



MegaPhase®

Phase³TM

Phase3TM Cables to 67 GHz

Ultra Low Loss Performance

- Ultra Low Loss
- Excellent Shielding Effectiveness: -110 dB
- Low VSWR
- Helical Foil/Braid Outer Conductor
- Super Flexible
- Light Weight

Phase3TM cables offer the absolute lowest loss possible without sacrificing flexibility or shielding effectiveness.

The Phase3TM product line is used in airborne phased-array radars, ground-based EW, and ATE. Available with phase matching, delay matching, and armoring upon request.



Electrical Data

Maximum Frequency:

C08: 67.0 GHz
C11: 50.0 GHz
C12: 40.0 GHz
C19: 26.5 GHz
C29: 18.0 GHz

Impedance:

50 Ω nominal

Propagation Velocity:

C08: 75% nominal
C11, 12, 19, 29: 84% nominal

Time Delay:

C08: 1.35 ns/ft (4.43 ns/m)
C11, 12, 19, 29: 1.21 ns/ft (3.97 ns/m)

Shielding Effectiveness:

-110 dB minimum (cable only)

Dielectric Withstanding Voltage:

C08: 2.5 kV at 60 Hz
C11: 5.0 kV at 60 Hz
C12: 7.0 kV at 60 Hz
C19: 10.0 kV at 60 Hz
C29: 15.0 kV at 60 Hz

Capacitance:

C08: 27.0 pF/ft (88.6 pF/m)
C11, 12, 19, 29: 24.0 pF/ft (78.7 pF/m)

Mechanical Data

Finished Outer Diameter:

C08: 0.110 in (0.279 cm)
C11: 0.140 in (0.356 cm)
C12: 0.144 in (0.366 cm)
C19: 0.225 in (0.572 cm)
C29: 0.310 in (0.787 cm)

Static Bend Radius:

C08: 0.50 in (1.300 cm)
C11: 0.75 in (1.905 cm)
C12: 0.75 in (1.905 cm)
C19: 1.25 in (3.175 cm)
C29: 1.75 in (4.445 cm)

Weight with Standard Jacket/Armor:

C08: 0.01 lbs/ft (0.018 kg/m)
C11: 0.019 lbs/ft (0.028 kg/m)
C12: 0.02 lbs/ft (0.028 kg/m)
C19: 0.04 lbs/ft (0.062 kg/m)
C29: 0.09 lbs/ft (0.134 kg/m)

Operating Temp. Range:

85 to 392° F (-65 to 200° C)

Above 185° F (85° C) use "T" designation and provide temperature range.

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Phase3™ Cables to 67 GHz (continued)

Cable Construction

Inner Conductor:	Solid Ag-plated Cu
Dielectric:	PTFE Tape
Outer Conductor:	Ag-plated Cu Strip/ Ag-plated Cu Flat Braid
Standard Finish:	FEP

Available Connectors

C08: 1.85mm

C11: 1.85 mm, 2.4 mm 2.9mm,3.5mm ,SMA

C12: 1.85mm, 2.4mm, 2.92mm, 3.5mm, SMA, TNC, Type N

C19: 3.5mm, BNC, SMA, TNC, Type N

C29: 7-16 DIN, SMA, TNC, Type N

(maximum frequency dependent on cable; other connectors available)



Phase3™ Cables to 67 GHz (continued)

