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10 REM *****
20 REM * ANTENNA & FEEDLINE *
30 REM * DESIGN PRIMER *
40 REM *****
50 REM
60 REM de VK1MM
70 REM
80 MODE 0
90 GOSUB 560
100 PRINT CHR$(254)
110 PEN 2
120 FOR Y=1 TO 20:LOCATE 1,Y:PRINT CHR$(206):LOCATE 20,Y:PRINT CHR$(206):NEXT
130 FOR X=1 TO 20:LOCATE X,1:PRINT CHR$(206):LOCATE X,20:PRINT CHR$(206):NEXT
140 LOCATE 3,7:PRINT"ANTENNA & FEEDER"
150 LOCATE 4,12:PRINT"DESIGN PRIMER"
160 LOCATE 7,17:PRINT CHR$(164) " VK1MM"
170 FOR T=1 TO 5000:NEXT T
180 PRINT CHR$(255)
190 CLS:PRINT"MODE 1
200 PRINT TAB(6)"ANTENNA & FEEDER DESIGN PRIMER "
210 PEN 3:PRINT TAB(15) CHR$(164) " VK1MM"
220 LOCATE 10,5:PRINT"YAGI" - HF YAGI"
230 LOCATE 10,6:PRINT"YAGI" - VHF/UHF YAGI"
240 LOCATE 10,7:PRINT"YAGI" - YAGI DESIGN NOTES"
250 LOCATE 10,8:PRINT"YAGI" - DIPOLE (CO-AX FEED)"
260 LOCATE 10,9:PRINT"YAGI" - DIPOLE (OPEN WIRE FEED)"
270 LOCATE 10,10:PRINT"YAGI" - DIPOLE DESIGN NOTES"
280 LOCATE 10,11:PRINT"YAGI" - GROUND PLANE"
290 LOCATE 10,12:PRINT"YAGI" - DELTA LOOP"
300 LOCATE 10,13:PRINT"YAGI" - CUBICAL QUAD"
310 LOCATE 10,14:PRINT"YAGI" - GAMMA MATCH"
320 LOCATE 10,15:PRINT"YAGI" - COAX IMPEDANCE"
330 LOCATE 10,16:PRINT"YAGI" - OPEN WIRE IMPEDANCE"
340 LOCATE 10,17:PRINT"YAGI" - COAX CABLE DATA"
350 LOCATE 10,18:PRINT"YAGI" - STANDARD WIRE GAUGE"
360 LOCATE 10,19:PRINT"YAGI" - FREQUENCY/WAVELENGTH"
370 LOCATE 10,21:PRINT"YAGI" - END PROGRAM"
380 PEN 1
390 LOCATE 1,75,10,10
400 LOCATE 12,25:INPUT"Select Option";a$:a$=UPPER$(a$)
410 IF a$="A" THEN 700
420 IF a$="B" THEN 1170
430 IF a$="C" THEN 570
440 IF a$="D" THEN 1590
450 IF a$="E" THEN 1970
460 IF a$="F" THEN 2400
470 IF a$="G" THEN 2570
480 IF a$="H" THEN 2920
490 IF a$="I" THEN 3330
500 IF a$="J" THEN 3730
510 IF a$="K" THEN 4040
520 IF a$="L" THEN 4430
530 IF a$="M" THEN 4770
540 IF a$="N" THEN 5030
550 IF a$="O" THEN 5300
560 IF a$="Z" THEN CALL %0
570 CLS
580 REM

590 REM *****
600 REM * YAGI DESIGN NOTES *
610 REM *****

620 REM
630 PRINT TAB(10)"YAGI DESIGN NOTES"
640 LOCATE 2,3:PRINT"1. For decreased element spacing,length
of elements shou
650 LOCATE 2,8:PRINT"2. Additional Directors will increase gain and F/B rat
10,but decrease bandwidth and beamwidth"
660 LOCATE 2,13:PRINT"3. Wide element spacing gives higher gain,less criti
cal tuning of element lengths and higher input re
sistance of driven element"
670 LOCATE 2,19:PRINT"4. Additional directors should be reduced in leng
th by about 5% fL each additional element"
680 PEN 2
690 LOCATE 8,25:PRINT"Press any key to continue"
700 SOUND 1,75,10,10
710 IF INKEY$="" THEN 710
720 GOTO 190
730 REM
740 REM *****
750 REM * HF YAGI DESIGN *
760 REM *****
770 REM
780 CLS:PRINT"
790 PRINT TAB(12)"HF YAGI DESIGN"
800 PEN 2:SOUND 1,75,10,10
810 LOCATE 4,10:PRINT"What is the operating frequency"
820 LOCATE 15,12:INPUT "in MHz";F
830 PEN 1
840 IF F>40 THEN 1170
850 S=ROUND(195/F,2):R=ROUND(495/F,2):D=ROUND(472.5/F,2):H=ROUND(450/F,2):L=2*S
860 CLS:PRINT"

