EMC Lab EM Series

Low Loss Armored Test Cables for Compliance Measurements

MegaPhase designed its EM series test cable specifically for the needs of EMC lab technicians. These low density dielectric cables are constructed using materials that meet electromagnetic compatibility standards. The cable assemblies offer excellent shielding effectiveness and the benefits of crush resistant armoring. MegaPhase plug connectors (exception: precision airline) have conductive interface gaskets integrated to minimize RF leakage at the connector. Phase matching, alternative conductive jackets and other features are available to suit specific EMI/RFI test environments.

Electrical Data

Maximum Frequency:	EMC1:	40.0 GHz
	EMC2:	26.5 GHz
	EMC3:	18.0 GHz
Impedance:	50 Ω nominal	
Propagation Velocity:	84% nominal	
Time Delay:	1.21 ns/ft (43.97 ns/m)	
Shielding Effectiveness:	-120 dB minimum (cable only)	
Dielectric Withstanding Voltage:	EMC1	7 kV at 60 Hz
	EMC2:	10 kV at 60 Hz
	EMC3:	15 kV at 60 Hz
Capacitance:	24.4 pF/ft (80.1 pF/m)	

Mechanical Data

Finished Outer Diameter:	EMC1:	0.355 in (0.902 cm)
	EMC2:	0.475 in (1.207 cm)
	EMC3:	0.570 in (1.488 cm)
Static Bend Radius:	EMC1:	1.25 in (3.175 cm)
	EMC2:	1.5 in (3.800 cm)
	EMC3:	2.0 in (5.080 cm)
Weight with Standard Jacket/Armor:	EMC1:	0.13 lbs/ft (0.198 kg/m)
	EMC2:	0.29 lbs/ft (0.426 kg/m)
	EMC3:	0.33 lbs/ft (0.496 kg/m)
Crush Resistance:	EMC1:	500 lbs/linear in (89.3 kg/linear cm)
	EMC2:	300 lbs/linear in (53.6 kg/linear cm)
	EMC3:	300 lbs/linear in (53.6 kg/linear cm)
Operating Temp. Range:	-67 to 245° F (-55 to 120° C) Above 185° F (85° C) use "T" designation and provide temperature range.	

Cable Construction

Inner Conductor:	Solid Ag-plated Cu
Dielectric:	PTFE Tape
Outer Conductor:	Ag-plated Cu Strip/ Ag-plated Cu Flat Braid
Ruggedization:	Metal Braid/Metal Conduit
Standard Finish:	Neoprene

(a wide variety of other protective finishes and armors available)

Available Connectors

EMC1: 1.85 mm, 2.4 mm 2.9mm,3.5mm, SMA, TNC, Type N

EMC2: 3.5mm, BNC, SMA, TNC, Type N

EMC3: 7-16 DIN, SMA, TNC, Type N

(maximum frequency dependent on cable; other connectors available)

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Specifications

Frequency		EMC1			EMC2			EMC3			Conn. Loss dB
		Attenuation		VSWR	Attenuation		VSWR	Attenuation		VSWR	
GHz	Band	dB/ft	dB/m		dB/ft	dB/m		dB/ft	dB/m		
0.3	UHF	0.060	0.196	1.10	0.034	0.113	1.10	0.026	0.086	1.10	0.006
0.5		0.077	0.254		0.044	0.146		0.034	0.112		0.009
0.8		0.098	0.323		0.056	0.185		0.043	0.142		0.012
1.0	L	0.110	0.362		0.063	0.207		0.049	0.159		0.014
2.0	S	0.158	0.518		0.090	0.294		0.070	0.229		0.024
2.4		0.174	0.570		0.098	0.322		0.077	0.252		0.027
3.0		0.195	0.640		0.110	0.361		0.086	0.283		0.032
4.0	C	0.227	0.745	1.15	0.127	0.418	1.15	0.101	0.330	1.20	0.040
6.0		0.281	0.923		0.157	0.515		0.125	0.411		0.055
8.0	X	0.328	1.077	1.20	0.182	0.597	1.20	0.146	0.480	1.25	0.070
10.0		0.370	1.215		0.204	0.670		0.166	0.543		0.084
12.4		0.416	1.366	1.25	0.228	0.749	1.25	0.186	0.612	1.30	0.101
15.0	Ku	0.462	1.516		0.252	0.827		0.207	0.681		0.118
18.0		0.511	1.677	1.30	0.277	0.910	1.30	0.230	0.755	1.35	0.139
20.0	K	0.542	1.778		0.293	0.962		-	-	-	0.152
22.0		0.571	1.875		0.308	1.011		-	-	-	0.165
24.0		0.600	1.969		0.323	1.058		-	-	-	0.178
26.5		0.635	2.082	1.35	0.340	1.115	1.35	-	-	-	0.194
28.0	Ka	0.655	2.148		-	-	-	-	-	-	0.204
30.0		0.681	2.233		-	-	-	-	-	-	0.217
32.0		0.706	2.317		-	-	-	-	-	-	0.230
34.0		0.731	2.398	1.40	-	-	-	-	-	-	0.243
36.0		0.755	2.478		-	-	-	-	-	-	0.256
40.0		0.803	2.633	1.45	-	-	-	-	-	-	0.281

