



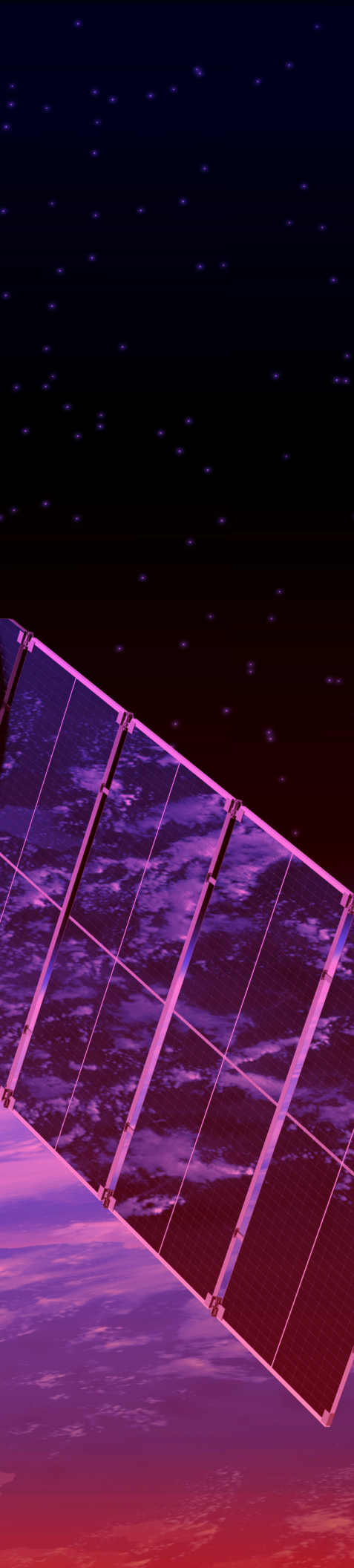
Performance Meets Durability RF & Microwave Products Through 110GHz

**Test & Measurement Cables
RF & Microwave Cables
RF Components
Connectors
Adapters & Accessories**



With the right connections, anything is possible.





Attenuation	1
Power	2
Introduction	3
Design and Manufacturing of RF & Microwave Cables and Components Through 110 GHz	5

Test and Measurement Cables

VNA Test Port Extension Cables.....	6
Killer Bee® Series Test Cables to 50 GHz	10
RF Orange Flexible Cable To 110 GHz.....	15
Survivor™ Ruggedized Cables to 50 GHz	20
EMC Lab Test Cables to 40 GHz	23
Thermal VAC Test Cables to 50 GHz.....	26
Broadband Test Cables to 8 GHz	30
RF Green™ Test Cables to 26.5 GHz	32
SiteLine™ Armored Test Cables to 18 GHz	34
Private Labeled T&M Cables.....	39

RF and Microwave

Phase3™ Cables to 67 GHz	40
HyperFlex™ Cable	44
AlumiBend™ Cables to 90 GHz	47
UltraPhase™ Cable	50
The Warrior Cable® to 50 GHz	52
Survivor™ Ruggedized Cables to 50 GHz.....	55
GrooveTube® Cables to 50 GHz	58
NextPhase™ Cables to 40 GHz	61
NextPhase™ Stranded Conductor	64
Semi-Rigid Cables to 110 GHz	66
MegaForm™ Cables to 20 GHz	69
JumpShot™ Cables to 18 GHz.....	71

RF Components

N-Way Power Dividers.....	74
Directional Couplers.....	76

Connectors

NMD Connectors.....	78
Mega8 Multi-Port Connector System	79
ZMA Quick-Disconnect Connectors.....	82
ZN™ Quick-Disconnect Connectors	83

Adapters and Accessories

Test Adapters	84
Factory Form Right Angle.....	85
Break-Over Torque Wrenches	86
Oasis® Universal & Adapter Kit	87

Attenuation

Loss per Foot

Type		1 GHz	8 GHz	12.4 GHz	18 GHz	26.5 GHz	32 GHz	40 GHz	50 GHz	67 GHz	110 GHz
E05	UltraPhase	0.309	0.921	1.168	1.435	1.783	1.985	2.257	2.571	3.059	4.136
E08		0.194	0.593	0.759	0.941	1.183	1.325	1.518	1.743	2.097	
E12		0.129	0.387	0.492	0.606	0.755	0.842	0.959			
520	GrooveTube®	0.120	0.417	0.555	0.715	0.937	1.072				
620		0.103	0.338	0.443	0.561	0.722					
912	NextPhase	0.170	0.505	0.639	0.785	0.973	1.083	1.230	1.400		
912s		0.180	0.533	0.675	0.827	1.025	1.140	1.295	1.472		
916		0.120	0.364	0.465	0.575	0.720	0.805	0.920			
916s		0.127	0.382	0.486	0.598	0.746	0.832	0.948			
919		0.082	0.248	0.317	0.392	0.490					
919s		0.085	0.260	0.332	0.412	0.518					
930		0.058	0.173	0.220	0.270						
C08	Phase3	0.200	0.615	0.789	0.980	1.234	1.383	1.587	1.825	2.200	
C11		0.135	0.388	0.485	0.588	0.718	0.792	0.890	1.000		
C12		0.110	0.328	0.416	0.511	0.634	0.706	0.803			
C19		0.067	0.200	0.254	0.312	0.388					
C29		0.054	0.162	0.206	0.254						
B08	JumpShot	0.230	0.697	0.890	1.100	1.377					
B14		0.130	0.401	0.515	0.640	0.807					
HFx090	HyperFlex	0.366	1.118	1.431	1.773	2.226	2.492	2.854	3.275	3.937	
HFx120		0.162	0.542	0.715	0.912	1.184	1.348	1.577	1.850		
HFx141		0.170	0.533	0.687	0.859	1.089	1.225	1.412			
AL047	AlumiBend	89.96	29.38	23.32	18.38	14.71	12.92	11.2	9.66	7.91	
AL086		210.98	70.25	56.15	44.65	36.08	31.89	27.87	24.27		
AL141		466.83	156.67	125.59	100.26	81.36					

CW Power Handling (Watts)

Type		1 GHz	8 GHz	12.4 GHz	18 GHz	26.5 GHz	32 GHz	40 GHz	50 GHz	67 GHz	110 GHz
E05	UltraPhase	66.03	21.35	16.88	13.25	10.54	9.23	7.97	6.84	5.56	3.81
E08		129.25	43.05	34.41	27.37	22.12	19.56	17.09	14.89	12.36	
E12		274.28	90.02	71.62	56.64	45.49	40.07	34.86			
520	GrooveTube®	727.81	231.21	181.86	141.83	112.17	97.80				
620		247.68	83.44	66.98	53.55	43.53					
912	NextPhase	339.10	113.15	90.51	72.05	58.28	51.57	45.10			
916		494.28	165.56	132.63	105.78	85.75	75.99	66.58			
919		996.75	332.52	266.07	211.94						
930		1,953.44	641.82	511.11	404.87						
945		5,805.61	2,037.84	1,659.71							
C08	Phase3	129.25	43.05	34.41	27.37	22.12	19.56	17.09	14.89	12.36	
C11		448.10	150.38	120.55	96.22	78.06	69.21	60.68	53.06		
C12		518.06	173.94	139.46	111.34	90.37	80.14	70.29			
C19		1,200.26	399.95	319.94	254.77	206.24					
C29		2,055.91	676.87	539.41	427.65						
HFx090	HyperFlex	81.30	25.41	19.85	15.33	11.97	10.35	8.79	7.42	5.86	
HFx120		128.88	41.13	32.39	25.28	20.00	17.44	14.98	12.80		
HFx141		252.59	80.50	63.37	49.45	39.13	34.12	29.32			
AL047	AlumiBend	31.41	89.78	110.35	135.75	163.95	182.46	204.76	229.89	267.78	
AL086		20.20	58.04	71.47	88.11	106.67	118.89	133.67	150.37	175.67	
AL141		11.58	33.63	41.57	51.47	62.61					

Space

MegaPhase cable assemblies have been used in space programs, including the first rendezvous with the asteroid Itikawa, the successful 7-year Hayabusa mission, the LunIR lunar flyby mission, the Dream Chaser program, and others including Jupiter 3, Echostar, Sirius XM, Worldview Legion, and Intelstat 40.

Missiles

Megaphase offers comprehensive support for a variety of missile systems. Some of these have included the highly advanced SM3, Paveway II, NetFires, RF TOW, and Griffin. With Megaphase cables, you can be confident in the reliable operation of your missile systems.

Global Security and C5ISR

MegaPhase is a leading provider to the US Armed Forces and its Allies, including the JLTV program. Our strong legacy of reliable past performance, relentless quality, and technical capability the Warfighter can trust. With fast prototypes and ramp-to-production times, MegaPhase is a recognized leader in sensors, ECM, ISR, and communications systems. Our heritage includes CREW, Prophet, TPS, and JTRS, many featuring the Warrior Cable®.

Military Airborne & Unmanned Systems

MegaPhase designs and manufactures cable assemblies meeting the rigorous standards for Military airborne applications (MIL-T-81490). With a range of lightweight cable assemblies, including our patented high-frequency hermetic, our heritage is expanding. Our products are employed on telemetry, ISR, and EW systems including E-2D, ARES, VUIT-2, V-22, Hunter, CEC, and Guardrail.

Telecom, Broadband & Mobile Backhaul

MegaPhase products offer very low insertion loss and low PIM (-165dBc). With capability through 110 GHz our products are installed in multi-gigabit data links and backhaul and widely used in production and field test applications.

Instruments & Automated Testing

MegaPhase was built on providing phase-stable external accessory cables for vector, scalar and spectrum measurements. Today our products are an important part of advanced automated test equipment systems for mobile devices, semiconductors, industrial automation and other RF and microwave components.

SATCOM & Broadcast

MegaPhase supports a wide variety of antennas, ground communications and other critical components of integrated satellite communications systems. Our products are an essential link in the transmission and reception of a range of systems from Deep Space Network to commercial satellite radio.





**With the right connections,
anything is possible.**

Design and Manufacturing of RF & Microwave Cables and Components Through 110 GHz

We design and manufacture cables, components, connectors, and accessories with the understanding that if a connection fails, it can take your whole system with it. We provide best-in-class service, a powerful warranty, AS9100 level quality, the most responsive deliveries, and highly competitive pricing. Because doing one thing right just isn't enough. That's why our products are known for low loss, superior phase & amplitude stability over flexure and temperature, repeatability, and extra rugged mechanical strength.

And that's why we believe that with the right connections, anything is possible.

Call us at 570-424-8400 or Solutions@MegaPhase.com.

Visit us online www.MegaPhase.com.



AS9100
CERTIFIED



MegaPhase



Test and Measurement



MegaPhase VNA Test Port Extension Cables

High Performance VN Series Cable Assemblies

MegaPhase VNA cable assemblies are designed to ease the time associated with test equipment calibrations where compensation for loss, mismatches, and feedthroughs are critical to the test outcome.

VN series cables are mechanically stable and can be bent with little effect on insertion loss, phase or VSWR. They can be employed time and again when rigorous test regimens are called for.

Cable assemblies are available in user defined lengths up to 25 feet. These low loss alternatives to expensive OEM test cables are the perfect solution for any test lab employing critical test equipment in their production operations.

The cable is constructed with an armored jacket and boot to protect the connectors and for effective VNA, PNA, and scalar test calibrations. Cables are available in phase matched lengths and come with a large variety of integrated connectors including the popular ruggedized NMD type.

Electrical Data

Maximum Frequency:
67 GHz

Impedance:
50 Ω nominal

Propagation Velocity:
VN32 69% nominal
VN67 80% nominal

Time Delay:
VN32 1.47 ns/ft (4.82 ns/m)
VN67 1.27 ns/ft (4.167 ns/m)

Dielectric Withstanding Voltage:
VN32 10 kV at 60 Hz
VN67 1.2 kV at 60 Hz

Capacitance:
VN32 29.0 pF/ft (95.1 pF/m)
VN67 25.4 pF/ft (83.3 pF/m)

Mechanical Data

Finisher Outer Diameter:
0.625 in (1.588 cm)

Static Bend Radius:
4.0 in (10.16 cm)

Max. Operating Temperature:
-75° to 248°F (-60° to 120° C)
VN32 includes VN26, VN18, VN8, VN4
VN67 includes VN34, VN40 and VN50

Cable Construction

Inner Conductor: Solid Ag-plated Cu

Dielectric:

VN32 PTFE

VN67 Foamed FEP

Outer Conductor: GrooveTube® Cu

Standard Finish: Metal Braid/Metal Conduit

Available Connectors

1.85mm, 2.4mm, 2.92mm, 3.5mm,
7mm, SMA, TNC, Type N

Specifications

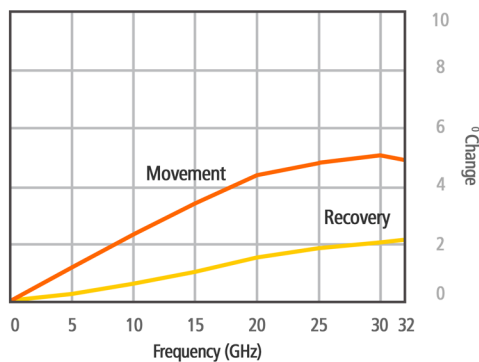
Frequency		VN32 Series*		VN67 Series**		Conn Loss dB	VSWR
		Attenuation		Attenuation			
Band	GHz	dB/ft	dB/m	dB/ft	dB/m		
UHF	0.3	0.062	0.203	0.104	0.341	0.006	1.10
	0.5	0.082	0.268	0.135	0.443	0.009	
	0.8	0.106	0.348	0.172	0.566	0.012	
L	1.0	0.120	0.394	0.194	0.635	0.014	
S	2.0	0.178	0.585	0.279	0.915	0.024	1.15
	2.4	0.199	0.652	0.307	1.009	0.027	
	3.0	0.227	0.744	0.347	1.137	0.032	
C	4.0	0.270	0.885	0.405	1.328	0.040	
	6.0	0.347	1.138	0.505	1.658	0.055	
X	8.0	0.417	1.367	0.593	1.945	0.070	1.20
	10.0	0.482	1.580	0.672	2.205	0.084	1.25
	12.4	0.555	1.822	0.759	2.491	0.101	1.30
Ku	15.0	0.631	2.070	0.847	2.779	0.118	
	18.0	0.715	2.345	0.941	3.089	0.139	
K	20.0	0.769	2.522	1.001	3.285	0.152	1.35
	22.0	0.821	2.695	1.059	3.475	0.165	
	24.0	0.873	2.865	1.115	3.659	0.178	
	26.5	0.937	3.073	1.183	3.881	0.194	
Ka	28.0	0.974	3.196	1.223	4.011	0.204	1.40
	30.0	1.024	3.358	1.274	4.181	0.217	
	32.0	1.072	3.518	1.325	4.347	0.230	
	34.0			1.375	4.510	0.243	1.45
	36.0			1.423	4.669	0.256	
V	40.0			1.518	4.980	0.281	1.50
	45.0			1.633	5.356	0.313	
	50.0			1.743	5.719	0.344	1.55
	60.0			1.955	6.414	0.406	
	67.0			2.097	6.881	0.450	1.60
	70.0					0.468	

*VN32 includes VN26, VN18, VN8, VN4

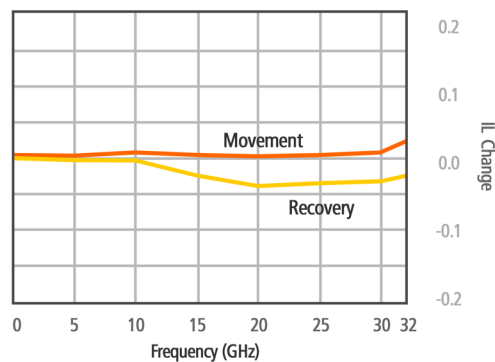
**VN67 includes VN34, VN40 and VN50

MegaPhase VNA Test Port Extension Cables to 32 GHz

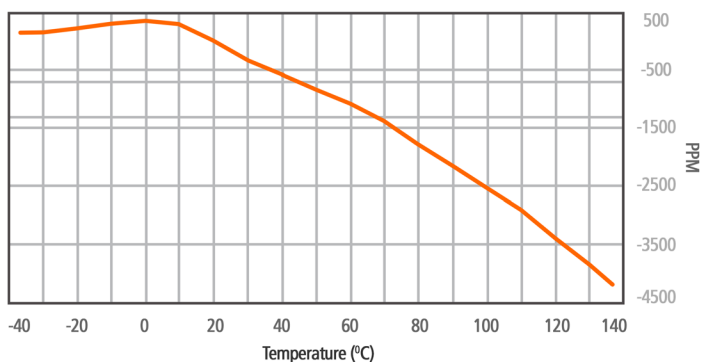
Phase Change vs. Flexure



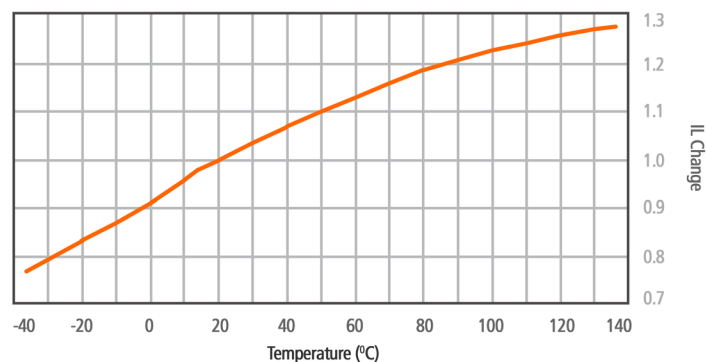
Insertion Loss vs. Flexure



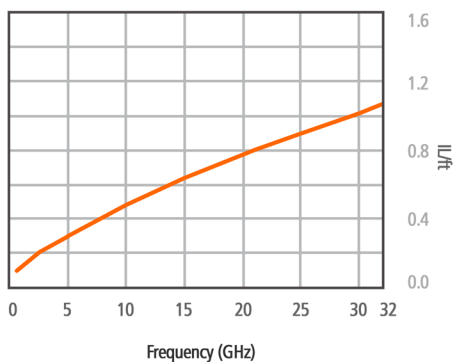
Phase Change vs. Temperature



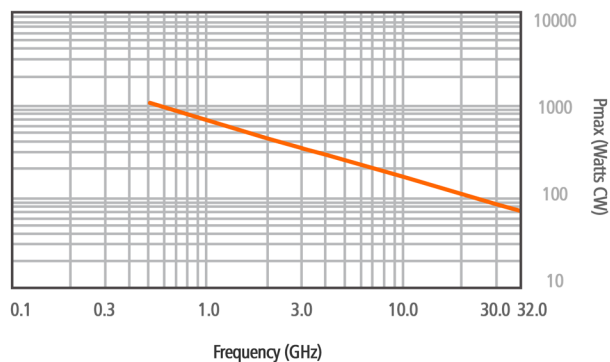
Insertion Loss vs. Temperature



Insertion Loss



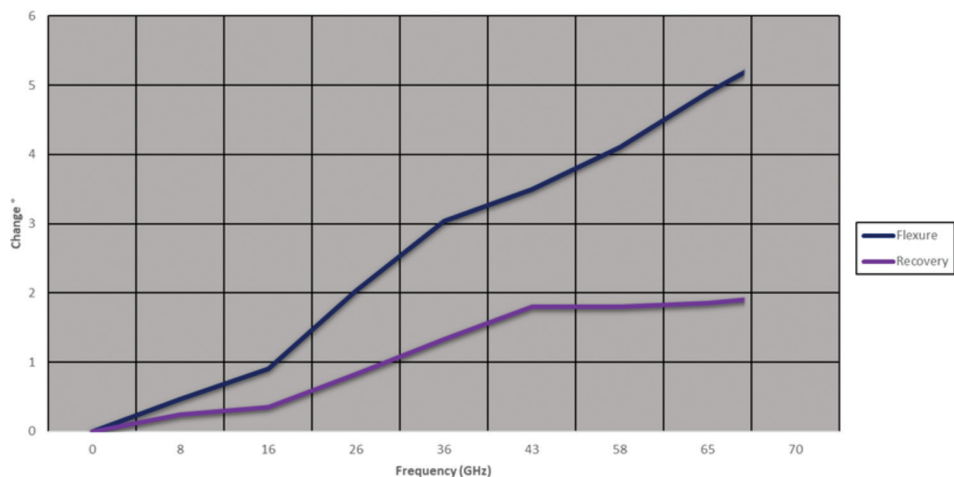
Cable CW Power Handling



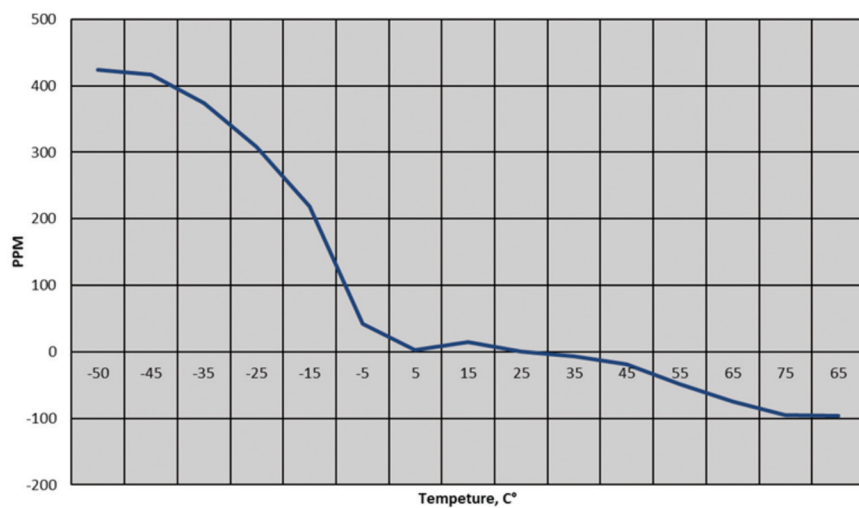
Note: Data at ambient temperature and sea level. Power handling of a cable assembly is also connector dependent and includes variables such as altitude, temperature and system VSWR. See website for connector power handling standards, including altitude, temperature and VSWR derating.

MegaPhase VNA Test Port Extension Cables to 67 GHz

Phase vs. Flexure



Phase vs. Temperature





MegaPhase Killer Bee® Series Test Cables to 50 GHz

Phase & Amplitude Stable Performance through Ka Band



- Phase Stable
- Low VSWR
- Low Loss
- Armored
- Wide Variety of Connectors
- Ultra-Flexible

Electrical Data

Maximum Frequency:
50 GHz

Impedance:
50 Ω nominal

Propagation Velocity:
KBx 84% nominal
KB50 80% nominal

Time Delay:
KBx 1.21 ns/ft (3.97 ns/m)
KB50 1.27ns/ft. (4.167 ns/m)

Shielding Effectiveness:
-100 dB minimum (cable only)

Dielectric Withstanding Voltage:
KBx 7.0 kV at 60 Hz
KB50 1.2 kV at 60 Hz

Capacitance:
KBx 24.0 pF/ft (78.7 pF/m)
KB50 25.4 pF/ft. (83.3 pF/m)

Mechanical Data

Finished Outer Diameter:
KBx 0.360 in, nominal
KB50 0.315 in, nominal

Static Bend Radius:
KBx 1.75 in (4.445 cm)
KB50 1.5 in (3.81 cm)

Weight with Standard Jacket/Armor:
KBx 0.05 lbs/ft (0.67 kg/m)
KB50 0.04 lbs/ft (0.060 kg/m)

Max. Assembly Length:
KBx 25 ft (8 m)
KB50 40 ft (12 m)

Crush Resistance:
250 lbs/linear in (44.6 kg/linear cm)

Operating Temp. Range:
-67 to 275° F (-55 to 135° C)

MegaPhase designed its Killer Bee series test cable specifically for the needs of lab technicians where precise measurements are critical. Typical applications: RF production and benchtop testing, RF instruments, and Vector network analyzers. These high-performance cables are designed for phase and amplitude stable test applications. This cable provides a long service life with repeatable performance throughout the life of the cable. A wide variety of connectors and phase matching are available.



Cable Construction

Inner Conductor:	Solid Ag-plated Cu
Dielectric:	KBx PTFE Tape KB50 Foamed FEP Inner Shield Ag-plated Cu Outer Braid Shield: Ag-plated Cu
Standard Finish:	NOMEX® Braid over Polyolefin over Metal Armor

Available Connectors

KBx SMA, Type N, TNC, 3.5mm, 2.92mm
KB40 3.5mm, 2.92mm
KB50 2.4mm

MegaPhase Killer Bee® Test Cables to 50 GHz

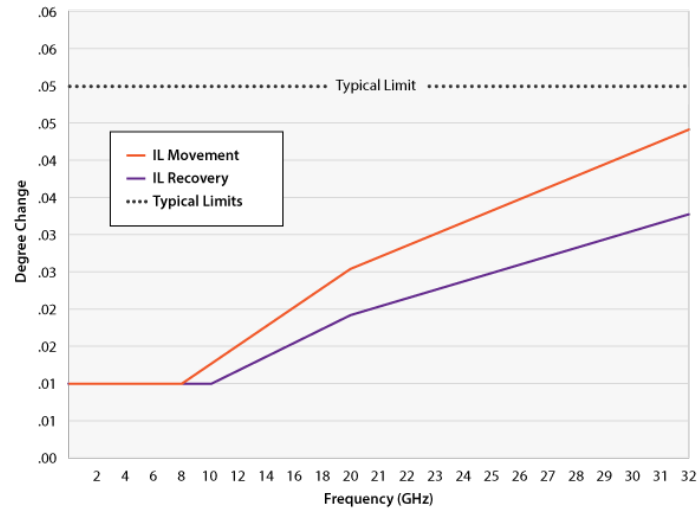
Frequency		KBx		KB50		Conn Loss dB	VSWR
		Attenuation		Attenuation			
Band	GHz	dB/ft	dB/m	dB/ft	dB/m		
UHF	0.3	0.060	0.196	0.104	0.341	0.006	1.10
	0.5	0.077	0.254	0.135	0.443	0.009	
	0.8	0.098	0.323	0.172	0.566	0.012	
L	1.0	0.110	0.362	0.194	0.635	0.014	
S	2.0	0.158	0.518	0.279	0.915	0.024	1.15
	2.4	0.174	0.570	0.307	1.009	0.027	
	3.0	0.195	0.640	0.347	1.137	0.032	
C	4.0	0.227	0.745	0.405	1.328	0.04	
	6.0	0.281	0.923	0.505	1.658	0.055	1.20
X	8.0	0.328	1.077	0.593	1.945	0.07	1.25
	10.0	0.370	1.215	0.672	2.205	0.084	
	12.4	0.416	1.366	0.759	2.491	0.101	1.30
Ku	15.0	0.462	1.516	0.847	2.779	0.118	1.35
	18.0	0.511	1.677	0.941	3.089	0.139	
K	20.0	0.542	1.778	1.001	3.285	0.152	1.40
	22.0	0.571	1.875	1.059	3.475	0.165	
	24.0	0.600	1.969	1.115	3.659	0.178	
	26.5	0.634	2.082	1.183	3.881	0.194	
Ka	28.0	0.655	2.148	1.223	4.011	0.204	1.45
	30.0	0.681	2.233	1.274	4.181	0.217	
	32.0	0.706	2.317	1.325	4.347	0.23	
	34.0	0.731	2.398	1.375	4.510	0.243	1.50
	36.0			1.423	4.669	0.256	
V	40.0			1.518	4.980	0.281	
	45.0			1.633	5.356	0.313	
	50.0			1.743	5.719	0.344	1.55

KBx includes KB4x, KB8x, KB18x, KB26x and KB34x

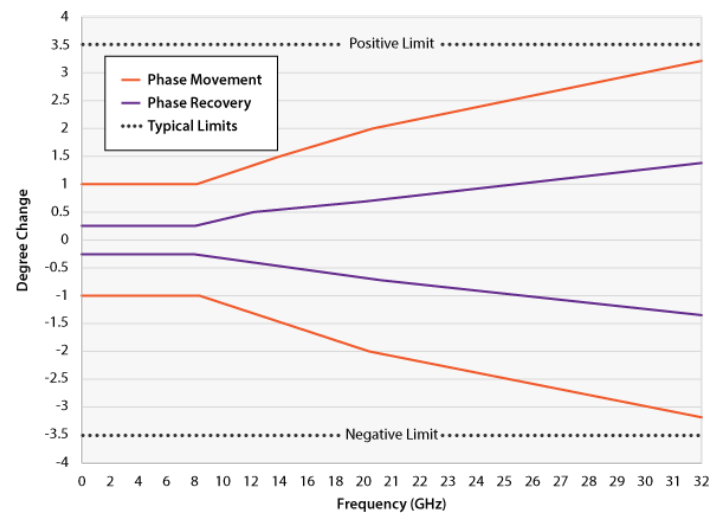
KB50 includes KB40

MegaPhase Killer Bee® KBx Graphs

Amplitude Change vs. Flexure



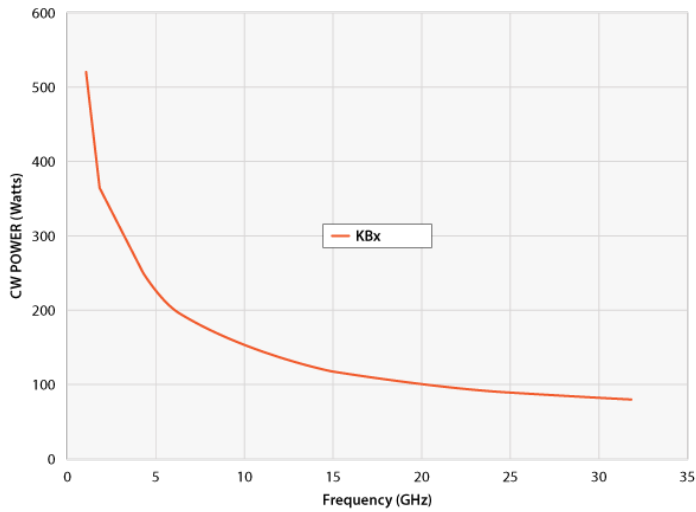
Phase Change vs. Flexure



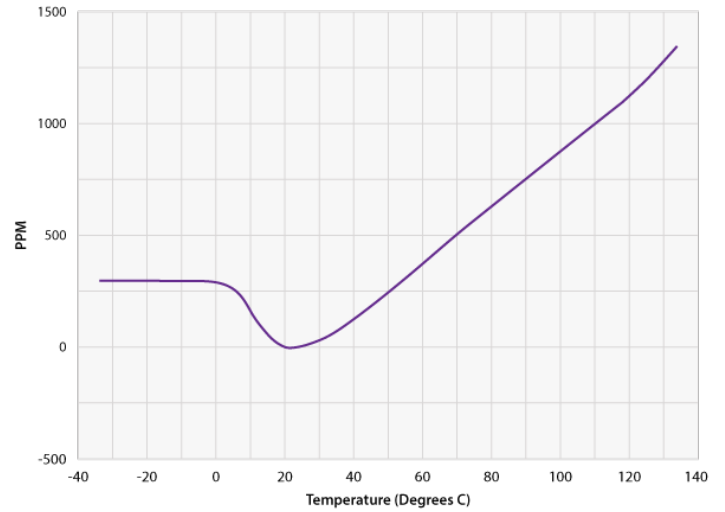
MegaPhase Killer Bee®

KBx Graphs

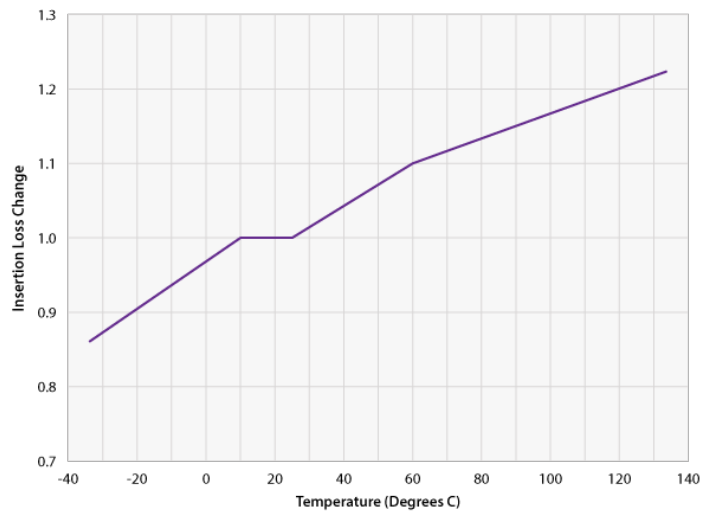
KB32x™ CW Power Capability 25°C at Sea Level