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870 LOCATE 18,1:PRINT"Director":LOCATE 29,1:PRINT H "Ft"
880 PEN 1
890 FOR X=18 TO 38:LOCATE X,2:PRINT CHR$(210):NEXT
900 FOR I=2 TO 21:PRINT TAB(28)CHR$(149):NEXT
910 FOR X=17 TO 39:LOCATE X,12:PRINT CHR$(154):NEXT
920 FOR X=16 TO 40:LOCATE X,22:PRINT CHR$(208):NEXT
930 PEN 2
940 LOCATE 18,11:PRINT"Driven":LOCATE 29,11:PRINT D "Ft"
950 LOCATE 18,21:PRINT"Reflector":LOCATE 29,21:PRINT R "Ft"
960 PEN 1
970 LOCATE 28,12:PRINT CHR$(159)
980 PEN 3
990 LOCATE 29,6:PRINT"Spacing":LOCATE 29,7:PRINT S "Ft"
1000 LOCATE 30,16:PRINT"Boom":LOCATE 30,17:PRINT L "Ft"
1010 PEN 1
1020 LOCATE 1,1:PRINT"HF YAGI DESIGN":LOCATE 1,2:PRINT"*****"
1030 PEN 3
1040 LOCATE 1,4:PRINT"For" F "MHz"
1050 PEN 2
1060 LOCATE 1,6:PRINT"Dimensions are":LOCATE 1,7:PRINT"optimum for":LOCATE 1,8:P
RINT"max gain and":LOCATE 1,9:PRINT"max F/B ratio."
1070 LOCATE 1,12:PRINT"Z = 20-35"CHR$(191):LOCATE 1,15:PRINT"F/B ratio":LOCATE 1
,16:PRINT" = 25dB":LOCATE 1,19:PRINT"Gain = 7.5d
B"
1080 PEN 3:SOUND 1,75,10,10
1090 LOCATE 15,24:INPUT "More Y/N";b$:b$=UPPER$(b$)
1100 IF b$="Y" THEN 700
1110 IF b$="N" THEN 190
1120 REM

1130 REM *****
1140 REM * VHF/UHF YAGI DESIGN *
1150 REM *****

1160 REM
1170 CLS:PRINT"
1180 PRINT TAB(12)"VHF/UHF YAGI DESIGN"
1190 PEN 2
1200 LOCATE 5,10:PRINT"What is the operating frequency"
1210 SOUND 1,75,10,10
1220 LOCATE 15,12:INPUT "in MHz";F
1230 IF F>40 THEN 700
1240 S=ROUND(2360/F,2):R=ROUND(5880/F,2):D=ROUND(5600/F,2):H=ROUND(5320/F,2):L=2
*S
1250 CLS
1260 LOCATE 18,1:PRINT"Director":LOCATE 29,1:PRINT H "ins"
1270 PEN 1
1280 FOR X=18 TO 38:LOCATE X,2:PRINT CHR$(210):NEXT
1290 FOR I=2 TO 21:PRINT TAB(28)CHR$(149):NEXT
1300 FOR X=17 TO 39:LOCATE X,12:PRINT CHR$(154):NEXT
1310 FOR X=16 TO 40:LOCATE X,22:PRINT CHR$(208):NEXT
1320 PEN 2
1330 LOCATE 18,11:PRINT"Driven":LOCATE 29,11:PRINT D "ins"
1340 LOCATE 18,21:PRINT"Reflector":LOCATE 29,21:PRINT R "ins"
1350 PEN 1
1360 LOCATE 28,12:PRINT CHR$(159)
1370 PEN 3
1380 LOCATE 29,6:PRINT"Spacing":LOCATE 29,7:PRINT S "ins"
1390 LOCATE 30,16:PRINT"Boom":LOCATE 30,17:PRINT L "ins"
1400 PEN 1
1410 LOCATE 1,1:PRINT"VHF/UHF YAGI":LOCATE 1,2:PRINT"*****"
1420 PEN 3
1430 LOCATE 1,4:PRINT"For" F "MHz"
1440 PEN 2
1450 LOCATE 1,8:PRINT"Dimensions are":LOCATE 1,9:PRINT"optimum for":LOCATE 1,10:
PRINT"max gain and":LOCATE 1,11:PRINT"max F/B ratio"
1460 LOCATE 1,14:PRINT"Z = 20-35"CHR$(191)
1470 LOCATE 1,16:PRINT"F/B ratio":LOCATE 5,17:PRINT" = 25dB":LOCATE 1,20:PRINT"Ga
in = 7.5dB"
1480 PEN 3
1490 SOUND 1,75,10,10
1500 LOCATE 12,25:INPUT "More Y/N";c$
1510 c$=UPPER$(c$)
1520 IF c$="Y" THEN 1170
1530 IF c$="N" THEN 190
1540 REM

1550 REM *****
1560 REM * DIPOLE DESIGN (CO-AX FEED) *
1570 REM *****

1580 REM
1590 CLS:PRINT"
1600 PRINT TAB(14)"DIPOLE DESIGN"
1610 PEN 3
1620 LOCATE 14,3:PRINT"(Co-ax Feed)"
1630 PEN 2
1640 LOCATE 5,8:PRINT"What is the operating frequency"
1650 SOUND 1,75,10,10
1660 LOCATE 15,10:INPUT "in MHz";F
1670 PEN 1
1680 L=ROUND(468/F,2):E=L/2
1690 CLS
1700 FOR X=20 TO 28:LOCATE X,9:PRINT CHR$(154):NEXT

