APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0044

HCAI Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: ABB, Inc.

Manufacturer's Technical Representative: Elwood Combs

Mailing Address: 6801 Industrial Drive, Mebane, NC 27302

Telephone: (919) 563-7624 Email: elwood.combs@us.abb.com

Product Information

Product Name: Switchgear/Switchboards

Product Type: Switchboards

Product Model Number: See Certified Product Table attached

General Description: Class 1, Class 2, and ISB Switchboards. 800 to 6000A Evolution, Spectra, Jiffy, GenTower, Integrated, Reliagear, Commercial Metering, PowerBreak II, and AV-3 Stack Switchboards include disconnects and distribution units in indoor and outdoor enclosures.

Mounting Description: Rigid, Floor Mounted

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: 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

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

Company Name: W.E. GUNDY & ASOCIATES 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 Dynamics Test Laboratory

Contact Person: Robert Francis

Mailing Address: 1801 Route 51, Jefferson Hills PA 75229-3513

Telephone: (972) 247-9657 Email: rfrancis@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

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = Multiple, see attachments

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

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 10/25/2028

Date: 10/25/2022

Name: Mohammad Karim Title: Supervisor, Health Facilities

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

Condition of Approval (if applicable):

Table 1	ABB, INC. CLASS 1 SWITCHBOARD CERTIFIED PRODUCT LINE MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 2.0g at $^{z}/_{h}$ = 1 → F_p = 1.50g and S_{DS} = 2.5 at $^{z}/_{h}$ = 0 → F_p = 1.13g

ID/Catalog Number[1]	Max Current Rating (A)	NEMA Enclosure	Equipment Dimensions (in)				Weight (lbs)	Representative UUT[2]
			Width	Depth	Height	Max CG		
EV-CL1-SB	800	1	30	25	90	45	510	UUT_w-5
[EV/SP/JF/GT/INT/RG/CM]-CL1-SB	800-4000	1, 3R	30	25-30	93	46.5	500-700	Interpolated
[EV/SP/JF/GT/INT/RG/CM]-CL1-SB	800-4000	1, 3R	30	25-30	90	45	500-800	Interpolated
RG-CL1-SB[3]	800	1	30	25	90	45	809	UUT_s-7
EV-CL1-SB	4000	1	45	25	90	45	870	UUT_v-6
CM-CL1-SB	NA	3R	35	40	93	46.5	1020	UUT_t-2
EV-CL1-SB	4000	1	45	25	90	45	1026	UUT_v-3
RG-CL1-SB	1200	1	30	30	90	50.1	1226	UUT_r-3
[EV/SP/JF/GT/INT/RG/CM]-CL1-SB	800-6000	1, 3R	30-45	30-45	90-93	46.5	500-1000	Interpolated
[EV/SP/JF/GT/INT/RG/CM]-CL1-SB	800-6000	1, 3R	35-45	35-45	90-93	46.5	500-1400	Interpolated
[EV/SP/JF/GT/INT/RG/CM]-CL1-SB	800-6000	1, 3R	40-45	40-45	90-93	46.5	500-1750	Interpolated
RG-CL1-SB[3]	4000	1	50	50	90	45	1625	UUT_s-8
EV-CL1-SB	4000	1	40	35	90	45	1176	UUT_w-4
GT-CL1-SB	4000	3R	40	50	93	46.5	1852	UUT_t-1
[EV/SP/JF/GT/INT/RG/CM]-CL1-SB	800-6000	1, 3R	45-60	45-60	90-93	46.5	500-1950	Interpolated
[EV/SP/JF/GT/INT/RG/CM]-CL1-SB	800-6000	1, 3R	50-60	50-60	90-93	46.5	500-2200	Interpolated
[EV/SP/JF/GT/INT/RG/CM]-CL1-SB	800-6000	1, 3R	55-60	55-60	90-93	46.5	500-2400	Interpolated
[EV/SP/JF/GT/INT/RG/CM]-CL1-SB	800-6000	1, 3R	60	60	93	46.5	500-2600	Interpolated
[EV/SP/JF/GT/INT/RG/CM]-CL1-SB	800-6000	1, 3R	60	60	90	45	500-2700	Interpolated
RG-CL1-SB[3]	4000	1	60	60	90	45	2711	UUT_s-9
RG-CL1-SB	5000	1	50	45	90	50.2	2884	UUT_r-2
RG-CL1-SB	6000	1	50	50	90	47.2	2975	UUT_r-1

Table 1	ABB, INC. CLASS 1 SWITCHBOARD CERTIFIED PRODUCT LINE MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 2.0g at $^{z}/_{h}$ = 1 → F_p = 1.50g and S_{DS} = 2.5 at $^{z}/_{h}$ = 0 → F_p = 1.13g

ID/Catalog Number[1]	Max Current Rating (A)	NEMA Enclosure	Equipment Dimensions (in)				Weight (lbs)	Representative UUT[2]
			Width	Depth	Height	Max CG		

General Notes:

[1] ABB's switchboard product line utilizes the same typical construction accross the varied switchboard product offerings for a wide variety of industrial applications. The following naming conventions are utilized by ABB to identify the varied switchboard product offerings. The initials are utilized within this seismic certification documetnation to identy the switboard product offerings.

EV = Evolution / SP = Spectra / JF = Jiffy / GT = GenTower / INT = Integrated / RG = Reliagear / CM = Comercial Metering

The switchboard configuration is made of a typical enclosure that houses a wide variety of internal electrical components. Seismic certification levels vary for the different internal electrical components. Therefore ABB utilizes a clasification system (Class 1, Class 2, and ISB) to define the seismic ratings for the varied configurations based on the internal components housed within a switchboard section. This clasification and seismic rating is detailed on the seismic certification label applied to each switchboard section within a lineup.

[2] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:

$_{r}$ - 16188 / $_{s}$ - 15605 / $_{t}$ - 2346A / $_{u}$ - 10164 / $_{v}$ - 10155 / $_{w}$ - 10154 / $_{x}$ - 8101 / $_{y}$ - 8055 / $_{z}$ - 8480

[3] Reliagear has both copper and aluminum bus. UUT_s-7/9 are copper and UUT_s-8 is aluminum.

[4] See Table 4 for listing of certified subcomponents of the Class 1 Switchboard product line.

Table 2	ABB, INC. CLASS 2 SWITCHBOARD CERTIFIED PRODUCT LINE MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 1.56g at $^{z}/_{h}$ = 1 → F_p = 1.17g and S_{DS} = 2.50g at $^{z}/_{h}$ = 0 → F_p = 1.13g

ID/Catalog Number[1]	Max Current Rating (A)	NEMA Enclosure	Equipment Dimensions (in)				Weight (lbs)	Representative UUT[2]
			Width	Depth	Height	Max CG		
INT-CL2-SB	4000	1	25	15	90	45	380	UUT_x-5
INT-CL2-SB	4000	1	20	30	90	45	405	UUT_x-3
INT-CL2-SB	4000	1	40	15	90	45	435	UUT_x-1
EV-CL2-SB	800	1	30	25	90	45	510	UUT_w-5
[EV/SP/JF/GT/INT/RG/CM/PB/AV]-CL2-SB	800-6000	1, 3R	15-20	15-20	90	45	150-250	Interpolated
			20-30	20-30	90-93	46.5	150-525	
			25-30	25-30	90-93	46.5	300-900	
			30	30	90-93	46.5	500-1450	
RG-CL2-SB[3]	800	1	30	25	90	45	809	UUT_s-7
EV-CL2-SB	4000	1	45	25	90	45	870	UUT_v-6
CM-CL2-SB	NA	3R	35	40	93	46.5	1020	UUT_t-2
EV-CL2-SB	4000	1	45	25	90	45	1026	UUT_v-3
AV-CL2-SB	6000	3R	15	50	92	46	1050	UUT_y-1a
RG-CL2-SB	1200	1	30	30	90	50.1	1226	UUT_r-3
RG-CL2-SB[3]	4000	1	50	50	90	45	1625	UUT_s-8
[EV/SP/JF/GT/INT/RG/CM/PB/AV]-CL2-SB	800-6000	1, 3R	30-45	30-45	90-93	46.5	500-1400	Interpolated
			35-45	35-45	90-93	46.5	500-2000	
			40-45	40-45	90-93	46.5	500-2400	
			45	45	90-93	46.5	500-2400	
EV-CL2-SB	4000	1	40	35	90	45	1176	UUT_w-4
EV-CL2-SB	2000	1	35	35	90	45	1435	UUT_v-2a
GT-CL2-SB	4000	3R	40	50	93	46.5	1852	UUT_t-1
PB-CL2-SB	6000	3R	22	50	92	46	2129	UUT_y-1b
RG-CL2-SB[3]	4000	1	60	60	90	45	2711	UUT_s-9

