



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

**APPLICATION FOR HCAI SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: OSP-0690

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Siemens Industry, Inc.

Manufacturer's Technical Representative: Terry Woodyard

Mailing Address: 7000 Siemens Road, Wendell, NC 27591

Telephone: (919) 365-2458

Email: Terry.woodyard@siemens.com

Product Information

Product Name: Switchgear/Switchboards

Product Type: Switchgear - Medium Voltage

Product Model Number: GM-SG 5kV-27kV Metal-Clad Switchgear

General Description: GM-SG is a metalclad switchgear that provides medium voltage circuit protection

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





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

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

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

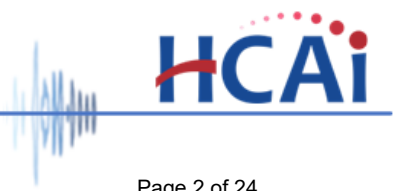
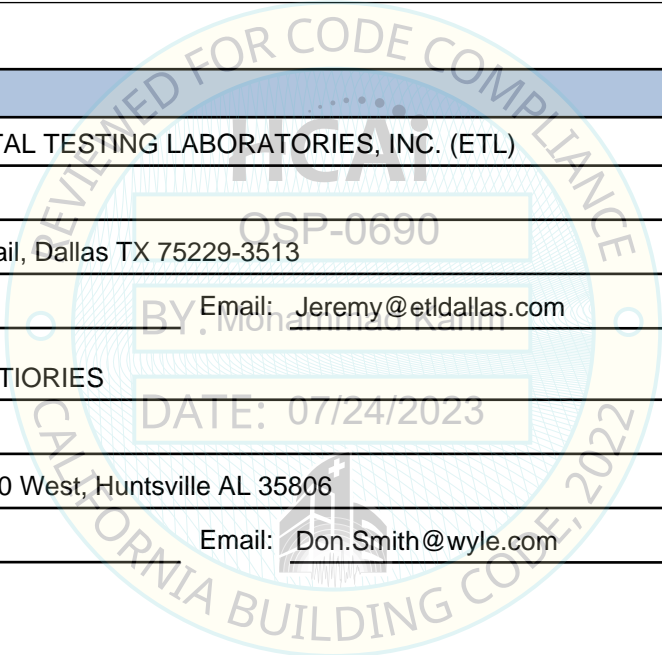
Certification Method

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

Testing Laboratory

Company Name: ENVIRONMENTAL TESTING LABORATORIES, INC. (ETL)
Contact Person: Jeremy Lange
Mailing Address: 11034 Indian Trail, Dallas TX 75229-3513
Telephone: (972) 247-9657 Email: Jeremy@etldallas.com

Company Name: WYLE LABORATORIES
Contact Person: Don Smith
Mailing Address: 7800 Highway 20 West, Huntsville AL 35806
Telephone: (256) 837-4411 Email: Don.Smith@wyle.com





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Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.50 at $z/h = 1.0$ and 1.13 at $z/h = 0$

SDS (Design spectral response acceleration at short period, g) = 2.0 at $z/h = 1.0$ and 2.5 at $z/h = 0$

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

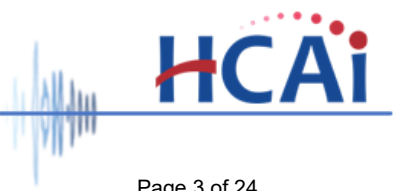
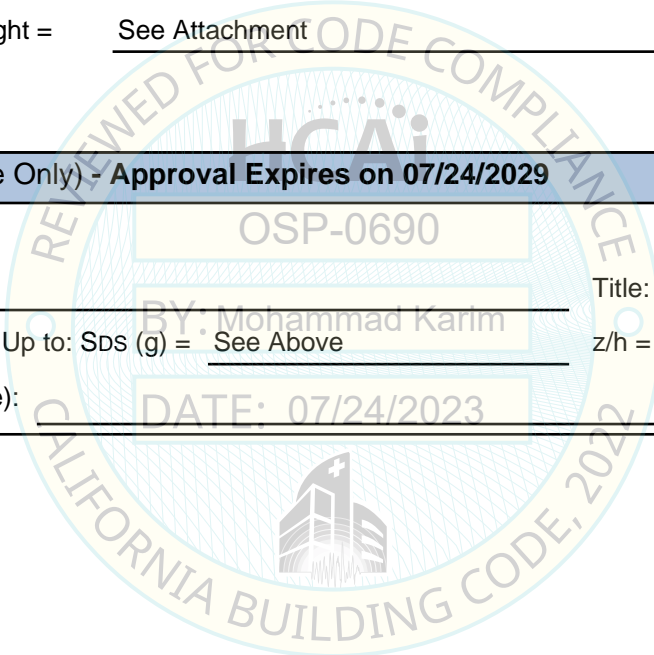
HCAI Approval (For Office Use Only) - Approval Expires on 07/24/2029

Date: 7/24/2023

Name: Mohammad Karim Title: Supervisor, Health Facilities

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

Condition of Approval (if applicable): DATE: 07/24/2023



SIEMENS - TYPE GM-SG 5kV-27kV METAL-CLAD SWITCHGEAR CERTIFIED COMPONENT MATRIX



| ID Number | System kV Rating | Short Circuit (kA) | Main Bus Ampere Rating | Enclosure Dimensions (in) | | | | Vertical COG (in) | Max Weight ¹ (lbs) | Representative UUT ² |
|-----------|------------------|--------------------|------------------------|---------------------------|-------|--------|------------------------|-------------------|-------------------------------|---------------------------------|
| | | | | Width | Depth | Height | Extension ³ | | | |

Table 1: GM-SG Switchgear Product Line - Single Section

| | | | | | | | | | | |
|--------------------------|-----------|-----------|-------------|-----------|------------|-------------|----------|-------------|-------------|--------------------------|
| GM-SG-25-1200-1HA | 5 | 25 | 1200 | 36 | 99 | 95.3 | 0 | 44.2 | 3478 | UUT_y-6 |
| GM-SG-50-2000-1HA | 5 | 50 | 1200 | 36 | 99 | 95.3 | 0 | 45.8 | 3944 | UUT_y-7 |
| GM-SG-xx-xxxx-AUX | - | - | 1200 - 4000 | 36 | 99 | 95.3 | 0 | 46.0 | 3945 | Interpolated |
| GM-SG-xx-xxxx-AUX | - | - | 1200 - 4000 | 36 | 99 | 95.3 | 0 | 46.0 | 3945 | Interpolated |
| GM-SG-xx-xxxx-1HA | 5 - 15 | 25 - 63 | 1200 - 4000 | 36 | 99 | 95.3 | 0 | 46.0 | 3945 | Interpolated |
| GM-SG-xx-xxxx-1HB | 5 - 15 | 25 - 63 | 1200 - 4000 | 36 | 99 | 95.3 | 0 | 46.0 | 3945 | Interpolated |
| GM-SG-xx-xxxx-2H | 5 - 15 | 25 - 63 | 1200 - 4000 | 36 | 99 | 95.3 | 0 | 46.0 | 3945 | Interpolated |
| GM-SG-xx-xxxx-1HA | 27 | 25 - 63 | 1200 - 4000 | 36 | 120 | 103 | 0 | 46.0 | 4300 | Interpolated |
| GM-SG-xx-xxxx-1HB | 27 | 25 - 63 | 1200 - 4000 | 36 | 120 | 103 | 0 | 46.0 | 4300 | Interpolated |
| GM-SG-xx-xxxx-2H | 27 | 25 - 63 | 1200 - 4000 | 36 | 120 | 103 | 0 | 46.0 | 4300 | Interpolated |
| GM-SG-40-1200-AUX | 27 | 40 | 1200 | 36 | 120 | 103 | 0 | 46.1 | 4365 | UUT_z-2 |