Specifications

Frequency		C08 Series		C11 Series		C12 Series		C19 Series		VSWR	Conn. Loss dB
		Attenuation		Attenuation		Attenuation		Attenuation			
GHz	Band	dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m		
0.3	UHF	0.107	0.352	0.074	0.242	0.060	0.196	0.036	0.119	1.10	0.006
0.5		0.139	0.457	0.095	0.313	0.077	0.254	0.047	0.154		0.009
0.8		0.178	0.584	0.121	0.396	0.098	0.323	0.060	0.196		0.012
1.0	L	0.200	0.656	0.135	0.443	0.110	0.362	0.067	0.220		0.014
2.0	S	0.288	0.946	0.192	0.629	0.158	0.518	0.096	0.315	1.15	0.024
2.4		0.318	1.043	0.210	0.690	0.174	0.570	0.105	0.346		0.027
3.0		0.359	1.176	0.235	0.772	0.195	0.640	0.119	0.389		0.032
4.0	C	0.419	1.375	0.272	0.893	0.227	0.745	0.138	0.453		0.040
6.0		0.524	1.719	0.335	1.098	0.281	0.923	0.171	0.562	0.055	
8.0	X	0.615	2.018	0.388	1.272	0.328	1.077	0.200	0.656	1.20	0.070
10.0		0.698	2.290	0.434	1.425	0.370	1.215	0.226	0.740	1.25	0.084
12.4		0.789	2.290	0.485	1.592	0.416	1.366	0.254	0.832	1.30	0.101
15.0	Ku	0.881	2.589	0.535	1.755	0.462	1.516	0.282	0.924		0.118
18.0		0.980	2.891	0.588	1.928	0.511	1.677	0.312	1.023		0.139
20.0	K	1.043	3.422	0.620	2.036	0.542	1.778	0.331	1.085	1.35	0.152
22.0		1.104	3.621	0.652	2.138	0.571	1.875	0.349	1.145		0.165
24.0		1.163	3.814	0.682	2.237	0.600	1.969	0.366	1.202		0.178
26.5		1.234	4.048	0.718	2.355	0.635	2.082	0.388	1.272		0.194
28.0	Ka	1.276	4.185	0.739	2.423	0.655	2.148	-	-	1.40	0.204
30.0		1.330	4.364	0.766	2.512	0.681	2.233	-	-		0.217
32.0		1.383	4.539	0.792	2.598	0.706	2.317	-	-	0.230	
34.0		1.436	4.711	0.817	2.681	0.731	2.398	-	-	1.45	0.243
36.0		1.487	4.879	0.842	2.762	0.755	2.478	-	-	0.256	
40.0	V	1.587	5.207	0.890	2.919	0.803	2.633	-	-	1.50	0.281
45.0		1.708	5.604	0.946	3.104	-	-	-	-		0.313
50.0		1.825	5.988	1.000	3.281	-	-	-	-	1.55	0.344
60.0		2.049	6.722	-	-	-	-	-	-		0.406
67.0		2.200	7.218	-	-	-	-	-	-	1.60	0.450

Note: Typical Insertion Loss dB = (Attenuation)(Length) + 2(Conn. Loss)

Attenuation at any frequency =

C08: $(0.19043 \times \sqrt{\text{freqGHz}}) + (0.00957 \times \text{freqGHz})$;

C12: $(0.1073 \times \sqrt{\text{freqGHz}}) + (0.0031 \times \text{freqGHz})$;

C19: $(0.065 \times \sqrt{\text{freqGHz}}) + (0.002 \times \text{freqGHz})$



Phase3™ Cables to 67 GHz (continued)

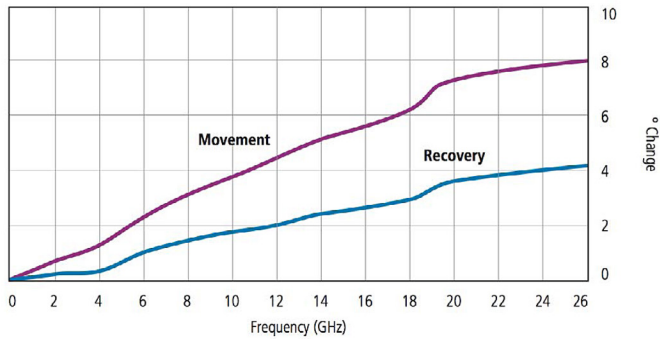
Specifications

Frequency		C29 Series			Conn. Loss dB
		Attenuation		VSWR	
GHz	Band	dB/ft	dB/m		
0.3	UHF	0.029	0.095	1.10	0.006
0.5		0.038	0.124		0.009
0.8		0.048	0.157		0.012
1.0	L	0.054	0.177		0.014
2.0	S	0.077	0.253	1.15	0.024
2.4		0.085	0.279		0.027
3.0		0.096	0.314		0.032
4.0	C	0.111	0.365	1.20	0.040
6.0		0.138	0.454		0.055
8.0	X	0.162	0.531	1.25	0.070
10.0		0.183	0.600		0.084
12.4		0.206	0.676	1.30	0.101
15.0	Ku	0.229	0.752		0.118
18.0		0.254	0.833	1.35	0.139