Table 2	ABB, INC. CLASS 2 SWITCHBOARD CERTIFIED PRODUCT LINE MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 1.56g at $^{z}/_{h}$ = 1 → F_p = 1.17g and S_{DS} = 2.50g at $^{z}/_{h}$ = 0 → F_p = 1.13g

ID/Catalog Number[1]	Max Current Rating (A)	NEMA Enclosure	Equipment Dimensions (in)				Weight (lbs)	Representative UUT[2]
			Width	Depth	Height	Max CG		
[EV/SP/JF/GT/INT/RG/CM/PB/AV]-CL2-SB	800-6000	1, 3R	45-60	45-60	90-93	46.5	1000-3000	Interpolated
			50-60	50-60	90-93	46.5	1000-3400	
			55-60	55-60	90-93	46.5	1000-3900	
			60	60	90	45	1000-4300	
			60	60	90	45	1000-4450	
RG-CL2-SB	5000	1	50	45	90	50.2	2884	UUT_r-2
RG-CL2-SB	6000	1	50	50	90	47.2	2975	UUT_r-1
EV-CL2-SB	6000	1	60	60	90	45	4463	UUT_u-1

General Notes:

[1] ABB's switchboard product line utilizes the same typical construction accross the varied switchboard product offerings for a wide variety of industrial applications. The following naming conventions are utilized by ABB to identify the varied switchboard product offerings. The initials are utilized within this seismic certification documetnation to identy the switboard product offerings.

EV = Evolution / SP = Spectra / JF = Jiffy / GT = GenTower / INT = Integrated / RG = Reliagear / CM = Comercial Metering
PB = Power Break II / AV = AV-3 Stack

The switchboard configuration is made of a typical enclosure that houses a wide variety of internal electrical components. Seismic certification levels vary for the different internal electrical components. Therefore ABB utilizes a clasification system (Class 1, Class 2, and ISB) to define the seismic ratings for the varied configurations based on the internal components housed within a switchboard section. This clasification and seismic rating is detailed on the seismic certification label applied to each switchboard section within a lineup.

[2] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:

$_r$ - 16188 / $_s$ - 15605 / $_t$ - 2346A / $_u$ - 10164 / $_v$ - 10155 / $_w$ - 10154 / $_x$ - 8101 / $_y$ - 8055 / $_z$ - 8480

[3] Reliagear has both copper and aluminum bus. UUT_s-7/9 are copper and UUT_s-8 is aluminum.

[4] See Table 5 for listing of certified subcomponents of the Class 2 Switchboard product line.

Table 3	ABB, INC. ISB SWITCHBOARD CERTIFIED PRODUCT LINE MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 1.10g at $^{z}/_{h}$ = 1 → F_p = 0.83g and S_{DS} = 1.76g at $^{z}/_{h}$ = 0 → F_p = 0.79g

ID/Catalog Number[1]	Max Current Rating (A)	NEMA Enclosure	Equipment Dimensions (in)				Weight (lbs)	Representative UUT[2]
			Width	Depth	Height	Max CG		
INT-ISB-SB	4000	1	25	15	90	45	380	UUT_x-5
INT-ISB-SB	4000	1	20	30	90	45	405	UUT_x-3
INT-ISB-SB	4000	1	40	15	90	45	435	UUT_x-1
EV-ISB-SB	800	1	30	25	90	45	510	UUT_w-5
RG-ISB-SB[3]	800	1	30	25	90	45	809	UUT_s-7
[EV/SP/JF/GT/INT/RG/CM/PB/AV]-ISB-SB	800-6000	1, 3R	15-20	15-20	90	45	150-250	Interpolated
			20-30	20-30	90-93	46.5	150-525	Interpolated
			25-30	25-30	90-93	46.5	300-975	Interpolated
			30	30	90-93	46.5	500-1450	Interpolated
EV-ISB-SB	4000	1	45	25	90	45	870	UUT_v-6
CM-ISB-SB	NA	3R	35	40	93	46.5	1020	UUT_t-2
EV-ISB-SB	4000	1	45	25	90	45	1026	UUT_v-3
AV-ISP-PB	6000	3R	15	50	92	46	1050	UUT_y-1a
EV-ISB-SB	4000	1	40	35	90	45	1176	UUT_w-4
RG-ISB-SB	1200	1	30	30	90		1226	UUT_r-3
EV-ISB-SB	2000	1	35	35	90	45	1435	UUT_v-2a
[EV/SP/JF/GT/INT/RG/CM/PB/AV]-ISB-SB	800-6000	1, 3R	30-45	30-45	90-93	46.5	500-1500	Interpolated
			35-45	35-45	90-93	46.5	500-2100	Interpolated
			40-45	40-45	90-93	46.5	500-2400	Interpolated
			45	45	90-93	46.5	500-2400	Interpolated
RG-ISB-SB[3]	4000	1	50	50	90	45	1625	UUT_s-8
GT-ISB-SB	4000	3R	40	50	93	46.5	1852	UUT_t-1
INT-ISB-SB	4000	1	40	35	90	45	2125	UUT_z-1
PB-ISB-SB	6000	3R	22	50	92	46	2129	UUT_y-1b
INT-ISB-SB	4000	1	40	35	90	45	2410	UUT_z-2

Table 3	ABB, INC. ISB SWITCHBOARD CERTIFIED PRODUCT LINE MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 1.10g at $^{z}/_{h}$ = 1 → F_p = 0.83g and S_{DS} = 1.76g at $^{z}/_{h}$ = 0 → F_p = 0.79g

ID/Catalog Number[1]	Max Current Rating (A)	NEMA Enclosure	Equipment Dimensions (in)				Weight (lbs)	Representative UUT[2]
			Width	Depth	Height	Max CG		
RG-ISB-SB[3]	4000	1	60	60	90	45	2711	UUT_s-9
[EV/SP/JF/GT/INT/RG/CM/PB/AV]-ISB-SB	800-6000	1, 3R	45-60	45-60	90-93	46.5	1000-3200	Interpolated
			50-60	50-60	90-93	46.5	1000-3600	Interpolated
			55-60	55-60	90-93	46.5	1000-3900	Interpolated
			60	60	93	46.5	1000-4300	Interpolated
			60	60	90	45	1000-4450	Interpolated
RG-ISB-SB	5000	1	50	45	90	50.2	2884	UUT_r-2
RG-ISB-SB	6000	1	50	50	90	47.2	2975	UUT_r-1
EV-ISB-SB	6000	1	60	60	90	45	4463	UUT_u-1

General Notes:

[1] ABB's switchboard product line utilizes the same typical construction accross the varied switchboard product offerings for a wide variety of industrial applications. The following naming conventions are utilized by ABB to identify the varied switchboard product offerings. The initials are utilized within this seismic certification documetnation to identy the switboard product offerings.

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PB = Power Break II / AV = AV-3 Stack

The switchboard configuration is made of a typical enclosure that houses a wide variety of internal electrical components. Seismic certification levels vary for the different internal electrical components. Therefore ABB utilizes a clasification system (Class 1, Class 2, and ISB) to define the seismic ratings for the varied configurations based on the internal components housed within a switchboard section. This clasification and seismic rating is detailed on the seismic certification label applied to each switchboard section within a lineup.

[2] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:

$_r$ - 16188 / $_s$ - 15605 / $_t$ - 2346A / $_u$ - 10164 / $_v$ - 10155 / $_w$ - 10154 / $_x$ - 8101 / $_y$ - 8055 / $_z$ - 8480

[3] Reliagear has both copper and aluminum bus. UUT_s-7/9 are copper and UUT_s-8 is aluminum.

[4] See Table 6 for listing of certified subcomponents of the ISB Switchboard product line.

