

SECONDARY CONSTANTS OF LOADED CABLE
19 GAUGE ANB, DNB, GNB
H88 LOADING

at 68° F. *

Freq. Hertz	Propagation Constant per Mile			Mid-Section Impedance			
	Attenuation		β Radians	R Ohms	X Ohms (neg.)	Z Ohms	Angle Degrees (neg.)
	α Nepers	dB					
1	.00477	.041	.00409	11325	9623	14862	40.4
50	.02744	.238	.03550	1709	1311	2154	37.5
100	.03431	.298	.05679	1366	821	1594	31.0
200	.03945	.343	.09884	1190	472	1280	21.7
300	.04121	.358	.1421	1142	329	1188	16.1
500	.04242	.368	.2310	1118	203	1136	10.3
800	.04300	.374	.3671	1121	129	1129	6.6
1000	.04321	.375	.4595	1132	104	1137	5.3
1200	.04339	.377	.5533	1149	88	1152	4.4
1400	.04355	.378	.6488	1170	77	1172	3.8
1600	.04372	.380	.7462	1196	69	1198	3.3
1800	.04392	.381	.8462	1229	63	1230	2.9
2000	.04417	.384	.9492	1268	59	1270	2.7
2200	.04450	.387	1.0558	1318	56	1319	2.4
2400	.04496	.391	1.1669	1379	55	1380	2.3
2500	.04526	.393	1.2245	1415	56	1417	2.3
2600	.04561	.396	1.2837	1457	57	1458	2.2
2700	.04604	.400	1.3448	1504	58	1505	2.2
2750	.04629	.402	1.3760	1529	59	1531	2.2
2800	.04657	.404	1.4078	1557	60	1558	2.2
3000	.04803	.417	1.5415	1693	68	1694	2.3
3200	.05041	.438	1.6886	1886	85	1888	2.6
3500	.05814	.505	1.9500	2416	158	2421	3.7
3800	.09312	.809	2.3316	4254	871	4342	11.6

* Temperature variation per degree F.

Hz	dB	rad.	R	X
300	.0008	.00005	.055	-.607
1000	.0008	.00011	-.105	-.233
3000	.0007	.00042	.283	-.181

Notes: nominal cutoff frequency = 3900 Hz.
phase delay = 73.13×10^{-6} seconds/mile at 1000 Hz.
velocity of propagation = 13.67×10^3 miles/second at 1000 Hz.

End-Section Impedance

Frequency (Hz) End Section	300		1000		2000		2500	
	R	X	R	X	R	X	R	X
0 (Full Coil)	1139	-244	1063	+180	943	+ 516	845	+ 669
.1	1142	-261	1088	+128	1044	+ 446	994	+ 622
.2	1143	-278	1108	+ 73	1136	+ 350	1149	+ 527
.3	1143	-296	1123	+ 15	1210	+ 230	1289	+ 377
.4	1143	-313	1131	- 44	1257	+ 90	1387	+ 176
.5 (Mid-Section)	1142	-329	1132	-104	1268	- 59	1415	- 56
.6	1141	-346	1127	-163	1246	- 205	1368	- 280
.7	1139	-362	1117	-219	1193	- 337	1261	- 466
.8	1137	-378	1101	-274	1117	- 446	1120	- 597
.9	1134	-394	1079	-325	1028	- 530	972	- 675
1.0 (Full Section)	1131	-410	1054	-372	934	- 590	835	- 712

Frequency (Hz) End Section	2750		3000		3500		3800	
	R	X	R	X	R	X	R	X
0 (Full Coil)	782	+745	707	+822	496	+ 980	276	+1096
.1	958	+721	906	+831	713	+1102	439	+1340
.2	1155	+639	1150	+777	1054	+1196	766	+1684
.3	1346	+478	1413	+616	1572	+1150	1524	+2109
.4	1488	+235	1627	+321	2179	+ 722	3304	+1932
.5 (Mid-Section)	1529	- 59	1693	- 68	2416	- 158	4254	- 871
.6	1459	-343	1581	-438	2002	- 925	2231	-2210
.7	1304	-561	1352	-693	1403	-1199	1070	-1885
.8	1115	-696	1098	-819	952	-1181	596	-1491
.9	931	-759	874	-852	656	-1073	378	-1207
1.0 (Full Section)	772	-774	697	-836	485	- 954	264	-1004