

Date of Calibration = 03/14/2000

Date Printed: Tuesday, March 14, 2000 4:13 PM

Customer Name: Electronics Test Centre

Antenna Manufacturer: ARA

Antenna Model: LPB-2520/A

Antenna Serial No.: 1045

Temperature (Deg C): 16

Humidity (%): 54

Measurement Distance in Meters = 3

Antenna Polarization = HORZ

NOTES:

CAL CERT #: 7469

Freq (MHz)	ACF (dB)	Gain (dBi)	Num GAIN
20.0000	20.3	-24.0	0.00
25.0000	19.2	-21.1	0.01
30.0000	18.5	-18.8	0.01
35.0000	17.6	-16.6	0.02
40.0000	16.8	-14.5	0.04
45.0000	15.9	-12.7	0.05
50.0000	14.9	-10.7	0.08
55.0000	13.5	-8.5	0.14
60.0000	11.4	-5.6	0.27
65.0000	9.1	-2.7	0.54
70.0000	7.4	-0.3	0.93
75.0000	6.7	1.0	1.25
80.0000	7.0	1.3	1.35
85.0000	7.5	1.3	1.34
90.0000	8.4	0.9	1.23
95.0000	9.0	0.8	1.19
100.0000	9.5	0.7	1.17
105.0000	9.8	0.8	1.20
110.0000	10.5	0.5	1.13
115.0000	11.4	0.0	1.00
120.0000	11.8	-0.0	0.99
125.0000	12.1	0.1	1.01
130.0000	11.7	0.8	1.19
135.0000	10.9	1.9	1.56
140.0000	10.1	3.1	2.03
145.0000	9.5	3.9	2.46
150.0000	9.3	4.4	2.75
155.0000	9.4	4.6	2.88
160.0000	9.7	4.6	2.90
165.0000	10.5	4.0	2.52

170.0000	10.0	4.8	3.03
175.0000	10.2	4.8	3.04
180.0000	10.2	5.1	3.23
185.0000	10.0	5.6	3.62
190.0000	10.2	5.6	3.61
195.0000	10.9	5.1	3.27
200.0000	11.4	4.8	3.03
205.0000	11.4	5.0	3.19
210.0000	12.1	4.5	2.83
215.0000	12.6	4.2	2.64
220.0000	12.8	4.2	2.65
225.0000	12.8	4.5	2.79
230.0000	12.9	4.5	2.85
235.0000	13.0	4.6	2.90
240.0000	13.5	4.3	2.71
245.0000	13.4	4.6	2.86
250.0000	13.2	4.9	3.11
255.0000	13.5	4.9	3.07
260.0000	13.8	4.7	2.95
265.0000	14.0	4.7	2.92
270.0000	14.2	4.6	2.88
275.0000	13.7	5.3	3.38
280.0000	13.4	5.8	3.77
285.0000	13.2	6.1	4.04
290.0000	13.3	6.2	4.13
295.0000	13.5	6.1	4.03
300.0000	13.9	5.9	3.88
305.0000	14.2	5.7	3.68
310.0000	14.5	5.5	3.59
315.0000	14.3	5.8	3.83
320.0000	14.1	6.2	4.13
325.0000	14.2	6.2	4.16
330.0000	14.6	5.9	3.92
335.0000	14.9	5.8	3.82
340.0000	15.1	5.7	3.73
345.0000	15.3	5.7	3.68
350.0000	15.1	6.0	3.94
355.0000	15.1	6.1	4.09
360.0000	15.3	6.0	4.00
365.0000	15.7	5.8	3.77
370.0000	15.9	5.6	3.65
375.0000	16.1	5.6	3.62
380.0000	16.2	5.6	3.65
385.0000	16.3	5.6	3.65
390.0000	16.2	5.8	3.78
395.0000	16.4	5.7	3.75
400.0000	16.3	5.9	3.88
405.0000	16.4	5.9	3.92

