

SECONDARY CONSTANTS OF LOADED CABLE  
22 GAUGE ASA, BSA, CSA, DSA, ESA  
D88 LOADING

At 68°F.\*

Freq. Hertz	Propagation Constant Per Mile			Mid-Section Impedance			
	Attenuation		Phase Shift $\beta$ Radians	R Ohms	X ohms (Neg.)	Z Ohms	Angle Degrees (Neg.)
	$\alpha$ Nepers	dB					
1	.00744	.065	.00638	14216	12098	18667	40.4
50	.04459	.387	.05309	2059	1716	2680	39.8
100	.05779	.502	.08190	1587	1114	1939	35.1
200	.06981	.606	.1356	1315	674	1477	27.1
300	.07484	.650	.1899	1229	482	1320	21.4
500	.07867	.683	.3018	1176	304	1215	14.5
800	.08038	.698	.4747	1166	195	1182	9.5
1000	.08084	.702	.5925	1173	158	1184	7.7
1200	.08110	.704	.7121	1187	133	1195	6.4
1400	.08127	.706	.8338	1206	116	1212	5.5
1600	.08141	.707	.9581	1230	103	1234	4.8
1800	.08154	.708	1.085	1260	94	1264	4.3
2000	.08171	.710	1.216	1297	87	1300	3.8
2200	.08195	.712	1.351	1342	82	1345	3.5
2400	.08233	.715	1.491	1398	80	1400	3.3
2500	.08259	.717	1.564	1431	80	1433	3.2
2600	.08293	.720	1.638	1467	80	1470	3.1
2700	.08334	.724	1.714	1509	81	1511	3.1
2750	.08359	.726	1.753	1531	81	1534	3.0
2800	.08387	.728	1.793	1556	82	1558	3.0
3000	.08539	.742	1.958	1671	89	1673	3.1
3200	.08790	.763	2.137	1828	103	1831	3.2
3500	.09566	.831	2.444	2213	157	2219	4.1
3900	.1429	1.241	3.021	3845	773	3922	11.4

\* Temperature Variation Per Degree F.

Hz	dB	Rad.	R	X
300	.0013	.00009	.202	-.821
1000	.0016	.00015	-.069	-.329
3000	.0013	.00052	.205	-.219

Notes: Nominal Cutoff Frequency = 4000 Hz.  
Phase Delay =  $94.29 \times 10^{-6}$  Seconds/Mile at 1000 Hz.  
Velocity of Propagation =  $10.61 \times 10^3$  Miles/Second at 1000 Hz.

## END-SECTION IMPEDANCE

End Section \ Frequency (Hz)	300		1000		1600		2000	
	R	X	R	X	R	X	R	X
0 (Full Coil)	1226	-396	1107	+130	1044	+359	988	+ 494
.1	1229	-414	1132	+ 76	1109	+287	1088	+ 419
.2	1230	-431	1151	+ 19	1162	+201	1176	+ 320
.3	1230	-448	1165	- 39	1202	+105	1246	+ 197
.4	1230	-465	1172	- 99	1226	+ 2	1289	+ 59
.5 (Mid Section)	1229	-482	1173	-158	1230	-103	1297	- 87
.6	1228	-499	1168	-216	1218	-206	1276	- 229
.7	1226	-515	1158	-272	1189	-302	1226	- 358
.8	1224	-531	1142	-326	1147	-389	1154	- 466
.9	1221	-547	1122	-376	1095	-463	1069	- 550
1.0 (Full Section)	1218	-562	1098	-423	1035	-525	978	- 611

End Section \ Frequency (Hz)	2500		2750		3000		3500	
	R	X	R	X	R	X	R	X
0 (Full Coil)	895	+654	836	+733	766	+812	579	+ 974
.1	1043	+595	1012	+695	967	+802	810	+1064
.2	1191	+491	1201	+600	1200	+726	1150	+1101
.3	1321	+338	1377	+432	1439	+553	1611	+ 982
.4	1407	+140	1501	+194	1621	+266	2072	+ 552
.5 (Mid Section)	1431	- 80	1531	- 81	1671	- 89	2213	- 157
.6	1387	-293	1466	-347	1572	-427	1912	- 785
.7	1288	-473	1327	-556	1371	-671	1437	-1074
.8	1157	-603	1153	-692	1140	-803	1035	-1114
.9	1017	-685	980	-763	929	-850	754	-1051
1.0 (Full Section)	885	-727	826	-786	756	-845	568	- 961