

***Flexco Microwave, Inc.***

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## Program History and Cable Capabilities

### Cable Assemblies DC-50 GHz



Flexco Microwave's Design & Development Team is available for solving your interconnect problems – whether the solution is a catalog item or not. For over 4 decades Flexco has provided a myriad of expert design services to systems and test engineers worldwide. Some would have said these designs couldn't be done. Flexco makes it happen!



Award-winning custom and off-the-shelf cable assemblies for military programs and the commercial marketplace.



Contact Flexco Microwave at [sales@FlexcoMW.com](mailto:sales@FlexcoMW.com) or Request a Quote on <http://www.FlexcoMW.com>

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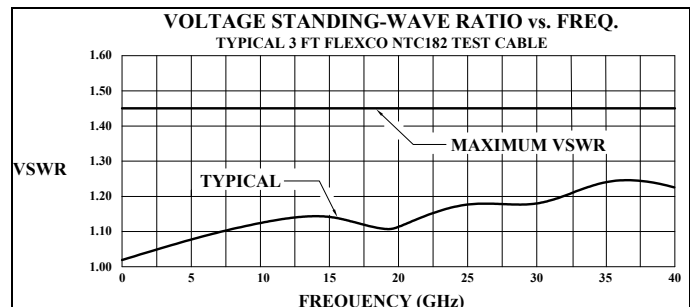
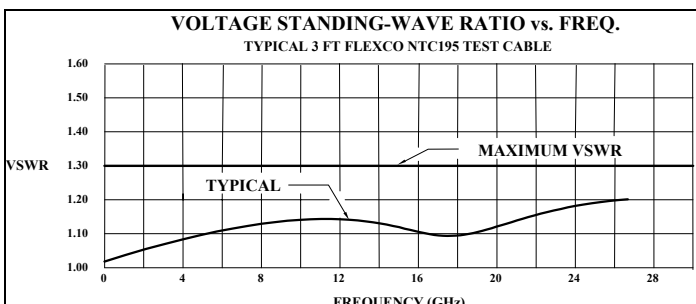
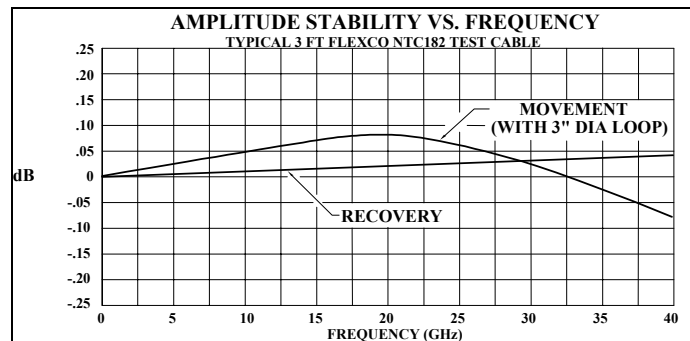
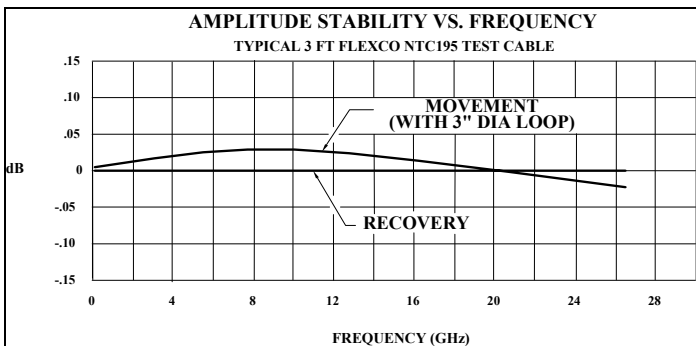
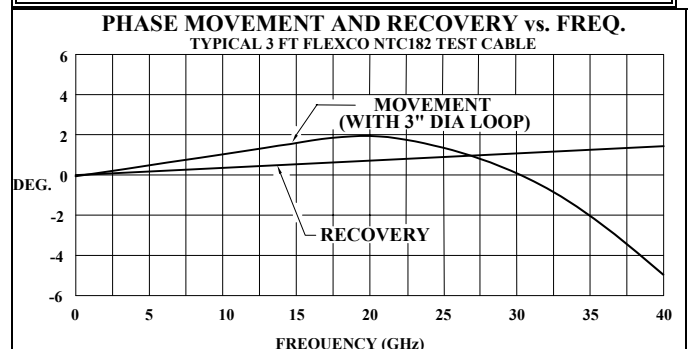
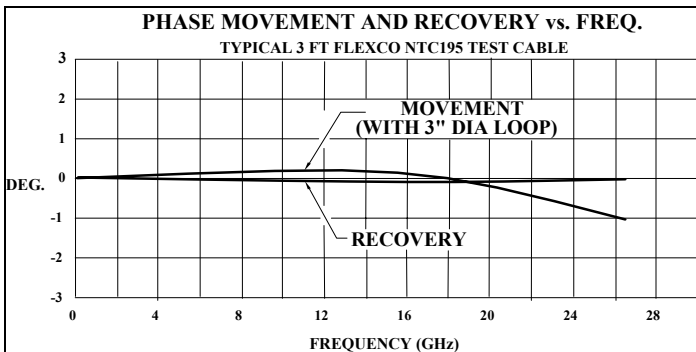
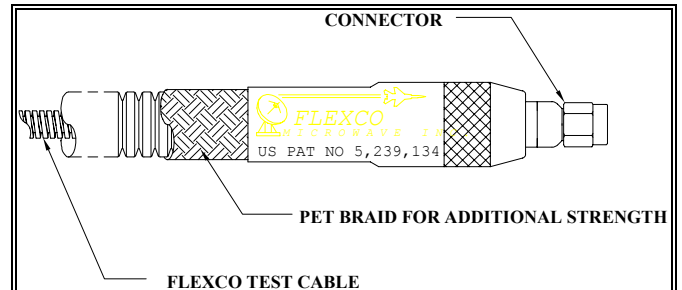
**Flexco Microwave's Precision VANA Test Cables**

**Specification Summary**

	NTC195	NTC182
<b>Electrical</b>		
Maximum Frequency (GHz)	26.5	40
Nominal Impedance ( $\Omega$ )	50	50
Velocity of Propagation (%)	74	69
Time Delay (ns/ft)	1.37	1.47
Breakdown Voltage (KV@ 60 Hz)	0.5	5.0
Nominal Capacitance (pF/ft)	28	29
Shielding Effectiveness (dBc min.)	-90	-90
<b>Physical</b>		
Center Conductor Type	Stranded	Solid
Minimum Bend Radius (inches)	1.5	1.5
Cable Assembly Outer Diameter (in.)	0.50	0.50

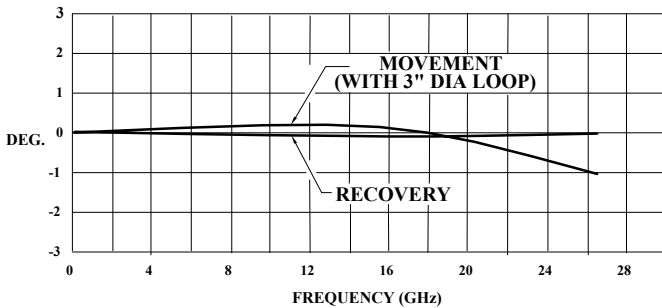
**Available Connectors**

	3.5 mm	SMA	N	APC-7	K	2.4 mm	TNC
Plug	X	X	X		X	X	X
Jack	X	X	X		X	X	
NMD	X				X	X	
Sexless				X			



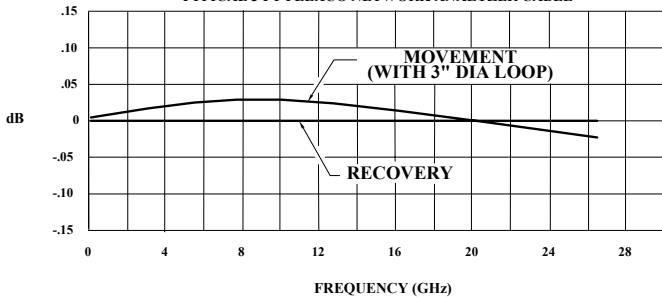
## NTC195 VANA Test Cable to 26.5 GHz

**PHASE MOVEMENT AND RECOVERY vs. FREQ.**  
 TYPICAL 3 FT FLEXCO NETWORK ANALYZER CABLE



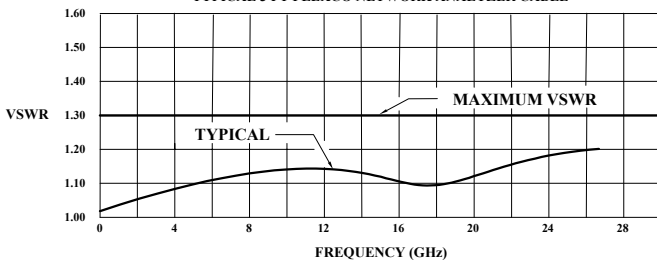
NTC195 VANA Test cables exhibit excellent phase stability when flexed permitting truly accurate measurements.

**AMPLITUDE STABILITY VS. FREQUENCY**  
 TYPICAL 3 FT FLEXCO NETWORK ANALYZER CABLE



Change in amplitude measures less than 0.05 dB when flexed and returns virtually to zero when uncoiled.

**VOLTAGE STANDING-WAVE RATIO vs. FREQ.**  
 TYPICAL 3 FT FLEXCO NETWORK ANALYZER CABLE

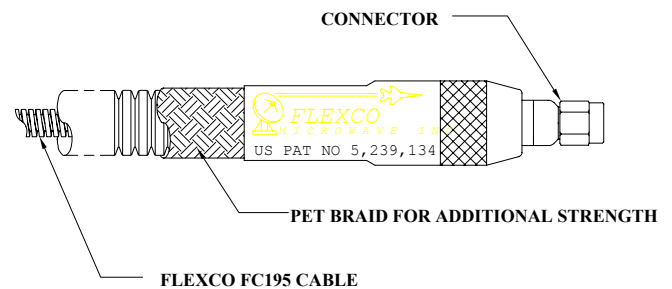


Typical VSWR compared to maximum specification. VSWR remains constant during flexing.

### Electrical Characteristics:

Nominal Impedance:	50Ω
Velocity of Propagation:	74%
Effective Dielectric Constant:	1.83
Time Delay:	1.37 ns/ft
Shielding Effectiveness:	-90 dBc min.
Nominal Capacitance:	28 pF/ft
Dielectric Withstanding Voltage:	0.5 KV (rms)
Maximum Frequency:	26.5 GHz
∅ vs. Min. Bend Radius:	1° max. to 26.5 GHz
Maximum VSWR:	1.30:1

Insertion loss values at specific frequencies can be calculated by using the information provided on the *FC195 Flexible Coaxial Cable* specification sheet.



### Physical Characteristics:

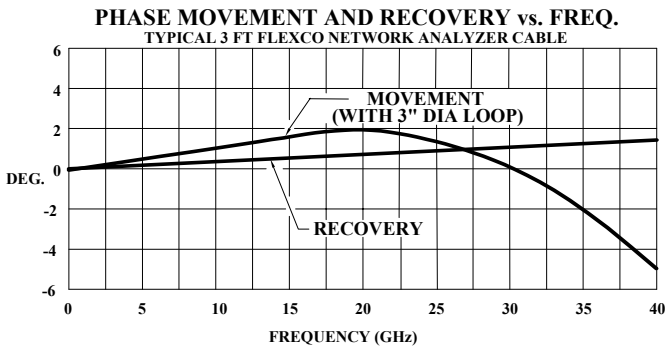
Center Conductor:	Stranded Silver Plated Copper (SPC) per ASTM-B8
Dielectric:	PTFE per L-P-403
Outer Conductor:	Strip wound oxygen free Copper per UNS 10200
Min. Bend Radius:	1.5"
Operating Temperature:	-40°C to +120°C
Protective Jacketing:	Non-metallic corrugated tubing
Outer Braid:	Polyester - PET
Cable Assembly Outer Diameter:	0.50" nominal

### Available Connectors:

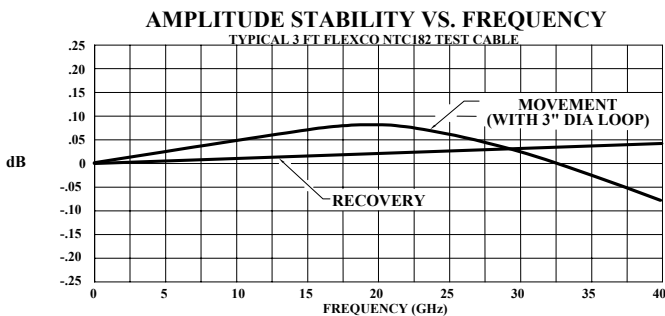
3.5 mm:	Plug, Jack, NMD
SMA:	Plug, Jack
N:	Plug, Jack
APC-7:	Sexless
K:	Plug, Jack, NMD
2.4 mm:	Plug, Jack, NMD
TNC:	Plug

Please refer to Table 1 in the *Ordering Information* section for maximum connector frequencies and Flexco designation.

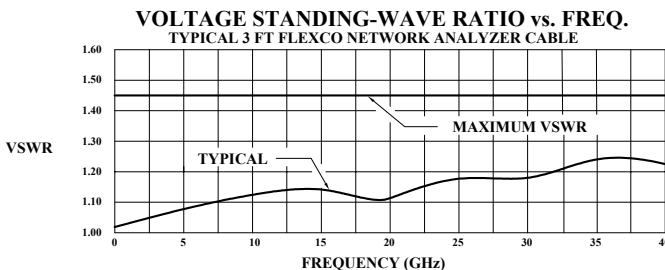
## NTC182 VANA Test Cable to 40 GHz



NTC182 VANA Test cables exhibit excellent phase stability when flexed permitting truly accurate measurements.



Change in amplitude measures less than 0.10 dB when flexed and exhibits excellent recovery.

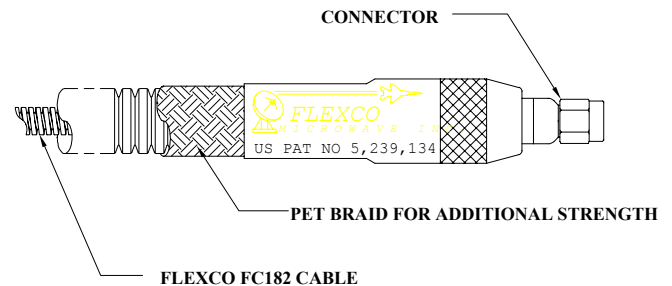


Typical VSWR compared to maximum specification. VSWR remains constant during flexing.

**Electrical Characteristics:**

Nominal Impedance:	50Ω
Velocity of Propagation:	69%
Effective Dielectric Constant:	2.10
Time Delay:	1.47 ns/ft
Shielding Effectiveness:	-90 dBc min.
Nominal Capacitance:	29 pF/ft
Dielectric Withstanding Voltage:	0.5 KV (rms)
Maximum Frequency:	40 GHz
Maximum VSWR:	1.45:1

Insertion loss values at specific frequencies can be calculated by using the information provided on the *FC182 Flexible Coaxial Cable* specification sheet.



**Physical Characteristics:**

Center Conductor:	Solid Silver Plated
	Copper (SPC) per ASTM-B298
Dielectric:	PTFE per L-P-403
Outer Conductor:	Strip wound oxygen free
	Copper per UNS 10200
Min. Bend Radius:	1.5"
Operating Temperature:	-40°C to +120°C
Protective Jacketing:	Non-metallic corrugated
	tubing
Outer Braid:	Polyester - PET
Cable Assembly Outer Diameter:	0.50" nominal

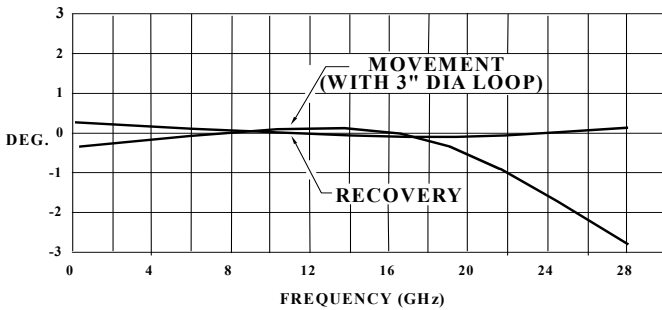
**Available Connectors:**

3.5 mm:	Plug, Jack, NMD
SMA:	Plug, Jack
N:	Plug, Jack
APC-7:	Sexless
K:	Plug, Jack, NMD
2.4 mm:	Plug, Jack, NMD
TNC:	Plug

Please refer to Table 1 in the *Ordering Information* section for maximum connector frequencies and Flexco designation.

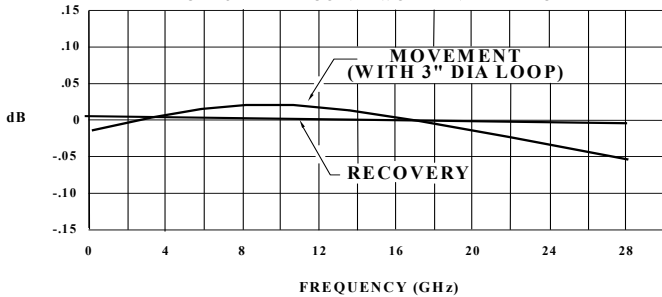
## NTC105 VANA Test Cable to 28 GHz

**PHASE MOVEMENT AND RECOVERY vs. FREQ.**  
TYPICAL 3 FT FLEXCO NETWORK ANALYZER CABLE



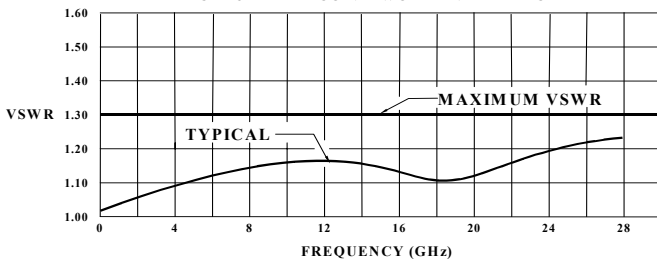
NTC105 VANA Test cables exhibit excellent phase stability when flexed permitting truly accurate measurements.

**AMPLITUDE STABILITY VS. FREQUENCY**  
TYPICAL 3 FT FLEXCO NETWORK ANALYZER CABLE



Change in amplitude measures less than 0.05 dB when flexed and returns virtually to zero when uncoiled.

**VOLTAGE STANDING-WAVE RATIO vs. FREQ.**  
TYPICAL 3 FT FLEXCO NETWORK ANALYZER CABLE

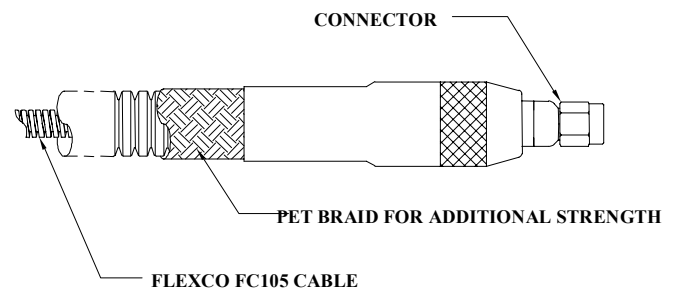


Typical VSWR compared to maximum specification. VSWR remains constant during flexing.

### Electrical Characteristics:

Nominal Impedance:	50Ω
Velocity of Propagation:	80%
Effective Dielectric Constant:	1.57
Time Delay:	1.27 ns/ft
Shielding Effectiveness:	-90 dBc min.
Nominal Capacitance:	26.7 pF/ft
Dielectric Withstanding Voltage:	3.0 KV (rms)
Maximum Frequency:	28 GHz
∅ vs. Min. Bend Radius:	3° max. to 28 GHz
Maximum VSWR:	1.30:1
Phase Stability v. Flex. – 28 GHz	5ppm/°C

Insertion loss values at specific frequencies can be calculated by using the information provided on the *FC105 Flexible Coaxial Cable* specification sheet.



### Physical Characteristics:

Center Conductor:	Stranded Silver Plated Copper (SPC) per ASTM-B8
Dielectric:	Expanded PTFE
Outer Conductor:	Strip wound oxygen free Copper per UNS 10200
Min. Bend Radius:	1.5"
Operating Temperature:	-40°C to +120°C
Protective Jacketing:	Non-metallic corrugated tubing
Outer Braid:	Polyester - PET
Cable Assembly Outer Diameter:	0.50" nominal

### Available Connectors:

3.5 mm:	Plug, Jack, NMD
SMA:	Plug, Jack
N:	Plug, Jack
APC-7:	Sexless
K:	Plug, Jack, NMD
2.4 mm:	Plug, Jack, NMD
TNC:	Plug

Please refer to Table ¶ in the *Ordering Information* section for maximum connector frequencies and Flexco designation.

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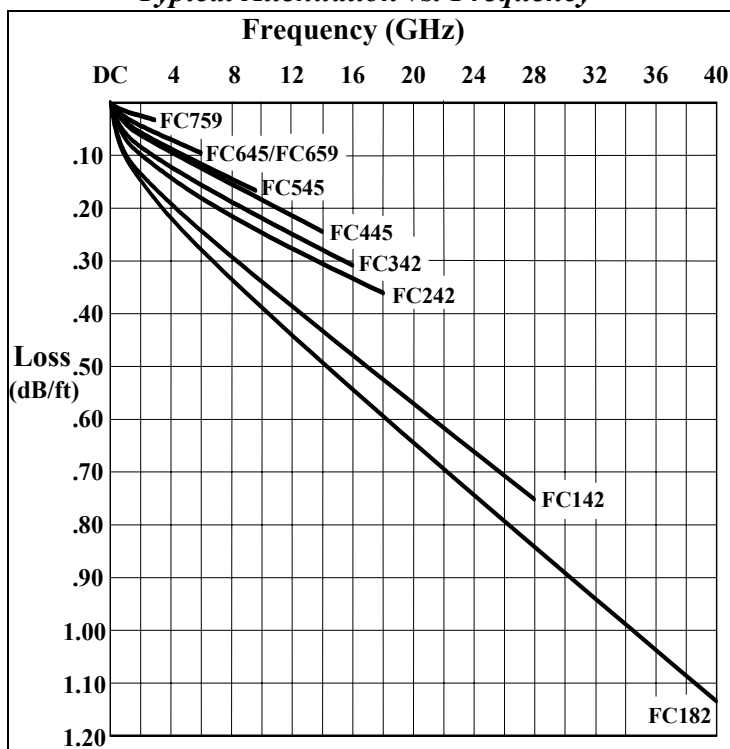
**Flexco Microwave's Long-Lyfe™ Series Cables**

**Specification Summary**

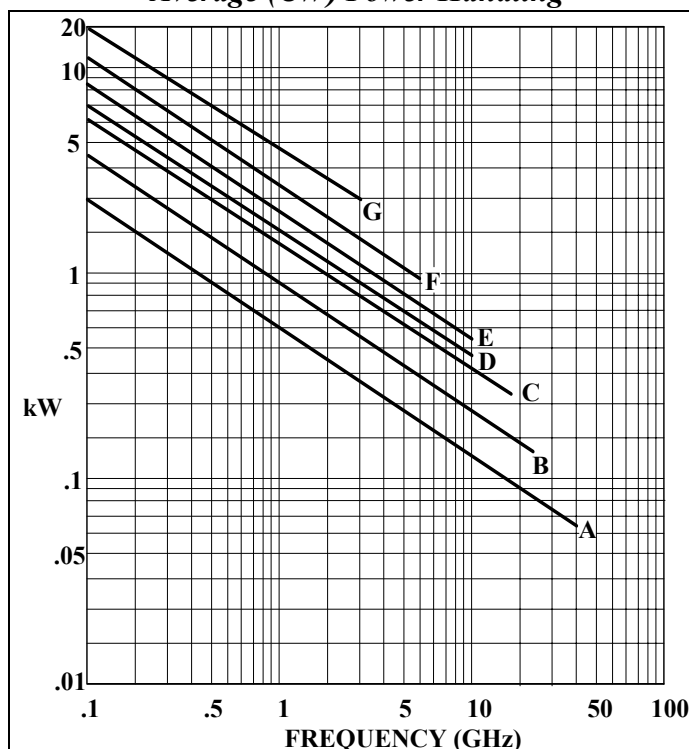
	FC142	FC182	FC242	FC342	FC445	FC545	FC645	FC659	FC759
<b>Electrical</b>									
Maximum Frequency (GHz)	28	50	18	16	14	9.5	6	6	3
Nominal Impedance (Ω)	50	50	50	50	50	50	50	50	50
Velocity of Propagation (%)	72.5	69	80	80	84	80	80	87	88
Time Delay (ns/ft)	1.40	1.47	1.27	1.27	1.21	1.27	1.27	1.17	1.15
Breakdown Voltage (KV@ 60 Hz)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0
Nominal Capacitance (pF/ft)	28	29	28	28	24	25	26	24	24
Shielding Effectiveness (dBc min.)	-90	-90	-90	-90	-90	-90	-90	-90	-90
CW Power Curve (use graph below)	A	A	B	C	D	E	F	F	G
<b>Insertion Loss (dB/ft)</b>									
at 0.4 GHz	0.06	0.07	0.03	0.02	0.01	0.02	0.01	0.02	0.008
at 0.9 GHz	0.09	0.10	0.05	0.04	0.03	0.04	0.02	0.03	0.018
at 2.0 GHz	0.13	0.16	0.10	0.07	0.06	0.07	0.04	0.05	0.03
at 8.0 GHz	0.30	0.37	0.22	0.18	0.15	0.16			
at 12.0 GHz	0.38	0.48	0.29	0.24	0.21				
at 18.0 GHz	0.50	0.62	0.36						
at 26.5 GHz	0.68	0.78							
at 50.0 GHz		1.40							
<b>Physical</b>									
Center Conductor Type	Solid	Solid	Solid	Solid	Stranded	Stranded	Stranded	Tubular	Tubular
Minimum Bend Radius (inches)	0.5	0.5	1.0	1.5	4.0	5.0	6.5	6.5	5.0
Unjacketed Weight per Foot (lbs.)	0.040	0.035	0.088	0.112	0.220	0.410	0.670	0.750	1.078
Unjacketed Outer Diameter (in.)	0.205	0.205	0.330	0.390	0.450	0.740	1.035	1.035	1.900

Available connectors include N, TNC, 2.4 mm, 3.5 mm, K, SMA, SC, LC and 7-16 DIN, conforming to MIL-C-39012 or IEEE specifications. Other connectors are available upon request. A wide selection of jackets, braids, and armoring are also available.