Phase Change vs. Temperature

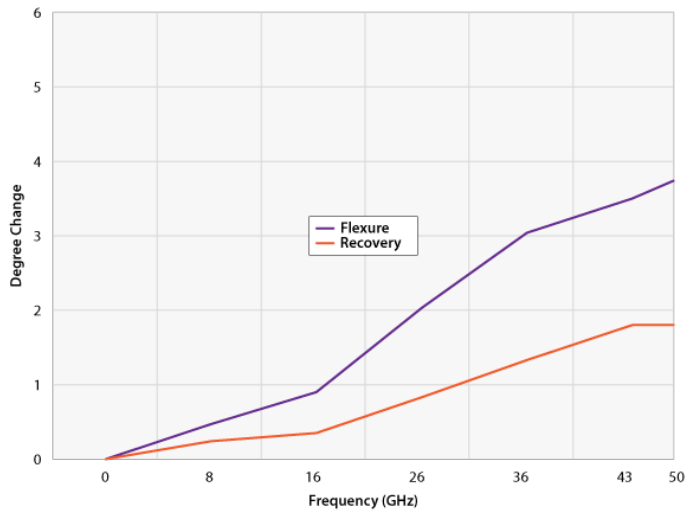


Insertion Loss vs. Temperature

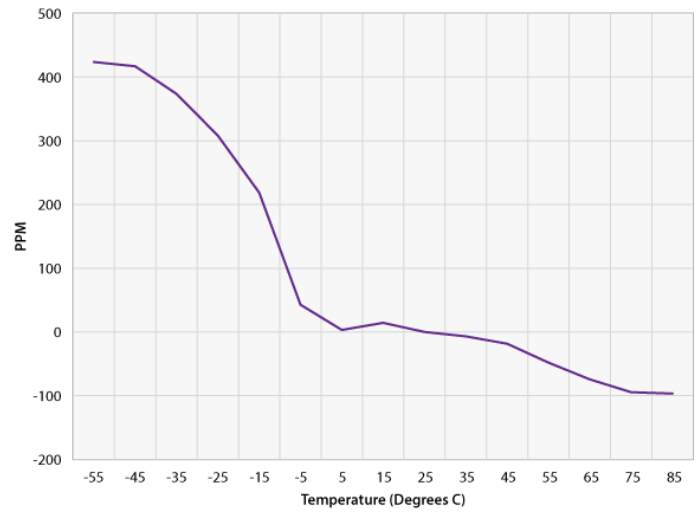


MegaPhase Killer Bee® Series Test Cables to 50 GHz

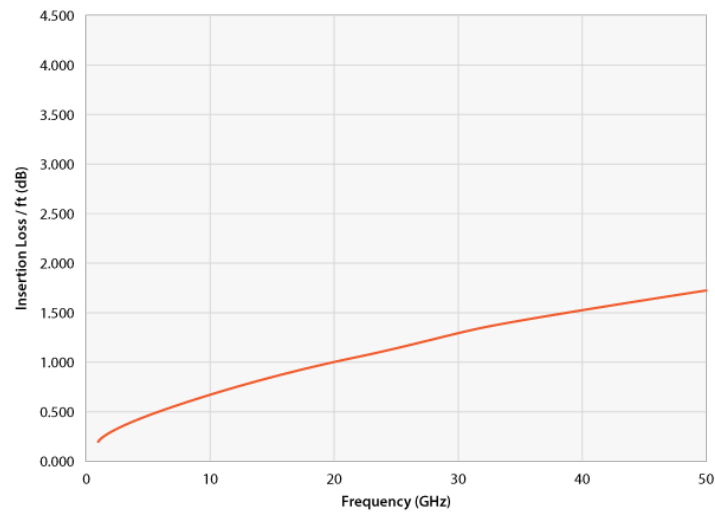
Phase vs. Flexure



Phase vs. Temperature



Insertion Loss





MegaPhase RF Orange Flexible Cable To 110 GHz

The MegaPhase RF Orange® product line now features 110 GHz capabilities! This rugged, armored test cable allows for excellent VSWR, phase and amplitude stability versus flexure and temperature. Whether you're in a lab, production environment, or building an ATE, this rugged test cable provides a long service life with repeatable performance throughout the life cycle of the cable.

Electrical Data

Maximum Frequency:
110 GHz

Impedance:
50 Ω nominal

Propagation Velocity:
TM32 69% nominal
TM67 80% nominal
TM110 78.7 % nominal

Time Delay:
TM32 1.47 ns/ft (4.82 ns/m)
TM67 1.27 ns/ft. (4.167 ns/m)
TM110 1.291 ns/ft. (4.236 ns/m)

Shielding Effectiveness:
-100 dB minimum (cable only)

Dielectric Withstanding Voltage:
TM32 10 kV at 60 Hz
TM67 1.2 kV at 60 Hz
TM110 400 V at 60 Hz

Capacitance:
TM32 29.0 pF/ft (95.1 pF/m)
TM67 25.4 pF/ft. (83.3 pF/m)
TM110 25.82 pF/ft. (84.71 pF/m)

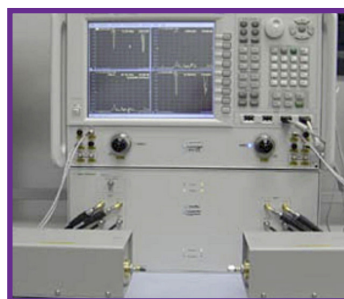
Mechanical Data

Outer Diameter:
0.285 in (0.724 cm)

Static Bend Radius:
1.5 in (3.81 cm)

Max. Operating Temperature:
-67 to 275° F (-55 to 135° C)
TM32 includes TM26, TM18, TM8, TM4
TM67 includes TM50, TM40, TM34

- Phase Stable
- Low VSWR
- Armored
- Ultra-Flexible



Cable Construction

Inner Conductor:	Solid Ag-plated Cu
Dielectric:	
TM32	PTFE
TM67, TM110	Foamed FEP
Outer Conductor:	TM 32 - GrooveTube® Cu TM 67 / TM 110 - Ag plated Cu/ Ag plated Cu
Standard Finish:	Polyolefin over Metallic Braid

Available Connectors

(dependent on cable type)
1.0mm 1.85mm. 2.4mm. 2.92mm, 3.5mm,
BNC, SMA, TNC, Type N,

Maximum Assembly Length

(Consult Factory)

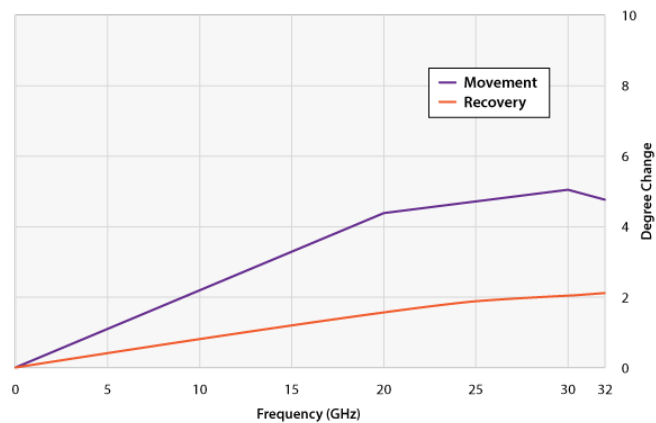
Specifications

Frequency		TM32 Series*		TM67 Series**		TM110 Series***		Conn Loss dB	VSWR	
		Attenuation		Attenuation		Attenuation				
Band	GHz	dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m			
UHF	0.3	0.062	0.203	0.104	0.341	0.167	0.548	0.006	1.10	
	0.5	0.082	0.268	0.135	0.443	0.217	0.711	0.009		
	0.8	0.106	0.348	0.172	0.566	0.276	0.904	0.012		
L	1.0	0.120	0.394	0.194	0.635	0.309	1.014	0.014		
S	2.0	0.178	0.585	0.279	0.915	0.442	1.451	0.024	1.15	
	2.4	0.199	0.652	0.307	1.009	0.486	1.596	0.027		
	3.0	0.227	0.744	0.347	1.137	0.547	1.793	0.032		
C	4.0	0.270	0.885	0.405	1.328	0.636	2.087	0.040		1.20
	6.0	0.347	1.138	0.505	1.658	0.789	2.588	0.055		
X	8.0	0.417	1.367	0.593	1.945	0.921	3.020	0.070	1.25	
	10.0	0.482	1.580	0.672	2.205	1.039	3.408	0.084		
	12.4	0.555	1.822	0.759	2.491	1.168	3.832	0.101		
Ku	15.0	0.631	2.070	0.847	2.779	1.297	4.255	0.118		1.30
	18.0	0.715	2.345	0.941	3.089	1.435	4.707	0.139		
K	20.0	0.769	2.522	1.001	3.285	1.522	4.992	0.152	1.35	
	22.0	0.821	2.695	1.059	3.475	1.605	5.266	0.165		
	24.0	0.873	2.865	1.115	3.659	1.686	5.530	0.178		
	26.5	0.937	3.073	1.183	3.881	1.783	5.849	0.194		
Ka	28.0	0.974	3.196	1.223	4.011	1.839	6.035	0.204	1.40	
	30.0	1.024	3.358	1.274	4.181	1.913	6.277	0.217		
	32.0	1.072	3.518	1.325	4.347	1.985	6.513	0.230		
	34.0			1.375	4.510	2.055	6.743	0.243	1.45	
	36.0			1.423	4.669	2.124	6.969	0.256		
V	40.0			1.518	4.980	2.257	7.406	0.281	1.50	
	45.0			1.633	5.356	2.417	7.931	0.313		
	50.0			1.743	5.719	2.571	8.436	0.344		1.55
	60.0			1.955	6.414	2.864	9.396	0.406		
	67.0			2.097	6.881	3.059	10.035	0.450	1.60	
	70.0					3.140	10.302	0.468		
W	80.0					3.403	11.166	0.530		1.60
	90.0					3.656	11.995	0.591		
	100.0					3.900	12.795	0.652		
	110.0					4.136	13.571	0.713		

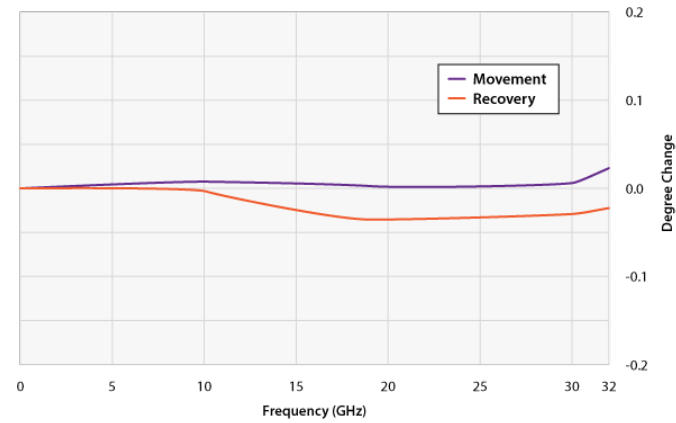
*TM32 includes TM26, TM18, TM8, TM4. **TM67 includes TM50, TM40, TM34. ***TM110 includes TM70

MegaPhase RF Orange Flexible Cable to 32 GHz

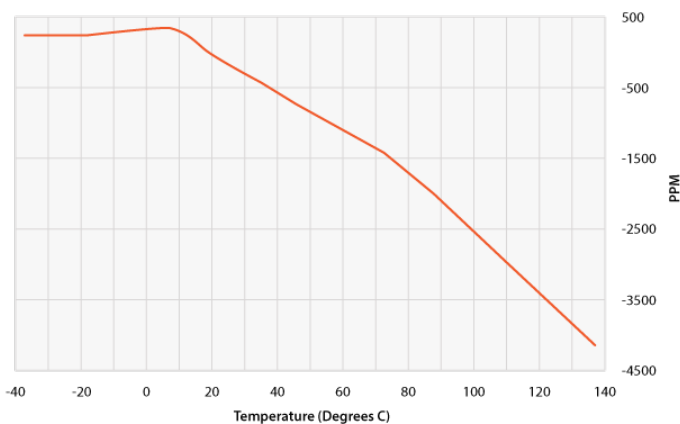
Phase Change vs. Flexure



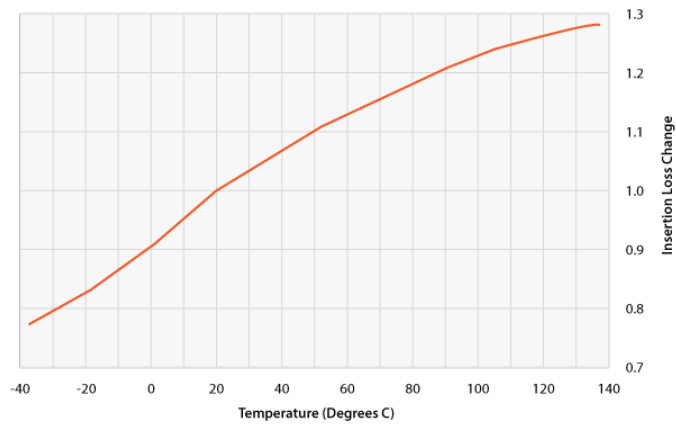
Insertion Loss vs. Flexure



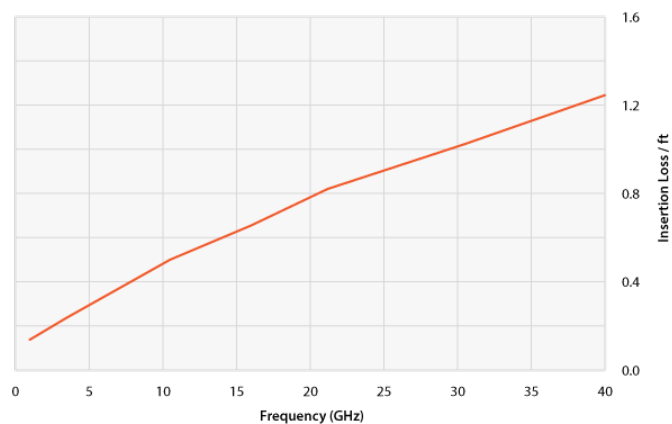
Phase Change vs. Temperature



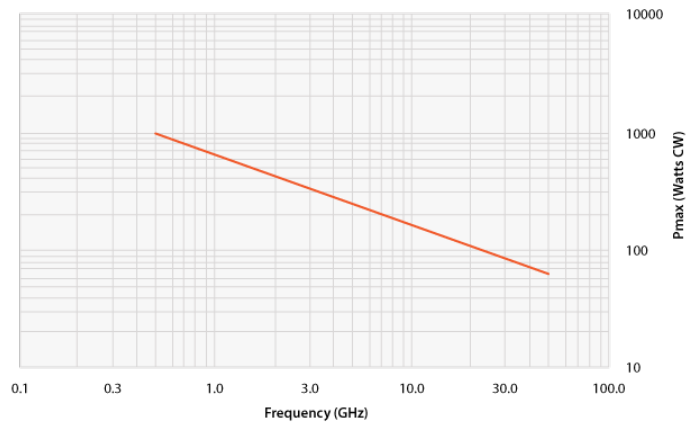
Insertion Loss vs. Temperature



Insertion Loss

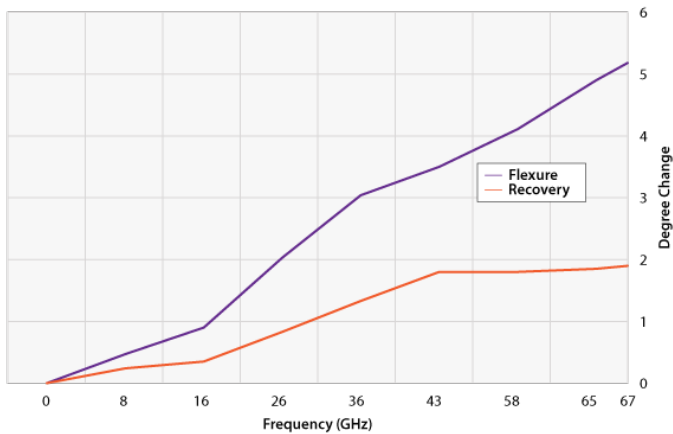


Cable CW Power Handling

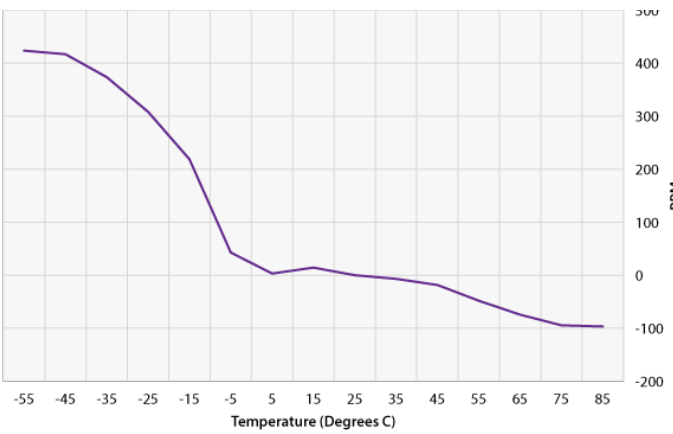


MegaPhase RF Orange Flexible Cable to 67 GHz

Phase vs. Flexure

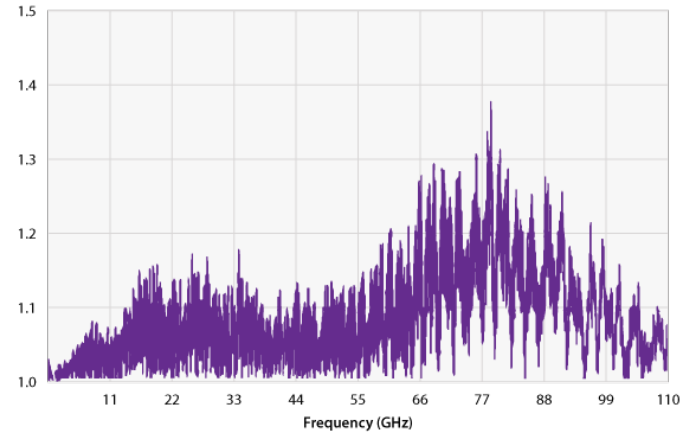


Phase vs. Temperature

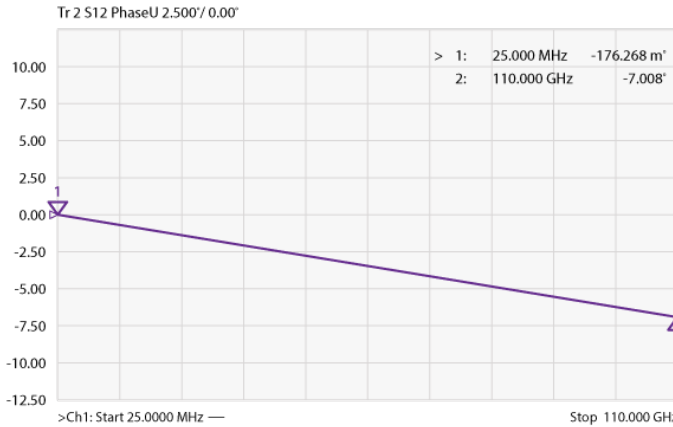


MegaPhase RF Orange Flexible Cable to 110 GHz

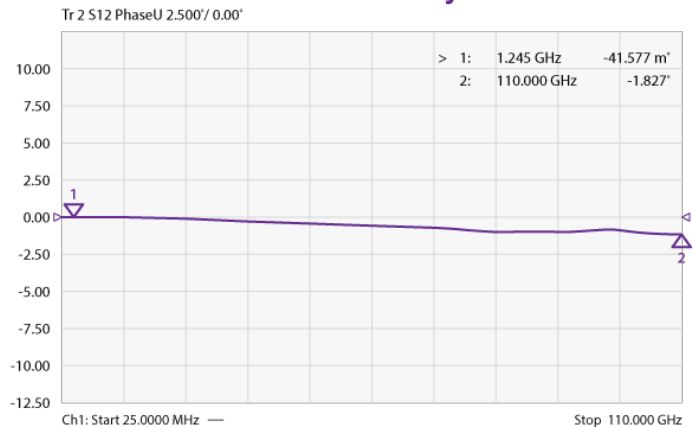
Typical VSWR



Phase vs. Flexure

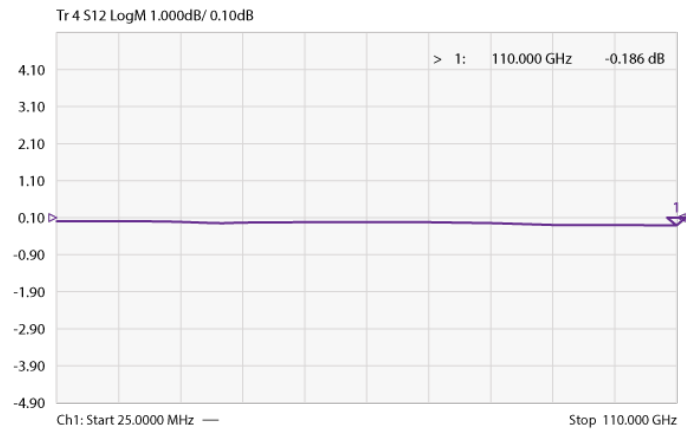


Phase Recovery

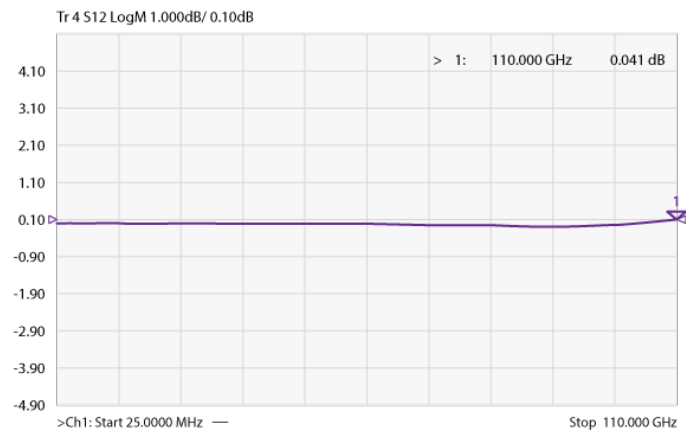


MegaPhase RF Orange Flexible Cable to 110 GHz

Insertion Loss vs. Flexure



Insertion Loss Recovery





Survivor™ Ruggedized Cables to 50 GHz

Low Loss Armored Cables for Rigorous Environments



- Crush Resistant
- Low Loss Robust Connector Termination
- Stainless Steel Armor
- Robust Connector Termination
- Wide Variety of Connectors

The Survivor™ cable assemblies employ a low loss cable inside a light weight stainless steel armor to survive rigorous installation conditions through 50 GHz. These low density dielectric cables are designed to handle rigorous test environments and provide high crush resistance for applications including outdoor antenna testing, production test, and lab test.

The Survivor™ cables are cost effective and available with Type N, SMA, 3.5mm, 2.92mm, 2.4mm, and 1.85mm connectors.

Electrical Data

Maximum Frequency:

NC11: 50.0 GHz
NC12: 40.0 GHz
NC19: 26.5 GHz
NC29: 18.0 GHz

Impedance:

50 Ω nominal

Propagation Velocity:

NC11: 84% nominal
NC12: 84% nominal
NC19: 84% nominal
NC29: 84% nominal

Time Delay:

NC11: 1.21 ns/ft (3.97 ns/m)
NC12: 1.21 ns/ft (3.97 ns/m)
NC19: 1.21 ns/ft (3.97 ns/m)
NC29: 1.21 ns/ft (3.97 ns/m)

Shielding Effectiveness:

-110 dB minimum (cable only)

Dielectric Withstanding Voltage:

NC11: 5 kV at 60 Hz
NC12: 5 kV at 60 Hz
NC19: 10.0 kV at 60 Hz
NC29: 15.0 kV at 60 Hz

Capacitance:

NC11: 24.4 pF/ft (80.1 pF/m)
NC12: 24.4 pF/ft (80.1 pF/m)
NC19: 24.4 pF/ft (80.1 pF/m)
NC29: 24.4 pF/ft (80.1 pF/m)

Mechanical Data

Finished Outer Diameter:

NC11: 0.275 in (0.698 cm)
NC12: 0.275 in (0.699 cm)
NC19: 0.400 in (1.016 cm)
NC29: 0.575 in (1.461 cm)

Static Bend Radius:

NC11: 1.75 in (4.44 cm)
NC12: 1.75 in (4.445 cm)
NC19: 2.50 in (6.35 cm)
NC29: 3.00 in (7.62 cm)

Weight with Standard Jacket/Armor:

NC11: 0.075 lbs/ft (0.119 kg/m)
NC12: 0.080 lbs/ft (0.1191 kg/m)
NC19: 0.145 lbs/ft (0.216 kg/m)
NC29: 0.220 lbs/ft (0.327 kg/m)

Crush Resistance:

500 lbs/linear in.

Operating Temp. Range:

-85 to 392° F (-65 to 200° C)

Cable Construction

Inner Conductor:	Solid Ag-plated Cu
Dielectric:	PTFE Tape
Outer Conductor:	Ag-plated Cu Strip/ Ag-plated Cu Flat Braid
Standard Finish:	Neoprene over Metal Armor
Maximum Length:	35 Feet

Available Connectors

NC12: 1.85mm, 2.4mm, 2.92mm, 3.5mm,
SMA, TNC, Type N

NC19: 3.5mm, BNC, SMA, TNC, Type N

NC29: 7-16 DIN, SMA, TNC, Type N

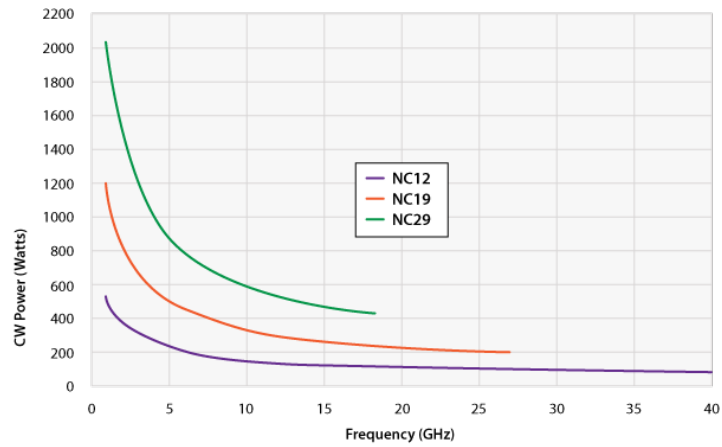
MegaPhase standard connectors are designed using passivated 303 Stainless Steel. These designs pass Salt Spray testing in accordance with Mil-Std-202 Method 101 condition C. MegaPhase suggests for more stringent environments the use of 303 Stainless Steel Gold plated connectors, this must be requested at the time of quoting.