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1710 LOCATE 29,9:PRINT CHR$(143)
1720 FOR x=30 TO 38:LOCATE x,9:PRINT CHR$(154):NEXT x
1730 PEN 2
1740 LOCATE 24,5:PRINT"Total Length":LOCATE 25,7:PRINT L "Ft"
1750 LOCATE 20,11:PRINT"Length of each leg":LOCATE 25,13:PRINT E "Ft"
1760 PEN 1
1770 LOCATE 1,1:PRINT"DIPOLE DESIGN"
1780 LOCATE 1,2:PRINT"*****"
1790 PEN 3
1800 LOCATE 2,3:PRINT"(Co-ax Feed)"
1810 PEN 2
1820 LOCATE 2,5:PRINT "For" F "MHz"
1830 PEN 1
1840 LOCATE 2,9:PRINT"Z = 60-75*CHR$(191)"
1850 LOCATE 2,12:PRINT"Gain = 2.1dbi"
1860 PEN 3
1870 SOUND 1,75,10,10
1880 LOCATE 12,24:INPUT "More Y/N":a$
1890 a$=UPPER$(a$)
1900 IF a$="Y" THEN 1590
1910 IF a$="N" THEN 190
1920 REM
1930 REM *****
1940 REM * DIPOLE (OPEN WIRE FEED) *
1950 REM *****

1960 REM
1970 CLS:PEN 1
1980 PRINT TAB(12)"DIPOLE DESIGN"
1990 PEN 3
2000 LOCATE 11,3:PRINT"(Open Wire Feed)"
2010 PEN 2
2020 SOUND 1,75,10,10
2030 LOCATE 5,8:PRINT"What is the operating frequency":LOCATE 15,10:INPUT "in MH
z":F
2040 PEN 1
2050 L=ROUND(468/F,2):C=ROUND(118/F,2):E=ROUND(148/F,2)
2060 CLS
2070 FOR x=17 TO 38:LOCATE x,9:PRINT CHR$(210):NEXT x
2080 LOCATE 25,10:PRINT CHR$(205):LOCATE 30,10:PRINT CHR$(204):LOCATE 26,11:PRIN
T CHR$(205):LOCATE 29,11:PRINT CHR$(204)
2090 FOR i=12 TO 17:PRINT TAB(28)CHR$(209):PRINT TAB(27)CHR$(211):NEXT
2100 PEN 2
2110 LOCATE 16,5:PRINT"Element Length" L "Ft"
2120 PEN 3
2130 LOCATE 25,8:PRINT CHR$(1)CHR$(8)CHR$(32)CHR$(67)CHR$(32)CHR$(32)CHR$(1)CHR$(
9)
2140 LOCATE 31,10:PRINT CHR$(1)CHR$(11):LOCATE 31,11:PRINT"E":LOCATE 31,12:PRINT
CHR$(1)CHR$(10)
2150 LOCATE 15,12:PRINT"C="C"Ft":LOCATE 15,15:PRINT"E="E"Ft"
2160 PEN 2
2170 LOCATE 30,20:PRINT"600*CHR$(191):LOCATE 30,21:PRINT"line,any":LOCATE 30,22:
PRINT"length"
2180 LOCATE 14,19:PRINT"Line spacing":PEN 3:LOCATE 14,21:PRINT"B in.for 12g":LOC
ATE 14,22:PRINT"6 in.for 14g":LOCATE 14,23:PRINT"S 1
n.for 16g":LOCATE 14,24:PRINT"3*CHR$(170)"in.for 18g"
2190 PEN 1
2200 LOCATE 2,1:PRINT"DIPOLE DESIGN"
2210 LOCATE 2,2:PRINT"*****"
2220 LOCATE 1,3:PRINT"(Open Wire Feed)"
2230 PEN 3
2240 LOCATE 1,5:PRINT"For" F "MHz"
2250 PEN 2
2260 LOCATE 1,8:PRINT "This is the":LOCATE 1,9:PRINT "most efficient":LOCATE 1,1
0:PRINT "method of":LOCATE 1,11:PRINT "feeding a":LO
CATE 1,12:PRINT "dipole with"
2270 LOCATE 1,13:PRINT "an open wire":LOCATE 1,14:PRINT "line.":LOCATE 1,15:PRIN
T"Matching is":LOCATE 1,16:PRINT"via the delta":LOCA
TE 1,17:PRINT"match and ATU"
2280 LOCATE 1,19:PRINT"Gain ="":LOCATE 3,20:PRINT"2.15dbi"
2290 PEN 1
2300 SOUND 1,75,10,10
2310 LOCATE 1,25:INPUT "More Y/N":f$
2320 f$=UPPER$(f$)
2330 IF f$="Y" THEN 1970
2340 IF f$="N" THEN 190
2350 REM
2360 REM *****
2370 REM * DIPOLE DESIGN NOTES *
2380 REM *****