**Typical Attenuation vs. Frequency**

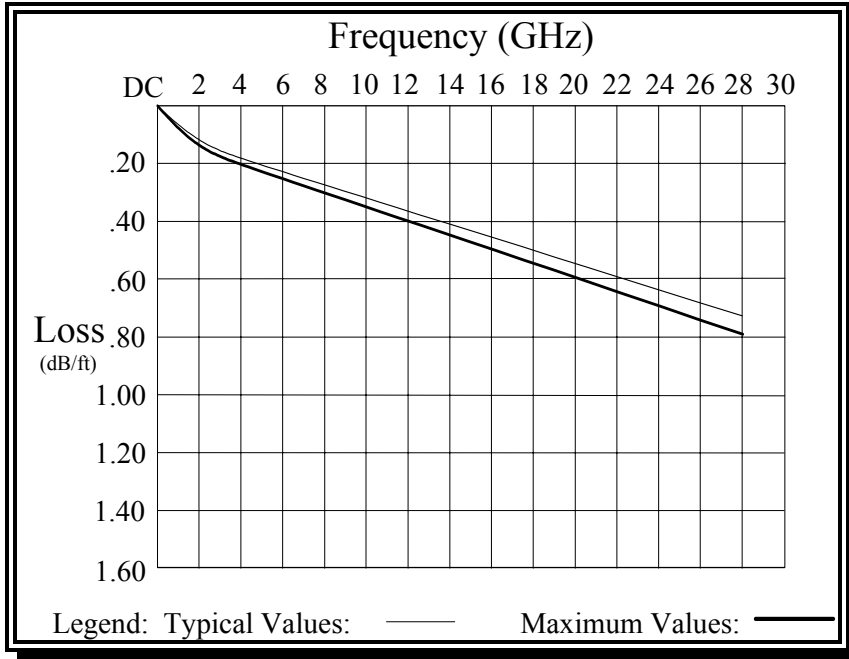


**Average (CW) Power Handling**



## FC142 Flexible Coaxial Cable 28 GHz Cable

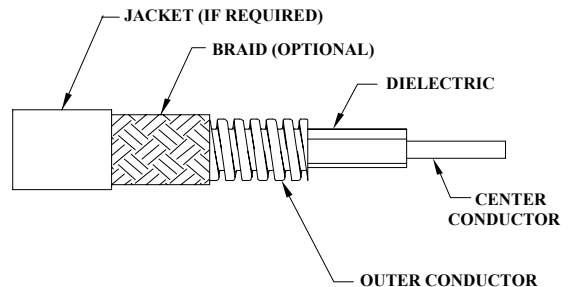
### Frequency vs. Attenuation



**Electrical Characteristics:**

- Nominal Impedance: 50Ω
  - Velocity of Propagation: 72.5%
  - Effective Dielectric Constant: 1.90
  - Time Delay: 1.4 ns/ft
  - Shielding Effectiveness: -90 dBc min.
  - Dielectric Withstanding Voltage: 3.0 KV  
(@ 60 Hz Sea Level/25°C)
  - Nominal Capacitance: 28 pF/ft
  - Maximum VSWR:
    - Precision Straight connectors:
      - DC - <4 GHz 1.10:1
      - 4 GHz - <8 GHz 1.15:1
      - 8 GHz - <18 GHz 1.25:1
      - 18 GHz - 28 GHz 1.35:1
    - Non-Precision or Angle connectors:
      - DC - <4 GHz 1.20:1
      - 4 GHz - <8 GHz 1.30:1
      - 8 GHz - <18 GHz 1.40:1
      - 18 GHz - 28 GHz 1.50:1
  - Maximum Frequency: 50 GHz
- For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.5	0.07	0.06	0.02	0.03
1.0	0.10	0.09	0.02	0.03
2.0	0.15	0.14	0.03	0.05
4.0	0.22	0.21	0.04	0.06
6.0	0.28	0.27	0.06	0.09
8.0	0.32	0.31	0.07	0.11
10.0	0.37	0.36	0.08	0.12
12.0	0.41	0.39	0.08	0.12
14.0	0.46	0.44	0.09	0.14
16.0	0.50	0.48	0.10	0.15
18.0	0.53	0.51	0.11	0.17
20.0	0.60	0.57	0.12	0.19
22.0	0.64	0.61	0.13	0.23
24.0	0.67	0.64	0.14	0.26
26.0	0.71	0.68	0.15	0.30
28.0	0.79	0.75	0.16	0.32



**Physical Characteristics:**

- Center Conductor: Solid SPC per ASTM-B298
- Dielectric: PTFE per ASTM D4895
- Outer Conductor: Strip wound oxygen free copper per UNS C10200, 0.210" max. O.D.
- Minimum Internal Bend Radius: 0.5 inches
- Operating Temperature: -60°C to +175°C
- Weight per Foot (unjacketed): 0.040 lbs
- Connector Interface: Per MIL-STD-348

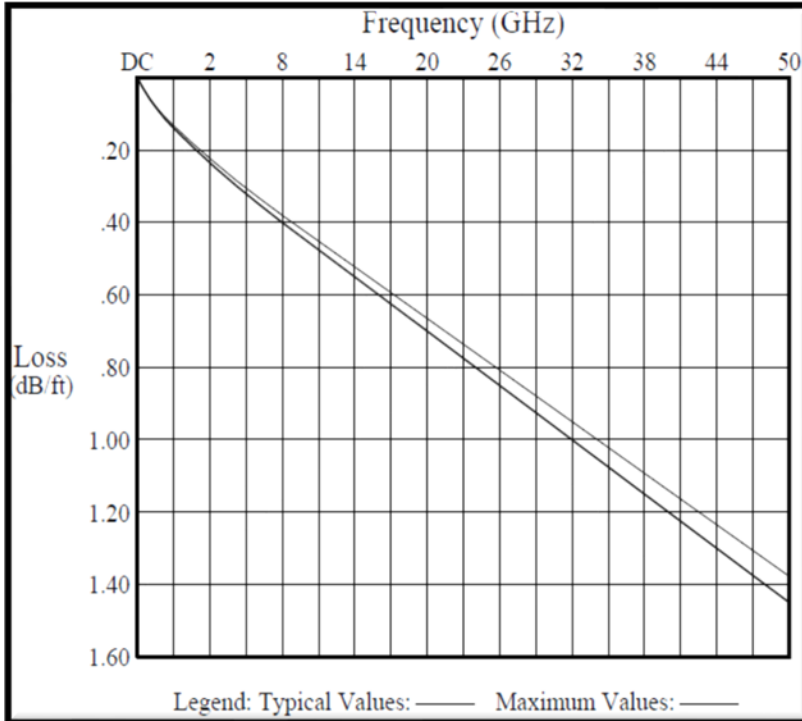
**Optional Jacketing and Braid:**

- Polyolefin per AMS-DTL-23053/5: 0.250" max. O.D.
- Neoprene per AMS-DTL-23053/1: 0.285" max. O.D.
- FEP per AMS-DTL-23053/11: 0.240" max. O.D.
- Braid: Bronze per UNS C22000: 0.250" max. O.D.
- Others available, please consult factory.



## FC182 Flexible Coaxial Cable 50 GHz Cable

### Frequency vs. Attenuation



Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.5	0.08	0.07	0.02	0.03
1.0	0.12	0.11	0.02	0.03
2.0	0.18	0.17	0.03	0.05
4.0	0.26	0.24	0.04	0.06
6.0	0.34	0.32	0.06	0.09
8.0	0.40	0.38	0.07	0.11
10.0	0.46	0.44	0.08	0.12
12.0	0.51	0.48	0.08	0.12
14.0	0.56	0.53	0.09	0.14
16.0	0.60	0.57	0.10	0.15
18.0	0.65	0.62	0.11	0.17
20.0	0.70	0.66	0.12	0.19
22.0	0.75	0.71	0.13	0.23
24.0	0.80	0.76	0.14	0.26
26.0	0.83	0.78	0.15	0.30
28.0	0.90	0.85	0.16	
30.0	0.95	0.90	0.16	
32.0	1.00	0.95	0.17	
34.0	1.06	1.00	0.18	
36.0	1.10	1.04	0.19	
38.0	1.15	1.10	0.20	
40.0	1.20	1.14	0.20	
50.0	1.47	1.40	0.35	

**Electrical Characteristics:**

Nominal Impedance: 50Ω  
 Velocity of Propagation: 69%  
 Effective Dielectric Constant: 2.10  
 Time Delay: 1.47 ns/ft  
 Shielding Effectiveness: -90 dBc min.  
 Dielectric Withstanding Voltage: 5.0 KV  
 (@ 60 Hz, Sea Level/25°C)

Nominal Capacitance: 29 pF/ft  
 Maximum VSWR:

**Precision Straight connectors:**

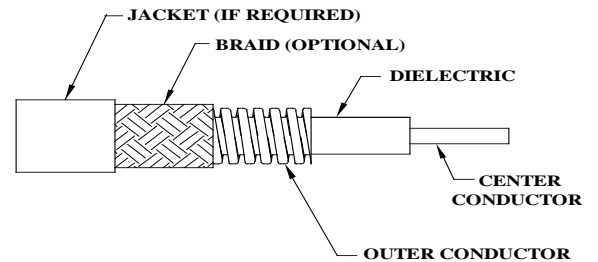
DC - <4 GHz 1.10:1  
 4 GHz - <8 GHz 1.15:1  
 8 GHz - <18 GHz 1.25:1  
 18 GHz - <26.5 GHz 1.35:1  
 26.5 GHz - 50 GHz 1.45:1

**Non-Precision or Angle connectors:**

DC - <4 GHz 1.20:1  
 4 GHz - <8 GHz 1.30:1  
 8 GHz - <18 GHz 1.40:1  
 18 GHz - 26.5 GHz 1.50:1

Maximum Frequency: 50 GHz

For phase and other electrical characteristics, please consult the appropriate section of catalog.



**Physical Characteristics:**

Center Conductor: Solid SPC per ASTM B298  
 Dielectric: PTFE per ASTM D4895  
 Outer Conductor: Strip wound oxygen free copper per UNS C10200, 0.210" max. O.D.  
 Minimum Internal Bend Radius: 0.5 inches  
 Operating Temperature: -60°C to +175°C  
 Weight per Foot (unjacketed): 0.035 lbs  
 Connector Interface: Per MIL-STD-348

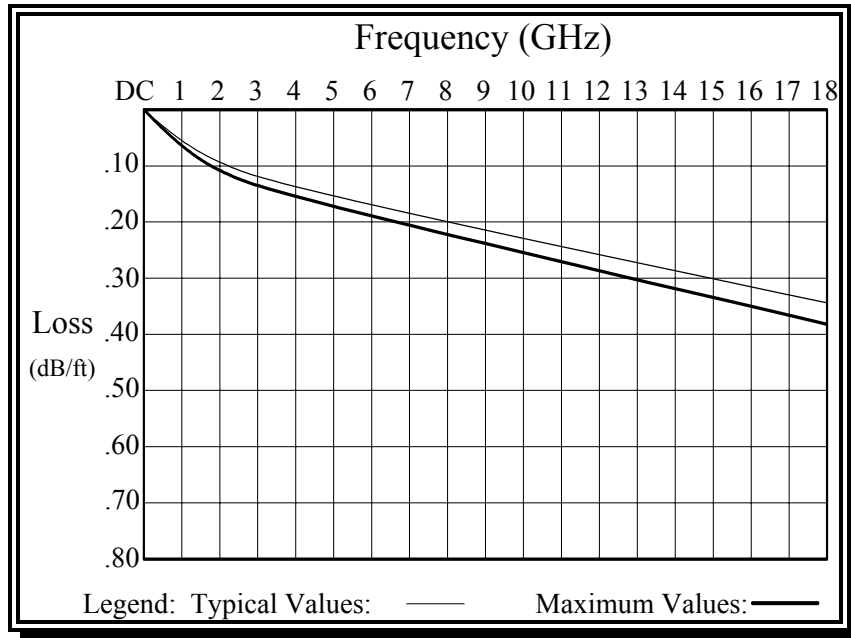
**Optional Jacketing and Braid:**

Polyolefin per SAE AS23053/5: 0.250" max. O.D.  
 Neoprene per SAE AS23053/1: 0.285" max. O.D.  
 FEP per SAE AS23053/11: 0.240" max. O.D.  
 Braid: Bronze per UNS C22000, 0.250" max. O.D.  
 Others available, please consult factory.



## FC242 Flexible Coaxial Cable 18 GHz Cable

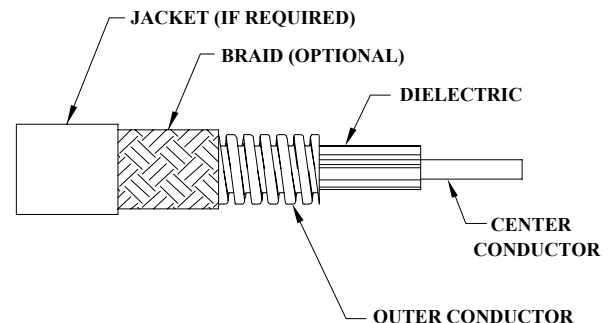
### Frequency vs. Attenuation



**Electrical Characteristics:**

- Nominal Impedance: 50Ω
  - Velocity of Propagation: 80%
  - Effective Dielectric Constant: 1.56
  - Time Delay: 1.27 ns/ft
  - Shielding Effectiveness: -90 dBc min.
  - Dielectric Withstanding Voltage: 5.0 KV  
(@ 60 Hz, Sea Level/25°C)
  - Nominal Capacitance: 28 pF/ft
  - Maximum VSWR:
    - Precision Straight connectors:
      - DC - <4 GHz 1.10:1
      - 4 GHz - <8 GHz 1.15:1
      - 8 GHz - 18 GHz 1.25:1
    - Non-Precision or Angle connectors:
      - DC - <4 GHz 1.20:1
      - 4 GHz - <8 GHz 1.30:1
      - 8 GHz - 18 GHz 1.40:1
  - Maximum Frequency: 18 GHz
- For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.5	0.05	0.04	0.02	0.03
1.0	0.07	0.06	0.02	0.03
2.0	0.11	0.10	0.03	0.05
3.0	0.12	0.11	0.04	0.06
4.0	0.16	0.15	0.04	0.06
5.0	0.18	0.17	0.05	0.08
6.0	0.20	0.19	0.06	0.09
7.0	0.21	0.20	0.06	0.09
8.0	0.23	0.22	0.07	0.11
9.0	0.25	0.24	0.07	0.11
10.0	0.27	0.26	0.08	0.12
11.0	0.28	0.27	0.08	0.12
12.0	0.30	0.29	0.08	0.12
13.0	0.32	0.30	0.09	0.14
14.0	0.33	0.31	0.09	0.14
15.0	0.34	0.32	0.10	0.15
16.0	0.35	0.34	0.10	0.15
17.0	0.37	0.35	0.11	0.17
18.0	0.38	0.36	0.11	0.17



**Physical Characteristics:**

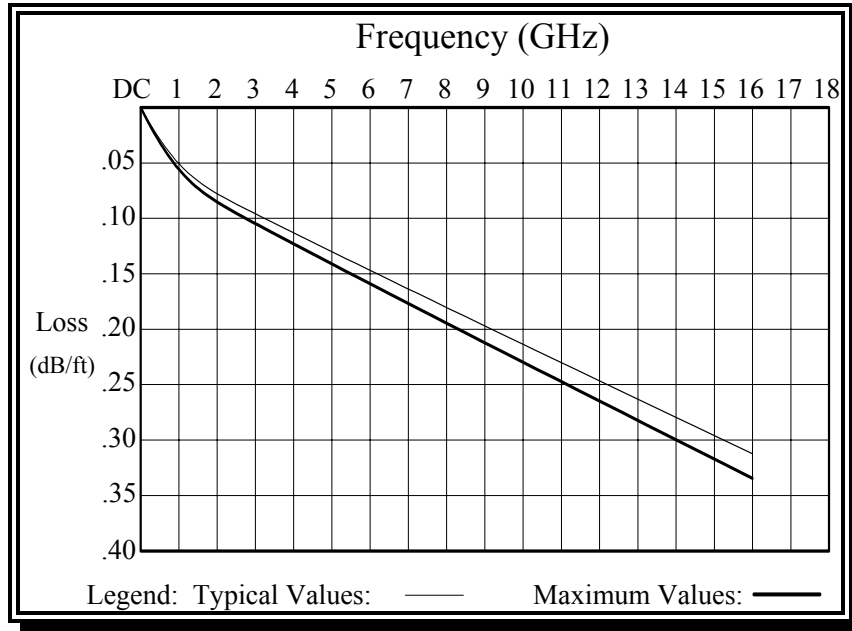
- Center Conductor: Solid SPC per ASTM-B298
- Dielectric: PTFE per ASTM D4895
- Outer Conductor: Strip wound oxygen free Copper per UNS C10200, 0.335" max. O.D.
- Minimum Internal Bend Radius: 1.0 inches
- Operating Temperature: -60°C to +175°C
- Weight per Foot (unjacketed): 0.088 lbs

**Optional Jacketing and Braid:**

- Polyolefin per AMS-DTL-23053/5: 0.375" max. O.D.
- Neoprene per AMS-DTL-23053/1: 0.410" max. O.D.
- FEP per AMS-DTL-23053/11: 0.360" max. O.D.
- Braid: Bronze per UNS C22000, 0.375" max. O.D.
- Others available, please consult factory.

## FC342 Flexible Coaxial Cable 16 GHz Cable

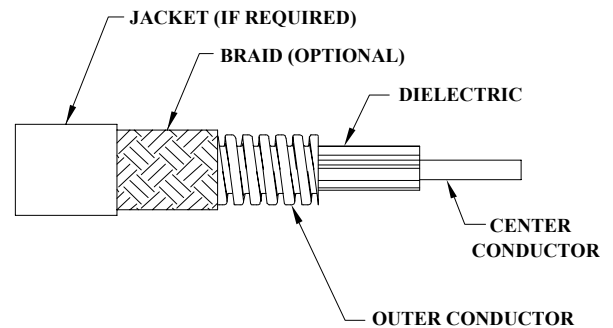
### Frequency vs. Attenuation



**Electrical Characteristics:**

- Nominal Impedance: 50Ω
  - Velocity of Propagation: 80%
  - Effective Dielectric Constant: 1.56
  - Time Delay: 1.27 ns/ft
  - Shielding Effectiveness: -90 dBc min.
  - Dielectric Withstanding Voltage: 5.0 KV  
(@ 60 Hz, Sea Level/25°C)
  - Nominal Capacitance: 28 pF/ft
  - Maximum VSWR:
    - Precision Straight connectors:
      - DC - <4 GHz: 1.10:1
      - 4 GHz - <8 GHz: 1.15:1
      - 8 GHz - 16 GHz: 1.25:1
    - Non-Precision or Angle connectors:
      - DC - <4 GHz: 1.20:1
      - 4 GHz - <8 GHz: 1.30:1
      - 8 GHz - 16 GHz: 1.40:1
  - Maximum Frequency: 16 GHz
- For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.5	0.04	0.03	0.02	0.03
1.0	0.07	0.06	0.02	0.03
2.0	0.08	0.07	0.03	0.05
3.0	0.11	0.09	0.04	0.06
4.0	0.13	0.12	0.04	0.06
5.0	0.14	0.13	0.05	0.08
6.0	0.16	0.15	0.06	0.09
7.0	0.18	0.17	0.06	0.09
8.0	0.19	0.18	0.07	0.11
9.0	0.22	0.20	0.07	0.11
10.0	0.23	0.22	0.08	0.12
11.0	0.25	0.24	0.08	0.12
12.0	0.27	0.25	0.08	0.12
13.0	0.28	0.26	0.09	0.14
14.0	0.30	0.28	0.09	0.14
15.0	0.32	0.30	0.10	0.15
16.0	0.33	0.31	0.10	0.15



**Physical Characteristics:**

- Center Conductor: Solid SPC per ASTM-B298
- Dielectric: PTFE per ASTM D4895
- Outer Conductor: Strip wound oxygen free copper per UNS C10200, 0.395" max. O.D.
- Minimum Internal Bend Radius: 1.5 inches
- Operating Temperature: -60°C to +175°C
- Weight per Foot (unjacketed): 0.112 lbs

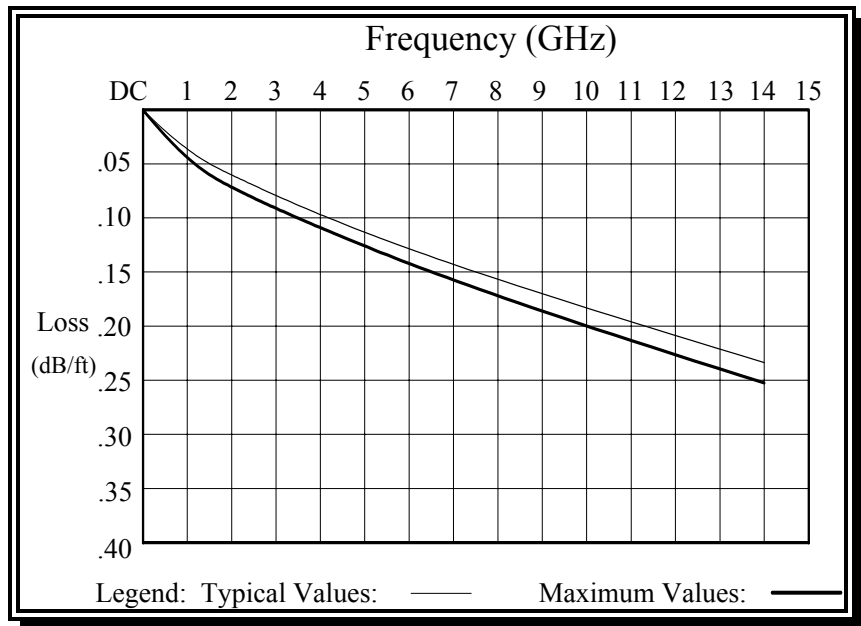
**Optional Jacketing and Braid:**

- Polyolefin per AMS-DTL-23053/5: 0.435" max. O.D.
  - Neoprene per AMS-DTL-23053/1: 0.470" max. O.D.
  - FEP per AMS-DTL-23053/11: 0.425" max. O.D.
  - Braid: Bronze per UNS C22000, 0.435" max. O.D.
- Others available, please consult factory.

