



TEST REPORT

August 20, 2025

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Glenair ANSI/NEMA HP6 Commercial Equivalent Wire Test Summary (Ref. QTP-1455)

Revision	Description of Changes	Date	Author
1	Initial Release	8/26/25	CJG

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1. Scope

This test report summarizes the results of Turboflex M single wall copper wire original qualification. Nickel-coated copper wire was tested to meet requirements outlined by NEMA HP6 (200°C rating with silver-coated copper values) and Glenair QTP-1455.

2. Reference Documents

2.1 Military and Industry Specifications:

ANSI/NEMA HP 6-2021	Electrical and Electronic Silicone and Silicone Braided Insulated, Hook-Up Wire, Types S (600V), ZHS (600V), SS (1000V), ZHSS (1000V), SSB Braided (1000V) and ZHSSB Braided (1000V)
MIL-STD-2223	Military Standard: Test Methods for Insulated Electrical Wire
FED-STD-228	Federal Standard: Test Methods for Cables and Wire, Insulated
MIL-DTL-24643	Detail Specification: Cables, Electrical, Low Smoke, Halogen-Free, for Shipboard Use, General Specification for
SAE AS4373	Test Methods for Insulated Electrical Wire
SAE AS29606	Wire, Electrical, Stranded, Uninsulated Copper, Copper Alloy, or Aluminum, or Thermocouple Extension, General Specification for
ASTM D3032	Standard Test Methods for Hookup Wire Insulation
ASTM G21	Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
DEFENCE 02-711	Determination of the Smoke Index of the Products of Combustion from Small Specimens of Materials
DEFENCE 02-713	Determination of the Toxicity Index of the Products of Combustion from Small Specimens of Materials
IEC 60754-1	Test on Gases Evolved During Combustion of Materials from Cables – Part 1: Determination of the Halogen Acid Gas Content
UL 2556	Standard for Safety: Wire and Cable Test Methods
Glenair QTP-1455	TurboFlex M Qualification Test Plan



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2.2 Glenair Drawing:

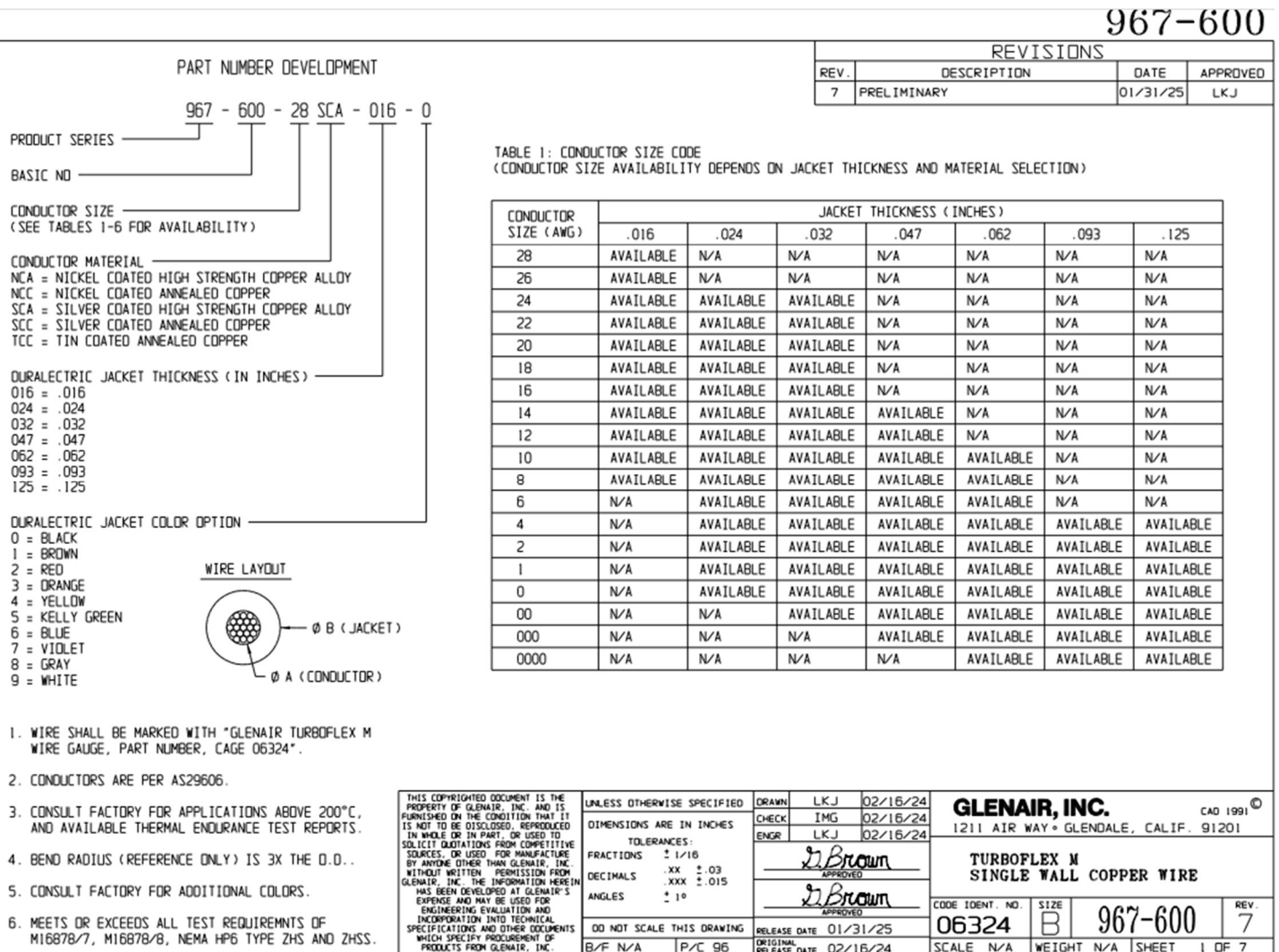


Figure 1 – Glenair 967-600 TurboFlex M, Single Wall, Copper Wire



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3. Test Specimens

The parts numbers and descriptions of the Turboflex M parts tested are listed in Table I.

Table I

Part Number	Description
967-600-20NCA-016-9	Glenair Turboflex M Single Wall Copper Wire, 20 AWG Nickel-Coated High Strength Copper Alloy Conductor, Duraelectric Insulated, 600-Volt, 200°C
967-600-16NCA-032-9	Glenair Turboflex M Single Wall Copper Wire, 16 AWG Nickel-Coated High Strength Copper Alloy Conductor, Duraelectric Insulated, 600-Volt, 200°C
967-600-12NCC-047-9	Glenair Turboflex M Single Wall Copper Wire, 12 AWG Nickel-Coated Copper Conductor, Duraelectric Insulated, 1000-Volt, 200°C
967-600-8NCC-062-9	Glenair Turboflex M Single Wall Copper Wire, 8 AWG Nickel-Coated Copper Conductor, Duraelectric Insulated, 1000-Volt, 200°C
967-600-4NCC-062-9	Glenair Turboflex M Single Wall Copper Wire, 4 AWG Nickel-Coated Copper Conductor, Duraelectric Insulated, 1000-Volt, 200°C

4. Test Conditions:

Unless stated otherwise, all tests were done at room temperature ($75 \pm 5^{\circ}\text{F}$) and sea level



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5. Summary of Results

	Group 1	Group 2	Group 3	Group 4	Group 5
	967-600-20NCA-016-9	967-600-16NCA-032-9	967-600-12NCC-047-9	967-600-8NCC-062-9	967-600-4NCC-062-9
Tensile Strength/Elongation At Break					
Test Reference	ASTM D3032-21a Section 16				
Requirement Reference	NEMA HP6				
Requirement	700 psi min / 125% min				
Results	1301 psi / 477%	1474 psi / 478%	1297 psi / 478%	1011 psi / 477%	800 psi / 498%
Pass/Fail	Pass	Pass	Pass	Pass	Pass
Concentricity					
Test Reference	SAE AS4373 Rev F Method 101				
Requirement Reference	NEMA HP6				
Requirement	70% min.				
Results	92%	77%	90%	90%	99%
Pass/Fail	Pass	Pass	Pass	Pass	Pass
Voltage Rating (Electrical Working Voltage - EWW)					
Test Reference	ASTM D3032-21a Section 8				
Requirement Reference	NEMA HP6 (ZHS) 600 V, min		NEMA HP6 (ZHSS) 1000 V, min		
Results	Lowest EWW (V): 733	Lowest EWW (V): 882	Lowest EWW (V): 1224	Lowest EWW (V): 1305	Lowest EWW (V): 1575
Pass/Fail	Pass	Pass	Pass	Pass	Pass

