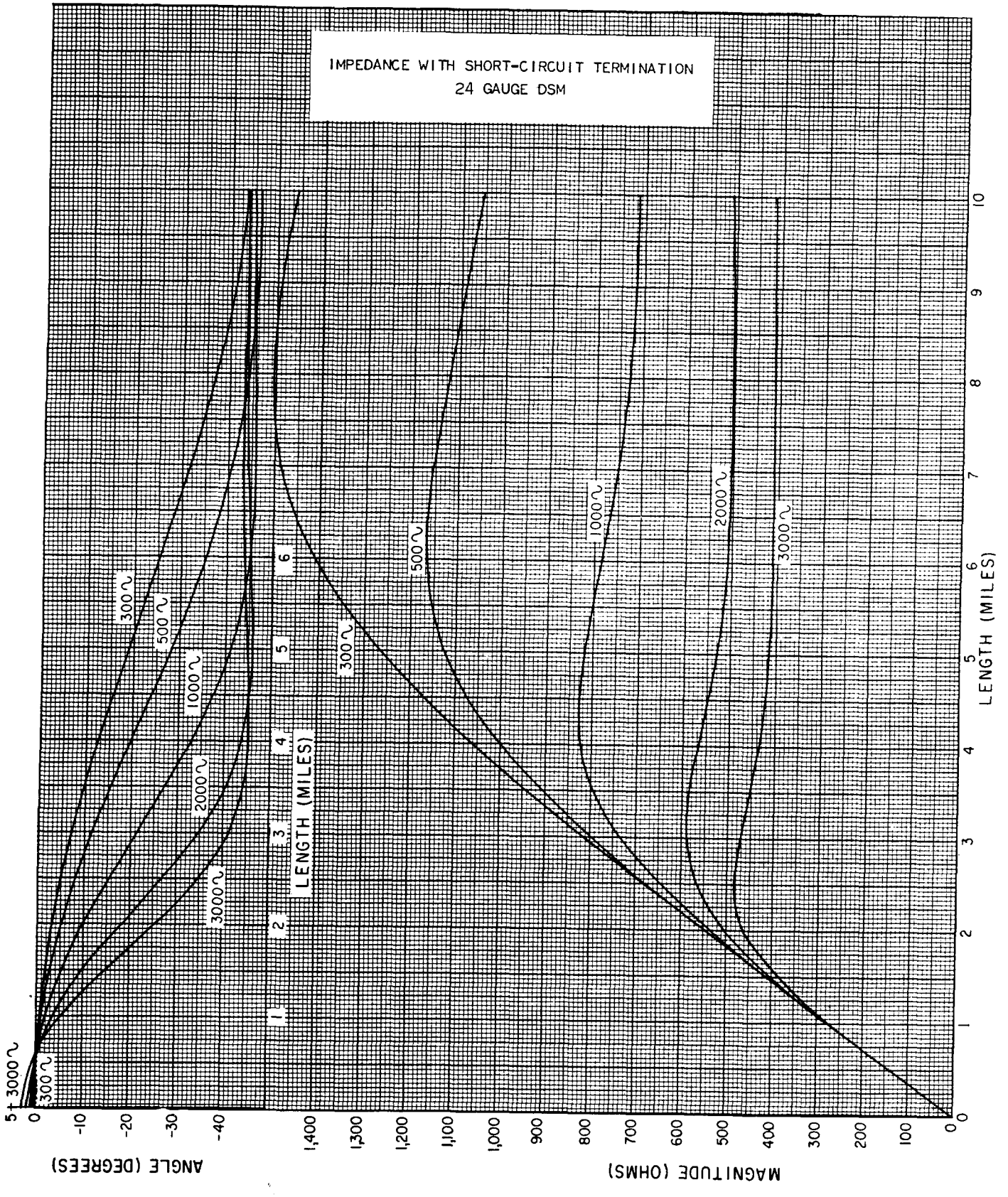
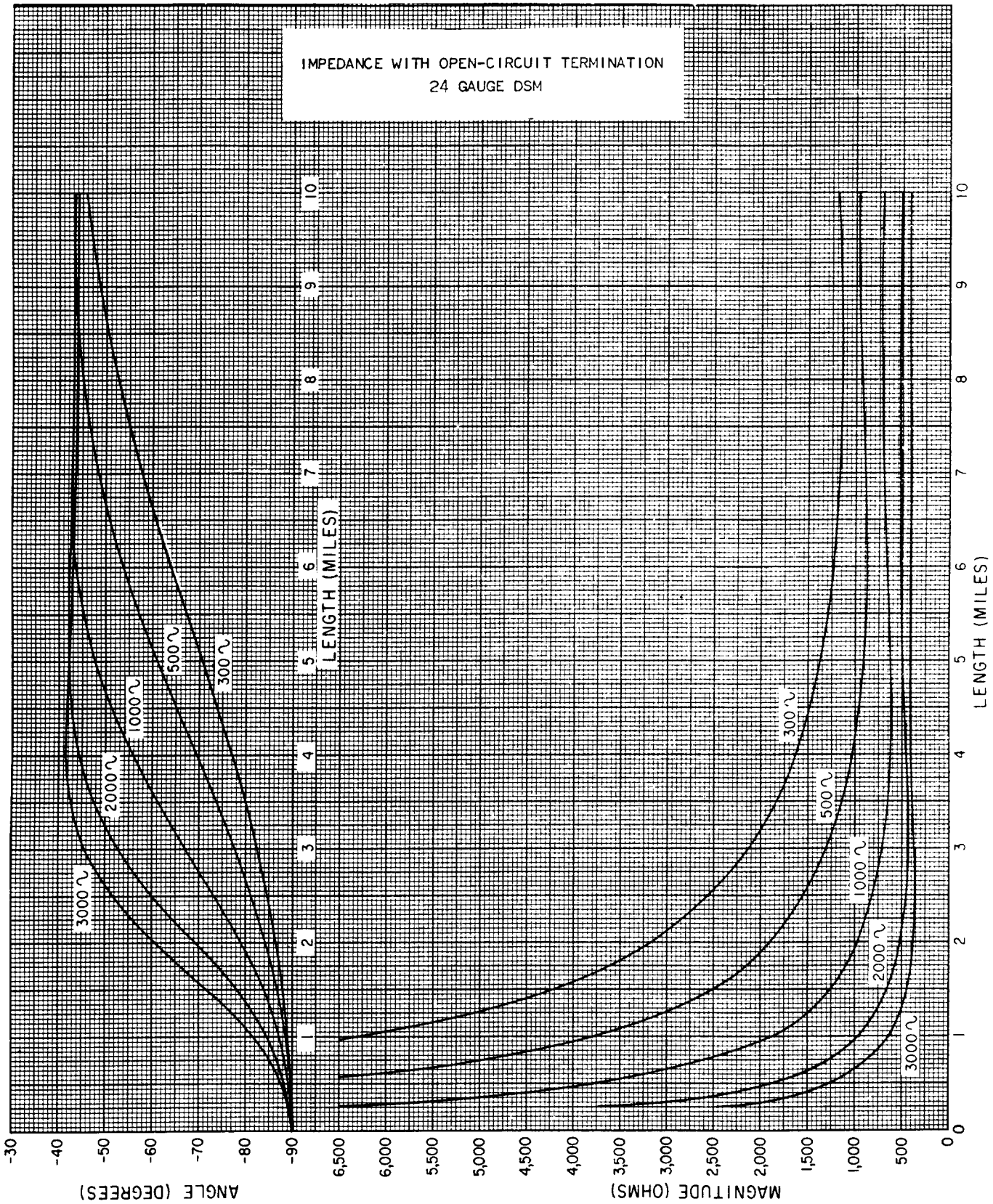
INPUT IMPEDANCE OF NON-LOADED CABLE WITH SHORT-CIRCUIT AND OPEN-CIRCUIT TERMINATION 24 GAUGE DSM

Length miles	Frequency - Cycles per Second				
	300	500	1000	2000	3000
Characteristic Impedance ($Z_o = \sqrt{Z_{sc} Z_{oc}}$)					
	934 -j 927 1316 ∠44.8°	725 -j 717 1019 ∠44.7°	515 -j 504 721 ∠44.4°	367 -j 353 510 ∠43.9°	303 -j 286 416 ∠43.4°
Impedance with Short-Circuit Termination (Z_{sc})					
1	275 -j 3 275 ∠0.7°	274 -j 4 274 ∠0.8°	274 -j 8 274 ∠1.7°	274 -j 16 274 ∠3.4°	271 -j 25 272 ∠5.3°
2	546 -j 29 547 ∠3.0°	544 -j 48 546 ∠5.0°	528 -j 91 536 ∠9.8°	478 -j 161 504 ∠18.6°	416 -j 202 463 ∠25.9°
3	807 -j 100 813 ∠7.1°	782 -j 160 798 ∠11.6°	685 -j 271 737 ∠21.6°	482 -j 338 589 ∠35.0°	354 -j 312 472 ∠41.4°
4	1034 -j 229 1059 ∠12.5°	941 -j 341 1001 ∠19.9°	689 -j 451 823 ∠33.2°	408 -j 389 564 ∠43.6°	305 -j 308 433 ∠45.3°
5	1193 -j 411 1262 ∠19.0°	988 -j 536 1124 ∠28.5°	616 -j 538 818 ∠41.1°	369 -j 378 528 ∠45.7°	295 -j 291 415 ∠44.6°