Note: Typical Insertion Loss dB = (Attenuation)(Length) + 2(Conn. Loss)
Attenuation at any frequency = EMC1: (0.10730 x √freq GHz) + (0.00310 x freq GHz),
EMC2: (0.06227 x √freq GHz) + (0.00073 x freq GHz), EMC3: (0.04687 x √freq GHz) + (0.00173 x freq GHz)

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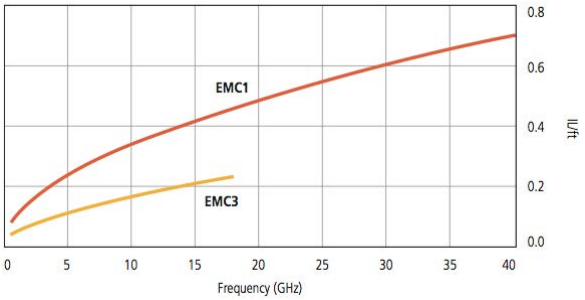
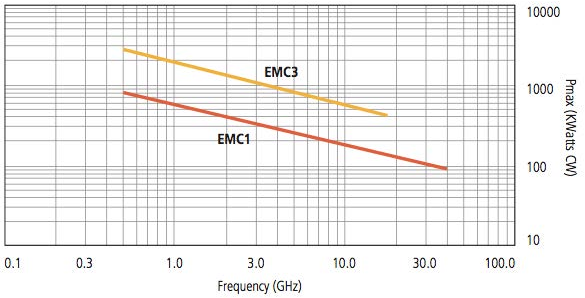
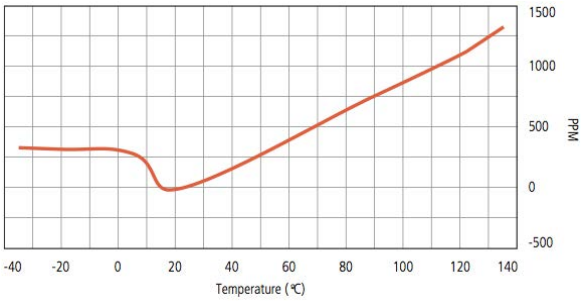
Insertion loss



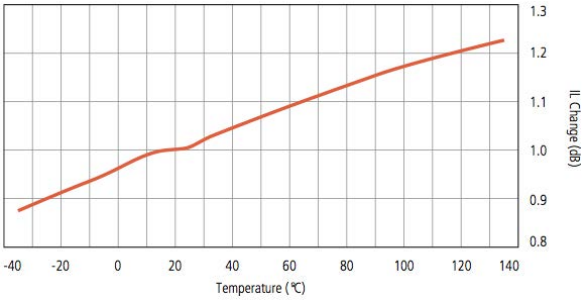
Cable CW Power Handling



Phase Change vs. Temperature



Insertion Loss vs. Temperature



Note: Typical Insertion Loss dB = (Attenuation)(Length) + 2(Conn. Loss) Attenuation at any frequency = (0.19043 x √freq GHz) + (0.00957 x freq GHz)

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