

UTiFLEX® Flexible Cable Assemblies



POWER HANDLING

Background

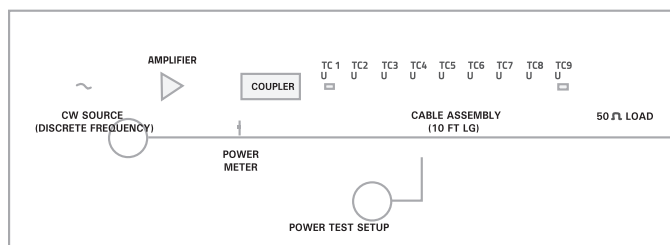
UTiFLEX cable assemblies were tested for CW high power handling capability. The primary purpose of the test was to ensure the ability of the selected cable assemblies to withstand exposure to high power levels and still function per specification. The secondary purpose of the test was to determine external cable and connector temperature relative to power input.

Process

The following UTiFLEX cable assemblies were selected for test:

| Serial Number | Description |
|---------------|--------------------|
| 96H1761 UFA | 210B-0-0600-300300 |
| 96H1758 UFA | 147A-0-0600-504504 |
| 96H1755 UFB | 311A-0-0600-504504 |
| 96H1762 UFA | 210B-0-0600-504504 |
| 96H1760 UFA | 210B-0-0600-504504 |
| 96H1763 UFA | 210B-0-0600-504504 |
| 96H1765 UFA | 210A-0-0600-504504 |
| 96H1764 UFA | 210B-0-0600-300300 |
| 96H1766 UFA | 210B-0-0120-300300 |
| 96H1757 UFB | 311A-0-0600-603603 |

Figure 1



All nine thermocouple temperature readings were measured prior to power input. Then 100 watts of CW power at 18 GHz was injected into the test specimen. The power was maintained $\pm 2\%$ until all thermocouples attached to the cable had reached a steady state. Steady state was defined as temperature change less than $\pm 1^\circ$ within 5 minutes. After steady state was reached, the temperature on each thermocouple was recorded and the injected power was increased.

Additional power levels included 150 watts for all test specimens and 200 watts for some samples. After each power increment, all thermocouple temperatures were allowed to obtain steady state before measurements were recorded. The maximum temperature recorded on the cable assembly at each input power level is indicated below. After completion of the power handling test, all test specimens were tested for insertion loss and VSWR performance and were determined to meet CarlisleIT specifications.

| Serial Number | Description | Temp ($^\circ$ C) @ | | |
|---------------|--------------------|----------------------|-----------|------------|
| | | 100 watts | 150 watts | 200 watts |
| 96H1761 | 210B-0-0600-300300 | 43.1 | 56.0 | 66.0 |
| 96H1758 | 147A-0-0600-504504 | 48.6 | 61.4 | 56.9 |
| 96H1755 | 311A-0-0600-504504 | 30.0 | 37.0 | 42.7 |
| 96H1762 | 210B-0-0600-504504 | 36.4 | 49.3 | Not tested |
| 96H1760 | 210B-0-0600-504504 | 41.6 | 53.3 | Not tested |
| 96H1763 | 210B-0-0600-504504 | 37.1 | 47.6 | Not tested |
| 96H1765 | 210A-0-0600-504504 | 49.2 | 67.4 | Not tested |
| 96H1764 | 210B-0-0600-300300 | 33.9 | 46.7 | Not tested |
| 96H1766 | 210B-0-0120-300300 | 37.7 | 43.4 | Not tested |
| 96H1757 UFB | 311A-0-0600-603603 | 34.3 | 42.3 | 51.2 |

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