Specifications

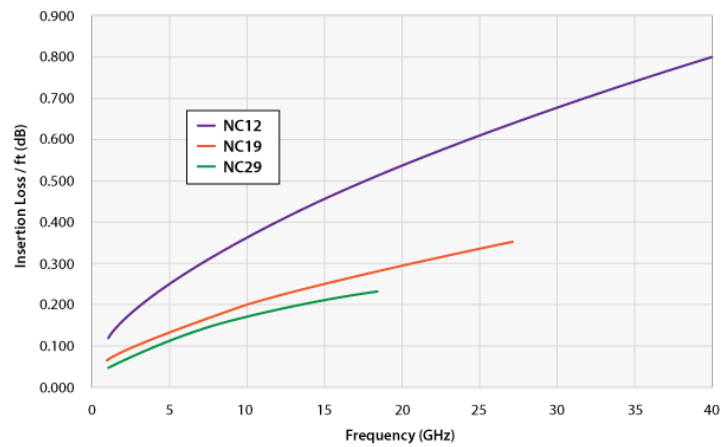
Frequency		NC11 Series		NC12 Series		NC19 Series		NC29 Series		VSWR	Conn. Loss dB
		Attenuation		Attenuation		Attenuation		Attenuation			
GHz	Band	dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m		
0.3	UHF	0.074	0.242	0.060	0.196	0.036	0.119	0.029	0.095	1.10	0.006
0.5		0.095	0.313	0.077	0.254	0.047	0.154	0.038	0.124		0.009
0.8		0.098	0.396	0.098	0.323	0.060	0.196	0.048	0.157		0.012
1.0	L	0.121	0.443	0.110	0.362	0.067	0.220	0.054	0.177		0.014
2.0	S	0.135	0.629	0.158	0.518	0.096	0.315	0.077	0.253	1.15	0.024
2.4		0.174	0.690	0.174	0.570	0.105	0.346	0.085	0.279		0.027
3.0		0.192	0.772	0.195	0.640	0.119	0.389	0.096	0.314		0.032
4.0	C	0.210	0.893	0.227	0.745	0.138	0.453	0.111	0.365		0.040
6.0		0.235	1.098	0.281	0.923	0.171	0.562	0.138	0.454		0.055
8.0	X	0.388	1.272	0.328	1.077	0.200	0.656	0.162	0.531	1.20	0.070
10.0		0.434	1.425	0.370	1.215	0.226	0.740	0.183	0.600	1.25	0.084
12.4		0.485	1.592	0.416	1.366	0.254	0.832	0.206	0.676	1.30	0.101
15.0	Ku	0.535	1.755	0.462	1.516	0.282	0.924	0.229	0.752		0.118
18.0		0.588	1.928	0.511	1.677	0.312	1.023	0.254	0.833	1.35	0.139
20.0	K	0.620	2.036	0.542	1.778	0.331	1.085	-	-		0.152
22.0		0.652	2.138	0.571	1.875	0.349	1.145	-	-		0.165
24.0		0.682	2.237	0.600	1.969	0.366	1.202	-	-		0.178
26.5	Ka	0.718	2.355	0.635	2.082	0.388	1.272	-	-	1.40	0.194
28.0		0.739	2.423	0.655	2.148	-	-	-	-		0.204
30.0		0.766	2.512	0.681	2.233	-	-	-	-		0.217
32.0		0.792	2.598	0.706	2.317	-	-	-	-	1.45	0.230
34.0		0.817	2.681	0.731	2.398	-	-	-	-		0.243
36.0		0.842	2.762	0.755	2.478	-	-	-	-		0.256
40.0	V	0.890	2.919	0.803	2.633	-	-	-	-	1.50	0.281
45.0		0.946	3.104								0.313
50.0		1.000	3.281								0.344

Note: Typical Insertion Loss dB = (Attenuation)(Length) + 2(Conn. Loss)
 Attenuation at any frequency = NC12: $(0.1073 \times \sqrt{\text{freqGHz}}) + (0.0031 \times \text{freqGHz})$;
 NC19: $(0.065 \times \sqrt{\text{freqGHz}}) + (0.002 \times \text{freqGHz})$;
 NC29: $(0.052 \times \sqrt{\text{freqGHz}}) + (0.00185 \times \text{freqGHz})$

Cable CW Power Handling



Insertion Loss



MegaPhase standard connectors are designed using passivated 303 Stainless Steel. These designs pass Salt Spray testing in accordance with Mil-Std-202 Method 101 condition C. MegaPhase suggests for more stringent environments the use of 303 Stainless Steel Gold plated connectors, this must be requested at the time of quoting.



EMC Lab Test Cables to 40 GHz

Low Loss Armored Test Cables for Compliance Measurements

- Low Loss
- Long Lengths Available
- Excellent Shielding -110 dB
- Armored
- Wide Variety of Connectors
- Flexible

MegaPhase designed its EMC series test cable specifically for the needs of EMC lab technicians. With assembly shielding effectiveness of -110 dB, these low loss, ultra-rugged armored cables are constructed using materials that meet electromagnetic compatibility standards including conductive interface gaskets. Phase matching, alternative conductive jackets (such as Ferrite), and long lengths are just some of the features available for EMI/RFI test environments including transient and spurious emissions measurements.

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:

-110 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: 0.380 in (0.965 cm)

EMC2: 0.500 in (1.270 cm)

EMC3: 0.625 in (1.587 cm)

Static Bend Radius:

EMC1: 1.75 in (4.445 cm)

EMC2: 2.50 in (6.35 cm)

EMC3: 3.00 in (7.62 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:

500 lbs/linear in.

Operating Temp. Range:

-85° to 392°F (-65° to 200°C)

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

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)

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	0.036	0.119	1.10	0.029	0.095	1.10	0.006
0.5		0.077	0.254		0.047	0.154		0.038	0.124		0.009
0.8		0.098	0.323		0.060	0.196		0.048	0.157		0.012
1.0	L	0.110	0.362		0.067	0.220		0.054	0.177		0.014
2.0	S	0.158	0.518		0.096	0.315		0.077	0.253		0.024
2.4		0.174	0.570		0.105	0.346		0.085	0.279		0.027
3.0		0.195	0.640		0.119	0.389		0.096	0.314		0.032
4.0	C	0.227	0.745	1.15	0.138	0.453	1.15	0.111	0.365	1.20	0.040
6.0		0.281	0.923		0.171	0.562		0.138	0.454		0.055
8.0	X	0.328	1.077	1.20	0.200	0.656	1.20	0.162	0.531	1.25	0.070
10.0		0.370	1.215		0.226	0.740		0.183	0.600		0.084
12.4	Ku	0.416	1.366	1.25	0.254	0.832	1.25	0.206	0.676	1.30	0.101
15.0		0.462	1.516		0.282	0.924		0.229	0.752		0.118
18.0		0.511	1.677	1.30	0.312	1.023	1.30	0.254	0.833	1.35	0.139
20.0	K	0.542	1.778		0.331	1.085		-	-	-	0.152
22.0		0.571	1.875		0.349	1.145		-	-	-	0.165
24.0		0.600	1.969		0.366	1.202		-	-	-	0.178
26.5		0.635	2.082	1.35	0.388	1.272	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

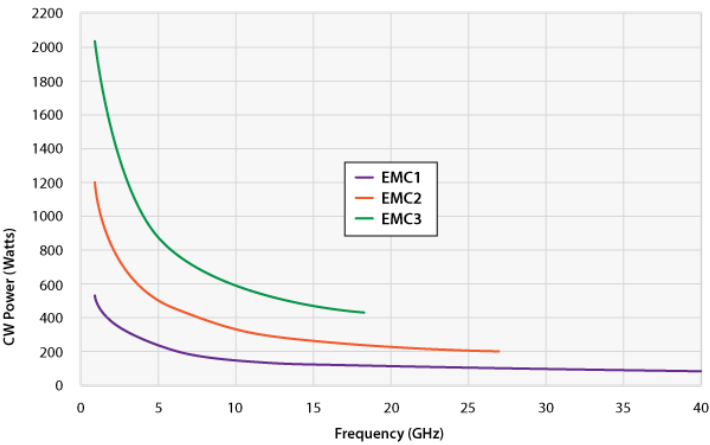
Note: Typical Insertion Loss dB = (Attenuation)(Length) + 2(Conn. Loss)

Attenuation at any frequency = EMC1: $(0.10730 \times \sqrt{\text{freq GHz}}) + (0.00310 \times \text{freq GHz})$

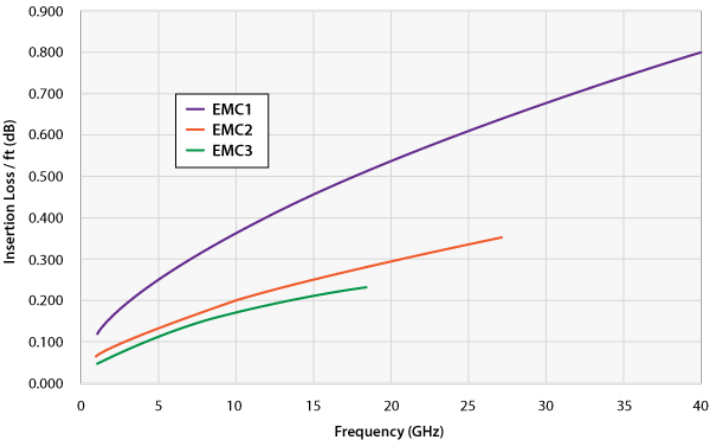
EMC2: $(0.065 \times \sqrt{\text{freq GHz}}) + (0.002 \times \text{freq GHz})$

EMC3: $(0.052 \times \sqrt{\text{freq GHz}}) + (0.00185 \times \text{freq GHz})$

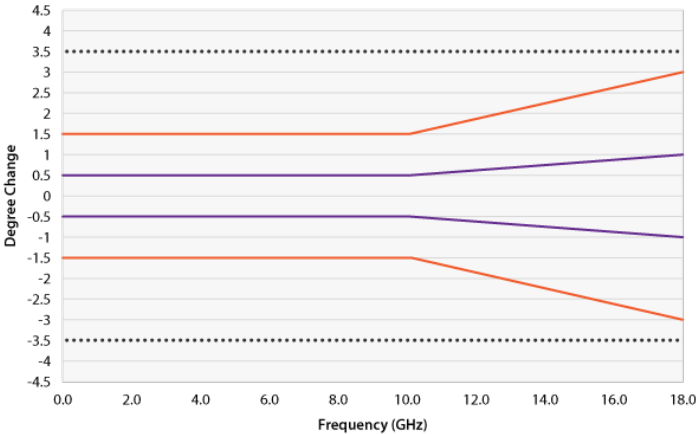
Cable CW Power Handling



Insertion Loss



Phase Change vs. Flexure





THERMALVAC

Thermal VAC Test Cables to 50 GHz

Thermal-Vacuum Cables For Altitude & Thermal Testing



- Low Outgassing
- Phase Stable
- Vented Connectors
- Ideal for High Bay Testing
- Rugged Construction

Electrical Data

Maximum Frequency:
50 GHz

Impedance:
50 Ω nominal

Propagation Velocity:
TV32 - 69% nominal
TV50 - 80% nominal

Time Delay:
TV32 - 1.47 ns/ft (4.82 ns/m)
TV50 - 1.27 ns/ft (4.167 ns/m)

Shielding Effectiveness:
-110 dB minimum (cable only)

Dielectric Withstanding Voltage:
TV32 - 10 kV at 60 Hz
TV50 - 1.2 kV at 60 Hz

Capacitance:
TV32 - 29.0 pF/ft (95.1 pF/m)
TV50 - 25.4 pF/ft (83.3 pF/m)

Mechanical Data

Finished Outer Diameter:
0.285 in (0.724 cm)

Static Bend Radius:
1.5 in (3.81 cm)

Weight with Standard Jacket/Armor:
0.05 lbs/ft (0.067 kg/m)

Crush Resistance:
250 lbs/linear in (44.6 kg/linear cm)

Operating Temp. Range:
-67 to 392°F (-55 to 200°C)
TV32 includes TV26, TV18, TV8, TV4
TV50 includes TV40, TV34

MegaPhase Thermal VAC microwave test cables are manufactured specifically for customers testing space and airborne systems and components. This phase stable cable is ideal for high bay testing of RF payloads, and applications in the severe environment of thermal vacuum chambers, altitude chambers, thermal shock, or any other application requiring thermal stability.

Cable Construction

Inner Conductor:

Dielectric:

TV32

TV50

Outer Conductor:

Standard Finish:

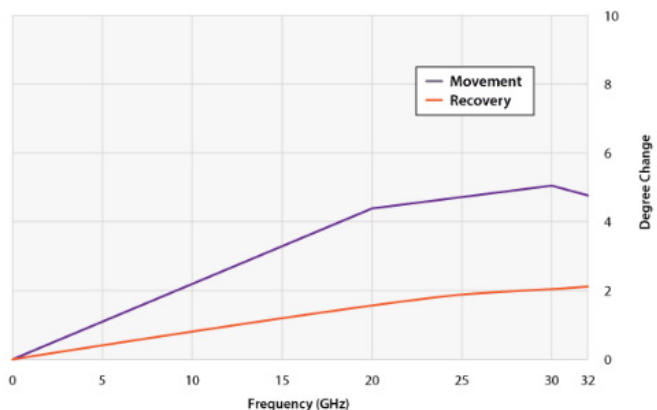
Available Connectors

1.85mm, 2.4mm, 2.92mm, 3.5mm,
7mm, 7-16 DIN, BNC, SMA, TNC,
Type N, ZMA, ZN
(maximum frequency dependent on cable; other
connectors available)

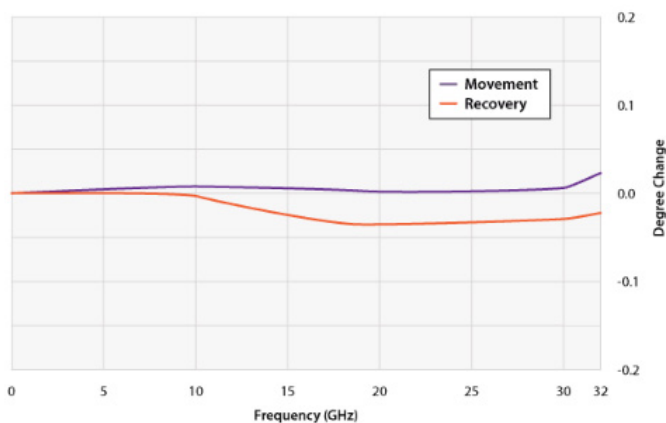
Maximum Assembly Length

(Consult Factory)

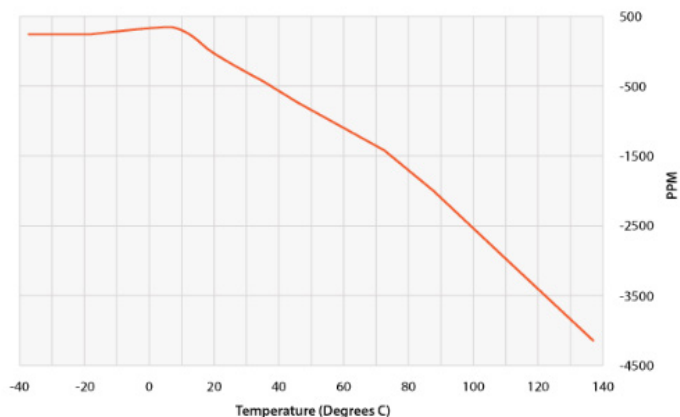
TV32 Phase Change vs. Flexure



TV32 Insertion Loss vs. Flexure



TV32 Phase Change vs. Temperature



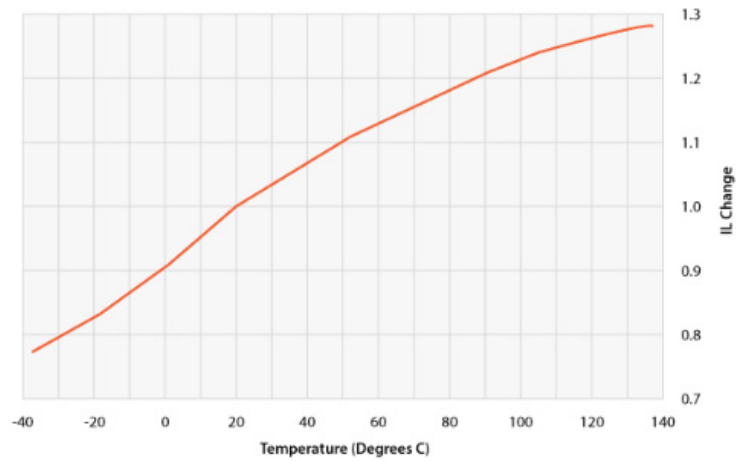
Specifications

Frequency		TV32 Series*		TV50**		Conn Loss dB	VSWR
		Attenuation		Attenuation			
Band	GHz	dB/ft	dB/m	dB/ft	dB/m		
UHF	0.3	0.062	0.203	0.104	0.341	0.006	1.10
	0.5	0.082	0.268	0.135	0.443	0.009	
	0.8	0.106	0.348	0.172	0.566	0.012	
L	1.0	0.120	0.394	0.194	0.635	0.014	
S	2.0	0.178	0.585	0.279	0.915	0.024	1.15
	2.4	0.199	0.652	0.307	1.009	0.027	
	3.0	0.227	0.744	0.347	1.137	0.032	
C	4.0	0.270	0.885	0.405	1.328	0.040	
	6.0	0.347	1.138	0.505	1.658	0.055	
X	8.0	0.417	1.367	0.593	1.945	0.070	1.20
	10.0	0.482	1.580	0.672	2.205	0.084	1.25
	12.4	0.555	1.822	0.759	2.491	0.101	1.30
Ku	15.0	0.631	2.070	0.847	2.779	0.118	
	18.0	0.715	2.345	0.941	3.089	0.139	1.35
K	20.0	0.769	2.522	1.001	3.285	0.152	
	22.0	0.821	2.695	1.059	3.475	0.165	
	24.0	0.873	2.865	1.115	3.659	0.178	
	26.5	0.937	3.073	1.183	3.881	0.194	1.40
Ka	28.0	0.974	3.196	1.223	4.011	0.204	
	30.0	1.024	3.358	1.274	4.181	0.217	
	32.0	1.072	3.518	1.325	4.347	0.230	
	34.0			1.375	4.510	0.243	1.45
	36.0			1.423	4.669	0.256	
V	40.0			1.518	4.980	0.281	1.50
	45.0			1.633	5.356	0.313	
	50.0			1.743	5.719	0.344	1.55

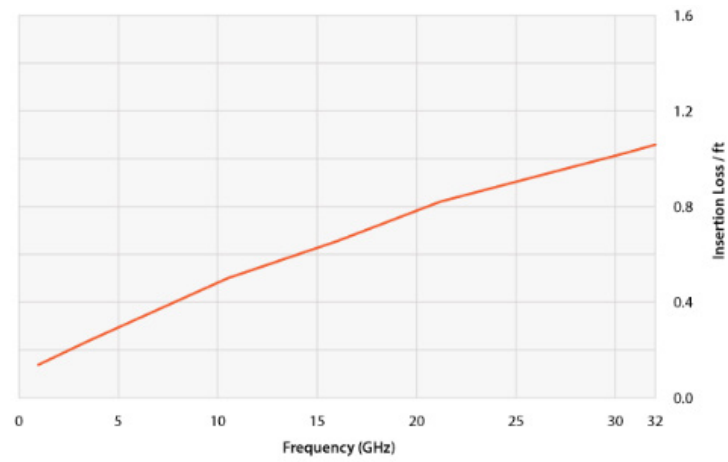
*TV32 includes TV26, TV18, TV8, TV4

**TV50 includes TV40, TV34

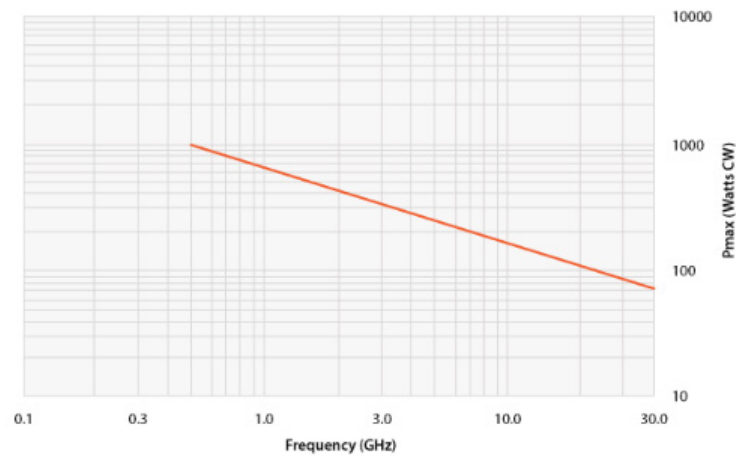
TV32 Insertion Loss vs. Temperature



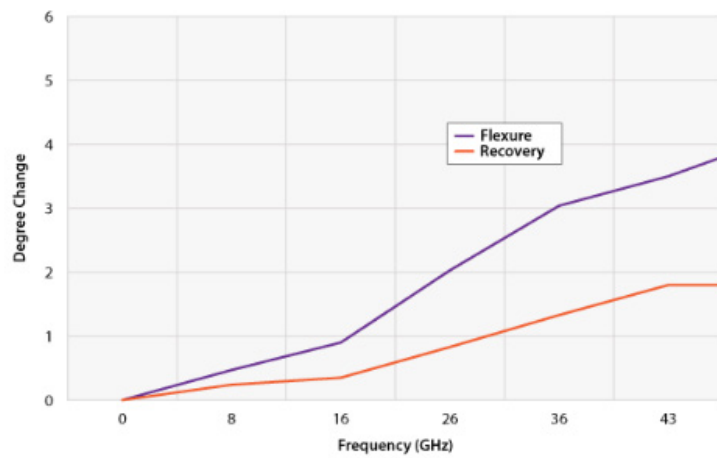
TV32 Insertion Loss



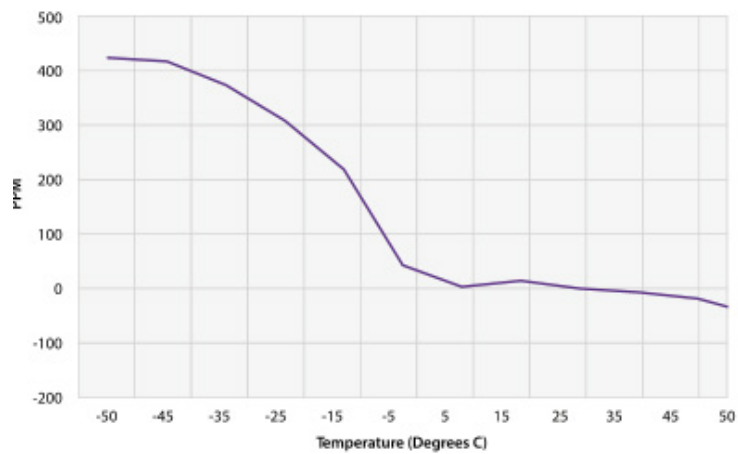
TV32 Cable CW Power Handling

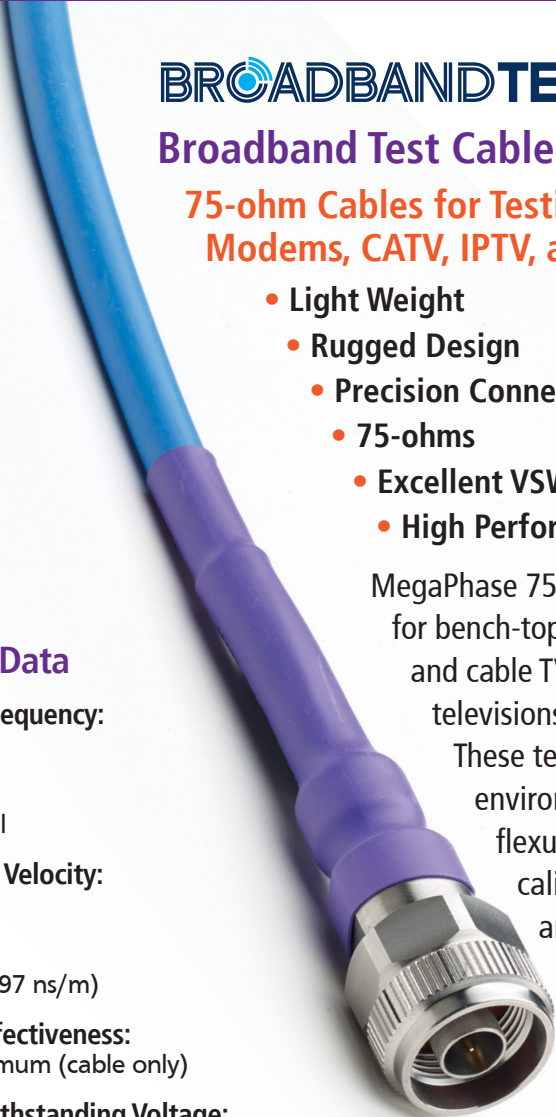


TV50 Phase vs. Flexures



TV50 Phase vs. Temperature





BROADBANDTEST

Broadband Test Cables to 8 GHz

75-ohm Cables for Testing of IoT Devices, Cable Modems, CATV, IPTV, and Broadcast Components



- Light Weight
- Rugged Design
- Precision Connectors
- 75-ohms
- Excellent VSWR 1.10:1 at 4 GHz
- High Performance

Electrical Data

Maximum Frequency:
8 GHz

Impedance:
75 Ω nominal

Propagation Velocity:
84% nominal

Time Delay:
1.21 ns/ft (3.97 ns/m)

Shielding Effectiveness:
-110 dB minimum (cable only)

Dielectric Withstanding Voltage:
3 kV at 60 Hz

Capacitance:
15.8 pF/ft (51.8 pF/m)

Mechanical Data

Finished Outer Diameter:
0.285 in (0.724 cm)

Static Bend Radius:
1.5 in (3.81 cm)

Weight with Standard Jacket/Armor:
0.06 lbs/ft (0.089 kg/m)

Crush Resistance:
250 lbs/linear in (44.6 kg/linear cm)

Operating Temp. Range:
-67 to 185° F (-55 to 85° C)

MegaPhase 75-ohm broadband test cables offer are designed for bench-top testing of devices in broadcast, IoT, satellite and cable TV receivers, cable modems, High Definition televisions, AM/FM radio receivers, and police scanners.

These test cables are designed to survive in rugged test environments and provide stable performance under flexure enabling repeatable measurements between calibrations. Precision connectors include Type N, F, and BNC.

Cable Construction

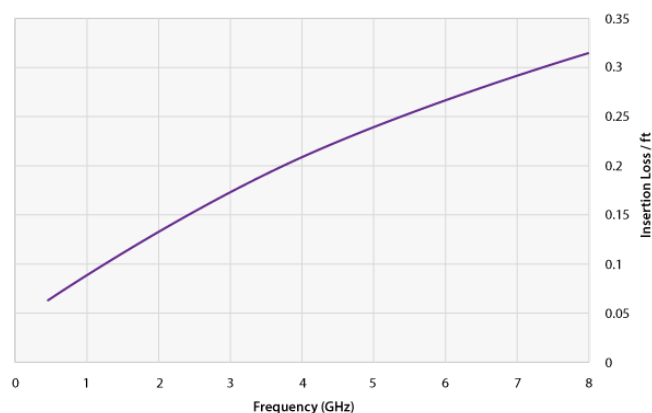
Inner Conductor:	Solid Cu
Dielectric:	Foamed Polyethylene
Outer Conductor:	GrooveTube® Cu
Standard Finish:	Polyolefin over Sn-plated metallic braid

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

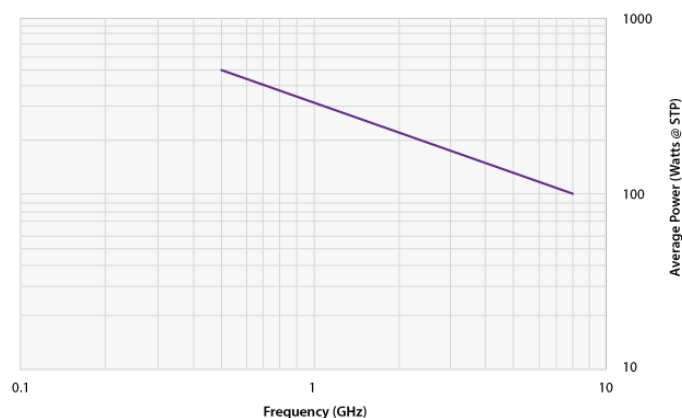
Available Connectors

BNC, F, Type N
(maximum frequency dependent on cable;
other connectors available)

Cable Insertion Loss



Cable CW Power Handling

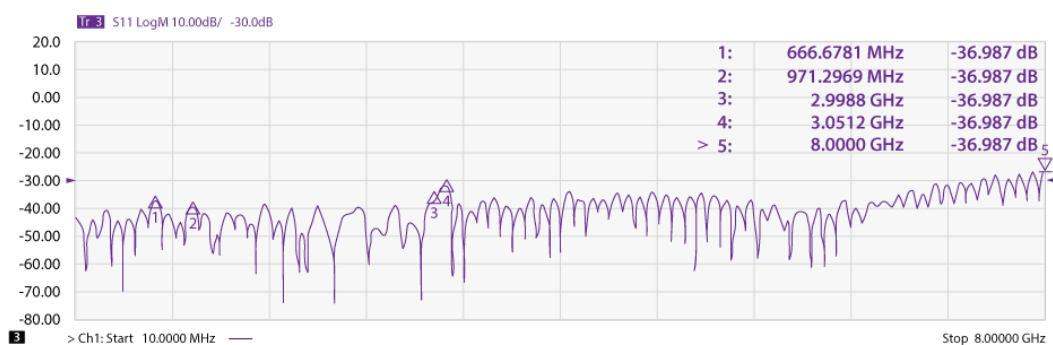


Specifications

Frequency		Attenuation		Conn. Loss dB	VSWR
GHz	Band	dB/ft	dB/m		
0.3	UHF	0.046	0.152	0.006	1.10
0.5		0.061	0.201	0.009	
0.8		0.080	0.261	0.012	
1.0	L	0.090	0.296	0.014	1.15
2.0	S	0.134	0.441	0.024	
2.4		0.150	0.491	0.027	
3.0		0.171	0.562	0.032	
4.0	C	0.204	0.669	0.040	1.20
6.0		0.263	0.862	0.055	
8.0	X	0.316	1.037	0.070	

Note: Typical Insertion Loss dB = (Attenuation)(Length) + 2(Conn. Loss)
 Attenuation at any frequency = $(0.784 \times \sqrt{\text{freq GHz}}) + (0.0118 \times \text{freq GHz})$

Typical Return Loss Terminated





RF Green™ Test Cables to 26.5 GHz

Eco-Friendly, Phase Stable Performance



- RoHS Compliant
- Zero Halogen
- Zero Flourine
- Armored
- Phase Stable
- Light Weight

MegaPhase is the leader in high performance cables with minimal environmental impact. In addition to using eutectic (Pb-free) RoHS-compliant solders, these assemblies use a cellular Polyethylene dielectric to eliminate Fluorine typically found in PTFE-based products. The jacketing and labels are made from SmartGrid rubber, a Zero-Halogen solution to further our commitment to reduce environmental impact. This cable assembly is rugged and provides a great overall value for your laboratory without expanding your carbon footprint.