Table 4	ABB, INC. CLASS 1 SWITCHBOARD CERTIFIED SUBCOMPONENT MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 2.0g at $^{z}/_{h}$ = 1 → F_p = 1.50g and S_{DS} = 2.5 at $^{z}/_{h}$ = 0 → F_p = 1.13g

Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT[1]
Fusible Switches				
ADS36030HS	GE	30A	18.7	UUT_v-6
ADS*	GE	30-1200A	18.7-75	Interpolated
ADS36120LB	GE	1200A	75	UUT_v-6
Fuses				
ATDR1/2	Mersen	0.5A	0.9	UUT_w-4
AJT1-1/2	Mersen	1.5A	0.25	UUT_v-2a
A4J6	Mersen	6.0A	0.12	UUT_v-2a
AJT, A4J6, A4BY, ATDR	Mersen	0.5A-4000A	0.9-25.5	Interpolated
A4BY800	Mersen	800A	3.9	UUT_w-5
A4BY1200	Mersen	1200A	4.5	UUT_v-6
A4BY4000	Mersen	4000A	25.5	UUT_w-4
Record Plus Circuit Breakers				
NEFBV	ABB	15A	3	UUT_s-7
NEFBV	ABB	30A	3	Interpolated
NEFB	ABB	15A - 100A	3-5	Interpolated
NEFBV	ABB	50A	4	Interpolated
NEFBV	ABB	100A	5	UUT_s-7
FBL36TE030R	GE	F-type, 30A	5	UUT_v-3
FBH36TE035R2	GE	F-type, 35A	4	UUT_v-3
F*	GE	F-type, 30A-600A	1-22	Interpolated
FGP36AA066R1	GE	F-type, 600A	22	UUT_v-3
Spectra RMS Circuit Breakers				
SEHA36AT0030	GE	S-type, 30A	5	UUT_v-3
S*	GE	S-type, 30A-1200A	5 - 42.8	Interpolated
SKHA36AT1200	GE	S-type, 1200A	42.8	UUT_v-3
Thermal Mag, Q-Line, Molded Case Switches				
TEYF1015	GE	T-type, 15A	2	UUT_v-3
TEYF2015	GE	T-type, 15A	2	UUT_v-3
TEYF3015	GE	T-type, 15A	2	UUT_v-3
T*	GE	T-type, 15A-1200A	2-37	Interpolated
TKM3F	GE	T-type, 1200A	37	UUT_v-6
XT Molded Case Switches				
XT1	ABB	160A	4	UUT_s-7
XT4	ABB	250A	7	UUT_s-7, UUT_s-8
XT5	ABB	600A	15	UUT_s-8, UUT_s-9, UUT_r-2
XT7	ABB	1200A	43	UUT_s-8, UUT_s-9, UUT_r-3

General Notes:

[1] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
r - 16188 / s - 15605 / t - 2346A / u - 10164 / v - 10155 / w - 10154 / x - 8101 / y - 8055 / z - 84800

* Is used to indicated the series of identification numbers (range of subcomponents) beyond the primary identification number for the specified subcomponent product line.

Table 4	ABB, INC. CLASS 1 SWITCHBOARD CERTIFIED SUBCOMPONENT MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: $S_{DS} = 2.0g$ at $^z/_h = 1 \rightarrow F_p = 1.50g$ and $S_{DS} = 2.5$ at $^z/_h = 0 \rightarrow F_p = 1.13g$

Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT[1]
Emax Breakers - Fixed				
Emax 1.2	ABB	1200A Fixed 3P/4P	31-35	Extrapolated
Emax 1.2	ABB	1200A Fixed 3P	31	UUT_r-3
Emax 2.2	ABB	2000A Fixed 3P/4P	115-148	Interpolated
Emax 4.2	ABB	3000A Fixed 3P/4P	201-256	Interpolated
Emax 6.2 - 5kA	ABB	5000A Fixed 3P/4P	314-406	Interpolated
Emax 6.2 - 5kA	ABB	5000A Fixed 4P	406	UUT_r-2
Emax Breakers - Drawout				
Emax 1.2	ABB	1200A Drawout 3P/4P	90.4-102.5	Extrapolated
Emax 1.2	ABB	1200A Drawout 4P	102.5	UUT_r-3
Emax 2.2	ABB	2000A Drawout 3P/4P	135-239	Interpolated
Emax 4.2	ABB	3000A Drawout 3P/4P	300-377	Interpolated
Emax 6.2 - 5kA	ABB	5000A Drawout 3P/4P	486-620	Interpolated
Emax 6.2 – 6kA	ABB	6000A Drawout Only 3P	818	UUT_r-1
Spectra Power Panels				
APNB3812	GE	Spectra 1200A	150	UUT_v-6
APN*	GE	Spectra 1200A-2000A	150-175	Interpolated
APNB3820	GE	Spectra 2000A	175	UUT_v-3
Reliagear Power Panels Bus Stack				
IN1604TX3H1	ABB	400A, Aluminum	53	UUT_s-7
IN1604CC3H2	ABB	400A, Copper	62	UUT_s-7
Inxx(04-40)xx(1,3,4)(Hx,Bx)	ABB	400A-4000A, CU & AL	53-510	Interpolated
IN4030CC3H1	ABB	3000A, Aluminum	280	UUT_s-8
IN5640CC4B3	ABB	4000A, Copper	510	UUT_s-9
Surge Protection Device (SPD)				
TPHE*, THE*, ATHE*, TPME*	GE	25-100kA/130-200kA	0-25	Extrapolated
TPHE480D12PP	GE	125kA/250kA	25	UUT_v-3
TPHE*, THE*, ATHE*, TPME*	GE	125-300kA/250-600kA	25	Interpolated
TPHE480D30PP	GE	300kA/600kA	25	UUT_v-6
SP120Y	ABB	120Wye, SPD, Disconnect	50	UUT_s-8
SP277Y	ABB	480/277Y, SPD, Disconnect	50	Interpolated
SP347Y	ABB	600/347Y, SPD, Disconnect	50	Interpolated
SP480D	ABB	480D, SPD, Disconnect	50	UUT_s-8

General Notes:

[1] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
r - 16188 / s - 15605 / t - 2346A / u - 10164 / v - 10155 / w - 10154 / x - 8101 / y - 8055 / z - 8480

* Is used to indicated the series of identification numbers (range of subcomponents) beyond the primary identification number for the specified subcomponent product line.

Table 4	ABB, INC. CLASS 1 SWITCHBOARD CERTIFIED SUBCOMPONENT MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 2.0g at $^{z}/_{h}$ = 1 → F_p = 1.50g and S_{DS} = 2.5 at $^{z}/_{h}$ = 0 → F_p = 1.13g

Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT[1]
Meter Socket				
CM100A35K480V	GE	480V	8.4	UUT_t-2
CM200A65K480V	GE	480V	8.4	UUT_t-2
CM100, CM200	GE	240V-600V	6.7-10.2	Interpolated
CM200MSJF240V	GE	240V	6.7	UUT_t-2
CM200MSJF600V	GE	600V	10.2	UUT_t-2
MT04AP	ABB	Pulse, Carbon Steel	16	UUT_s-7
MT04AM(AD)	ABB	ModBus, Carbon Steel	16	Interpolated
MT04AB	ABB	BacNe, Carbon Steel	16	UUT_s-8
Generator Connectors				
HBLFRSBN	Hubbell		0.1	UUT_t-1
HBL	Hubbell		0.1 - 1.54	Interpolated
HBLFRGN	Hubbell		1.54	UUT_t-1
Transfer Switches				
OXA30U2X2QB	ABB	30A 2 Pole ATS	25	UUT_s-8
OX*	ABB	TruONE ATS	25-125	Interpolated
OXB1200U3S2QT	ABB	1200A 4 pole ATS	125	UUT_s-8
Control Power Transformer				
9T58K2808	GE	0.3 kVA 240/480	7	UUT_v-2a
9T58K28(08-15)	GE	0.05kVA-3kVA 240/480	7-54	Interpolated
9T58K2815	GE	3.0kVA 240/480	54	UUT_s-7

General Notes:

[1] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
r - 16188 / s - 15605 / t - 2346A / u - 10164 / v - 10155 / w - 10154 / x - 8101 / y - 8055 / z - 8480

* Is used to indicated the series of identification numbers (range of subcomponents) beyond the primary identification number for the specified subcomponent product line.

Table 5	ABB, INC. CLASS 2 SWITCHBOARD CERTIFIED SUBCOMPONENT MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 1.56g at $^{z}/_{h}$ = 1 → F_p = 1.17g and S_{DS} = 2.50g at $^{z}/_{h}$ = 0 → F_p = 1.13g

Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT[1]
High Pressure Contact Switch (HPC)				
THPR3608GA3	GE	HPC, 800A	115	UUT_w-5
THPR*, THPC*	GE	HPC, 800A-4000A	115-540	Interpolated
THPC3640G3T	GE	HPC, 4000	540	UUT_w-4
Fusible Switches				
ADS36030HS	GE	30A	18.7	UUT_v-6
ADS*	GE	30-1200A	18.7-75	Interpolated
ADS36120LB	GE	1200A	75	UUT_v-6
Fuses				
ATDR1/2	Mersen	0.5A	0.9	UUT_w-4
AJT1-1/2	Mersen	1.5A	0.25	UUT_v-2a
A4J6	Mersen	6.0A	0.12	UUT_v-2a
AJT, A4J6, A4BY, ATDR	Mersen	0.5A-4000A	0.9-25.5	Interpolated
A4BY800	Mersen	800A	3.9	UUT_w-5
A4BY1200	Mersen	1200A	4.5	UUT_v-6
A4BY4000	Mersen	4000A	25.5	UUT_w-4
Record Plus Circuit Breakers				
NEFBV	ABB	15A	3	UUT_s-7
NEFBV	ABB	30A	3	Interpolated
NEFB	ABB	15A - 100A	3-5	Interpolated
NEFBV	ABB	50A	4	Interpolated
NEFBV	ABB	100A	5	UUT_s-7
FBL36TE030R	GE	F-type, 30A	2.7	UUT_v-3
FBH36TE035R2	GE	F-type, 35A	4	UUT_v-3
F*	GE	F-type, 30A-600A	2.7-22	Interpolated
FGP36AA066R1	GE	F-type, 600A	22	UUT_v-3
Spectra RMS Circuit Breakers				
SEHA36AT0030	GE	S*-type, 30A	5	UUT_v-3
SELA36AT0150	GE	S*-type, 150A	5	UUT_y-1a
SFLA36AT0250	GE	S*-type, 250A	9	UUT_y-1a
S*	GE	S*-type, 30A-1200A	5-42.8	Interpolated
SGLA36AT0600	GE	S*-type, 600A	13	UUT_y-1a
SKPA36AT1200	GE	S*-type, 1200A	40	UUT_y-1a
SKHA36AT1200	GE	S*-type, 1200A	42.8	UUT_v-3

General Notes:

[1] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
r - 16188 / s - 15605 / t - 2346A / u - 10164 / v - 10155 / w - 10154 / x - 8101 / y - 8055 / z - 8480

* Is used to indicated the series of identification numbers (range of subcomponents) beyond the primary identification number for the specified subcomponent product line.