Table 2: GM-SG Switchgear Product Line - Ganged Sections

| | | | | | | | | | | |
|--------------------------|-----------|-----------|-------------|-----------|-----------|-------------|----------|-------------|-------------|---------------------------|
| GM-SG-1200-AUX | - | - | 1200 | 36 | 99 | 95.3 | 0 | 48.6 | 1948 | UUT_y-3a |
| GM-SG-1200-AUX | - | - | 1200 | 36 | 99 | 95.3 | 0 | 48.6 | 1948 | UUT_y-5a |
| GM-SG-xx-xxxx-AUX | - | - | 1200 - 4000 | 36 | 99 | 95.3 | 0 - 30 | 62.0 | 2000 | Interpolated |
| GM-SG-xx-xxxx-1HA | 5 - 15 | 25 - 63 | 1200 - 4000 | 36 | 99 | 95.3 | 0 - 30 | 58.0 | 2500 | Interpolated |
| GM-SG-xx-xxxx-AUX | 27 | 25 - 63 | 1200-3000 | 36 | 120 | 103 | 0 - 30 | 60.0 | 3000 | Interpolated |
| GM-SG-xx-xxxx-1HA | 27 | 25 - 63 | 1200-3000 | 36 | 120 | 103 | 0 - 30 | 62.0 | 3300 | Interpolated |
| GM-SG-xx-xxxx-1HB | 27 | 25 - 63 | 1200-3000 | 36 | 120 | 103 | 0 - 30 | 60.0 | 3500 | Interpolated |
| GM-SG-25-1200-1HA | 5 | 25 | 1200 | 36 | 99 | 95.3 | 0 | 43.7 | 3516 | UUT_y-5b |
| GM-SG-25-1200-1HA | 5 | 25 | 1200 | 36 | 99 | 95.3 | 0 | 43.7 | 3530 | UUT_y-3b |
| GM-SG-50-1200-1HB | 15 | 50 | 1200 | 36 | 99 | 95.3 | 0 | 44.0 | 3749 | UUT_x-1b |

General Notes:

¹ Weights are given for single sections

² x, y and z indicates the test report in which the units were qualified under: x - 54620-1, y - 15977, z - 16628

³ UUTy-2ab were tested with the 30" enclosure extension on the rear. The extension bolts to the rear of the enclosure and is not anchored to the foundation. This extension can be installed on any unit as long as the maximum weight and center of gravity do not exceed the listed values.

SIEMENS - TYPE GM-SG 5kV-27kV METAL-CLAD SWITCHGEAR CERTIFIED COMPONENT MATRIX



| ID Number | System kV Rating | Short Circuit (kA) | Main Bus Ampere Rating | Enclosure Dimensions (in) | | | | Vertical COG (in) | Max Weight ¹ (lbs) | Representative UUT ² |
|-----------|------------------|--------------------|------------------------|---------------------------|-------|--------|------------------------|-------------------|-------------------------------|---------------------------------|
| | | | | Width | Depth | Height | Extension ³ | | | |

Table 2: GM-SG Switchgear Product Line - Ganged Sections - S_{DS} = 2.0 at z/h = 1.0

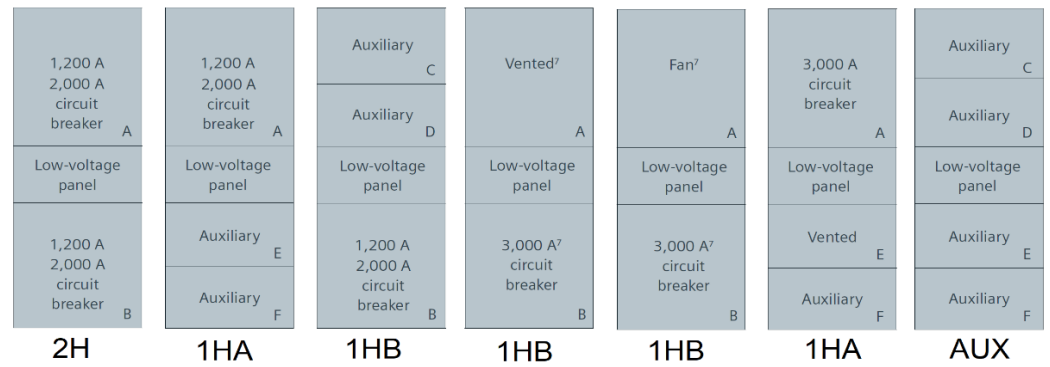
| | | | | | | | | | | |
|--------------------------|-----------|-----------|-------------|-----------|------------|-------------|-----------|-------------|-------------|---------------------------|
| GM-SG-40-3000-1HA | 27 | 40 | 3000 | 36 | 120 | 103 | 0 | 62.2 | 3990 | UUT_z-1b |
| GM-SG-xx-xxxx-1HB | 5 - 15 | 25 - 63 | 1200 - 4000 | 36 | 99 | 95.3 | 0 - 30 | 55.0 | 4000 | Interpolated |
| GM-SG-50-1200-2H | 15 | 50 | 1200 | 36 | 99 | 95.3 | 0 | 49.4 | 4553 | UUT_x-1a |
| GM-SG-xx-xxxx-2H | 27 | 25 - 63 | 1200-3000 | 36 | 120 | 103 | 0 - 30 | 58.0 | 4600 | Interpolated |
| GM-SG-xx-xxxx-AUX | 27 | 25 - 63 | 1200-3000 | 36 | 120 | 103 | 0 - 30 | 56.0 | 4900 | Interpolated |
| GM-SG-xx-xxxx-1HA | 5 - 15 | 25 - 63 | 1200 - 4000 | 36 | 99 | 95.3 | 0 - 30 | 53.0 | 5000 | Interpolated |
| GM-SG-xx-xxxx-1HB | 5 - 15 | 25 - 63 | 1200 - 4000 | 36 | 99 | 95.3 | 0 - 30 | 52.0 | 5000 | Interpolated |
| GM-SG-xx-xxxx-AUX | - | - | 1200 - 4000 | 36 | 99 | 95.3 | 0 - 30 | 53.0 | 5000 | Interpolated |
| GM-SG-50-2000-1HA | 15 | 50 | 2000 | 36 | 99 | 95.3 | 30 | 51.4 | 5395 | UUT_y-2b |
| GM-SG-xx-xxxx-1HA | 27 | 25 - 63 | 1200-3000 | 36 | 120 | 103 | 0 - 30 | 58.0 | 5500 | Interpolated |
| GM-SG-xx-xxxx-1HB | 27 | 25 - 63 | 1200-3000 | 36 | 120 | 103 | 0 - 30 | 54.0 | 5500 | Interpolated |
| GM-SG-xx-xxxx-2H | 27 | 25 - 63 | 1200-3000 | 36 | 120 | 103 | 0 - 30 | 55.0 | 5900 | Interpolated |
| GM-SG-40-3000-2H | 27 | 40 | 3000 | 36 | 120 | 103 | 0 | 51.4 | 5905 | UUT_z-1a |
| GM-SG-xx-xxxx-1HA | 5 - 15 | 25 - 63 | 1200 - 4000 | 36 | 99 | 95.3 | 0 - 30 | 52.0 | 6500 | Interpolated |
| GM-SG-xx-xxxx-1HB | 5 - 15 | 25 - 63 | 1200 - 4000 | 36 | 99 | 95.3 | 0 - 30 | 52.0 | 6500 | Interpolated |
| GM-SG-xx-xxxx-2H | 5 - 15 | 25 - 63 | 1200 - 4000 | 36 | 99 | 95.3 | 0 - 30 | 52.0 | 6500 | Interpolated |
| GM-SG-xx-xxxx-AUX | - | - | 1200 - 4000 | 36 | 99 | 95.3 | 0 - 30 | 52.0 | 6500 | Interpolated |
| GM-SG-63-4000-2H | 15 | 63 | 4000 | 36 | 99 | 95.3 | 30 | 52.3 | 6524 | UUT_y-2a |