## FC445 Flexible Coaxial Cable

### 14 GHz cable

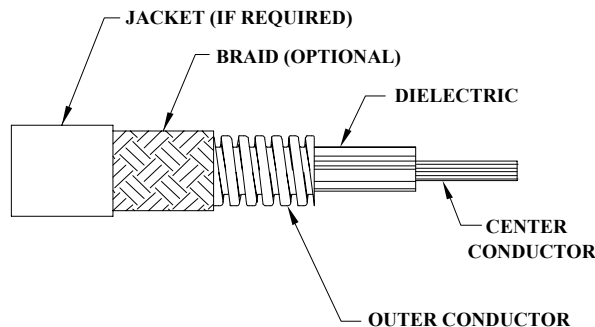
### Frequency vs. Attenuation



**Electrical Characteristics:**

- Nominal Impedance: 50Ω
  - Velocity of Propagation: 84%
  - Effective Dielectric Constant: 1.42
  - Time Delay: 1.21 ns/ft
  - Shielding Effectiveness: -90 dBc min.
  - Dielectric Withstanding Voltage: 5.0 KV  
(@ 60 Hz, Sea Level/25°C)
  - Nominal Capacitance: 24 pF/ft
  - Maximum VSWR:
    - Precision Straight connectors:
      - DC - <4 GHz: 1.10:1
      - 4 GHz - <8 GHz: 1.15:1
      - 8 GHz - 14 GHz: 1.25:1
    - Non-Precision or Angle connectors:
      - DC - <4 GHz: 1.20:1
      - 4 GHz - <8 GHz: 1.30:1
      - 8 GHz - 14 GHz: 1.40:1
  - Maximum Frequency: 14 GHz
- For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.5	0.03	0.02	0.02	0.03
1.0	0.05	0.04	0.02	0.03
2.0	0.07	0.06	0.03	0.05
3.0	0.09	0.08	0.04	0.06
4.0	0.11	0.10	0.04	0.06
5.0	0.13	0.12	0.05	0.08
6.0	0.14	0.13	0.06	0.09
7.0	0.16	0.15	0.06	0.09
8.0	0.17	0.16	0.07	0.11
9.0	0.18	0.17	0.07	0.11
10.0	0.20	0.19	0.08	0.12
11.0	0.21	0.20	0.08	0.12
12.0	0.23	0.22	0.08	0.12
13.0	0.24	0.23	0.09	0.14
14.0	0.25	0.24	0.09	0.14



**Physical Characteristics:**

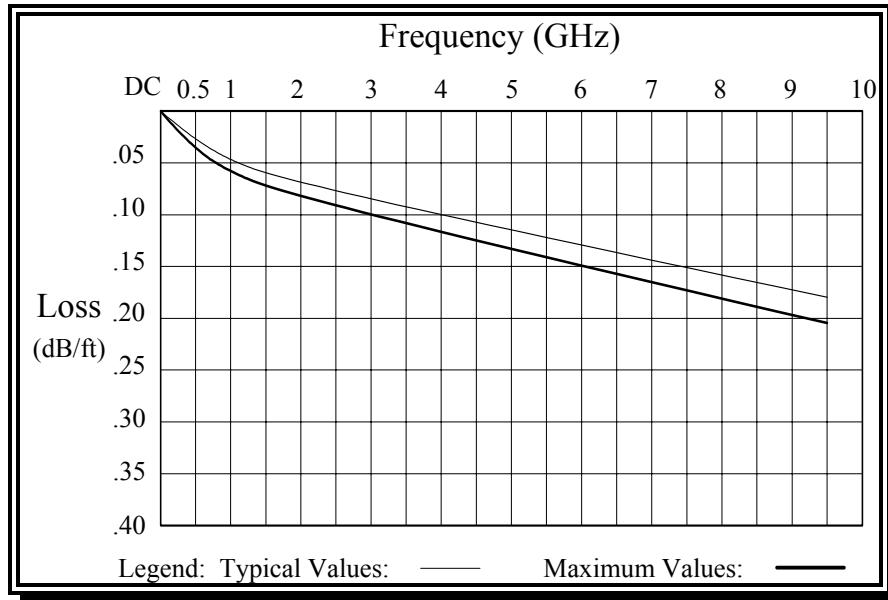
- Center Cond.: Stranded SPC per ASTM-B8 or B298
- Dielectric: PTFE per ASTM D4895
- Outer Conductor: Strip wound oxygen free copper per UNS C10200, 0.455" max. O.D.
- Minimum Internal Bend Radius: 4 inches
- Operating Temperature: -60°C to +175°C
- Weight per Foot (unjacketed): 0.22 lbs

**Optional Jacketing and Braid:**

- Polyolefin per AMS-DTL-23053/5: 0.500" max. O.D.
  - Neoprene per AMS-DTL-23053/1: 0.530" max. O.D.
  - FEP per AMS-DTL-23053/11: 0.485" max. O.D.
  - Braid: Bronze per UNS C22000, 0.500" max. O.D.
- Others available, please consult factory.

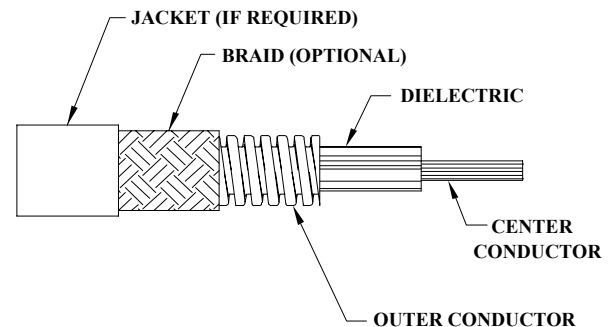
## FC545 Flexible Coaxial Cable 9.5 GHz Cable

### Frequency vs. Attenuation



**Electrical Characteristics:**

- Nominal Impedance: 50Ω
  - Velocity of Propagation: 80%
  - Effective Dielectric Constant: 1.56
  - Time Delay: 1.27 ns/ft
  - Shielding Effectiveness: -90 dBc min.
  - Dielectric Withstanding Voltage: 5.0 KV (@ 60 Hz, Sea Level/25°C)
  - Nominal Capacitance: 25 pF/ft
  - Maximum VSWR:
    - Precision Straight connectors:
      - DC - <4 GHz: 1.15:1
      - 4 GHz - 9.5 GHz: 1.25:1
    - Non-Precision or Angle connectors:
      - DC - <4 GHz: 1.25:1
      - 4 GHz - 9.5 GHz: 1.35:1
  - Maximum Frequency: 9.5 GHz
- For phase and other electrical characteristics, please consult the appropriate section of catalog.



Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.5	0.04	0.03	0.02	0.03
1.0	0.06	0.05	0.02	0.03
2.0	0.08	0.07	0.03	0.05
3.0	0.10	0.09	0.04	0.06
4.0	0.12	0.11	0.04	0.06
5.0	0.14	0.13	0.05	0.08
6.0	0.16	0.15	0.06	0.09
7.0	0.17	0.16	0.06	0.09
8.0	0.18	0.17	0.07	0.11
9.5	0.20	0.18	0.08	0.12

**Physical Characteristics:**

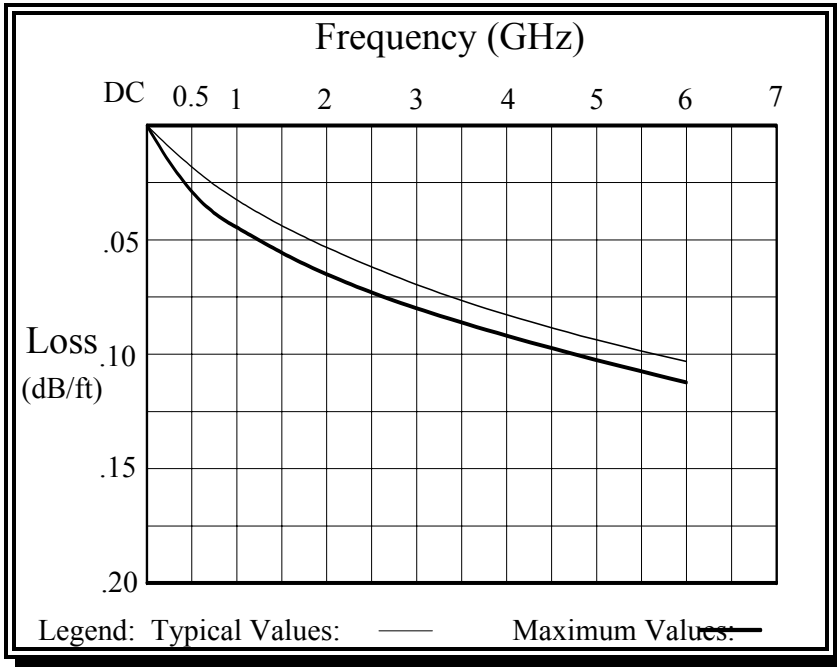
- Center Conductor: Stranded SPC per ASTM-B8 or B298
- Dielectric: PTFE per ASTM D4895
- Outer Conductor: Strip wound oxygen free copper per UNS C10200, 0.410 lbs
- Minimum Internal Bend Radius: 5 inches
- Operating Temperature: -60°C to +175°C
- Weight per Foot (unjacketed): 0.410 lbs

**Optional Jacketing and Braid:**

- Polyolefin per MIL-I-23053/5: 0.790" max. O.D.
  - Neoprene per MIL-I-23053/1: 0.815" max. O.D.
  - FEP per MIL-I-23053/11: 0.775" max. O.D.
  - Braid: Bronze per UNS C22000, 0.790" max. O.D.
- Others available, please consult factory.

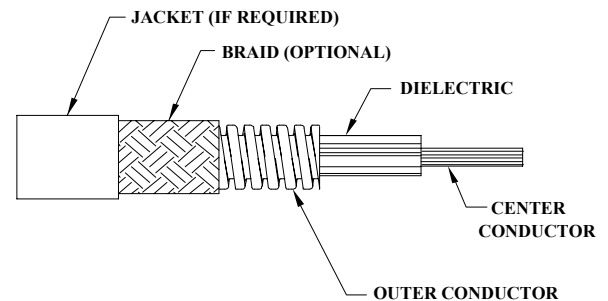
## FC645 Flexible Coaxial Cable 6 GHz cable

### Frequency vs. Attenuation



**Electrical Characteristics:**

- Nominal Impedance: 50Ω
  - Velocity of Propagation: 80%
  - Effective Dielectric Constant: 1.56
  - Time Delay: 1.27 ns/ft
  - Shielding Effectiveness: -90 dBc min.
  - Dielectric Withstanding Voltage: 5.0 KV  
(@ 60 Hz, Sea Level/25°C)
  - Nominal Capacitance: 26 pF/ft
  - Maximum Frequency: 6 GHz
- For phase and other electrical characteristics, please consult the appropriate section of catalog.



**Physical Characteristics:**

- Center Conductor: Stranded SPC per ASTM-B8 or B298
- Dielectric: PTFE per ASTM D4895
- Outer Conductor: Strip wound oxygen free copper per UNS C10201.040" max. O.D.
- Minimum Internal Bend Radius: 6.5 inches
- Operating Temperature: -60°C to +175°C
- Weight per Foot (unjacketed): 0.67 lbs

**Optional Jacketing and Braid:**

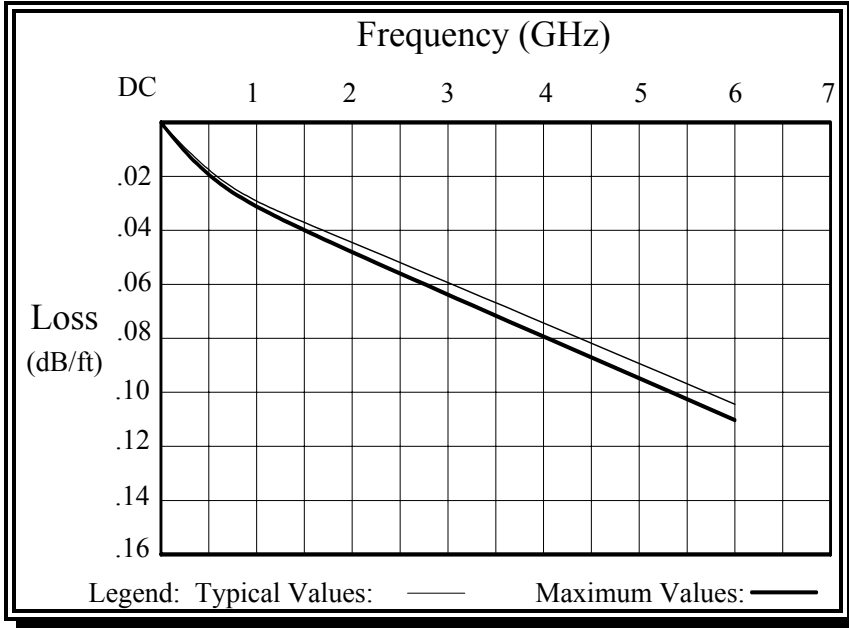
- Polyolefin per AMS-DTL-23053/5: 1.10" max. O.D.
  - Neoprene per AMS-DTL-23053/1: 1.12" max. O.D.
  - FEP per AMS-DTL-23053/11: 1.08" max. O.D.
  - Braid: Bronze per UNS C22000, 1.10" max. O.D.
- Others available, please consult factory.

Frequency (GHz)	Typical Insertion Loss (dB/ft)	Typical Insertion Loss (**)(dB/ft)	Max. VSWR (precision connector)	Max. VSWR (non precision and angle connector)
0.5	0.02	0.02	1.10:1	1.20:1
1.0	0.03	0.03	1.15:1	1.25:1
2.0	0.04	0.06	1.20:1	1.30:1
3.0	0.05	0.07	1.25:1	1.35:1
4.0	0.06	0.08	1.30:1	1.40:1
5.0	0.11	0.10	1.35:1	1.45:1
6.0	0.12	0.11	1.35:1	1.45:1

\*\* - Includes connector losses

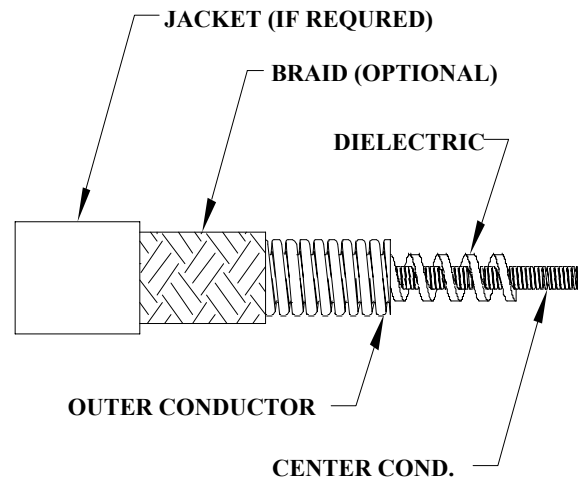
## FC659 Flexible Coaxial Cable 6 GHz Cable

### Frequency vs. Attenuation



**Electrical Characteristics:**

- Nominal Impedance: 50Ω
  - Velocity of Propagation: 87%
  - Effective Dielectric Constant: 1.32
  - Time Delay: 1.17 ns/ft
  - Shielding Effectiveness: -90 dBc min.
  - Dielectric Withstanding Voltage: 10.0 KV  
(@ 60 Hz, Sea Level/25°C)
  - Nominal Capacitance: 24 pF/ft
  - Maximum Frequency: 6 GHz
- For phase and other electrical characteristics, please consult the appropriate section of catalog.



Frequency (GHz)	Maximum Insertion Loss (**) (dB/ft)	Typical Insertion Loss (**) (dB/ft)	Max. VSWR (precision connector)	Max. VSWR (non precision or angle connector)
0.2	0.015	0.014	1.10:1	1.20:1
0.4	0.022	0.021	1.10:1	1.20:1
0.8	0.029	0.027	1.10:1	1.20:1
1.0	0.035	0.033	1.15:1	1.25:1
2.0	0.046	0.043	1.20:1	1.30:1
3.0	0.063	0.059	1.25:1	1.35:1
4.0	0.073	0.067	1.30:1	1.40:1
5.0	0.100	0.094	1.35:1	1.45:1
6.0	0.110	0.104	1.35:1	1.45:1

**Physical Characteristics:**

- Center Conductor: Corrugated Tubular Copper
- Dielectric: Air with spiral wound PTFE
- Outer Conductor: Strip wound oxygen free copper per UNS C10200, 1.040" max. O.D.
- Minimum Internal Bend Radius: 6.5 inches
- Operating Temperature: -60°C to +175°C
- Weight per Foot (unjacketed): 0.75 lbs.

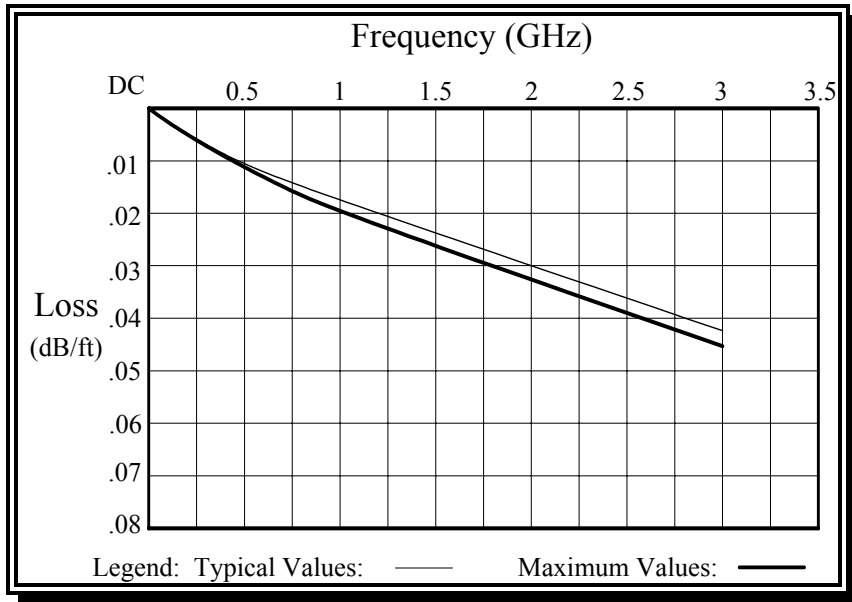
**Optional Jacketing and Braid:**

- Polyolefin per AMS-DTL-23053/5: 1.10" max. O.D.
  - Neoprene per AMS-DTL-23053/1: 1.12" max. O.D.
  - Braid: Bronze per UNS C22000, 1.10" max. O.D.
- Others available, please consult factory.

\*\* - Includes connector losses

## FC759 Flexible Coaxial Cable 3 GHz Cable

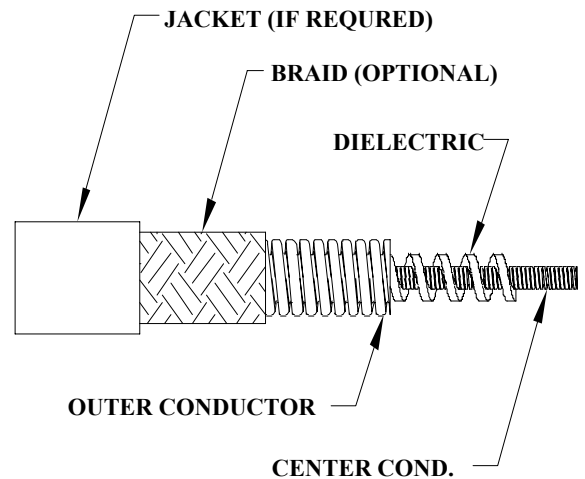
### Frequency vs. Attenuation



**Electrical Characteristics:**

Nominal Impedance:	50Ω
Velocity of Propagation:	88%
Effective Dielectric Constant:	1.29
Time Delay:	1.15 ns/ft
Shielding Effectiveness:	-90 dBc min.
Dielectric Withstanding Voltage:	10.0 KV (@ 60 Hz, Sea Level/25°C)
Nominal Capacitance:	24 pF/ft
Maximum Frequency:	3 GHz

For phase and other electrical characteristics, please consult the appropriate section of catalog.



Frequency (GHz)	Typical Insertion Loss (dB/ft)	Typical Connector Loss (dB)	Typical VSWR
0.2	0.0040	0.01	1.15:1
0.4	0.006	0.02	1.20:1
0.8	0.012	0.02	1.25:1
1.0	0.015	0.02	1.30:1
2.0	0.022	0.03	1.35:1
3.0	0.031	0.04	1.35:1

**Physical Characteristics:**

Center Conductor:	Corrugated Tubular Copper
Dielectric:	Air with spiral wound PTFE
Outer Conductor:	Strip wound oxygen free copper per UNS C10200, 1.9" max. O.D.
Minimum Internal Operating Temperature:	-60°C to +175°C
Bend Radius	5 inches
Weight per Foot (unjacketed):	1.078 lbs.

**Optional Jacketing and Braid:**

Polyolefin per AMS-DTL-23053/5:	1.96" max. O.D.
Neoprene per AMS-DTL-23053/1:	1.98" max. O.D.
Braid:	Bronze per UNS C22000, 1.96" max. O.D.

Others available, please consult factory.



**Flexco Microwave, Inc.**

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 Port Murray, NJ 07865  
 Telephone 908 835 1720 Fax 908 835 0002  
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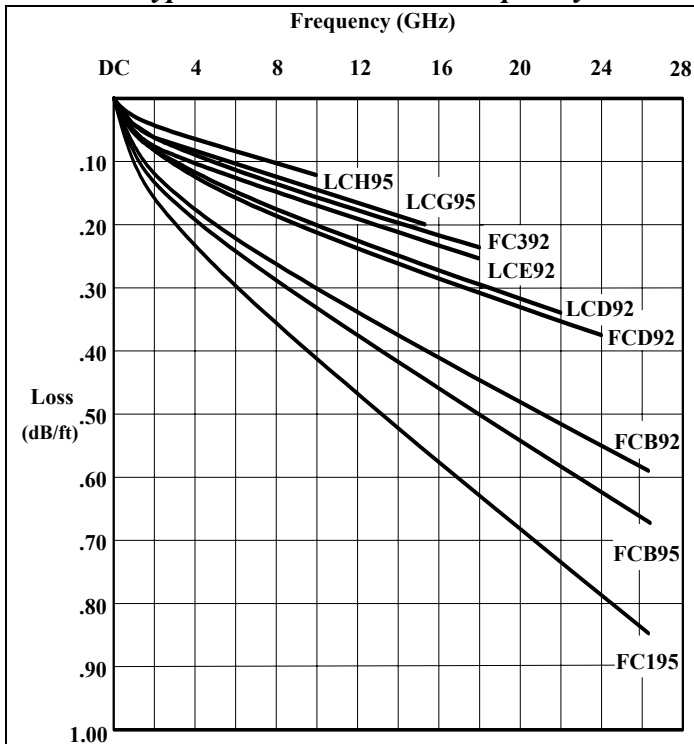
**Flexco Microwave's Hi-Vel™ Series Cables**

**Specification Summary**

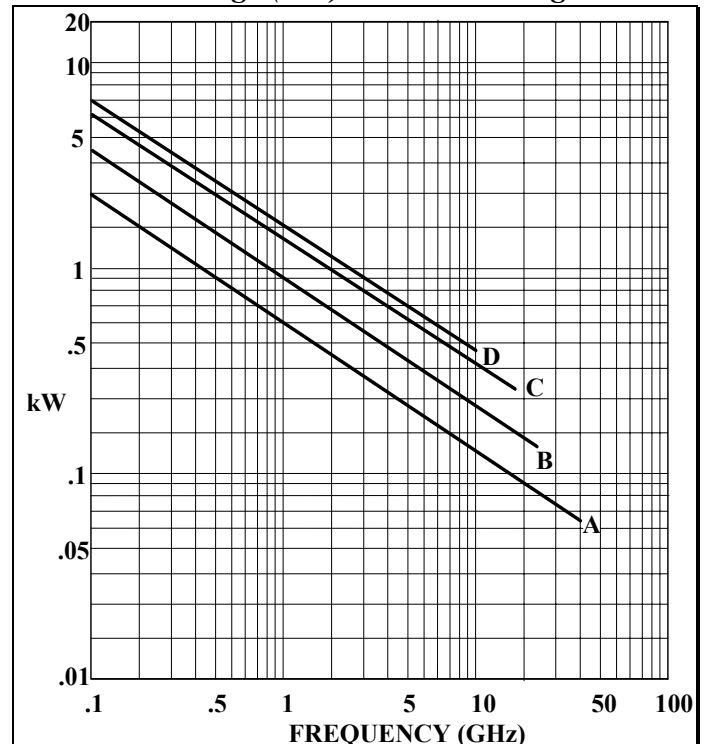
	FC195	FCB92	FCB95	FCD92	FC392	LCD92	LCE92	LCG95	LCH95
<b>Electrical</b>									
Maximum Frequency (GHz)	26.5	26.5	26.5	24	18	22	18	15.5	10
Nominal Impedance (Ω)	50	50	50	50	50	50	50	50	50
Velocity of Propagation (%)	74	83	83	85	88.5	89	90.5	92.4	91.8
Time Delay (ns/ft)	1.37	1.22	1.22	1.20	1.15	1.14	1.12	1.10	1.11
Breakdown Voltage (KV@ 60 Hz)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Nominal Capacitance (pF/ft)	28	26	24	25	25	23	24	22	24
Shielding Effectiveness (dBc min.)	-90	-90	-90	-90	-90	-90	-90	-90	-90
CW Power Curve (use graph below)	A	A	A	B	C	B	C	C	D
<b>Insertion Loss (dB/ft)</b>									
at 0.4 GHz	0.07	0.05	0.06	0.04	0.02	0.04	0.03	0.02	0.02
at 0.9 GHz	0.11	0.09	0.10	0.07	0.04	0.07	0.05	0.04	0.04
at 2.0 GHz	0.16	0.12	0.14	0.10	0.06	0.10	0.07	0.06	0.05
at 8.0 GHz	0.38	0.28	0.30	0.21	0.13	0.19	0.14	0.12	0.11
at 12.0 GHz	0.47	0.36	0.39	0.26	0.17	0.22	0.18	0.16	
at 18.0 GHz	0.64	0.43	0.50	0.31	0.22	0.28	0.23		
at 26.5 GHz	0.84	0.60	0.68						
<b>Physical</b>									
Center Conductor Type	Stranded	Solid	Stranded	Solid	Solid	Solid	Solid	Stranded	Stranded
Minimum Bend Radius (inches)	0.5	0.5	0.5	1.25	1.5	1.25	1.5	1.5	4.0
Unjacketed Weight per Foot (lbs.)	0.040	0.040	0.040	0.061	0.110	0.085	0.115	0.180	0.215
Unjacketed Outer Diameter (in.)	0.205	0.215	0.215	0.265	0.375	0.310	0.375	0.435	0.585

Available connectors include N, TNC, 2.4 mm, 3.5 mm, K, SMA, SC, LC and 7-16 DIN, conforming to MIL-C-39012 or IEEE specifications. Other connectors are available upon request. A wide selection of jackets, braids, and armoring are also available.