Table 5	ABB, INC. CLASS 2 SWITCHBOARD CERTIFIED SUBCOMPONENT MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 1.56g at $^{z}/_{h}$ = 1 → F_p = 1.17g and S_{DS} = 2.50g at $^{z}/_{h}$ = 0 → F_p = 1.13g

Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT[1]
Thermal Mag, Q-Line, Molded Case Switches				
TEYF1015	GE	T-type, 15A	2	UUT_v-3
TEYF2015	GE	T-type, 15A	2	UUT_v-3
TEYF3015	GE	T-type, 15A	2	UUT_v-3
T*	GE	T-type, 15A-1200A	2-37	Interpolated
TKM3F	GE	T-type, 1200A	37	UUT_v-6
XT Molded Case Switches				
XT1	ABB	160A	4	UUT_s-7
XT4	ABB	250A	7	UUT_s-7, UUT_s-8
XT5	ABB	600A	15	UUT_s-8, UUT_s-9, UUT_r-2
XT7	ABB	1200A	43	UUT_s-8, UUT_s-9, UUT_r-3
Emax Breakers - Fixed				
Emax 1.2	ABB	1200A Fixed 3P/4P	31-35	Extrapolated
Emax 1.2	ABB	1200A Fixed 3P	31	UUT_r-3
Emax 2.2	ABB	2000A Fixed 3P/4P	115-148	Interpolated
Emax 4.2	ABB	3000A Fixed 3P/4P	201-256	Interpolated
Emax 6.2 - 5kA	ABB	5000A Fixed 3P/4P	314-406	Interpolated
Emax 6.2 - 5kA	ABB	5000A Fixed 4P	406	UUT_r-2
Emax Breakers - Drawout				
Emax 1.2	ABB	1200A Drawout 3P/4P	90.4-102.5	Extrapolated
Emax 1.2	ABB	1200A Drawout 4P	102.5	UUT_r-3
Emax 2.2	ABB	2000A Drawout 3P/4P	135-239	Interpolated
Emax 4.2	ABB	3000A Drawout 3P/4P	300-377	Interpolated
Emax 6.2 - 5kA	ABB	5000A Drawout 3P/4P	486-620	Interpolated
Emax 6.2 – 6kA	ABB	6000A Drawout Only 3P	818	UUT_r-1
EntelliGuard G (800A-4000A)				
G*	GE	800A-2000A	136.7-176.4	Extrapolated
GA20M2X	GE	2000A	176.4	UUT_v-2a
G*	GE	2500A-6000A	253.5-463.0	Interpolated
GA60M2X	GE	6000A	463	UUT_u-1
PowerBreak II (800A-4000A)				
SSD30D30H	GE	3000A	353	UUT_y-1b
SSD	GE	800A-3000A	166-353	Interpolated
SSD20D20H	GE	2000A	202	UUT_y-1b
SSD08D08H	GE	800A	166	UUT_y-1b

General Notes:

[1] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
r - 16188 / s - 15605 / t - 2346A / u - 10164 / v - 10155 / w - 10154 / x - 8101 / y - 8055 / z - 8480

* Is used to indicated the series of identification numbers (range of subcomponents) beyond the primary identification number for the specified subcomponent product line.

Table 5	ABB, INC. CLASS 2 SWITCHBOARD CERTIFIED SUBCOMPONENT MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 1.56g at $^{z}/_{h}$ = 1 → F_p = 1.17g and S_{DS} = 2.50g at $^{z}/_{h}$ = 0 → F_p = 1.13g

Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT[1]
Power Panels				
APNB3812	GE	Spectra 1200A	150	UUT_v-6
APN*	GE	Spectra 1200A-2000A	150-170	Interpolated
APNB3820	GE	Spectra 2000A	170	UUT_v-3
ALM3424MTX	GE	A Series 225A	33	UUT_x-1
AL*, AD*	GE	A Series 225-600A	33-75	Interpolated
ADM3366MTX	GE	A Series 600A	75	UUT_x-5
Reliagear Power Panels Bus Stack				
IN1604TX3H1	ABB	400A, Aluminum	53	UUT_s-7
IN1604CC3H2	ABB	400A, Copper	62	UUT_s-7
Inxx(04-40)xx(1,3,4)(Hx,Bx)	ABB	400A-4000A, CU & AL	53-510	Interpolated
IN4030CC3H1	ABB	3000A, Aluminum	280	UUT_s-8
IN5640CC4B3	ABB	4000A, Copper	510	UUT_s-9
Surge Protection Device (SPD)				
TPHE*, THE*, ATHE*, TPME*	GE	25-100kA/130-200kA	0-25	Extrapolated
TPHE480D12PP	GE	125kA/250kA	25	UUT_v-3
TPHE*, THE*, ATHE*, TPME*	GE	125-300kA/250-600kA	25	Interpolated
TPHE480D30PP	GE	300kA/600kA	25	UUT_v-6
SP120Y	ABB	120Wye, SPD, Disconnect	50	UUT_s-8
SP277Y	ABB	480/277Y, SPD, Disconnect	50	Interpolated
SP347Y	ABB	600/347Y, SPD, Disconnect	50	Interpolated
SP480D	ABB	480D, SPD, Disconnect	50	UUT_s-8
Strip Heaters				
CRX# OT-1225	Chromalox	Heater	3	UUT_v-2a
Transfer Switches				
ZTG000A00020E	GE	Zenith Transfer Switch	60	UUT_x-3
ZTG*	GE	Zenith Transfer Switch	60-69	Interpolated
ZTGD00A0U020E	GE	Zenith Transfer Switch	69	UUT_x-3
OXA30U2X2QB	ABB	30A 2 Pole ATS	25	UUT_s-8
OX*	ABB	TruONE ATS	25-125	Interpolated
OXB1200U3S2QT	ABB	1200A 4 pole ATS	125	UUT_s-8
Meter Socket				
CM100A35K480V	GE	480V	8.4	UUT_t-2
CM200A65K480V	GE	480V	8.4	UUT_t-2

General Notes:

[1] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
r - 16188 / s - 15605 / t - 2346A / u - 10164 / v - 10155 / w - 10154 / x - 8101 / y - 8055 / z - 8480

* Is used to indicated the series of identification numbers (range of subcomponents) beyond the primary identification number for the specified subcomponent product line.

Table 5	ABB, INC. CLASS 2 SWITCHBOARD CERTIFIED SUBCOMPONENT MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 1.56g at $^{z}/_{h}$ = 1 → F_p = 1.17g and S_{DS} = 2.50g at $^{z}/_{h}$ = 0 → F_p = 1.13g

Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT[1]
Meter Socket - cont'd				
CM100, CM200	GE	240V-600V	6.7-10.2	Interpolated
CM200MSJF240V	GE	240V	6.7	UUT_t-2
CM200MSJF600V	GE	600V	10	UUT_t-2
MT04AP	ABB	Pulse, Carbon Steel	16	UUT_s-7
MT04AM(AD)	ABB	ModBus, Carbon Steel	16	Interpolated
MT04AB	ABB	BacNe, Carbon Steel	16	UUT_s-8
Generator Connectors				
HBLFRSBN	Hubbell		0.1	UUT_t-1
HBL	Hubbell		0.1-1.54	Interpolated
HBLFRGN	Hubbell		1.54	UUT_t-1
Control Power Transformer				
9T58K2808	GE	0.3 kVA 240/480	7	UUT_v-2a
9T58K28(08-15)	GE	0.05kVA-3kVA 240/480	7-54	Interpolated
9T58K2815	GE	3.0kVA 240/480	54	UUT_s-7

General Notes:

[1] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
r - 16188 / s - 15605 / t - 2346A / u - 10164 / v - 10155 / w - 10154 / x - 8101 / y - 8055 / z - 8480

* Is used to indicated the series of identification numbers (range of subcomponents) beyond the primary identification number for the specified subcomponent product line.