2390 REM
2400 CLS:PEN 1
2410 PRINT TAB(10)"DIPOLE DESIGN NOTES"
2420 LOCATE 1,3:PRINT"1. Z is approx. = 73*CHR$(191) but will vary with height
above ground"
2430 LOCATE 1,7:PRINT"2. Length will vary with thickness of material"
2440 LOCATE 1,10:PRINT"3. K (constant) for material varies from 0.92 for thin
wire to 0.98 for 1 in. tubing"
2450 LOCATE 1,14:PRINT"4. For HF dipoles the formula for calculating le
ngth is L=(492*K)/F Ft."
2460 LOCATE 1,17:PRINT"5. For VHF dipoles the formula for calculating le
ngth is L=(5905*K)/F inches"
2470 SOUND 1,75,10,10
2480 PEN 2
2490 LOCATE 8,25:PRINT"Press any key to continue"
2500 IF INKEY="" THEN 2500
2510 CLS:GOTO 190
2520 REM
2530 REM *****
2540 REM * GROUND PLANE DESIGN *
2550 REM *****

2560 REM
2570 CLS:PEN 1
2580 PRINT TAB(9)"GROUND PLANE DESIGN"
2590 PEN 2
2600 SOUND 1,75,10,10
2610 LOCATE 5,8:PRINT"What is the operating frequency":LOCATE 15,10:INPUT "in MH
z":F
2620 CLS:PEN 1
2630 H=ROUND(236/F,2):R=ROUND(H*1.05,2)
2640 FOR i=2 TO 13:PRINT TAB(30)CHR$(149):NEXT
2650 LOCATE 26,9:PRINT CHR$(205):LOCATE 27,10:PRINT CHR$(205):LOCATE 28,11:PRINT
CHR$(205):LOCATE 29,12:PRINT CHR$(205)
2660 LOCATE 34,9:PRINT CHR$(204):LOCATE 33,10:PRINT CHR$(204):LOCATE 32,11:PRINT
CHR$(204):LOCATE 31,12:PRINT CHR$(204)
2670 LOCATE 30,13:PRINT CHR$(203)
2680 LOCATE 29,14:PRINT CHR$(204):LOCATE 28,15:PRINT CHR$(204):LOCATE 27,16:PRIN
T CHR$(204):LOCATE 26,17:PRINT CHR$(204)
2690 LOCATE 31,14:PRINT CHR$(205):LOCATE 32,15:PRINT CHR$(205):LOCATE 33,16:PRIN
T CHR$(205):LOCATE 34,17:PRINT CHR$(205)
2700 PEN 3
2710 LOCATE 20,4:PRINT"Radiator":LOCATE 21,5:PRINT H "Ft"
2720 LOCATE 27,20:PRINT"Radials":LOCATE 28,21:PRINT R "Ft"
2730 PEN 1
2740 LOCATE 1,1:PRINT"GROUND PLANE DESIGN"
2750 LOCATE 1,2:PRINT"*****"
2760 LOCATE 1,4:PRINT"For" F "MHz"
2770 PEN 2
2780 LOCATE 1,7:PRINT"Z = 30-50*CHR$(191)"
2790 LOCATE 1,9:PRINT"Z may vary with":LOCATE 1,10:PRINT"diam.of tubing":LOCATE
1,11:PRINT"and droop angle":LOCATE 1,12:PRINT"of rad
ials, e.g.":LOCATE 1,13:PRINT"30*CHR$(191)" for horz1.":LOCATE 1,14:PRINT"50*CHR
$(191)" for 45 deg."
2800 LOCATE 1,17:PRINT"Gain = 1.5dbi"
2810 PEN 3
2820 SOUND 1,75,10,10
2830 LOCATE 12,24:INPUT "More Y/N":a$
2840 a$=UPPER$(a$)
2850 IF a$="Y" THEN 2570
2860 IF a$="N" THEN 190
2870 REM
2880 REM *****
2890 REM * DELTA LOOP DESIGN *
2900 REM *****

2910 REM
2920 CLS:PEN 1
2930 PRINT TAB(12)"DELTA LOOP DESIGN"
2940 PEN 2
2950 SOUND 1,75,10,10
2960 LOCATE 5,8:PRINT"What is the operating frequency":LOCATE 15,10:INPUT "in MH
z":F
2970 CLS:PEN 1
2980 R=ROUND(1030/F,2):D=ROUND(1005/F,2):S=ROUND(0.2*(984/F),2)
2990 FOR x=16 TO 23:LOCATE x,7:PRINT CHR$(210):NEXT x
3000 FOR x=28 TO 35:LOCATE x,7:PRINT CHR$(210):NEXT x
3010 FOR x=20 TO 31:LOCATE x,12:PRINT CHR$(208):NEXT x
3020 LOCATE 16,8:PRINT CHR$(205):LOCATE 17,9:PRINT CHR$(205):LOCATE 18,10:PRINT
CHR$(205):LOCATE 19,11:PRINT CHR$(205)
3030 LOCATE 23,8:PRINT CHR$(204):LOCATE 22,9:PRINT CHR$(204):LOCATE 21,10:PRINT
CHR$(204):LOCATE 20,11:PRINT CHR$(204)
3040 LOCATE 28,8:PRINT CHR$(205):LOCATE 29,9:PRINT CHR$(205):LOCATE 30,10:PRINT
CHR$(205):LOCATE 31,11:PRINT CHR$(205)
3050 LOCATE 35,8:PRINT CHR$(204):LOCATE 34,9:PRINT CHR$(204):LOCATE 33,10:PRINT
CHR$(204):LOCATE 32,11:PRINT CHR$(204)
3060 PEN 2
3070 LOCATE 16,5:PRINT"Driven":LOCATE 28,5:PRINT"Reflector"
3080 PEN 3
3090 LOCATE 15,6:PRINT D "Ft":LOCATE 28,6:PRINT R "Ft"
3100 PEN 2
3110 LOCATE 20,14:PRINT"Boom"
3120 PEN 3:LOCATE 24,14:PRINT S "Ft"
3130 PEN 1
3140 LOCATE 1,1:PRINT"DELTA LOOP DESIGN"
3150 LOCATE 1,2:PRINT"*****"
3160 LOCATE 1,4:PRINT"For" F "MHz"
3170 PEN 2
3180 LOCATE 1,8:PRINT"Use tubing for":LOCATE 1,9:PRINT"sides and wire":LOCATE 1,
10:PRINT"for tops."
3190 LOCATE 1,13:PRINT"Z = 80-90*CHR$(191)"
3200 LOCATE 1,15:PRINT"Gain = 8db"
3210 LOCATE 1,17:PRINT"F/B ratio = 20db"
3220 SOUND 1,75,10,10
3230 PEN 3
3240 LOCATE 11,25:INPUT "More Y/N":a$
3250 a$=UPPER$(a$)
3260 IF a$="Y" THEN 2920
3270 IF a$="N" THEN 190
3280 REM
3290 REM *****
3300 REM * CUBICAL QUAD DESIGN *
3310 REM *****

