

COMMUNICATIONS DATA SHEET No.208
POST OFFICE PHYSICAL LINE PARAMETERS

A. Average Transmission Loss and Cut-off Frequency for Copper Conductors

Cable	Conductor lb/mile dia.mm		cut-off freq. kHz	TRANSMISSION LOSS			
				dB/mile		dB/km	
				800Hz	1600Hz	800Hz	1600Hz
PCQL, PCQ, PCQT, PCUT, POLY.UT., POLY.TWIN, POLY.QUAD No.5	2½	0.32	-	3.2	4.5	2.0	2.8
	4	0.40	-	2.6	3.5	1.6	2.2
	6½	0.50	-	1.9	2.7	1.2	1.7
	10	0.63	-	1.8	2.4	1.1	1.5
	20	0.90	-	1.1	1.6	0.7	1.0
	25	1.00	-	1.0	1.4	0.6	0.9
	40	1.27	-	0.8	1.0	0.5	0.6
PCQT (Phantom)	10	0.63	-	1.6	2.6	0.99	1.62
	20	0.90	-	0.9	1.4	0.56	0.87
Carrier (Phantom)	40	1.27	-	0.8	1.0	0.50	0.62
UL Scr. Pr.	40	1.27	-	0.6	0.8	0.37	0.5
16mH/1.136 mls. 16mH/1.828 km	40	1.27	8.9	0.4	0.4	0.25	0.25
	25	1.00	8.9	0.6	0.6	0.37	0.37
	20	0.90	8.9	0.7	0.7	0.43	0.43
22mH/1.136 mls. 22mH/1.828 km	40	1.27	7.6	0.4	0.4	0.25	0.25
	20	0.90	7.6	0.7	0.7	0.43	0.43
44mH/1.136 mls. 44mH/1.828 km	40	1.27	5.5	0.3	0.3	0.19	0.19
	20	0.90	5.5	0.5	0.5	0.31	0.31
88mH/1.136 mls. 88mH/1.828 km ↓ 2000 yds.	40	1.27	3.9	0.2	0.2	0.12	0.12
	20	0.90	3.9	0.4	0.4	0.25	0.25
	10	0.63	3.9	0.7	0.7	0.43	0.43
22mH/0.568 mls. 22mH/0.914 km	40	1.27	10.9	0.3	0.3	0.19	0.19
	20	0.90	10.9	0.5	0.5	0.31	0.31
22mH/0.284 mls. 22mH/0.457 km	40	1.27	14.8	0.2	0.2	0.12	0.12
	20	0.90	14.8	0.4	0.4	0.25	0.25
16mH/0.568 mls. 16mH/0.914 km	40	1.27	12.8	0.3	0.3	0.19	0.19
	20	0.90	12.8	0.6	0.6	0.37	0.37

B. Average Transmission Loss for Aluminium Conductors

Cable	Conductor lb/mile dia.mm		TRANSMISSION LOSS		
			dB/km		
			800Hz	1600Hz	3000Hz
POLY.TWIN AL.	6½	0.5	1.77	2.5	3.42
	-	0.6	1.41	2.0	2.72
	-	0.8	1.13	1.6	2.18

U.T. UNIT TWIN
P.C. PAPER.
Q. LOCAL
T. TRUNK

C. Conductor Resistance for Copper and Aluminium Conductors

DESIGNATION		RESISTANCE			
m.m.	lb/mile	COPPER		ALUMINIUM	
		ohms/loop mile at 20°C	ohms/loop km at 20°C	ohms/loop mile at 20°C	ohms/loop km at 20°C
0.3	-	786.0	488.4	1288.0	800.4
0.32	2½	690.0	428.8	1132.0	703.4
0.4	-	444.0	275.8	726.0	451.2
0.404	4	434.0	269.6	-	-
0.5	6½	282.0	175.2	464.0	288.4
0.6	-	196.6	122.2	322.0	200.0
0.635	10	175.2	108.8	-	-
0.7	-	144.2	89.6	236.0	146.6
0.8	-	110.4	68.6	181.0	112.4
0.9	-	87.4	54.4	143.0	88.4
0.902	20	87.0	54.0	-	-
1.0	-	70.6	43.8	115.8	72.0
1.016	25	68.4	42.6	-	-
1.2	-	49.2	30.6	76.2	47.4
1.219	37	47.6	29.6	-	-
1.270	40	43.8	27.2	-	-
1.3	-	41.8	26.0	68.6	42.6
1.6	-	27.6	17.2	45.2	28.0
1.684	70	25.0	15.6	-	-
1.7	-	24.4	15.2	40.0	24.8

- Notes:
- (1) Conductor resistance of phantom circuits is half that of either of the side circuits.
 - (2) Conductor resistance of 40lb UL SCR.PR. is the same as 40lb PCQL cable.
 - (3) Conductor resistance of loaded circuits is approximately equal to that of the equivalent unloaded circuits. The true resistance will depend on type and number of loading coils used.
 - * (4) Maximum mutual capacitance at 1kHz for 0.5mm, 0.63mm and 0.9mm copper conductors is 65nF/km. TYP 45nF
 - (5) Maximum mutual capacitance at 1kHz for 0.5mm and 0.8mm gauge aluminium conductors is 72nF/km.
 - (6) Further details of aluminium cables may be obtained from POEE Journal volume 64, October 1971.