Table 6	ABB, INC. ISB SWITCHBOARD CERTIFIED SUBCOMPONENT MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 1.10g at $^{z}/_{h}$ = 1 → F_p = 0.83g and S_{DS} = 1.76g at $^{z}/_{h}$ = 0 → F_p = 0.79g

Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT[1]
High Pressure Contact Switch (HPC)				
THPR3608GA3	GE	HPC, 800A	115	UUT_w-5
THPR*, THPC*	GE	HPC, 800A-4000A	115-540	Interpolated
THPC3640G3T	GE	HPC, 4000	540	UUT_w-4
Fusible Switches				
ADS36030HS	GE	30A	18.7	UUT_v-6
ADS*	GE	30-1200A	18.7-75	Interpolated
ADS36120LB	GE	1200A	75	UUT_v-6
Fuses				
ATDR1/2	Mersen	0.5A	<10	UUT_w-4
AJT1-1/2	Mersen	1.5A	<10	UUT_v-2a
A4J6	Mersen	6.0A	<10	UUT_v-2a
AJT, A4J6, A4BY, ATDR	Mersen	0.5A-4000A	<10-25	Interpolated
A4BY800	Mersen	800A	<10	UUT_w-5
A4BY1200	Mersen	1200A	<10	UUT_v-6
A4BY4000	Mersen	4000A	25	UUT_w-4
Record Plus Circuit Breakers				
NEFBV	ABB	15A	3	UUT_s-7
NEFBV	ABB	30A	3	Interpolated
NEFB	ABB	15A - 100A	3-5	Interpolated
NEFBV	ABB	50A	4	Interpolated
NEFBV	ABB	100A	5	UUT_s-7
FBL36TE030R	GE	F-type, 30A	5	UUT_v-3
FBH36TE035R2	GE	F-type, 35A	4	UUT_v-3
F*	GE	F-type, 30A-600A	3.3-22	Interpolated
FGP36AA066R1	GE	F-type, 600A	22	UUT_v-3
Spectra RMS Circuit Breakers				
SEHA36AT0030	GE	S*-type, 30A	5	UUT_v-3
SELA36AT0150	GE	S*-type, 150A	5	UUT_y-1a
SFLA36AT0250	GE	S*-type, 250A	9	UUT_y-1a
S*	GE	S*-type, 30A-1200A	5-42.8	Interpolated
SGLA36AT0600	GE	S*-type, 600A	13	UUT_y-1a
SKPA36AT1200	GE	S*-type, 1200A	40	UUT_y-1a
SKHA36AT1200	GE	S*-type, 1200A	42.8	UUT_v-3

General Notes:

[1] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
r - 16188 / s - 15605 / t - 2346A / u - 10164 / v - 10155 / w - 10154 / x - 8101 / y - 8055 / z - 8480

* Is used to indicated the series of identification numbers (range of subcomponents) beyond the primary identification number for the specified subcomponent product line.

Table 6	ABB, INC. ISB SWITCHBOARD CERTIFIED SUBCOMPONENT MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 1.10g at $^{z}/_{h}$ = 1 → F_p = 0.83g and S_{DS} = 1.76g at $^{z}/_{h}$ = 0 → F_p = 0.79g

Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT[1]
Thermal Mag, Q-Line, Molded Case Switches				
TEYF1015	GE	T-type, 15A	2	UUT_v-3
TEYF2015	GE	T-type, 15A	2	UUT_v-3
TEYF3015	GE	T-type, 15A	2	UUT_v-3
T*	GE	T-type, 15A-1200A	2-36	Interpolated
TKM3F	GE	T-type, 1200A	36	UUT_v-6
XT Molded Case Switches				
XT1	ABB	160A	4	UUT_s-7
XT4	ABB	250A	7	UUT_s-7, UUT_s-8
XT5	ABB	600A	15	UUT_s-8, UUT_s-9, UUT_r-2
XT7	ABB	1200A	43	UUT_s-8, UUT_s-9, UUT_r-3
Emax Breakers - Fixed				
Emax 1.2	ABB	1200A Fixed 3P/4P	31-35	Extrapolated
Emax 1.2	ABB	1200A Fixed 3P	31	UUT_r-3
Emax 2.2	ABB	2000A Fixed 3P/4P	115-148	Interpolated
Emax 4.2	ABB	3000A Fixed 3P/4P	201-256	Interpolated
Emax 6.2 - 5kA	ABB	5000A Fixed 3P/4P	314-406	Interpolated
Emax 6.2 - 5kA	ABB	5000A Fixed 4P	406	UUT_r-2
Emax Breakers - Drawout				
Emax 1.2	ABB	1200A Drawout 3P/4P	90.4-102.5	Extrapolated
Emax 1.2	ABB	1200A Drawout 4P	102.5	UUT_r-3
Emax 2.2	ABB	2000A Drawout 3P/4P	135-239	Interpolated
Emax 4.2	ABB	3000A Drawout 3P/4P	300-377	Interpolated
Emax 6.2 - 5kA	ABB	5000A Drawout 3P/4P	486-620	Interpolated
Emax 6.2 – 6kA	ABB	6000A Drawout Only 3P	818	UUT_r-1
EntelliGuard G				
G*	GE	800A-2000A	136.7-176.4	Extrapolated
GA20M2X	GE	2000A	176.4	UUT_v-2a
G*	GE	2500A-6000A	253.5-463.0	Interpolated
GA60M2X	GE	6000A	463	UUT_u-1
PowerBreak II (800A-4000A)				
SSD30D30H	GE	3000A	353	UUT_y-1b
SSD	GE	800A-3000A	166-353	Interpolated
SSD20D20H	GE	2000A	202	UUT_y-1b
SSD08D08H	GE	800A	166	UUT_y-1b

General Notes:

1 The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
r - 16188 / s - 15605 / t - 2346A / u - 10164 / v - 10155 / w - 10154 / x - 8101 / y - 8055 / z - 8480

* Is used to indicated the series of identification numbers (range of subcomponents) beyond the primary identification number for the specified subcomponent product line.

Table 6	ABB, INC. ISB SWITCHBOARD CERTIFIED SUBCOMPONENT MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 1.10g at $^{z}/_{h}$ = 1 → F_p = 0.83g and S_{DS} = 1.76g at $^{z}/_{h}$ = 0 → F_p = 0.79g

Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT[1]
Dry Type Transformer				
9T84C9474G03	GE	75kVA	833	UUT_z-1
9T84C9474G03	GE	112.5kVA	833	UUT_z-1
9T45J0006	GE	150kVA	851	UUT_z-2
9T*	GE	75kVA-225kVA	833-851	Interpolated
9T45J0007	GE	225kVA	851	UUT_z-2
Power Panels				
APNB3812	GE	Spectra 1200A	150	UUT_v-6
APN*	GE	Spectra 1200A-2000A	150-170	Interpolated
APNB3820	GE	Spectra 2000A	170	UUT_v-3
ALM3424MTX	GE	A Series 225A	33	UUT_x-1
AL*, AD*	GE	A Series 225-600A	33-75	Interpolated
ADM3366MTX	GE	A Series 600A	75	UUT_x-5
Reliagear Power Panels Bus Stack				
IN1604TX3H1	ABB	400A, Aluminum	53	UUT_s-7
IN1604CC3H2	ABB	400A, Copper	62	UUT_s-7
Inxx(04-40)xx(1,3,4)(Hx,Bx)	ABB	400A-4000A, CU & AL	53-510	Interpolated
IN4030CC3H1	ABB	3000A, Aluminum	280	UUT_s-8
IN5640CC4B3	ABB	4000A, Copper	510	UUT_s-9
Surge Protection Device (SPD)				
TPHE*, THE*, ATHE*, TPME*	GE	25-100kA/130-200kA	0-25	Extrapolated
TPHE480D12PP	GE	125kA/250kA	25	UUT_v-3
TPHE*, THE*, ATHE*, TPME*	GE	125-300kA/250-600kA	25	Interpolated
TPHE480D30PP	GE	300kA/600kA	25	UUT_v-6
SP120Y	ABB	120Wye, SPD, Disconnect	50	UUT_s-8
SP277Y	ABB	480/277Y, SPD, Disconnect	50	Interpolated
SP347Y	ABB	600/347Y, SPD, Disconnect	50	Interpolated
SP480D	ABB	480D, SPD, Disconnect	50	UUT_s-8
Strip Heaters				
CRX# OT-1225	Chromalox	Heater	3	UUT_v-2a
Transfer Switches				
ZTG000A00020E	GE	Zenith Transfer Switch	60	UUT_x-3
ZTG*	GE	Zenith Transfer Switch	60-69	Interpolated
ZTGD00A0U020E	GE	Zenith Transfer Switch	69	UUT_x-3

General Notes:

1 The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
r - 16188 / s - 15605 / t - 2346A / u - 10164 / v - 10155 / w - 10154 / x - 8101 / y - 8055 / z - 8480

* Is used to indicated the series of identification numbers (range of subcomponents) beyond the primary identification number for the specified subcomponent product line.