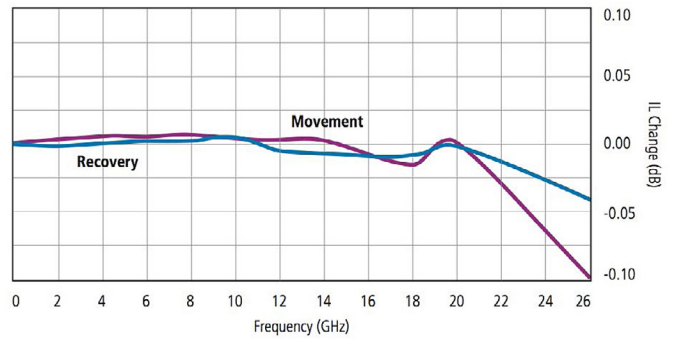
Note: Typical Insertion Loss dB = (Attenuation)(Length) + 2(Conn. Loss)
Attenuation at any frequency = C29: (0.052 x $\sqrt{\text{freqGHz}}$) + (0.00185 x freqGHz)

Phase3[™] Cables to 67 GHz (continued)

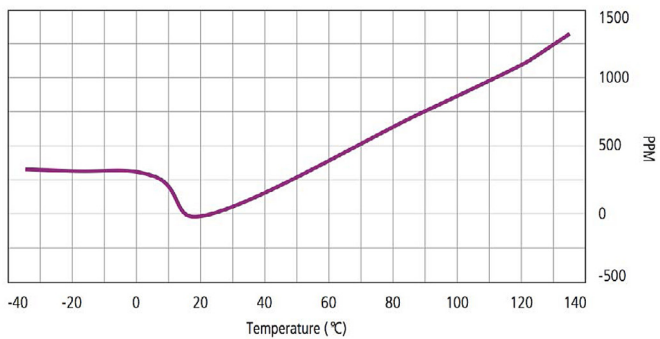
Phase Change vs. Flexure



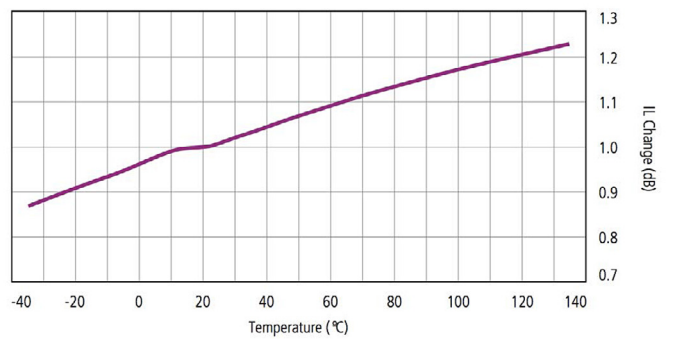
Insertion Loss vs. Flexure



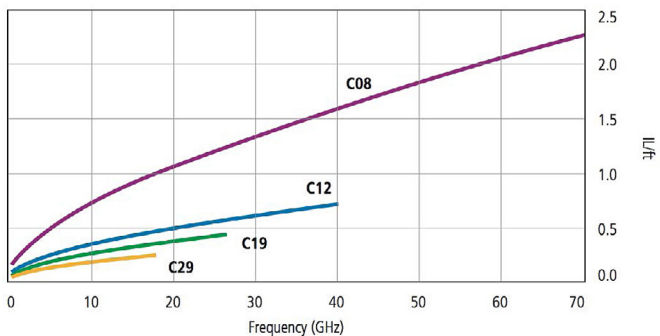
Phase Change vs. Temperature



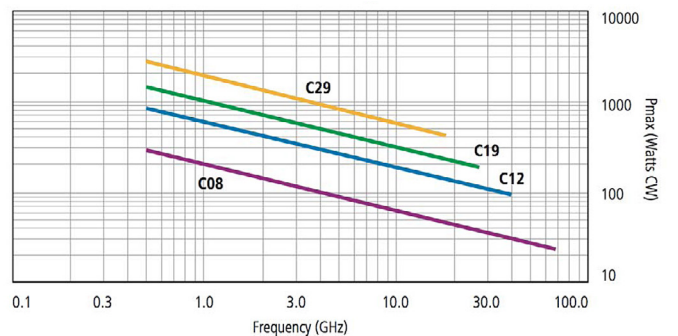
Insertion Loss vs. Temperature



Insertion Loss



Cable CW Power Handling



Note: Data at ambient temperature and sea level. Power handling of a cable assembly is also connector dependent and includes variables such as altitude, temperature and system VSWR. See website for connector power handling standards, including altitude, temperature and VSWR derating.