General Notes:

¹ Weights are given for single sections

² x, y and z indicates the test report in which the units were qualified under: x - 54620-1, y - 15977, z - 16628

³ UUT_y-2ab were tested with the 30" enclosure extension on the rear. The extension bolts to the rear of the enclosure and is not anchored to the foundation. This extension can be installed on any unit as long as the maximum weight and center of gravity do not exceed the listed values.



**SIEMENS - TYPE GM-SG 5kV-27kV METAL-CLAD SWITCHGEAR
CERTIFIED SUBCOMPONENT MATRIX**



| Subcomponent ID or Siemens PN | Manufacturer | Width (in) | Depth (in) | Height (in) | Weight (lb) | Notes | Representative UUT ¹ |
|---|--------------|------------|------------|-------------|-------------|----------------------------------|---|
| Table 3a - Vacuum Circuit Breakers (by kA rating) | | | | | | | |
| 5-GMSG-40-1200 | Siemens | 32.0" | 39.0" | 36.0" | 440 | 40kA, 1200 | Extrapolated |
| 5-GMSG-40-xxx | Siemens | 32.0" | 39.0" | 36.0" | 440-665 | 40kA, 1200, 2000, 3000, 4000FC | Extrapolated |
| 5-GMSG-50-xxx | Siemens | 32.0" | 39.0" | 36.0" | 455-670 | 50kA, 1200, 2000, 3000, 4000FC | Extrapolated |
| 5-GMSG-63-xxx | Siemens | 32.0" | 39.0" | 36.0" | 809-824 | 63kA, 1200, 2000, 3000 | Extrapolated |
| 7-GMSG-40-xxx | Siemens | 32.0" | 39.0" | 36.0" | 455-675 | 40kA, 1200, 2000, 3000, 4000FC | Extrapolated |
| 15-GMSG-25-xxx | Siemens | 32.0" | 39.0" | 36.0" | 430-640 | 25kA, 1200, 2000 | Extrapolated |
| 15-GMSG-25-1200 | Siemens | 32.0" | 39.0" | 36.0" | 430 | 25kA, 1200 | UUT _x -1a, UUT _y -3b, -5b, -6 |
| 15-GMSG-40-xxx | Siemens | 32.0" | 39.0" | 36.0" | 445-675 | 40kA, 1200, 2000, 3000, 4000FC | Interpolated |
| 15-GMSG-50-xxx | Siemens | 32.0" | 39.0" | 36.0" | 460-680 | 50kA, 1200, 2000, 3000, 4000FC | Interpolated |
| 15-GMSG-50-2000 | Siemens | 32.0" | 39.0" | 36.0" | 650 | 50kA, 2000 | UUT _x -1a |
| 15-GMSG-50-1200 | Siemens | 32.0" | 39.0" | 36.0" | 438 | 50kA, 1200 | UUT _x -1b |
| 15-GMSG-50-2000 | Siemens | 32.0" | 39.0" | 36.0" | 650 | 50kA, 2000 | UUT _y -2b, UUT _y -7 |
| 15-GMSG-63-xxx | Siemens | 32.0" | 39.0" | 36.0" | 809-824 | 63kA, 1200, 2000, 3000 | Interpolated |
| 15-GMSG-63-3000 | Siemens | 32.0" | 39.0" | 36.0" | 824 | 63kA, 3000 | UUT _y -2a, UUT _y -4 |
| 27-GMSG-40-1200 | Siemens | 32.0" | 43.0" | 38.0" | 571-637 | 40kA, 1200 | UUT _z -1b |
| 27-GMSG-25-xxx | Siemens | 32.0" | 43.0" | 38.0" | 571-637 | 25kA, 1200, 2000, 2500, 3000FC | Interpolated |
| 27-GMSG-40-xxx | Siemens | 32.0" | 43.0" | 38.0" | 571-637 | 40kA, 1200, 2000, 2500, 3000FC | Interpolated |
| 27-GMSG-40-2000 | Siemens | 32.0" | 43.0" | 38.0" | 571-637 | 40kA, 2000 | UUT _z -1a |
| 27-GMSG-40-2000 | Siemens | 32.0" | 43.0" | 38.0" | 571-637 | 40kA, 2000 | UUT _z -1b |
| Table 3b - Vacuum Circuit Breakers (by MVA rating) | | | | | | | |
| 5-GMSG-250-xxx | Siemens | 32.0" | 39.0" | 36.0" | 440-665 | 250MVA, 1200, 2000 | Extrapolated |
| 5-GMSG-350-xxx | Siemens | 32.0" | 39.0" | 36.0" | 455-670 | 350MVA, 1200, 2000, 3000, 4000FC | Extrapolated |
| 7-GMSG-500-xxx | Siemens | 32.0" | 39.0" | 36.0" | 455-576 | 500MVA, 1200, 2000 | Extrapolated |
| 15-GMSG-500-1200 | Siemens | 32.0" | 39.0" | 36.0" | 430 | 500MVA, 1200 | UUT _x -1a, UUT _y -3b, -5b, -6 |
| 15-GMSG-500-xxx | Siemens | 32.0" | 39.0" | 36.0" | 430-640 | 500MVA, 1200, 2000, 3000, 4000FC | Interpolated |
| 15-GMSG-750-xxx | Siemens | 32.0" | 39.0" | 36.0" | 445-675 | 750MVA, 1200, 2000, 3000, 4000FC | Interpolated |

General Notes:

Vacuum circuit breakers listed in tables 3a and 3b are identical, just listed by different ratings. 5kV, 7kV breaker are constructed the exact same as the 15kV tested breakers.

