

# TFLMR<sup>®</sup>

*Flexible Communications Coax*



Low Loss Communications  
Coax Reference Chart



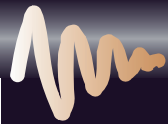
# Communications Coax Selection Guide

## Attenuation ( dB per 100 feet ; +25C )

	2 1/4" LDF	1 5/8" LDF	1 1/4" LDF	LMR-1700	7/8" LDF	LMR-1200	LMR-900	1/2" LDF	LMR-600	LMR-500	1/2" SuperFlex	3/8" LDF
Frequency / Size	2.350"	1.980"	1.550"	1.670"	1.090"	1.200"	0.870"	0.630"	0.590"	0.500"	0.520"	0.440"
30 MHz	0.096*	0.120	0.147	0.149	0.197	0.209	0.288	0.369	0.421	0.54	0.561	0.567
50 MHz	0.125*	0.156	0.191	0.195	0.257	0.272	0.374	0.479	0.547	0.70	0.730	0.736
150 MHz	0.227*	0.280	0.340	0.347	0.458	0.481	0.658	0.845	0.964	1.22	1.29	1.30
220 MHz	0.281*	0.345*	0.416*	0.427	0.560*	0.589	0.803	1.05*	1.18	1.49	1.58*	1.59*
450 MHz	0.422	0.515	0.617	0.632	0.834	0.864	1.17	1.51	1.72	2.17	2.32	2.30
700 MHz	-.-	-.-	-.-	0.809	-.-	1.10	1.48	-.-	2.18	2.77	-.-	-.-
900 MHz	0.641*	0.767*	0.912*	0.936	1.23*	1.27	1.70	2.21*	2.50	3.13	3.41*	3.36*
1,500 MHz	0.879*	1.050	1.22	1.26	1.66	1.69	2.24	2.93	3.31	4.13	4.57	4.43
2,000 MHz	1.058*	1.250	1.45	1.50	1.97	1.99	2.63	3.45	3.90	4.84	5.41	5.21
2,500 MHz	-.-	1.440	1.68*	1.71	2.27*	2.26	2.98	3.91*	4.42	5.48	6.17*	5.91*

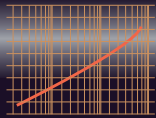
Attenuation at Any Frequency = [ k1 x SqRt (Fmhz) ] + [ k2 x Fmhz ] or use Performance Calculator at [www.timesmicrowave.com](http://www.timesmicrowave.com)

k1				0.02646		0.03737	0.05177		0.07555	0.09659		
k2				0.00016		0.00016	0.00016		0.00026	0.00026		



## Power Handling ( kW ; +40C ; Sea Level )

	2 1/4" LDF	1 5/8" LDF	1 1/4" LDF	LMR-1700	7/8" LDF	LMR-1200	LMR-900	1/2" LDF	LMR-600	LMR-500	1/2" SuperFlex	3/8" LDF
Frequency / Size	2.350"	1.980"	1.550"	1.670"	1.090"	1.200"	0.870"	0.630"	0.590"	0.500"	0.520"	0.440"
30 MHz	39.5*	28.9	21.1	20.3	14.0	12.6	8.9	6.31	5.5	4.4	5.75	4.14
50 MHz	30.2*	22.1	16.2	15.6	10.7	9.7	6.8	4.85	4.3	3.4	4.42	3.19
150 MHz	16.7*	12.3	9.09	8.7	6.04	5.5	3.9	2.75	2.4	1.9	2.49	1.81
220 MHz	13.5*	13.5*	7.45*	7.1	4.94*	4.5	3.2	2.23*	1.9	1.6	2.04*	1.49*
450 MHz	8.91	6.71	5.01	4.8	3.32	3.1	2.2	1.53	1.3	1.1	1.38	1.02
700 MHz	-.-	-.-	-.-	3.8	-.-	2.4	1.7	-.-	1.1	0.85	-.-	-.-
900 MHz	5.90*	4.49*	3.39*	3.3	2.24	2.1	1.5	1.05*	0.93	0.75	0.944*	0.703*
1,500 MHz	4.29*	3.30	2.52	2.4	1.66	1.6	1.1	0.793	0.70	0.57	0.705	0.530
2,000 MHz	3.57*	2.76	2.13	2.0	1.40	1.3	1.0	0.673	0.59	0.49	0.597	0.451
2,500 MHz	-.-	2.40	1.84*	1.8	1.21*	1.2	0.9	0.594*	0.52	0.43	0.547*	0.398*



