

7. IMPEDANCE MISMATCH

There may be cases where it is necessary to use the THRULINE on other than the 50-ohm circuit for which it is designed.

Using the THRULINE, you will be inserting a 4-inch length of 50-ohm air line and the load on the transmitter will be changed from its original condition without the THRULINE. For a power reflection factor under 10% and frequency below 200 MHz, the 4-inch length mismatch is not too serious. But going any higher than these values, even if the transmitter is tuned up with the THRULINE in place, the load impedance will be very different when it is removed.

The THRULINE, of course, indicates zero reflection when the load, at its load connector, is 50 ohms,

pure resistive. An ideal condition on a 70-ohm line on the load side of the THRULINE will show 3% reflected power, i.e., THRULINE load is 70 ohms resistive, VSWR in the 50-ohm THRULINE is $70/50 = 1.4$. The THRULINE can also show this same reflected percentage with $50/1.4 = 35.7$ ohms pure resistive load which could exist with 10% reflected power on the 70-ohm line (VSWR = 2 on the 70-ohm line). From this you can see that the 70-ohm line could have as much as 10% reflected power and VSWR = 2 when the THRULINE indicates 3% reflected power of VSWR = 1.4.

It should be especially remembered that with 70-ohm lines it is most important to get the reflected power indication and subtract it from the forward, because of this factor being so much more critical here than with intended 50-ohm line.

TABLE I — STANDARD ELEMENTS (CAT. NOS.)

TYPE	Freq. Band MHz	WATTS FULL SCALE									
		5	10	25	50	100	250	500	1000	2500	5000
H	2-30	-	-	-	50H	100H	250H	500H	1000H	2500H	5000H
A	25-60	5A	10A	25A	50A	100A	250A	500A	1000A	-	-
B	50-125	5B	10B	25B	50B	100B	250B	500B	1000B	-	-
C	100-250	5C	10C	25C	50C	100C	250C	500C	1000C	-	-
D	200-500	5D	10D	25D	50D	100D	250D	500D	1000D	-	-
E	400-1000	5E	10E	25E	50E	100E	250E	500E	1000E	-	-

In addition to the Standard Types listed above, other special Elements are provided as follows: (See Bird Gen. Catalog)

Table II — Low Power Elements 1 and 2.5 watts in nine narrow band units from 60 to 950 MHz.

Table III — High Frequency Elements 1, 2.5, 5,

10, and 25 watts in four frequency bands; 950-1260 MHz, 1100-1800 MHz, 1700-2200 MHz and 2200-2300 MHz, respectively.

Table IV — Low Frequency Elements 1K, 2.5K, 5K, and 10K watts in one frequency band; .45 to 2.5 MHz.

SPECIAL NOTE

For the convenience of users, a set of VSWR conversion nomographs is appended to this handbook. With these charts, VSWR's may be directly ascertained from forward and reverse power values read from the THRULINE Wattmeter.