¹ x, y and z indicates the test report in which the units were qualified under: x - 54620-1, y - 15977, z - 16628

SIEMENS - TYPE GM-SG 5kV-27kV METAL-CLAD SWITCHGEAR CERTIFIED SUBCOMPONENT MATRIX



| Subcomponent ID or Siemens PN | Manufacturer | Width (in) | Depth (in) | Height (in) | Weight (lb) | Notes | Representative UUT ¹ |
|--|--------------|------------|------------|-------------|-------------|-----------------------------------|---|
| Table 3b - Vacuum Circuit Breakers (by MVA rating) - cont'd | | | | | | | |
| 15-GMSG-750-2000 | Siemens | 32.0" | 39.0" | 36.0" | 650 | 750MVA, 2000 | UUT _x -1a |
| 15-GMSG-750-1200 | Siemens | 32.0" | 39.0" | 36.0" | 438 | 750MVA, 1200 | UUT _x -1b |
| 15-GMSG-750-2000 | Siemens | 32.0" | 39.0" | 36.0" | 650 | 750MVA, 2000 | UUT _y -2b, UUT _y -7 |
| 15-GMSG-1000-xxx | Siemens | 32.0" | 39.0" | 36.0" | 460-680 | 1000MVA, 1200, 2000, 3000, 4000FC | Interpolated |
| 15-GMSG-1000-3000 | Siemens | 32.0" | 39.0" | 36.0" | 824 | 1000MVA, 3000 | UUT _y -2a, UUT _y -4 |
| Table 4 - Ground Current Transformers | | | | | | | |
| 61-300-092-xxx | GE/ITI | 11.47 | 11.47 | 6 | 60 | MODEL 143, 50:5 | UUT _y -2b |
| 61-300-092-xxx | GE/ITI | 11.47 | 11.47 | 6 | 60 | MODEL 143, 50:5 to 600:5 | Interpolated |
| 61-300-078-xxx | GE/ITI | 14.52 | 7.48 | 7.35 | 70 | MGS Model, 25:5 - 600:5 | Interpolated |
| 61-300-151-xxx | GE/ITI | 32.4 | 10.75 | 3.5 | 80 | MDG1 Model, 50:1 and 100:1 | Interpolated |
| 15-172-875-xxx | GE/ITI | 27.56 | 13.58 | 5.5 | 150 | MODEL 593, 50:5 to 500:5 | Interpolated |
| 77-602-000-420 | GE/ITI | 27.56 | 13.58 | 5.5 | 190 | MODEL 593 - HIGH ACCURACY | UUT _y -2a |
| Table 5 - Primary Current Transformers | | | | | | | |
| 62-300-066-xxx | GE ITI | 10.89 | 3.5 | 10.89 | 34 | | UUT _y -2a |
| 62-300-067-xxx | GE ITI | 10.89 | 3.5 | 10.89 | 34 | | Interpolated |
| 61-300-119-xxx | GE ITI | 10.75 | 10.75 | 3.5 | 34 | | Interpolated |
| 61-300-092-xxx | GE ITI | 11.10 | 6 | 11.47 | 60 | | Interpolated |
| 61-300-068-xxx | GE ITI | 10.75 | 7 | 10.75 | 64 | | UUT _x -1a |
| 61-300-069-xxx | GE ITI | 10.75 | 10.75 | 7 | 64 | | Interpolated |
| 61-300-121-xxx | GE ITI | 10.75 | 10.75 | 7 | 64 | | UUT _y -2a |
| 62-300-148-xxx | CORE | 10.75 | 10.75 | 3.5 | 19.85 | 2000:1, 3000:1 | Interpolated |
| 62-300-069-xxx | CORE | 10.75 | 10.75 | 7 | 30.05 - 56 | 600:5, 5000:5 | Interpolated |
| 62-300-068-xxx | CORE | 10.75 | 10.75 | 7 | 56 | | UUT _y -2a |

General Notes:

Vacuum circuit breakers listed in tables 3a and 3b are identical, just listed by different ratings. 5kV, 7kV breaker are constructed the exact same as the 15kV tested breakers.

¹ x, y and z indicates the test report in which the units were qualified under: _x - 54620-1, _y - 15977, _z - 16628

**SIEMENS - TYPE GM-SG 5kV-27kV METAL-CLAD SWITCHGEAR
CERTIFIED SUBCOMPONENT MATRIX**



| Subcomponent ID or Siemens PN | Manufacturer | Width (in) | Depth (in) | Height (in) | Weight (lb) | Notes | Representative UUT ¹ |
|---|--------------|------------|-------------|--------------|-------------|---------------------------------|--|
| Table 6 - Voltage Transformers | | | | | | | |
| 15-172-788-xxx | GE ITI | 6.38 | 9.31 | 8 | 34.00 | PTW3-1-60-*** | UUT _y -6 / UUT _y -7 |
| 15-172-787-xxx | GE ITI | 6.38 | 9.31 | 7.07 | 34.00 | PTW3-2-60-*** | Interpolated |
| 15-172-787-xxx | GE ITI | 9.25 | 15.5 | 11.31 | 85.00 | PTW5-2-110-***, PTW4-2-75-*** | Interpolated |
| 15-172-787-xxx | GE ITI | 9.25 | 13.13 | 12.17 | 85.00 | PTW5-1-110-***, PTW4-1-75-*** | UUT _y -2b |
| 15_172_787_200 | GE ITI | 9.5 | 13.75 | 13.44 | 125.00 | PT6-1-125 | UUT _z -2 |
| 15_172_787_201 | GE ITI | 9.5 | 13.75 | 15 | 125.00 | PT6-2-125 | UUT _z -2 |
| 15-172-788-xxx | ARTECHE | 6.35 | 9.31 | 8.22 | 32.00 | 753060020 - 753060011 | UUT _y -6, UUT _y -7 |
| 15-172-788-xxx | ARTECHE | 6.35 | 9.31 | 7.26 | 32.00 | 753030020 - 753030027 | Interpolated |
| 15-172-787-xxx | ARTECHE | 9.78 | 15.31 | 11.57 | 85.00 | 753450060 - 753450055 | Interpolated |
| 15-172-787-xxx | ARTECHE | 9.01 | 15.62 | 12.36 | 85.00 | 753460070 - 753460063 | UUT _x -1b, UUT _y -2b, -3b, -5b |
| Table 7 - Surge Capacitors | | | | | | | |
| 25-213-265-022 | GE | 16.5 | 4 - 5.12 | 12.7 - 24.08 | 36 | | UUT _y -3b, UUT _y -5b |
| 77-604-000-441 to 445 | GE | 16.58 | 4.62 - 6.12 | 28.05 | 36 - 66 | | Interpolated |
| 77-604-000-445 | GE | 16.58 | 4.62 - 6.12 | 28.05 | 66 | | UUT _y -3a |
| 77-604-000-446 | GE | 16.58 | 5.12 | 22.8 | 57 | | Interpolated |
| Table 8 - Control Power Transformers | | | | | | | |
| 15-172-867-001 | GE ITI | 9 | 17 | 14.12 | 165 | 5kVA - CPT3-60-5 & CPT5-95-5 | UUT _y -5b |
| 15-172-867-031 to 060 | GE ITI | 11.38 | 18.12 | 15.38 | 250 | 10kVA - CPT3-60-10 & CPT5-95-10 | Interpolated |
| 15-172-867-075 | GE ITI | 11.38 | 17 | 15.38 | 290 | 15kV-CPTS3-60-15 & CPTS5-95-15 | UUT _x -1b |
| 15-172-867-091 to 120 | GE ITI | 12.25 | 23.5 | 20.25-23.75 | 450 | 25kVA - CPTN5-95-25 | Interpolated |
| 15-172-867-121 to 150 | GE ITI | 12.25 | 23.5 | 20.25-23.75 | 450 | 37.5kVA - CPT5-95-37.5 | Interpolated |
| 15-172-867-165 | GE ITI | 29.25 | 17.75 | 36.38 | 750 | 50kVA-CPTD3-60-50 & CPTD5-95-50 | UUT _y -2b |
| 25-172-867-001 | AFP | 10.5 | 16.5 | 14.8 | 165 | 1-ph 5kVA, 860716B | UUT _y -3b |
| 25-172-867-031 to 060 | AFP | 11.625 | 18 | 15.375 | 290 | 1-ph 10kVA, 860717 | Interpolated |
| 25-172-867-061 to 090 | AFP | 11.625 | 18 | 15.375 | 290 | 1-ph 15kVA, 860718B | Interpolated |
| 25-172-867-104 | AFP | 21.5 | 20 | 25 | 650 | 1-ph 25kVA, 860694B | UUT _y -6, UUT _y -7 |