410.0000	16.6	5.9	3.88
415.0000	16.7	5.8	3.83
420.0000	17.1	5.5	3.58
425.0000	17.1	5.6	3.67
430.0000	17.2	5.6	3.67
435.0000	17.4	5.6	3.63
440.0000	17.1	5.9	3.92
445.0000	16.8	6.4	4.33
450.0000	16.9	6.3	4.29
455.0000	17.3	6.1	4.08
460.0000	17.6	5.8	3.82
465.0000	18.0	5.6	3.62
470.0000	18.2	5.4	3.47
475.0000	18.2	5.5	3.55
480.0000	18.0	5.8	3.80
485.0000	17.9	6.0	3.97
490.0000	18.1	5.9	3.91
495.0000	18.2	5.9	3.92
500.0000	18.2	6.0	3.98
505.0000	18.2	6.1	4.03
510.0000	18.2	6.1	4.11
515.0000	18.4	6.0	4.01
520.0000	18.7	5.8	3.81
525.0000	19.0	5.6	3.61
530.0000	19.2	5.4	3.51
535.0000	19.3	5.5	3.55
540.0000	19.2	5.7	3.68
545.0000	18.9	6.1	4.05
550.0000	18.8	6.2	4.20
555.0000	18.8	6.3	4.28
560.0000	18.7	6.4	4.38
565.0000	18.9	6.3	4.30
570.0000	19.1	6.2	4.18
575.0000	19.3	6.1	4.09
580.0000	19.6	5.8	3.84
585.0000	19.7	5.9	3.87
590.0000	19.7	5.9	3.91
595.0000	20.0	5.7	3.69
600.0000	20.3	5.5	3.54
605.0000	19.9	5.9	3.88
610.0000	19.6	6.3	4.25
615.0000	19.5	6.5	4.48
620.0000	19.4	6.7	4.65
625.0000	19.4	6.7	4.67
630.0000	19.5	6.7	4.66
635.0000	19.8	6.5	4.46
640.0000	20.0	6.4	4.32
645.0000	20.1	6.3	4.27

650.0000	20.2	6.2	4.21
655.0000	20.5	6.0	4.03
660.0000	20.7	5.9	3.92
665.0000	20.8	5.8	3.84
670.0000	20.9	5.8	3.83
675.0000	20.8	5.9	3.93
680.0000	20.9	6.0	3.96
685.0000	20.7	6.2	4.16
690.0000	20.5	6.5	4.49
695.0000	20.4	6.6	4.59
700.0000	20.5	6.6	4.62
705.0000	20.5	6.6	4.60
710.0000	20.6	6.6	4.59
715.0000	20.7	6.5	4.51
720.0000	20.8	6.5	4.49
725.0000	21.0	6.4	4.41
730.0000	21.1	6.3	4.30
735.0000	21.4	6.1	4.08
740.0000	21.6	6.0	4.00
745.0000	21.7	6.0	3.95
750.0000	21.7	6.0	4.01
755.0000	21.6	6.1	4.10
760.0000	21.5	6.3	4.24
765.0000	21.3	6.5	4.52
770.0000	21.2	6.7	4.68
775.0000	21.3	6.7	4.69
780.0000	21.3	6.8	4.74
785.0000	21.4	6.7	4.72
790.0000	21.5	6.6	4.57
795.0000	21.6	6.6	4.54
800.0000	21.7	6.6	4.55
805.0000	21.6	6.7	4.64
810.0000	21.8	6.6	4.59
815.0000	21.8	6.6	4.59
820.0000	21.8	6.7	4.63
825.0000	21.9	6.6	4.61
830.0000	22.0	6.6	4.59
835.0000	22.0	6.6	4.62
840.0000	22.1	6.6	4.55
845.0000	22.1	6.6	4.60
850.0000	21.9	6.9	4.87
855.0000	21.8	7.0	5.01
860.0000	21.7	7.1	5.18
865.0000	22.0	6.9	4.94
870.0000	22.2	6.8	4.78
875.0000	22.3	6.8	4.76
880.0000	22.3	6.8	4.80
885.0000	22.4	6.7	4.73

890.0000	22.6	6.6	4.59
895.0000	22.8	6.4	4.40
900.0000	22.9	6.4	4.34
905.0000	23.0	6.3	4.31
910.0000	23.0	6.4	4.40
915.0000	22.9	6.5	4.50
920.0000	22.9	6.6	4.55
925.0000	22.9	6.6	4.55
930.0000	23.0	6.6	4.55
935.0000	23.0	6.6	4.54
940.0000	23.3	6.4	4.37
945.0000	23.2	6.5	4.48
950.0000	23.0	6.8	4.77
955.0000	22.9	6.9	4.90
960.0000	23.0	6.8	4.82
965.0000	23.2	6.7	4.72
970.0000	23.1	6.9	4.86
975.0000	23.1	6.9	4.93
980.0000	23.0	7.0	5.01
985.0000	23.1	6.9	4.94
990.0000	23.3	6.8	4.77
995.0000	23.4	6.7	4.71
1000.0000	23.4	6.8	4.79
1005.0000	23.4	6.8	4.82
1010.0000	23.5	6.8	4.80
1015.0000	23.6	6.8	4.76
1020.0000	23.9	6.5	4.49
1025.0000	24.0	6.4	4.38
1030.0000	24.1	6.4	4.33
1035.0000	23.9	6.6	4.53
1040.0000	23.9	6.6	4.59
1045.0000	23.9	6.7	4.69
1050.0000	23.9	6.8	4.74
1055.0000	23.9	6.7	4.72
1060.0000	24.0	6.7	4.65
1065.0000	24.1	6.7	4.65
1070.0000	24.1	6.7	4.67
1075.0000	24.1	6.7	4.71
1080.0000	24.0	6.9	4.85
1085.0000	23.9	7.0	4.99
1090.0000	23.9	7.1	5.08
1095.0000	23.9	7.1	5.10
1100.0000	23.9	7.1	5.13
1105.0000	24.0	7.1	5.12
1110.0000	24.0	7.1	5.08
1115.0000	24.2	6.9	4.94
1120.0000	24.3	6.9	4.91
1125.0000	24.2	7.0	5.03