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Dielectric Withstanding Voltage

Test Reference	ASTM D3032-21a Section 8 (26 ft sample length)		ASTM D3032-21a Section 8 (2 ft sample length)		
Requirement Reference	NEMA HP6 (ZHS) / Glenair		NEMA HP6 (ZHSS) / Glenair		
Requirement	2.2kV DWV-AC: 2 mA Maximum DWV-DC: 10 μ A Maximum		3.0kV DWV-AC: 2 mA Maximum DWV-DC: 10 μ A Maximum		
Results	DWV-AC: 1.995 mA DWV-DC: 0.200 μ A	DWV-AC: 1.932 mA DWV-DC: 0.155 μ A	DWV-AC: 0.151 mA DWV-DC: 0.250 μ A	DWV-AC: 0.208 mA DWV-DC: 0.141 μ A	DWV-AC: 0.324 mA DWV-DC: 0.155 μ A
Pass/Fail	Pass	Pass	Pass	Pass	Pass

Insulation Resistance

Test Reference	ASTM D3032-21a Section 6				
Requirement Reference	NEMA HP6				
Requirement	100 M Ω /1000ft min				
Results	1250 M Ω /1000ft	709 M Ω /1000ft	483 M Ω /1000ft	731 M Ω /1000ft	1086 M Ω /1000ft
Pass/Fail	Pass	Pass	Pass	Pass	Pass

Conductor Resistance

Test Reference	MIL-STD-2223 (2019) Method 5003				
Requirement Reference	SAE AS29606 – NCA/NCC				
Requirement	Shall not exceed 11.4 Ω /1000 feet	Shall not exceed 5.16 Ω /1000 feet	Shall not exceed 1.98 Ω /1000 feet	Shall not exceed 0.694 Ω /1000 feet	Shall not exceed 0.275 Ω /1000 feet
Results	10.3333 Ω /1000 feet	5.0356 Ω /1000 feet	1.7561 Ω /1000 feet	0.6000 Ω /1000 feet	0.2298 Ω /1000 feet
Pass/Fail	Pass	Pass	Pass	Pass	Pass

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Shrinkage

Test Reference	FED-STD-228A, Method 8231.1				
Requirement Reference	NEMA HP6				
Requirement	The insulation shall not flare away from the conductor, open up over the bent portion called for in the test, nor shrink back more than 0.125 inches.				
Results	0.0035 inches	0.0020 inches	0.0080 inches	0.0018 inches	0.0055 inches
Pass/Fail	Pass	Pass	Pass	Pass	Pass

Fungus Resistance

Test Reference	MIL-DTL-24643 (ASTM G 21) / Modification - Each fungal strain tested individually				
Requirement Reference	NEMA HP6 (ZHS & ZHSS)				
Requirement	0				
Results	0; No Growth of Aspergillus Brasiliensis, Talaromyces Pinophilus, Chaetomium globosum, Trichoderma Virens, or Aureobasidium pullulans				
Pass/Fail	Pass				

Acid Gas

Test Reference	IEC 60754-1				
Requirement Reference	NEMA HP6 (ZHS & ZHSS)				
Requirement	18%, max				
Results	7.62%				
Pass/Fail	Pass				

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Halogen Content

Test Reference	MIL- DTL-24643
Requirement Reference	NEMA HP6 (ZHS & ZHSS)
Requirement	0.2%, max
Results	<0.05%
Pass/Fail	Pass

Smoke Index

Test Reference	MIL- DTL-24643 (Defence Standard 02-711)
Requirement Reference	NEMA HP6 (ZHS & ZHSS)
Requirement	35, max
Results	2.23
Pass/Fail	Pass

Toxicity Index

Test Reference	MIL- DTL-24643 (Defence Standard 02-713)
Requirement Reference	NEMA HP6 (ZHS & ZHSS)
Requirement	5, max
Results	0.1
Pass/Fail	Pass



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6. Conclusion

Glenair's Turboflex M (nickel-coated copper) wire meets all performance requirements of ANSI/NEMA HP6-2021 (silver-coated copper wire) in 4-20 AWG range by similarity. 967-600-20NCA-XXX-X and 967-600-16NCA-XXX-X meet ZHS requirements while 967-600-12NCC-XXX-X, 967-600-8NCC-XXX-X and 967-600-4NCC-XXX-X meet ZHSS requirements.