**Typical Attenuation vs. Frequency**

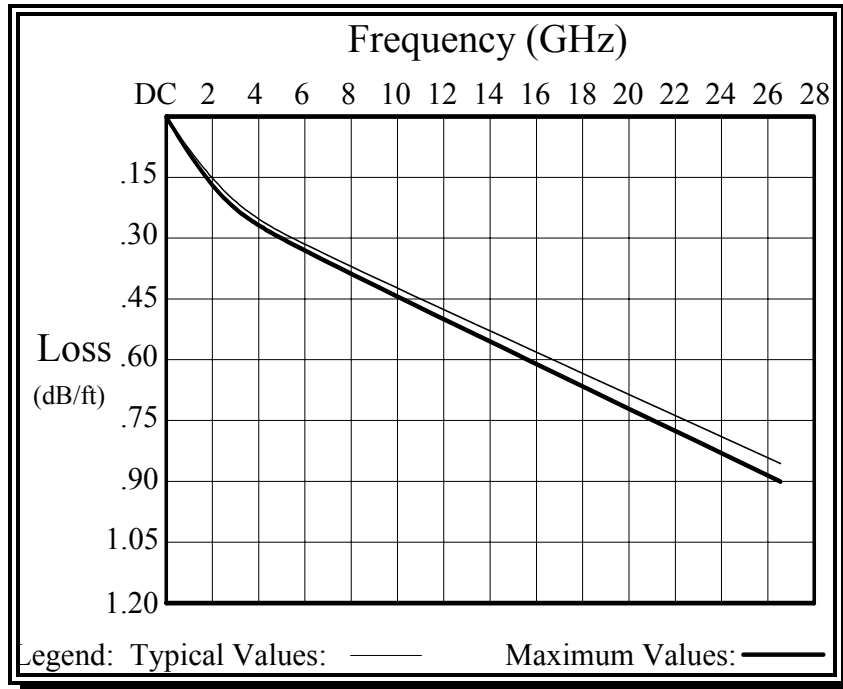


**Average (CW) Power Handling**



## FC195 Flexible Coaxial Cable 26.5 GHz Cable

### Frequency vs. Attenuation

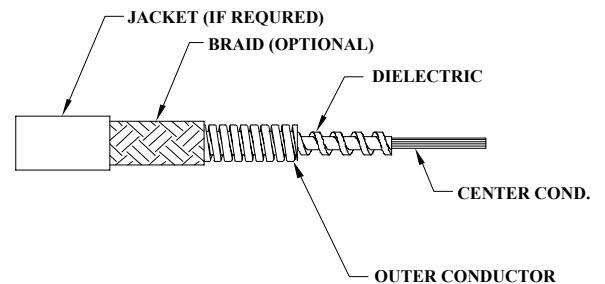


**Electrical Characteristics:**

Nominal Impedance:	50Ω
Velocity of Propagation:	74%
Effective Dielectric Constant:	1.83
Time Delay:	1.37 ns/ft
Shielding Effectiveness:	-90 dBc min.
Dielectric Withstanding Voltage:	3.0 KV (@ 60 Hz Sea Level/25°C)
Nominal Capacitance:	28 pF/ft
Maximum VSWR:	
Precision Straight connectors:	
DC - <4 GHz	1.10:1
4 GHz - <8 GHz	1.15:1
8 GHz - <18 GHz	1.25:1
18 GHz - 26.5 GHz	1.35:1
Non-Precision or Angle connectors:	
DC - <4 GHz	1.20:1
4 GHz - <8 GHz	1.30:1
8 GHz - <18 GHz	1.40:1
18 GHz - 26.5 GHz	1.50:1
Maximum Frequency:	26.5 GHz

For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.10	0.05	0.05	0.01	0.02
0.25	0.07	0.07	0.02	0.03
0.50	0.09	0.08	0.02	0.03
0.75	0.10	0.09	0.03	0.03
1.00	0.13	0.12	0.03	0.03
2.00	0.19	0.18	0.04	0.05
3.00	0.22	0.20	0.04	0.06
4.00	0.28	0.26	0.04	0.06
6.00	0.35	0.33	0.05	0.09
8.00	0.40	0.38	0.06	0.11
10.00	0.46	0.43	0.07	0.12
12.00	0.50	0.47	0.08	0.13
14.00	0.56	0.53	0.09	0.14
16.00	0.63	0.59	0.10	0.15
18.00	0.69	0.64	0.11	0.17
22.00	0.79	0.74	0.13	0.20
24.00	0.84	0.79	0.14	0.25
26.50	0.90	0.84	0.15	0.30



**Physical Characteristics:**

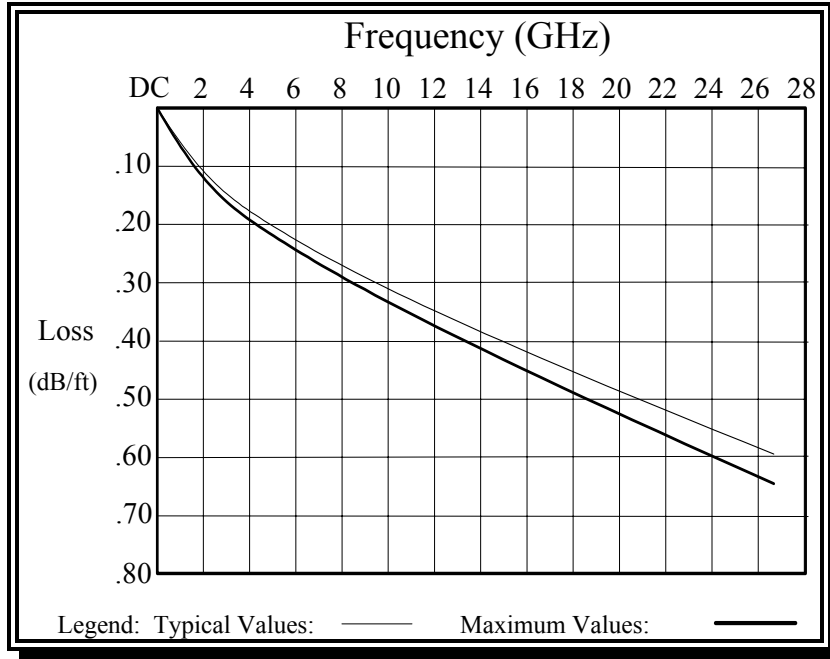
Center Cond.:	Stranded SPC per ASTM-B8
Dielectric:	PTFE per ASTM D4895
Outer Conductor:	Strip wound oxygen free copper per
Minimum Internal Bend Radius:	0.5 inches
Operating Temperature:	-60°C to +175°C
Weight per Foot (unjacketed):	0.040 lbs
Connector Interface:	Per MIL-STD-348

**Optional Jacketing and Braid:**

Polyolefin per AMS-DTL-23053/5: 0.250" max. O.D.  
 Neoprene per AMS-DTL-23053/1: 0.285" max. O.D.  
 FEP per AMS-DTL-23053/11: 0.240" max. O.D.  
 Braid: Bronze per UNS C22000, 0.250" max. O.D.  
 Others available, please consult factory.

## FCB92 Flexible Coaxial Cable 26.5 GHz Cable

### Frequency vs. Attenuation

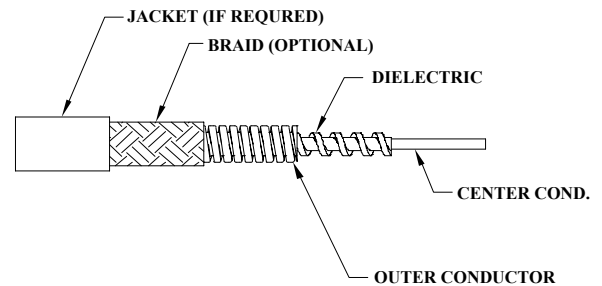


#### Electrical Characteristics:

Nominal Impedance:	50Ω
Velocity of Propagation:	83%
Effective Dielectric Constant:	1.44
Time Delay:	1.22 ns/ft
Shielding Effectiveness:	-90 dBc min.
Dielectric Withstanding Voltage:	3.0 KV (@ 60 Hz Sea Level/25°C)
Nominal Capacitance:	26 pF/ft
Maximum VSWR:	
Precision Straight connectors:	
DC - <4 GHz	1.10:1
4 GHz - <8 GHz	1.15:1
8 GHz - <18 GHz	1.25:1
18 GHz - 26.5 GHz	1.35:1
Non-Precision or Angle connectors:	
DC - <4 GHz	1.20:1
4 GHz - <8 GHz	1.30:1
8 GHz - <18 GHz	1.40:1
18 GHz - 26.5 GHz	1.50:1
Maximum Frequency:	27 GHz

For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.10	0.03	0.026	0.01	0.02
0.25	0.05	0.044	0.02	0.03
0.50	0.07	0.063	0.02	0.03
0.75	0.08	0.075	0.03	0.03
1.00	0.10	0.088	0.03	0.03
2.00	0.14	0.125	0.04	0.05
3.00	0.17	0.161	0.04	0.06
4.00	0.20	0.189	0.04	0.06
6.00	0.26	0.248	0.05	0.09
8.00	0.30	0.278	0.06	0.11
10.00	0.33	0.313	0.07	0.12
12.00	0.37	0.361	0.08	0.13
14.00	0.40	0.377	0.09	0.14
16.00	0.43	0.405	0.10	0.15
18.00	0.46	0.432	0.11	0.17
22.00	0.54	0.515	0.13	0.20
24.00	0.57	0.530	0.14	0.25
26.50	0.63	0.595	0.15	0.30



#### Physical Characteristics:

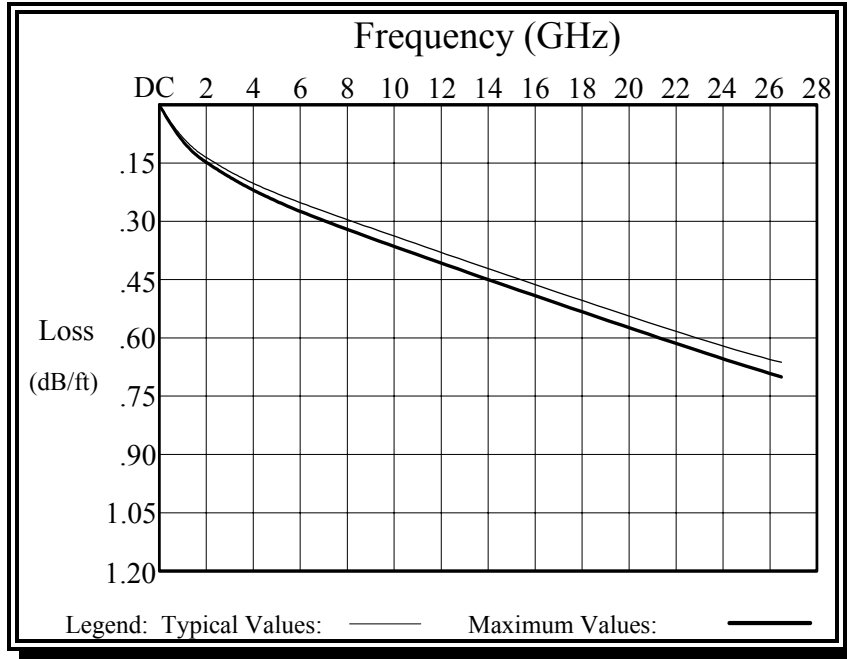
Center Conductor:	Solid SPC per ASTM-B298
Dielectric:	PTFE per ASTM D4895
Outer Conductor:	Strip wound oxygen free copper per UNS C10200, 0.220" max. O.D.
Minimum Internal Bend Radius:	0.5 inches
Operating Temperature:	-60°C to +175°C
Weight per Foot (unjacketed):	0.040 lbs
Connector Interface:	Per MIL-STD-348

#### Optional Jacketing and Braid:

Polyolefin per AMS-DTL-23053/5: 0.260" max. O.D.  
 Neoprene per AMS-DTL-23053/1: 0.290" max. O.D.  
 FEP per AMS-DTL-23053/11: 0.250" max. O.D.  
 Braid: Bronze per UNS C22000, 0.260" max. O.D.  
 Others available, please consult factory.

## FCB95 Flexible Coaxial Cable 26.5 GHz Cable

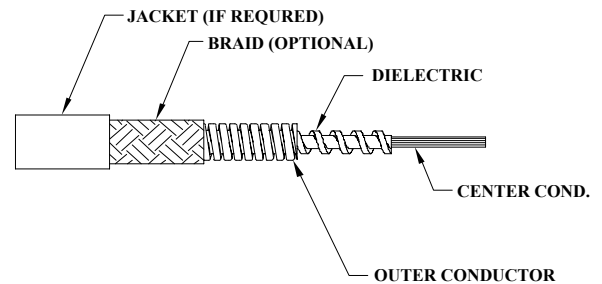
### Frequency vs. Attenuation



**Electrical Characteristics:**

- Nominal Impedance: 50Ω
  - Velocity of Propagation: 83 %
  - Effective Dielectric Constant: 1.44
  - Time Delay: 1.22 ns/ft
  - Shielding Effectiveness: -90 dBc min.
  - Dielectric Withstanding Voltage: 3.0 KV  
(@ 60 Hz Sea Level/25°C)
  - Nominal Capacitance: 24 pF/ft
  - Maximum VSWR:
    - Precision Straight connectors:
      - DC - <4 GHz 1.10:1
      - 4 GHz - <8 GHz 1.15:1
      - 8 GHz - <18 GHz 1.25:1
      - 18 GHz - 26.5 GHz 1.35:1
    - Non-Precision or Angle connectors:
      - DC - <4 GHz 1.20:1
      - 4 GHz - <8 GHz 1.30:1
      - 8 GHz - <18 GHz 1.40:1
      - 18 GHz - 26.5 GHz 1.50:1
  - Maximum Frequency: 26.5 GHz
- For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.10	0.04	0.04	0.01	0.02
0.25	0.06	0.06	0.02	0.03
0.50	0.08	0.07	0.02	0.03
0.75	0.09	0.08	0.03	0.03
1.00	0.11	0.10	0.03	0.03
2.00	0.15	0.14	0.04	0.05
3.00	0.19	0.18	0.04	0.06
4.00	0.22	0.21	0.04	0.06
6.00	0.27	0.26	0.05	0.09
8.00	0.32	0.30	0.06	0.11
10.00	0.37	0.35	0.07	0.12
12.00	0.41	0.39	0.08	0.13
14.00	0.44	0.42	0.09	0.14
16.00	0.48	0.46	0.10	0.15
18.00	0.52	0.50	0.11	0.17
22.00	0.60	0.58	0.13	0.20
24.00	0.64	0.62	0.14	0.25
26.50	0.71	0.68	0.15	0.30



**Physical Characteristics:**

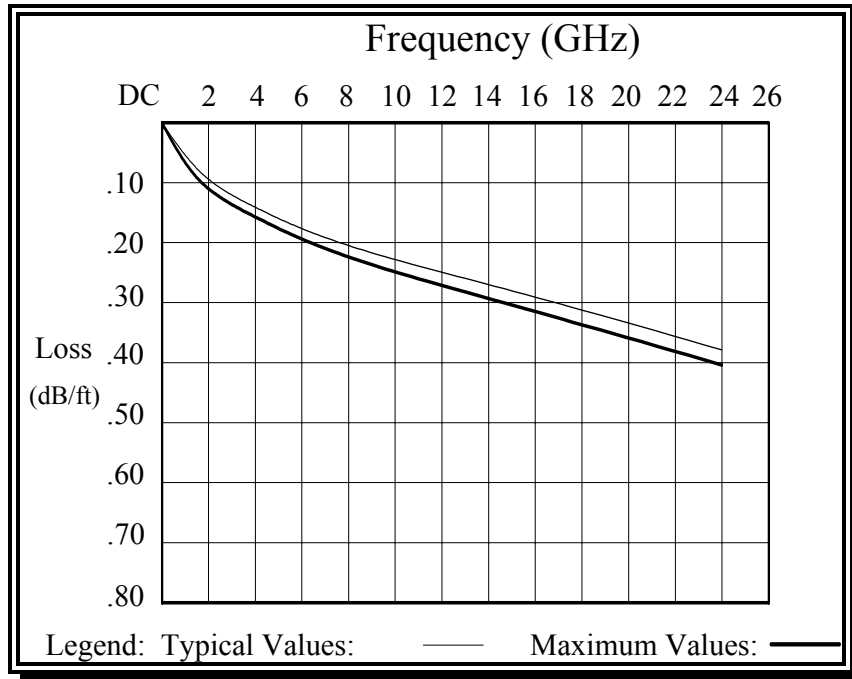
- Center Conductor: Stranded SPC per ASTM-B8 or B298
- Dielectric: PTFE per ASTM D4895
- Outer Conductor: Strip wound oxygen free copper per UNS C10200, 0.220" max. O.D.
- Minimum Internal Bend Radius: 0.5 inches
- Operating Temperature: -60°C to +175°C
- Weight per Foot (unjacketed): 0.040 lbs
- Connector Interface: Per MIL-STD-348

**Optional Jacketing and Braid:**

- Polyolefin per AMS-DTL-23053/5: 0.260" max. O.D.
- Neoprene per AMS-DTL-23053/1: 0.290" max. O.D.
- FEP per AMS-DTL-23053/11: 0.250" max. O.D.
- Braid: Bronze per UNS C22000, 0.260" max. O.D.
- Others available, please consult factory.

## FCD92 Flexible Coaxial Cable 24 GHz Cable

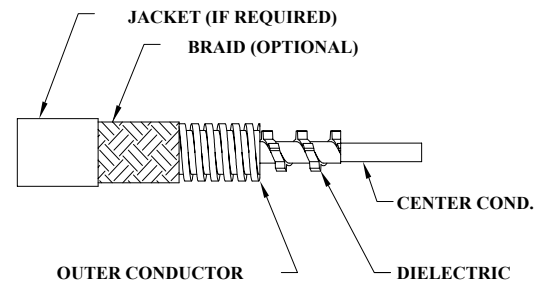
### Frequency vs. Attenuation



**Electrical Characteristics:**

- Nominal Impedance: 50Ω
  - Velocity of Propagation: 85%
  - Effective Dielectric Constant: 1.38
  - Time Delay: 1.20 ns/ft
  - Shielding Effectiveness: -90 dBc min.
  - Dielectric Withstanding Voltage: 3.0 KV  
(@ 60 Hz, Sea Level/25°C)
  - Nominal Capacitance: 25 pF/ft
  - Maximum VSWR:
    - Precision Straight connectors:
      - DC - <4 GHz 1.10:1
      - 4 GHz - <8 GHz 1.15:1
      - 8 GHz - <18 GHz 1.25:1
      - 18 GHz - 24 GHz 1.35:1
    - Non-Precision or Angle connectors:
      - DC - <4 GHz 1.20:1
      - 4 GHz - <8 GHz 1.30:1
      - 8 GHz - 24 GHz 1.40:1
  - Maximum Frequency: 24 GHz
- For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.10	0.04	0.03	0.01	0.02
0.25	0.05	0.04	0.02	0.03
0.50	0.06	0.05	0.02	0.03
0.75	0.07	0.06	0.03	0.03
1.0	0.08	0.07	0.03	0.03
2.0	0.11	0.10	0.04	0.05
3.0	0.13	0.12	0.04	0.06
4.0	0.15	0.14	0.04	0.06
6.0	0.19	0.18	0.06	0.09
8.0	0.22	0.21	0.07	0.11
10.0	0.25	0.24	0.08	0.12
12.0	0.27	0.26	0.08	0.13
14.0	0.29	0.27	0.09	0.14
16.0	0.31	0.29	0.10	0.15
18.0	0.33	0.31	0.11	0.17
20.0	0.36	0.34	0.12	0.19
22.0	0.38	0.36	0.13	0.20
24.0	0.40	0.38	0.14	0.25



**Physical Characteristics:**

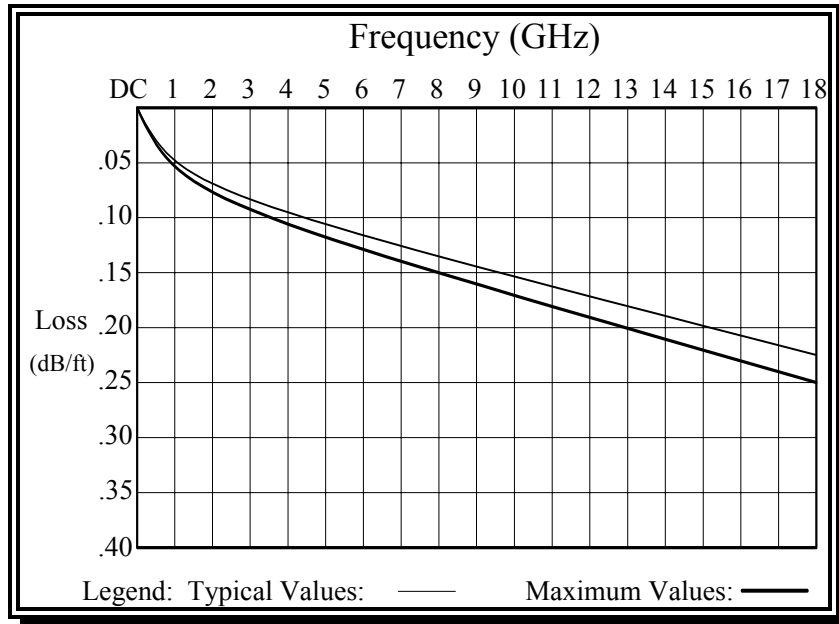
- Center Conductor: Solid SPC per ASTM-B298
- Dielectric: PTFE per ASTM D4895
- Outer Conductor: Strip wound oxygen free copper per UNS C10200, 0.275" max. O.D.
- Minimum Internal Bend Radius: 1.25 inches
- Operating Temperature: -60°C to +175°C
- Weight per Foot (unjacketed): 0.061 lbs
- Connector Interface: Per MIL-STD-348

**Optional Jacketing and Braid:**

- Polyolefin per AMS-DTL-23053/5: 0.325" max. O.D.
  - Neoprene per AMS-DTL-23053/1: 0.350" max. O.D.
  - FEP per AMS-DTL-23053/11: 0.300" max. O.D.
  - Braid: Bronze per UNS C22000, 0.325" max. O.D.
- Others available, please consult factory.

## FC392 Flexible Coaxial Cable 18 GHz Cable

### Frequency vs. Attenuation



**Electrical Characteristics:**

- Nominal Impedance: 50Ω
- Velocity of Propagation: 88.5%
- Effective Dielectric Constant: 1.28
- Time Delay: 1.15 ns/ft
- Shielding Effectiveness: -90 dBc min.
- Dielectric Withstanding Voltage: 3.0 KV  
(@ 60 Hz, Sea Level/25°C)
- Nominal Capacitance: 25 pF/ft

**Maximum VSWR:**

- Precision Straight connectors:
  - DC - <4 GHz 1.10:1
  - 4 GHz - <8 GHz 1.15:1
  - 8 GHz - 18 GHz 1.25:1

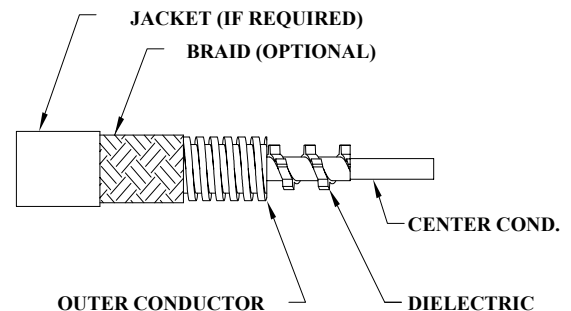
**Non-Precision or Angle connectors:**

- DC - <4 GHz 1.20:1
- 4 GHz - <8 GHz 1.30:1
- 8 GHz - 18 GHz 1.40:1

Maximum Frequency: 18 GHz

For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.04	0.008	0.006	0.01	0.02
0.10	0.016	0.014	0.02	0.03
0.30	0.021	0.018	0.02	0.03
0.50	0.035	0.032	0.02	0.03
1.0	0.055	0.048	0.02	0.03
2.0	0.075	0.064	0.03	0.05
3.0	0.095	0.082	0.04	0.06
4.0	0.110	0.096	0.04	0.06
5.0	0.125	0.109	0.05	0.08
6.0	0.135	0.120	0.06	0.09
7.0	0.150	0.133	0.06	0.09
8.0	0.160	0.143	0.07	0.11
9.0	0.170	0.154	0.07	0.11
10.0	0.180	0.162	0.08	0.12
11.0	0.190	0.170	0.08	0.12
12.0	0.200	0.183	0.08	0.12
13.0	0.210	0.188	0.09	0.14
14.0	0.220	0.198	0.09	0.14
15.0	0.225	0.204	0.10	0.15
16.0	0.235	0.212	0.10	0.15
17.0	0.245	0.220	0.11	0.17
18.0	0.250	0.230	0.11	0.17



**Physical Characteristics:**

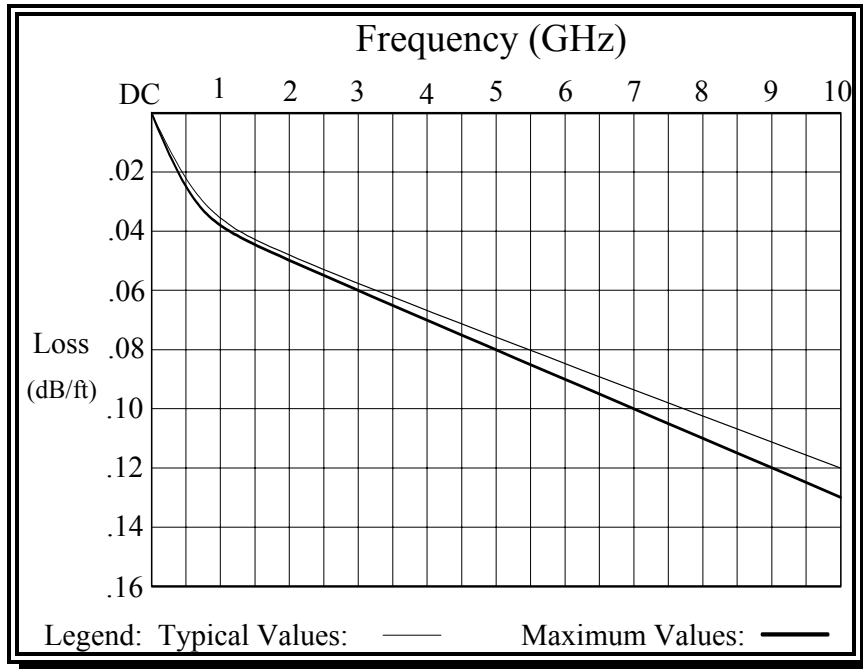
- Center Conductor: Solid SPC per ASTM-B298
- Dielectric: PTFE per ASTM D4895
- Outer Conductor: Strip wound oxygen free copper per UNS C10200, 0.375" max. O.D.
- Minimum Internal Bend Radius: 1.5 inches
- Operating Temperature: -60°C to +175°C
- Weight per Foot (unjacketed): 0.107 lbs

**Optional Jacketing and Braid:**

- Polyolefin per AMS-DTL-23053/5: 0.420" max. O.D.
- Neoprene per AMS-DTL-23053/1: 0.450" max. O.D.
- FEP per AMS-DTL-23053/11: 0.405" max. O.D.
- Braid: Bronze per UNS C22000, 0.420" max. O.D.
- Others available, please consult factory.

