

Table-2

SWR	Load Ω	Autotuner Loss in Watts (100 W input)								
		80m	60m	40m	30m	20m	17m	15m	12m	10m
20	2.50									
19	2.63									
18	2.78									
17	2.94									
16	3.13	X		15		10				10
15	3.33									
14	3.57									
13	3.85									
12	4.17									
11	4.55									
10	5.00									
9	5.56									
8.33	6.00									
8	6.25	13		15		15				20
7	7.14									
6	8.33									
5	10.00									
4	12.50	10		10		10				10
3	16.67									
2	25	10		10		10				17
1	50	10		10		10				10
2	100	10		10		10				10
3	150									
4	200	10		10		11				10
5	250									
6	300									
7	350									
8	400	10		10		11				10
9	450									
10	500									
11	550									
12	600									
13	650									
14	700									
15	750									
16	800	14		15		33				43
17	850									
18	900									
19	950									
20	1000									

X	No Match
#	Loss in watts from ARRL Lab test on autotuners
	Estimated range based on ARRL Lab test on autotuners
	AT-100Pro guaranteed SWR range of 10:1
	AT-100Pro ohmic range of 6-1000 Ω

Table-2 suggests a wider tuning range at some frequencies, but the author played it safe and used the guaranteed SWR range of 10:1.

MHz	102' Doublet		Ladder Line 30' Wireman 552			Coax 50' RG-8X			Total Line Loss	Autotuner	Total System
	Z ₁ R ± jX	50Ω SWR	Z ₂ R ± jX	50Ω SWR	Loss (Watts)	Z _{3A} R ± jX	50Ω SWR	Loss (Watts)	Ladder Line + Coax Loss (Watts)	Estimated Loss (Watts)	Loss (Watts)
3.800	33-j295	54.9	23+j44	4.1	10.4	28-j52	4.0	5.3	15.7	10.0	25.7
5.368	122+j320	19.6	588-j858	36.9	0.8	5+j31	13.6	63.2	64.0	10.0	74.0
7.150	613+j1301	67.6	44-j116	8.1	3.1	288-j18	5.8	28.6	31.7	10.0	41.7
10.125	1221-j2169	101.5	48+j293	37.7	9.7	10-j67	14.2	62.6	72.3	10.0	82.3
14.175	112+j25	2.4	115-j35	2.6	2.4	48+j40	2.2	17.3	19.7	10.0	29.7
18.118	3394+j1528	81.6	110-j521	52.1	7.3	7-j42	11.5	78.0	85.3	10.0	95.3
21.225	199-j812	70.5	37+j49	3.0	10.0	20+j11	2.6	20.6	30.6	10.0	40.6
24.940	244+j488	24.6	84-j27	1.9	4.1	58-j29	1.7	18.2	22.3	10.0	32.3
28.400	2468-j1481	67.2	494+j1076	56.8	9.2	5+j1	9.2	84.0	93.2	10.0	103.2
80m-10m Average:					6.3			42.0	48.3	10.0	58.3
Average of Tunable Bands:					6.5			29.0	35.5	10.0	45.5

MHz	102' Doublet		Ladder Line 30' Wireman 552			Coax 25' Wireman CQ106 RG-			Total Line Loss	Autotuner	Total System
	Z ₁ R ± jX	50Ω SWR	Z ₂ R ± jX	50Ω SWR	Loss (Watts)	Z _{3B} R ± jX	50Ω SWR	Loss (Watts)	Ladder Line + Coax Loss (Watts)	Estimated Loss (Watts)	Loss (Watts)
3.800	33-j295	54.9	23+j44	4.1	10.4	195+j34	4	1.6	12.0	10.0	22.0
5.368	122+j320	19.6	588-j858	36.9	0.8	2-j26	30.2	18.3	19.1	10.0	29.1
7.150	613+j1301	67.6	44-j116	8.1	3.1	7+j9	7.2	10.8	13.9	10.0	23.9
10.125	1221-j2169	101.5	48+j293	37.7	9.7	2+j12	25.1	33.6	43.3	10.0	53.3
14.175	112+j25	2.4	115-j35	2.6	2.4	96+j45	2.5	4.8	7.2	10.0	17.2
18.118	3394+j1528	81.6	110-j521	52.1	7.3	8-j96	28.5	45.1	52.4	10.0	62.4
21.225	199-j812	70.5	37+j49	3	10	81-j65	2.9	5.2	15.2	10.0	25.2
24.940	244+j488	24.6	84-j27	1.9	4.1	30+j13	1.9	5.1	9.2	10.0	19.2
28.400	2468-j1481	67.2	494+j1076	56.8	9.2	4+j49	24.3	57.4	66.6	10.0	76.6
80m-10m Average:					6.3			20.2	26.5	10.0	36.5
Average of Tunable Bands:					6.0			5.5	11.5	10.0	21.5

MHz	102' Doublet		No Ladder Line			Coax 50' RG-8X			Total Line Loss	Autotuner	Total System
	Z ₁ R ± jX	50Ω SWR	Z ₂ R ± jX	50Ω SWR	Loss (Watts)	Z _{3C} R ± jX	50Ω SWR	Loss (Watts)	Coax Loss (Watts)	Estimated Loss (Watts)	Loss (Watts)
3.800	33-j295	54.9				3+j4	18.3	66.7	66.7	10.0	76.7
5.368	122+j320	19.6				5-j20	10.8	45	45.0	10.0	55.0
7.150	613+j1301	67.6				22+j119	15.7	76.8	76.8	10.0	86.8
10.125	1221-j2169	101.5				5-j46	17.9	82.5	82.5	10.0	92.5
14.175	112+j25	2.4				35+j28	2.1	16.2	16.2	10.0	26.2
18.118	3394+j1528	81.6				8-j51	12.7	84.6	84.6	10.0	94.6
21.225	199-j812	70.5				6+j25	10.4	85.4	85.4	10.0	95.4
24.940	244+j488	24.6				107-j174	8.1	67.4	67.4	10.0	77.4
28.400	2468-j1481	67.2				5+j4	9.4	86.2	86.2	10.0	96.2
80m-10m Average:								67.9	67.9	10.0	77.9
Average of Tunable Bands:								56.6	56.6	10.0	66.6

Legend
Frequency in MHz
Z ₁ impedance & 50Ω SWR at antenna terminals
Z ₂ impedance, 50Ω SWR, & loss at end of 30 ft of 552 ladder line
Z _{3A} impedance, 50Ω SWR, & loss at end of 50 ft. of RG-8X
Z _{3B} impedance, 50Ω SWR, & loss at end of 25 ft. of RG-8
Z _{3C} impedance, 50Ω SWR, & loss at end of 50 ft. of RG-8X
Total transmission line loss in watts
Autotuner loss in watts
Total system loss

Note: All losses are based on 100 W input power.