SECONDARY CONSTANTS OF LOADED CABLE
19 GAUGE CNB, ENB, FNB
B88 LOADING

at 68° F.*

Freq. Hertz	Propagation Constant per Mile			Mid-Section Impedance			
	Attenuation		Phase Shift				
	α nepers	dB	β Radians	R ohms	X ohms (neg.)	Z ohms	Angle Degrees (neg.)
1	.00557	.048	.00481	10453	8841	13690	40.2
50	.02900	.252	.04616	1746	1088	2057	31.9
100	.03370	.293	.07950	1502	633	1630	22.8
200	.03614	.314	.1486	1404	339	1444	13.6
300	.03681	.320	.2193	1383	230	1402	9.4
500	.03735	.324	.3625	1376	139	1383	5.8
800	.03784	.329	.5795	1383	88	1386	3.6
1000	.03816	.331	.7255	1392	70	1394	2.9
1200	.03848	.334	.8727	1405	59	1407	2.4
1400	.03884	.337	1.022	1421	51	1422	2.1
1600	.03922	.341	1.172	1441	45	1441	1.8
1800	.03964	.344	1.325	1464	41	1464	1.6
2000	.04011	.348	1.481	1491	37	1491	1.4
2200	.04064	.353	1.639	1523	35	1523	1.3
2400	.04124	.358	1.802	1560	33	1561	1.2
2500	.04157	.361	1.884	1582	33	1582	1.2
2600	.04192	.364	1.968	1604	32	1605	1.1
2700	.04231	.367	2.053	1629	32	1630	1.1
2750	.04251	.369	2.096	1643	32	1643	1.1
2800	.04273	.371	2.140	1657	32	1657	1.1
3000	.04368	.379	2.317	1719	32	1719	1.1
3200	.04483	.389	2.502	1793	33	1794	1.0
3500	.04709	.409	2.796	1939	36	1939	1.1
4000	.05366	.466	3.352	2342	55	2342	1.3
4500	.07198	.625	4.077	3378	155	3382	2.6
4800	.1268	1.101	4.764	6130	985	6208	9.1

* Temperature Variation per Degree F.

Hz	dB	rad.	R	X
300	.0007	.00005	-.083	-.452
1000	.0007	.00015	-.133	-.160
3000	.0003	.00054	-.010	-.079

NOTES: Nominal cutoff frequency = 4900 Hz.

Phase delay = 115.46 $X10^{-6}$ seconds/mile at 1000 Hz.

Velocity of Propagation = 8.66 $X10^{3}$ 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)	1382	-146	1339	+210	1249	+524	1178	+672
.1	1383	-163	1359	+157	1330	+440	1301	+589
.2	1384	-180	1375	+102	1398	+339	1414	+472
.3	1384	-197	1386	+ 45	1451	+222	1506	+325
.4	1384	-213	1391	- 12	1483	+ 95	1566	+153
.5 (Mid-Section)	1383	-230	1392	- 70	1491	- 37	1582	- 33
.6	1382	-247	1389	-128	1477	-168	1557	-215
.7	1380	-263	1381	-184	1441	-292	1492	-382
.8	1379	-279	1368	-239	1387	-404	1399	-522
.9	1376	-296	1351	-292	1318	-500	1287	-631
1.0 (Full Section)	1374	-311	1330	-343	1240	-580	1168	-709

Frequency (Hz) / End Section	2750		3000		3500		4000	
	R	X	R	X	R	X	R	X
0 (Full Coil)	1135	+744	1085	+817	963	+962	799	+1109
.1	1282	+668	1257	+752	1184	+940	1058	+1163
.2	1422	+549	1429	+634	1434	+845	1403	+1145
.3	1541	+386	1583	+458	1685	+650	1820	+ 972
.4	1621	+187	1688	+228	1877	+342	2200	+ 558
.5 (Mid-Section)	1643	- 32	1719	- 32	1939	- 36	2342	- 55
.6	1609	-248	1673	-288	1852	-409	2148	- 650
.7	1524	-439	1561	-508	1650	-697	1754	-1019
.8	1404	-593	1407	-673	1401	-873	1350	-1158
.9	1265	-703	1238	-781	1160	-954	1026	-1160
1.0 (Full Section)	1124	-774	1074	-839	951	-971	787	-1102