Electrical Data

Maximum Frequency:
26.5 GHz

Impedance:
50 Ω nominal

Propagation Velocity:
80% nominal

Time Delay:
1.27 ns/ft (4.17 ns/m)

Shielding Effectiveness:
-110 dB minimum (cable only)

Dielectric Withstanding Voltage:
7.50 kV at 60 Hz

Capacitance:
26.7 pF/ft (87.6 pF/m)

Mechanical Data

Finished Outer Diameter:
0.335 in (0.724 cm)

Static Bend Radius:
1.5 in (3.81 cm)

Weight with Standard Jacket/Armor:
0.05 lbs/ft (0.014 kg/m)

Crush Resistance:
250 lbs/linear in (44.7 kg/linear cm)

Operating Temp. Range:
-40 to 185° F (-40 to +85° C)

Cable Construction

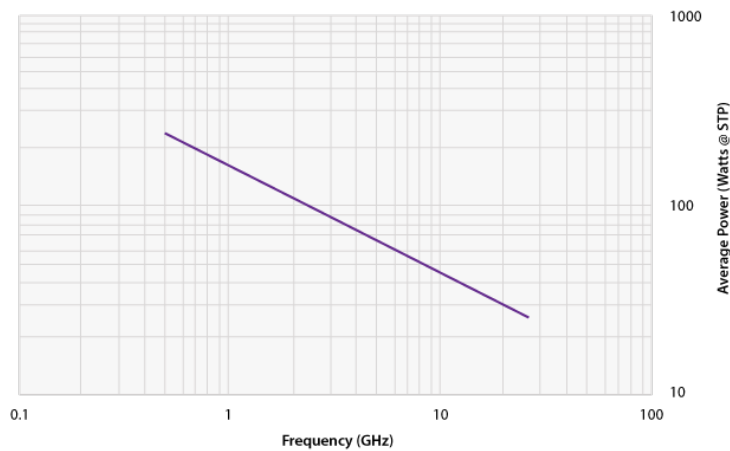
Inner Conductor:	Solid Ag Plated Cu
Dielectric:	Foam PE
Outer Conductor:	GrooveTube® Cu
Standard Finish:	Zero Halogen Polyolefin over Metallic Braid

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

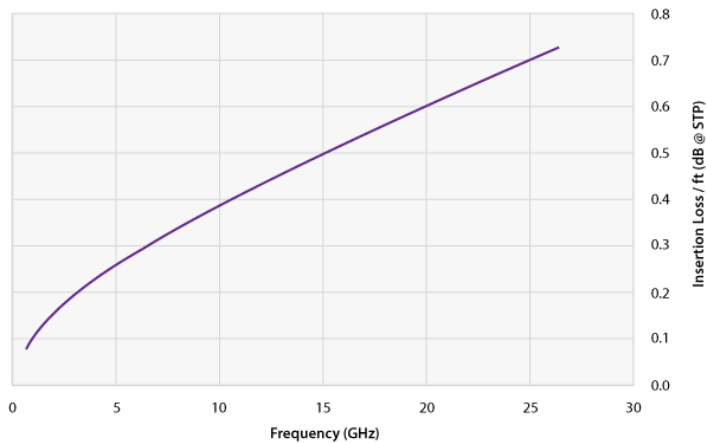
Available Connectors

2.9mm, 3.5mm, BNC, SMA, TNC, Type N
(maximum frequency dependent on cable;
other connectors available)

RF Green Power vs. Frequency



RF Green IL vs. Frequency



Specifications

Frequency		GR Series			
		Attenuation		Conn. Loss dB	VSWR
GHz	Band	dB/ft	dB/m		
0.3	UHF	0.054	0.179	0.006	1.10
0.5		0.071	0.234	0.009	
0.8		0.092	0.301	0.012	
1.0	L	0.103	0.339	0.014	1.15
2.0	S	0.151	0.497	0.024	
2.4		0.168	0.550	0.027	
3.0		0.190	0.625	0.032	
4.0	C	0.225	0.737	0.040	1.20
6.0		0.285	0.935	0.055	
8.0		0.338	1.111	0.070	
10.0	X	0.388	1.272	0.084	1.25
12.4		0.443	1.454	0.101	
15.0		0.499	1.639	0.118	1.30
18.0	Ku	0.561	1.841	0.139	
20.0		0.601	1.971	0.152	
22.0	K	0.639	2.097	0.165	1.35
24.0		0.677	2.220	0.178	
26.5		0.722	2.370	0.194	

Note: Typical Insertion Loss dB = (Attenuation)(Length) +2(Conn. Loss)
Attenuation at any frequency = (0.0945 x $\sqrt{\text{freq GHz}}$) + (0.0089 x freq GHz)

SITELINE™

SiteLine™ Armored Test Cables to 18 GHz

SiteLine Armored Test Cables



- Phase & Amplitude Stable
- Crush Proof 250 lbs/in (.46 kg/cm)
- Field and High Impact Production
- Rugged Armor
- Severe Environment
- Flight Line Testing

MegaPhase's SiteLine™ test cable assemblies are protected by a super-rugged armor designed for severe environments, such as flightline, outdoor antenna testing, and demanding production environments. This "gorilla proof" cable endures torque, twist, and crush forces better than any cable on the market, period. Ideal for use with FieldFox®, SiteMaster™, and Site Analyzer®.

Electrical Data

Maximum Frequency:
18 GHz

Impedance:
50 Ω nominal

Propagation Velocity:
SL 18 - 69% nominal

Time Delay:
SL 18 - 1.47 ns/ft (4.82 ns/m)

Shielding Effectiveness:
-115 dB minimum (cable only)

Dielectric Withstanding Voltage:
SL 18 - 10 kV at 60 Hz

Capacitance:
SL 18 - 29.0 pF/ft (95.1 pF/m)

Mechanical Data

Finished Outer Diameter:
0.5 in (1.27 cm)

Static Bend Radius:
3.0 in (7.62 cm)

Weight with Standard Jacket/Armor:
0.28 lbs/ft (0.417 kg/m)

Crush Resistance:
250 lbs/linear in (44.6 kg/linear cm)

Operating Temp. Range:
-85 to 248° F (-65 to 120° C)
Above 185° F (85° C) use "T" designation

Cable Construction

Inner Conductor:	Solid Ag-plated Cu
Dielectric:	
SL 18	PTFE
Outer Conductor:	
SL 18	GrooveTube® Cu
Standard Finished:	Neoprene

Available Connectors

7-16 DIN, BNC, SMA, TNC, Type N

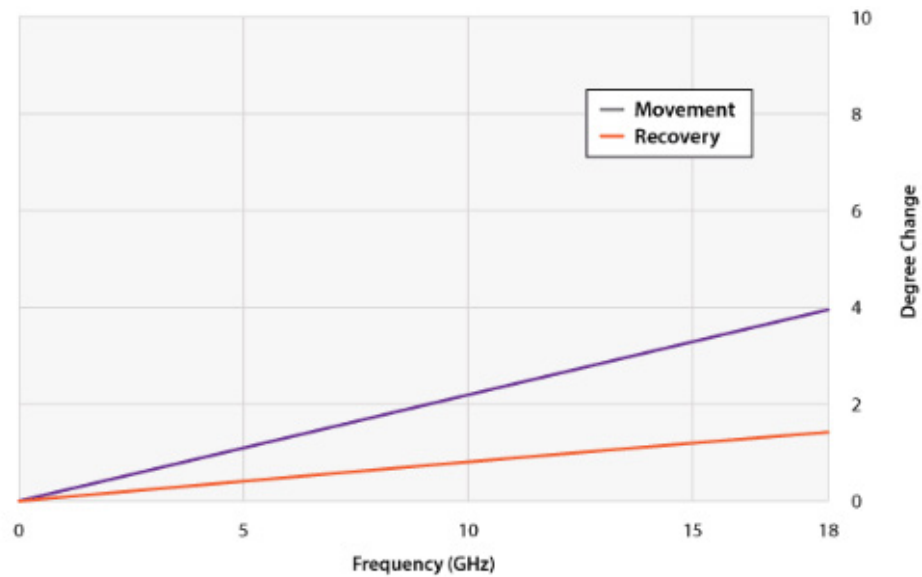
MegaPhase standard connectors are designed using passivated 303 Stainless Steel. These designs pass Salt Spray testing in accordance with Mil-Std-202 Method 101 condition C. MegaPhase suggests for more stringent environments the use of 303 Stainless Steel Gold plated connectors, this must be requested at the time of quoting.

Specifications

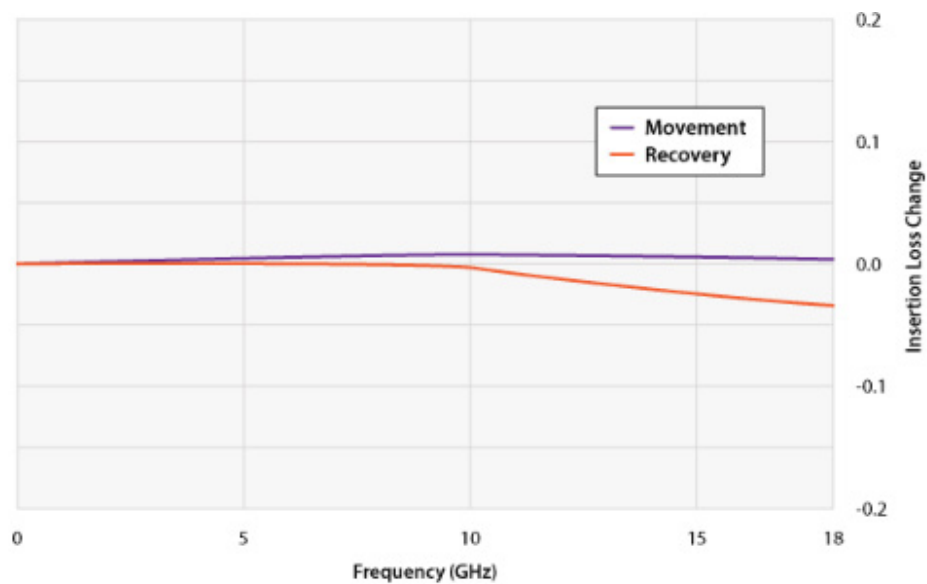
Frequency		SL 18 Series		Conn Loss dB	VSWR
		Attenuation			
Band	GHz	dB/ft	dB/m		
UHF	0.3	0.062	0.203	0.006	1.10
	0.5	0.082	0.268	0.009	
	0.8	0.106	0.348	0.012	
L	1.0	0.120	0.394	0.014	
S	2.0	0.178	0.585	0.024	1.15
	2.4	0.199	0.652	0.027	
	3.0	0.227	0.744	0.032	
C	4.0	0.270	0.885	0.040	
	6.0	0.347	1.138	0.055	
X	8.0	0.417	1.367	0.070	1.20
	10.0	0.482	1.580	0.084	1.25
	12.4	0.555	1.822	0.101	1.30
Ku	15.0	0.631	2.070	0.118	
	18.0	0.715	2.345	0.139	1.35

*SL 18 includes SL 4, SL 8

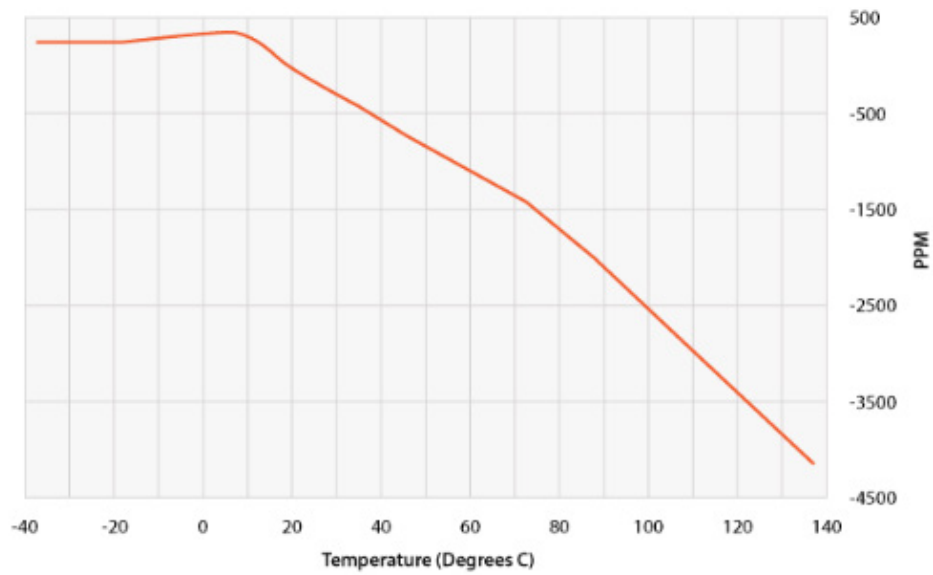
SL 18 Phase Change vs. Flexure



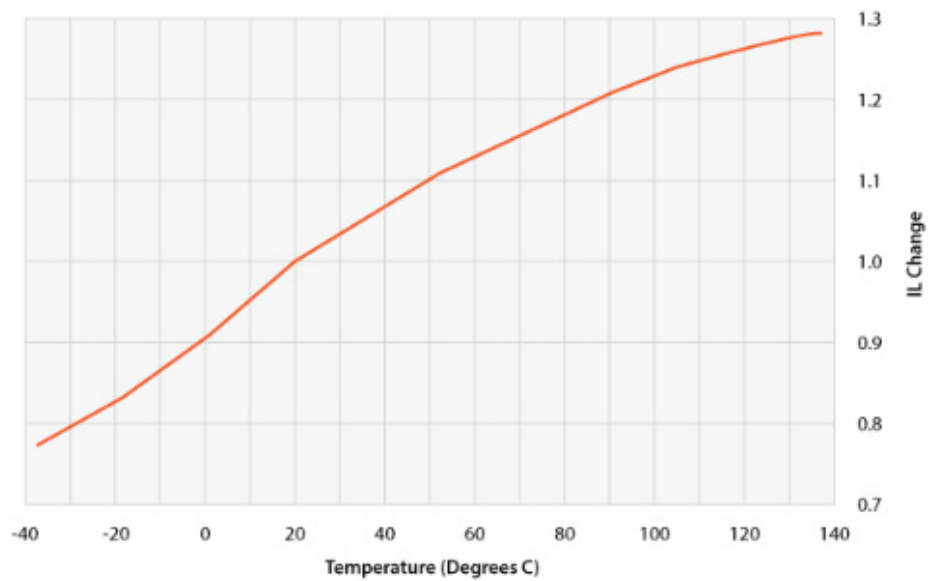
SL 18 Insertion Loss vs. Flexure



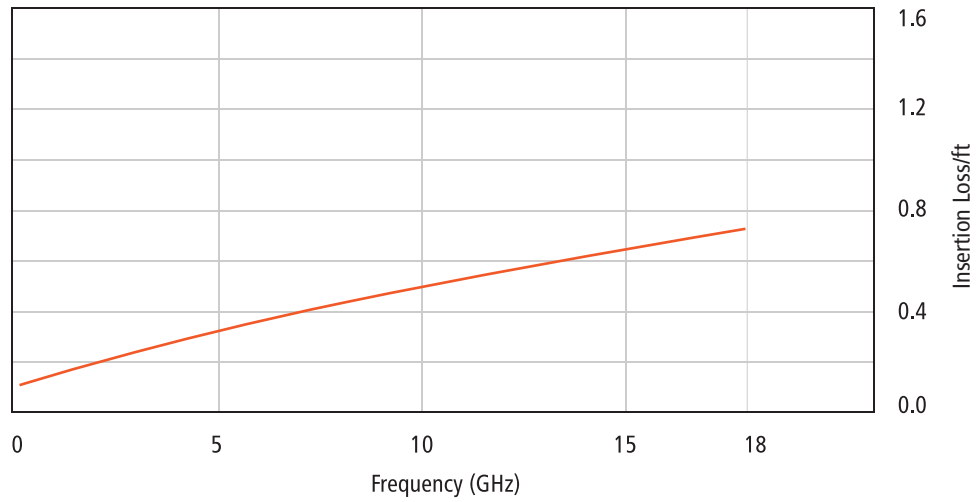
SL 18 Phase Change vs Temperature



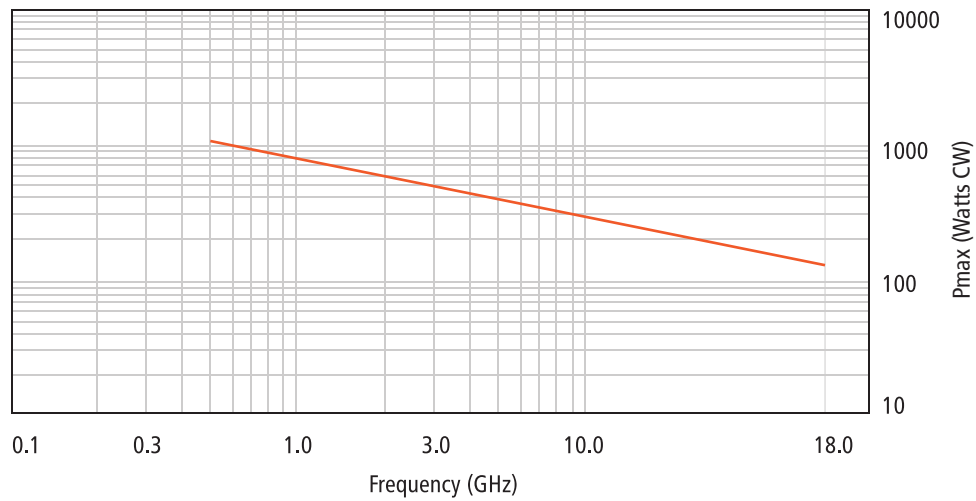
SL 18 Insertion Loss vs. Temperature



SL 18 Insertion Loss



SL 18 Cable CW Power Handling





Private Labeled T&M Cables

**Increase Revenues, Enhance Brand Marketing, and
Provide End-to-End Test Solutions**



MegaPhase is an industry leader in test & measurement cables for a wide variety of RF & Microwave applications.

Our products feature vertically-targeted cables used from 10 MHz through 67 GHz for telecom, semiconductor, spacecraft and C4ISR test sets using vector and spectrum analyzers, probe stations in addition to environmental test chambers.

You may already know that MegaPhase provides private-labeled test cables to some of the largest instrumentation manufacturers globally. This capability is also available for many customers in equipment rental, "rack and stack" integrators, brand-conscious component manufacturers, distributors and many others.

- Custom jacket color (including specific Pantone matches)
- Custom logo and labeling
- Test data on your letterhead
- Customer-supplied serial numbering and part numbering.
- Custom packaging and Shipping labels for drop-ship to customers



Phase³™

Phase3™ 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

Phase3™ cables offer the absolute lowest loss possible without sacrificing flexibility or shielding effectiveness.

The Phase3™ 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.

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)

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	0.034	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	1.35	0.139
20.0	K	1.043	3.422	0.620	2.036	0.542	1.778	0.331	1.085		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	Ka	1.234	4.048	0.718	2.355	0.635	2.082	0.388	1.272	1.40	0.194
28.0		1.276	4.185	0.739	2.423	0.655	2.148	-	-		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)

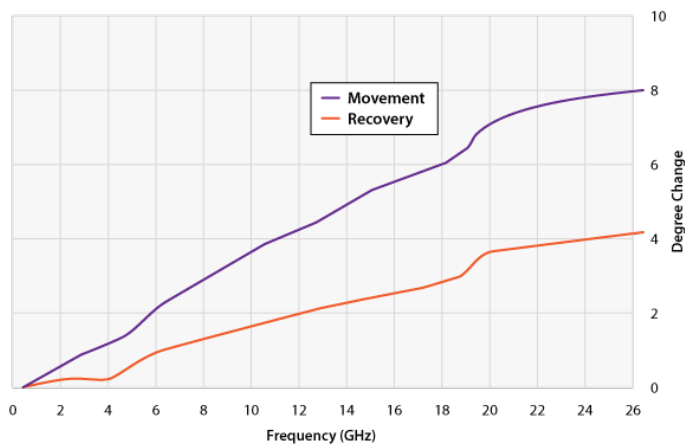
Attenuation at any frequency =

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

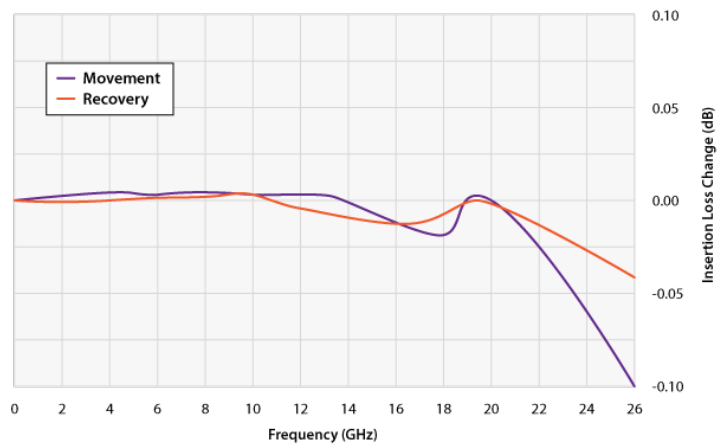
C12: $(0.1073 \times \sqrt{\text{freqGHz}}) + (0.0031 \times \text{freqGHz})$;

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

Phase Change vs. Flexure



Insertion Loss vs. Flexure

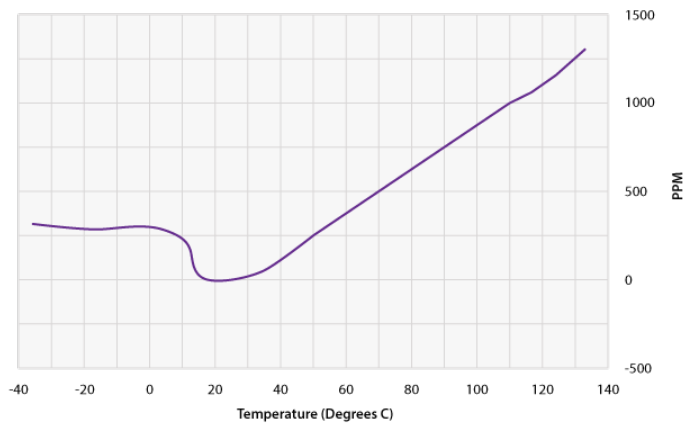


Specifications

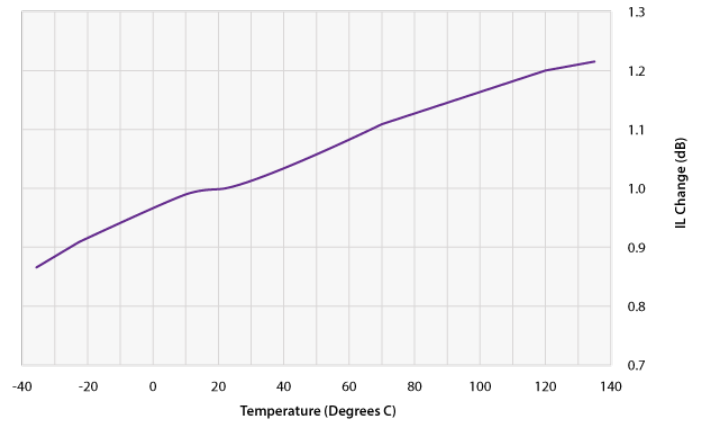
Frequency		C29 Series			Conn. Loss dB
		Attenuation		VSWR	
GHz	Band	dB/ft	dB/m		
0.3	UHF	0.029	0.095	1.10	0.006
0.5		0.038	0.124		0.009
0.8		0.048	0.157		0.012
1.0	L	0.054	0.177		0.014
2.0	S	0.077	0.253	1.15	0.024
2.4		0.085	0.279		0.027
3.0		0.096	0.314		0.032
4.0	C	0.111	0.365	1.20	0.040
6.0		0.138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

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

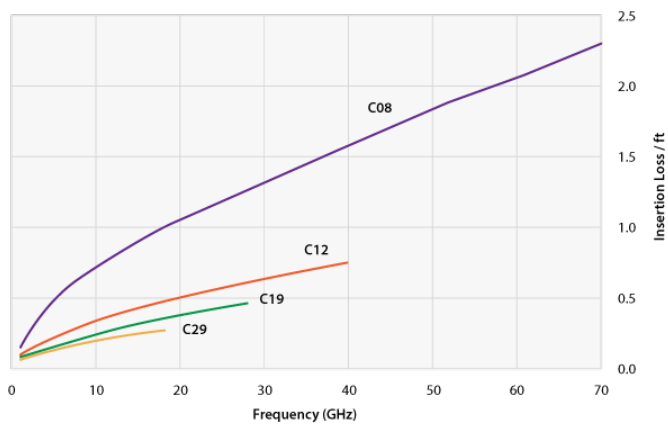
Phase Change vs. Temperature



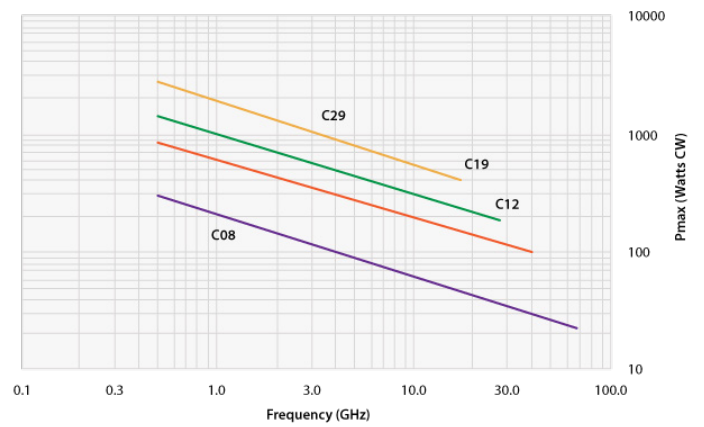
Insertion Loss vs. Temperature



Insertion Loss



Cable CW Power Handling





MegaPhase® HyperFlex™ Cable

MegaPhase has introduced a new cable that offers superior flexibility when compared to traditional solder-terminated connectors of similar sizes and applications. The HyperFlex™ Cable incorporates a solderless termination, eliminating solder wicking and enabling tight, right-angle bends directly behind the connector.

HyperFlex™ is available in three different series, .090, .120 and .141 inch diameter, with a frequency range of DC -67 GHz. This cable is ideally suited for inside-the-box and small form factor applications where tight routing is required.

Cable Construction:

Triple Shielded
FEP Outer Jacket

Min/Max Length:

4in/48in

Available Connectors:

SMA, 2.92mm, 2.4mm, SMP, Mega8

Operating Temp. Range:

-55 to 125° C

Electrical Data

Maximum Frequency:

HFx090 67 GHz
HFx120 50 GHz
HFx141 40 GHz

Impedance:

50 Ω nominal

Propagation Velocity:

HFx090, HFx120, HFx141, 69.5% nom

Time Delay:

HFx090, HFx120, HFx141
1.47 ns/ft (4.82 ns/m)

Shielding Effectiveness (Typical):

-110 dB minimum (cable only)

Dielectric Withstanding Voltage:

HFx090 600 Vrms
HFx120 900 Vrms
HFx141 1100 Vrms

Capacitance:

HFx090 29.0 pF/ft. (95 pF/m)
HFx120, HFx141, 29.1 pF/ft. (95.5 pF/m)

Mechanical Data

Finished Outer Diameter:

HFx090 0.090 in. (2.286 mm)
HFx120 0.120 in. (3.048 mm)
HFx141 0.141 in. (3.5814 mm)

Static Bend Radius:

HFx090 .10 in. (2.54 mm)
HFx120 .20in. (5.08 mm)
HFx141 .30 in. (7.62 mm)

Weight:

HFx090 4.1 grams/ft. (13.45 grams/m)
HFx120 7.5 grams/ft. (24.60 grams/m)
HFx141 11.2 grams/ft. (36.75 grams/m)

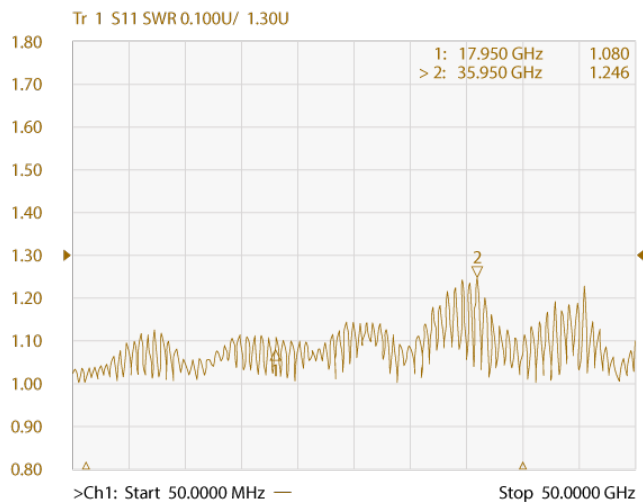
All electrical and mechanical parameters provided within this specification are typical/nominal



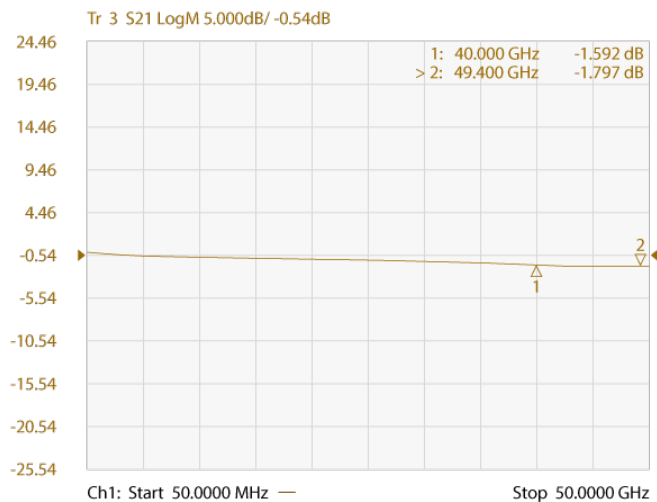
Specifications

Frequency		HFx090		HFx120		HFx141		Conn Loss dB	VSWR
		Attenuation		Attenuation		Attenuation			
Band	GHz	dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m		
UHF	0.3	0.197	0.645	0.084	0.277	0.091	0.297	0.006	1.10
	0.5	0.255	0.838	0.111	0.363	0.118	0.388	0.009	
	0.8	0.326	1.069	0.143	0.469	0.151	0.496	0.012	
L	1.00	0.366	1.201	0.162	0.530	0.170	0.558	0.014	
S	2.0	0.527	1.729	0.238	0.781	0.246	0.808	0.024	1.15
	2.4	0.581	1.905	0.264	0.867	0.272	0.892	0.027	
	3.0	0.654	2.146	0.301	0.986	0.307	1.008	0.032	
C	4.0	0.764	2.507	0.356	1.168	0.360	1.181	0.040	
	6.0	0.953	3.128	0.454	1.490	0.452	1.483	0.055	
X	8.0	1.118	3.668	0.542	1.779	0.533	1.747	0.070	1.20
	10.0	1.267	4.156	0.624	2.046	0.606	1.988	0.084	1.25
	12.4	1.431	4.694	0.715	2.346	0.687	2.255	0.101	
Ku	15.0	1.596	5.235	0.809	2.654	0.770	2.525	0.118	1.30
	18.0	1.773	5.817	0.912	2.993	0.859	2.818	0.139	
K	20.0	1.885	6.185	0.978	3.210	0.916	3.004	0.152	1.35
	22.0	1.994	6.541	1.043	3.422	0.970	3.184	0.165	
	24.0	2.099	6.885	1.106	3.630	1.024	3.359	0.178	
	26.5	2.226	7.302	1.184	3.883	1.089	3.572	0.194	
Ka	28.0	2.300	7.546	1.229	4.033	1.127	3.696	0.204	1.40
	30.0	2.397	7.864	1.289	4.230	1.176	3.859	0.217	
	32.0	2.492	8.176	1.348	4.423	1.225	4.019	0.230	
	34.0	2.585	8.480	1.406	4.614	1.273	4.176	0.243	
	36.0	2.676	8.780	1.464	4.803	1.320	4.331	0.256	
V	40.0	2.854	9.362	1.577	5.174	1.412	4.632	0.281	
	45.0	3.068	10.065	1.715	5.627			0.313	1.45
	50.0	3.275	10.744	1.850	6.071			0.344	
	60.0	3.671	12.044					0.406	1.50
	67.0	3.937	12.916					0.450	
Cable		A	B	Cable					
HyperFlex090		0.35	0.016	Cable Insertion Loss/ft : (A x √ freqGHz + B x freqGHz)					
HyperFlex120		0.145	0.0165						
HyperFlex141		0.160	0.010						

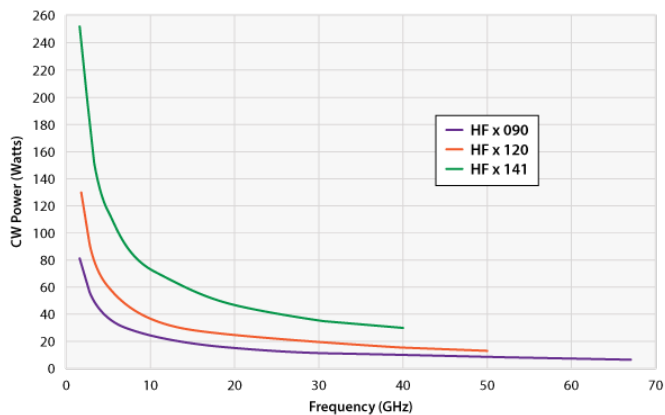
Typical VSWR Performance For HfX120 6in Assembly



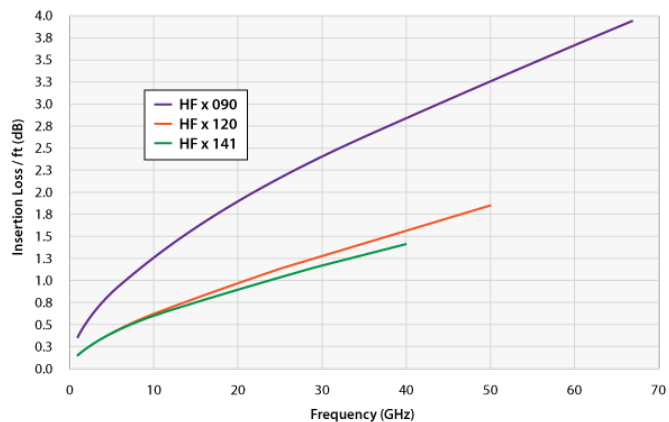
Typical Insertion Loss Performance For HfX120 6in Assembly



HyperFlex CW Power Capability 25°C @ Sea Level



HyperFlex™ Insertion Loss





AlumiBend™ Cables to 90 GHz

Space Qualified and Ultra-Light

- Phase stable over temperature
- Low loss
- Multipaction Resistant
- 40% lighter than copper
- For applications up to 90 GHz
- Space Qualified

MegaPhase's aluminum jacketed semi-rigid coaxial cable assemblies are cost-effective, high-performance alternatives to standard semi-rigid coax. Suitable for applications up to 90 GHz, these low loss cable assemblies feature a microporous dielectric, which provides lower attenuation and higher operating temperatures. Additionally, AlumiBend™ offers great phase stability vs. temperature when compared to solid PTFE semi-rigid cables. The MegaPhase AL Series is unique in that it is easily bent using a fixture to its finished shape and still maintains its shape after bending.

