

# *Military/Tactical Field Deployable*

## Antenna Feeder Cables



# Military/Tactical Field Deployable Antenna Feeder Cable Properties

	TCOM-400-UF	TCOM-600-UF	TCOM-600-FS	QEAM-400	QEAM-500	QEAM-810	LLSB-400 M17/223-00001	LLSB-600 M17/225-00001	LLSB-900 M17/226-00001	LLSB-1200 M17/227-00001
Loss (dB/100ft) @30 MHz	0.7	0.4	0.5	1.0	0.64	0.38	0.8	0.5	0.3	0.2
50 MHz	0.9	0.5	0.6	1.3	0.83	0.50	1.0	0.6	0.4	0.3
150 MHz	1.5	1.0	1.1	2.3	1.45	0.87	1.8	1.1	0.8	0.6
450 MHz	2.7	1.7	2.0	4.1	2.53	1.53	3.2	2.0	1.4	1.0
900 MHz	3.9	2.5	2.9	5.8	3.62	2.20	4.6	2.9	2.0	1.5
1800 MHz	5.7	3.7	4.3	8.3	5.19	3.19	6.7	4.3	2.9	2.2
2500 MHz	6.8	4.4	5.2	9.9	6.17	3.81	8.0	5.2	3.5	2.7
6000 MHz	11.0	7.4	8.8	15.6	9.86	6.20	13.0	8.7	5.9	-
10000 MHz	14.8	10.2	12.0	20.5	13.04	-	-	-	-	-
16000 MHz	19.6	-	-	26.4	-	-	-	-	-	-
18000 MHz	-	-	-	28.1	-	-	-	-	-	-
K1	0.12229	0.07555	0.08888	0.18950	0.11644	0.06926	0.14387	0.08888	0.06091	0.04396
K2	0.00026	0.00026	0.00031	0.00015	0.00014	0.00014	0.00031	0.00031	0.00019	0.00019
Loss at other Frequencies = [K1 x √ F] + [K2 x F] F = Frequency in MHz										
CW Power(kW) @30 MHz	3.0	6.0	5.0	4.0	6.0	14.0	3.0	6.0	9.0	13.0
50 MHz	2.6	4.2	3.6	2.8	4.9	11.2	2.6	4.2	6.9	9.7
150 MHz	1.5	2.4	2.0	1.6	2.8	6.4	1.5	2.4	3.9	5.5
450 MHz	0.8	1.3	1.1	0.9	1.6	3.6	0.8	1.3	2.2	3.1
900 MHz	0.58	0.93	0.8	0.7	1.1	2.5	0.6	0.9	1.5	2.1
1800 MHz	0.40	0.63	0.53	0.5	0.8	1.7	0.4	0.6	1.0	1.4
2500 MHz	0.33	0.52	0.44	0.4	0.7	1.4	0.3	0.5	0.9	1.2
6000 MHz	0.20	0.31	0.26	0.2	0.4	0.9	0.2	0.3	0.5	-
10000 MHz	0.15	0.23	0.19	0.2	0.3	-	-	-	-	-
16000 MHz	0.11	-	-	0.1	-	-	-	-	-	-
18000 MHz	-	-	-	0.1	-	-	-	-	-	-
Passive Intermod (dBc)	>-150			>-150			>-120			
Impedance (ohms)	50			50			50			
Capacitance (pF/ft)	23.9	23.4	23.4	26.4	25.4	24.7	23.9	23.4	23.4	23.1
Velocity of Propagation (%)	85	87	87	76	80	82	84	85	87	87
Dielectric Constant	1.38	1.32	1.32	1.73	1.56	1.49	1.42	1.38	1.32	1.32
DC Voltage (kV)	2.5	4	4	2	3	5	3	4	5	6
Outer Diameter (inches)	0.405	0.590	0.590	0.405	0.500	0.810	0.405	0.590	0.870	1.20
Jacket Material	PUR	PUR	PUR	PUR	PUR	PUR	XLPE	XLPE	XLPE	XLPE
Operating Temp Range (°C)	-40° to +90°			-40° to +90°			-40° to +85°			
Bend Radius (in)	4	6	6	5	5	8	4	6	9	11
Bending Moment (ft/lb)	0.5	9	9	1	1.3	6	1.75	2.75	9	15
Weight (lb/ft)	0.089	0.160	0.220	0.152	0.193	0.442	0.068	0.131	0.266	0.448
Connectors: field installable	Yes			No			Yes			
: factory installed	Yes			Yes			Yes			

Feeder cables for military field deployable antennas need to be rugged enough to withstand the rigors of repeated reeling, while still providing good electrical performance and resistance to a variety of harsh environments. While corrugated copper cables and other cables designed for fixed installations are frequently used for these applications, they do not provide reliable long term performance. Times Microwave Systems manufactures several families of cables that provide superior flexing, while still providing excellent electrical performance.