1130.0000	24.2	7.1	5.08
1135.0000	24.4	6.9	4.92
1140.0000	24.5	6.8	4.81
1145.0000	24.6	6.8	4.74
1150.0000	24.8	6.6	4.62
1155.0000	24.9	6.6	4.57
1160.0000	25.0	6.5	4.50
1165.0000	25.1	6.4	4.41
1170.0000	25.1	6.4	4.40
1175.0000	25.2	6.4	4.36
1180.0000	25.2	6.4	4.38
1185.0000	25.2	6.5	4.49
1190.0000	25.0	6.7	4.66
1195.0000	25.0	6.8	4.77
1200.0000	24.6	7.1	5.18
1205.0000	24.5	7.3	5.40
1210.0000	24.5	7.3	5.41
1215.0000	24.3	7.6	5.70
1220.0000	24.4	7.5	5.69
1225.0000	24.5	7.5	5.61
1230.0000	24.6	7.4	5.53
1235.0000	24.6	7.4	5.48
1240.0000	24.8	7.2	5.31
1245.0000	24.9	7.2	5.26
1250.0000	25.0	7.2	5.23
1255.0000	24.9	7.2	5.29
1260.0000	25.0	7.2	5.24
1265.0000	25.1	7.1	5.17
1270.0000	25.4	6.8	4.84
1275.0000	25.6	6.7	4.72
1280.0000	25.6	6.7	4.68
1285.0000	25.7	6.7	4.64
1290.0000	25.7	6.7	4.66
1295.0000	25.7	6.7	4.70
1300.0000	25.6	6.8	4.84
1305.0000	25.5	7.0	5.04
1310.0000	25.4	7.2	5.22
1315.0000	25.4	7.2	5.27
1320.0000	25.6	7.0	5.05
1325.0000	25.6	7.1	5.12
1330.0000	25.5	7.2	5.25
1335.0000	25.3	7.4	5.44
1340.0000	25.3	7.5	5.59
1345.0000	25.2	7.6	5.71
1350.0000	25.3	7.6	5.69
1355.0000	25.4	7.5	5.57
1360.0000	25.4	7.4	5.53
1365.0000	25.5	7.4	5.55

1370.0000	25.4	7.5	5.69
1375.0000	25.4	7.6	5.70
1380.0000	25.4	7.6	5.70
1385.0000	25.5	7.5	5.67
1390.0000	25.6	7.4	5.52
1395.0000	25.8	7.3	5.36
1400.0000	26.0	7.1	5.17
1405.0000	26.1	7.0	5.04
1410.0000	26.1	7.1	5.10
1415.0000	26.1	7.1	5.18
1420.0000	26.1	7.1	5.14
1425.0000	26.1	7.1	5.17
1430.0000	26.2	7.1	5.18
1435.0000	26.2	7.1	5.14
1440.0000	26.4	7.0	5.03
1445.0000	26.3	7.1	5.12
1450.0000	26.2	7.2	5.23
1455.0000	26.2	7.3	5.32
1460.0000	26.2	7.3	5.32
1465.0000	26.3	7.2	5.23
1470.0000	26.3	7.2	5.25
1475.0000	26.4	7.2	5.19
1480.0000	26.5	7.1	5.10
1485.0000	26.5	7.1	5.15
1490.0000	26.5	7.2	5.23
1495.0000	26.4	7.3	5.33
1500.0000	26.5	7.2	5.28
1505.0000	26.6	7.2	5.21
1510.0000	26.7	7.1	5.12
1515.0000	26.8	7.0	5.02
1520.0000	26.8	7.0	5.05
1525.0000	26.8	7.1	5.08
1530.0000	26.8	7.1	5.17
1535.0000	26.8	7.1	5.10
1540.0000	26.8	7.2	5.22
1545.0000	26.8	7.2	5.19
1550.0000	26.8	7.2	5.27
1555.0000	26.8	7.2	5.29
1560.0000	26.8	7.2	5.27
1565.0000	26.8	7.3	5.36
1570.0000	26.8	7.3	5.34
1575.0000	26.9	7.2	5.29
1580.0000	26.9	7.2	5.29
1585.0000	26.9	7.3	5.33
1590.0000	26.9	7.3	5.39
1595.0000	26.9	7.4	5.45
1600.0000	26.7	7.5	5.67
1605.0000	26.7	7.6	5.81