6	1267 -j 610 1406 ∠25.7°	946 -j 682 1166 ∠35.8°	554 -j 552 782 ∠44.9°	360 -j 363 511 ∠45.2°	299 -j 285 413 ∠43.7°
7	1259 -j 784 1483 ∠31.9°	872 -j 758 1156 ∠41.0°	520 -j 539 749 ∠46.0°	362 -j 354 506 ∠44.4°	302 -j 285 415 ∠43.3°
8	1201 -j 908 1506 ∠37.1°	804 -j 782 1122 ∠44.2°	507 -j 523 728 ∠45.9°	365 -j 352 507 ∠43.9°	303 -j 286 416 ∠43.4°
9	1125 -j 978 1491 ∠41.0°	757 -j 779 1086 ∠45.8°	506 -j 511 719 ∠45.3°	367 -j 352 509 ∠43.8°	303 -j 286 416 ∠43.4°
10	1056 -j1009 1460 ∠43.7°	730 -j 763 1056 ∠46.3°	509 -j 505 717 ∠44.8°	368 -j 353 510 ∠43.8°	303 -j 286 416 ∠43.4°
Impedance with Open-Circuit Termination (Z_{oc})					
1	121 -j6296 6297 ∠88.9°	93 -j3787 3788 ∠88.6°	96 -j1895 1897 ∠87.1°	93 -j 945 950 ∠84.4°	94 -j 628 635 ∠81.5°
2	188 -j3157 3163 ∠86.6°	185 -j1892 1901 ∠84.4°	185 -j 951 969 ∠79.0°	183 -j 482 516 ∠69.2°	182 -j 327 374 ∠60.9°
3	278 -j2111 2129 ∠82.5°	275 -j1272 1301 ∠77.8°	274 -j 651 706 ∠67.2°	267 -j 352 442 ∠52.8°	258 -j 261 367 ∠45.4°
4	365 -j1594 1635 ∠77.1°	364 -j 972 1038 ∠69.5°	357 -j 521 632 ∠55.6°	330 -j 321 461 ∠44.2°	299 -j 264 399 ∠41.5°
