



# GORE-FLIGHT™ Microwave Assemblies

## Reduce Life Cycle Costs With Durable, Reliable Performance

Specifically designed to meet the requirements of current and future generation aircraft, GORE-FLIGHT™ Microwave Assemblies have been specified worldwide. The vapor-sealed, durable construction of these assemblies (figure 1) delivers reliable performance with longer service life and reduced system downtime, resulting in lower life cycle costs for the aircraft operator.

The internally ruggedized construction of GORE-FLIGHT™ Microwave Assemblies withstands concentrated loads well in excess of those specified by MIL-T-81490; reducing the likelihood of inadvertent crush damage during installation and throughout service life. The flexibility of the cable, coupled with an inherent resistance to overbending, provides a cable assembly that is easier to install within the confines of an aircraft.

Vapor and liquid barriers prevent any ingress of oils, fuels, coolants or cleaning fluids, ensuring continued electrical performance even in the harshest of environments.

Features for GORE-FLIGHT™ Microwave Assemblies include:

- SMA, TNCA and N-type connectors to MIL-C-39012 and MIL-T-81490
- Fully qualified #8 contacts
- Replaceable connector options
- Connector polarization
- Self-Locking connectors - SMA, TNC, TK and N series
- Optional lock-wire holes on coupling nuts
- Profile options for 90/45 degree connectors

### TYPICAL APPLICATIONS

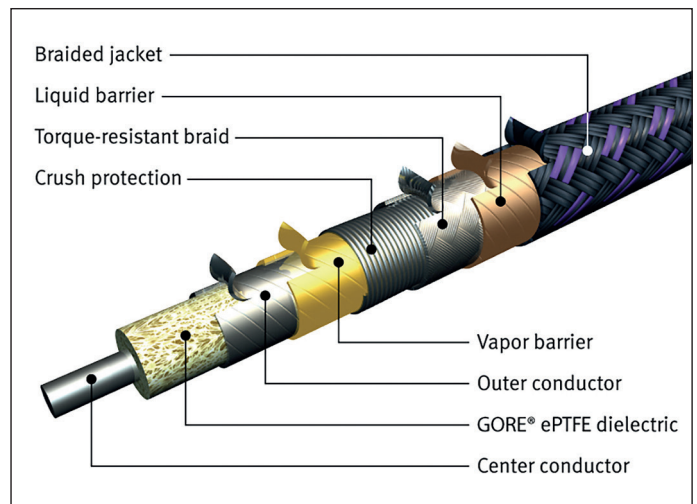
- Airborne Electronic Surveillance/Counter Measures
- Radar Warning (electronic defense) systems
- Missile Approach Warning systems
- Radar interconnects
- Electronic/Signal Intelligence
- Navigation/Communication systems



### BENEFITS OF GORE-FLIGHT™ MICROWAVE ASSEMBLIES

- Easier handling and routing during installation
- No degradation of electrical performance during or after install
- High crush resistance extends service life and so reduces life cycle costs
- Durable vapor sealing prevents ingress of aircraft contaminants
- Comprehensive qualification data available to support product claims

FIGURE 1 - CABLE CONSTRUCTION





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## PERFORMANCE SPECIFICATION

|  | GORE CABLE TYPE                                     | 04                                      | 02          | 08          | 05          | 0B          | 06          | 0E          | 0L          |
|--|---|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>ELECTRICAL PROPERTIES</b>               | Maximum Frequency GHz                               | 18                                      | 18          | 18          | 18          | 18          | 18          | 18          | 7           |
|  | Characteristic Impedance Ohms                       | 50                                      |             |             |             |             |             |             |             |
|  | Typical Insertion Loss dB/m (dB/ft) @ Max Frequency | 2.03 (0.62)                             | 1.33 (0.41) | 1.33 (0.41) | 1.15 (0.35) | 0.95 (0.29) | 0.75 (0.23) | 0.69 (0.21) | 0.33 (0.10) |
|  | Velocity of Propagation %                           | 85                                      |             |             |             |             |             |             |             |
|  | Time Delay ns/cm (ns/in)                            | 0.04 (0.103)                            |             |             |             |             |             |             |             |
|  | Dielectric Constant                                 | 1.4                                     |             |             |             |             |             |             |             |
|  | Shielding Effectiveness dB to 18GHz                 | >100                                    |             |             |             |             |             |             |             |
|  |   |   |             |             |             |             |             |             |             |
| <b>MECHANICAL/ENVIRONMENTAL PROPERTIES</b> | Centre Conductor                                    | Solid                                   | Stranded    | Stranded    | Solid       | Solid       | Solid       | Solid       | Stranded    |
|  | Overall Diameter mm (in)                            | 4.55 (0.18)                             | 6.96 (0.27) | 7.25 (0.29) | 6.96 (0.27) | 7.50 (0.29) | 9.50 (0.37) | 9.93 (0.39) | 12.7 (0.50) |
|  | Nominal Weight g/m (oz/ft)                          | 41 (0.43)                               | 105 (1.13)  | 137 (1.47)  | 105 (1.13)  | 128 (1.37)  | 190 (2.04)  | 204 (2.19)  | 345 (3.70)  |
|  | Minimum Bend Radius mm (in)                         | 12.5 (0.49)                             | 25.0 (0.98) | 25.0 (0.98) | 25.0 (0.98) | 38.0 (1.49) | 50.0 (1.97) | 55.0 (2.16) | 62.5 (2.46) |
|  | Temperature Range °C (°F)                           | -58 to 200 <sup>a</sup><br>(-72 to 392) |             |             |             |             |             |             |             |
|  | Crush Resistance kgf/cm (lb/in)                     | >31.3 (>175)                            |             |             |             |             |             |             |             |

<sup>a</sup> Contact a Gore representative for applications with an operating temperature > 175°C.

