltage Switchgear	Test Date: October 2012
Component: SAFE-BR/AUX	Report Number: EL:10368

UUT Function: Control, protection, and isolation of electrical equipment

UUT Description: Combined breaker and auxiliary NEMA 1 frame with 3000A main bus, 2000A ADVAC circuit breaker, 19" drawout PT/Fuse, and VIZ-11 fixed PT's.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
4,935	36	93.5	118.0	33	14.5	32.0

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	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_y-2A

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



Mounting Details: Rigid floor mounted with (6) 1/2" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: ETL, Dallas Texas
Product Line: Medium Voltage Switchgear	Test Date: December 2020
Component: ADV27-UMC	Report Number: 15979 Rev 1
UUT Function: Control, protection, and isolation of electrical equipment	
UUT Description: UMC NEMA 1 frame with 2000A main bus, UMC 27kV VersaRupter switch, VIZ-15G fixed PTs, and CTWH7 CT's.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
4,990	60	102	95	30.6	7.0	24.8

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	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_y-2B

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



Mounting Details: Rigid floor mounted with (6) 1/2" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: ETL, Dallas Texas
Product Line: Medium Voltage Switchgear	Test Date: December 2020
Component: ADV-BR/AUX	Report Number: 15979 Rev 1

UUT Function: Control, protection, and isolation of electrical equipment

UUT Description: Combined breaker and auxiliary NEMA 1 frame with 2000A main bus, 1200A AMVAC circuit breaker, and drawout CPT / Fuse combination.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
3,590	36	102	95	30.6	7.0	24.8

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	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_a-1A

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



Mounting Details: Rigid floor mounted with (4) 1/2" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: ETL, Dallas Texas
Product Line: Medium Voltage Switchgear	Test Date: April 2024
Component: SAFE-TR	Report Number: 17325 Rev 1
UUT Function: Control, protection, and isolation of electrical equipment	
UUT Description: Transition section, NEMA 1 frame with upper plenum.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
1,475	20	95	125	6.7	5.5	5.3

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	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_a-1B

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



Mounting Details: Rigid floor mounted with (6) 1/2" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: ETL, Dallas Texas
Product Line: Medium Voltage Switchgear	Test Date: April 2024
Component: SAFE-BR/AUX	Report Number: 17325 Rev 1

UUT Function: Control, protection, and isolation of electrical equipment

UUT Description: Combined breaker and auxiliary NEMA 1 frame with 3000A main bus, 3000A AMVAC circuit breaker, 38" drawout PT/Fuse, MCB-5A / MCB-15A CT's, VIZ-11 fixed PT, XPI-III / XPS arresters, KEVA 24 B21 voltage sensors, KECA 80 current sensors, 3000A bus support bushing, 3000A breaker bushing, and LV components.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
5,215	36	93.5	120	6.7	5.5	5.3

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	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_a-1C

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



Mounting Details: Rigid floor mounted with (6) 1/2" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: ETL, Dallas Texas
Product Line: Medium Voltage Switchgear	Test Date: April 2024
Component: ADV-BR/AUX	Report Number: 17325 Rev 1

UUT Function: Control, protection, and isolation of electrical equipment

UUT Description: Combined breaker and auxiliary NEMA 1 frame with 3000A main bus, a 3000A ADVAC circuit breaker, SAB-2D CT's, KIT-60 / KIT-11 CT's, QRU-100 / U1-175-63 / U1-270-40 UFES switches, BYZ-S / BYZ-L, Type P2 panel board, 3000A bus / CT support bushings, 3000A breaker bushing, and LV components.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
3,835	35	92	102	6.7	5.5	5.3

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	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_b-2A

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



Mounting Details: Rigid floor mounted with (4) 5/8" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: ETL, Dallas Texas
Product Line: Medium Voltage Switchgear	Test Date: August 2024
Component: ADV27-BR/AUX	Report Number: 17452 Rev 1

UUT Function: Control, protection, and isolation of electrical equipment

UUT Description: Combined breaker / auxiliary NEMA 3R ODNWI frame with 2000A main bus, 2000A AMVAC breaker, 15kV fixed mount CPT, KIR-60 / KIR-11 CT's, VIY-60 / VIZ-15G PT's, panelboard, KEVA voltage sensors, roof bushings, 2000A breaker bushing, 2000A bus support bushing, and LV components.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
5,734	36	110	120	> 33	3.6	12.9

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	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_b-2B

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



Mounting Details: Rigid floor mounted with (4) 5/8" grade 5 bolts with 6x1.5x0.5" seismic washers at each bolt location.



Manufacturer: ABB Inc.	Test Location: ETL, Dallas Texas
Product Line: Medium Voltage Switchgear	Test Date: August 2024
Component: ADV27-AUX	Report Number: 17452 Rev 1
UUT Function: Control, protection, and isolation of electrical equipment	
UUT Description: Auxiliary NEMA 3R ODNWI frame with 2000A main bus, VK3B1514U VersaRupter switch, 2000A breaker bushings, HBL battery rack / batteries, and MDS battery charger, transformer throat, and LV components.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
3,980	36	110	120	> 33	3.6	12.9

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	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.