Electrical Data

Maximum Frequency:

AL047: 90 GHz

AL086: 67 GHz

AL141: 26.5 GHz

Impedance:50 Ω nominal**Propagation Velocity:**

76.5% nominal

Time Delay:

1.33 ns/ft (4.36 ns/m)

Shielding Effectiveness:

-110 dB minimum (cable only)

Dielectric Withstanding Voltage:

AL047: 2.0 kV at 60 Hz

AL086 & AL141: 5.0 kV rms at 60 Hz

Capacitance:

29 pF/ft (95.1 pF/m)

Mechanical Data

Finished Outer Diameter:

AL047: 0.047 in (0.119 cm)

AL086: 0.0865 in (0.220 cm)

AL141: 0.141 in (0.358 cm)

Static Bend Radius:

AL047: 0.125 in (0.318 cm)

AL086: 0.25 in (0.635 cm)

AL141: 0.50 in (1.270 cm)

Weight with Standard Jacket/Armor:

AL047: 0.0022 lbs./ft (0.0033 kg/m)

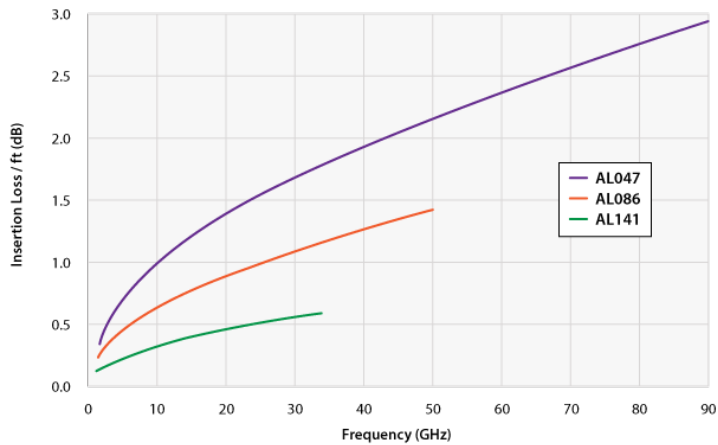
AL086: 0.0063 lbs./ft (0.0094 kg/m)

AL141: 0.0167 lbs./ft (0.0249 kg/m)

Operating Temp. Range:

-67 to 482° F (-55 to +250° C)

Insertion Loss



Cable Construction

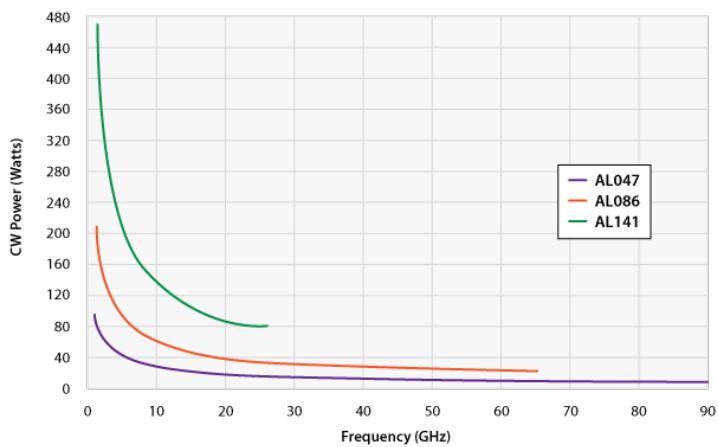
Inner Conductor: Solid Ag-plated Cu
Dielectric: LD PTFE
Outer Conductor: Ag-plated Al

Available Connectors

(cable dependent)

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

Cable CW Power Handling



Specifications

Frequency		AL047		AL086		AL141		Conn Loss dB	VSWR
		Attenuation		Attenuation		Attenuation			
Band	GHz	dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m		
UHF	0.3	0.165	0.540	0.107	0.351	0.055	0.180	0.006	1.10
	0.5	0.213	0.697	0.138	0.454	0.071	0.232	0.009	
	0.8	0.269	0.882	0.175	0.574	0.090	0.294	0.012	
L	1.0	0.301	0.987	0.196	0.642	0.100	0.328	0.014	
S	2.0	0.426	1.397	0.277	0.910	0.142	0.465	0.024	1.15
	2.4	0.467	1.531	0.304	0.997	0.155	0.509	0.027	
	3.0	0.522	1.712	0.340	1.116	0.174	0.570	0.032	
C	4.0	0.603	1.978	0.393	1.290	0.201	0.658	0.040	
	6.0	0.740	2.426	0.482	1.582	0.246	0.806	0.055	
X	8.0	0.855	2.804	0.558	1.830	0.284	0.932	0.070	1.20
	10.0	0.957	3.138	0.625	2.049	0.318	1.042	0.084	1.25
	12.4	1.066	3.498	0.697	2.285	0.354	1.161	0.101	1.30
Ku	15.0	1.174	3.850	0.767	2.517	0.390	1.278	0.118	
	18.0	1.287	4.222	0.842	2.761	0.427	1.400	0.139	
K	20.0	1.358	4.453	0.888	2.913	0.450	1.477	0.152	1.35
	22.0	1.425	4.673	0.932	3.058	0.472	1.549	0.165	
	24.0	1.489	4.884	0.975	3.196	0.493	1.619	0.178	
	26.5	1.566	5.135	1.025	3.362	0.519	1.702	0.194	
Ka	28.0	1.610	5.280	1.054	3.458			0.204	1.40
	30.0	1.667	5.468	1.092	3.582			0.217	
	32.0	1.723	5.650	1.129	3.702			0.230	
	34.0	1.776	5.827	1.164	3.819			0.243	1.45
	36.0	1.829	5.998	1.199	3.932			0.256	
V	40.0	1.929	6.328	1.265	4.150			0.281	1.50
	45.0	2.048	6.719	1.344	4.409			0.313	
	50.0	2.161	7.089	1.419	4.654			0.344	1.55
	60.0	2.372	7.779	1.558	5.112			0.406	
	67.0	2.509	8.230	1.650	5.411			0.450	
W	80.0	2.747	9.011					0.503	1.60
	90.0	2.918	9.571					0.591	

ULTRAPHASE™

MegaPhase UltraPhase™ Cable



The MegaPhase UltraPhase Series E product line is constructed with foam FEP dielectric and is a great choice for phase stability versus flexure and stability over temperature. The temperature performance features linearity across a wide temperature range, and does not exhibit the “knee” that traditional PTFE cables exhibit at ambient temperature. UltraPhase is ideal for applications including both air- and ground-based phased array radars, sensors, mobile backhaul, and temperature testing.

Electrical Data

Maximum Frequency:

E05 110 GHz
E08 67 GHz

Impedance:

50 Ω nominal

Propagation Velocity:

E05 78.7% nominal
E08 80% nominal

Time Delay:

E05 1.291 ns/ft. (4.236 ns/m)
E08 1.27 ns/ft. (4.167 ns/m)

Shielding Effectiveness:

-100 dB minimum (cable only)

Dielectric Withstanding Voltage:

E05 400 VRMS
E08 1200 VRMS

Capacitance:

E05 25.82 pF/ft. (84.71 pF/m)
E08 25.4 pF/ft. (83.3 pF/m)

Mechanical Data

Finished Outer Diameter:

E05 0.056 in. (1.422 mm)
E08 0.100 in. (2.54 mm)

Static Bend Radius:

E05 .25 in. (6.35 mm)
E08 .35 in. (8.9 mm)

Weight:

E05 1.87 grams/ft. (6.14 grams/m)
E08 5.0 grams/ft. (16.4 grams/m)

Operating Temp. Range:

-85 to 329° F
-65 to 165° C

Cable Construction

Inner Conductor: Solid Ag-plated Cu
Dielectric: Foamed FEP
Inner Shield: Ag-plated Cu
Outer Braid Shield: Ag-plated Cu
Outer Jacket: FEP

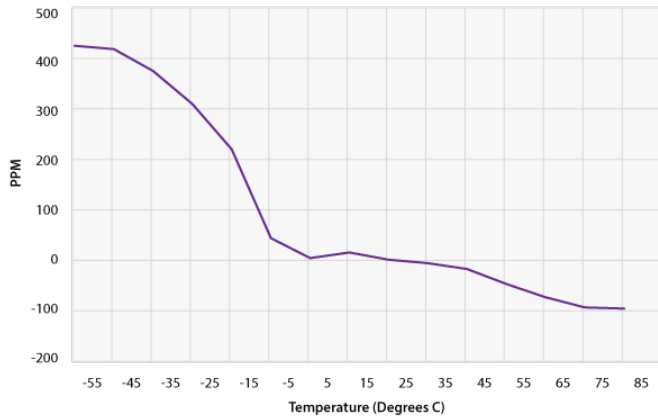
Maximum Length

35 Feet

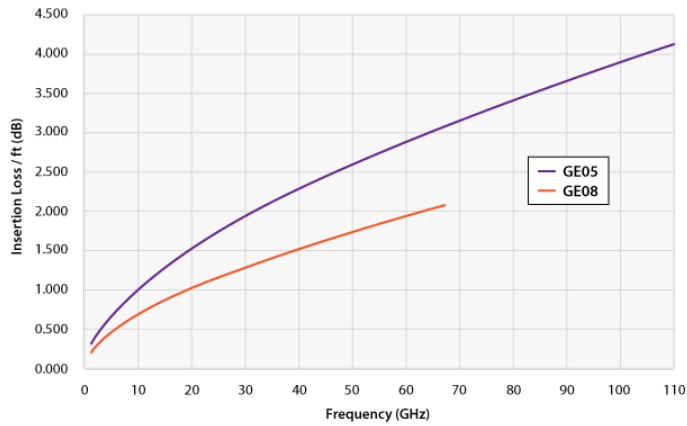
Available Connectors

Type N, SMA, 3.5mm, 2.92mm, 2.4mm
1.85mm, 1.0mm, SMP, SMPM

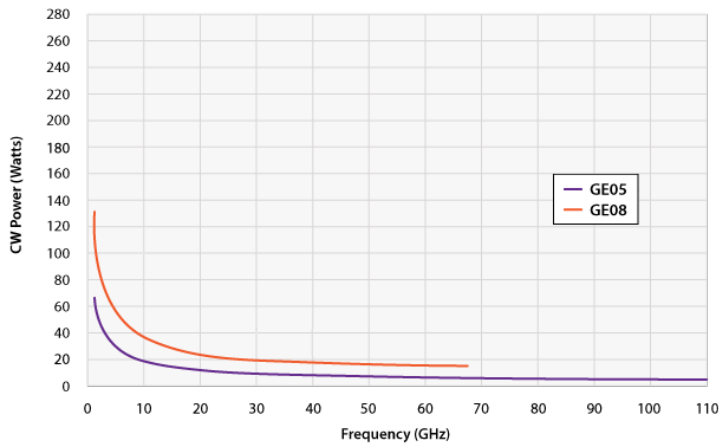
Phase vs. Temperature



Insertion Loss



Cable CW Power Handling



Specification

Frequency		GE05 Series		GE08 Series		Conn Loss dB	VSWR
		Attenuation		Attenuation			
Band	GHz	dB/ft	dB/m	dB/ft	dB/m		
UHF	0.3	0.167	0.548	0.104	0.341	0.006	1.10
	0.5	0.217	0.711	0.135	0.443	0.009	
	0.8	0.276	0.904	0.172	0.566	0.012	
L	1.0	0.309	1.014	0.194	0.635	0.014	
S	2.0	0.442	1.451	0.279	0.915	0.024	1.15
	2.4	0.486	1.596	0.307	1.009	0.027	
	3.0	0.547	1.793	0.347	1.137	0.032	
C	4.0	0.636	2.087	0.405	1.328	0.040	
	6.0	0.789	2.588	0.505	1.658	0.055	
X	8.0	0.921	3.020	0.593	1.945	0.070	1.20
	10.0	1.039	3.408	0.672	2.205	0.084	1.25
	12.4	1.168	3.832	0.759	2.491	0.101	1.30
Ku	15.0	1.297	4.255	0.847	2.779	0.118	
	18.0	1.435	4.707	0.941	3.089	0.139	
K	20.0	1.522	4.992	1.001	3.285	0.152	1.35
	22.0	1.605	5.266	1.059	3.475	0.165	
	24.0	1.686	5.530	1.115	3.659	0.178	
	26.5	1.783	5.849	1.183	3.881	0.194	
Ka	28.0	1.839	6.035	1.223	4.011	0.204	1.40
	30.0	1.913	6.277	1.274	4.181	0.217	
	32.0	1.985	6.513	1.325	4.347	0.230	
	34.0	2.055	6.743	1.375	4.510	0.243	1.45
	36.0	2.124	6.969	1.423	4.669	0.256	
V	40.0	2.257	7.406	1.518	4.980	0.281	1.50
	45.0	2.417	7.931	1.633	5.356	0.313	
	50.0	2.571	8.436	1.743	5.719	0.344	1.55
	60.0	2.864	9.396	1.955	6.414	0.406	
	67.0	3.059	10.035	2.097	6.881	0.450	1.60
	70.0	3.140	10.302			0.468	
W	80.0	3.403	11.166			0.530	1.60
	90.0	3.656	11.995			0.591	
	100.0	3.900	12.795			0.652	
	110.0	4.136	13.571			0.713	



THEWARRIORCABLE®



The Warrior Cable® to 50 GHz

Rugged and Crush-Proof – When Downtime is Not an Option

- Soldier Proof Solution
- Stable Under Vibration and Abuse
- Crush Resistant to 250 lbs/linear in (45 kg/linear cm)
- Rugged GrooveTube® Technology
- Proprietary Pull-Resistant Connector Design
- Jacketed to withstand the elements, including chemicals.

Electrical Data

Maximum Frequency:

520- 32 GHz
520x- 50 GHz

Impedance:

50 Ω nominal

Propagation Velocity:

520 - 69% nominal
520x - 80% nominal

Time Delay:

520 - 1.47 ns/ft (4.82 ns/m)
520x - 1.27 ns/ft (4.167 ns/m)

Shielding Effectiveness:

-110 dB minimum (cable only)

Dielectric Withstanding Voltage:

520 - 10 kV at 60 Hz
520x - 1.2 kV at 60 Hz

Capacitance:

520 - 29.0 pF/ft (95.1 pF/m)
520x - 25.4 pF/ft (88.3 pF/m)

Mechanical Data

Finished Outer Diameter:

520: 0.330 in (0.838 cm)

Static Bend Radius:

520: 1.5 in (3.81 cm)

Weight with Standard Jacket/Armor:

520: 0.05 lbs/ft (0.067 kg/m)

Crush Resistance:

250 lbs/linear in (44.6 kg/linear cm)

Operating Temp. Range:

-67 to 275° F (-55 to 135° C)
Above 185° F (85° C) use "T" designation

The MegaPhase Warrior Cable® is a combat proven, "soldier proof" solution ideal for ground-based EW and ECM.

This cable is internally armored with GrooveTube®

Technology, a crush-proof outer conductor, surviving in the harshest conditions including salt, fog, humidity, dust, sand, vibration, and flexure.

Cable Construction

Inner Conductor:	Solid Ag-plated Cu
Dielectric: 520	Solid PTFE
520x	Foamed FEP
Outer Conductor: 520	GrooveTube® Cu
520x	Solid Ag-plated Cu Foil/Braid
Standard Finish:	Neoprene over Metallic Braid

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

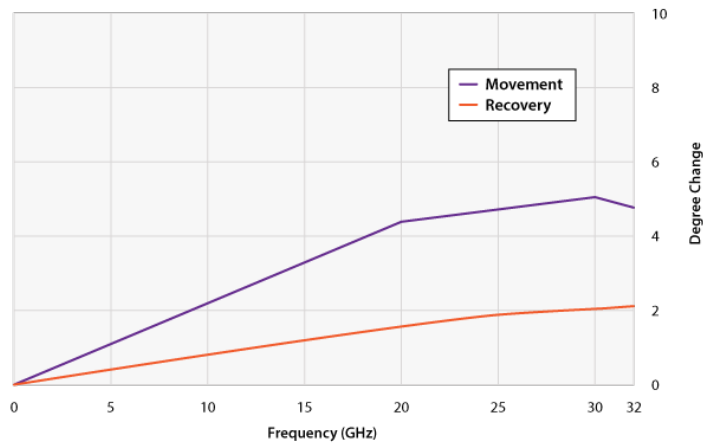
Available Connectors

520: 1.85 mm, 2.4 mm, 2.9mm, 3.5mm, 7mm, 7-16 DIN, BNC, SMA, TNC, Type N, ZMA, ZN

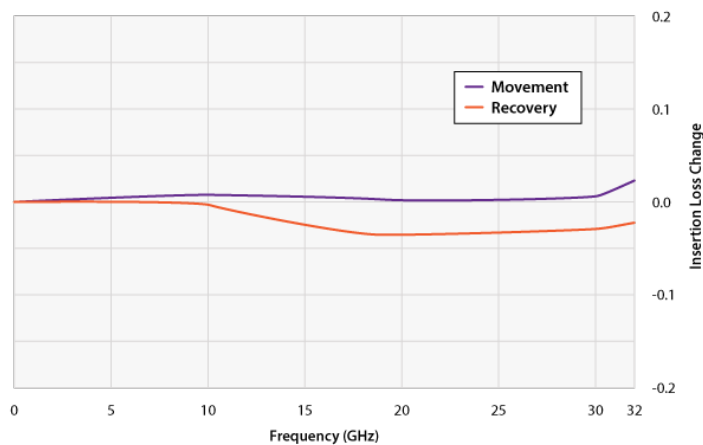
(maximum frequency dependent on cable; other connectors available)

MegaPhase standard connectors are designed using passivated 303 Stainless Steel. These designs pass Salt Spray testing in accordance with Mil-Std-202 Method 101 condition C. MegaPhase suggests for more stringent environments the use of 303 Stainless Steel Gold plated connectors, this must be requested at the time of quoting.

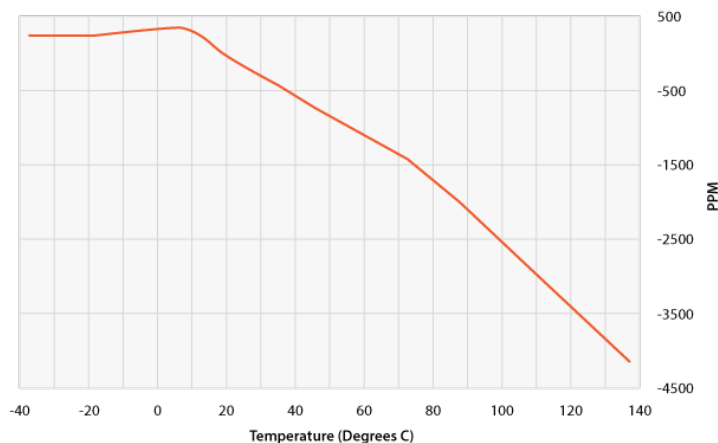
520 Phase Change vs Flexure



520 Insertion Loss vs Flexure



520 Phase Change vs Temperature



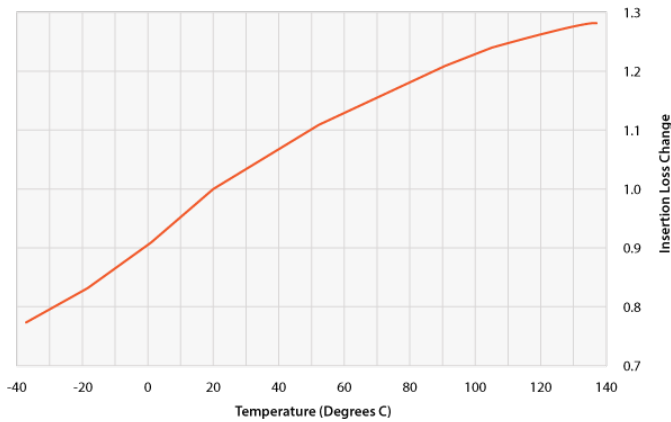
Additional Information

All Warrior cable assemblies are tested 100% for S-Parameters and each assembly is serialized. Standard test data includes VSWR and insertion loss. Additional testing options will be quoted upon request. Full traceability is available for each cable assembly.

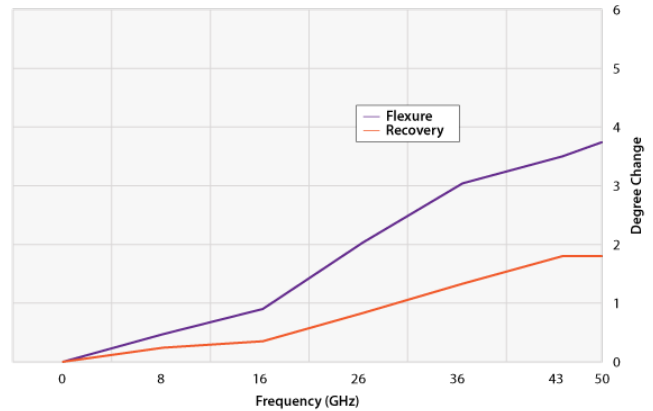
Specifications

Frequency		520		520x		Conn Loss dB	VSWR
		Attenuation		Attenuation			
Band	GHz	dB/ft	dB/m	dB/ft	dB/m		
UHF	0.3	0.062	0.203	0.104	0.341	0.006	1.10
	0.5	0.082	0.268	0.135	0.443	0.009	
	0.8	0.106	0.348	0.172	0.566	0.012	
L	1.0	0.120	0.394	0.194	0.635	0.014	
S	2.0	0.178	0.585	0.279	0.915	0.024	1.15
	2.4	0.199	0.652	0.307	1.009	0.027	
	3.0	0.227	0.744	0.347	1.137	0.032	
C	4.0	0.270	0.885	0.405	1.328	0.040	
	6.0	0.347	1.138	0.505	1.658	0.055	
X	8.0	0.417	1.367	0.593	1.945	0.070	1.20
	10.0	0.482	1.580	0.672	2.205	0.084	1.25
	12.4	0.555	1.822	0.759	2.491	0.101	1.30
Ku	15.0	0.631	2.070	0.847	2.779	0.118	
	18.0	0.715	2.345	0.941	3.089	0.139	
K	20.0	0.769	2.522	1.001	3.285	0.152	1.35
	22.0	0.821	2.695	1.059	3.475	0.165	
	24.0	0.873	2.865	1.115	3.659	0.178	
	26.5	0.937	3.073	1.183	3.881	0.194	
Ka	28.0	0.974	3.196	1.223	4.011	0.204	1.40
	30.0	1.024	3.358	1.274	4.181	0.217	
	32.0	1.072	3.518	1.325	4.347	0.230	
	34.0		3.676	1.375	4.510	0.243	1.45
	36.0		3.833	1.423	4.669	0.256	
V	40.0		4.141	1.518	4.980	0.281	1.50
	45.0			1.633	5.356	0.313	
		50.0			1.743	5.719	0.344

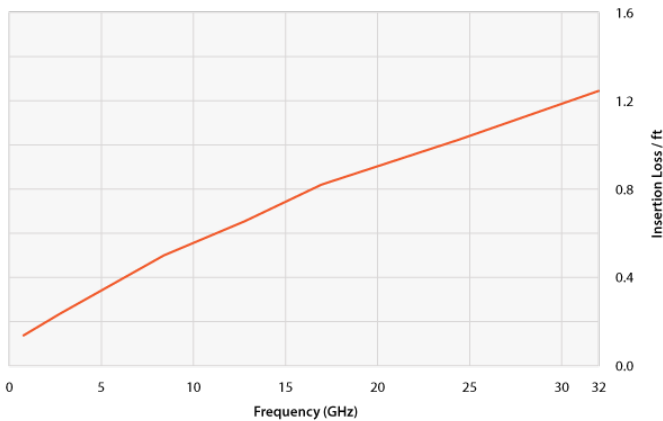
520 Insertion Loss vs Temperature



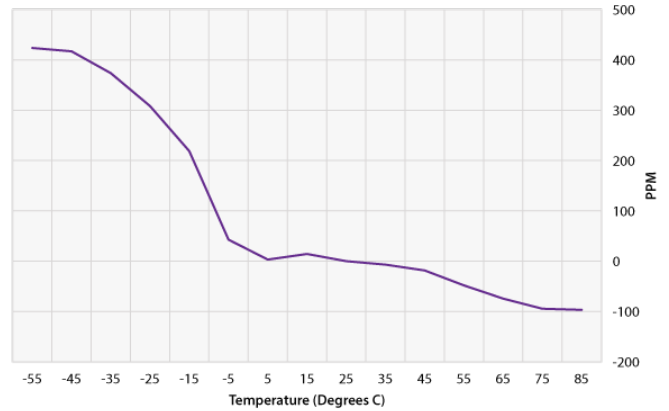
520x Phase vs. Flexures



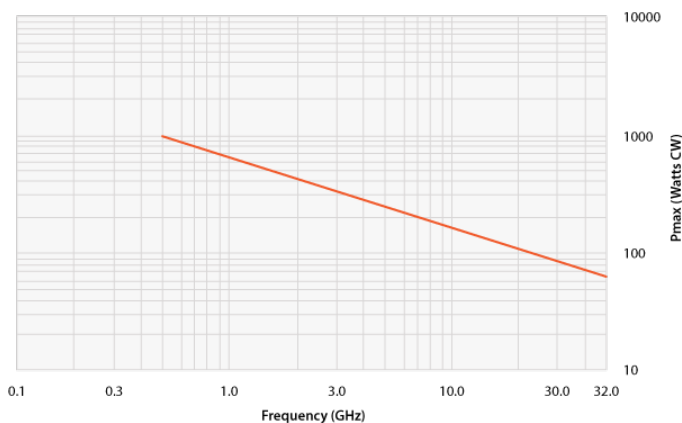
520 Insertion Loss



520x Phase vs. Temperature



520 Cable CW Power Handling



MegaPhase standard connectors are designed using passivated 303 Stainless Steel. These designs pass Salt Spray testing in accordance with Mil-Std-202 Method 101 condition C. MegaPhase suggests for more stringent environments the use of 303 Stainless Steel Gold plated connectors, this must be requested at the time of quoting.