## QUALIFICATION SUMMARY

Designed to meet the stringent specification requirements of military aircraft, these assemblies have undergone substantial qualification testing to provide user confidence in their capabilities and performance.

| EXAMINATION OR TEST                           | APPLICABLE STANDARDS  | STATUS                               |
|---|---|--------------------------------------|
| Design and Construction                       | MIL-T-81490 paragraph 4.7.1   | Compliant                            |
| Marking                                       | MIL-T-81490 paragraph 4.7.1   | Compliant                            |
| Workmanship                                   | MIL-T-81490 paragraph 4.7.2   | Compliant                            |
| RF Insertion Loss                             | MIL-T-81490 paragraph 4.7.3   | Compliant                            |
| Voltage Standing Wave Ratio                   | MIL-T-81490 paragraph 4.7.4   | Compliant                            |
| Impedance                                     | MIL-T-81490 paragraph 4.7.5   | Compliant                            |
| Vapour leakage                                | MIL-STD-202F, notice 9, method 112E paragraph 5, condition C, procedure IV                                    | Compliant                            |
| Velocity of Propagation                       | MIL-T-81490 paragraph 4.7.7   | Compliant                            |
| RF Leakage                                    | MIL-STD-1344, method 3008   | Compliant                            |
| Thermal Shock                                 | MIL-STD-810D, method 503.2  | Compliant                            |
| Power Handling Capability                     | MIL-T-81490 paragraph 4.7.13  | Compliant                            |
| Flexure                                       | MIL-T-81490 paragraph 4.7.15  | Compliant                            |
| Torque  | MIL-T-81490 paragraph 4.7.16, torque requirement of 50 in/lbs replaced by $\pm 90^\circ$ angular displacement | Compliant                            |
| Tensile Load                                  | MIL-T-81490 paragraph 4.7.17  | Compliant                            |
| Concentrated Load                             | MIL-T-81490 paragraph 4.7.18, 100 $\pm$ 2 lbs force   | Compliant. Achieved $\geq$ 400lbs    |
| Abrasion                                      | MIL-T-81490 paragraph 4.7.19  | Compliant                            |
| Sand and Dust                                 | MIL-STD-810D, method 510.2, procedure 1   | Compliant                            |
| High Potential Withstanding Voltage           | MIL-STD-202, method 301   | Compliant                            |
| Explosive Atmosphere                          | MIL-STD-810, method 511   | Compliant                            |
| Temperature / Humidity / Altitude / Vibration | MIL-STD-810D, method 520.0, procedure III with vibration as per MIL-STD-810D, method 514.3, procedure 1       | Compliant                            |
| Humidity                                      | MIL-STD-810, method 507   | Compliant                            |
| Vibration                                     | MIL-STD-810D, method 514.3, procedure 1   | Compliant                            |
| Gunfire Vibration                             | MIL-STD-810D, method 519.3 procedure 1, test spectra fig. 519.3-1   | Compliant                            |
| Salt Fog                                      | MIL-STD-810D, method 509, exposure $\geq$ 96 hours  | Compliant. Achieved $\geq$ 500 hours |



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| EXAMINATION OR TEST       | APPLICABLE STANDARDS  | STATUS   |
|---------------------------|---|--|
| Chemical Resistance       | BS3G100, part 2, section 3, subsection 3.12, for class A<br>Fluids tested:<br>1. Avtag F.40 (JP-4)<br>2. Avtur F.34 (JP-8)<br>3. Hydraulic fluid OM 15<br>4. Cabin seal compound<br>5. Engine and gearbox oil 156.000<br>6. De-icing fluid S737<br>7. De-icing fluid (windscreen)<br>8. De-icing fluid (aircraft) S1746<br>9. De-icing fluid (runway)<br>10. Sea water<br>11. Heat transfer liquid<br>12. Engine corrosion inhibiting fluid OM 13<br>13. Aircraft washing agent(s)<br>14. Corrosion prevention compound<br>15. Aircraft cleaning compound | Compliant<br>Compliant<br>Compliant<br>Compliant<br>Compliant<br>Compliant<br>Compliant<br>Compliant<br>Compliant<br>Compliant<br>Compliant<br>Compliant<br>Compliant<br>Compliant |
| Icing freezing rain       | MIL-STD-810D, method 521.0  | Compliant  |
| Fungus resistance         | MIL-STD-810D, method 508.3  | Compliant  |
| Acoustic noise            | MIL-STD-810D, method 513.3, procedure II  | Compliant  |
| Mechanical shock          | MIL-STD-810D, method 516.3, procedures I, V & VI  | Compliant  |
| Drip                      | MIL-STD-810D, method 506.2, procedure II  | Compliant  |
| Rain                      | MIL-STD-810D, method 506.2, procedure I   | Compliant  |
| Fire resistance           | MIL-STD-202F, method III and MIL-C-17F, paragraphs 3.7.22 and 4.8.23  | Compliant  |
| Corona extinction voltage | MIL-C-17, paragraphs 3.7.5 and 4.8.6  | Compliant  |
| Endurance                 | MIL-C-39012, paragraphs 3.15 and 4.6.12   | Compliant  |
| Acceleration              | MIL-STD-810D, method 513.3 procedures I and II  | Compliant  |
| Flammability              | FAR25.853 (a) appendix F part I (b)(7)  | Compliant  |
| Toxicity                  | FAR25.853 (a) appendix F part I (b)(7)  | Compliant  |
| Smoke                     | FAR25.853 (a) appendix F part I (b)(7)  | Compliant  |

NOTICE – USE RESTRICTIONS APPLY. Not for use in food, drug, cosmetic or medical manufacturing, processing, or packaging operations.