5	456 -j1294 1372 ∠70.6°	449 -j 807 924 ∠60.9°	428 -j 470 636 ∠47.7°	365 -j 330 492 ∠42.1°	309 -j 280 417 ∠42.2°
6	542 -j1106 1232 ∠63.9°	529 -j 717 891 ∠53.6°	479 -j 461 665 ∠43.9°	375 -j 345 509 ∠42.6°	306 -j 286 419 ∠43.1°
7	624 -j 987 1168 ∠57.7°	597 -j 672 899 ∠48.4°	509 -j 472 694 ∠42.8°	373 -j 353 514 ∠43.4°	303 -j 287 417 ∠43.5°
8	700 -j 912 1150 ∠52.5°	652 -j 657 926 ∠45.2°	523 -j 486 714 ∠42.9°	370 -j 356 513 ∠43.9°	303 -j 286 416 ∠43.4°
9	768 -j 872 1162 ∠48.6°	692 -j 659 956 ∠43.6°	524 -j 498 723 ∠43.5°	368 -j 355 511 ∠44.0°	303 -j 286 416 ∠43.4°
10	825 -j 852 1186 ∠45.9°	718 -j 672 984 ∠43.1°	522 -j 504 725 ∠44.0°	367 -j 354 510 ∠44.0°	303 -j 286 416 ∠43.4°


IMPEDANCE WITH SHORT-CIRCUIT TERMINATION
24 GAUGE DSM
LENGTH (MILES)
MAGNITUDE (OHMS)
ANGLE (DEGREES)
300Ω
500Ω
1000Ω
2000Ω
3000Ω


IMPEDANCE WITH OPEN-CIRCUIT TERMINATION
24 GAUGE DSM
LENGTH (MILES)
1
2
3
4
5
6
7
8
9
10
300 Ω
500 Ω
1000 Ω
2000 Ω
3000 Ω
ANGLE (DEGREES)
-30
-40
-50
-60
-70
-80
-90
MAGNITUDE (OHMS)
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
LENGTH (MILES)
0
1
2
3
4
5
6
7
8
9
10