Survivor™ Ruggedized Cables to 50 GHz

Low Loss Armored Cables for Rigorous Environments



- Crush Resistant
- Low Loss Robust Connector Termination
- Stainless Steel Armor
- Robust Connector Termination
- Wide Variety of Connectors

The Survivor™ cable assemblies employ a low loss cable inside a light weight stainless steel armor to survive rigorous installation conditions through 50 GHz. These low density dielectric cables are designed to handle rigorous test environments and provide high crush resistance for applications including outdoor antenna testing, production test, and lab test.

The Survivor™ cables are cost effective and available with Type N, SMA, 3.5mm, 2.92mm, 2.4mm, and 1.85mm connectors.

Electrical Data

Maximum Frequency:

NC11: 50.0 GHz
NC12: 40.0 GHz
NC19: 26.5 GHz
NC29: 18.0 GHz

Impedance:

50 Ω nominal

Propagation Velocity:

NC11: 84% nominal
NC12: 84% nominal
NC19: 84% nominal
NC29: 84% nominal

Time Delay:

NC11: 1.21 ns/ft (3.97 ns/m)
NC12: 1.21 ns/ft (3.97 ns/m)
NC19: 1.21 ns/ft (3.97 ns/m)
NC29: 1.21 ns/ft (3.97 ns/m)

Shielding Effectiveness:

-110 dB minimum (cable only)

Dielectric Withstanding Voltage:

NC11: 5 kV at 60 Hz
NC12: 5 kV at 60 Hz
NC19: 10.0 kV at 60 Hz
NC29: 15.0 kV at 60 Hz

Capacitance:

NC11: 24.4 pF/ft (80.1 pF/m)
NC12: 24.4 pF/ft (80.1 pF/m)
NC19: 24.4 pF/ft (80.1 pF/m)
NC29: 24.4 pF/ft (80.1 pF/m)

Mechanical Data

Finished Outer Diameter:

NC11: 0.275 in (0.698 cm)
NC12: 0.275 in (0.699 cm)
NC19: 0.400 in (1.016 cm)
NC29: 0.575 in (1.461 cm)

Static Bend Radius:

NC11: 1.75 in (4.44 cm)
NC12: 1.75 in (4.445 cm)
NC19: 2.50 in (6.35 cm)
NC29: 3.00 in (7.62 cm)

Weight with Standard Jacket/Armor:

NC11: 0.075 lbs/ft (0.119 kg/m)
NC12: 0.080 lbs/ft (0.1191 kg/m)
NC19: 0.145 lbs/ft (0.216 kg/m)
NC29: 0.220 lbs/ft (0.327 kg/m)

Crush Resistance:

500 lbs/linear in.

Operating Temp. Range:

-85 to 392° F (-65 to 200° C)

Cable Construction

Inner Conductor:	Solid Ag-plated Cu
Dielectric:	PTFE Tape
Outer Conductor:	Ag-plated Cu Strip/ Ag-plated Cu Flat Braid
Standard Finish:	Neoprene over Metal Armor
Maximum Length:	35 Feet

Available Connectors

NC12: 1.85mm, 2.4mm, 2.92mm, 3.5mm,
SMA, TNC, Type N

NC19: 3.5mm, BNC, SMA, TNC, Type N

NC29: 7-16 DIN, SMA, TNC, Type N

MegaPhase standard connectors are designed using passivated 303 Stainless Steel. These designs pass Salt Spray testing in accordance with Mil-Std-202 Method 101 condition C. MegaPhase suggests for more stringent environments the use of 303 Stainless Steel Gold plated connectors, this must be requested at the time of quoting.

Specifications

Frequency		NC11 Series		NC12 Series		NC19 Series		NC29 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	0.074	0.242	0.060	0.196	0.036	0.119	0.029	0.095	1.10	0.006
0.5		0.095	0.313	0.077	0.254	0.047	0.154	0.038	0.124		0.009
0.8		0.098	0.396	0.098	0.323	0.060	0.196	0.048	0.157		0.012
1.0	L	0.121	0.443	0.110	0.362	0.067	0.220	0.054	0.177		0.014
2.0	S	0.135	0.629	0.158	0.518	0.096	0.315	0.077	0.253	1.15	0.024
2.4		0.174	0.690	0.174	0.570	0.105	0.346	0.085	0.279		0.027
3.0		0.192	0.772	0.195	0.640	0.119	0.389	0.096	0.314		0.032
4.0	C	0.210	0.893	0.227	0.745	0.138	0.453	0.111	0.365		0.040
6.0		0.235	1.098	0.281	0.923	0.171	0.562	0.138	0.454	0.055	
8.0	X	0.388	1.272	0.328	1.077	0.200	0.656	0.162	0.531	1.20	0.070
10.0		0.434	1.425	0.370	1.215	0.226	0.740	0.183	0.600	1.25	0.084
12.4		0.485	1.592	0.416	1.366	0.254	0.832	0.206	0.676	1.30	0.101
15.0	Ku	0.535	1.755	0.462	1.516	0.282	0.924	0.229	0.752		0.118
18.0		0.588	1.928	0.511	1.677	0.312	1.023	0.254	0.833	0.139	
20.0	K	0.620	2.036	0.542	1.778	0.331	1.085	-	-	1.35	0.152
22.0		0.652	2.138	0.571	1.875	0.349	1.145	-	-		0.165
24.0		0.682	2.237	0.600	1.969	0.366	1.202	-	-		0.178
26.5		0.718	2.355	0.635	2.082	0.388	1.272	-	-		0.194
28.0	Ka	0.739	2.423	0.655	2.148	-	-	-	-	1.40	0.204
30.0		0.766	2.512	0.681	2.233	-	-	-	-		0.217
32.0		0.792	2.598	0.706	2.317	-	-	-	-		0.230
34.0		0.817	2.681	0.731	2.398	-	-	-	-		0.243
36.0		0.842	2.762	0.755	2.478	-	-	-	-	1.45	0.256
40.0		0.890	2.919	0.803	2.633	-	-	-	-		0.281
45.0	V	0.946	3.104							1.50	0.313
50.0		1.000	3.281								0.344

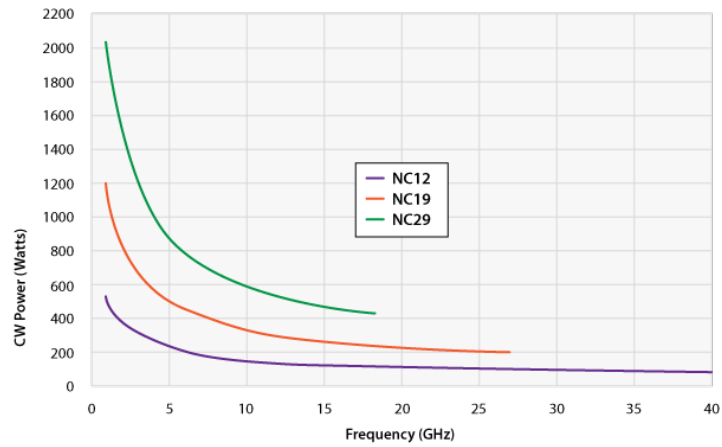
Note: Typical Insertion Loss dB = (Attenuation)(Length) +2(Conn. Loss)

Attenuation at any frequency = NC12: $(0.1073 \times \sqrt{\text{freqGHz}}) + (0.0031 \times \text{freqGHz})$;

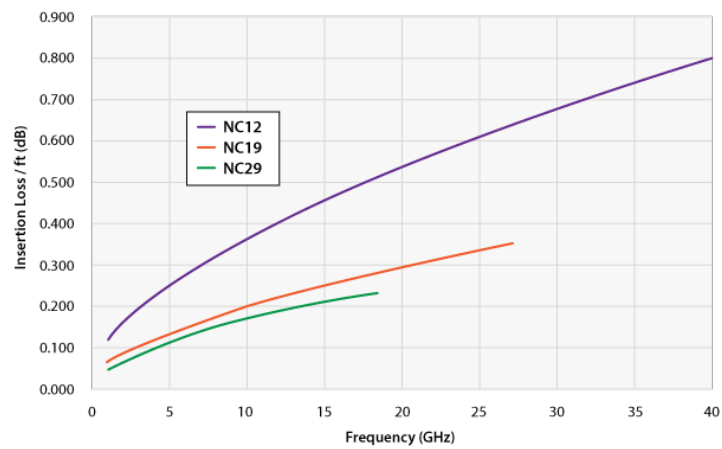
NC19: $(0.065 \times \sqrt{\text{freqGHz}}) + (0.002 \times \text{freqGHz})$;

NC29: $(0.052 \times \sqrt{\text{freqGHz}}) + (0.00185 \times \text{freqGHz})$

Cable CW Power Handling



Insertion Loss



MegaPhase standard connectors are designed using passivated 303 Stainless Steel. These designs pass Salt Spray testing in accordance with Mil-Std-202 Method 101 condition C. MegaPhase suggests for more stringent environments the use of 303 Stainless Steel Gold plated connectors, this must be requested at the time of quoting.



GrooveTube® Cables to 50 GHz

Rugged, Low Loss Performance for Severe Environments

- Low insertion loss
- Phase and amplitude stable
- Stable under vibration and severe conditions
- Rugged GrooveTube® Technology
- Boundless™ PTFE Dielectric
- Proprietary Pull-Resistant Connector Design

MegaPhase offers these cables with rugged GrooveTube® Technology, a crush-proof convoluted copper armor and outer conductor. GrooveTube® features low insertion loss, phase and amplitude stability, and low VSWR.

Applications include phased array radar, electronic warfare radar systems, and applications where high reliability interconnects are critical. Available with phase matching, delay matching, and custom configurations.

Electrical Data

Maximum Frequency:

135: 10.0 GHz
620: 26.5 GHz
520: 32.0 GHz
520x: 50.0 GHz

Impedance:

50 Ω nominal

Propagation Velocity:

135: 84% nominal
520: 69% nominal
520x: 80% nominal
620: 80% nominal

Time Delay:

135: 1.21 ns/ft (3.97 ns/m)
620: 1.27 ns/ft (4.17 ns/m)
520: 1.47 ns/ft (4.82 ns/m)
520x: 1.27 ns/ft (4.17 ns/m)

Shielding Effectiveness:

-110 dB minimum (cable only)

Dielectric Withstanding Voltage:

135: 15 kV at 60 Hz
620: 7.5 kV at 60 Hz
520x: 1.2 kV at 60 Hz

Capacitance:

520: 29.0 pF/ft (95.1 pF/m)
620: 26.7 pF/ft (87.6 pF/m)
135 Series: 15.8 pF/ft (51.8 pF/m)

Mechanical Data

Finished Outer Diameter:

520, 520x, 620: 0.285 in (0.724 cm)
135: 0.400 in (1.016 cm)

Static Bend Radius:

520, 520x, 620: 1.5 in (3.81 cm)
135: 3.0 in (7.62 cm)

Weight with Standard Jacket/Armor:

520, 520x, 620: 0.05 lbs/ft (0.067 kg/m)
135: 0.14 lbs/ft (0.209 kg/m)

Crush Resistance:

250 lbs/linear in (44.6 kg/linear cm)

Operating Temp. Range:

520, 520x, 135: -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

Specifications - 5 Series

Frequency		520 Series		520x Series		Conn Loss dB	VSWR
		Attenuation		Attenuation			
Band	GHz	dB/ft	dB/m	dB/ft	dB/m		
UHF	0.3	0.062	0.203	0.104	0.341	0.006	1.10
	0.5	0.082	0.268	0.135	0.443	0.009	
	0.8	0.106	0.348	0.172	0.566	0.012	
L	1.0	0.120	0.394	0.194	0.635	0.014	
S	2.0	0.178	0.585	0.279	0.915	0.024	1.15
	2.4	0.199	0.652	0.307	1.009	0.027	
	3.0	0.227	0.744	0.347	1.137	0.032	
C	4.0	0.270	0.885	0.405	1.328	0.040	1.20
	6.0	0.347	1.138	0.505	1.658	0.055	
X	8.0	0.417	1.367	0.593	1.945	0.070	1.25
	10.0	0.482	1.580	0.672	2.205	0.084	1.30
	12.4	0.555	1.822	0.759	2.491	0.101	
Ku	15.0	0.631	2.070	0.847	2.779	0.118	1.35
	18.0	0.715	2.345	0.941	3.089	0.139	
K	20.0	0.769	2.522	1.001	3.285	0.152	1.40
	22.0	0.821	2.695	1.059	3.475	0.165	
	24.0	0.873	2.865	1.115	3.659	0.178	
	26.5	0.937	3.073	1.183	3.881	0.194	
Ka	28.0	0.974	3.196	1.223	4.011	0.204	1.45
	30.0	1.024	3.358	1.274	4.181	0.217	
	32.0	1.072	3.518	1.325	4.347	0.230	
	34.0			1.375	4.510	0.243	
	36.0			1.423	4.669	0.256	
V	40.0			1.518	4.980	0.281	1.50
	45.0			1.633	5.356	0.313	
	50.0			1.743	5.719	0.344	

Cable Construction

Inner Conductor:

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

Dielectric:

135: Boundless PTFE

520: PTFE

520x: Foamed FEP

620: Foam PE

Outer Conductor: 520, 620, 135, GrooveTube® Cu

520x Ag plated Cu Foil/Braid

Standard Finish:

520, 520x, 620, 135: Polyolefin over Metallic Braid

Available Connectors

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

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

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

(maximum frequency dependent on cable; other connectors available)

Specifications

Frequency		135		VSWR	Conn. Loss dB
		Attenuation			
GHz	Band	dB/ft	dB/m		
0.3	UHF	0.032	0.106	1.15:1	0.006
0.5		0.042	0.137		0.009
0.8		0.053	0.175		0.012
1.0	L	0.060	0.196		0.014
2.0	S	0.086	0.283	1.20:1	0.024
2.4		0.096	0.311		0.027
3.0		0.107	0.351		0.032
4.0	C	0.125	0.410	1.30:1	0.040
6.0		0.156	0.511		0.055
8.0	X	0.183	0.599		0.070
10.0		0.207	0.678	1.35:1	0.084

Specifications

Frequency		620		VSWR	Conn. Loss dB
		Attenuation			
GHz	Band	dB/ft	dB/m		
0.3	UHF	0.054	0.179	1.10	0.006
0.5		0.071	0.234		0.009
0.8		0.092	0.301		0.012
1.0	L	0.103	0.339		0.014
2.0	S	0.151	0.497	1.15	0.024
2.4		0.168	0.550		0.027
3.0		0.190	0.625		v0.032
4.0	C	0.225	0.737		0.04
6.0		0.285	0.935	1.20	0.055
8.0	X	0.338	1.111	1.25	0.07
10.0		0.388	1.272		0.084
12.4			0.443	1.454	1.30
15.0	Ku	0.499	1.639	1.35	0.118
18.0		0.561	1.841	1.40	0.139
20.0	K	0.601	1.971		0.152
22.0		0.639	2.097		0.165
24.0		0.677	2.220		0.178
26.5		0.722	2.370	1.45	0.194
28.0	Ka	-	-		0.204
30.0		-	-		0.217
32.0		-	-		0.23



NEXT PHASE™

NextPhase™ Cables to 40 GHz

General Purpose Low Loss

- Low Loss
- Low VSWR
- Excellent Shielding Effectiveness
- Triple Shielded
- FEP Jacket
- Wide Variety of Connectors

The NextPhase™ low loss cable line is designed for general purpose interconnects demanding low loss and triple shielding. Applications include ATE, ground- and air-based EW, and many others where reasonable cost and long lengths are required. A wide variety of diameters are available to accommodate a wide range of design requirements in terms of bend radii, weight and power performance. A wide variety of connectors are available.



Electrical Data

Maximum Frequency:

912 & 916: 40.0 GHz
919: 24.0 GHz
930: 18.0 GHz
945: 12.0 GHz

Impedance:

50 Ω nominal

Propagation Velocity:

912: 75.5% nominal
916: 76.0% nominal
919: 76.5% nominal
930: 77.0% nominal
945: 78.0% nominal

Time Delay:

912: 1.35 ns/ft (4.43 ns/m)
916: 1.34 ns/ft (4.40 ns/m)
919: 1.33 ns/ft (4.36 ns/m)
930: 1.32 ns/ft (4.33 ns/m)
945: 1.31 ns/ft (4.30 ns/m)

Shielding Effectiveness:

-90 dB minimum (cable only)

Dielectric Withstanding Voltage:

912: 5.0 kV at 60 Hz
916: 7.0 kV at 60 Hz
919: 10.0 kV at 60 Hz
930: 15.0 kV at 60 Hz
945: 20.0 kV at 60 Hz

Capacitance:

912 & 919: 26.7 pF/ft (87.6 pF/m)
916: 26.9 pF/ft (88.3 pF/m)
930: 26.2 pF/ft (86.0 pF/m)
945: 26.0 pF/ft (85.2 pF/m)

Mechanical Data

Finished Outer Diameter:

912: 0.126 in (0.320 cm)
916: 0.160 in (0.406 cm)
919: 0.205 in (0.521 cm)
930: 0.305 in (0.775 cm)
945: 0.450 in (11.43 cm)

Static Bend Radius:

912: 0.6 in (1.524 cm)
916: 0.9 in (2.286 cm)
919: 1.1 in (2.794 cm)
930: 1.8 in (4.572 cm)
945: 2.5 in (6.350 cm)

Weight with Standard Jacket/Armor:

912: 0.02 lbs/ft (0.030 kg/m)
916: 0.04 lbs/ft (0.060 kg/m)
919: 0.05 lbs/ft (0.074 kg/m)
930: 0.09 lbs/ft (0.134 kg/m)
945: 0.20 lbs/ft (0.30 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.

Cable Construction

Inner Conductor: Solid Ag-plated Cu, 945 stranded Solid Ag-plated Cu
Dielectric: PTFE Tape
Outer Conductor: Ag-plated Cu Flat Braid/
Polyamide Foil/Ag-plated Cu Round Braid
Standard Finish: FEP
(a wide variety of other protective finishes and armors available)

Available Connectors

912: 2.4mm, 2.92mm, 3.5mm, SMA, TNC, Type N
916: 1.85 mm, 2.4 mm, 2.9mm, 3.5mm, SMA, TNC, Type N
919: 3.5mm, BNC, SMA, TNC, Type N
930: 7-16 DIN, SMA, TNC, Type N
945: TNC, Type N
(maximum frequency dependent on cable; other connectors available)

Specifications

Frequency		912 Series			916 Series			919 Series			930 Series			945 Series			Conn. Loss dB	
GHz	Band	Attenuation		VSWR	Attenuation		VSWR	Attenuation		VSWR	Attenuation		VSWR	Attenuation		VSWR		
		dB/m	dB/m		dB/ft	dB/m		dB/ft	dB/m		dB/ft	dB/m		dB/ft	dB/m			
0.3	UHF	0.092	0.302	1.10	0.065	0.212	1.10	0.044	0.145	1.10	0.031	0.103	1.10	0.020	0.066	1.10	0.006	
0.5		0.119	0.391		0.084	0.275		0.057	0.188		0.041	0.133		0.026	0.085		0.009	
0.8		0.152	0.497		0.107	0.351		0.073	0.240		0.052	0.170		0.034	0.122		0.012	
1.0	L	0.170	0.558		0.120	0.394		0.082	0.269		0.058	0.190		0.038	0.125		0.014	
2.0	S	0.243	0.798	1.15	0.173	0.566	1.15	0.118	0.387	1.20	0.083	0.272	1.15	0.056	0.184	1.15	0.024	
2.4		0.267	0.877		0.190	0.623		0.130	0.426		0.091	0.299		0.062	0.203		0.027	
3.0		0.300	0.985		0.214	0.702		0.146	0.479		0.103	0.337		0.070	0.230		0.032	
4.0	C	0.349	1.146	1.20	0.250	0.819	1.25	0.170	0.559	1.25	0.119	0.391	1.20	0.083	0.272	1.20	0.040	
6.0		0.433	1.420		0.311	1.020		0.212	0.696		0.148	0.486		0.106	0.348		0.055	
8.0	X	0.505	1.656	1.25	0.364	1.195	1.20	0.281	0.815		0.173	0.568		0.126	0.413		0.070	
10.0		0.569	1.867	1.30	0.412	1.352	1.25	0.248	0.922	1.30	0.195	0.641	1.25	0.147	0.482	1.25	0.084	
12.4		0.639	2.098	1.35	0.465	1.526		0.317	1.040		0.220	0.721	1.30	0.166	0.545	1.30	0.101	
15.0	Ku	0.710	2.328		0.518	1.699		0.353	1.158		0.244	0.800					0.118	
18.0		0.785	2.574		0.575	1.886	1.35	0.392	1.285	1.35	0.270	0.886	1.35				0.139	
20.0	K	0.832	2.729	1.35	0.611	2.004		0.416	1.365									0.152
22.0		0.877	2.877		0.646	2.118		0.440	1.442									0.165
24.0		0.921	3.021		0.679	2.228	1.35	0.462	1.517	1.45							0.178	
26.5	0.973	3.193	1.40	0.720	2.362	-		-								0.194		
28.0	Ka	1.004		3.294	0.744	2.439		-	-								0.204	
30.0		1.044		3.425	0.774	2.541	-	-								0.217		
32.0		1.083	3.553	0.805	2.640	-	-								0.230			
34.0	1.121	3.677	1.45	0.834	2.737	1.40	-	-								0.243		
36.0	1.158	3.799		0.863	2.833		-	-								0.256		
40.0	1.230	4.036		0.920	3.018		1.45	-	-								0.281	

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

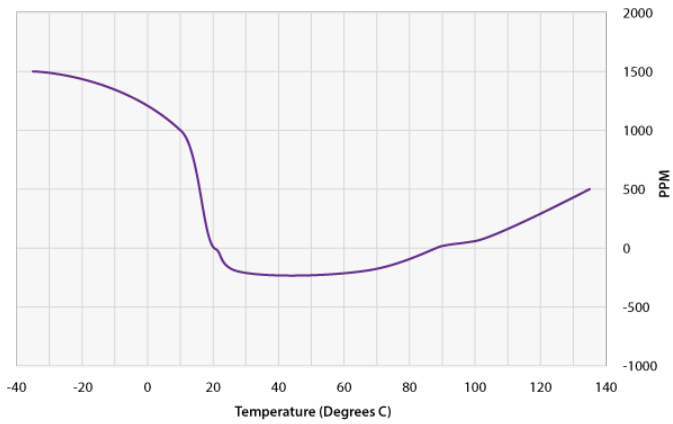
Attenuation at any frequency = 912: $(0.1654 \times \sqrt{\text{freq GHz}}) + (0.0046 \times \text{freq GHz})$

916: $(0.11522 \times \sqrt{\text{freq GHz}}) + (0.00478 \times \text{freq GHz})$

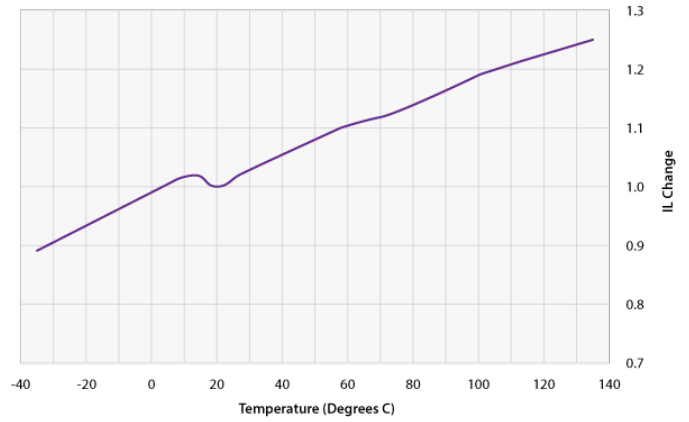
919: $(0.07882 \times \sqrt{\text{freq GHz}}) + (0.00318 \times \text{freq GHz})$

930: $(0.05621 \times \sqrt{\text{freq GHz}}) + (0.00175 \times \text{freq GHz})$

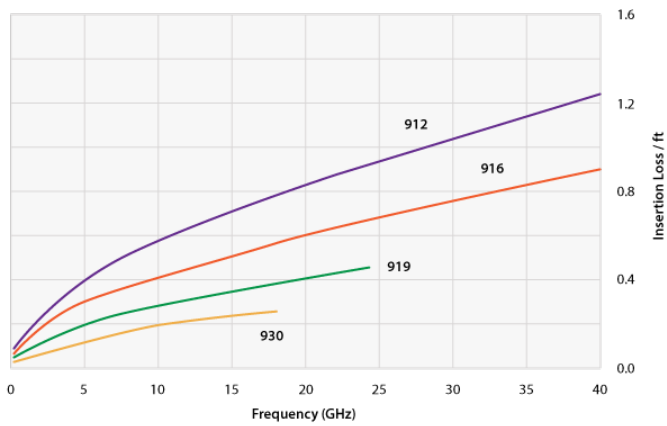
Phase Change vs. Temperature



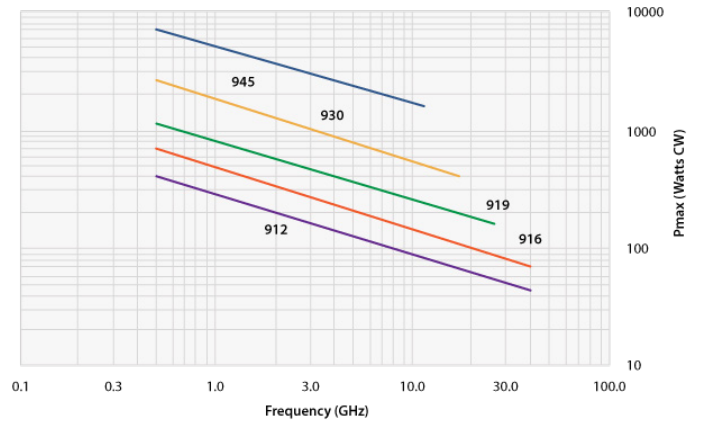
Insertion Loss vs. Temperature



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.



NextPhase™ Stranded Conductor

The NextPhase™ low loss stranded cable line is designed for general purpose interconnects demanding low loss and triple shielding. Applications include ATE, ground- and air-based EW, and many others where reasonable cost and long lengths are required. A wide variety of diameters are available to accommodate a wide range of design requirements in terms of bend radii, weight and power performance.

Electrical Data

Maximum Frequency:

912S: 50.0 GHz
916S: 40.0 GHz
919S: 28.0 GHz
930S: 18.0 GHz

Impedance:

50 Ω nominal

Propagation Velocity:

912S, 916S: 74.0% nominal
919S: 75.0% nominal
930S: 77.0% nominal

Time Delay:

912S, 919S, 930S: 1.35 ns/ft (4.43 ns/m)
916S: 1.33 ns/ft (4.36 ns/m) Shielding

Shielding Effectiveness:

-90 dB minimum (cable only)

Dielectric Withstanding Voltage:

5.0 kV at 60 Hz

Capacitance:

912S: 27.0 pF/ft (88.6 pF/m)
916S: 26.9 pF/ft (88.3 pF/m)
919S, 930S: 26.7 pF/ft (87.6 pF/m)

Mechanical Data

Cable Construction

Inner Conductor: Stranded Ag-plated Cu

Outer Conductor: Ag-plated Cu Flat Braid/
Polyamide Foil/Ag-plated Cu Round Braid

Standard Finish: FEP

Dielectric: PTFE Tape

Finished Outer Diameter:

912S: 0.124 in (0.314 cm)
916S: 0.160 in (0.406 cm)
919S: 0.205 in (0.521 cm)
930S: 0.305 in (0.775 cm)

Static Bend Radius:

912S: 0.6 in (1.524 cm)
916S: 0.9 in (2.286 cm)
919S: 1.1 in (2.794 cm)
930S: 1.8 in (4.572 cm)

Weight:

912S: 0.02 lbs/ft (0.030 kg/m)
916S: 0.04 lbs/ft (0.060 kg/m)
919S: 0.05 lbs/ft (0.074 kg/m)
930S: 0.09 lbs/ft (0.134 kg/m)

Available Connectors:

912S, 916S: SMA, 2.4mm, 2.92mm, 3.5mm,
919S, 930S: SMA, TNC, Type N

Operating Temp. Range:

-85 to 392° F (-65 to 200° C)

Specifications

Frequency		912S Series		916S Series		919S Series		930S Series		Conn Loss dB	VSWR
GHz	Band	Attenuation		Attenuation		Attenuation		Attenuation			
		dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m		
UHF	0.3	0.100	0.328	0.069	0.227	0.046	0.152	0.031	0.101	0.006	1.10
	0.5	0.130	0.425	0.090	0.295	0.060	0.197	0.040	0.132	0.009	
	0.8	0.165	0.541	0.114	0.375	0.077	0.251	0.052	0.169	0.012	
L	1.0	0.185	0.607	0.128	0.420	0.086	0.282	0.058	0.190	0.014	
S	2.0	0.265	0.870	0.183	0.600	0.124	0.406	0.084	0.276	0.024	1.20
	2.4	0.292	0.957	0.201	0.660	0.136	0.447	0.093	0.305	0.027	
	3.0	0.328	1.076	0.226	0.742	0.153	0.503	0.105	0.344	0.032	
C	4.0	0.382	1.252	0.263	0.862	0.179	0.587	0.123	0.404	0.04	1.25
	6.0	0.474	1.555	0.326	1.069	0.223	0.732	0.154	0.507	0.055	
X	8.0	0.554	1.817	0.380	1.246	0.261	0.858	0.182	0.598	0.07	
	10.0	0.625	2.052	0.428	1.405	0.296	0.971	0.207	0.680	0.084	
	12.4	0.704	2.310	0.481	1.579	0.334	1.096	0.235	0.772	0.101	
Ku	15.0	0.782	2.567	0.534	1.752	0.372	1.221	0.264	0.865	0.118	1.35
	18.0	0.866	2.842	0.590	1.937	0.413	1.356	0.294	0.965	0.139	
K	20.0	0.919	3.016	0.626	2.053	0.439	1.441			0.152	
	22.0	0.970	3.183	0.660	2.165	0.464	1.523			0.165	
	24.0	1.019	3.345	0.693	2.272	0.489	1.603			0.178	
	26.5	1.079	3.540	0.732	2.402	0.518	1.699			0.194	
Ka	28.0	1.113	3.653	0.755	2.478	0.535	1.755			0.204	1.45
	30.0	1.159	3.801	0.785	2.576					0.217	
	32.0	1.203	3.946	0.814	2.672					0.23	
	34.0	1.246	4.087	0.843	2.766					0.243	
	36.0	1.288	4.225	0.871	2.857					0.256	
V	40.0	1.370	4.494	0.925	3.035					0.281	1.50
	45.0	1.468	4.816							0.313	
	50.0	1.563	5.127							0.344	



Semi-Rigid Cables to 110 GHz

Custom and Standard Designs Using CNC Bending

- Catalog or Build-to-Print
- Stable Performance
- Custom Design Services
- Precision CNC Bends
 - Sizes 0.034in (0.86mm) to .25in (6.35mm)
 - Wide Variety of Connectors

MegaPhase offers high reliability semi-rigid cable assemblies in a variety of configurations. With precision CNC bending, our customers are guaranteed consistency among multiple assemblies. MegaPhase offers custom design services complete with engineering drawings. These assemblies are MIL-DTL-17 qualified, typically with a tin-plated copper outer conductor. Applications include delay lines, switch matrices, test fixtures, instrumentation, and other integrated systems.