## General Performance Properties

	LMR-1700	LMR-1200	LMR-900	LMR-600	LMR-500	LMR-400	LMR-300	LMR-240	LMR-200
Conductor: (note 1)	0.527"	0.349"	0.262"	0.176"	0.142"	0.108"	0.070"	0.056"	0.044"
Dielectric: Cellular PE (note 2)	1.350"	0.920"	0.680"	0.455"	0.370"	0.285"	0.190"	0.150"	0.116"
Shield: Aluminum Tape (note 3)	1.356"	0.926"	0.686"	0.461"	0.376"	0.291"	0.196"	0.155"	0.121"
Tinned Copper Braid	1.402"	0.972"	0.732"	0.490"	0.405"	0.320"	0.225"	0.178"	0.144"
Jacket: Black PE (note 4)	1.670"	1.200"	0.870"	0.590"	0.500"	0.405"	0.300"	0.240"	0.195"
Bend Radius (note 5)	13.5"	6.5"	3"	1.5"	1.25"	1"	.875"	0.75"	0.50"
Weight(lbs/foot)	0.736	0.448	0.266	0.131	0.097	0.068	0.055	0.034	0.022
Temperature Range	-40°C to +85°C								
Impedance	50 Ohms								
Velocity (%)	89	88	87	87	86	85	85	84	83
Capacitance (pF per Foot)	22.8	23.1	23.4	23.4	23.6	23.9	23.9	24.2	24.5
DC Resistance: center conductor (ohms/1000')	0.21	0.32	0.54	0.53	0.82	1.39	2.12	3.20	5.36
: shield	0.27	0.37	0.55	1.20	1.27	1.65	2.21	3.89	4.90
Shielding	> 90 db								

LMR-400	3/8" SuperFlex	Belden 9913	ULTRA-LINK™	RG213/RG214	1/4" SuperFlex	LMR-300	LMR-240	Belden RG8X	LMR-200	ULTRA-LINK	LMR-195	RG-58	LMR-100A
0.405"	0.415"	0.405"	0.405"	0.405"	0.300"	0.300"	0.240"	0.242"	0.195"	0.195"	0.195"	0.195"	0.110"
0.7	0.654	0.8	0.7	1.2	0.98	1.1	1.3	2.0	1.8	2.5	2.0	2.5	3.9
0.9	0.848	0.9	--	1.6	1.27	1.4	1.7	2.5	2.3	--	2.6	3.1	5.1
1.5	1.49	1.6	1.5	2.8	2.23	2.4	3.0	4.7	4.0	5.1	4.4	6.2	8.9
1.8	1.82*	--	--	3.5	2.72	2.9	3.7	6.0	4.8	--	5.4	7.4	10.9
2.7	2.66	2.8	2.7	5.2	3.93	4.2	5.3	8.6	7.0	9.5	7.8	10.6	15.8
3.42	--	--	--	--	--	5.1	6.6	--	8.7	--	9.8	--	20.0
3.9	3.86*	4.2	4.19	8.0	5.67*	6.1	7.6	12.8	9.9	14.0	11.1	16.5	22.8
5.1	5.12	5.6	--	--	7.47	7.9	9.9	--	12.9	--	14.5	--	30.0
6.0	6.01	6.7	--	--	8.73	9.2	11.5	--	15.0	--	16.9	--	35.0
6.8	6.84*	--	6.8*	--	9.85*	10.4	12.9	--	16.9	37*	19.0	--	40.0

0.12229						0.19193	0.24208		0.32090		0.35686		0.70914
0.00026						0.00033	0.00033		0.00033		0.00047		0.00174

LMR-400	3/8" SuperFlex	Belden 9913	ULTRA-LINK	RG213/RG214	1/4" SuperFlex	LMR-300	LMR-240	Belden RG8X	LMR-200	ULTRA-LINK	LMR-195	RG-58	LMR-100A
0.405"	0.415"	0.405"	0.405"	0.405"	0.300"	0.300"	0.240"	0.242"	0.195"	0.195"	0.195"	0.195"	0.110"
3.3	3.97	2.2	--	1.8	2.28	2.1	1.49	0.35	1.02	4.0	0.89	0.40	0.23
2.6	3.06	1.7	--	1.2	1.76	1.6	1.15	0.28	0.79	--	0.68	0.30	0.18
1.5	1.74	0.90	--	0.62	1.00	0.93	0.66	0.15	0.45	2.0	0.39	0.16	0.10
1.2	1.44*	--	--	--	0.825*	0.76	0.54	--	0.37	--	0.32	--	0.08
0.83	0.975	0.45	--	0.30	0.567	0.52	0.38	0.08	0.26	1.0	0.22	0.08	0.06
0.66	--	--	--	--	--	0.43	0.30	--	0.21	--	0.18	--	0.05
0.58	0.674*	0.28	--	0.18	0.393*	0.36	0.26	0.05	0.18	0.65	0.15	0.05	0.040
0.44	0.507	0.20	--	--	0.299	0.28	0.20	--	0.14	--	0.12	--	0.030
0.37	0.431	0.16	--	--	0.256	0.24	0.17	--	0.12	--	0.10	--	0.025
0.33	0.379*	--	--	--	0.225*	0.21	0.15	--	0.11	--	0.09	--	0.020

### NOTES:

- Center Conductor in LMR-900, LMR-1200 & LMR-1700 is Copper Tube  
Center Conductor in LMR-400, LMR-500 & LMR-600 is Copper Clad Aluminum  
Center Conductor in LMR-195, LMR-200, LMR-240 and LMR-300 is Bare Copper  
LMR-100A is BCCS
- Low loss closed cell polyethylene foam (LMR-100A solid polyethylene)
- Aluminum laminated tape bonded (LMR-100A unbonded) to the Dielectric with a Tinned Copper Overbraid
- Black UV protected polyethylene (LMR-100A black PVC)
- Less than 1 ohm impedance change at bend

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Competitor's Data As Published  
\* = estimated from published data.

