

SECONDARY CONSTANTS OF LOADED CABLE  
19-GAUGE CNB, ENB, FNB  
B135 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	.00559	.049	.00485	10529	8861	13761	40.1
50	.02623	.228	.05163	1951	982	2185	26.7
100	.02894	.251	.09366	1769	542	1850	17.0
200	.03007	.261	.1808	1709	281	1732	9.3
300	.03039	.264	.2692	1699	189	1709	6.3
500	.03074	.267	.4475	1701	114	1705	3.8
800	.03122	.271	.7178	1721	72	1722	2.4
1000	.03157	.274	.9004	1742	58	1742	1.9
1200	.03197	.278	1.085	1768	49	1769	1.6
1400	.03242	.282	1.274	1801	42	1802	1.4
1600	.03293	.286	1.466	1842	38	1842	1.2
1800	.03353	.291	1.663	1891	35	1892	1.1
2000	.03423	.297	1.865	1952	33	1952	1.0
2200	.03507	.305	2.075	2026	32	2026	0.9
2400	.03611	.314	2.293	2118	32	2118	0.9
2500	.03672	.319	2.406	2172	33	2172	0.9
2600	.03740	.325	2.522	2233	33	2234	0.9
2700	.03819	.332	2.642	2303	35	2303	0.9
2750	.03862	.335	2.703	2341	36	2341	0.9
2800	.03909	.340	2.765	2382	37	2382	0.9
3000	.04137	.359	3.026	2580	43	2580	1.0
3200	.04465	.388	3.312	2858	55	2858	1.1
3500	.05370	.466	3.815	3594	104	3596	1.7

\* Temperature Variation per Degree F.

Hz	dB	Rad.	R	X
300	.0006	.00006	-.133	-.398
1000	.0005	.00017	-.152	-.131
3000	0	.00083	.426	-.081

Notes: Nominal Cutoff Frequency = 3950 Hz.  
Phase Delay =  $143.3 \times 10^{-6}$  seconds/mile at 1000 Hz.  
Velocity of Propagation =  $6.98 \times 10^3$  miles/second at 1000 Hz.

## END-SECTION IMPEDANCE

Frequency (Hz) End Section	300		1000		1600		2000	
	R	X	R	X	R	X	R	X
0 (Full Coil)	1694	- 60	1636	+ 371	1548	+ 650	1462	+ 829
.1	1696	- 86	1674	+ 293	1645	+ 546	1611	+ 725
.2	1698	- 111	1704	+ 210	1728	+ 421	1747	+ 582
.3	1699	- 137	1726	+ 123	1792	+ 279	1858	+ 402
.4	1699	- 163	1739	+ 33	1831	+ 124	1931	+ 192
.5 (Mid-Section)	1699	- 189	1742	- 58	1842	- 38	1952	- 33
.6	1697	- 214	1736	- 148	1826	- 198	1922	- 256
.7	1695	- 240	1720	- 236	1782	- 350	1845	- 461
.8	1692	- 265	1696	- 321	1716	- 488	1732	- 634
.9	1689	- 290	1665	- 401	1633	- 607	1596	- 769
1.0 (Full Section)	1684	- 314	1626	- 476	1537	- 706	1451	- 867

Frequency (Hz) End Section	2500		2750		3000		3500	
	R	X	R	X	R	X	R	X
0 (Full Coil)	1316	+1051	1222	+1162	1110	+1274	800	+1501
.1	1539	+ 975	1483	+1117	1404	+1275	1121	+1668
.2	1768	+ 833	1771	+ 993	1761	+1189	1620	+1789
.3	1976	+ 609	2053	+ 755	2144	+ 951	2355	+1708
.4	2123	+ 310	2264	+ 397	2458	+ 523	3206	+1115
.5 (Mid-Section)	2172	- 33	2341	- 36	2580	- 43	3594	- 104
.6	2110	- 374	2248	- 466	2434	- 603	3091	-1250
.7	1955	- 662	2024	- 808	2104	-1006	2237	-1742
.8	1745	- 873	1742	-1028	1722	-1219	1545	-1776
.9	1519	-1004	1459	-1139	1377	-1288	1083	-1643
1.0 (Full Section)	1304	-1070	1210	-1173	1098	-1275	786	-1476