General Notes:

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**SIEMENS - TYPE GM-SG 5kV-27kV METAL-CLAD SWITCHGEAR
CERTIFIED SUBCOMPONENT MATRIX**



| Subcomponent ID or Siemens PN | Manufacturer | Width (in) | Depth (in) | Height (in) | Weight (lb) | Notes | Representative UUT ¹ |
|--|--------------|------------|------------|-------------|--------------|-------------------------|--|
| Table 9 - Control Power Transformers - cont'd | | | | | | | |
| 25-172-867-190 to 197 | AFP | 26 | 21 | 37 | 450 | 1 PHASE - 60 Hz - 5kVA | Interpolated |
| 25-172-867-210 to 217 | AFP | 28 | 22 | 37 | 550 | 1 PHASE - 60Hz - 10kVA | Interpolated |
| 25-172-867-220 to 227 | AFP | 28 | 22 | 37 | 550 | 1 PHASE - 60 Hz - 15kVA | Interpolated |
| 25-172-867-237 | AFP | 28 | 25 | 40 | 750 | 1 PHASE - 60 Hz - 25kVA | UUT _z -2 |
| Table 10 - Surge Arresters | | | | | | | |
| 77-615-001-001 to 012 | Siemens | 4.7 | 4.7 | 6.7 - 15.7 | 2.8 - 8.9 | Distribution class | Extrapolated |
| 77-615-001-008 | Siemens | 4.7 | 4.7 | 10.6 | 6.1 | Distribution class | UUT _y -2a |
| 77-615-001-020 to 033 | Siemens | 4.7 | 4.7 | 6 - 13 | 7 - 16 | Intermediate class | Interpolated |
| 77-615-001-040 to 052 | Siemens | 4.7 | 4.7 | 12 - 24 | 13 - 23 | Station class | Interpolated |
| 77-615-001-052 | Siemens | 4.7 | 4.7 | 24 | 23 | Station class | UUT _y -2a, 2b |
| 77-101-001-059 to 070 | GE | | | 6.8 - 12.2 | 6.2 - 10 | intermediate class | Extrapolated |
| 77-101-001-159 to 170 | GE | | | 4.5 - 18.6 | 5.1 - 14.8 | Intermediate class | Interpolated |
| 77-101-001-064 | GE | | | 12.2 | 10 | Intermediate class | UUT _y -2a, |
| 77-101-002-047 to 058 | GE | | | 3 - 15.5 | 5.4 - 12.8 | Distribution class | Interpolated |
| 77-101-001-073 to 079 | GE | | | 9.9 - 13.5 | 12.6 - 17.3 | Station class | Interpolated |
| 77-101-001-079 | GE | | | 13.5 | 17.3 | Station class | UUT _y -2a |
| 77-903-001-036 to 046 | Ohio Brass | | | 5.5 - 13.9 | 3.5 - 9.0 | Distribution class | Interpolated |
| 77-903-001-040 | Ohio Brass | | | 8.5 | 5.7 | | UUT _y -2a |
| 77-903-001-047 to 058 | Ohio Brass | | | 5.5 - 17.2 | 4.18 - 10.78 | Distribution class | Interpolated |
| 77-903-001-059 to 072 | Ohio Brass | | | 9.5 - 22.8 | 11 - 27 | Intermediate class | Interpolated |
| 77-903-001-073 to 080 | Ohio Brass | | | 10.2 - 18.2 | 20.3 - 28.3 | Station class | Interpolated |
| 77-903-001-080 | Ohio Brass | | | 18.2 | 28.3 | Station class | UUT _y -2a |
| Table 11 - Protective Relays/Devices | | | | | | | |
| 77-620-300-001 | GE | 8.07 | 5.58 | 11.67 | 8 | 369 | UUT _y -3a, UUT _y -5a |
| 77-615-000-811 | GE | 8.42 | 9.1 | 9.9 | 20 | 869 | Interpolated |
| 77-860-000-117 | GE | 8.42 | 9.1 | 9.9 | 20 | GE-889 | Interpolated |
| 77-870-645-263 | GE | 8.42 | 9.1 | 9.9 | 20 | 845 | Interpolated |

General Notes:

¹ x, y and z indicates the test report in which the units were qualified under: x - 54620-1, y - 15977, z - 16628