LMR-195	LMR-100A
0.037"	0.018"
0.110"	0.060"
0.116"	0.065"
0.139"	0.083"
0.195"	0.110"
0.50"	0.25"
0.021	0.009
76	66
26.7	30.8
7.58	81.0
4.90	9.5



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# Benefits of LMR Cable

- Flexible:** More flexible than corrugated copper cables often eliminating the need for jumper cables
- Low Cost:** The most cost effective choice for antenna feeders and jumper cables.
- Easy Connector Attachment:** Connectors suitable for quick field attachment using common hand tools or available stripping tools.
- Low Loss:** Loss comparable to corrugated copper cables.
- Weatherproof:** Black UV protected polyethylene jacket for long term outdoor exposure. LMR-DB watertight construction standard on LMR-900, -1200, -1700 (optional on LMR-195 through -600). Connectors provided with gaskets and shrink boots. Bonded aluminum tape resists moisture ingress.

## LMR<sup>®</sup> Connectors

	LMR-200	LMR-240	LMR-300	LMR-400	LMR-500	LMR-600	LMR-900	LMR-1200	LMR-1700
N (plug)	✓	✓	✓	✓	✓	✓	✓	✓	✓
N (plug)-RP	✓			✓		✓			✓
N (jack)				✓			✓		✓
N (rt.angle)		✓	✓	✓	✓	✓		✓	
UHF (plug)		✓			✓	✓			
Mini UHF	✓	✓		✓					
BNC (plug)	✓	✓		✓					
TNC (plug)	✓	✓	✓	✓	✓	✓			
TNC (plug)-RP	✓	✓		✓		✓			
TNC (plug) RA		✓		✓					
TNC (jack)	✓								
TNC (jack)-RP	✓			✓		✓			
SMA (plug)	✓	✓	✓	✓					
SMA RP	✓	✓							
SMA RA		✓							
7/16 DIN (plug)				✓		✓	✓	✓	✓
7/16 DIN (jack)				✓		✓	✓	✓	✓
7/16 DIN bulkhead (jack)									
7/16 90° (plug)						✓	✓		
7/8 EIA Flange						✓	✓	✓	

Please consult TMS for other connector requirements

## Special LMR Products

- LMR-DB:** Watertight flexible coax meets Industry Standard watertightness tests ASTM D4565, REA PE39, ANSI S-84-608 while maintaining the same excellent performance properties as standard LMR. The inert flooding compound completely eliminates all paths of water migration and ingress for long term reliability (10 year warranty).
- LMR-FR Riser and LMR-LLPL Plenum Fire Retardant Cables:** The LMR-FR cables have fire retardant, low smoke, non-halogenated jackets. The jackets are UV protected to allow installation outdoors or indoors. They provide identical electrical performance to standard LMR cables. They are UL/CSA 'CMR'(FT-4) listed for installation in risers and are approved for use by the London Underground. LMR-LLPL is UL/CSA 'CMP'(FT-6) listed for indoor use in air handling plenums, where maximum fire retardancy and minimum smoke generation are dictated.
- LMR-UltraFlex:** A stranded center conductor and a more flexible jacket make LMR-UltraFlex ideal for applications requiring repeat bending. Available sizes include 240, 400, and newly introduced 500 and 600. Attenuation is about 15% higher than for standard LMR cables. LMR-UltraFlex cable accepts standard LMR connectors.
- LMR-MA Mobile Antenna Cables:** The MA or mobile antenna versions of the LMR cables provide improved performance compared to RG-58 for mobile antenna feeders in high frequency applications. The LMR-MA cables feature PVC jackets for better flexibility and easier installation and non-bonded outer conductor tape for ease of connector attachment.
- 75 Ohm Versions:** LMR-200 through 600 sizes are available in 75 Ohm versions.
- E-Z Connectors:** The EZ series of connectors are the quickest and easiest to install high performance connectors available. They utilize push on center contacts to eliminate soldering. They are available for LMR-200, 240, 400, 600, 900, 1200 and 1700 cables.
- Prep Tools:** Available for LMR-240, 400, 500, 600, 900, 1200 and 1700. Easily strips cable for consistent high quality assemblies.
- Cable Assemblies:** FlexTech™ factory fabricated with LMR-DB watertight cable, weather sealed and 100% sweep tested for VSWR and Insertion Loss.
- Hardware Accessories:** A complete line of supporting hardware, including ground kits, hoisting grips, snap-in hangers, support blocks, entry panels and weatherproofing kits are available.



### TIMES MICROWAVE SYSTEMS - THE COAX LEADER

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