Electrical Data

Maximum Frequency:

SR047: 110 GHz
SR034, SR086: 50.0 GHz
SR141: 34.0 GHz
SR250: 18.0 GHz

Impedance:

50 Ω nominal

Propagation Velocity:

69% nominal

Time Delay:

1.47 ns/ft (4.82 ns/m)

Shielding Effectiveness:

-110 dB minimum (cable only)

Dielectric Withstanding Voltage:

SR034 & SR047: 2.0 kV at 60 Hz
SR086 & SR141: 5.0 kV at 60 Hz
SR250: 7.5 kV at 60 Hz

Capacitance:

9 pF/ft (95.1 pF/m)

Mechanical Data

Finished Outer Diameter:

SR034: 0.034 in (0.86 cm)	SR141: 0.141 in (0.358 cm)
SR047: 0.047 in (0.119 cm)	SR250: 0.250 in (0.635 cm)
SR086: 0.086 in (0.218 cm)	

Static Bend Radius:

SR034: 0.05 in (0.127 cm)	SR141: 0.25 in (0.635 cm)
SR047: 0.08 in (0.191 cm)	SR250: 0.50 in (1.270 cm)
SR086: 0.13 in (0.318 cm)	

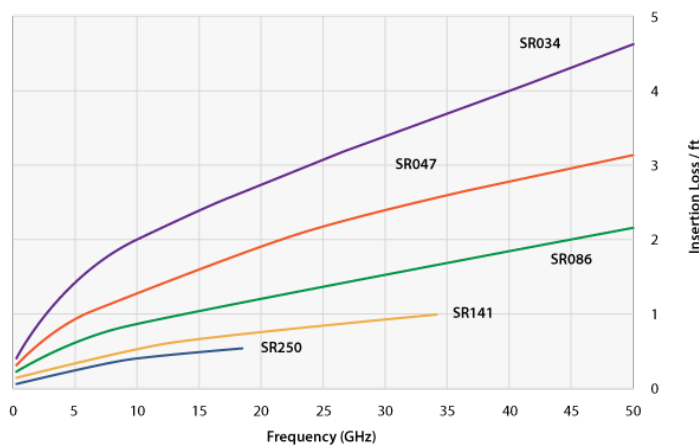
Weight with Standard Jacket/Armor:

SR034: 0.003 lbs/ft (0.004 kg/m)	SR141: 0.035 lbs/ft (0.052 kg/m)
SR047: 0.005 lbs/ft (0.007 kg/m)	SR250: 0.106 lbs/ft (0.158 kg/m)
SR086: 0.016 lbs/ft (0.024 kg/m)	

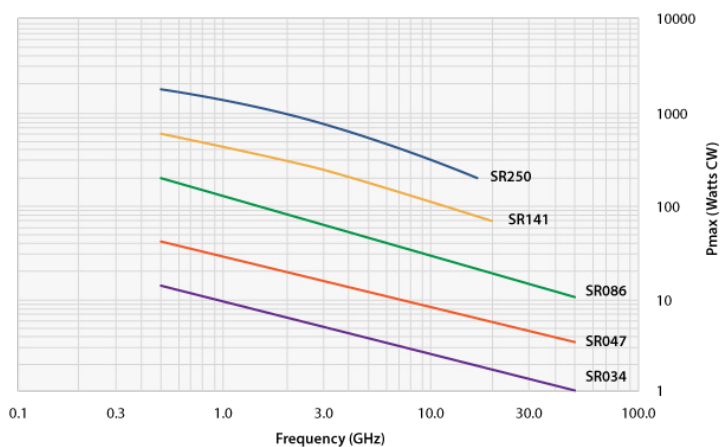
Operating Temp. Range:

SR034 & SR047: -40 to 212° F (-40 to 100° C)
SR086 & SR141: -40 to 257° F (-40 to 125° C)
SR250: -40 to 194° F (-40 to 90° C)

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.

Cable Construction

Inner Conductor:

SR034, SR047,
SR086 & SR141: Solid Ag-plated Cu-clad Steel
SR250: Solid Ag-plated Cu

Dielectric:

PTFE

Outer Conductor:

Sn-plated Cu Tube

Available Connectors

SR034: MMCX, SMA, SSMA

SR047: 1.0 mm, 2.4mm, 2.92mm, 3.5mm, SMA

SR086: 2.4mm, 2.92mm, 3.5mm, MMCX, OSP, OSSP, SMA, SMB, SMC, SMP, SSMA, SSMB, SSMP, TNC, Type N, ZMA

SR141: 2.92mm, 3.5mm, SMA, TNC, Type N

SR250: SMA, Type N

(maximum frequency dependent on cable; other connectors available)

Specifications

Frequency		SR034		SR047		SR086		SR141		SR250		Conn. Loss dB	VSWR
		Attenuation		Attenuation		Attenuation		Attenuation		Attenuation			
GHz	Band	dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m	dB/ft	dB/m		
0.3	UHF	0.327	1.072	0.217	0.713	0.117	0.384	0.063	0.207	0.039	0.127	0.006	1.10
0.5		0.423	1.387	0.281	0.923	0.153	0.501	0.083	0.271	0.051	0.168	0.009	
0.8		0.536	1.758	0.357	1.172	0.195	0.641	0.106	0.349	0.066	0.217	0.012	
1.0	L	0.600	1.969	0.400	1.312	0.220	0.722	0.120	0.394	0.075	0.246	0.014	
2.0	S	0.853	2.798	0.570	1.870	0.319	1.048	0.176	0.577	0.112	0.366	0.024	1.15
2.4		0.963	3.071	0.626	2.053	0.353	1.157	0.195	0.639	0.124	0.407	0.027	
3.0		1.049	3.441	0.702	2.303	0.399	1.308	0.221	0.726	0.142	0.465	0.032	
4.0	C	1.215	3.986	0.814	2.672	0.468	1.535	0.261	0.856	0.169	0.553	0.040	
6.0		1.496	4.909	1.005	3.298	0.588	1.930	0.331	1.087	0.217	0.711	0.055	
8.0	X	1.736	5.695	1.168	3.833	0.694	2.278	0.394	1.292	0.260	0.854	0.070	1.20
10.0		1.949	6.394	1.314	4.311	0.791	2.595	0.451	1.481	0.301	0.987	0.084	1.25
12.4		2.180	7.151	1.472	4.830	0.898	2.947	0.516	1.693	0.347	1.138	0.101	
15.0	Ku	2.407	7.899	1.629	5.344	1.007	3.304	0.582	1.909	0.394	1.293	0.118	1.30
18.0		2.649	8.691	1.769	5.891	1.125	3.691	0.654	2.145	0.446	1.464	0.139	
20.0	K	2.800	9.187	1.900	6.234	1.200	3.937	0.700	2.297	-	-	0.152	1.30
22.0		2.944	9.660	2.000	6.562	1.273	4.176	0.745	2.444	-	-	0.165	
24.0		3.083	10.115	2.096	6.878	1.344	4.408	0.789	2.588	-	-	0.178	
26.5		3.249	10.660	2.212	7.257	1.430	4.691	0.842	2.764	-	-	0.194	
28.0	Ka	3.346	10.977	2.279	7.478	1.480	4.856	0.874	2.867	-	-	0.204	1.40
30.0		3.471	11.387	2.366	7.764	1.546	5.073	0.915	3.003	-	-	0.217	
32.0		3.592	11.785	2.451	8.043	1.611	5.286	0.956	3.136	-	-	0.230	
34.0		3.710	12.173	2.534	8.314	1.675	5.495	0.996	3.268	-	-	0.243	1.45
36.0		3.286	12.551	2.615	8.579	1.738	5.701	-	-	-	-	0.256	
40.0		4.048	13.281	2.771	9.091	1.860	6.103	-	-	-	-	0.281	
45.0	V	4.313	14.150	2.957	9.703	2.009	6.591	-	-	-	-	0.313	1.50
50.0		4.565	14.979	3.136	10.288	2.153	7.064	-	-	-	-	0.344	1.55
60.0		-	-	3.473	11.393	-	-	-	-	-	-	0.406	
67.0		-	-	3.695	12.124	-	-	-	-	-	-	0.450	
75.0		-	-	3.939	12.924	-	-	-	-	-	-	0.499	
80.0	W	-	-	4.086	13.407	-	-	-	-	-	-	0.530	1.60
90.0		-	-	4.371	14.341	-	-	-	-	-	-	0.591	
100.0		-	-	4.644	15.238	-	-	-	-	-	-	0.652	
110.0		-	-	4.908	16.102	-	-	-	-	-	-	0.713	

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

Attenuation at any frequency = SR034: $(0.59248 \times \sqrt{\text{freq GHz}}) + (0.00752 \times \text{freq GHz})$

SR047: $(0.39284 \times \sqrt{\text{freq GHz}}) + (0.00716 \times \text{freq GHz})$

SR086: $(0.20608 \times \sqrt{\text{freq GHz}}) + (0.01392 \times \text{freq GHz})$

SR141: $(0.10948 \times \sqrt{\text{freq GHz}}) + (0.01052 \times \text{freq GHz})$

SR250: $(0.06569 \times \sqrt{\text{freq GHz}}) + (0.00931 \times \text{freq GHz})$



MegaForm™ Cables to 20 GHz

Hand-Formable Jumper Cables

- Low VSWR
- Alternate to Semi-Rigid
- Easy Installation
- Tin-Dipped Copper Braid Outer Conductor
- Bends in Place
- .086in (2.18mm), and .141in (3.5mm)

MegaForm™ hand-formable jumper cables are ideal for “on the fly” bending when semi-rigid cables are not practical. These cable assemblies can be hand formed in-place and eliminate the cost of design and drawings which semi-rigid cables would require. Applications include cabinet interconnects, ATE, and systems integration. A wide variety of connectors are available.

Electrical Data

Maximum Frequency:
CC086, CC141: 20.0 GHz

Impedance:
50 Ω nominal

Propagation Velocity:
69.5% nominal

Time Delay:
1.46 ns/ft (4.79 ns/m)

Shielding Effectiveness:
-110 dB minimum (cable only)

Dielectric Withstanding Voltage:
CC086: 1.5 kV at 60 Hz
CC141: 1.9 kV at 60 Hz

Capacitance:
29.5 pF/ft (96.8 pF/m)

Mechanical Data

Finished Outer Diameter:
CC086: 0.085 in (0.216 cm)
CC141: 0.139 in (0.353 cm)

Static Bend Radius:
CC086: 0.125 in (0.3175 cm)
CC141: 0.43 in (1.092 cm)

Weight with Standard Jacket/Armor:
CC086: 0.01 lbs/ft (0.018 kg/m)
CC141: 0.02 lbs/ft (0.030 kg/m)

Operating Temp. Range:
-85 to 392° F (-65 to 200° C)

Cable Construction

Inner Conductor:	Solid Ag-plated C-clad Steel
Dielectric:	PTFE
Outer Conductor:	Metallic Alloy Saturated Cu Braid (Pb Free)

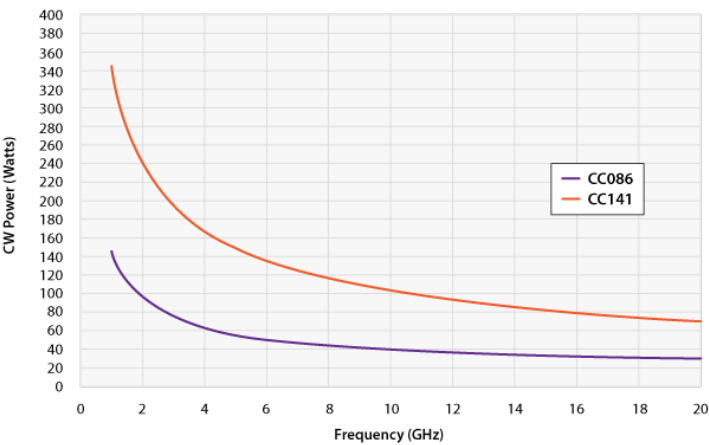
Available Connectors

CC086: 2.4 mm, 2.92mm, 3.5mm, MMCX, OSP, OSSP, SMA, SMB, SMC, SMP, SSMA, SSMB, SSMP, TNC, Type N, ZMA

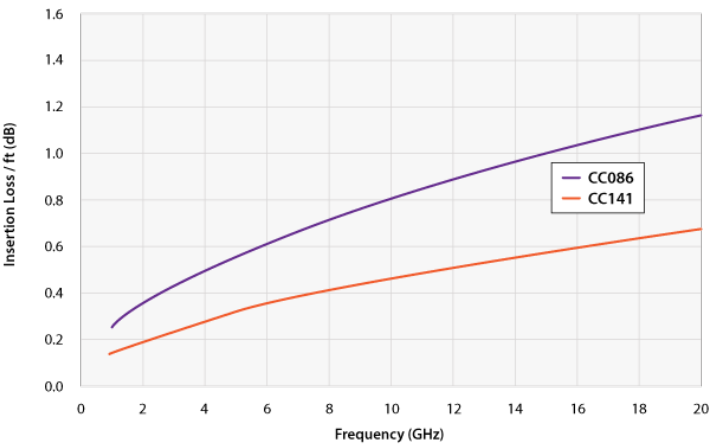
CC141: 2.9mm, 3.5mm, SMA, TNC, Type N

(maximum frequency dependent on cable; other connectors available)

Cable CW Power Handling



Insertion Loss



Specifications

Frequency		CC086		CC141		Conn Loss dB	VSWR
		Attenuation		Attenuation			
GHz	Band	dB/ft	dB/m	dB/ft	dB/m		
0.3	UHF	0.117	0.384	0.063	0.206	0.006	1.10
0.5		0.153	0.501	0.082	0.270	0.009	
0.8		0.195	0.641	0.106	0.348	0.012	
1.0	L	0.220	0.722	0.120	0.394	0.014	1.15
2.0	S	0.319	1.047	0.177	0.579	0.024	
2.4		0.352	1.156	0.196	0.643	0.027	
3.0		0.398	1.307	0.223	0.731	0.032	
4.0	C	0.467	1.533	0.264	0.865	0.040	
6.0		0.587	1.927	0.336	1.102	0.055	
8.0	X	0.693	2.273	0.400	1.314	0.070	1.20
10.0		0.789	2.588	0.460	1.510	0.084	1.25
12.4		0.896	2.938	0.527	1.730	0.101	1.30
15.0	Ku	1.004	3.293	0.596	1.956	0.118	
18.0		1.121	3.677	0.672	2.203	0.139	1.35
20.0	K	1.195	3.922	0.720	2.362	0.152	

Note: Typical Insertion Loss dB = (Attenuation)(Length) +2(Conn. Loss)
Attenuation at any frequency =
CC086: $(0.20638 \times \sqrt{\text{freq GHz}}) + (0.1362 \times \text{freq GHz})$
CC141: $(0.10819 \times \sqrt{\text{freq GHz}}) + (0.01181 \times \text{freq GHz})$



JumpShot™ Cables to 18 GHz

Low Cost Jumper Cables for Systems Integration



- Replacement for RG402 and RG405
- Cost Effective
- Ultra-Flexible
- Double Shielded Outer Conductor
- Blue FEP Jacket
- .086in (1.2mm) and .141in (2.18mm) Diameters

The MegaPhase JumpShot™ is an easily installable cable designed for fixed installations such as ATE, switch matrix, and board fixtures where multiple flexures and mating cycles are not anticipated. This flexible alternative to semi-rigid RG402 and RG405 feature a small diameter and great flexibility through 18 GHz. A wide variety of connectors are available.

Electrical Data

Maximum Frequency:
18.0 GHz

Impedance:
50 Ω nominal

Propagation Velocity:
70% nominal

Time Delay:
1.47 ns/ft (4.82 ns/m)

Shielding Effectiveness:
-90 dB minimum (cable only)

Dielectric Withstanding Voltage:
B08: 1.0 kV at 60 Hz
B14: 3.0 kV at 60 Hz

Capacitance:
29 pF/ft (95.1 pF/m)

Mechanical Data

Finished Outer Diameter:
B08: 0.104 in (0.264 cm)
B14: 0.163 in (0.414 cm)

Static Bend Radius:
B08: 0.5 in (1.270 cm)
B14: 0.8 in (2.032 cm)

Weight with Standard Jacket/Armor:
B08: 0.01 lbs/ft (0.021 kg/m)
B14: 0.03 lbs/ft (0.048 kg/m)

Operating Temp. Range:
-85 to 392° F (-65 to 200° C)
Above 185° F (85° C) use "T" designation

Cable Construction

Inner Conductor: Solid Ag-plated
Cu-clad Steel

Dielectric: PTFE

Outer Conductor: Spiral Ag-plated Cu strip/
Ag-plated Cu Round Braid

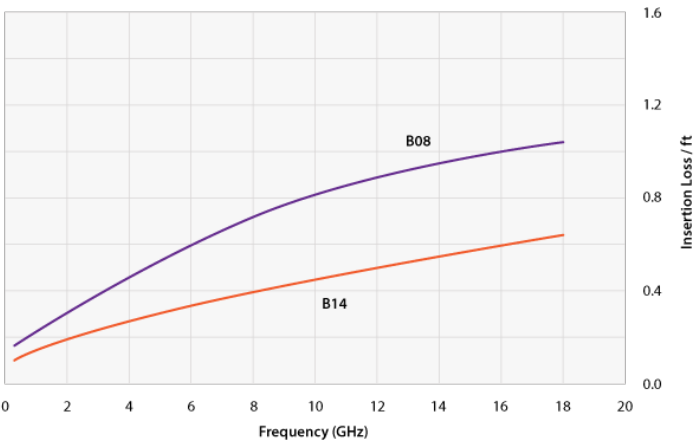
Standard Finish: FEP
(a wide variety of other protective finishes
and armors available)

Available Connectors

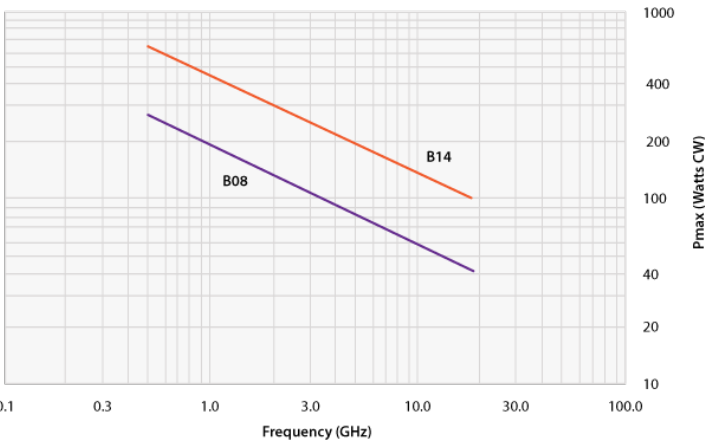
B08: 3.5mm, BNC, MMCX, OSP, OSSP, SMA, SMB, SMC, SMP, SSMA, SSMB, SSMP, TNC, Type N, ZMA

B14: 3.5mm, BNC, SMA, TNC, Type N
(maximum frequency dependent on cable; other connectors available)

Insertion Loss



Cable CW Power Handling



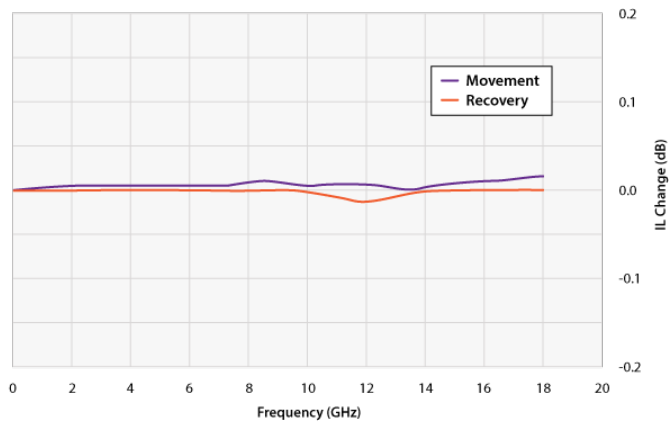
Note: Data at ambient temperature and sea level. Power handling of a cable assembly is also connector dependent and includes variables such as altitude, temperature and system VSWR. See website for connector power handling standards, including altitude, temperature and VSWR derating.

Specifications

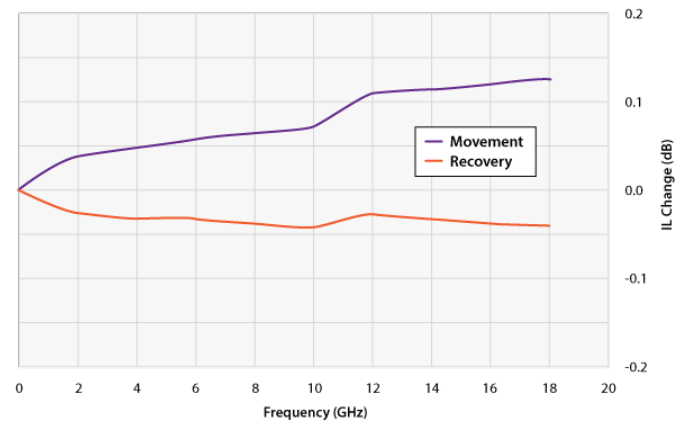
Frequency		B08 Series		B14 Series		Conn Loss dB	VSWR
		Attenuation		Attenuation			
GHz	Band	dB/ft	dB/m	dB/ft	dB/m		
0.3	UHF	0.124	0.406	0.070	0.228	0.006	1.10
0.5		0.161	0.527	0.091	0.297	0.009	
0.8		0.205	0.672	0.116	0.379	0.012	
1.0	L	0.230	0.755	0.130	0.427	0.014	
2.0	S	0.331	1.085	0.188	0.616	0.024	1.15
2.4		0.364	1.194	0.207	0.679	0.027	
3.0		0.410	1.345	0.233	0.765	0.032	
4.0	C	0.478	1.568	0.273	0.895	0.040	1.20
6.0		0.595	1.954	0.341	1.120	0.055	
8.0	X	0.697	2.288	0.401	1.315	0.070	1.25
10.0		0.789	2.589	0.455	1.493	0.084	
12.4			0.890	2.920	0.515	1.689	0.101
15.0	Ku	0.991	3.252	0.575	1.887	0.118	
18.0		1.100	3.609	0.640	2.100	0.139	1.35

Note: Typical Insertion Loss dB = (Attenuation)(Length) +2(Conn. Loss)
Attenuation at any frequency =
B08: $(0.22097 \times \sqrt{\text{freq GHz}}) + (0.00903 \times \text{freq GHz})$
B14: $(0.12357 \times \sqrt{\text{freq GHz}}) + (0.00643 \times \text{freq GHz})$

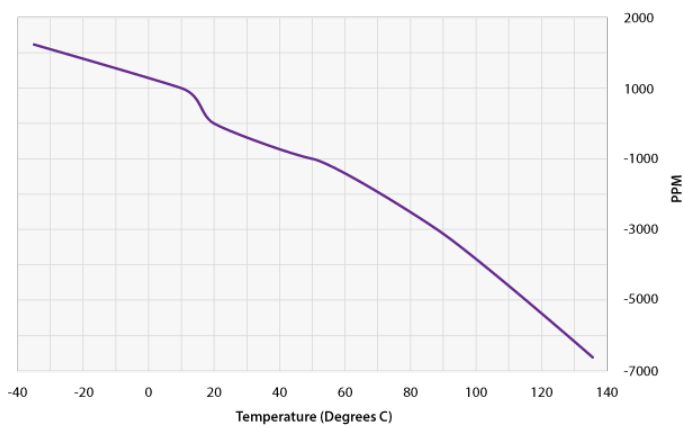
B08 Insertion Loss vs. Temperature



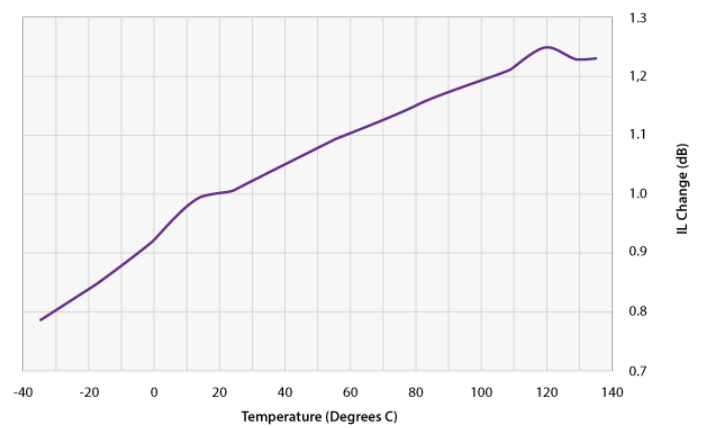
B14 Insertion Loss vs. Temperature



Phase Change vs. Temperature



Insertion Loss vs. Temperature



RF Components

N-Way Power Dividers

Highly Dependable Port-To-Port Isolation

MegaPhase offers low insertion loss solutions for both low and high power signal applications. Using lumped element or stripline circuit technology, MegaPhase standard and custom designs

deliver high port to port isolation and tight phase tolerance with optimum VSWR.

Our engineering team can complete and deliver first samples of most new designs within a very short lead time.

Power Dividers

SMA, 3.5mm, 2.92mm and 2.4mm available

0.5-40 GHz, Octave and Multi-octave Bandwidths

Low Insertion Loss & Amplitude Balance

Designed to meet MIL-DTL-23971

Environmental Screening Available



N-Way Power Dividers

MegaPhase Model No	Type	Freq (GHz)	Connectors	Isolation (dB, Min)	Insertion Loss (dB, Max)	Phase Balance (deg, Max)	Amplitude Balance (dB, Max)	VSWR Input (x:xx:1, max)	VSWR Output (x:xx:1, max)	CW Input(W) @ Load VSWR Out 1.2:1	CW Input(W) @ Load VSWR Out 2.0:1	Size
PD12-2N-3.25	2way	.5 -6GHz	N-F	17	1.3	4	0.4	1.6	1.35	30	10	3.25x2.46x.75
PD12-2S-3.25G	2way		SMA-F		1.3		0.4					3.25x2.46x.75
PD16-2S-4.25G	2way	.5-8GHz	SMA-F	16	0.8	6	0.9	1.5	1.5	20	5	4.75x1.00x.38
PD36-2S-9.2G	2way	.5-18GHz	SMA-F	14	1.9	10	0.9	1.8	1.8	20	5	4.75x1.00x.38
PD9-2S-10G	2way	2-18GHz	SMA-F	15	1	5	0.5	1.6	1.6	10	1	2.25x1.00x.38
PD4-2S-11G	2way	4-18GHz	SMA-F	18	0.6	4	0.5	1.6	1.4	10	1	1.00x1.00x.38

3 Way Power Divider

MegaPhase Model No	Type	Freq (GHz)	Connectors	Isolation (dB, Min)	Insertion Loss (dB, Max)	Phase Balance (deg, Max)	Amplitude Balance (dB, Max)	VSWR Input (x:xx:1, max)	VSWR Output (x:xx:1, max)	CW Input(W) @ Load VSWR Out 1.2:1	CW Input(W) @ Load VSWR Out 2.0:1	Size
PD9-3S-10G	3way	2-18GHz	SMA-F	15	1.3	5	1	2	1.8	10	1	4.46x2.46x.38

4 Way Power Divider

MegaPhase Model No	Type	Freq (GHz)	Connectors	Isolation (dB, Min)	Insertion Loss (dB , Max)	Phase Balance (deg,Max)	Amplitude Balance (dB, Max)	VSWR Input (x.xx:1, max)	VSWR Output (x.xx:1, max)	CW Input(W) @ Load VSWR Out 1.2:1	CW Input(W) @ Load VSWR Out 2.0:1	Size
PD16-25-4.25	4way	5-8GHz	SMA-F	15	4	8	1	1.9	1.6	20	5	6.25x2.97x.38
PD36-45-9.2G	4way	5-8GHz	SMA-F	15	4	8	1	1.9	1.6	20	5	6.25x2.97x.38
PD9-45-10G	4way	2-18GHz	SMA-F	16	1.6	6	0.8	1.8	1.5	30	10	4.0x2.5x.38
PD4-45-11G	4way	4-18GHz	SMA-F	18	1.2	10	0.8	1.8	1.6	30	10	1.98x1.46x.38

6 Way Power Divider

MegaPhase Model No	Type	Freq (GHz)	Connectors	Isolation (dB, Min)	Insertion Loss (dB , Max)	Phase Balance (deg,Max)	Amplitude Balance (dB, Max)	VSWR Input (x.xx:1, max)	VSWR Output (x.xx:1, max)	CW Input(W) @ Load VSWR Out 1.2:1	CW Input(W) @ Load VSWR Out 2.0:1	Size
PD9-65-10G	6way	2-18GHz	SMA-F	15	1.9	12	1	2	1.5	25	7	6.00x4.00x.38

8 Way Power Divider

MegaPhase Model No	Type	Freq (GHz)	Connectors	Isolation (dB, Min)	Insertion Loss (dB , Max)	Phase Balance (deg,Max)	Amplitude Balance (dB, Max)	VSWR Input (x.xx:1, max)	VSWR Output (x.xx:1, max)	CW Input(W) @ Load VSWR Out 1.2:1	CW Input(W) @ Load VSWR Out 2.0:1	Size
PD9-85-10G	8way	2-18GHz	SMA-F	16	2.4	10	1	1.9	1.5	25	7	5.75x4.46x.38

Directional Couplers

The Coupling Precision You Need For Any Environment

MegaPhase offers a range of coupling values and bandwidths to suit various applications and system needs. These can be designed for the most benign laboratory environment to the rigorous demands of Military Airborne and Space systems. Tight tolerances on coupling value, directivity and insertion loss can be achieved in various packages and connector combinations.