3320 REM
3330 CLS:PEN 1
3340 PRINT TAB(10)"CUBICAL QUAD DESIGN"
3350 PEN 2
3360 SOUND 1,75,10,10
3370 LOCATE 5,8:PRINT"What is the operating frequency":LOCATE 15,10:INPUT "in M
Hz":f
3380 CLS:PEN 2
3390 R=ROUND(1032/F,2):D=ROUND(1010/F,2):P=ROUND(980/F,2):S=ROUND(0.2*984/F,2)
3400 FOR x=24 TO 34:LOCATE x,9:PRINT CHR$(208):NEXT
3410 PEN 1
3420 LOCATE 20,8:PRINT CHR$(204):LOCATE 21,7:PRINT CHR$(204):LOCATE 22,6:PRINT C
HR$(204):LOCATE 23,5:PRINT CHR$(204):LOCATE 24,5:PRI
NT CHR$(205):LOCATE 25,6:PRINT CHR$(205):LOCATE 26,7:PRINT CHR$(203):LOCATE 27,8
:PRINT CHR$(205)
3430 LOCATE 25,8:PRINT CHR$(204):LOCATE 27,6:PRINT CHR$(204):LOCATE 28,5:PRINT C
HR$(204):LOCATE 29,5:PRINT CHR$(205):LOCATE 30,6:PRI
NT CHR$(205):LOCATE 31,7:PRINT CHR$(203):LOCATE 32,8:PRINT CHR$(205)
3440 LOCATE 30,8:PRINT CHR$(204):LOCATE 32,6:PRINT CHR$(204):LOCATE 33,5:PRINT C
HR$(204):LOCATE 34,5:PRINT CHR$(205):LOCATE 35,6:PRI
NT CHR$(205):LOCATE 36,7:PRINT CHR$(205):LOCATE 37,8:PRINT CHR$(205)
3450 LOCATE 20,9:PRINT CHR$(205):LOCATE 21,10:PRINT CHR$(205):LOCATE 22,11:PRINT
CHR$(205):LOCATE 23,12:PRINT CHR$(205):LOCATE 24,12
:PRINT CHR$(204):LOCATE 25,11:PRINT CHR$(204):LOCATE 26,10:PRINT CHR$(203):LOCAT
E 27,9:PRINT CHR$(204)
3460 LOCATE 25,9:PRINT CHR$(205):LOCATE 27,11:PRINT CHR$(205):LOCATE 28,12:PRINT
CHR$(205):LOCATE 29,12:PRINT CHR$(204):LOCATE 30,11
:PRINT CHR$(204):LOCATE 31,10:PRINT CHR$(203):LOCATE 32,9:PRINT CHR$(204)
3470 LOCATE 30,9:PRINT CHR$(205):LOCATE 32,11:PRINT CHR$(205):LOCATE 33,12:PRINT
CHR$(205):LOCATE 34,12:PRINT CHR$(204):LOCATE 35,11
:PRINT CHR$(204):LOCATE 36,10:PRINT CHR$(204):LOCATE 37,9:PRINT CHR$(204)
3480 PEN 3
3490 LOCATE 18,4:PRINT"Reflector":LOCATE 27,3:PRINT"Driven":LOCATE 33,4:PRINT"Di
rector"
3500 LOCATE 18,15:PRINT R "Ft":LOCATE 24,14:PRINT D "Ft":LOCATE 30,15:PRINT P "F
t"
3510 PEN 2
3520 LOCATE 22,17:PRINT"Spacing" S "Ft"
3530 PEN 1
3540 LOCATE 1,1:PRINT"CUBICAL QUAD DESIGN"
3550 LOCATE 1,2:PRINT"*****"
3560 PEN 2
3570 LOCATE 1,4:PRINT"For" F "MHz"
3580 LOCATE 1,8:PRINT"Z = 75*CHR$(191)"