**SIEMENS - TYPE GM-SG 5kV-27kV METAL-CLAD SWITCHGEAR
CERTIFIED SUBCOMPONENT MATRIX**



| Subcomponent ID or Siemens PN | Manufacturer | Width (in) | Depth (in) | Height (in) | Weight (lb) | Notes | Representative UUT ¹ |
|--|--------------|------------|------------|--------------|-------------|----------|--|
| Table 11 - Protective Relays/Devices - cont'd | | | | | | | |
| 77-989-000-082 | GE | 8.42 | 9.1 | 9.9 | 20 | GE-889 | Interpolated |
| 77-989-000-170 | GE | 8.42 | 9.1 | 9.9 | 20 | 845 | Interpolated |
| 44-988-000-019 | GE | 8.42 | 9.1 | 9.9 | 20 | 850 | Interpolated |
| 77-608-000-187 | GE | 19 | 10.9 | 7 | 45 | B90 | Interpolated |
| 77-615-000-987 | GE | 17.52 | 10.9 | 7 | 45 | B90 | Interpolated |
| 77-601-000-778 | GE | 17.56 | 11 | 15 | 45 | G60 | Interpolated |
| 77-602-000-492 | GE | 17.56 | 11 | 15 | 45 | C60 | Interpolated |
| 77-602-000-514 | GE | 17.56 | 11 | 15 | 45 | M60 | Interpolated |
| 77-950-100-170 | GE | 17.56 | 11 | 15 | 45 | G30 | Interpolated |
| 77-950-100-174 | GE | 17.56 | 11 | 15 | 45 | G30 | Interpolated |
| 44-950-100-006 | GE | 17.56 | 11 | 15 | 45 | T60 | Interpolated |
| 44-950-100-003 | GE | 17.56 | 11 | 15 | 45 | F60 | UUT _y -3a, UUT _y -5a |
| 77-989-000-239 | SEL | 19 | 9.17 | 1.75 | 4.3 | 2730 | Extrapolated |
| 77-989-000-236 | SEL | 5.67 | 7.56 | 5.8 | 6 | 751 | UUT _y -3a, UUT _y -5a |
| 77-990-000-015 | SEL | 5.67 | 7.56 | 5.8 | 6 | 787 | Interpolated |
| 77-989-000-237 | SEL | 5.67 | 7.56 | 5.8 | 6 | 710 | Interpolated |
| 77-989-000-077 | SEL | 5.67 | 7.56 | 5.8 | 6 | SEL-700G | Interpolated |
| 79-964-000-012 | SEL | 19.8 | 9 | 6.65 | 9.01 | SEL-587Z | Interpolated |
| 77-963-000-033 | SEL | 19.8 | 10.48 | 6.85 - 10.35 | 22.8 - 29.6 | 411L | Interpolated |
| 77-963-000-056 | SEL | 19.8 | 10.48 | 6.85 - 10.35 | 22.8 - 29.6 | 411L | Interpolated |
| 77-975-000-136 | SEL | 19.8 | 8.5 | 8.4 - 17.15 | 14.1 - 45.9 | SEL-487B | Interpolated |
| 77-964-000-555 | SEL | 19.8 | 8.5 | 6.65 - 10.15 | 17.7 - 32.8 | SEL-451 | Interpolated |
| 77-975-000-136 | SEL | 19.8 | 8.5 | 17.15 | 45.9 | SEL-487B | UUT _y -3a, UUT _y -5a |
| 43-200-002-961 | Siemens | 2.91 | 9.01 | 10.45 | 8.8 | 7SJ80 | UUT _y -3a, UUT _y -5a |
| 44-961-000-021 | Siemens | 5.91 | 10.55 | 9.02 | 7.9 | 7SJ82 | Interpolated |
| 77-615-000-731 | Siemens | 5.91 | 10.47 | 9.02 | 7.9 | 7SJ81 | Interpolated |
| 77-989-000-157 | Siemens | 5.91 | 10.55 | 9.02 | 7.9 | 7SK82 | Interpolated |

General Notes:

Vacuum circuit breakers listed in tables 3a and 3b are identical, just listed by different ratings. 5kV, 7kV breaker are constructed the exact same as the 15kV tested breakers.

¹ x, y and z indicates the test report in which the units were qualified under: x - 54620-1, y - 15977, z - 16628

**SIEMENS - TYPE GM-SG 5kV-27kV METAL-CLAD SWITCHGEAR
CERTIFIED SUBCOMPONENT MATRIX**



| Subcomponent ID or Siemens PN | Manufacturer | Width (in) | Depth (in) | Height (in) | Weight (lb) | Notes | Representative UUT ¹ |
|--|--------------|------------|------------|-------------|-------------|---------------------------------|--|
| Table 11 - Protective Relays/Devices - cont'd | | | | | | | |
| 77-988-000-094 | Siemens | 6-17.8 | 10.55 | 9.02 | 9.7 - 34.2 | 7UM85 | Interpolated |
| 77-989-000-094 | Siemens | 6-17.8 | 10.55 | 9.02 | 9.7 - 34.2 | 7SK85 | Interpolated |
| 44-100-000-724 | Siemens | 6-17.8 | 10.55 | 9.02 | 9.7 - 34.2 | 7SJ85, 7UT85 | Interpolated |
| 44-100-000-724 | Siemens | 17.72 | 10.55 | 9.02 | 34.2 | 7UT85 | UUT _y -3a, UUT _y -5a |
| Table 12 - Fuse Trucks | | | | | | | |
| G7-440-100-001 | Siemens | 32.0" | 43.2" | 37.5" | 319 | | UUT _z -2 |
| Table 13 - Fuses | | | | | | | |
| 00-871-181-016 | Mersen | 3.0" | - | 30.81" | 13 | 38kV rated D-size 9F60 1E fuse | UUT _z -2 |
| 00-871-181-018 | Mersen | 3.0" | - | 30.81" | 13 | 38kV rated D-size 9F60 2E fuse | Interpolated |
| 00-871-181-019 | Mersen | 3.0" | - | 30.81" | 13 | 38kV rated D-size 9F60 3E fuse | Interpolated |
| 00-871-181-020 | Mersen | 3.0" | - | 30.81" | 13 | 38kV rated D-size 9F60 5E fuse | Interpolated |
| 00-871-181-021 | Mersen | 3.0" | - | 30.81" | 13 | 38kV rated D-size 9F60 7E fuse | Interpolated |
| 00-871-181-022 | Mersen | 3.0" | - | 30.81" | 13 | 38kV rated D-size 9F60 10E fuse | Interpolated |
| 00-871-181-023 | Mersen | 3.0" | - | 30.81" | 13 | 38kV rated D-size 9F60 15E fuse | Interpolated |
| 00-871-181-024 | Mersen | 3.0" | - | 30.81" | 13 | 38kV rated D-size 9F60 20E fuse | Interpolated |
| 00-871-181-025 | Mersen | 3.0" | - | 30.81" | 13 | 38kV rated D-size 9F60 25E fuse | Interpolated |
| 00-871-181-026 | Mersen | 3.0" | - | 30.81" | 13 | 38kV rated D-size 9F60 30E fuse | UUT _z -2 |

General Notes:

¹ x, y and z indicates the test report in which the units were qualified under: x - 54620-1, y - 15977, z - 16628

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section.



| | |
|------------------------------|--|
| Manufacturer: Siemens | Test Location: Wiley Laboratories |
|------------------------------|--|

| | |
|---|-------------------------------|
| Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear | Report Number: 54620-1 |
|---|-------------------------------|

| | |
|---------------------------------------|--------------------------------------|
| Model Number: GM-SG-50-1200-2H | UUT No. in Test Report: UUT-1 |
|---------------------------------------|--------------------------------------|

UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1) 2-High Low Voltage Switchgear section.

UUT Components:
 NEMA1 12ga Carbon Steel Enclosure, vacuum circuit breakers (15-GMSG-50-2000, 15-GMSG-25-1200), and primary current transformer (61-300-068).

UUT PROPERTIES

| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Fequency (Hz) | | |
|-------------|-------------------------------|-------------------|--------|-----------------------|-----|-----|
| | Width | Depth / Extension | Height | FB | SS | V |
| 4,553 | 36.0 | 99 / 0 | 95.3 | 9.50 | 5.9 | >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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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.

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section.



| | |
|------------------------------|--|
| Manufacturer: Siemens | Test Location: Wiley Laboratories |
|------------------------------|--|

| | |
|---|-------------------------------|
| Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear | Report Number: 54620-1 |
|---|-------------------------------|

| | |
|--|--------------------------------------|
| Model Number: GM-SG-50-1200-1HB | UUT No. in Test Report: UUT-1 |
|--|--------------------------------------|

UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1) 1-High Low Voltage Switchgear section.