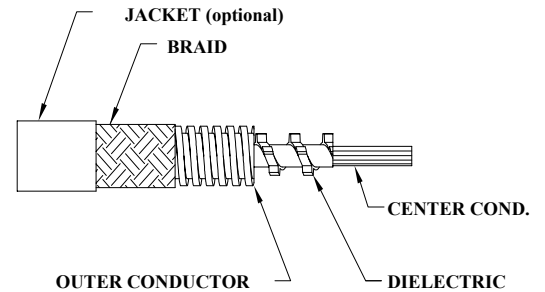
## FCH95 Flexible Coaxial Cable 10 GHz Cable

### Frequency vs. Attenuation



**Electrical Characteristics:**

- Nominal Impedance: 50Ω
  - Velocity of Propagation: 91.8%
  - Effective Dielectric Constant: 1.185
  - Time Delay: 1.11 ns/ft
  - Shielding Effectiveness: -90 dBc min.
  - Dielectric Withstanding Voltage: 3.0 KV  
(@ 60 Hz, Sea Level/25°C)
  - Nominal Capacitance: 24 pF/ft
  - Maximum VSWR:
    - Precision Straight connectors:
      - DC - <4 GHz 1.10:1
      - 4 GHz - <8 GHz 1.15:1
      - 8 GHz - 10 GHz 1.25:1
    - Non-Precision or Angle connectors:
      - DC - <4 GHz 1.20:1
      - 4 GHz - <8 GHz 1.30:1
      - 8 GHz - 10 GHz 1.40:1
  - Maximum Frequency: 10.5 GHz
- For phase and other electrical characteristics, please consult the appropriate section of catalog.



Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.5	0.03	0.03	0.02	0.03
1.0	0.04	0.04	0.03	0.05
2.0	0.05	0.05	0.04	0.06
3.0	0.07	0.07	0.04	0.06
4.0	0.08	0.07	0.05	0.08
5.0	0.09	0.08	0.06	0.09
6.0	0.10	0.09	0.06	0.09
7.0	0.11	0.10	0.07	0.11
8.0	0.12	0.11	0.07	0.11
9.0	0.12	0.11	0.08	0.12
10.0	0.13	0.12	0.08	0.12

**Physical Characteristics:**

- Center Conductor: Stranded SPC per ASTM-B8 or B298
- Dielectric: PTFE per ASTM D4895
- Outer Conductor: Strip wound oxygen free copper per UNS C10200, 0.560" Dia.
- Minimum Internal Bend Radius: 4 inches
- Operating Temperature: -60°C to +175°C
- Weight per Foot (no jacketing): 0.215 lbs.
- Connector Interface: Per MIL-STD-348

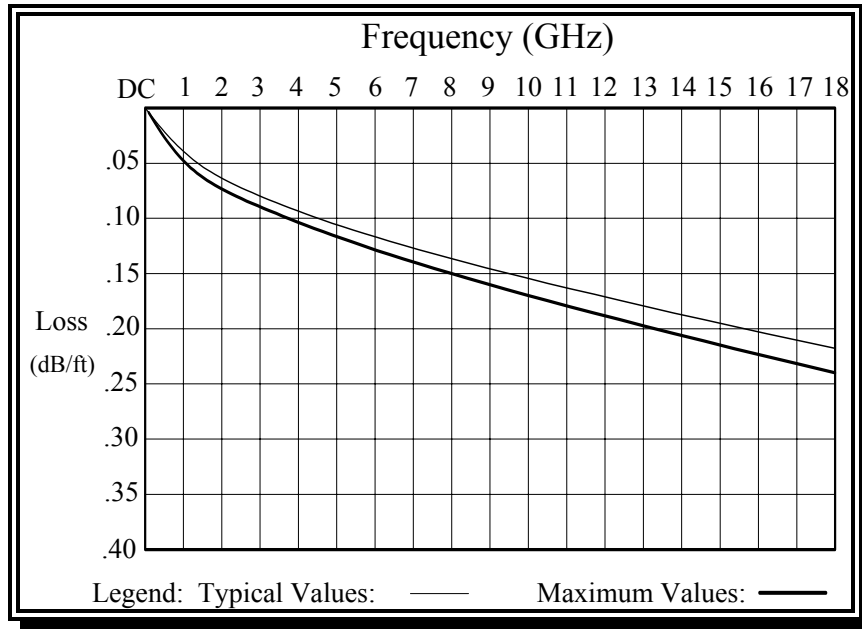
**Optional Jacketing:**

- Polyolefin per AMS-DTL-23053/5: 0.650" max. O.D.
- Neoprene per AMS-DTL-23053/1: 0.680" max. O.D.
- Braid: Bronze per UNS C22000, 0.600" max. O.D.
- Nomex braid 0.655" max. O.D.
- Others available, please consult factory.



## LCE92 Flexible Coaxial Cable 18 GHz Cable

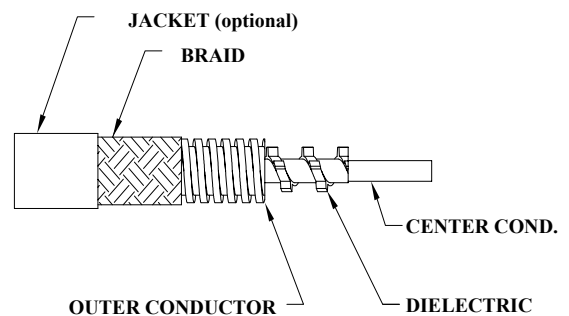
### Frequency vs. Attenuation



**Electrical Characteristics:**

- Nominal Impedance: 50Ω
  - Velocity of Propagation: 90.5%
  - Effective Dielectric Constant: 1.22
  - Time Delay: 1.12 ns/ft
  - Shielding Effectiveness: -90 dBc min.
  - Dielectric Withstanding Voltage: 3.0 KV  
(@ 60 Hz, Sea Level/25°C)
  - Nominal Capacitance: 24 pF/ft
  - Maximum VSWR:
    - Precision Straight connectors:
      - DC - <4 GHz 1.10:1
      - 4 GHz - <8 GHz 1.15:1
      - 8 GHz - 18 GHz 1.25:1
    - Non-Precision or Angle connectors:
      - DC - <4 GHz 1.20:1
      - 4 GHz - <8 GHz 1.30:1
      - 8 GHz - 18 GHz 1.40:1
  - Maximum Frequency: 18 GHz
- For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connector (dB)
1.0	0.046	0.044	0.02	0.03
2.0	0.075	0.071	0.03	0.05
3.0	0.092	0.087	0.04	0.06
4.0	0.106	0.102	0.04	0.06
5.0	0.121	0.115	0.05	0.08
6.0	0.133	0.126	0.06	0.09
7.0	0.143	0.136	0.06	0.09
8.0	0.155	0.147	0.07	0.11
9.0	0.165	0.157	0.07	0.11
10.0	0.175	0.166	0.08	0.12
11.0	0.185	0.176	0.08	0.12
12.0	0.196	0.186	0.08	0.12
13.0	0.206	0.196	0.09	0.14
14.0	0.215	0.204	0.09	0.14
15.0	0.220	0.209	0.10	0.15
16.0	0.226	0.218	0.10	0.15
17.0	0.235	0.223	0.11	0.17
18.0	0.240	0.228	0.11	0.17



**Physical Characteristics:**

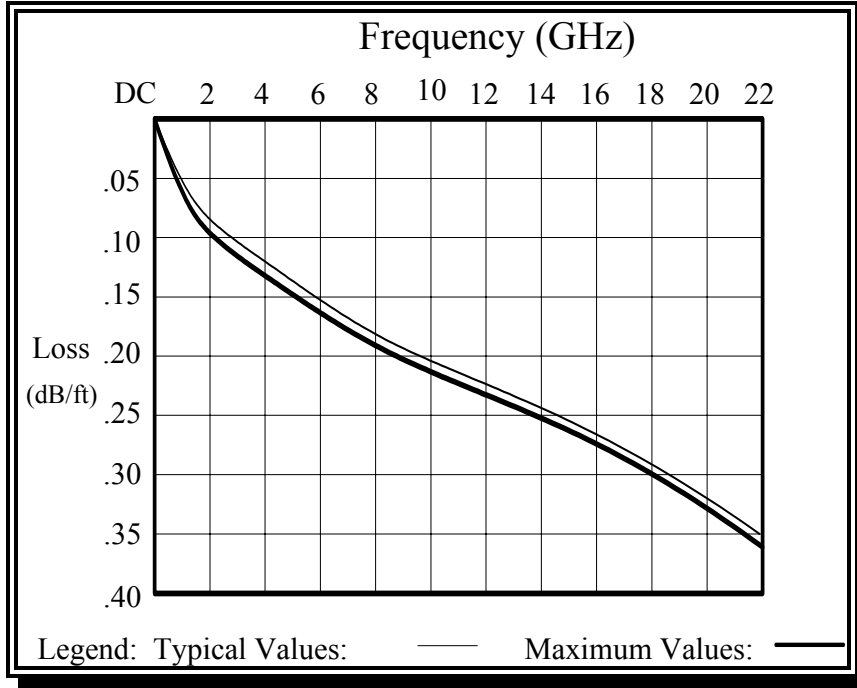
- Center Conductor: Solid SPC per ASTM-B298
- Dielectric: PTFE per ASTM D4895
- Outer Conductor: Strip wound oxygen free copper per UNS C10200, 0.335" Dia.
- Braid: Bronze per UNS C22000, 0.375" max. O.D.
- Minimum Internal Bend Radius: 1.5 inches
- Operating Temperature: -60°C to +175°C
- Weight per Foot (no jacketing): 0.115 lbs
- Connector Interface: Per MIL-STD-348

**Optional Jacketing:**

- Polyolefin per AMS-DTL-23053/5: 0.420" max. O.D.
  - Neoprene per AMS-DTL-23053/1: 0.450" max. O.D.
  - FEP per AMS-DTL-23053/11: 0.410" max. O.D.
- Others available, please consult factory.

## LCD92 Flexible Coaxial Cable 22 GHz Cable

### Frequency vs. Attenuation

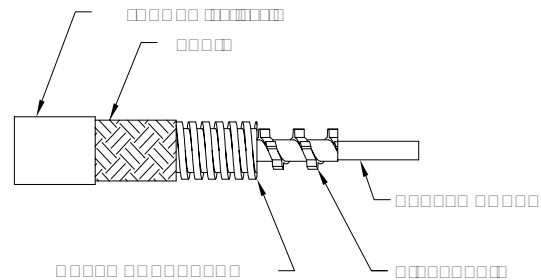


### Electrical Characteristics:

Nominal Impedance:	50Ω
Velocity of Propagation:	89%
Effective Dielectric Constant:	1.26
Time Delay:	1.14 ns/ft
Shielding Effectiveness:	-90 dBc min.
Dielectric Withstanding Voltage:	3.0 KV
	(@ 60 Hz, Sea Level/25°C)
Nominal Capacitance:	23 pF/ft
Maximum VSWR:	
Precision Straight connectors:	
DC - <4 GHz	1.10:1
4 GHz - <8 GHz	1.15:1
8 GHz - <18 GHz	1.25:1
18 GHz - 22 GHz	1.35:1
Non-Precision or Angle connectors:	
DC - <4 GHz	1.20:1
4 GHz - <8 GHz	1.30:1
8 GHz - <18 GHz	1.40:1
18 GHz - 22 GHz	1.50:1
Maximum Frequency:	22 GHz

For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.10	0.04	0.03	0.01	0.02
0.25	0.05	0.04	0.02	0.03
0.50	0.06	0.05	0.02	0.03
0.75	0.07	0.06	0.02	0.03
1.0	0.08	0.07	0.02	0.03
2.0	0.11	0.10	0.03	0.05
3.0	0.12	0.11	0.04	0.06
4.0	0.14	0.13	0.04	0.06
5.0	0.16	0.15	0.05	0.08
6.0	0.17	0.16	0.06	0.09
8.0	0.20	0.19	0.07	0.11
10.0	0.22	0.21	0.08	0.12
12.0	0.24	0.22	0.08	0.13
14.0	0.26	0.24	0.09	0.14
16.0	0.28	0.26	0.10	0.15
18.0	0.30	0.28	0.11	0.17
20.0	0.33	0.31	0.12	0.19
22.0	0.37	0.35	0.13	0.21



### Physical Characteristics:

Center Conductor:	solid SPC per ASTM-B298
Dielectric:	PTFE per ASTM D4895
Outer Conductor:	Strip wound oxygen free copper per UNS C10200, 0.265" Dia.
Braid:	Bronze per UNS C22000, 0.310" max. O.D.
Minimum Internal Bend Radius:	1.25 inches
Operating Temperature:	-60°C to +175°C
Weight per Foot (no jacketing)	0.085 lbs

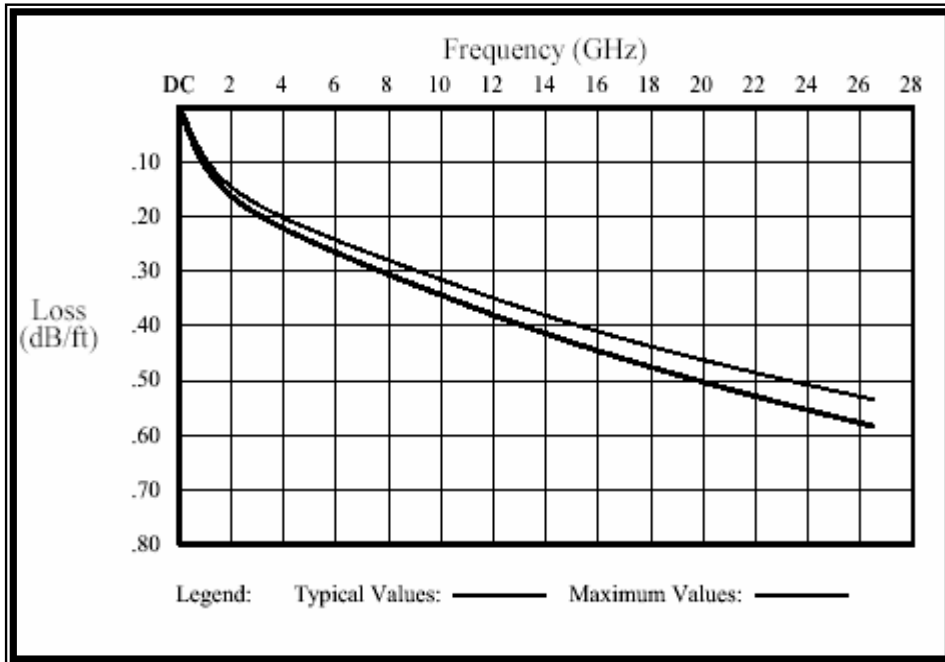
### Optional Jacketing:

Polyolefin per AMS-DTL-23053/5:	0.350" max. O.D.
Neoprene per AMS-DTL-23053/1:	0.385" max. O.D.
FEP per AMS-DTL-23053/11:	0.340" max. O.D.
Nomex braid:	0.355" max. O.D.

Others available, please consult factory.

## FC105 Flexible Coaxial Cable 26.5 GHz Cable

### Frequency vs. Attenuation

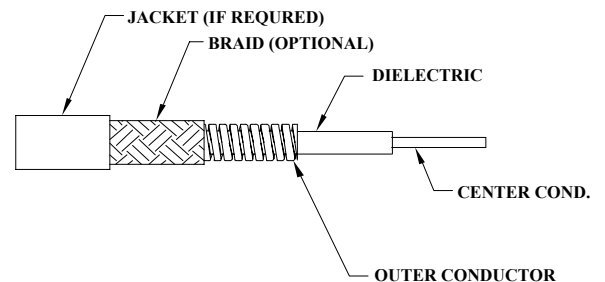


### Electrical Characteristics:

Nominal Impedance:	50Ω
Velocity of Propagation:	83%
Effective Dielectric Constant:	1.45
Time Delay:	1.22 ns/ft
Shielding Effectiveness:	-90 dBc min.
Dielectric Withstanding Voltage:	3.0 KV (@ 60 Hz Sea Level/25°C)
Nominal Capacitance:	26.7 pF/ft
Maximum VSWR:	
Precision Straight connectors:	
DC - <4 GHz	1.10:1
4 GHz - <8 GHz	1.15:1
8 GHz - <18 GHz	1.25:1
18 GHz - 26.5 GHz	1.35:1
Non-Precision or Angle connectors:	
DC - <4 GHz	1.20:1
4 GHz - <8 GHz	1.30:1
8 GHz - <18 GHz	1.40:1
18 GHz - 26.5 GHz	1.50:1
Maximum Frequency:	26.5 GHz

For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.50	0.04	0.03	0.02	0.03
1.00	0.11	0.10	0.03	0.03
2.00	0.16	0.14	0.04	0.05
4.00	0.22	0.20	0.04	0.06
6.00	0.26	0.24	0.05	0.09
8.00	0.30	0.28	0.06	0.11
10.00	0.34	0.32	0.07	0.12
12.00	0.37	0.35	0.08	0.13
14.00	0.41	0.38	0.09	0.14
16.00	0.43	0.40	0.10	0.15
18.00	0.48	0.44	0.11	0.17
22.00	0.52	0.48	0.13	0.20
24.00	0.55	0.50	0.14	0.25
26.50	0.59	0.54	0.15	0.30



### Physical Characteristics:

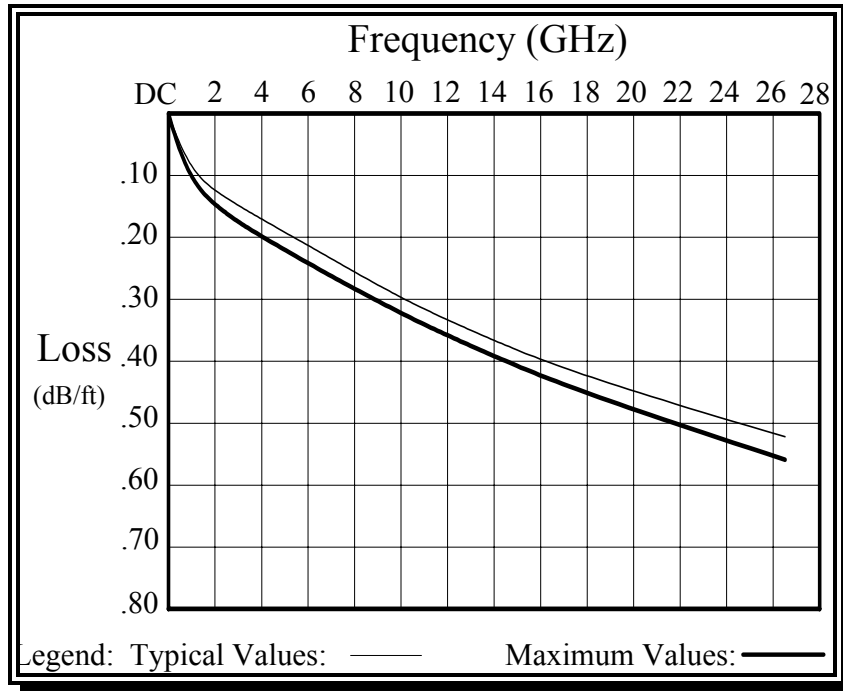
Center Cond.:	Stranded SPC
Dielectric:	Expanded PTFE
Outer Conductor:	Strip wound oxygen free copper per UNS C10200, 0.216" max. O.D.
Minimum Internal Bend Radius:	0.5 inches
Operating Temperature:	-60°C to +175°C
Weight per Foot (unjacketed):	0.040 lbs

### Optional Jacketing and Braid:

Polyolefin per AMS-DTL-23053/5: 0.250" max. O.D.  
 Neoprene per AMS-DTL-23053/1: 0.285" max. O.D.  
 FEP per AMS-DTL-23053/11: 0.240" max. O.D.  
 Braid: Bronze per UNS C22000, 0.250" max. O.D.  
 Others available, please consult factory.

## FC102 Flexible Coaxial Cable 26.5 GHz Cable

### Frequency vs. Attenuation

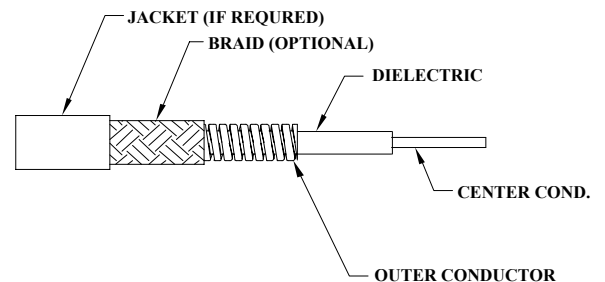


**Electrical Characteristics:**

Nominal Impedance:	50Ω
Velocity of Propagation:	76.5%
Effective Dielectric Constant:	1.71
Time Delay:	1.33 ns/ft
Shielding Effectiveness:	-90 dBc min.
Dielectric Withstanding Voltage:	3.0 KV
	(@ 60 Hz Sea Level/25°C)
Nominal Capacitance:	26.7 pF/ft
Maximum VSWR:	
Precision Straight connectors:	
DC - <4 GHz	1.10:1
4 GHz - <8 GHz	1.15:1
8 GHz - <18 GHz	1.25:1
18 GHz - 26.5 GHz	1.35:1
Non-Precision or Angle connectors:	
DC - <4 GHz	1.20:1
4 GHz - <8 GHz	1.30:1
8 GHz - <18 GHz	1.40:1
18 GHz - 26.5 GHz	1.50:1
Maximum Frequency:	26.5 GHz

For phase and other electrical characteristics, please consult the appropriate section of catalog.

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Loss per precision connector (dB)	Loss per non precision or angle connect. (dB)
0.50	0.07	0.06	0.02	0.03
1.00	0.10	0.09	0.03	0.03
2.00	0.14	0.12	0.04	0.05
4.00	0.19	0.17	0.04	0.06
6.00	0.23	0.21	0.05	0.09
8.00	0.27	0.25	0.06	0.11
10.00	0.32	0.30	0.07	0.12
12.00	0.35	0.33	0.08	0.13
14.00	0.38	0.36	0.09	0.14
16.00	0.42	0.39	0.10	0.15
18.00	0.45	0.42	0.11	0.17
22.00	0.48	0.44	0.13	0.20
24.00	0.52	0.48	0.14	0.25
26.50	0.55	0.51	0.15	0.30



**Physical Characteristics:**

Center Cond.:	Solid SPC per ASTM -B298
Dielectric:	Expanded PTFE
Outer Conductor:	Strip wound oxygen free copper per
Minimum Internal Bend Radius:	0.5 inches
Operating Temperature:	-60°C to +175°C
Weight per Foot (unjacketed):	0.040 lbs

**Optional Jacketing and Braid:**

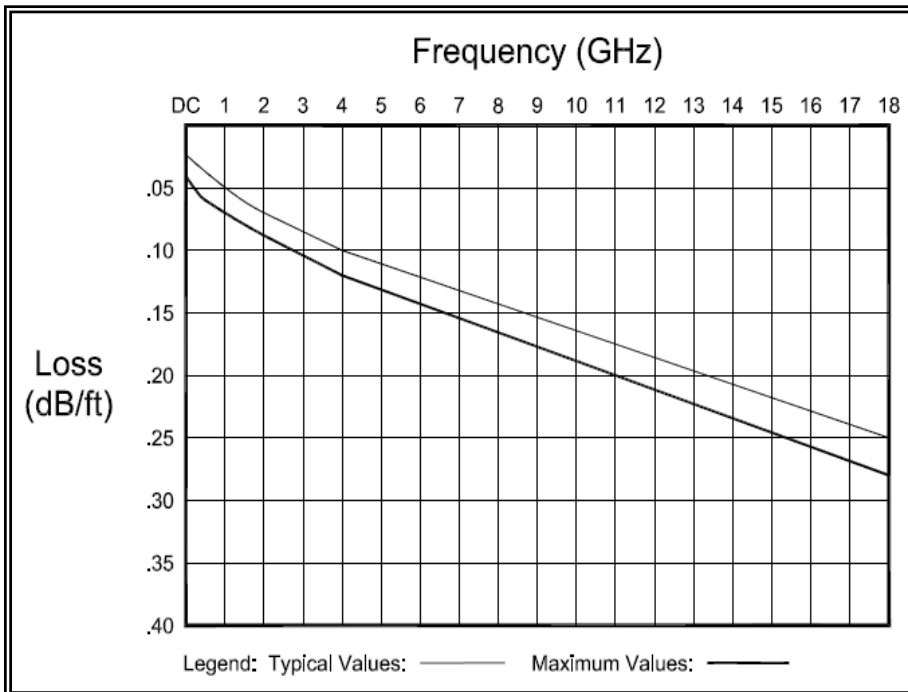
Polyolefin per AMS-DTL-23053/5: 0.250" max. O.D.  
 Neoprene per AMS-DTL -23053/1: 0.285" max. O.D.  
 FEP per AMS-DTL -23053/11: 0.240" max. O.D.  
 Braid: Bronze per UNS C22000, 0.250" max. O.D.  
 Others available, please consult factory.