Narrow Band Dual Direction Couplers

Octave and Multi-octave Bands to 12 GHz

6, 10, 20 and 30dB Coupling

Type N, SMA, and 2.92mm Connectors Available

High Power, Low Insertion Loss

Designed to meet MIL-DTL-15370

Environmental Screening Available



Narrow Band Directional Couplers

Wide Bandwidth to 26.5 GHz

10, 16, 20dB Coupling

25 W Power Handling

SMA, and 2.92mm Connectors Available

Designed to meet MIL-DTL-15370 Environmental Screening Available

Wide Band Directional Couplers

Multi-Octave Bands to 18 GHz

T6, 10, 20 and 30dB Coupling

50 W Power Handling

Type N, SMA, and 2.92mm Connectors Available

Designed to meet MIL-DTL-15370

Environmental Screening Available

Narrow Band Dual Direction Couplers

MegaPhase Model No.	Type	Frequency Range (GHz)	Connectors	Coupling (dB, Nom.)	Frequency Sensitivity (dB, Max.)	Directivity (dB, Min.)	Insertion Loss (dB, Max)	Main Line VSWR	Coupled Line VSWR	Size
DDC-40N-17G	Dual 40 dB	.1 to .25	N-F	40	1	20	0.55	1.25	1.35	5.00 x 2.00 x 1.25 750 745 740
DDC-40NS-17G	Dual 40 dB		N/SMA-F							
DDC-40NB-17G	Dual 40 dB		N/BNC-F							

Wide Band Directional Couplers

MegaPhase Model No.	Type	Frequency Range (GHz)	Connectors	Coupling (dB, Nom.)	Frequency Sensitivity (dB, Max.)	Directivity (dB, Min.)	Insertion Loss (dB, Max)	Main Line VSWR	Coupled Line VSWR	Size
DC27-10S-4G	10 dB	0.3 – 8.0	SMA -F	10, 20	1.2	15	1	1.5	1.5	6.00 x .73 x .50
DC27-20S-4G	20 dB									
DC36-10S-9.2G	10 dB	0.5 – 18.5	SMA -F	10, 20	1.2	12	1.6	1.8	1.8	4.40 x .73 x .50
DC36-20S-9.2G	20 dB									
DC9-10S-10G	10 dB	2.0-18.0	SMA -F	6, 10, 15 20, 30 dB	1.2	12 10 (30 dB)	1	1.8	1.8	2.25 x .73 x .50
DC9-15S-10G	15 dB									
DC9-20S-10G	20 dB									
DC9-30S-10G	30 dB									

Narrow Band Directional Coupler

MegaPhase Model No.	Type	Frequency Range (GHz)	Connectors	Coupling (dB, Nom.)	Frequency Sensitivity (dB, Max.)	Directivity (dB, Min.)	Insertion Loss (dB, Max)	Main Line VSWR	Coupled Line VSWR	Size
DC3-3N-.32	3 dB	13-.520	NF (C-5352-dB will be dual directional)	3 to 40* (40 dB is 30 w/ internal pad)	1 to 2	18 (3-7 dB) 20 (10+ dB)	0.3 dB above theoretical coupling loss	1.3	1.3	5.80 x 2.00 x 1.00
DC3-4N-.32	4 dB									
DC3-5N-.32	5 dB									
DC3-6N-.32	6 dB									
DC3-7N-.32	7 dB									
DC3-10N-.32	10 dB									
DC3-15N-.32	15 dB									
DC3-20N-.32	20 dB									
DC3-30N-.32	30 dB									
DC7-5N-1.5G	5 dB	.38-2.7	N-F	5 to 30 dB	1	20	0.7	1.35	1.35	6.46 x 1.21 x .72 343 312 283
DC7-6N-1.5G	6 dB									
DC7-7N-1.5G	7 dB									
DC7-10N-1.5G	10 dB									
DC7-15N-1.5G	15 dB									
DC7-20N-1.5G	20 dB									
DC7-30N-1.5G	30 dB									
DC2-XS-.75G*	6, 10, 15, 20, 30 dB	0.5 – 1.0	SMA -F	6, 10, 15, 20, 30 Db *	1	20 dB (up to 4GHz)	0.6	1.3 (up to 4GHz)	1.3 (up to 4GHz)	4.40 x .73 x .50
DC4-XS-1.25G*		0.5 – 2.0								4.40 x .73 x .50
DC4-XS-1.7G*		0.7 – 2.7								4.40 x .73 x .50
DC2-XS-1.5G*		1.0 – 2.0				15 dB (up to 12GHz)		1.5 (up to 12GHz)	1.5 (up to 12GHz)	3.50 x .73 x .50
DC4-XS-2.5G*		1.0 – 4.0								3.50 x .73 x .50
DC2-XS-3G*		2.0 – 4.0				12 dB (up to 18GHz)		1.7 (up to 18GHz)	1.7 (up to 18GHz)	2.25 x .73 x .50
DC2-XS-3.9G*		2.6 – 5.2								2.25 x .73 x .50
DC2-XS-6G*		4.0 – 8.0								1.10 x .65 x .50
DC2-XS-9.5G*		7.0 – 12.4								1.10 x .65 x .50
DC2-XS-15G*		12.0 – 18.0								1.10 x .65 x .50

*NOTE: Customer to designate the coupling value needed by replacing the "X" i.e. 6 DB coupler would be DC2-6S-.75G

Connectors

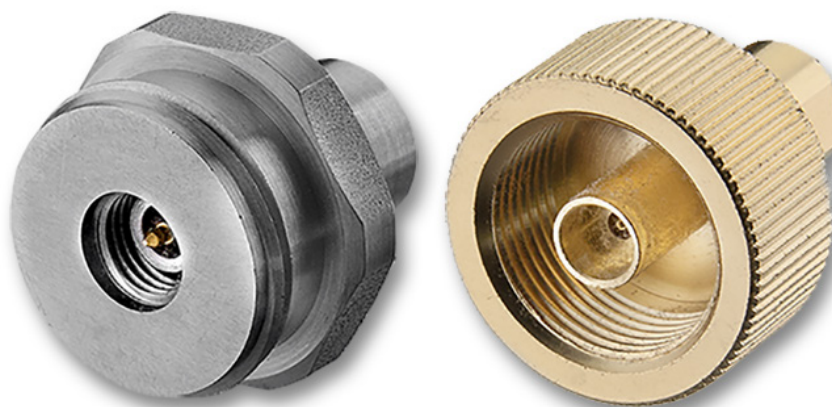
NMD Connectors

Ruggedized Test Port Connectors For Network Analyzers



Most often, NMD connectors are 3.5mm, 2.9mm, 2.4mm, and 1.85mm connectors. They include a large threaded body that is specially designed to stabilize the test port cable when attached to the front of the analyzer or test set using MegaPhase test port cables.

The NMD design allows the use of standard female cables and adapters. Since the test port connectors are male connectors, they have standard inside threads that can accommodate the female connectors. It is best to use the recommended cables with NMD connectors. NMD stands for Network Measurements Division, an outdated term for the original HP division that produced the Agilent 8510A and 8720A analyzers.





Mega8 Multi-Port Connector System

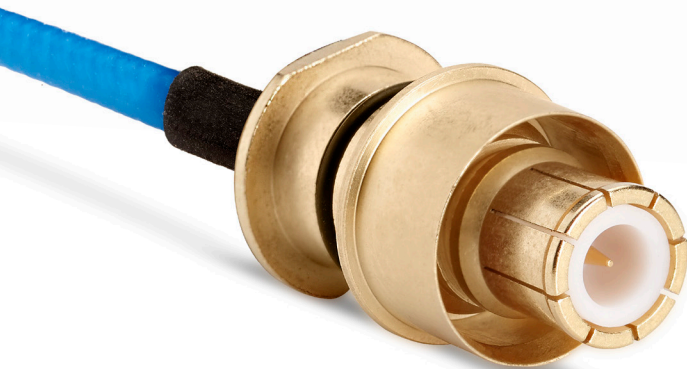
The Mega8 multi-port connector system offers high performance RF interconnects, equivalent to Times Microwave M8 connectors, for use in both fixed and rotary winged airframes. Mega8 multi-ports meet the harsh requirements of MIL-T-81490 and MIL-C-87104 and are guaranteed to mate with other leading industry brands.

Features:

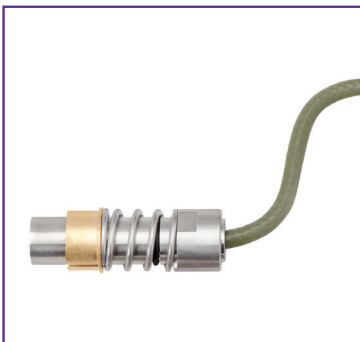
- Individually sealed connector housings and cable assemblies
- Spring loaded interfaces to ensure positive mating under the most extreme vibration
- Simple front release of individual cable assemblies
- Housings can accept a variety of cable assemblies including flexible, semi-rigid, HyperFlex™ up to .480 inches in diameter
- Available in various numbers of ports and housing configurations
- Keyed housings to allow for multiple housings on a single box
- Single jack screw housing mating feature
- Two standard plating options: Chemical Film and EN-PTFE



Plug (outboard) Harness



Receptacle (inboard) Harness



Mega8 Socket on HyperFlex™
HFX120 Cable



Insertion/Extraction Tool
(PN TOS-M8-01)

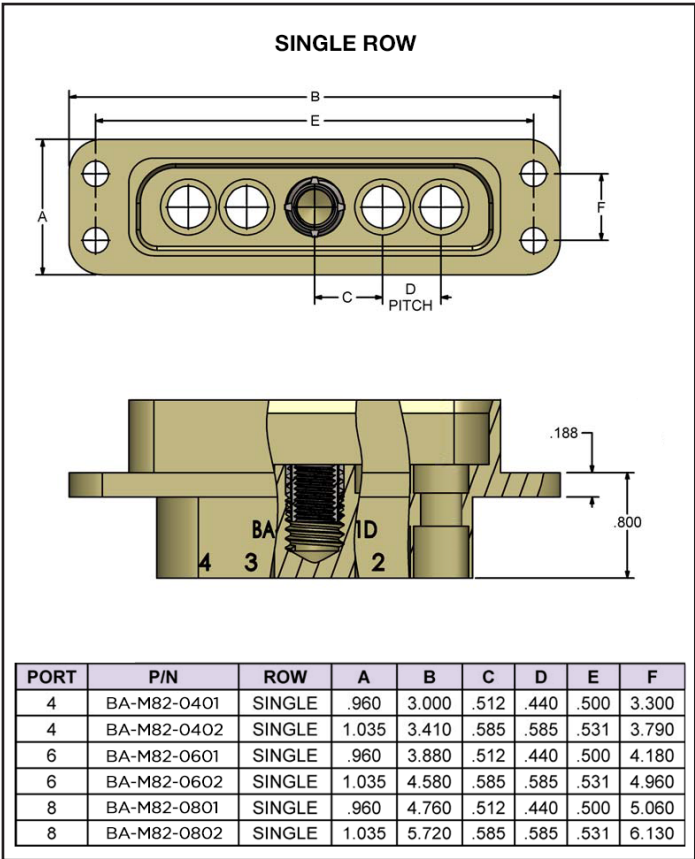
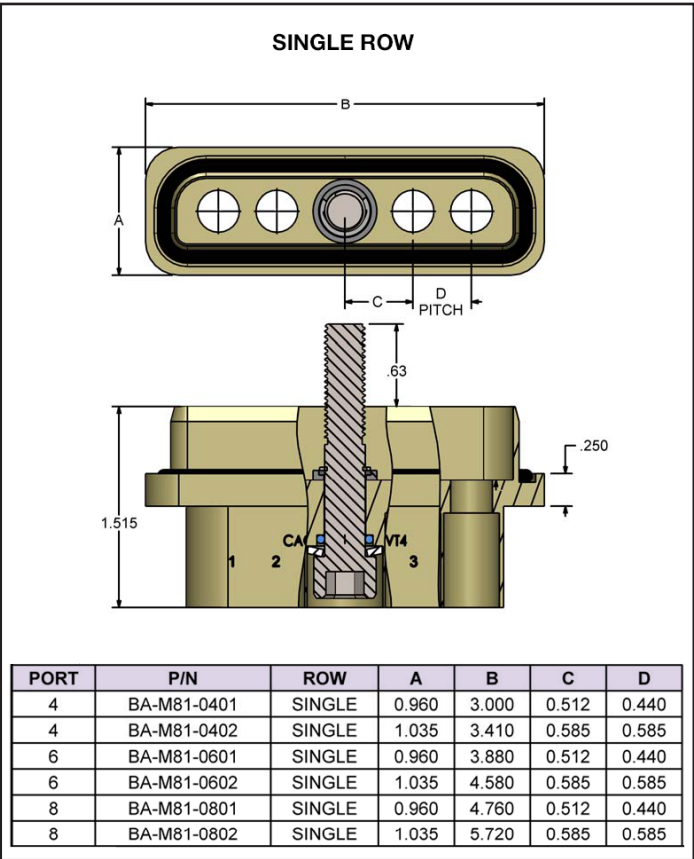


Test Adapters Available



Seal and Keying Plug Available

Single Row Mega8 Shells with .440 and .585 Spacing:



Three row, four row and special configurations are also available. Contact MegaPhase for details.

Materials

BLOCK: ALUMINUM PER 6061-T6 OR 6061-T651, SAE AMS-QQ-A-250/11, SAE AMS-QQ-A-225/8 or AMS 4027

SCREW: TOOL STEEL D2 PER ASTM A-681, UNS T30402, HEAT TREAT AND TEMPER TO 39Rc/50Rc

WASHER: SS303 PER ASTM A-582, UNS S30300, PASSIVATION PER SAE-AMS-QQ-P-35 OR SAE-AMS-2700, METHOD 1, TYP 2

GASKETS: FLUOROSILICONE PER ASTM D2000 CLASS FK OR ASTM D1418 DESIGNATION FVMQ

Finish

C: CHEMFILM: PER MIL-C-5541, MIL-DTL-5541, OR ASTM-B449 / ASTM-B921

E: PTFE: EN-PTFE PLATING NiSLIP™ 500

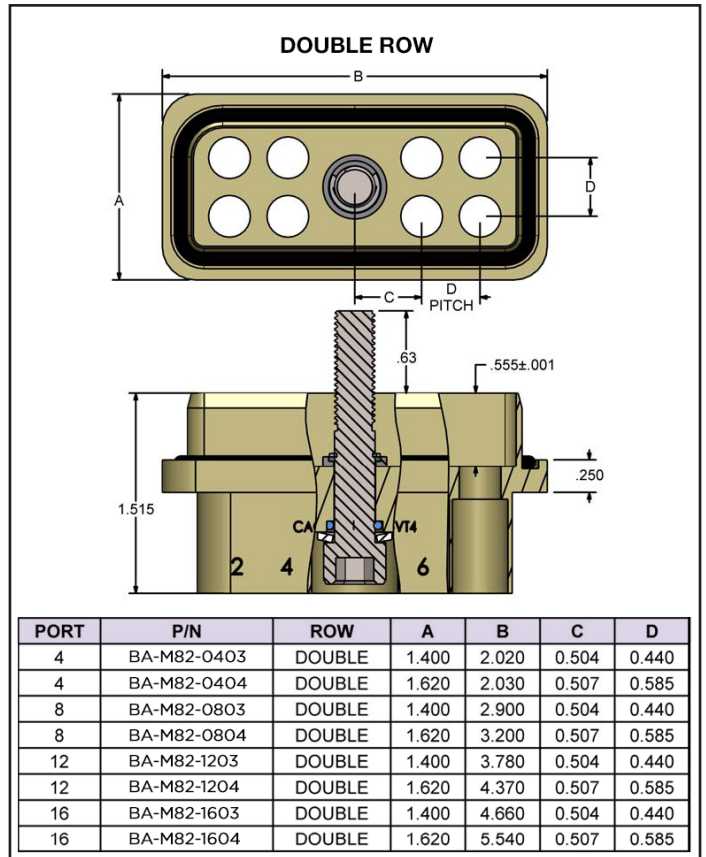
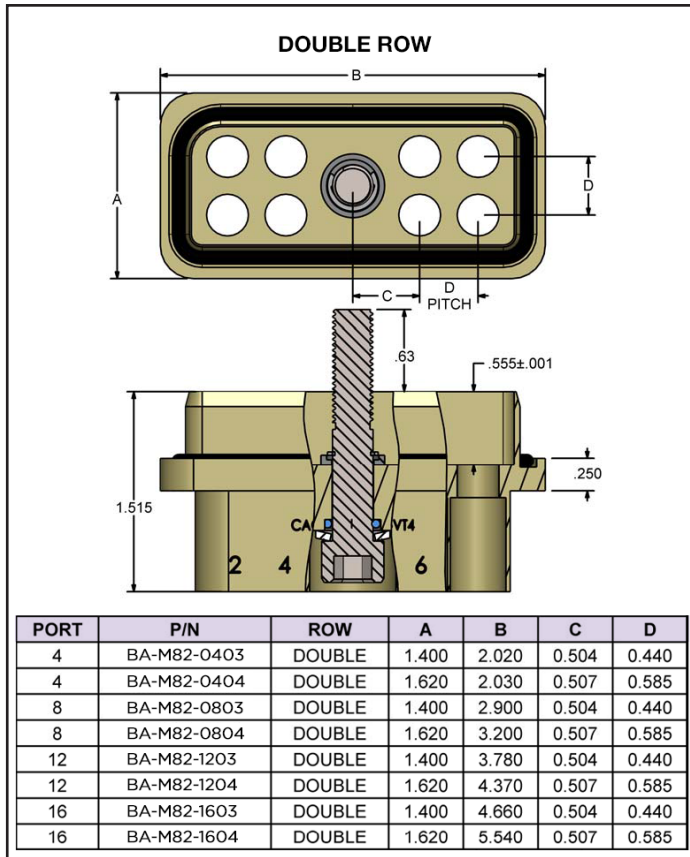
Part Number

BA-M81-xxxxY

xxxx: SEE PREFIX IN PART NUMBER COLUMN TABLE BELOW

Y: FINISH (PLATING)

Double Row Mega8 Shells with .440 and .585 Spacing:



Three row, four row and special configurations are also available. Contact MegaPhase for details.

Materials

BLOCK: ALUMINUM PER 6061-T6 OR 6061-T651, SAE AMS-QQ-A-250/11, SAE AMS-QQ-A-225/8 or AMS 4027

SCREW: TOOL STEEL D2 PER ASTM A-681, UNS T30402, HEAT TREAT AND TEMPER TO 39Rc/50Rc

WASHER: SS303 PER ASTM A-582, UNS S30300, PASSIVATION PER SAE-AMS-QQ-P-35 OR SAE-AMS-2700, METHOD 1, TYP 2

GASKETS: FLUOROSILICONE PER ASTM D2000 CLASS FK OR ASTM D1418 DESIGNATION FVMQ

Finish

C: CHEMFILM: PER MIL-C-5541, MIL-DTL-5541, OR ASTM-B449 / ASTM-B921

E: PTFE: EN-PTFE PLATING NiSLIP™ 500

Part Number

BA-M81-xxxxY

xxxx: SEE PREFIX IN PART NUMBER COLUMN TABLE BELOW

Y: FINISH (PLATING)

ZMA Quick-Disconnect Connectors

Equivalent to SMA through 18 GHz



MegaPhase ZMA Series precision coaxial connectors and adapters are ideal for applications where there are constraints on space. The bayonet-style coupling nut is easily mated and e-mated with a quarter turn, without the need for a torque wrench. For applications such as antenna systems, this connector provides excellent mechanical stability and eliminates the need for lock wiring in high vibration environments where space is limited. In test systems, this connector provides a fast and accurate method for continuous connects and disconnects.

The connectors are "keyed" with lugs in 2-, 3- or 4-lug styles. MegaPhase also offers a full line of in-series and between-series adapters, including SMA, through 18 GHz.

Electrical Data

Maximum Frequency:

TM, TV & 520: 18 GHz

A08: 12.4 GHz

Impedance: 50 Ω nominal

Maximum VSWR:

DC-8 GHz: 1.05:1

8-12.4 GHz: 1.15:1

12.4-18 GHz: 1.25:1

Max. Insertion Loss: $\text{dB} = 0.05 \times (\text{FGHz})^{1/2}$



Mechanical Data

Body: Passivated SST per ASTM A582

Bead: PTFE per ASTM-D-1710

Center Pin: Gold Plated Beryllium Copper per ASTM-B-196

Min Matching Cycles: 500

ZN™ Quick-Disconnect Connectors

Equivalent to Type N through 15 GHz



MegaPhase ZN Series precision coaxial connectors and adapters are ideal for applications where there are constraints on space. The bayonet-style coupling nut is easily mated and de-mated with a quarter turn, without the need for a torque wrench. For applications such as antenna systems, this connector provides excellent mechanical stability and eliminates the need for lock wiring in high vibration environments where space is limited. In test systems, this connector provides a fast and accurate method for continuous connects and disconnects

The connectors are "keyed" with 3- or 4- lug style. MegaPhase also offers a full line of in-series adapters through 15 GHz.

Electrical Data

Maximum Frequency:	15 GHz
Impedance:	50 Ω nominal
Maximum VSWR:	
DC-8 GHz:	1.05:1
8-12.4 GHz:	1.15:1
12.4-18 GHz:	1.25:1
Max. Insertion Loss:	$\text{dB} = 0.05 \times (\text{FGHz})^{1/2}$



Mechanical Data

Body:	Passivated SST per ASTM A582
Bead:	PTFE per ASTM-D-1710
Center Pin:	Gold Plated Beryllium Copper per ASTM-B-196
Min Matching Cycles:	500

Adapters and Accessories



Test Adapters

A Complete Kit at the Tips of Your Fingers



MegaPhase straight and right angle test adapters are designed to work with in-series and between-series connectors. Applications include defense and commercial uses, and they are ideal for probe station testing through 50 GHz. MegaPhase adapters feature linear phase slope, low SWR, and high reliability.

In-Series and Between-Series Straight Adapters

Interface		1.0mm		1.85mm		2.4mm		2.92mm		3.5mm		SMA		Type N		7mm	TNC	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	M	F
1.0mm	M	CA-1111	CA-1112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F	-	CA-1112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.85mm	M	-	-	CA-V1V	CA-V1V2	CA-V121	CA-V122	CA-V1K1	C1-V1K2	-	-	-	-	-	-	-	-	-
	F	-	-	-	CA-V1V2	CA-V121	CA-V122	CA-V1K1	C1-V1K2	-	-	-	-	-	-	-	-	-
2.4mm	M	-	-	-	-	CA-V121	CA-V122	CA-V1K1	C1-V1K2	CA-2131	CA-2132	CA-21S1	CA-21S2	CA-21N1	CA-21N2	CA-2179	-	-
	F	-	-	-	-	-	CA-V122	-	C1-V1K2	-	CA-2132	-	CA-21S2	-	CA-21N2	CA-2179	-	-
2.92mm	M	-	-	-	-	-	-	CA-V1K1	C1-V1K2	CA-2131	CA-2132	CA-21S1	CA-21S2	CA-21N1	CA-21N2	CA-2179	-	-
	F	-	-	-	-	-	-	-	C1-V1K2	-	CA-2132	-	CA-21S2	-	CA-21N2	CA-2179	-	-
3.5mm	M	-	-	-	-	-	-	-	-	CA-2131	CA-2132	CA-21S1	CA-21S2	CA-21N1	CA-21N2	CA-2179	CA-31T1	CA-31T2
	F	-	-	-	-	-	-	-	-	-	CA-2132	-	CA-21S2	-	CA-21N2	CA-2179	CA-31T1	CA-31T2
SMA	M	-	-	-	-	-	-	-	-	-	-	CA-21S1	CA-21S2	CA-21N1	CA-21N2	CA-2179	CA-31T1	CA-31T2
	F	-	-	-	-	-	-	-	-	-	-	-	CA-21S2	-	CA-21N2	CA-2179	CA-31T1	CA-31T2
Type N	M	-	-	-	-	-	-	-	-	-	-	-	-	CA-21N1	CA-21N2	CA-2179	CA-31T1	CA-31T2
	F	-	-	-	-	-	-	-	-	-	-	-	-	-	CA-21N2	CA-2179	CA-31T1	CA-31T2

In-Series and Between-Series Right Angle Adapters

Interface		2.4mm		2.92mm		SMA	
		M	F	M	F	M	F
2.4mm	M	CA-2321	CA-232	CA-23K1	CA-23K2	CA-23S1	CA-23S2
	F	-	CA-232	-	CA-23K2	-	CA-23S2
2.92mm	M	-	-	CA-23K1	CA-23K2	CA-23S1	CA-23S2
	F	-	-	-	CA-23K2	-	CA-23S2
SMA	M	-	-	-	-	CA-23S1	CA-23S2
	F	-	-	-	-	-	CA-23S2

Connector Adapter Materials	
Body and Coupling Nut	Passivated Stainless Steel per UNS No. S30300
Dielectric Bead	PTFE per ASTM-D-1710, PCTFE per ASTM-D-1430-11
Center Pin	Gold Plated Beryllium Copper per UNS No. C17300

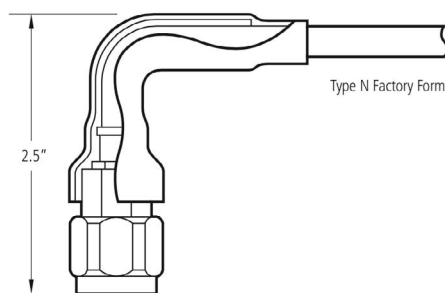
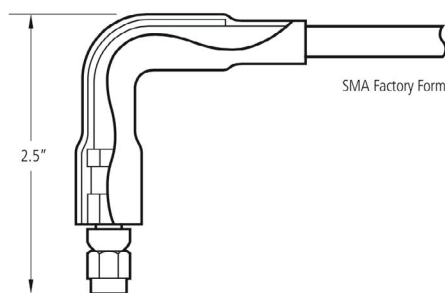
Factory Form Right Angle

Unique Permanent Right Angle Design

The Factory Form Right Angle design will extend the life of your cable assemblies without sacrificing electrical performance. MegaPhase designed the Factory Form Right Angle as a replacement for right-angled connectors and test adapters. The unique permanent curved flexure minimizes electrical reflection and loss found in right-angled connectors and adapters.

It provides the necessary space needed for cable mate/de-mate processes. This design option is available on most MegaPhase Test and Measurement and RF Cables.

Specifications



Break-Over Torque Wrenches

Essential to Preventing Overtorquing of RF Connectors

- MegaPhase break-over torque wrenches are essential for repeatable measurements in lab or production applications.
- When the preset torque value is reached the torque wrench “breaks over” indicating torque has been reached and eliminating overtightening.
- The wrenches are designed and manufactured to meet or exceed the accuracy and repeatability requirements of ISO 6789:2003 (+/- 6% of setting).
- Our slim line torque wrenches have thinner stainless steel heads which allows improved access to tightly spaced areas.



Specification

Connector		Color Coded Handle	Part No.	Coupling Torque	
Type	Code			in/lb	N/cm
7mm	79	Red	BTWs-12-750	12	135
N1	N1	Red	BTWs-12-750	12	220
3.5mm	31	Blue	BTWs-8-312	8	90
2.92mm	K1	Blue	BTWs-8-312	8	90
2.4mm	21	Blue	BTWs-8-312	8	90
1.85mm	V1	Blue	BTWs-8-312	8	90
SMA	S1	Blue	BTWs-8-312	8	56
TNC	T1	Red	BTWs-5-562	5	56
VNA Port NMD	30/K0/20/V0	Red	BTWs-8-787	5	90

Oasis® Universal & Adapter Kit

A Complete Kit at the Tips of Your Fingers



The universal cable kit contains the tools to properly terminate 3 different length cable sub-assemblies with various connector combinations as specified below. The brass, nickel plated adapters have gold plated center contacts and are housed in their own separate case. They can be easily removed with your fingertips in a work area or out in the field. The adapter kit and cables are then housed in a rugged sealed case.

Electrical Data

Maximum Frequency: 4 GHz

Impedance: 50 Ω nominal

Time Delay: 1.47 ns/ft (4.82 ns/m)

Shielding Effectiveness: -90 dB minimum

Dielectric Withstanding Voltage: 10 kV at 60 Hz

Mechanical Data

Jacketed Outer Diameter: 0.275 in (6.99 mm)

Static Bend Radius: 0.5 in (12.7 mm)

Weight with Standard Jacket/Armor: 0.05 lbs/ft (0.023 kg/m)

Operating Temp. Range: -31 to 212° F (-35 to 100° C)



Adapter Kit Contents

	Qty.
Universal Adapter BNC	6
F Type	2 male, 2 female
N Type	2 male, 2 female
RCA	2 male, 2 female
SMA	2 male, 2 female
TNC	2 male, 2 female
UHF (0.3 GHz max.)	2 male, 2 female
Mini-UHF (2 GHz max.)	2 male, 2 female
Double Banana Plug	1
Double Binding Post	1
Signal Sampler	1
Wrench	2

Universal Cable Assemblies

	Qty.
36 in	2
60 in	2
96 in	2

NSN: 6145-01-564-7040

Specification

Frequency		Attenuation		Conn. Loss dB	VSWR
GHz	Band	dB/ft	dB/m		
0.045	UHF	0.03	0.07	0.01	1.10
0.512	VHF	0.08	0.27	0.02	1.15
1.000	L	0.12	0.39	0.02	1.20
2.000	S	0.17	0.57	0.03	1.25
3.000		0.22	0.73	0.04	1.30
4.000	C	0.26	0.86	0.04	1.35

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



Don't Take Our Word For It.

"I wanted to take a moment to thank you for the hasty turnaround on our order. The service was fantastic as always. We will look to MegaPhase for all of our continued cabling needs."

- Senior buyer at a leading space systems company

"Thank you so much for your prompt response on this matter. I have made notes in our system to never use [your competitor] again and to try MegaPhase for those needs instead. Just want to say thanks again for your help!"

- Buyer at a compliance test lab

"We have always been very satisfied with the quick service and delivery we receive from MegaPhase."

- Test engineer at a large semiconductor OEM

"My guys in [our corporate location] love these MegaPhase cables! We'll buy more this year."

- Senior RF test system designer at a large mobile phone OEM

MegaPhase



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