UUT Components:
 NEMA1 12ga Carbon Steel Enclosure, vacuum circuit breaker (15-GMSG-50-1200), voltage transformer (15-172-787), and control power transformers (15-172-867-061).

UUT PROPERTIES

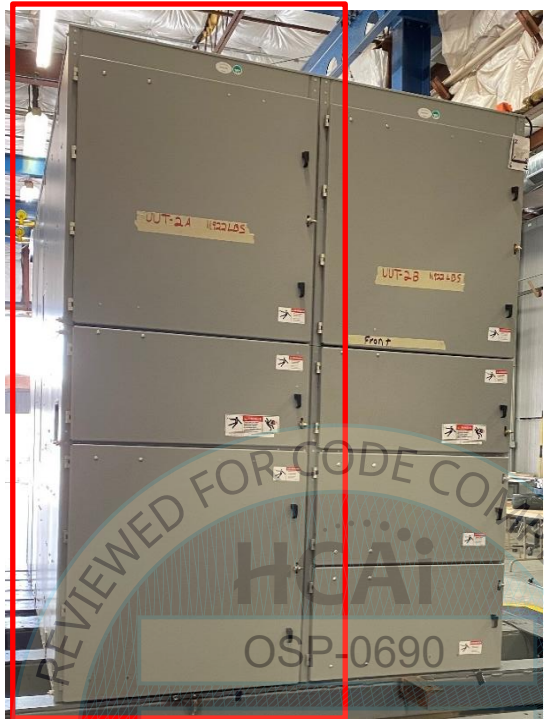
| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Fequency (Hz) | | |
|-------------|-------------------------------|-------------------|--------|-----------------------|-----|-----|
| | Width | Depth / Extension | Height | FB | SS | V |
| 3,749 | 36.0 | 99 / 0 | 95.3 | 9.50 | 5.9 | >33 |

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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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.

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts, 1.5"x1.5"x3/16" plate washers at all locations, and Siemens GX-000-661-001 seismic bracket on the front bolts.



| | |
|------------------------------|---------------------------|
| Manufacturer: Siemens | Test Location: ETL |
|------------------------------|---------------------------|

| | |
|---|-----------------------------|
| Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear | Report Number: 15977 |
|---|-----------------------------|

| | |
|---------------------------------------|--------------------------------------|
| Model Number: GM-SG-63-4000-2H | UUT No. in Test Report: UUT-2 |
|---------------------------------------|--------------------------------------|

UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1) 2-High Low Voltage Switchgear section.

UUT Components:
 NEMA1 12ga Carbon Steel Enclosure, vacuum circuit breakers (15-GMSG-63-3000), ground current transformer (77-602-000-420), primary current transformers (62-300-066, 61-300-121, 62-300-068, 62-300-119), and surge arresters (77-615-001/012, 77-615-001-052, 77-101-001-064, 77-101-001-079, 77-903-001-040, 77-903-001-080).



UUT PROPERTIES



| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Frequency (Hz) | | |
|-------------|-------------------------------|-------------------|--------|------------------------|-----|------|
| | Width | Depth / Extension | Height | FB | SS | V |
| 6,524 | 36.0 | 99 / 30 | 95.3 | 4.96 | >33 | 16.7 |

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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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-2b | UNIT UNDER TEST (UUT) SUMMARY SHEET | | |  WEGAI <small>W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING</small> | | | |
| Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts, 1.5"x1.5"x3/16" plate washers at all locations, and Siemens GX-000-661-001 seismic bracket on the front bolts. | | | | | | | |
|  | | | | | | | |
| Manufacturer: Siemens | | | | Test Location: ETL | | | |
| Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear | | | | Report Number: 15977 | | | |
| Model Number: GM-SG-50-2000-1HA | | | | UUT No. in Test Report: UUT-2 | | | |
| UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources. | | | | | | | |
| UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1) 1-High Low Voltage Switchgear section. | | | | | | | |
| UUT Components: NEMA1 12ga Carbon Steel Enclosure, vacuum circuit breaker (15-GMSG-50-2000), ground current transformer (61-300-092), voltage transformers (15-172-787, 15-172-787), control power transformers (15-172-867-165), and surge arrester (77-615-001-052). | | | | | | | |
| UUT PROPERTIES | | | | | | | |
| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Frequency (Hz) | | | |
| | Width | Depth / Extension | Height | FB | SS | V | |
| 5,395 | 36.0 | 99 / 30 | 95.3 | 4.96 | >33 | 16.7 | |
| 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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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-3a | UNIT UNDER TEST (UUT) SUMMARY SHEET | | |  WEGAI <small>W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING</small> | | | |
| Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts, 1.5"x1.5"x3/16" plate washers at all locations, and Siemens GX-000-661-001 seismic bracket on the front bolts. | | | | | | | |
|  | | | | | | | |
| Manufacturer: Siemens | | | | Test Location: ETL | | | |
| Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear | | | | Report Number: 15977 | | | |
| Model Number: GM-SG-1200-AUX | | | | UUT No. in Test Report: UUT-3 | | | |
| UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources. | | | | | | | |
| UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1) Auxilary Low Voltage Switchgear section. | | | | | | | |
| UUT Components: NEMA1 12ga Carbon Steel Enclosure, surge capacitors (77-604-000-445), and protective relay/devices (77-620-300-001, 44-950-100-003, 77-989-000-236, 77-975-000-136, 43-200-002-961, 44-100-000-724). | | | | | | | |
| UUT PROPERTIES | | | | | | | |
| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Fequency (Hz) | | | |
| | Width | Depth / Extension | Height | FB | SS | V | |
| 1,948 | 36.0 | 99 / 0 | 95.3 | >33 | 6.9 | 11.5 | |
| 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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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. | | | | | | | |

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts, 1.5"x1.5"x3/16" plate washers at all locations, and Siemens GX-000-661-001 seismic bracket on the front bolts.



| | |
|------------------------------|---------------------------|
| Manufacturer: Siemens | Test Location: ETL |
|------------------------------|---------------------------|

| | |
|---|-----------------------------|
| Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear | Report Number: 15977 |
|---|-----------------------------|

| | |
|--|--------------------------------------|
| Model Number: GM-SG-25-1200-1HB | UUT No. in Test Report: UUT-3 |
|--|--------------------------------------|

UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1)1-High Low Voltage Switchgear section.

UUT Components:
 NEMA1 12ga Carbon Steel Enclosure, vacuum circuit breaker (15-GMSG-25-1200), voltage transformers (15-172-787), control power transformers (25-172-867-001), and surge capacitors (25-213-265-022).