## FCL02 Flexible Coaxial Cable

### 18 GHz Cable

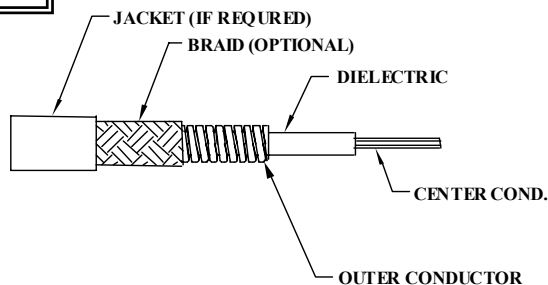
#### Frequency vs. Attenuation

#### Electrical Characteristics:



Nominal Impedance:	50Ω
Velocity of Propagation:	83.5%
Effective Dielectric Constant:	1.43
Time Delay:	1.21 ns/ft
Shielding Effectiveness:	-90 dBc min.
Dielectric Withstanding Voltage:	3.0 kV (@ 60 Hz Sea Level/25°C)
Nominal Capacitance:	26.7 pF/ft
Maximum VSWR:	
Precision Straight connectors:	
DC - <4 GHz	1.10:1
4 GHz - <8 GHz	1.15:1
8 GHz - <18 GHz	1.25:1
Non-Precision or Angle connectors:	
DC - <4 GHz	1.20:1
4 GHz - <8 GHz	1.30:1
8 GHz - <18 GHz	1.40:1
Maximum Frequency:	18 GHz
Phase Stability vs. Flex - 18 GHz:	4 deg.
Phase Stability vs. Temperature(@ 10 GHz):	6 ppm/C°

Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Precision Connector Loss (dB)	Non Precision Connector Loss (dB)
0.50	0.05	0.04	0.02	0.03
1.00	0.07	0.06	0.03	0.03
2.00	0.08	0.07	0.04	0.05
4.00	0.12	0.10	0.04	0.06
6.00	0.14	0.12	0.05	0.09
8.00	0.17	0.15	0.06	0.11
10.00	0.18	0.16	0.07	0.12
12.00	0.21	0.18	0.08	0.13
14.00	0.23	0.20	0.09	0.14
16.00	0.26	0.23	0.10	0.15
18.00	0.28	0.25	0.11	0.17



#### Physical Characteristics:

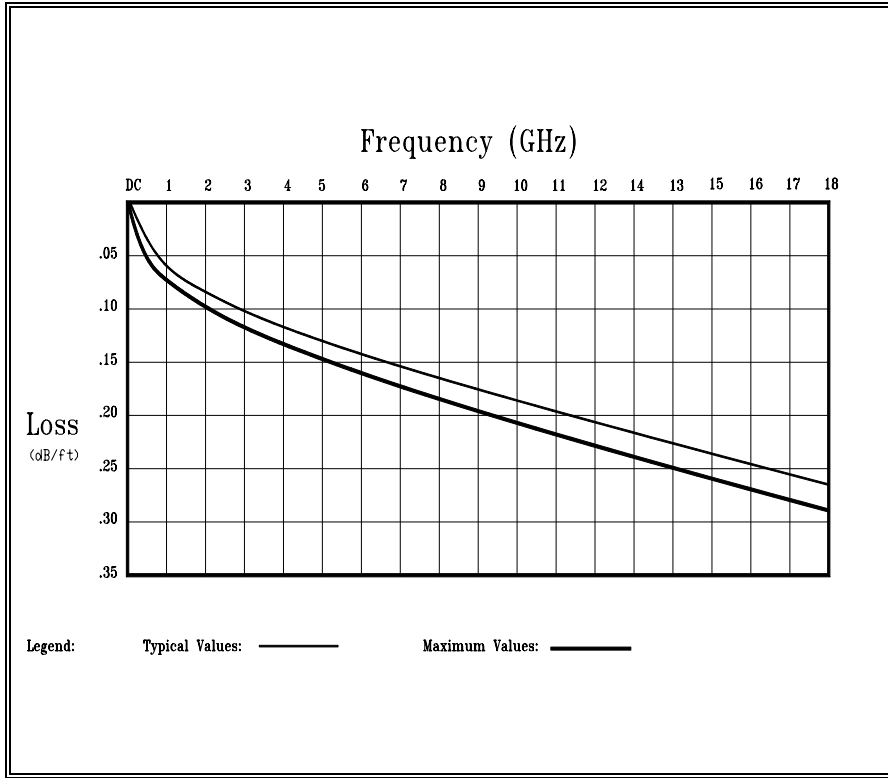
Center Cond.:	Solid SPC per ASTM -B298
Dielectric:	Expanded PTFE
Outer Conductor:	Strip wound oxygen free copper per UNS C10200, 0.315" max. O.D.
Minimum Internal Bend Radius:	1.5 inches
Operating Temperature:	-60°C to +175°C
Weight per Foot (unjacketed):	0.080 lbs

#### Optional Jacketing and Braid:

Polyolefin per AMS-DTL-23053/5:	0.350" max. O.D.
Neoprene per AMS-DTL -23053/1:	0.385" max. O.D.
FEP per AMS-DTL -23053/11:	0.340" max. O.D.
Braid: Bronze per UNS C22000,	0.350" max. O.D.
Others available, please consult factory.	

## FCL05 Flexible Coaxial Cable 18 GHz Cable

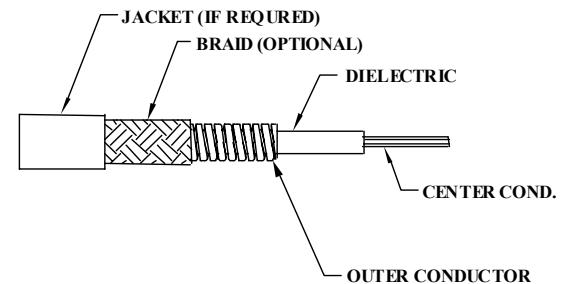
### Frequency vs. Attenuation



### Electrical Characteristics:

Nominal Impedance:	50Ω
Velocity of Propagation:	82.5%
Effective Dielectric Constant:	1.48
Time Delay:	1.24 ns/ft
Shielding Effectiveness:	-90 dBc min.
Dielectric Withstanding Voltage:	3.0 kV (@ 60 Hz Sea Level/25°C)
Nominal Capacitance:	26.7 pF/ft
Maximum VSWR:	
Precision Straight connectors:	
DC - <4 GHz	1.10:1
4 GHz - <8 GHz	1.15:1
8 GHz - <18 GHz	1.25:1
Non-Precision or Angle connectors:	
DC - <4 GHz	1.20:1
4 GHz - <8 GHz	1.30:1
8 GHz - <18 GHz	1.40:1
Maximum Frequency:	18 GHz
Phase Stability vs. Flex - 18 GHz:	3 deg.
Phase Stability vs. Temperature (@ 10 GHz):	6 ppm/C°

For phase and other electrical characteristics, please consult the appropriate section of catalog.



Frequency (GHz)	Maximum Insertion Loss (dB/ft)	Typical Insertion Loss (dB/ft)	Precision Connector Loss (dB)	Non Precision Connector Loss (dB)
0.50	0.05	0.04	0.02	0.03
1.00	0.07	0.06	0.02	0.03
2.00	0.10	0.08	0.03	0.05
3.00	0.12	0.10	0.04	0.06
4.00	0.14	0.12	0.04	0.06
5.00	0.15	0.13	0.05	0.08
6.00	0.17	0.15	0.06	0.09
7.00	0.18	0.16	0.06	0.09
8.00	0.19	0.17	0.07	0.11
10.00	0.21	0.19	0.08	0.12
12.00	0.23	0.21	0.08	0.13
12.40	0.24	0.22	0.08	0.13
14.00	0.25	0.23	0.09	0.14
16.00	0.27	0.25	0.10	0.15
18.00	0.29	0.27	0.11	0.17

### Physical Characteristics:

Center Cond.:	Stranded SPC per ASTM -B298
Dielectric:	Expanded PTFE
Outer Conductor:	Strip wound oxygen free copper per UNS C10200, 0.315" max. O.D.
Minimum Internal Bend Radius:	1.5 inches
Operating Temperature:	-60°C to +175°C
Weight per Foot (unjacketed):	0.083 lbs

### Optional Jacketing and Braid:

Polyolefin per AMS-DTL-23053/5:	0.350" max. O.D.
Neoprene per AMS-DTL -23053/1:	0.385" max. O.D.
FEP per AMS-DTL -23053/11:	0.340" max. O.D.
Braid:	Bronze per UNS C22000, 0.350" max. O.D.

Others available, please consult factory.

**Flexco Microwave, Inc.**

PO Box 115, 17 Karrville Rd.  
 Port Murray, NJ 07865  
 Telephone 908 835 1720 Fax 908 835 0002  
 http://www.FlexcoMW.com e-mail: sales@FlexcoMW.com



## Flexco Microwave's "S" Series Cables

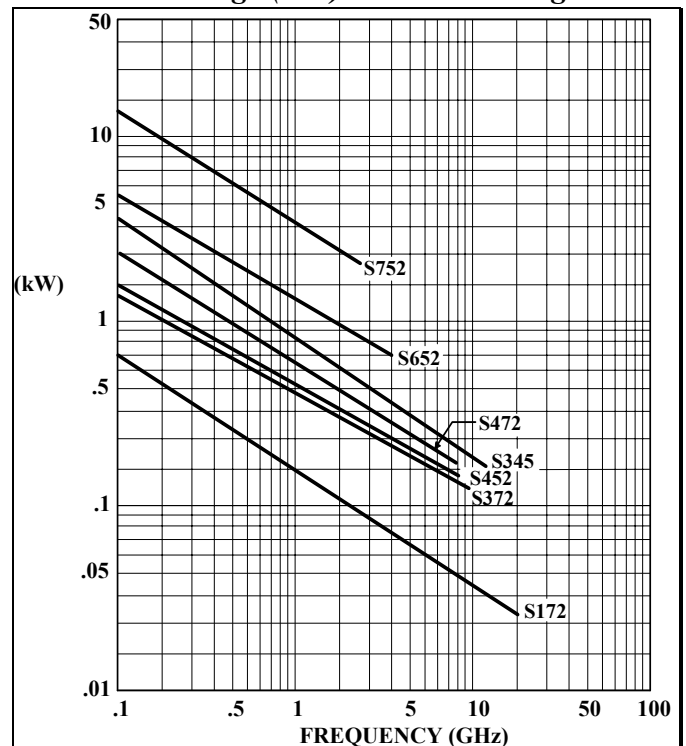
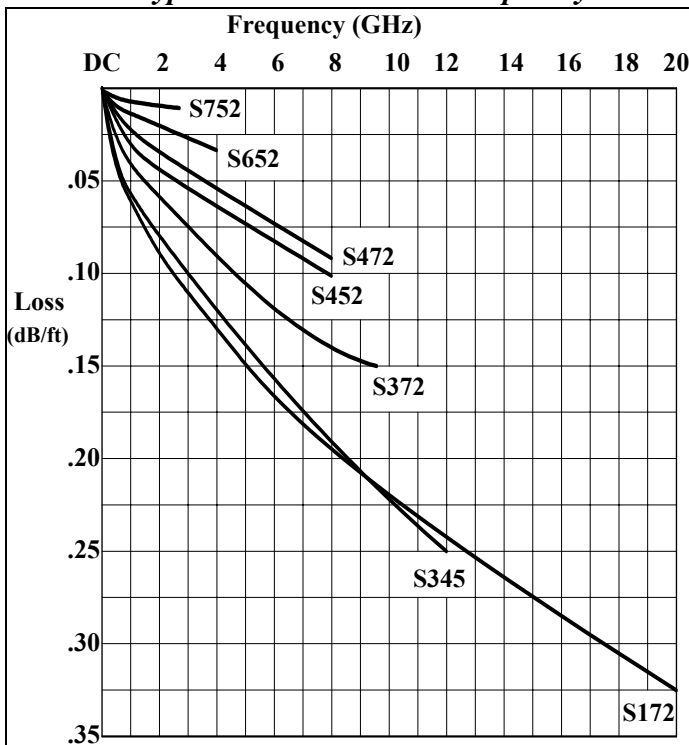
### Specification Summary

	S172	S345	S372	S452	S472	S652	S752
<b>Electrical</b>							
Maximum Frequency (GHz)	20	12	9.5	8	8	4	2.7
Nominal Impedance ( $\Omega$ )	50	50	50	50	50	50	50
Velocity of Propagation (%)	84	79	81	90	88	90	95
Time Delay (ns/ft)	1.21	1.29	1.25	1.13	1.15	1.13	1.07
Breakdown Voltage (KV@ 60 Hz)	3.0	5.0	5.0	5.0	5.0	5.0	8.0
Nominal Capacitance (pF/ft)	24	26	25	24	24	24	22.5
Shielding Effectiveness (dBc min.)	-110	-90	-110	-90	-110	-90	-90
<b>Insertion Loss (dB/ft)</b>							
at 0.4 GHz	0.03	0.04	0.02	0.02	0.01	0.008	0.004
at 0.9 GHz	0.06	0.05	0.03	0.03	0.02	0.010	0.006
at 2.0 GHz	0.08	0.07	0.05	0.04	0.03	0.018	0.009
at 8.0 GHz	0.20	0.19	0.13	0.10	0.08		
at 12.0 GHz	0.24	0.25					
at 18.0 GHz	0.30						
<b>Physical</b>							
Center Conductor Type	Solid	Stranded	Solid	Solid	Solid	Tubular	Tubular
Minimum Bend Radius (inches)	1.0	2.0	1.25	5.5	5.0	10.5	20.0
Weight per Foot (lbs.)	0.050	0.162	0.150	0.182	0.165	0.560	0.864
Outer Diameter (in.)	0.300	0.480	0.530	0.585	0.640	1.100	1.996

Available connectors include N, TNC, 2.4 mm, 3.5 mm, K, SMA, SC, LC and 7-16 DIN, conforming to MIL-C-39012 or IEEE specifications. Other connectors are available upon request. A wide selection of jackets, braids, and armoring are also available.

### Average (CW) Power Handling

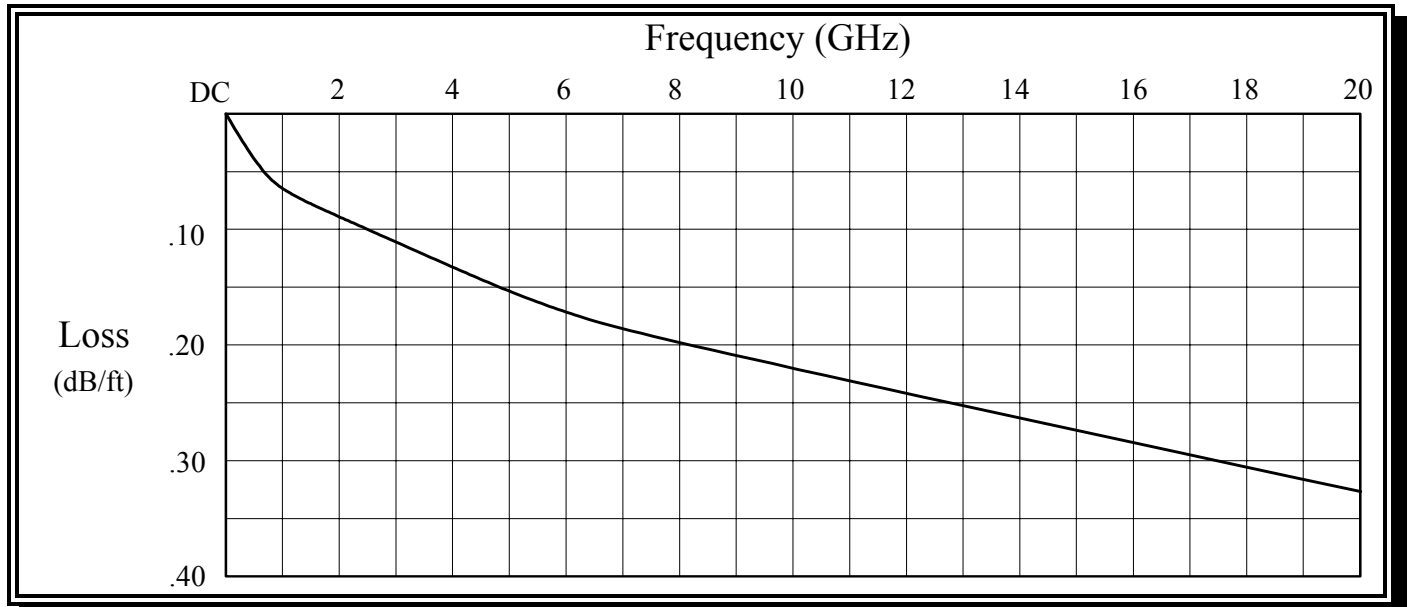
**Typical Attenuation vs. Frequency**



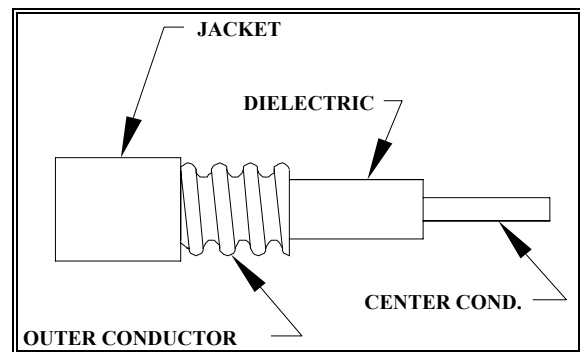


## *S172 Flexible Coaxial Cable* 20 GHz Cable

### *Frequency vs. Attenuation*



Frequency (GHz)	Typical Insertion Loss (dB/ft)	Typical Connector Loss (dB/each)	Average Power at 40°C (kW)
0.03	0.010	0.02	1.25
0.4	0.037	0.02	0.33
1.0	0.060	0.02	0.20
2.0	0.080	0.03	0.15
4.0	0.125	0.04	0.09
8.0	0.200	0.07	0.06
12.0	0.240	0.08	0.05
16.0	0.280	0.10	0.04
20.0	0.325	0.12	0.03



**Electrical Characteristics:**

Nominal Impedance: 50Ω  
 Velocity of Propagation: 84%  
 Effective Dielectric Constant: 1.42  
 Time Delay: 1.21 ns/ft  
 Shielding Effectiveness: -110 dBc min.  
 Dielectric Withstanding Voltage: 3.0 KV  
 (@ 60 Hz, Sea Level/25°C)  
 Nominal Capacitance: 24 pF/ft  
 Maximum Frequency: 20 GHz

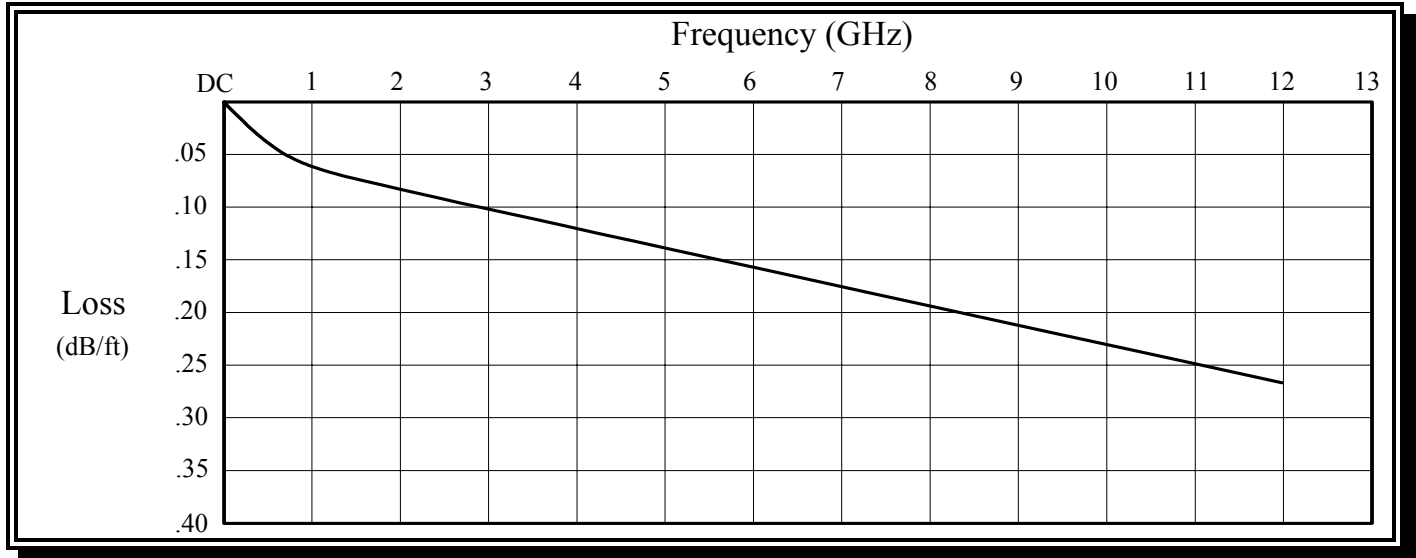
Center Conductor: Solid, copper clad aluminum  
 Dielectric: Polyethylene foam  
 Outer Conductor: Seamless, corrugated copper  
 0.250" nominal O.D.  
 Jacket: Black polyethylene, 0.300" nominal O.D.  
 Minimum Internal Bend Radius: 1.0 inches  
 Operating Temperature: -40°C to +85°C  
 Weight per Foot: 0.05 lbs.  
 Connector Interface: Per MIL-STD-348

**Physical Characteristics:**

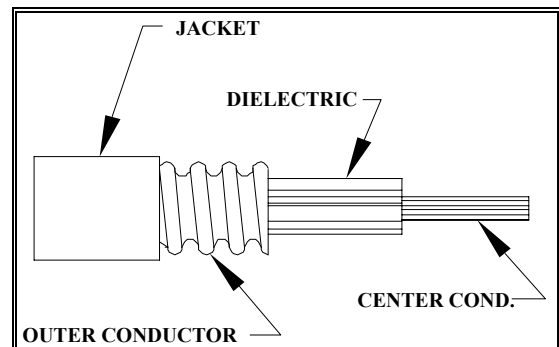
FMI 13073 A

## *S345 Flexible Coaxial Cable* 12 GHz Cable

### Frequency vs. Attenuation



Frequency (GHz)	Typical Insertion Loss (dB/ft)	Typical Connector Loss (dB)	Average Power at 40°C (kW)
0.5	0.04	0.02	1.60
1.0	0.05	0.02	0.95
2.0	0.07	0.03	0.68
4.0	0.11	0.04	0.45
6.0	0.15	0.06	0.36
8.0	0.18	0.07	0.29
12.0	0.24	0.08	0.22



**Electrical Characteristics:**

Nominal Impedance: 50Ω  
 Velocity of Propagation: 79%  
 Effective Dielectric Constant: 1.60  
 Time Delay: 1.29 ns/ft  
 Shielding Effectiveness: -90 dBc min.  
 Dielectric Withstanding Voltage: 5.0 KV  
 (@ 60 Hz, Sea Level/25°C)  
 Maximum Frequency: 14 GHz  
 Nominal Capacitance: 26 pF/ft

**Physical Characteristics:**

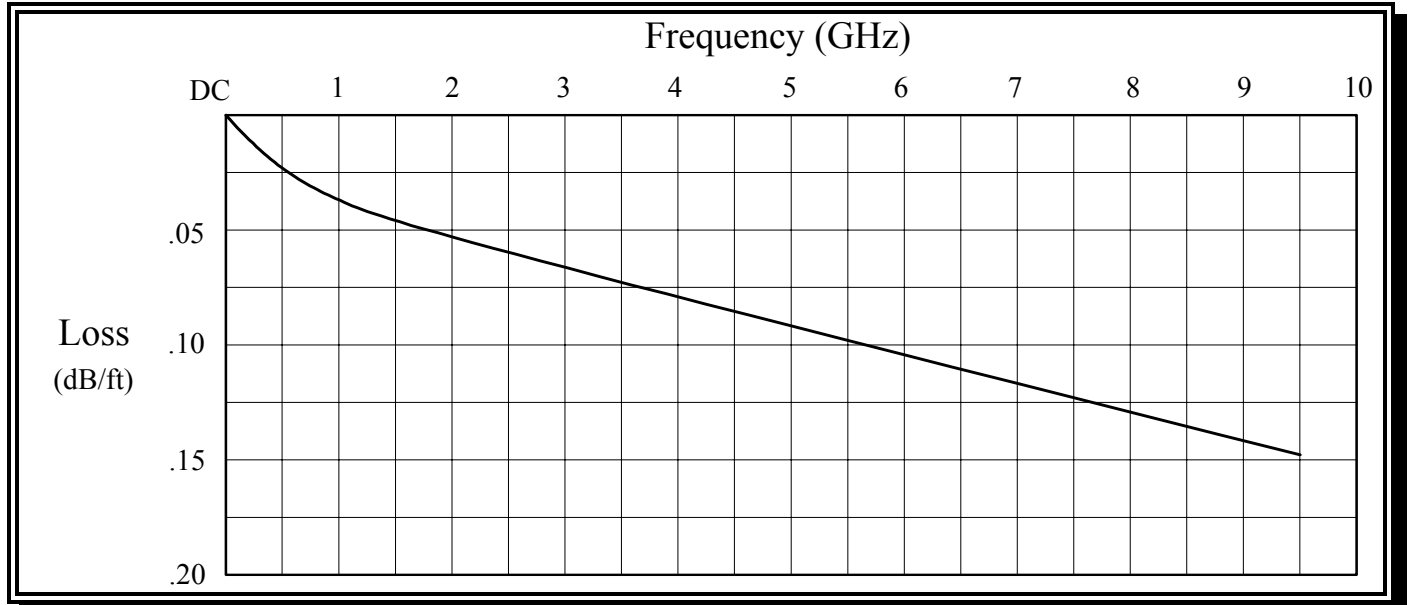
Center Conductor: Stranded SPC per ASTM-B8  
 Dielectric: PTFE per ASTM D4895  
 Outer Conductor: Seamless, corrugated phosphor bronze  
 per UNS C51000, 0.490" max. O.D.  
 Minimum Internal Bend Radius: 4.0 inches  
 Operating Temperature: -60°C to +175°C  
 Weight per Foot: 0.162 lbs.