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3590 LOCATE 1,11:PRINT"F/B ratio = 25dB"
3600 LOCATE 1,14:PRINT"Gain = 8.5dB"
3610 LOCATE 1,17:PRINT"all directors":LOCATE 1,18:PRINT"are 2.5%":LOCATE 1,19:PR
INT"shorter":LOCATE 1,20:PRINT"than the":LOCATE 1,21
:PRINT"driven el."
3620 PEN 1
3630 SOUND 1,75,10,10
3640 LOCATE 14,25:INPUT "More Y/N":a$
3650 a$=UPPER$(a$)
3660 IF a$="N" THEN 190
3670 IF a$="Y" THEN 3330
3680 REM

3690 REM *****
3700 REM * GAMMA MATCH DESIGN *
3710 REM *****

3720 REM
3730 CLS:PEN 1
3740 PRINT TAB(10)"GAMMA MATCH DESIGN"
3750 PEN 2
3760 SOUND 1,75,10,10
3770 LOCATE 5,8:PRINT"What is the operating frequency":LOCATE 15,10:INPUT "in Mh
z":F
3780 CLS:PEN 1
3790 C=INT(300/F*.6,2):A=ROUND((300/F*.39,9)*.055,2):B=ROUND((300/F*.39,9)*.0085,
2)
3800 FOR x=20 TO 38:LOCATE x,10:PRINT CHR$(210):NEXT
3810 FOR i=11 TO 14:PRINT TAB(36) CHR$(149):NEXT
3820 LOCATE 36,14:PRINT CHR$(153)
3830 LOCATE 25,13:PRINT"::":LOCATE 25,14:PRINT"::":LOCATE 25,15:PRINT"::"
3840 FOR x=22 TO 24:LOCATE x,14:PRINT CHR$(154):NEXT:LOCATE 25,14:PRINT CHR$(157
):LOCATE 26,14:PRINT CHR$(151):FOR x=27 TO 35:LOCATE
x,14:PRINT CHR$(154):NEXT
3850 PEN 3
3860 LOCATE 37,11:PRINT CHR$(1)CHR$(11):LOCATE 37,12:PRINT"B":LOCATE 37,14:PRINT
CHR$(1)CHR$(10)
3870 LOCATE 22,16:PRINT"Variable":LOCATE 22,17:PRINT"Capacitor":LOCATE 26,18:PRIN
T"C"
3880 LOCATE 22,12:PRINT CHR$(1)CHR$(8):LOCATE 23,12:PRINT"-----A-----":LOCATE 3
5,12:PRINT CHR$(1)CHR$(9)
3890 PEN 1
3900 LOCATE 10,1:PRINT"GAMMA MATCH DESIGN"
3910 LOCATE 10,2:PRINT"*****"
3920 PEN 2
3930 LOCATE 1,8:PRINT"A = " A "ins.":LOCATE 1,10:PRINT"B = " B "ins.":LOCATE 1,1
2:PRINT"C(max) " C "pF"
3940 PEN 1:SOUND 1,75,10,10
3950 LOCATE 12,25:INPUT "More Y/N":a$
3960 a$=UPPER$(a$)
3970 IF a$="Y" THEN 3730
3980 IF a$="N" THEN 190
3990 REM

4000 REM *****
4010 REM * COAX CABLE IMPEDANCE *
4020 REM *****

4030 REM
4040 CLS:PEN 1
4050 PRINT TAB(10)"COAXIAL CABLE IMPEDANCE"
4060 SOUND 1,75,10,10
4070 LOCATE 9,8:PRINT"Inside Diameter (D) of"
4080 LOCATE 16,9:INPUT"Outer Conductor":SD
4090 SOUND 1,75,10,10
4100 LOCATE 9,12:PRINT"Outside Diameter (d) of"
4110 LOCATE 17,13:INPUT"Inner Conductor":se
4120 SOUND 1,75,10,10
4130 LOCATE 9,16:PRINT "Dielectric constant (k)"
4140 LOCATE 12,17:PRINT"1.0 for air"
4150 LOCATE 12,18:PRINT"2.0 Teflon (PTFE)"
4160 LOCATE 12,19:INPUT "2.26 for polythene":k
4170 Z=ROUND(138/SQR(k)*LOG10(D/e),2)
4180 CLS
4190 SOUND 1,75,10,10
4200 FOR a=1 TO 360 STEP 5
4210 DEG
4220 PLOT 300,150
4230 PLOT 300+85*COS(a),150+85*SIN(a)
4240 PLOT 300+20*COS(a),150+20*SIN(a)
4250 NEXT
4260 PRINT TAB(8)"COAXIAL CABLE IMPEDANCE"
4270 PEN 2
4280 LOCATE 10,5:PRINT "Impedance =":Z:CHR$(191)
4290 PEN 3
4300 LOCATE 25,11:PRINT CHR$(208)CHR$(208)CHR$(208):LOCATE 26,12:PRINT CHR$(1)CH
R$(11):LOCATE 26,13:PRINT CHR$(1)CHR$(10):LOCATE 26,21:PRINT CHR$(
1)CHR$(10):LOCATE 25,22:PRINT CHR$(208)CHR$(208)CHR$(208)
4310 LOCATE 22,14:PRINT"_:LOCATE 22,16:PRINT"d":LOCATE 22,17:PRINT"_"
4320 PEN 1
4330 SOUND 1,75,10,10
4340 LOCATE 15,25:INPUT "More Y/N":a$
4350 a$=UPPER$(a$)
4360 IF a$="Y" THEN 4040
4370 IF a$="N" THEN 190
4380 REM

