

# GrooveTube® Low Loss Cables

## High Reliability RF Cable Assemblies

This system cable is made with our industry-leading GrooveTube® and is used in any application where low loss and/or phase stability are critical. Uses include phased array radar, electronic warfare radar systems, and high reliability interconnects. MegaPhase's 1 and 2 Series cables are ideal for thermal-VAC and space applications, while the 5 Series is well suited for antenna feed cable and EMC lab test cable applications. Our rugged construction resists torque, pull and crush forces. All GrooveTube® cable assemblies are tested 100% for S-Parameters and each assembly is serialized. Standard test and data includes VSWR and insertion loss. Additional testing options will be quoted upon request.

### Electrical Data

<b>Maximum Frequency:</b>	130, 135, 230:	18.0 GHz
	120:	32.0 GHz
	620:	26.5 GHz
	520:	50.0 GHz
	539:	12.4 GHz
<b>Impedance:</b>		50 Ω nominal
<b>Propagation Velocity:</b>	130, 135, 230:	84% nominal
	120:	86.5% nominal
	5 Series:	69% nominal
	6 Series:	80% nominal
<b>Time Delay:</b>	120:	1.17 ns/ft (3.84 ns/m)
	130, 135, 230:	1.21 ns/ft (3.97 ns/m)
	620:	1.27 ns/ft (4.17 ns/m)
	5 Series:	1.47 ns/ft (4.82 ns/m)
<b>Shielding Effectiveness:</b>		-110 dB minimum (cable only)
<b>Dielectric Withstanding Voltage:</b>	120, 520:	10 kV at 60 Hz
	130, 135, 230, 539:	15 kV at 60 Hz
	620:	7.5 kV at 60 Hz
<b>Capacitance:</b>	130, 230:	26.7 pF/ft (87.6 pF/m)
	5 Series:	29.0 pF/ft (95.1 pF/m)
	6 Series:	26.7 pF/ft (87.6 pF/m)
	120 Series:	24.5 pF/ft (80.4 pF/m)
	135 Series:	15.8 pF/ft (51.8 pF/m)
<b>Mechanical Data</b>		
<b>Finished Outer Diameter:</b>	120, 520, 620:	0.285 in (0.724 cm)
	130, 135, 230:	0.400 in (1.016 cm)
	539:	0.460 in (1.168 cm)
<b>Static Bend Radius:</b>	120, 520, 620:	1.5 in (3.81 cm)
	130, 135, 230:	3.0 in (7.62 cm)
	539:	3.0 in (7.62 cm)
<b>Weight with Standard Jacket/Armor:</b>	130, 230:	0.08 lbs/ft (0.119 kg/m)
	120, 520, 620:	0.05 lbs/ft (0.067 kg/m)
	539:	0.10 lbs/ft (0.149 kg/m)
	135:	0.14 lbs/ft (0.209 kg/m)
<b>Crush Resistance:</b>		250 lbs/linear in (44.6 kg/linear cm)

### Operating Temp. Range:

120, 135:	-67 to 275° F (-55 to 135° C)
130, 230:	-85 to 248° F (-65 to 120° C)
5 Series:	-67 to 275° F (-55 to 135° C)
620:	-40 to 185° F (-40 to 85° C)

For all series except 620:

Above 185° F (85° C) use "T" designation

### Cable Construction

#### Inner Conductor:

1, 5 & 6 Series:	Solid Ag-plated Cu
2 Series:	Stranded Ag-plated Cu

#### Dielectric:

130, 230:	Low Density PTFE
135:	Boundless PTFE
5 Series:	PTFE
6 Series:	Foam PE

**Outer Conductor:** GrooveTube® Cu

#### Standard Finish:

5 Series, 120, 620:	Polyolefin over Metallic Braid
130, 230:	Neoprene over Metallic Braid

### Available Connectors

120, 620: 2.4mm, 2.92mm, 3.5mm, 7mm, BNC, SMA, TNC, Type N

130, 230: 3.5mm, 7mm, BNC, SMA, TNC, Type N

135: 3.5mm, SMA, N Series, TNC, 7-16 DIN

520: 1.85mm, 2.4mm, 2.92mm, 3.5mm, 7mm, 7-16 DIN, BNC, SMA, TNC, Type N, ZMA, ZN

539: 7-16 DIN, SMA, TNC, Type N

(maximum frequency dependent on cable; other connectors available)

