

SECONDARY CONSTANTS OF LOADED CABLE
19 GAUGE ANB, DNB, GNB
D88 LOADING

AT 68° F.*

Freq. Hertz	Propagation Constant per Mile			Mid-Section Impedance			
	Attenuation		Phase Shift β Radians	R Ohms	X Ohms (neg.)	Z Ohms	Angle Degrees (neg.)
	α Nepers	dB					
1	.00479	.042	.00409	11492	9742	15065	40.3
50	.02678	.233	.03729	1797	1281	2207	35.5
100	.03264	.283	.06144	1479	779	1672	27.8
200	.03628	.315	.1104	1330	433	1399	18.0
300	.03734	.324	.1611	1294	298	1328	13.0
500	.03815	.331	.2639	1277	183	1290	8.1
800	.03868	.336	.4204	1281	115	1286	5.1
1000	.03903	.339	.5260	1292	92	1295	4.1
1200	.03914	.340	.6340	1306	78	1308	3.4
1400	.03926	.341	.7415	1323	68	1325	3.0
1600	.03949	.343	.8531	1345	60	1347	2.5
1800	.03995	.347	.9640	1371	55	1372	2.3
2000	.04041	.351	1.0780	1402	50	1403	2.1
2200	.04076	.354	1.1964	1439	48	1440	1.9
2400	.04122	.358	1.3179	1484	45	1484	1.7
2500	.04156	.361	1.3766	1508	44	1509	1.7
2600	.04179	.363	1.4421	1537	44	1537	1.6
2700	.04214	.366	1.5052	1567	44	1567	1.6
2750	.04225	.367	1.5363	1583	44	1584	1.6
2800	.04248	.369	1.5714	1600	44	1601	1.6
3000	.04329	.376	1.7076	1680	45	1680	1.5
3200	.04421	.384	1.8505	1778	48	1779	1.5
3500	.04812	.418	2.0787	1982	58	1983	1.7
4000	.05572	.484	2.5502	2689	117	2691	2.5
4300	.07311	.635	2.9409	3965	368	3982	5.3

* Temperature Variation per Degree F.

Hz	dB	rad.	R	X
300	.0007	.00005	-.086	-.549
1000	.0007	.00012	-.104	-.204
3000	.0005	.00045	-.090	-.124

Notes: Nominal Cutoff Frequency = 4490 Hz.
Phase Delay = 83.72×10^{-6} seconds/mile at 1000 Hz.
Velocity of Propagation = 11.95×10^3 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)	1293	-213	1234	+190	1134	+517	1053	+ 668
.1	1294	-230	1256	+137	1221	+436	1185	+ 594
.2	1295	-247	1273	+ 81	1297	+336	1312	+ 483
.3	1295	-264	1284	+ 24	1356	+218	1418	+ 334
.4	1295	-281	1291	- 34	1392	+ 87	1487	+ 153
.5 (Mid Section)	1294	-298	1292	- 92	1402	- 50	1508	- 44
.6	1293	-315	1288	-150	1386	-185	1477	- 238
.7	1291	-331	1279	-206	1345	-312	1401	- 411
.8	1289	-347	1265	-261	1283	-423	1293	- 549
.9	1287	-363	1247	-313	1208	-516	1169	- 649
1.0 (Full Section)	1284	-379	1225	-363	1124	-589	1043	- 714

Frequency (Hz) End Section	2750		3000		3500		4000	
	R	X	R	X	R	X	R	X
0 (Full Coil)	1004	+743	948	+817	804	+966	593	+1115
.1	1161	+680	1130	+771	1032	+981	836	+1242
.2	1319	+570	1325	+668	1316	+927	1214	+1334
.3	1458	+407	1507	+493	1630	+748	1772	+1270
.4	1554	+196	1637	+246	1892	+406	2414	+ 812
.5 (Mid Section)	1583	- 44	1680	- 45	1982	- 58	2689	- 117
.6	1540	-278	1620	-329	1851	-504	2289	- 967
.7	1437	-477	1479	-561	1574	-810	1646	-1315
.8	1296	-627	1296	-718	1268	-957	1134	-1329
.9	1143	-724	1109	-806	1002	-993	796	-1223
1.0 (Full Section)	994	-778	937	-842	792	-969	581	-1097