Table 6	ABB, INC. ISB SWITCHBOARD CERTIFIED SUBCOMPONENT MATRICES	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Seismic Certification Limits: S_{DS} = 1.10g at $^{z}/_{h}$ = 1 → F_p = 0.83g and S_{DS} = 1.76g at $^{z}/_{h}$ = 0 → F_p = 0.79g

Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT[1]
Transfer Switches - cont'd				
OXA30U2X2QB	ABB	30A 2 Pole ATS	25	UUT_s-8
OX*	ABB	TruONE ATS	25-125	Interpolated
OXB1200U3S2QT	ABB	1200A 4 pole ATS	125	UUT_s-8
Meter Socket				
CM100A35K480V	GE	480V	8.4	UUT_t-2
CM200A65K480V	GE	480V	8.4	UUT_t-2
CM100, CM200	GE	240V-600V	6.7 - 10.2	Interpolated
CM200MSJF240V	GE	240V	6.7	UUT_t-2
CM200MSJF600V	GE	600V	10.2	UUT_t-2
MT04AP	ABB	Pulse, Carbon Steel	16	UUT_s-7
MT04AM(AD)	ABB	ModBus, Carbon Steel	16	Interpolated
MT04AB	ABB	BacNe, Carbon Steel	16	UUT_s-8
Generator Connectors				
HBLFRSBN	Hubbell		0.1	UUT_t-1
HBL	Hubbell		0.1-1.54	Interpolated
HBLFRGN	Hubbell		1.54	UUT_t-1
Control Power Transformer				
9T58K2808	GE	0.3 kVA 240/480	7	UUT_v-2a
9T58K28(08-15)	GE	0.05kVA-3kVA 240/480	7-54	Interpolated
9T58K2815	GE	3.0kVA 240/480	54	UUT_s-7

General Notes:

[1] The units were tested at different times and the subscripts on the UUT's reference the following lab test reports:
r - 16188 / s - 15605 / t - 2346A / u - 10164 / v - 10155 / w - 10154 / x - 8101 / y - 8055 / z - 8480

* Is used to indicated the series of identification numbers (range of subcomponents) beyond the primary identification number for the specified subcomponent product line.

UUT_r-1	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.

Manufacturer: ABB, Inc.	**Test Location:** ETL
Product Line: Class1, Class 2, ISB Switchboard	**Report Number:** 16188, Rev 1
Model Number: RG-(CL1/CL2/ISB)-SB	**UUT No. in Test Report:** UUT-1

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with Emax 6.2 - 6kA circuit breaker.

UUT Components: NEMA 1 12ga Carbon Steel Enclosure with 6000A copper bus with (1) Emax 6.2 - 6kA drawout circuit breaker.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,975	50.0"	50.0"	90.0"	5.9	5.6	15.5

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
	2.50	0.00	1.50	-	-	1.68g	0.68g

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_r-2	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.

Manufacturer: ABB, Inc.	**Test Location:** ETL
Product Line: Class1, Class 2, ISB Switchboard	**Report Number:** 16188, Rev 1
Model Number: RG-(CL1/CL2/ISB)-SB	**UUT No. in Test Report:** UUT-2

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with Emax 6.2 - 5kA and XT5 circuit breakers.

UUT Components: NEMA 1 12ga Carbon Steel Enclosure with 5000A copper bus with (1) Emax 6.2 - 5kA fixed circuit breaker and (1) XT5 600A circuit breaker.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,884	50"	45.0"	90.0"	5.9	5.4	14.7

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
	2.50	0.00	1.50	-	-	1.68g	0.68g

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_r-3	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.

Manufacturer: ABB, Inc.	**Test Location:** ETL
Product Line: Class1, Class 2, ISB Switchboard	**Report Number:** 16188, Rev 1
Model Number: RG-(CL1/CL2/ISB)-SB	**UUT No. in Test Report:** UUT-3

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with Emax 1.2 and XT7 circuit breakers.

UUT Components: NEMA 1 12ga Carbon Steel Enclosure with 1200A copper bus with (1) Emax 1.2 - fixed breaker, (1) Emax 1.2 - drawout breaker and (1) XT7 1200A circuit breaker.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,226	30.0"	30.0"	90.0"	8.3	10.4	20.8

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
	2.50	0.00	1.50	-	-	1.68g	0.68g

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_s-7	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Floor mounted with (4) 1/2" diameter grade 8 bolts.

Manufacturer: ABB, Inc.	**Test Location:** ETL
Product Line: Class1, Class 2, ISB Switchboard	**Report Number:** 15605, Rev 1
Model #: RG-[CL1/CL2/ISB]-SB	**UUT No. in Test Report:** UUT-7

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with (2) Reliagear panelboards.

UUT Components: NEMA 1 12ga Carbon Steel Enclosure with a 400A aluminum Reliagear power panel bus stack (IN1604TX3H1), 400A copper Reliagear power panel bus stack (IN1604CC3H2), Record plus breakers (NEFBV-15A, NEFBV-100A), XT molded case switches (2x XT1, 2x XT4), CPT (9T58K2815) and metering socket (MT04AP).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
809	30.0"	25.0"	90.0"	6.9	9.7	24.0

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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_s-8	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Floor mounted with (4) 1/2" diameter grade 8 bolts.

Manufacturer: ABB, Inc.	**Test Location:** ETL
Product Line: Class1, Class 2, ISB Switchboard	**Report Number:** 15605, Rev 1
Model #: RG-[CL1/CL2/ISB]-SB	**UUT No. in Test Report:** UUT-8C

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with (1) Reliagear panelboard.

UUT Components: NEMA 1 12ga Carbon Steel Enclosure with a 3000A aluminum Reliagear power panel bus stack (IN4030CC3H1), XT molded case switches (2x XT4, 3x XT5, 2x XT7), surge protection devices (SP120Y, SP480D), ATS (OXA30U2X2QB, OXB1200U3S2QT), and metering socket (MT04AB).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,625	50.0"	50.0"	90.0"	4.8	6.9	12.5

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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_s-9	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Floor mounted with (4) 1/2" diameter grade 8 bolts.

Manufacturer: ABB, Inc.	**Test Location:** ETL
Product Line: Class1, Class 2, ISB Switchboard	**Report Number:** 15605, Rev 1
Model #: RG-[CL1/CL2/ISB]-SB	**UUT No. in Test Report:** UUT-9B

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with (1) Reliagear panelboard.

UUT Components: NEMA 1 12ga Carbon Steel Enclosure with a 4000A copper Reliagear power panel bus stack (IN5640CC4B3), and XT molded case switches (11x XT5, 7x XT7).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,711	60.0"	60.0"	90.0"	4.8	3.5	9.9

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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_t-1	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.
Required Modification: Door hinge bolts replaced with 1/4-20 bolts.

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class 1, Class 2, ISB Switchboard	**Report Number:** 2346A-R Rev.1
Model #: GT-[CL1/CL2/ISB]-SB	**UUT No. in Test Report:** UUT1

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a standalone floor mounted NEMA type 3R enclosure with (2) Generator Connection Receptacle Studs.

UUT Components: NEMA 3R 12ga Carbon Steel Enclosure with (2) Generator Connection Receptacles Studs (HBLFRSBN, HBLFRGN)

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,852	40.0"	50.0"	93.0"	11.5	7.57	32.8

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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_t-2	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class1, Class 2, ISB Switchboard	**Report Number:** 2346A-R Rev.1
Model #: CM-[CL1/CL2/ISB]-SB	**UUT No. in Test Report:** UUT2
UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.	
UUT Description: The unit is comprised of a standalone floor mounted NEMA type 3R enclosure with (4) meter sockets.	
UUT Components: NEMA 3R 12ga Carbon Steel Enclosure with (4) meter sockets ((2) CM100A35K480V, (2) CM200A65K600V) and (2) FD1 meter sockets(CM200MSJF600V, CM200MSJF240V)	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,020	35.0"	40.0"	93.0"	17.2	11.5	32.0

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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_v-3	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.
Required Modifications: (6) 1/4"-20 bolts added to front frame.

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class1, Class 2, ISB Switchboard	**Report Number:** 10155
Model #: EV-[CL1/CL2/ISB]-SB / Switchboard NPI-2	**UUT No. in Test Report:** UUT3

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit comprised of a standalon floor mounted NEMA 1 enclosure with 4000A busway and multiple circuit breakers.

