



PROTOTYPE TEST SUPPORT (PTS) 60 HZ TEST SUMMARY



GENERATOR SET MODELS

85GGHG
100GGHH

REPRESENTATIVE PROTOTYPE

Model: 100GGHH
Engine: WSG-1068
Alternator: UC3D

The following summarizes prototype testing conducted on the designated representative prototype of the specified models. This testing is conducted to verify the complete generator set electrical and mechanical design integrity. Prototype testing is conducted only on generator sets not sold as new equipment.

Maximum Surge Power: 110 kW

The generator set was evaluated to determine the stated maximum surge power.

Maximum Motor Starting: 360 kVA

The generator set was evaluated for acceptable voltage recovery to establish maximum motor starting capability. Generators are tested to simulate motor starting by applying the specified kVA load at low lagging power factor (0.4 or lower). With this load applied, the generator recovered to a minimum of 90% rated voltage.

Torsional Analysis and Testing:

The generator set was tested to verify that the design is not subjected to harmful torsional stresses in excess of 5000 psi. A spectrum analysis of the transducer output was conducted over the speed range of 1200 to 2000 RPM.

Cooling System: 40 °C Ambient 0.5 in. H₂O restriction

The cooling system was tested to determine ambient temperature and static restriction capabilities. The test was performed at full rated load in elevated ambient temperature under static restriction conditions.

Durability:

The generator set was subjected to a minimum 500 hour endurance test operating at variable load up to the standby rating based upon MIL-STD-705 to verify structural soundness and durability of the design.

Electrical and Mechanical Strength:

The generator set was tested to several single phase and three phase faults to verify that the generator can safely withstand the forces associated with short circuit conditions. The generator set was capable of producing full rated output at the conclusion of the testing.

Steady State Performance:

The generator set was tested to verify steady state operating performance was within the specified maximum limits.

Voltage Regulation:	± 1 %
Random Voltage Variation:	± 1 %
Frequency Regulation:	Isochronous
Random Frequency Variation:	± 0.50 %

Transient Performance:

The generator set was tested with the standard alternator to verify single step loading capability as required by NFPA 110 and verify acceptable voltage and frequency response on load addition or rejection. The following results were recorded:

Full Load Acceptance:

Voltage Dip:	38.34 %
Recovery Time:	6.2 Second
Frequency Dip:	30 %
Recovery Time:	5.2 Second

Full Load Rejection:

Voltage Rise:	29.5 %
Recovery Time:	3.5 Second
Frequency Rise:	16.67 %
Recovery Time:	4 Second

Harmonic Analysis:

(per MIL-STD-705B, Method 601.4)

<u>Harmonic</u>	<u>Line to Line</u>		<u>Line to Neutral</u>	
	<u>No Load</u>	<u>Full Load</u>	<u>No Load</u>	<u>Full Load</u>
3	0.056	0.184	0	0.14
5	0.74	0.79	0.72	0.76
7	0.72	2.05	0.72	2
9	0	0.03	0	0
11	0.375	0.64	0.37	0.62
13	0.12	0.53	0.115	0.53
15	0	0	0	0