**QEAM™** The ultimate cable design for field deployable applications is the QEAM (Quick Erecting Antenna Mast) cable. This cable series is designed specifically for use in demanding, mission critical applications, where reeling and unreeling are required over a wide temperature range. Its performance has been proven on systems such as the Hawk and Patriot Missile. The use of a taped PTFE dielectric results in exceptionally low bending moment and long bend life (typically more than 10,000 bends, depending upon radius, etc.). In the larger sizes, use of a composite center conductor further improves bend properties. Based on our MilTech aerospace cable assemblies, these assemblies are fully weather sealed and constructed in accordance with the requirements of MIL-T-81490. Heavy duty stainless steel connectors provide long term corrosion resistance and ruggedness. Qeam cables are sold only as finished assemblies, tested over the required frequency band and fitted with hoisting grips or otherwise customized to the requirements of the application.

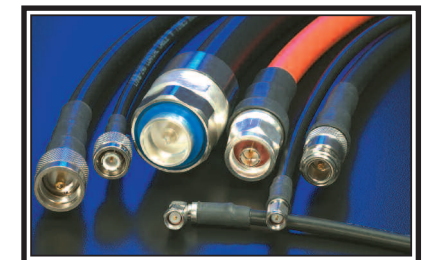
**TCOM®** The TCOM cable series has a foam dielectric and a silver plated copper strip braid outer conductor. This allows these cables to withstand several thousand reelings on a diameter at least 20 times the cable diameter. The FlexStrand versions, with a stranded center conductor, have a lower bending moment and a longer bend life. A wide variety of connector types is available. TCom cables are available either as assemblies or as bulk cable.



**LLSB™** The LLSB cable series is the most cost effective choice for field deployable applications. Although primarily recommended for fixed interconnects and other non-flexing applications, LLSB cables may be suitable for less demanding retractable antenna feeder applications. When LLSB cables are reeled on a diameter at least 20 times their cable diameter, they will withstand several hundred reelings — an order of magnitude more than is typical for corrugated copper cable. LLSB cables are much easier to terminate and have loss similar to comparable sized corrugated copper cables. LLSB cables may be purchased either as bulk cable to be terminated by the user or as finished assemblies to meet required specifications. LLSB cables are qualified under Military Specification MIL-C-17 and connectors complying with the requirements of MIL-C-39012 are available with a variety of interface types.



Our proven track record in providing cables for both military and commercial field deployable antenna systems includes the military's MSE (Mobile Subscriber Equipment) program, various missile launching platforms and other mission critical systems for ground based military communications and control. The products in this brochure are the most common used for field deployable antenna feeders. They represent only a small portion of our total product line. Our sales engineers can help you select or design the best product for your application.



#### Chart Notes:

- 1) power based on 1:1 vswr, sea level and +40°C ambient
- 2) power values are approximations, generally conservative and based on the cable's heat transfer properties
- 3) PUR = polyurethane  
XLPE = cross-linked polyethylene
- 4) All standard connector interface types available

## **About *TIMES MICROWAVE SYSTEMS***

Times Microwave Systems, was founded in 1948 as the Times Wire and Cable Company. Today, the company specializes in the design and manufacture of high performance flexible, semi-flexible and semi-rigid coaxial cable, connectors and cable assemblies. With over 60 years of leadership in the design, development, and manufacture of coaxial products for defense microwave systems, Times Microwave Systems is the acknowledged leader, offering high tech solutions for today's most demanding applications.

Cable assemblies from Times Microwave Systems are used as interconnects for microwave transmitters, receivers, and antennas on airframes, missiles, ships, satellites, and ground based communications systems, and as leads for test and instrumentation applications. As a highly specialized and technically focused company, Times Microwave Systems has been able to continually meet the challenges of specialty engineered transmission lines for both the military and commercial applications, drawing upon our:

- Thousands of unique cable and connector designs
- Exceptional RF and microwave design capability
- Precise material and process controls
- Unique in-house testing capabilities including RF shielding/leakage, vibration, moisture/vapor sealing, phase noise and flammability
- Years of MIL-T-81490, MIL-C-87104, and MIL-PRF-39012 experience
- ISO 9001 Certification

With over 60 years of Times Microwave Systems aerospace cable and connector technology experience and unparalleled design expertise, Times Microwave Systems' staff of Field Applications Engineers can help to provide the right solution for your interconnect applications.



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