4390 REM *****
4400 REM * OPEN WIRE IMPEDANCE *
4410 REM *****

4420 REM
4430 CLS:PEN 1
4440 PRINT TAB(8)"OPEN WIRE LINE IMPEDANCE"
4450 SOUND 1,75,10,10
4460 LOCATE 5,8:INPUT "Spacing between wires (S)":S
4470 SOUND 1,75,10,10
4480 LOCATE 5,12:INPUT "Diameter of wires (d)":d
4490 SOUND 1,75,10,10
4500 Z=ROUND(276*LOG10(S/d+SQR(((S/d)^2)-1)),2)
4510 CLS
4520 PRINT TAB(8)"OPEN WIRE LINE IMPEDANCE"
4530 PEN 1
4540 FOR a=1 TO 360 STEP 8
4550 DEG
4560 PLOT 230,150
4570 PLOT 230+25*COS(a),150+25*SIN(a)
4580 PLOT 360,150
4590 PLOT 360+25*COS(a),150+25*SIN(a)
4600 NEXT
4610 PEN 3
4620 LOCATE 17,16:PRINT CHR$(1)CHR$(8):LOCATE 19,16:PRINT"S":LOCATE 21,16:PRINT
CHR$(1)CHR$(9)
4630 LOCATE 26,14:PRINT"_:LOCATE 26,16:PRINT"d":LOCATE 26,18:PRINT"_"
4640 PEN 2
4650 LOCATE 10,10:PRINT "Impedance = " Z CHR$(191)
4660 SOUND 1,75,10,10
4670 PEN 1
4680 LOCATE 15,25:INPUT "More Y/N":a$
4690 a$=UPPER$(a$)
4700 IF a$="Y" THEN 4430
4710 IF a$="N" THEN 190

4720 REM
4730 REM *****
4740 REM * COAX CABLE DATA *
4750 REM *****

4760 REM
4770 CLS:PEN 1:MODE 2
4780 PRINT TAB(30)"COAXIAL CABLE DATA"
4790 LOCATE 1,4:PRINT"CABLE Z Attenuation (dB/100 ft.) at frequencies (MC/
s) Capacity Max "
4800 LOCATE 1,5:PRINT"
1 10 50 100 200 400 1
000 pF/ft V.rms"
4810 LOCATE 1,7:PRINT"RG-8A/U 50.0 0.16 0.55 1.3 1.9 2.7 4.1
5.0 30.5 4000"
4820 PRINT"RG-11A/U 75.0 0.18 0.66 1.6 2.3 3.3 4.8
7.8 20.5 5000"
4830 PRINT"RG-55A/U 50.0 0.30 1.2 3.2 4.8 7.0 10.0 1
6.5 29.5 1900"
4840 PRINT"RG-58U 53.5 0.33 1.25 3.15 4.6 6.9 10.5 1
7.5 28.5 1900"
4850 PRINT"RG-58C/U 50.0 0.42 1.4 3.3 4.9 7.4 12.0 2
4.0 30.0 1900"
4860 PRINT"RG-59A/U 75.0 0.34 1.1 2.4 3.4 4.9 7.0 1
2.0 20.5 2300"
4870 PRINT"RG-122 50.0 0.4 1.7 4.5 7.0 11.0 16.5 2
9.0 29.5 1900"
4880 PRINT"RG-174 50.0 2.3 3.9 6.6 8.9 12.0 17.5 3
0.0 30.0 1500"
4890 PRINT"RG-178B 50.0 2.6 5.6 10.5 14.0 19.0 28.0 4
6.0 28.5 1000"
4900 PRINT"RG-213/U 50.0 0.15 0.55 1.3 1.9 2.7 4.1
8.0 29.5 5000"
4910 PRINT"RG-214 50.0 0.21 0.66 1.5 2.3 3.3 5.0
8.8 29.5 5000"
4920 PRINT"RG-218/U 50.0 0.06 0.24 0.62 0.95 1.5 2.4
4.4 29.5 11000"
4930 PRINT"RG-223 50.0 0.3 1.2 3.2 4.8 7.0 10.0 1
6.5 29.5 1900"
4940 SOUND 1,75,10,10
4950 LOCATE 20,25:PRINT"Press any key to return to Main Menu"
4960 IF INKEY$="" THEN 4960
4970 GOTO 190
4980 REM