**Optional Jacketing:**

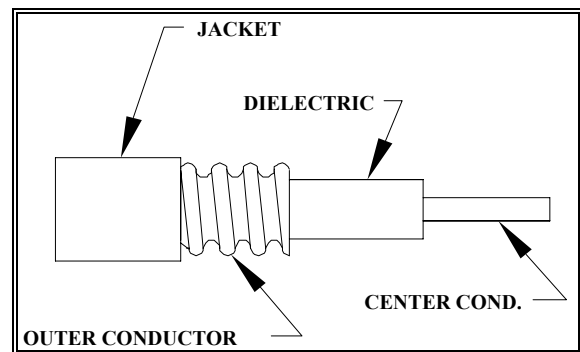
Polyolefin per AMS-DTL-23053/5: 0.540" max. O.D.  
 Neoprene per AMS-DTL-23053/1: 0.565" max. O.D.  
 FEP per AMS-DTL-23053/11: 0.520" max. O.D.  
 Others available, please consult factory.

## S372 Flexible Coaxial Cable 9.5 GHz Cable

### Frequency vs. Attenuation



Frequency (GHz)	Typical Insertion Loss (dB/ft)	Typical Connector Loss (dB/each)	Average Power at 40°C (kW)
0.03	0.0056	0.02	3.50
0.4	0.022	0.02	0.83
1.0	0.036	0.02	0.52
2.0	0.055	0.03	0.34
4.0	0.080	0.04	0.22
6.0	0.115	0.06	0.18
8.0	0.135	0.07	0.15
9.5	0.145	0.08	0.12



**Electrical Characteristics:**

Nominal Impedance: 50Ω  
 Velocity of Propagation: 81%  
 Effective Dielectric Constant: 1.52  
 Time Delay: 1.25 ns/ft  
 Shielding Effectiveness: -110 dBc min.  
 Dielectric Withstanding Voltage: 5.0 KV  
 (@ 60 Hz, Sea Level/25°C)  
 Nominal Capacitance: 25 pF/ft  
 Maximum Frequency: 9.5 GHz

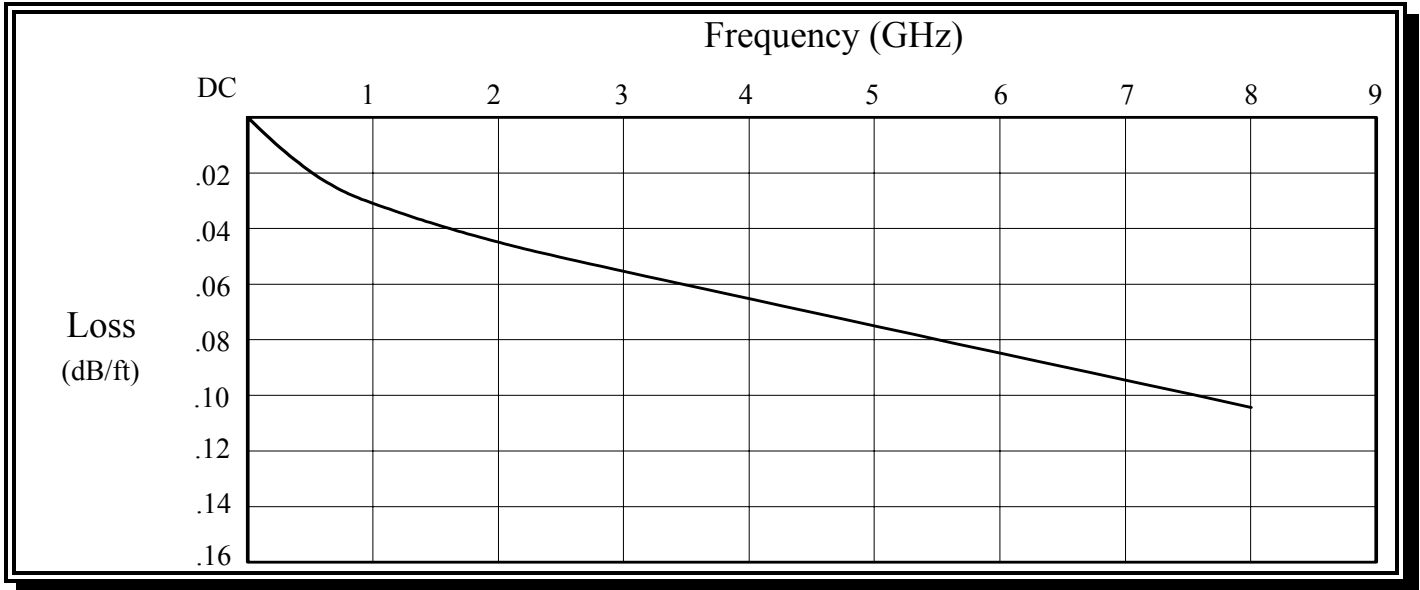
Center Conductor: Solid, copper clad aluminum  
 Dielectric: Closed cell polyethylene foam  
 Outer Conductor: Seamless, corrugated copper  
 0.480" nominal O.D.  
 Jacket: Black polyethylene, 0.530" nominal O.D.  
 Minimum Internal Bend Radius: 1.25 inches  
 Operating Temperature: -40°C to +85°C  
 Weight per Foot: 0.15 lbs.  
 Connector Interface: Per MIL-STD-348

**Physical Characteristics:**

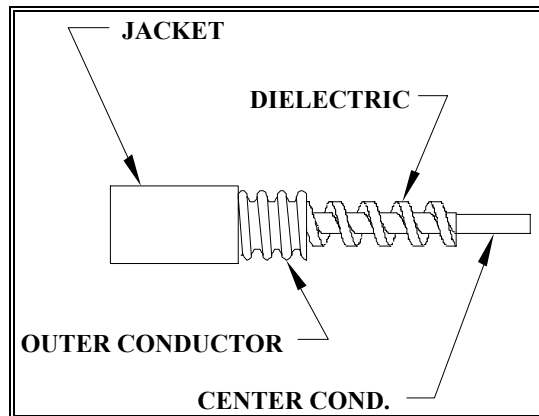
FMI 13068 A

**S452 Flexible Coaxial Cable**  
**8 GHz Cable**

**Frequency vs. Attenuation**



Frequency (GHz)	Typical Insertion Loss (dB/ft)	Typical Connector Loss (dB)	Average Power @ 40°C (kW)
0.1	0.0075	0.01	2.10
0.5	0.017	0.02	0.82
1.0	0.025	0.02	0.55
2.0	0.039	0.03	0.38
3.0	0.048	0.04	0.29
4.0	0.057	0.04	0.25
5.0	0.062	0.05	0.22
6.0	0.070	0.06	0.19
7.0	0.075	0.06	0.17
8.0	0.080	0.07	0.15



**Electrical Characteristics:**

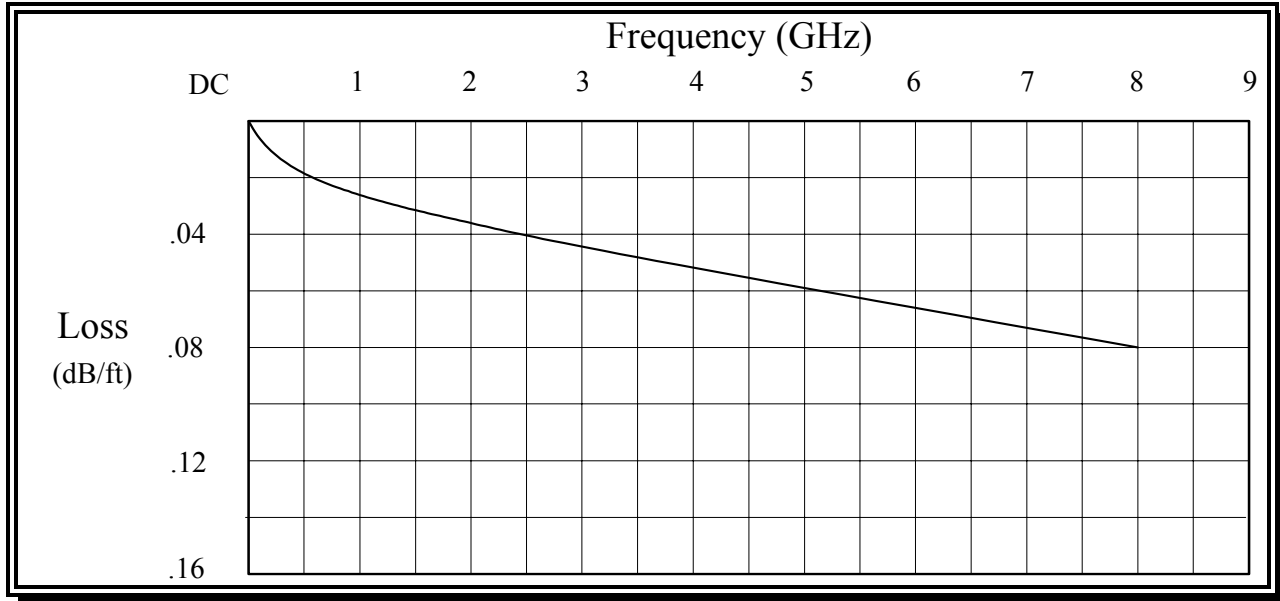
Nominal Impedance: 50Ω  
 Velocity of Propagation: 90 %  
 Effective Dielectric Constant: 1.23  
 Time Delay: 1.13 ns/ft  
 Shielding Effectiveness: -90 dBc min.  
 Dielectric Withstanding Voltage: 5.0 KV  
 (@ 60 Hz, Sea Level/25°C)  
 Nominal Capacitance: 24 pF/ft  
 Maximum Frequency: 9 GHz

**Physical Characteristics:**

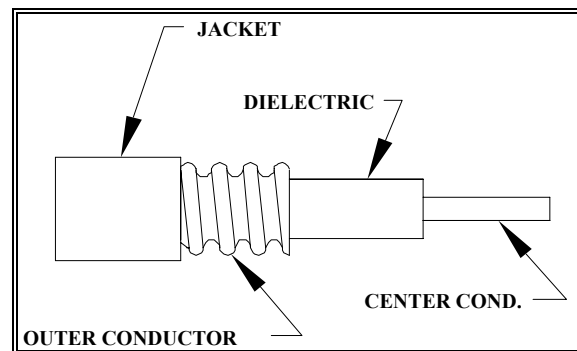
Center Conductor: Cu clad aluminum wire  
 Per ASTM-B-566-72  
 Dielectric: Air with spiral wound polyethylene  
 Outer Conductor: Seamless, corrugated copper  
 0.484" O.D. nominal  
 Jacket Type: Polyethylene (Black)  
 Jacketed O.D.: 0.585" O.D. nominal  
 Minimum Internal Bend Radius: 5.5 inches  
 Operating Temperature: -55°C to +80°C  
 Weight per foot: 0.182 lbs.

## *S472 Flexible Coaxial Cable* *8 GHz Cable*

### *Frequency vs. Attenuation*



Frequency (GHz)	Typical Insertion Loss (dB/ft)	Typical Connector Loss (dB/each)	Average Power at 40°C (kW)
0.03	0.0037	0.02	5.00
0.4	0.014	0.02	1.30
1.0	0.023	0.02	0.80
2.0	0.034	0.03	0.55
4.0	0.058	0.04	0.37
6.0	0.065	0.06	0.28
8.0	0.080	0.07	0.24



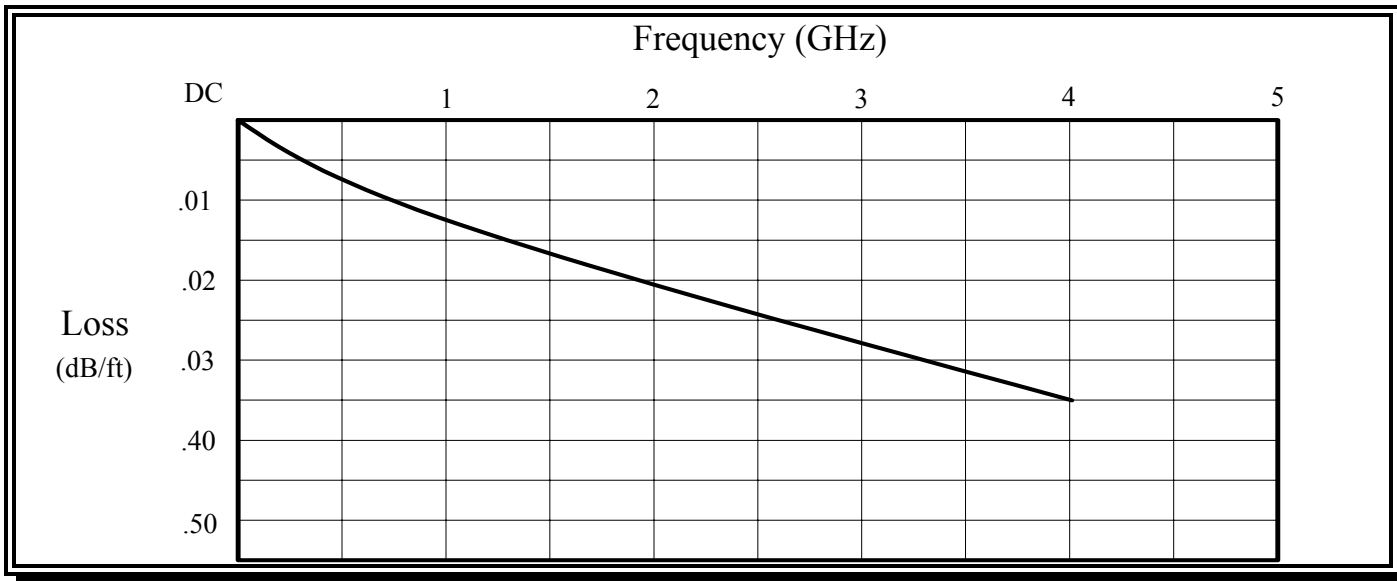
**Electrical Characteristics:**

Nominal Impedance: 50Ω  
 Velocity of Propagation: 88%  
 Effective Dielectric Constant: 1.28  
 Time Delay: 1.15 ns/ft  
 Shielding Effectiveness: -110 dBc min.  
 Dielectric Withstanding Voltage: 5.0 KV  
 (@ 60 Hz, Sea Level/25°C)  
 Nominal Capacitance: 24 pF/ft  
 Maximum Frequency: 8 GHz

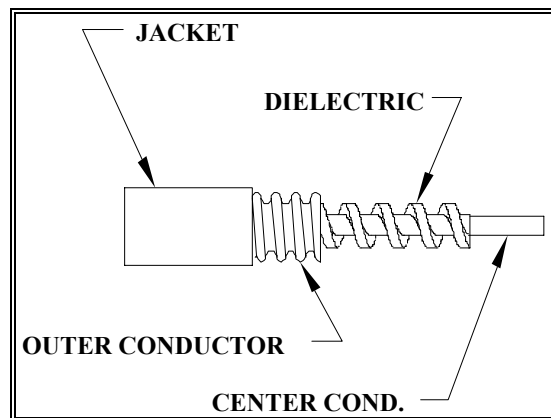
**Physical Characteristics:**

Center Conductor: Solid, copper clad aluminum  
 Dielectric: Closed cell polyethylene foam  
 Outer Conductor: Seamless, corrugated copper  
 0.547" nominal O.D.  
 Jacket: Black polyethylene, 0.640" nominal O.D.  
 Minimum Internal Bend Radius: 5.0 inches  
 Operating Temperature: -40°C to +85°C  
 Weight per Foot: 0.165 lbs.  
 Connector Interface: Per MIL-STD-348

**S652 Flexible Coaxial Cable**  
**5 GHz Cable**  
**Frequency vs. Attenuation**



Frequency (GHz)	Typical Insertion Loss (dB/ft)	Typical Connector Loss (dB)	Typical VSWR	Average Power @ 40°C (kW)
0.1	0.0037	0.01	1.20:1	6.70
0.5	0.0085	0.02	1.25:1	2.55
1.0	0.012	0.02	1.30:1	1.80
2.0	0.018	0.03	1.35:1	1.15
3.0	0.024	0.04	1.35:1	0.89
4.0	0.028	0.04	1.40:1	0.75



\*\* - Includes precision connector losses

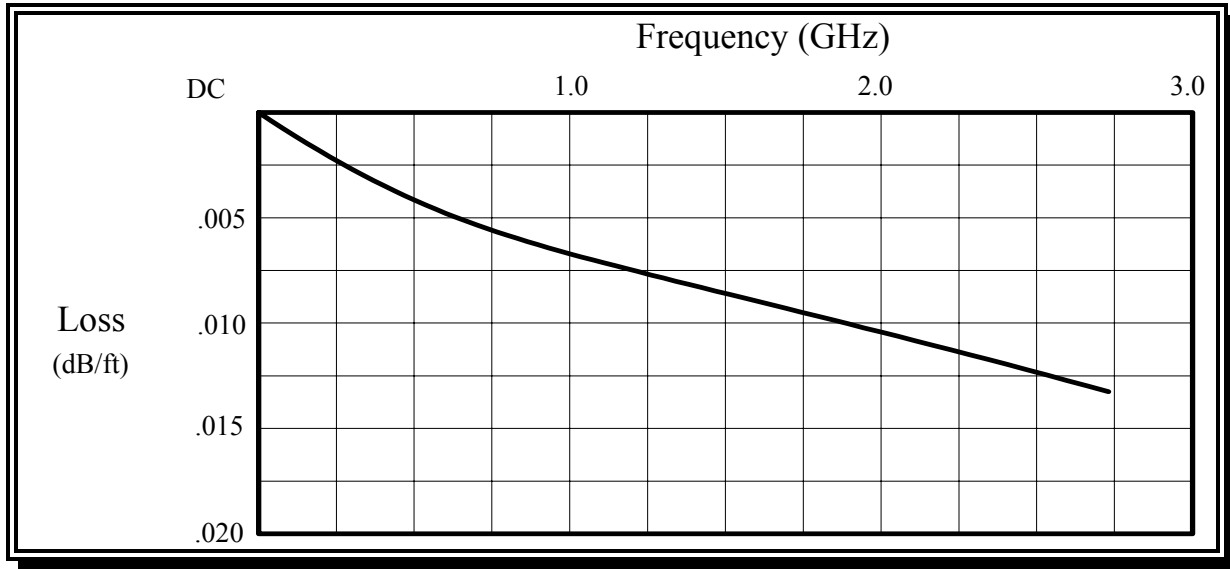
**Electrical Characteristics:**

Nominal Impedance: 50Ω  
 Velocity of Propagation: 90 %  
 Effective Dielectric Constant: 1.23  
 Time Delay: 1.13 ns/ft  
 Shielding Effectiveness: -90 dBc min.  
 Dielectric Withstanding Voltage: 6.0 KV  
 (@ 60 Hz, Sea Level/25°C)  
 Nominal Capacitance: 24 pF/ft  
 Maximum Frequency: 5 GHz

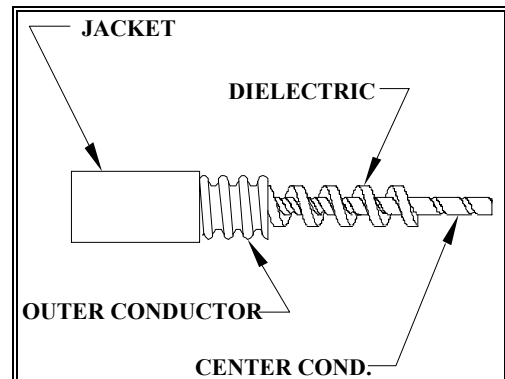
**Physical Characteristics:**

Center Conductor: Copper tube  
 Dielectric: Air with spiral wound polyethylene  
 Outer Conductor: Seamless, corrugated copper  
 1.00" O.D. nominal  
 Jacket Type: Polyethylene (Black)  
 Jacketed O.D.: 1.10" O.D. nominal  
 Minimum Internal Bend Radius: 10.5 inches  
 Operating Temperature: -55°C to +80°C  
 Weight per foot: 0.560 lbs.

**S752 Flexible Coaxial Cable**  
**2.75 GHz Cable**  
**Frequency vs. Attenuation**



Frequency (GHz)	Typical Insertion Loss (dB/ft)	Typical Connector Loss (dB)	Typical VSWR	Average Power @ 40°C (kW)
0.03	0.0011	0.005	1.20:1	28.0
0.4	0.0042	0.02	1.25:1	7.5
1.0	0.0069	0.02	1.35:1	4.6
2.0	0.0099	0.03	1.35:1	3.1
2.74	0.0110	0.04	1.40:1	2.7



**Electrical Characteristics:**

Nominal Impedance: 50Ω  
 Velocity of Propagation: 95 %  
 Effective Dielectric Constant: 1.11  
 Time Delay: 1.07 ns/ft  
 Shielding Effectiveness: -90 dBc min.  
 Dielectric Withstanding Voltage: 8.0 KV  
 (@ 60 Hz, Sea Level/25°C)  
 Nominal Capacitance: 22.5 pF/ft  
 Maximum Frequency: 2.74 GHz

**Physical Characteristics:**

Center Conductor: Corrugated copper tube  
 Dielectric: Air with spiral wound polyethylene  
 Outer Conductor: Seamless, corrugated copper  
 1.830" O.D. nominal  
 Jacket Type: Polyethylene (Black)  
 Jacketed O.D.: 1.996" O.D. nominal  
 Minimum Internal Bend Radius: 20.0 inches  
 Operating Temperature: -55°C to +80°C  
 Weight per foot: 0.864 lbs.