# GrooveTube® Low Loss Cables (cont'd)

## Specifications - 5 Series

Frequency		520		539		VSWR	Conn. Loss dB
		Attenuation					
GHz	Band	dB/ft	dB/m	dB/ft	dB/m		
0.3	UHF	0.062	0.203	0.031	0.103	1.10	0.006
0.5		0.082	0.268	0.042	0.137		0.009
0.8		0.106	0.348	0.054	0.179		0.012
1.0	L	0.120	0.394	0.062	0.203		0.014
2.0	S	0.178	0.585	0.094	0.308	1.15	0.024
2.4		0.199	0.652	0.105	0.345		0.027
3.0		0.227	0.744	0.121	0.396		0.032
4.0	C	0.270	0.885	0.145	0.476	1.20	0.040
6.0		0.347	1.138	0.189	0.621		0.055
8.0	X	0.417	1.367	0.230	0.754	1.25	0.070
10.0		0.482	1.580	0.268	0.879		0.084
12.4		0.555	1.822	0.312	1.023		0.101
15.0	Ku	0.631	2.070	-	-	1.30	0.118
18.0		0.715	2.345	-	-		0.139
20.0	K	0.769	2.522	-	-	1.35	0.152
22.0		0.821	2.695	-	-		0.165
24.0		0.873	2.865	-	-		0.178
26.5		0.937	3.073	-	-		0.194
28.0	Ka	0.974	3.196	-	-	1.40	0.204
30.0		1.024	3.358	-	-		0.217
32.0		1.072	3.518	-	-		0.230
34.0		1.121	3.676	-	-	1.45	0.243
36.0		1.168	3.833	-	-		0.256
40.0		1.262	4.141	-	-		0.281
45.0	Q	1.377	4.518	-	-		0.313
50.0	V	1.490	4.888	-	-	1.50	0.344

# GrooveTube® Low Loss Cables (cont'd)

## Specifications

Frequency		130		135		230		VSWR	Conn. Loss dB
		Attenuation							
GHz	Band	dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m		
0.3	UHF	0.029	0.097	0.032	0.106	0.037	0.122	1.10	0.006
0.5		0.038	0.126	0.042	0.137	0.048	0.157		0.009
0.8		0.049	0.161	0.053	0.175	0.061	0.199		0.012
1.0	L	0.055	0.180	0.060	0.196	0.068	0.223		0.014
2.0	S	0.079	0.260	0.086	0.283	0.096	0.316	1.15	0.024
2.4		0.087	0.287	0.096	0.311	0.106	0.347		0.027
3.0		0.099	0.324	0.107	0.351	0.118	0.388		0.032
4.0	C	0.115	0.378	0.125	0.410	0.137	0.449	1.20	0.040
6.0		0.144	0.473	0.156	0.511	0.168	0.552		0.055
8.0	X	0.169	0.556	0.183	0.599	0.195	0.639	1.25	0.070
10.0		0.192	0.630	0.207	0.678	0.218	0.716		0.084
12.4		0.210	0.713	0.223	0.766	0.244	0.799		0.101
15.0	Ku	0.243	0.796	0.260	0.853	0.296	0.881	1.30	0.118
18.0		0.270	0.886	0.289	0.948	0.295	0.968		0.139



**MegaPhase®**

*Our Customers Connect With Us™*

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## GrooveTube® Low Loss Cables (cont'd)

### Specifications

Frequency		120		620		VSWR	Conn. Loss dB
		Attenuation					
GHz	Band	dB/ft	dB/m	dB/ft	dB/m		
0.3	UHF	0.053	0.173	0.054	0.179	1.10	0.006
0.5		0.068	0.225	0.071	0.234		0.009
0.8		0.087	0.287	0.092	0.301		0.012
1.0	L	0.098	0.322	0.103	0.339		0.014
2.0	S	0.141	0.463	0.151	0.497	1.15	0.024
2.4		0.155	0.510	0.168	0.550		0.027
3.0		0.175	0.575	0.190	0.625		0.032
4.0	C	0.204	0.671	0.225	0.737	1.20	0.040
6.0		0.255	0.836	0.285	0.935		0.055
8.0	X	0.299	0.980	0.338	1.111	1.25	0.070
10.0		0.338	1.110	0.388	1.272		0.084
12.4		0.382	1.253	0.443	1.454		0.101
15.0	Ku	0.426	1.397	0.499	1.639	1.30	0.118
18.0		0.473	1.552	0.561	1.841		0.139
20.0	K	0.503	1.649	0.601	1.971	1.35	0.152
22.0		0.532	1.744	0.639	2.097		0.165
24.0		0.559	1.835	0.677	2.220		0.178
26.5	Ka	0.593	1.946	0.722	2.370	1.40	0.194
28.0		0.613	2.010	-	-		0.204
30.0		0.638	2.095	-	-		0.217
32.0		0.664	2.177	-	-		0.230