4990 REM *****
5000 REM * STANDARD WIRE GAUGE *
5010 REM *****

5020 REM
5030 CLS:PEN 1
5040 PRINT TAB(10)"STANDARD WIRE GAUGE"
5050 LOCATE 5,4:PRINT"S.W.G. Ins. S.W.G. Ins."
5060 LOCATE 6,6:PRINT"30 0.0124 15 0.0720"
5070 LOCATE 6,7:PRINT"29 0.0136 14 0.0800"
5080 LOCATE 6,8:PRINT"28 0.0148 13 0.0920"
5090 LOCATE 6,9:PRINT"27 0.0164 12 0.1040"
5100 LOCATE 6,10:PRINT"26 0.0180 11 0.1160"
5110 LOCATE 6,11:PRINT"25 0.0200 10 0.1280"
5120 LOCATE 6,12:PRINT"24 0.0220 9 0.1440"
5130 LOCATE 6,13:PRINT"23 0.0240 8 0.1600"
5140 LOCATE 6,14:PRINT"22 0.0280 7 0.1760"
5150 LOCATE 6,15:PRINT"21 0.0320 6 0.1920"
5160 LOCATE 6,16:PRINT"20 0.0360 5 0.2120"
5170 LOCATE 6,17:PRINT"19 0.0400 4 0.2320"
5180 LOCATE 6,18:PRINT"18 0.0460 3 0.2520"
5190 LOCATE 6,19:PRINT"17 0.0560 2 0.2760"
5200 LOCATE 6,20:PRINT"16 0.0640 1 0.3000"
5210 SOUND 1,75,10,10
5220 LOCATE 3,25:PEN 2:PRINT"Press any key to return to Main Menu"
5230 IF INKEY$="" THEN 5230
5240 GOTO 190
5250 REM

5260 REM *****
5270 REM * FREQUENCY - WAVELENGTH *
5280 REM *****

5290 REM
5300 CLS:PEN 1
5310 PRINT TAB(6)"FREQUENCY/WAVELENGTH CONVERSION"
5320 PEN 2
5330 LOCATE 8,8:PRINT"1.Frequency to Wavelength"
5340 LOCATE 8,10:PRINT"2.Wavelength to Frequency"
5350 PEN 1
5360 SOUND 1,75,10,10
5370 PEN 3
5380 LOCATE 12,15:INPUT "Select Option":a
5390 IF a<1 OR a>2 THEN 5300
5400 IF a=1 THEN CLS:GOTO 5420
5410 IF a=2 THEN CLS:GOTO 5370
5420 PEN 1
5430 PRINT TAB(8)"FREQUENCY TO WAVELENGTH"
5440 PEN 2
5450 SOUND 1,75,10,10
5460 LOCATE 5,8:INPUT "What is the Frequency in MHz":F
5470 L=ROUND(300/F,2)
5480 PEN 1
5490 LOCATE 10,12:PRINT F "MHz = " L "Metres"
5500 SOUND 1,75,10,10
5510 PEN 3
5520 LOCATE 15,25:INPUT "More Y/N":a$
5530 SOUND 1,75,10,10
5540 a$=UPPER$(a$)
5550 IF a$="Y" THEN 5300
5560 IF a$="N" THEN 190
5570 PEN 1
5580 PRINT TAB(8)"WAVELENGTH TO FREQUENCY"
5590 PEN 2
5600 SOUND 1,75,10,10
5610 LOCATE 2,8:INPUT "What is the Wavelength in Metres":L
5620 F=ROUND(300/L,2)
5630 PEN 1
5640 LOCATE 10,12:PRINT L "Metres = " F "MHz"
5650 GOTO 5580
5660 MEMORY 41999
5670 FOR i=42000 TO 42189:READ a$:v=VAL("&"a$):csum=csum+v:FOKE i,v:NEXT i
5680 IF csum>26226 THEN PRINT CHR$(7):PEN 2:PRINT"Data Checksum Error - check i
isting!":PEN 1:STOP
5690 CALL 42000:PRINT CHR$(255):CLS
5700 DATA 2A,5B,BB,22,E1,A4,21,27,A4,22,5B,BB,3E,C3,32,5A,BB,3E,CF,32
5710 DATA E0,A4,C9,F5,E5,D5,C5,32,E4,A4,FE,20,3B,35,FE,FF,20,07,3E,00
5720 DATA 32,E3,A4,18,25,FE,FE,20,07,3E,FF,32,E3,A4,1B,1A,3A,E3,A4,FE
5730 DATA 00,2B,08,3A,E4,A4,CD,79,A4,1B,0B,C1,D1,E1,F1,3A,E4,CE,A0,E0
5740 DATA A4,C9,C1,D1,E1,F1,C9,FE,0A,20,EC,3A,E3,A4,FE,0B,2B,ES,3E,00
5750 DATA C1,D1,E1,1B,DE,F2,CE,A4,2D,CD,75,BB,3E,FE,CD,5D,BB,2A,CE,A0,E0
5760 DATA 01,2B,04,2F,CD,22,CE,A4,2D,CD,75,BB,3E,FE,CD,5D,BB,2A,CE,A0,E0
5770 DATA 75,BB,3E,FF,CD,00,A4,C9,CD,05,B9,FE,79,CD,A5,BB,06,0B,11,D0
5780 DATA A4,7E,12,13,12,23,13,12,FB,F1,CD,0C,B9,3E,FE,21,D0,A4,CD,A0
5790 DATA BB,3E,FF,21,D0,A4,CD,A0,BB,C9
5800 RETURN

```