Intermediate Equipment Return Loss

24A AUTOTRANSFORMER AND N.L. CABLE

Table 1: Insertion Return Loss - 19 ga. Cable - Various Values of C

Length =	0.5 Mile			1.0 Mile			2.0 Miles			3.0 Miles		
C(mf.) =	1	3.5	10.5	1	3.5	10.5	1	3.5	10.5	1	3.5	10.5
Freq.												
300	1	7	11	2	6	9	2	6	7	2	5	6
1000	5	11	14	5	10	11	5	7	7	5	6	7
1500	7	13	14	7	10	11	6	8	8	5	6	6
2000	8	13	14	8	11	11	7	8	8	6	6	6
2500	9	14	14	9	11	11	7	8	8	6	6	6
3000	10	14	14	9	11	11	7	8	8	6	6	7

Table 2: Insertion Return Loss - C = 10.5 mf. - Various Gauges

Length =	3 Miles			6 Miles		
Gauge =	13	16	19	13	16	19
Freq.						
200	5	4	4	5	4	3
500	8	7	5	8	6	4
1000	11	8	6	9	6	4
2000	12	9	6	10	7	5
2500	12	9	6	10	7	5
3000	13	9	6	11	7	6

Notes: (1) This is a special application of the 24A autotransformer to reduce carrier reflections and has definite limitations as outlined in Section AB25.112.

(2) The table values are computed for the indicated length of insert with 24A autotransformer at each end. Table 1 inserts are in 128-mil 12" spaced copper side circuits. Table 2 inserts are in 128-mil 8" spaced copper side circuits. The effect of any condition likely to be encountered can be estimated closely enough from these two tables but if the insert is controlling in a given situation the effect can be computed for the exact condition by means of T-network data and facility characteristics given in other sections.

(3) The autotransformer has very little effect on phantoms so that data on bare non-loaded cable inserts can be applied to such circuits.

(4) If the cable is an entrance to a voice repeater station the effect on the repeater at that point can be substantially reduced by inserting in the balancing circuit duplicate autotransformers separated by an equivalent T-network simulating the non-loaded cable as described in AB25.112. A balance of at least 25 db can be assumed if the line and net autotransformers are selected at random. Values approaching those of the following table can be obtained by local pairing of line and corresponding network autotransformers.

	Return Loss (db)					
	13 Ga.		16 Ga.		19 Ga.	
Freq.	2.8 mi.	6 mi.	3 mi.	6 mi.	3 mi.	6 mi.
200	36	34	35	32	55	45
500	36	32	33	31	45	44
1000	40	33	32	31	44	46
2000	39	36	31	40	37	40
2500	35	38	31	34	36	36
3000	30	31	33	28	34	35