

SECONDARY CONSTANTS OF LOADED CABLE  
19 GAUGE CNB, ENB, FNB  
H44 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	.00528	.046	.00452	9856	8394	12946	40.4
50	.03230	.281	.03694	1399	1215	1853	41.0
100	.04266	.371	.05592	1058	804	1329	37.2
200	.05311	.461	.08986	851	501	987	30.5
300	.05807	.504	.1233	779	365	860	25.1
500	.06229	.541	.1920	729	235	766	17.9
800	.06436	.559	.2983	713	152	729	12.1
1000	.06493	.564	.3707	712	123	723	9.8
1200	.06526	.567	.4440	716	104	723	8.3
1400	.06547	.569	.5184	722	90	728	7.1
1600	.06562	.570	.5939	731	79	735	6.2
1800	.06573	.571	.6706	742	72	745	5.5
2000	.06582	.572	.7486	755	65	757	5.0
2200	.06592	.573	.8283	770	61	773	4.5
2400	.06603	.574	.9098	789	57	791	4.1
2500	.06610	.574	.9514	799	56	801	4.0
2600	.06618	.575	.9935	811	54	813	3.8
2700	.06628	.576	1.036	823	53	825	3.7
2750	.06634	.576	1.058	830	53	832	3.7
2800	.06640	.577	1.080	837	53	839	3.6
3000	.06670	.579	1.169	868	52	870	3.4
3200	.06715	.583	1.262	906	52	907	3.3
3500	.06826	.593	1.410	979	55	981	3.2
4000	.07261	.631	1.690	1184	76	1186	3.7
4500	.08895	.773	2.055	1708	194	1719	6.5
4800	.1460	1.268	2.395	2832	1065	3026	20.6

\* Temperature Variation Per Degree F.

Hz	dB	rad.	R	X
300	.0010	.00007	.200	-.579
1000	.0013	.00010	-.033	-.260
3000	.0010	.00029	0	-.114

Notes: Nominal Cutoff Frequency = 4850 Hz  
Phase Delay =  $58.99 \times 10^{-6}$  Seconds/Mile at 1000 Hz  
Velocity of Propagation =  $16.95 \times 10^3$  Miles/Second at 1000 Hz

## END-SECTION IMPEDANCE

End Section \ Frequency (Hz)	300		1000		2000		2500	
	R	X	R	X	R	X	R	X
0 (Full Coil)	779	-322	685	+ 21	632	+ 225	595	+ 309
.1	780	-331	695	- 7	674	+ 180	660	+ 264
.2	780	-340	703	- 35	710	+ 126	718	+ 202
.3	780	-348	709	- 65	736	+ 66	764	+ 125
.4	780	-357	712	- 94	752	+ 1	792	+ 37
.5 (Mid Section)	779	-365	712	-123	755	- 65	799	- 56
.6	778	-373	710	-152	747	-131	785	-147
.7	778	-381	706	-179	728	-191	751	-228
.8	777	-389	699	-206	700	-245	703	-295
.9	775	-397	691	-231	666	-291	648	-346
1.0 (Full Section)	774	-405	681	-256	627	-328	590	-382

End Section \ Frequency (Hz)	2750		3000		3500		4000	
	R	X	R	X	R	X	R	X
0 (Full Coil)	573	+ 350	547	+ 390	485	+ 470	401	+ 551
.1	649	+ 308	637	+ 354	601	+ 455	539	+ 576
.2	721	+ 245	726	+ 291	731	+ 403	721	+ 562
.3	781	+ 160	803	+ 198	859	+ 299	936	+ 464
.4	820	+ 58	854	+ 79	953	+ 138	1124	+ 241
.5 (Mid Section)	830	- 53	868	- 52	979	- 55	1184	- 76
.6	810	-160	842	-179	928	-241	1069	-369
.7	766	-254	783	-286	823	-379	864	-539
.8	705	-327	705	-365	698	-460	665	-596
.9	636	-378	621	-414	579	-494	508	-589
1.0 (Full Section)	567	-410	542	-439	479	-498	395	-556