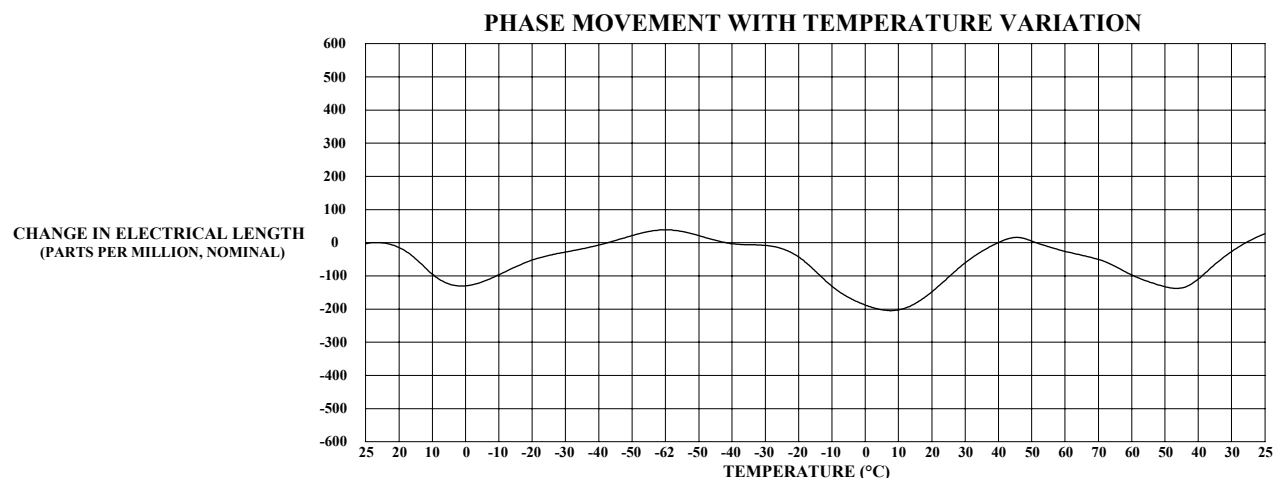




## *Cable Assembly Phase Characteristics*

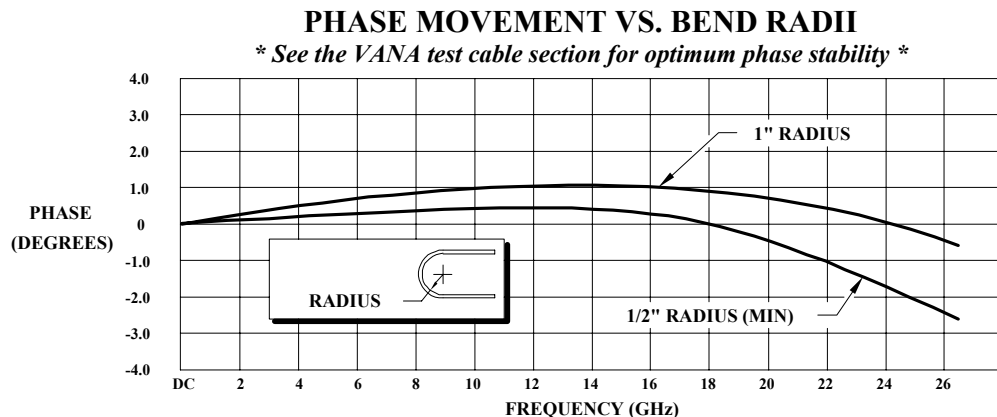
### **Phase Stability versus Temperature Changes**

Flexco has a unique cable construction, offering superior phase stability with temperature variations. When the affects are known of each independent phase characteristic, such as outer conductor vs. PTFE dielectric coefficients of thermal expansion, phase transitions at room temperature created by the hysteresis, water absorption at dew points, etc., these variables can be reduced by manufacturing processes. The Velocity of Propagation can then be optimized to produce a curve with the least effect on phase change vs. temperature. The graph below illustrates a typical "phase-free" over temperature performance in a 3 foot cable with 1 degree change in phase at 3 GHz. Since Flexco Microwave offers many different cable types, each profile is unique. For example, Spline and *Hi-Vel*<sup>TM</sup> exhibit linear phase variation vs. temperature.



### **Phase Stability versus Bending**

Flexco Microwave cable assemblies exhibit superior phase vs. bending characteristics because of several unique design features. Flexco's outer conductor design, with its fine pitch and deep convolutions, remains concentric during bending. The center conductor is firmly supported by the dielectric which also maintains its concentricity with the outer conductor during bending. Other companies typically offer foil wrapped and braided outer conductors, which become non-concentric or oval shaped during bending, causing electrical performance variations. Most Flexco cable assemblies can be "locked" using a patented process which mechanically locks the outer conductor to the dielectric, restricting any relative movement during bending. The graph below shows phase change versus bending on a typical Flexco cable assembly.



## ***Flexco Microwave, Inc.***

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### **Phase Tracking**

Phase tracking is the ability of two (or more) cable assemblies to remain within a defined phase window over a range of temperature, bend or both. Consistent phase tracking at Flexco Microwave is achieved by manufacturing process controls which insure cable assembly repeatability. Since different cable assembly types are manufactured using different assembly techniques and materials, specific phase tracking specifications must be defined by customer request.

### **Phase Matching**

Phase matched cable assemblies are a group of two or more cable assemblies with the same phase or electrical length. Because of slight variations in the velocity of propagation, two cables which are mechanically the same length may not have the same electrical length. To compensate for these variations, cable assembly mechanical lengths often require minor adjustments. Customers must specify the minimum allowable mechanical length tolerance in addition to a required phase length. The amount of adjustment required to the cable assembly's mechanical length is dependent on cable type, length, matching tolerance, and matching frequency. The table below illustrates the electrical length changes which will occur with as little as a  $\pm 0.5\%$  variation in velocity of propagation.

#### **Example: *Electrical Length vs. Velocity of Propagation***

*Cable Type:* FCB92  
*Mechanical Length:* 48 inches  
*Rated Velocity of Propagation:* 83%  
*Matching Frequency:* 16 GHz  
*Electrical Length Variation:* 340.05 degrees

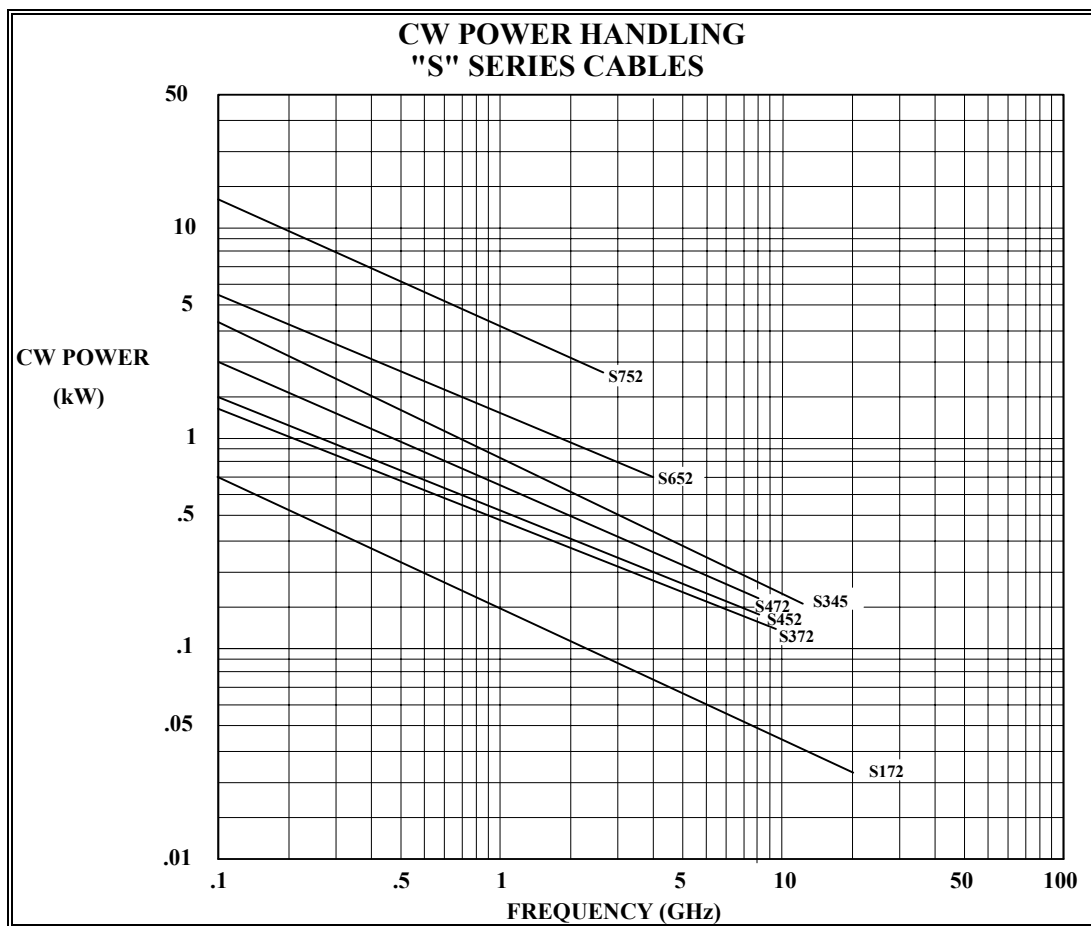
<b>Velocity of Propagation (%)</b>	<b>Time Delay (nanoseconds)</b>	<b>Electrical Length (degrees)</b>
82.5	1.2315	28393.98
82.6	1.2300	28359.61
82.7	1.2285	28325.32
82.8	1.2271	28291.11
82.9	1.2256	28256.98
83.0	1.2241	28222.94
83.1	1.2226	28188.97
83.2	1.2211	28155.09
83.3	1.2196	28121.29
83.4	1.2182	28087.57
83.5	1.2168	28053.94



## CW Power Handling

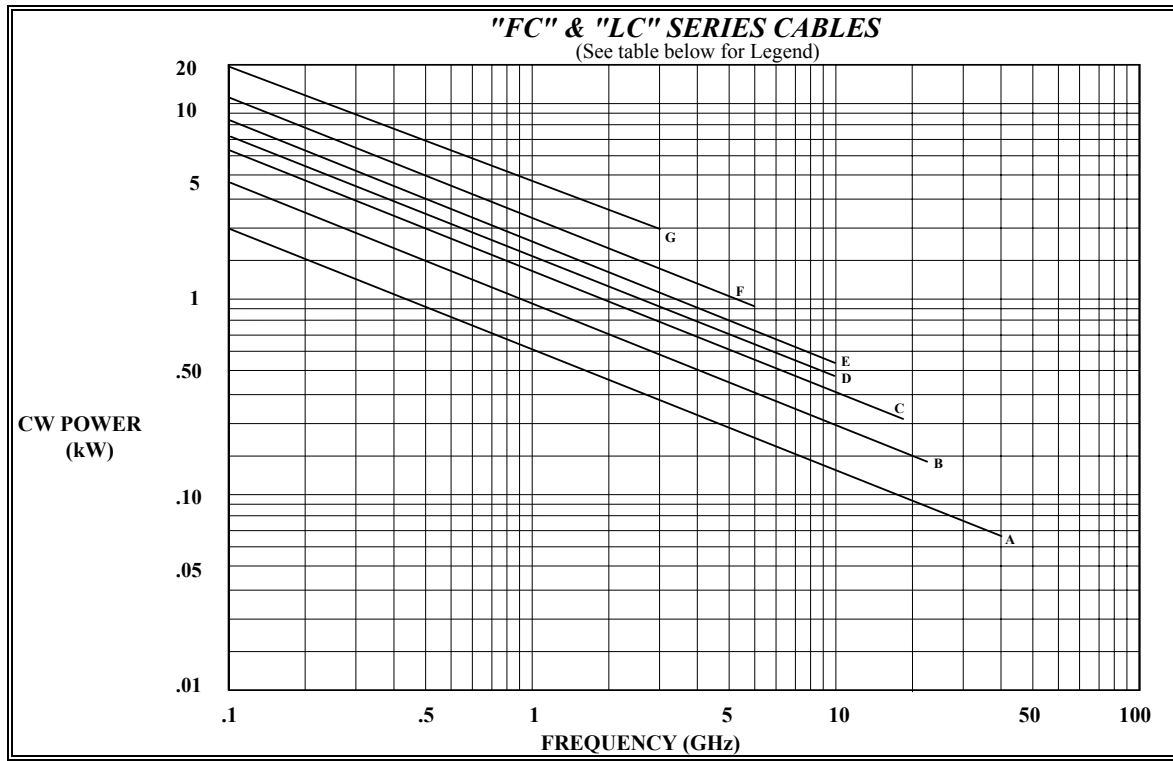
CW or average power handling capability of any cable assembly depends on several factors: connectors, frequency, physical size, ambient temperature, altitude, routing, ambient airflow, etc. In all cases, average power failure will occur when power transmitted into a cable assembly generates resistive and dielectric heating at rate which is higher than the rate at which built up heat energy can be dissipated. Heat energy must be transferred through the different layers of cable assembly construction and radiated away from the cable assembly via its outer surfaces. Flexco's unique outer conductor design and extruded, homogeneous, air articulated PTFE dielectrics combine to provide higher average power handling capabilities than other cable assemblies of similar size which use a foil wrapped and braided style outer conductor. The copper material and deep convolutions of Flexco's outer conductor exhibit excellent thermal conductivity properties and in turn will dissipate heat very efficiently. Air articulated dielectrics allow the transfer of heat from the center conductor to the outer conductor to occur much more rapidly than solid or tape style dielectrics, which act as an insulator and will actually restrict heat transfer.

The following power handling curves can be used to approximate the power handling capabilities of Flexco cables at different frequencies. These power curves are based on conditions at sea level, 40°C ambient temperature and 1:1 VSWR. Power handling derating factors for temperature and altitude are expressed as a percentage of the rated power. Since cable assembly power handling capability is influenced by many factors, it may be necessary to test the cable assembly under conditions which simulate the application envelope.



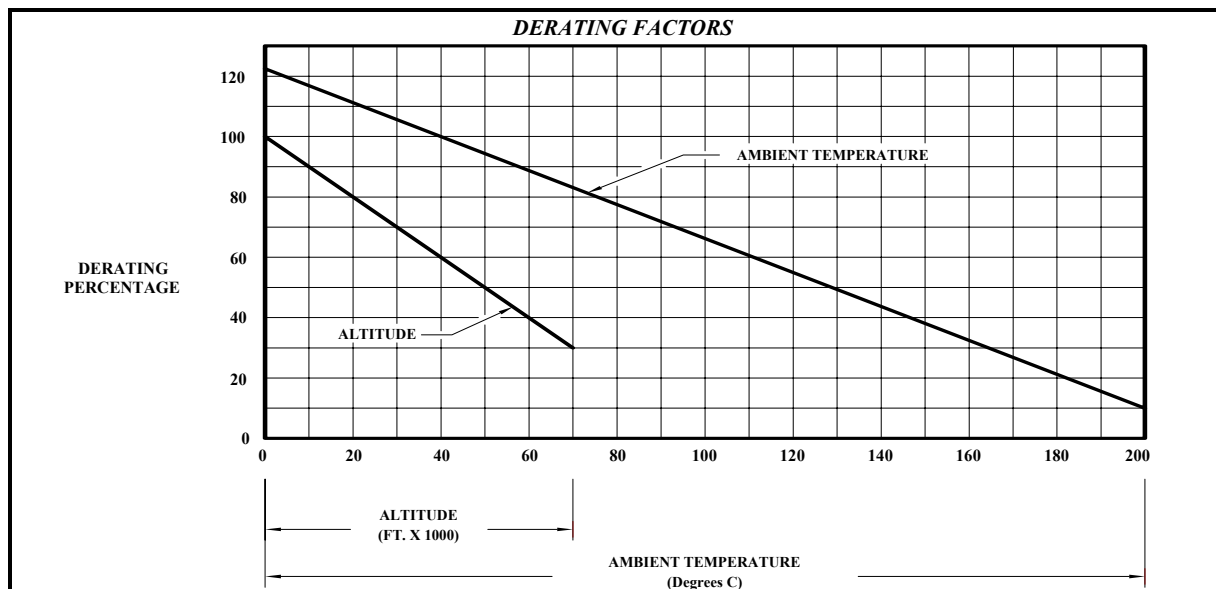
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**"FC" & "LC" Series Graph Legend**

Cable Type	Size (O.D.)	Curve Letter	Cable Type	Size (O.D.)	Curve Letter	Cable Type	Size (O.D.)	Curve Letter
FC142	0.205"	A	FC445	0.455"	D	FCB95	0.220"	A
FC182	0.205"	A	FC545	0.740"	E	FCD92	0.265"	B
FC195	0.205"	A	FC645	1.040"	F	LCE92	0.375"	C
FC242	0.335"	B	FC659	1.040"	F	FCH95	0.585"	D
FC342	0.395"	C	FC759	1.900"	G			
FC392	0.375"	C	FCB92	0.220"	A			



Flexco Microwave introduced the first high performance flexible cable in 1970, representing a major advance in coaxial interconnects. The unique, super-flexible outer conductor designs patented by Flexco have enabled systems and test engineers to design-in better performance ever since.

Today, Flexco's unique convoluted outer conductor remains unmatched for performance and flexibility during installation and operation. As you compare the specifications in this catalog, check for performance properties your program requires, then compare maximum flexibility.

You'll agree: **Nobody beats Flexco.**

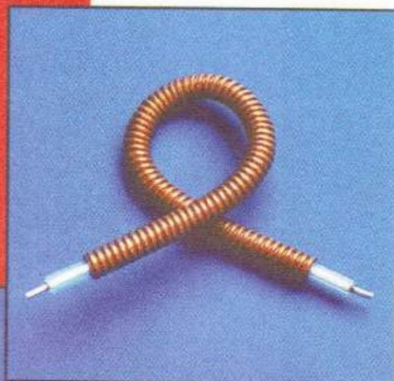
#### Benefits of Flexco's Unique Designs

Flexco Microwave's sealed outer conductor is manufactured using a patented process to form a highly flexible, tubular outer conductor from the highest quality copper. Center conductors are silver plated copper.

Flexco's patented dielectric processing methods make calculated helical cuts to air-articulated PTFE, nearly creating a flexible "airline." Dielectric cuts are PTFE, polyethylene and expanded PTFE tape. These designs allow for no change in concentricity between the inner and outer conductors during repeated flexing, and therefore no change in electrical performance.

For flexibility and electrical performance in coaxial cable...

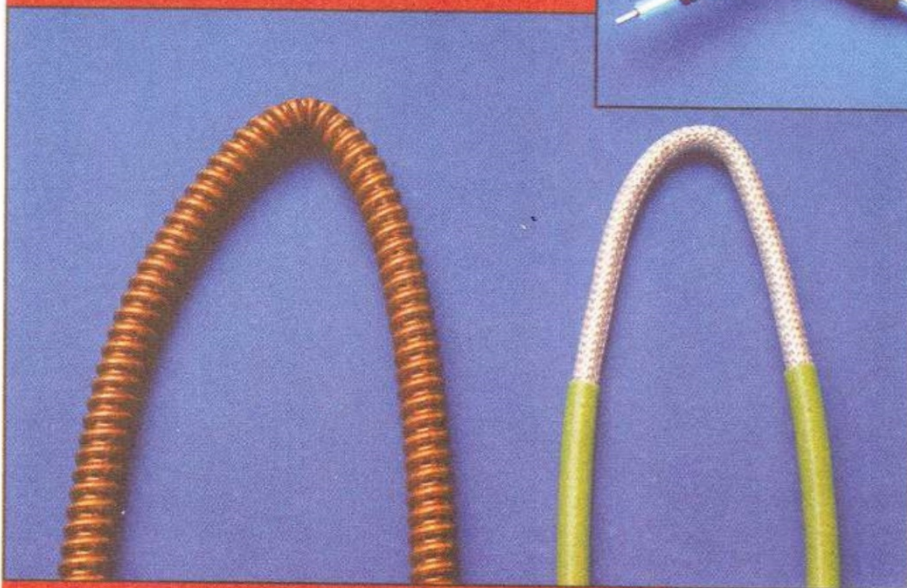
# Nobody Beats Flexco!



- Extreme Flexibility
- Lower VSWR
- Lower Insertion Loss
- Improved Electrical Stability
- Lower Phase versus Temperature Coefficient
- Better Phase Tracking
- Crush Proof and Rugged

Under flexure, nobody beats Flexco's ability to maintain phase and amplitude performance - repeatedly over time. Flexco's unique outer conductor and dielectric designs keep the center conductor where it belongs under flexure: Concentric with the outer conductor. The result is superior performance and more precise test results in your application.

*FLEXible coaxial cable from F/exco Microwave (inset) keeps its shape under flexure while electrical performance remains virtually unchanged. Seamless outer conductors tend to crush and break; braided outer conductors will "cage" at the bottom of the bend and "spread out" at the top - a detriment to performance.*





# TEST & MEASUREMENT

## Flexco Experience in Test & Measurement Cables

### Applications

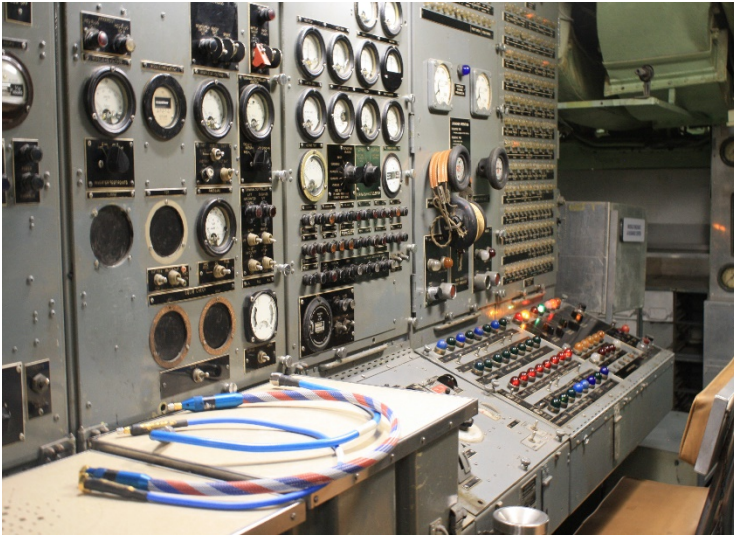
High power test  
Vibration test  
VNA and ANA test  
Production & lab bench test  
Component test  
Systems test  
Temperature test  
Thermal vacuum test

### Customers

Northrop Grumman  
Boeing  
Lockheed Martin  
Jet Propulsion Labs  
Naval Standards Lab

### Programs

IFTE  
Radcom



As an RF/Microwave engineer, you've seen it before: An entire production line shut down by a failed test cable that won't deliver phase stable and repeatable performance. Enter the Flexco line of cables for test and measurement.

Under flexure, nobody beats Flexco's ability to maintain phase and amplitude performance – repeatedly over time. Flexco's unique outer conductor and dielectric designs keep the center conductor where it belongs under flexure: Concentric with the outer conductor. The result is superior performance and more precise test results in your application.

Flexco offers three cable types for test and measurement, the '195, '182 and '105. Cables are available in three levels of protection to suit your specific applications needs: Blue Grade (FC195, etc.). Lab Grade (NTC 195) and the Super Cable (ATC 195). Any length and any connector combination are available including ruggedized NMD's to mate with male test ports (3.5mm, 2.4mm and K/2.92mm).



Contact Flexco Microwave at [sales@FlexcoMW.com](mailto:sales@FlexcoMW.com) or Request a Quote on <http://www.FlexcoMW.com>

# AIRBORNE & SPACE

Flexco Microwave's high-performance products are designed to meet the challenges of airborne environment, including MIL-C-17, MIL-T-81490, MIL-C-87014. Flexco is ready, willing and able to administer full qualification programs for new customers, which has been proven by our past experience. Products ready for flight include the SLL and Performance Series.



*Airborne cable systems from Flexco are built to withstand the rigors of a flight environment while providing steady electrical performance.*



## **Flexco Experience in Airborne & Space**

### **Applications**

- Satellite test
- Direct broadcast
- Global positioning
- On-board satellite
- Missile systems
- Electronic warfare & countermeasures
- Guidance systems

### **Customers**

- L3 Harris Technologies
- Lockheed Martin
- Northrup Grumman

### **Programs**

- Patriot
- Advanced Hawkeye



*Unlike traditional foil-wrap and braid cabling, Flexco's unique convoluted metal outer conductor permits the connector to be threaded onto the cable prior to soldering. This process adds strength and longevity to the interconnection system, and is another factor in Flexco's*



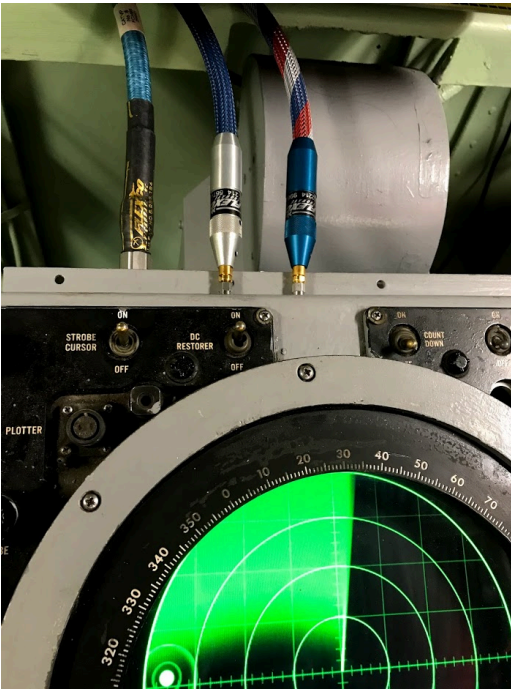
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# RADAR SYSTEMS

Critical applications such as air traffic control, missile guidance, and satellite earth stations have one thing in common: The need for high reliability interconnections that are low loss, phase matched and phase stable under temperature and flexure. All these systems operate with no margin for error; all rely on Flexco cables.

Flexco's high performance, rugged cable assemblies are super flexible and can be installed easily. Both the SLL Series and Performance Series from Flexco are two proven options.

## **Flexco Experience in Radar Stations**



### Applications

- Satellite uplink & downlink
- Shipboard radar
- Ground based radar
- Air route surveillance
- Weather detection radar

### Customers

- Raytheon Company
- Northrop Grumman
- Jet Propulsion Labs
- NASA
- Lockheed Martin

### Programs

- Aegis
- Cobra Judy/Dane
- Patriot
- XBR
- GBR
- Submarine Periscope



Contact Flexco Microwave at [sales@FlexcoMW.com](mailto:sales@FlexcoMW.com) or Request a Quote on <http://www.FlexcoMW.com>





Catalog and Custom Designs since 1970  
Super Flexible • Low Loss • Phase Stable  
Ground-based • Shipboard • Air • Space • Defense  
Wireless Communications • High Power • Test & Measurement  
***FLEXible COaxial Cable Assemblies to 50 GHz***

## Product Data Guide

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