UUT Components: NEMA 1 12ga carbon steel enclosure with 4000A copper bus, 2000 spectra series panelboard (APNB3820), TVSS Surge Protection device (TPHE480D12PP), record plus circuit breakers (FBL36TE030R, FBH36TE035R2, FGP36AA066R1), spectra circuit breakers (SEHA36AT0030, SKHA36AT1200), thermal mag molded case breakers (TEYF1015, TEYF2015, TEYF3015).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,026	45.0"	25.0"	90.0"	8.95	10	>33

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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_v-6	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.
Required Modifications: (6) 1/4"-20 bolts added to front frame

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class1, Class 2, ISB Switchboard	**Report Number:** 10155
Model #: EV-[CL1/CL2/ISB]-SB / Switchboard NPI-2	**UUT No. in Test Report:** UUT6

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with 4000A busway and multiple circuit breakers.

UUT Components: NEMA 1 12ga carbon steel enclosure with 4000A aluminum bus, 1200A (TKM3F), fusible switches (ADS36030HS, ADS36120LB), surge protection device (TPHE480D30PP), and 1200A fuse (AFBY1200)

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
870	45.0	25.0	91.0	9.48	11.4	13.0

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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_w-4	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.
Required Modifications: (6) 1/4-20 screws to the front door.

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class1, Class 2, ISB Switchboard	**Report Number:** 10154
Model #: EV-[CL1/CL2/ISB]-SB / Switchboard NPI-2	**UUT No. in Test Report:** UUT4

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with a 4000A busway and high pressure contact switch (HPC).

UUT Components: NEMA 1 12ga carbon steel enclosure with 4000A aluminum bus, 4000A HPC (THPC3640G3T), 4000A fuse (A4BY4000), ground fault transformer (BGFL254-1200), EPM power meter (PL74501AB0A000).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,176	40.0"	35.0"	90.0"	8.77	7.43	>33

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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_w-5	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.
Required Modifications: (4) 1/4-20 screws to the front door.

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class1, Class 2, ISB Switchboard	**Report Number:** 10154
Model #: EV-[CL1/CL2/ISB]-SB / Switchboard NPI-2	**UUT No. in Test Report:** UUT5
UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.	
UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with 800A busway and 800A high pressure contract (HPC) switch.	
UUT Components: NEMA 1 12ga carbon steel enclosure with 800A aluminum bus, 800A HPC switch (THPR3608GA3), 800A fuses (A4BY800), ampmeter (250440LSVE7JBNU), voltmeter (250444SJS7JGSU) and 2 selector switches (A11A00721E, A11A048-723E)	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
510	30.0"	25.0"	90.0"	12.3	10.9	12.7

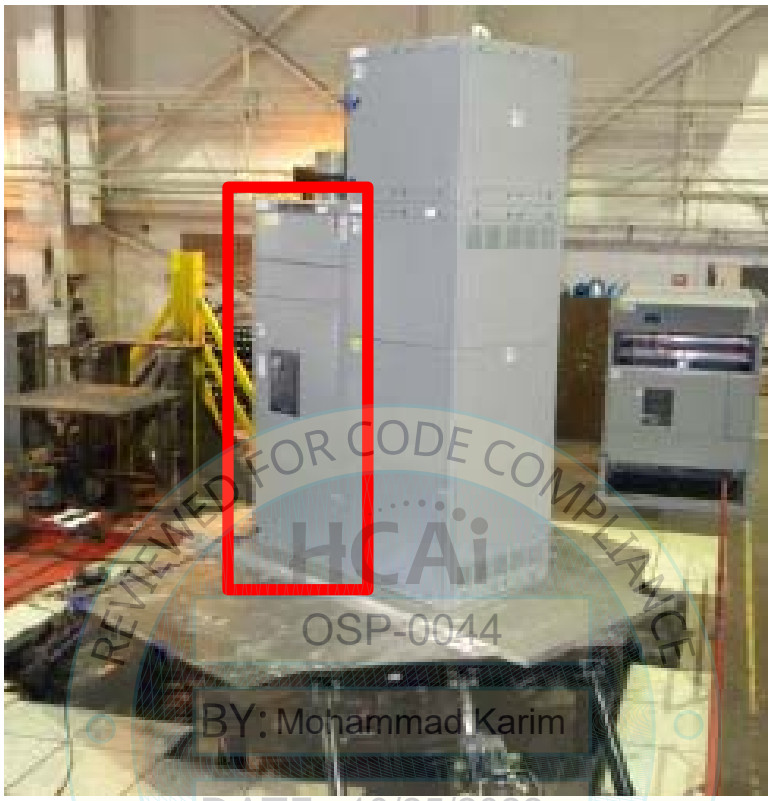
SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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_v-2a	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts in both sections.



Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class 2, ISB Switchboard	**Report Number:** 10155
Model #: EV-[CL2/ISB]-SB / Switchboard NPI 2	**UUT No. in Test Report:** UUT2

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a two mated, floor mounted NEMA type 1 enclousre with 2000A busway with Entelliguard circuit breaker.

UUT Components: NEMA 1 12ga carbon steel enclosure with 2000 copper bus, 1 Entelliguard circuit breaker (GA20M2X), heater (CRX# OT-1225), fuse (A4J6, AJT1-1/2, TR3R), relay (SPVRB 480), 0.3kVA Control Power Transformer (9T58K2808), and 123" top feeder stack.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,435	35.0"	35.0"	90.0"	8.2	16.8	31.0

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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_u-1	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.
Required Modification: (24) 1/4-20 screws added to front panels.

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class 2, ISB Switchboard	**Report Number:** 10164
Model #: EV-[CL2/ISB]-SB / Switchboard NPI-2	**UUT No. in Test Report:** UUT1

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of a 6000A copper busway and a 6000A Enteliguard Breaker.

UUT Components: NEMA1 12ga Carbon Steel Enclosure; 6000A Entelliguard G Circuit Breaker (GA60M2X), 6000A Copper silver-plated bus, PQM Meter (PQM II), Fuse (AJT2), Fuse Block (15149-3), Voltage Conditioner Plate (SVCA480Y), Power Supply Plate (SPSA480).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
4,463	60.0"	60.0"	90.0"	3.5	2.4	10.6

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	1.56	1.00	1.50	2.50g	1.87g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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-1	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.

UUT-1

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class 2, ISB Switchboard	**Report Number:** 8101
Model #: INT-[CL2/ISB]-SB / Distribution	**UUT No. in Test Report:** Switchboard#1

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with a 250A Circuit Breaker and (2) A Series Panelboards.

UUT Components: NEMA1 12ga Carbon Steel Enclosure with a 250A Spectra F Circuit Breaker (SFLA36AT0250), (2) A Series Panel Board (AQM3424MTX, ALM342MTX)

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
435	40.0"	15.0"	90.0"	19.50	12.5	>33

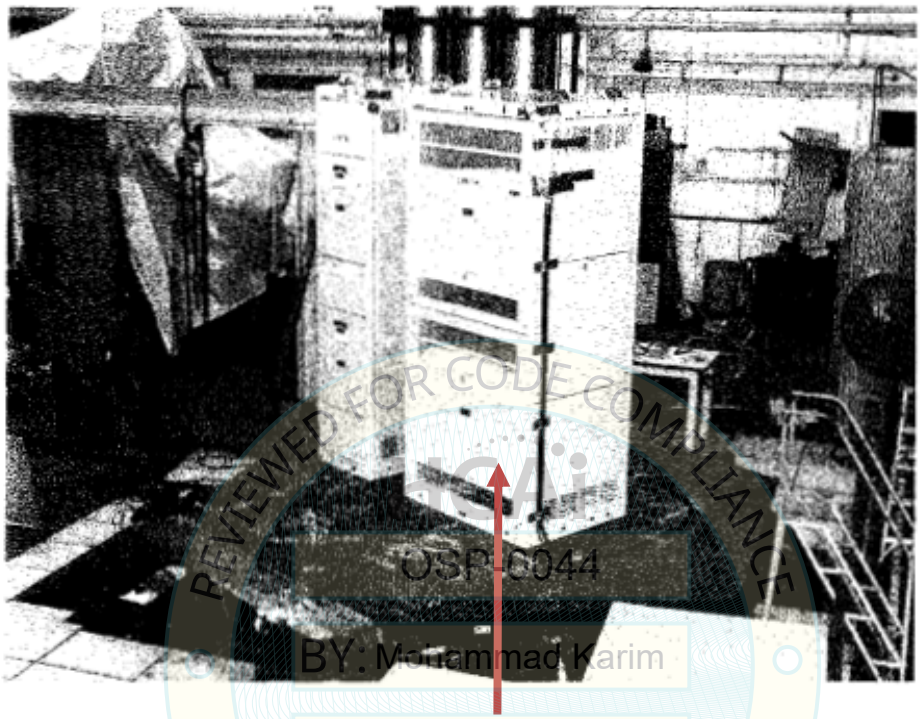
SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	1.56	1.00	1.50	2.50g	1.87g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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-3	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.



Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class 2, ISB Switchboard	**Report Number:** 8101
Model #: INT-[CL2/ISB]-SB	**UUT No. in Test Report:** Switchboard #3
UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.	
UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with ATS Switches.	
UUT Components: NEMA1 12ga Carbon Steel Enclosure; (2) 200A Automatic Transfer Switches (ZTG000A00020E, ZTG00A0U020E)	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
405	20.0"	30.0"	90.0"	18.70	14.8	>33

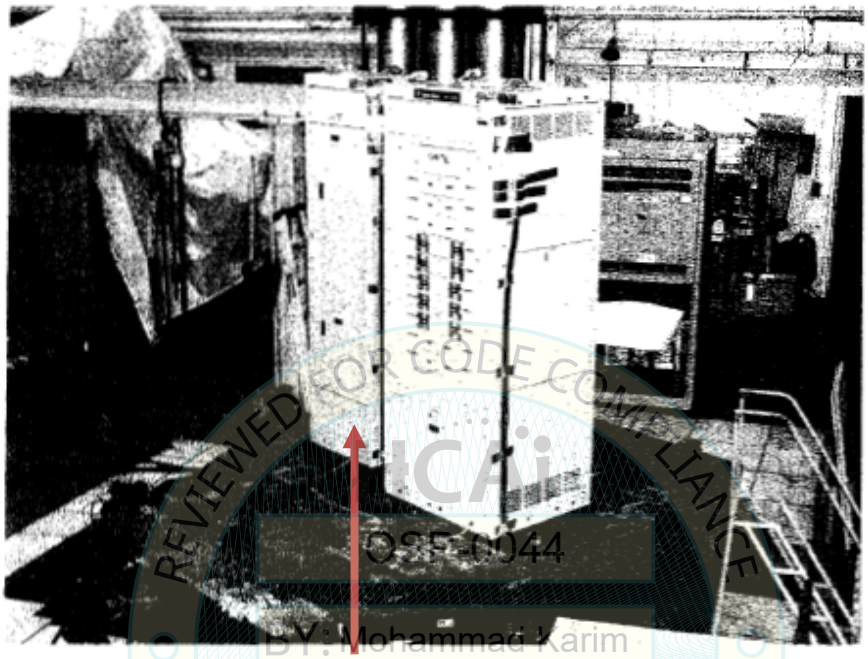
SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	1.67	1.00	1.50	2.67g	2.0g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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-5	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.



UUT-5

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class 2, ISB Switchboard	**Report Number:** 8101
Model #: INT-[CL2/ISB]-SB	**UUT No. in Test Report:** Switchboard #5
UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.	
UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with A Series Panel Board 600A	
UUT Components: NEMA1 12ga Carbon Steel Enclosure; A Series Panel Board 600A (ADM3366MTX), and TVSS (TPHE480D30PP).	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
380	25.0"	15.0"	90.0"	5.5	12.5	>33

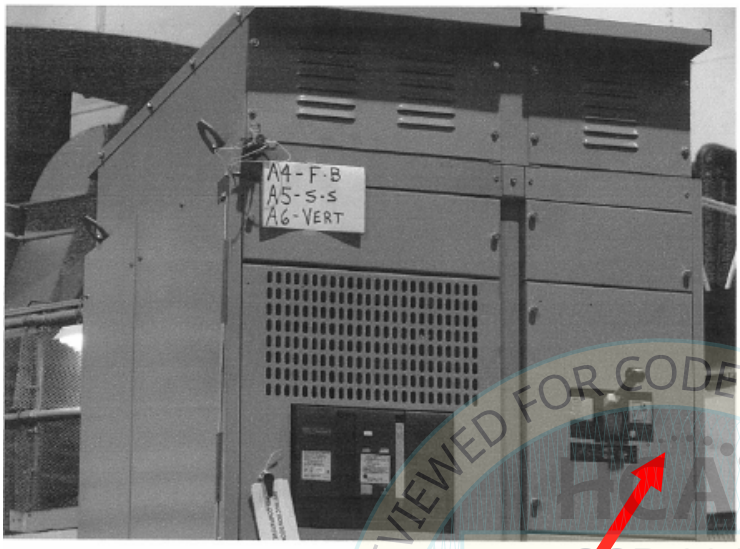
SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	1.67	1.00	1.50	2.67g	2.00g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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-1a	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.



UUT-1A

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class 2, ISB Switchboard	**Report Number:** 8055
Model #: AV-[CL2/ISB]-SB	**UUT No. in Test Report:** UUT1A

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a floor mounted NEMA type 3R enclosure consisting of a drip roof, circuit breakers and a relay.

UUT Components: NEMA3R 12ga Carbon Steel Enclosure with Relay (BE3-27-1A1N2), Spectra Circuit Breaker (SKPA36AT1200, SGLA36AT0600, SFLA36AT0250, SELA36AT0150).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,050	15.0"	50.0"	104.0"	12.4	7.8	>33

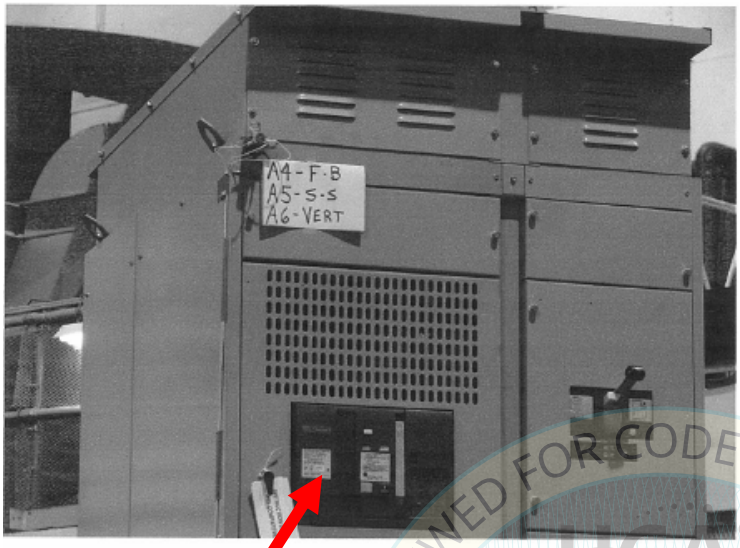
SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	1.67	1.00	1.50	2.67g	2.00g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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-1b	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.



UUT-1B

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: Class 2, ISB Switchboard	**Report Number:** 8055
Model #: PB-[CL2/ISB]-SB	**UUT No. in Test Report:** UUT1B

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a floor mounted NEMA type 3R enclosure consisting of a drip roof, circuit breakers.

UUT Components: NEMA3R 12ga Carbon Steel Enclosure with Powerbreak II Circuit Breaker (SSD30D30H, SSD20B20H, SSD08B08H).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,129	22.0"	50.0"	104.0"	12.4	7.8	>33

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	1.67	1.00	1.50	2.67g	2.00g	-	-
CBC 2019 / ICC-ES-AC156	2.50	0.00	1.50	-	-	1.68g	0.68g

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-1	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: ISB Switchboard	**Report Number:** 8480
Model #: INT-[ISB]-SB	**UUT No. in Test Report:** UUT1

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with (2) dry type transformers.

UUT Components: NEMA1 12ga Carbon Steel Enclosure with 75kVA Transformer (9T84C9474G03), 112.5kVA Transformer (9T84C9475G03).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,125	40.0"	35.0"	90.0"	7.8	32.0	>33

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	1.10	1.00	1.50	1.52g	1.14g	-	-
CBC 2019 / ICC-ES-AC156	1.76	0.00	1.50	-	-	1.02g	0.41g

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-2	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Floor mounted with (4) 1/2" diameter grade 5 bolts.

Manufacturer: ABB, Inc.	**Test Location:** Clark Test Laboratory
Product Line: ISB Switchboard	**Report Number:** 8480
Model #: INT-[ISB]-SB	**UUT No. in Test Report:** UUT2

UUT Function: Synchonization of multiple power sources to main bus for distribution of electricity.

UUT Description: The unit is comprised of a standalone floor mounted NEMA type 1 enclosure with a 150kVA Transformer and 225kVA Transformer

UUT Components: NEMA1 12ga Carbon Steel Enclosure; 150kVA Transformer (copper windings), 225kVA Transformer (copper windings

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,410	40.0"	35.0"	90.0"	15.6	15.5	>33

SEISMIC TEST PARAMETERS

Test Criteria	S_{DS} (g)	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2019 / ICC-ES-AC156	1.10	1.00	1.50	1.52g	1.14g	-	-
CBC 2019 / ICC-ES-AC156	1.76	0.00	1.50	-	-	1.02g	0.41g

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.