UUT PROPERTIES

| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Frequency (Hz) | | |
|-------------|-------------------------------|-------------------|--------|------------------------|-----|------|
| | Width | Depth / Extension | Height | FB | SS | V |
| 3,530 | 36.0 | 99 / 0 | 95.3 | >33 | 6.9 | 11.5 |

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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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-5a | UNIT UNDER TEST (UUT) SUMMARY SHEET | | |  WEGAI <small>W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING</small> | | | |
| Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts, 1.5"x1.5"x3/16" plate washers at all locations, and Siemens GX-000-661-001 seismic bracket on the front bolts. | | | | | | | |
|  | | | | | | | |
| Manufacturer: Siemens | | | | Test Location: ETL | | | |
| Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear | | | | Report Number: 15977 | | | |
| Model Number: GM-SG-1200-AUX | | | | UUT No. in Test Report: UUT-5 | | | |
| UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources. | | | | | | | |
| UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1) Auxiliary Low Voltage Switchgear section. | | | | | | | |
| UUT Components: NEMA1 12ga Carbon Steel Enclosure, surge capacitors (77-604-000-445), and protective relay/devices (77-620-300-001, 44-950-100-003, 77-989-000-236, 77-975-000-136, 43-200-002-961, 44-100-000-724).. | | | | | | | |
| UUT PROPERTIES | | | | | | | |
| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Fequency (Hz) | | | |
| | Width | Depth / Extension | Height | FB | SS | V | |
| 1,948 | 36.0 | 99 / 0 | 95.3 | >33 | 7.4 | 29.0 | |
| 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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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. | | | | | | | |

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts, 1.5"x1.5"x3/16" plate washers at all locations, and Siemens GX-000-661-001 seismic bracket on the front bolts.



| | |
|------------------------------|---------------------------|
| Manufacturer: Siemens | Test Location: ETL |
|------------------------------|---------------------------|

| | |
|---|-----------------------------|
| Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear | Report Number: 15977 |
|---|-----------------------------|

| | |
|--|--------------------------------------|
| Model Number: GM-SG-25-1200-1HA | UUT No. in Test Report: UUT-5 |
|--|--------------------------------------|

UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1)1-High Low Voltage Switchgear section.

UUT Components:
 NEMA1 12ga Carbon Steel Enclosure, vacuum circuit breaker (15-GMSG-25-1200), voltage transformers (15-172-787), control power transformers (15-172-867-030), and surge capacitors (25-213-265-022).

UUT PROPERTIES

| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Frequency (Hz) | | |
|-------------|-------------------------------|-------------------|--------|------------------------|-----|------|
| | Width | Depth / Extension | Height | FB | SS | V |
| 3,516 | 36.0 | 99 / 0 | 95.3 | >33 | 7.4 | 29.0 |

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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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-6

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



Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts, 1.5"x1.5"x3/16" plate washers at all locations, and Siemens GX-000-661-001 seismic bracket on the front bolts.



Manufacturer: Siemens **Test Location:** ETL

Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear **Report Number:** 15977

Model Number: GM-SG-25-1200-1HA **UUT No. in Test Report:** UUT-6

UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1)1-High Low Voltage Switchgear section.

UUT Components:
NEMA1 12ga Carbon Steel Enclosure, vacuum circuit breaker (15-GMSG-25-1200), voltage transformers (15-172-788, 15-172-788), and control power transformers (25-172-867).

UUT PROPERTIES

| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Frequency (Hz) | | |
|-------------|-------------------------------|-------------------|--------|------------------------|-----|------|
| | Width | Depth / Extension | Height | FB | SS | V |
| 3,478 | 36.0 | 99 / 0 | 95.3 | >33 | 5.3 | 23.4 |

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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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-7

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



Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts, 1.5"x1.5"x3/16" plate washers at all locations, and Siemens GX-000-661-001 seismic bracket on the front bolts.



Manufacturer: Siemens **Test Location:** ETL

Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear **Report Number:** 15977

Model Number: GM-SG-50-2000-1HA **UUT No. in Test Report:** UUT-7

UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1)1-High Low Voltage Switchgear section.

UUT Components:
NEMA1 12ga Carbon Steel Enclosure, vacuum circuit breaker (15-GMSG-50-2000), voltage transformers (15-172-788, 15-172-788), control power transformers (15-172-867-091), and surge capacitors (25-213-265-022).

UUT PROPERTIES

| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Frequency (Hz) | | |
|-------------|-------------------------------|-------------------|--------|------------------------|-----|------|
| | Width | Depth / Extension | Height | FB | SS | V |
| 3,944 | 36.0 | 99 / 0 | 95.3 | >33 | 6.3 | 27.0 |

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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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-1a

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



Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section.



Manufacturer: Siemens **Test Location:** ETL

Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear **Report Number:** 16628

Model Number: GM-SG-40-3000-2H **UUT No. in Test Report:** UUT-1

UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1) 2-High Low Voltage Switchgear section.

UUT Components:
NEMA1 12ga Carbon Steel Enclosure, vacuum circuit breakers (27-GMSG-40-2000, 27-GMSG-40-1200), and primary current transformer (61-300-068).

UUT PROPERTIES

| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Frequency (Hz) | | |
|-------------|-------------------------------|-------------------|--------|------------------------|-----|-----|
| | Width | Depth / Extension | Height | FB | SS | V |
| 5,905 | 36.0 | 120 / 0 | 103.0 | 6.05 | >33 | 5.5 |

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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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.

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section.



| | |
|------------------------------|---------------------------|
| Manufacturer: Siemens | Test Location: ETL |
|------------------------------|---------------------------|

| | |
|---|-----------------------------|
| Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear | Report Number: 16628 |
|---|-----------------------------|

| | |
|--|--------------------------------------|
| Model Number: GM-SG-40-3000-1HA | UUT No. in Test Report: UUT-1 |
|--|--------------------------------------|

UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1) 1-High Low Voltage Switchgear section.

UUT Components:
 NEMA1 12ga Carbon Steel Enclosure, vacuum circuit breaker (27-GMSG-40-2000), voltage transformer (15-172-787), and control power transformers (15-172-867-061).

UUT PROPERTIES

| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Fequency (Hz) | | |
|-------------|-------------------------------|-------------------|--------|-----------------------|-----|-----|
| | Width | Depth / Extension | Height | FB | SS | V |
| 3,990 | 36.0 | 120 / 0 | 103.0 | 6.05 | >33 | 5.5 |

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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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-2}

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



Mounting Details: Floor mounted with (6) 1/2" diameter grade 8 bolts, 1.5"x1.5"x3/16" plate washers at all location.



BY: Mohammad Karim

Manufacturer: Siemens **Test Location:** ETL

Product Line: GM-SG 5kV-27kV Metal-Clad Switchgear **Report Number:** 16628

Model Number: GM-SG-40-1200-AUX **UUT No. in Test Report:** UUT-2

UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1) 2-High Low Voltage Switchgear section.

UUT Components:
NEMA1 12ga Carbon Steel Enclosure, voltage transformer (15_172_787_200, 15_172_787_201), control power transformers (25-172-867-237), fuse truck (G7-440-100-001), and fuse (00-871-181-016, 00-871-181-026).

UUT PROPERTIES

| Weight (lb) | Enclosure Dimensions (inches) | | | Natural Fequency (Hz) | | |
|-------------|-------------------------------|-------------------|--------|-----------------------|-----|-----|
| | Width | Depth / Extension | Height | FB | SS | V |
| 4,365 | 36.0 | 120 / 0 | 103.0 | 9.81 | 8.2 | 7.6 |

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 2022 / ICC-ES-AC156 | 2.00 | 1.00 | 1.50 | 3.2g | 2.4g | - | - |
| | 2.50 | 1.00 | 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.