1610.0000	26.5	7.8	6.06
1615.0000	26.5	7.9	6.14
1620.0000	26.6	7.8	5.99
1625.0000	26.7	7.7	5.88
1630.0000	26.9	7.6	5.69
1635.0000	27.1	7.4	5.48
1640.0000	27.2	7.3	5.37
1645.0000	27.5	7.0	5.03
1650.0000	27.9	6.6	4.61
1655.0000	28.1	6.5	4.43
1660.0000	28.3	6.3	4.30
1665.0000	28.5	6.2	4.13
1670.0000	28.5	6.2	4.16
1675.0000	28.5	6.2	4.13
1680.0000	28.5	6.2	4.15
1685.0000	28.5	6.2	4.20
1690.0000	28.5	6.3	4.27
1695.0000	28.3	6.5	4.44
1700.0000	28.1	6.7	4.64
1705.0000	28.2	6.7	4.62
1710.0000	28.2	6.6	4.61
1715.0000	28.1	6.8	4.74
1720.0000	28.1	6.8	4.83
1725.0000	28.0	6.9	4.95
1730.0000	28.1	6.9	4.90
1735.0000	28.0	6.9	4.95
1740.0000	28.1	6.9	4.95
1745.0000	28.2	6.8	4.77
1750.0000	28.4	6.7	4.67
1755.0000	28.4	6.7	4.67
1760.0000	28.4	6.7	4.65
1765.0000	28.2	6.9	4.90
1770.0000	28.1	7.1	5.10
1775.0000	28.0	7.2	5.28
1780.0000	27.9	7.3	5.36
1785.0000	28.0	7.3	5.32
1790.0000	28.1	7.2	5.21
1795.0000	28.2	7.0	5.06
1800.0000	28.4	6.9	4.93
1805.0000	28.5	6.9	4.87
1810.0000	28.4	7.0	4.96
1815.0000	28.3	7.1	5.16
1820.0000	28.3	7.1	5.14
1825.0000	28.4	7.0	5.06
1830.0000	28.6	6.8	4.81
1835.0000	28.8	6.7	4.64
1840.0000	28.9	6.6	4.62
1845.0000	28.9	6.6	4.55

1850.0000	29.0	6.5	4.50
1855.0000	29.2	6.4	4.36
1860.0000	29.2	6.4	4.36
1865.0000	29.4	6.2	4.22
1870.0000	29.5	6.2	4.15
1875.0000	29.7	6.0	3.97
1880.0000	30.0	5.6	3.66
1885.0000	30.4	5.3	3.38
1890.0000	30.5	5.2	3.35
1895.0000	30.5	5.3	3.36
1900.0000	30.5	5.3	3.36
1905.0000	30.5	5.3	3.40
1910.0000	30.6	5.2	3.33
1915.0000	30.5	5.3	3.39
1920.0000	30.6	5.2	3.34
1925.0000	30.8	5.1	3.21
1930.0000	30.8	5.1	3.21
1935.0000	30.9	5.0	3.18
1940.0000	30.9	5.1	3.22
1945.0000	30.9	5.0	3.19
1950.0000	30.9	5.1	3.27
1955.0000	30.8	5.2	3.34
1960.0000	30.9	5.1	3.26
1965.0000	30.9	5.2	3.32
1970.0000	30.7	5.3	3.42
1975.0000	30.6	5.5	3.54
1980.0000	30.6	5.6	3.59
1985.0000	30.3	5.9	3.89
1990.0000	30.2	6.0	3.98
1995.0000	30.1	6.1	4.04
2000.0000	30.2	6.0	3.96

Date of Calibration = 03/14/2000

Date Printed: Tuesday, March 14, 2000 4:25 PM

Customer Name: Electronics Test Centre

Antenna Manufacturer: ARA

Antenna Model: LPB-2520/A

Antenna Serial No.: 1045

Temperature (Deg C): 16

Humidity (%): 54

Measurement Distance in Meters = 3

Antenna Polarization = VERT

NOTES:

CAL CERT #: 7469

Freq (MHz)	ACF (dB)	Gain (dBi)	Num GAIN
20.0000	17.7	-21.4	0.01
25.0000	17.2	-19.1	0.01
30.0000	16.9	-17.1	0.02
35.0000	15.7	-14.7	0.03
40.0000	14.5	-12.3	0.06
45.0000	13.4	-10.1	0.10
50.0000	12.1	-7.9	0.16
55.0000	10.7	-5.7	0.27
60.0000	9.1	-3.3	0.47
65.0000	9.0	-2.6	0.55
70.0000	8.4	-1.3	0.74
75.0000	7.4	0.3	1.07
80.0000	6.9	1.4	1.38
85.0000	7.3	1.5	1.42
90.0000	8.1	1.2	1.32
95.0000	8.6	1.1	1.30
100.0000	9.0	1.2	1.32
105.0000	10.1	0.6	1.14
110.0000	11.8	-0.8	0.84
115.0000	12.4	-1.0	0.80
120.0000	12.5	-0.7	0.84
125.0000	12.3	-0.1	0.97
130.0000	12.0	0.5	1.11
135.0000	11.5	1.3	1.35
140.0000	10.2	2.9	1.97
145.0000	10.0	3.5	2.22
150.0000	10.2	3.5	2.26
155.0000	9.8	4.2	2.62
160.0000	9.8	4.5	2.82
165.0000	11.2	3.3	2.15

170.0000	10.8	4.0	2.50
175.0000	10.6	4.5	2.79
180.0000	10.3	5.0	3.16
185.0000	10.4	5.1	3.27
190.0000	10.7	5.1	3.22
195.0000	10.9	5.1	3.27
200.0000	10.8	5.4	3.46
205.0000	10.9	5.6	3.60
210.0000	11.5	5.1	3.25
215.0000	12.4	4.5	2.79
220.0000	12.5	4.5	2.85
225.0000	12.2	5.0	3.18
230.0000	12.1	5.3	3.39
235.0000	12.3	5.3	3.41
240.0000	12.6	5.2	3.34
245.0000	12.8	5.1	3.26
250.0000	12.6	5.6	3.61
255.0000	12.7	5.7	3.70
260.0000	13.1	5.4	3.46
265.0000	13.9	4.8	3.02
270.0000	14.2	4.6	2.87
275.0000	13.8	5.2	3.31
280.0000	13.2	6.0	3.96
285.0000	13.1	6.2	4.18
290.0000	13.4	6.1	4.06
295.0000	13.6	6.0	3.95
300.0000	13.9	5.9	3.86
305.0000	14.1	5.8	3.81
310.0000	14.1	5.9	3.88
315.0000	14.0	6.1	4.09
320.0000	13.9	6.4	4.36
325.0000	14.1	6.4	4.34
330.0000	14.8	5.8	3.81
335.0000	15.0	5.7	3.70
340.0000	15.0	5.8	3.79
345.0000	14.9	6.0	4.00
350.0000	14.8	6.2	4.20
355.0000	14.9	6.3	4.26
360.0000	15.2	6.1	4.10
365.0000	15.4	6.0	3.99
370.0000	15.8	5.8	3.80
375.0000	16.0	5.6	3.66
380.0000	16.2	5.6	3.64
385.0000	16.2	5.7	3.73
390.0000	16.4	5.7	3.69
395.0000	16.3	5.9	3.85
400.0000	16.0	6.2	4.18
405.0000	15.9	6.4	4.41

410.0000	15.8	6.6	4.59
415.0000	16.1	6.4	4.40
420.0000	16.5	6.2	4.14
425.0000	16.7	6.0	4.01
430.0000	16.8	6.0	4.01
435.0000	16.4	6.5	4.50
440.0000	16.0	7.1	5.07
445.0000	15.9	7.2	5.29
450.0000	16.4	6.9	4.91
455.0000	17.0	6.4	4.34
460.0000	17.4	6.0	4.00
465.0000	17.5	6.1	4.03
470.0000	17.4	6.3	4.23
475.0000	17.5	6.3	4.24
480.0000	17.7	6.1	4.08
485.0000	17.8	6.1	4.04
490.0000	17.8	6.2	4.14
495.0000	17.4	6.7	4.65
500.0000	17.3	6.9	4.89
505.0000	17.2	7.1	5.11
510.0000	17.1	7.2	5.29
515.0000	17.3	7.1	5.16
520.0000	17.7	6.8	4.81
525.0000	18.1	6.5	4.51
530.0000	18.1	6.6	4.58
535.0000	18.1	6.6	4.59
540.0000	18.1	6.7	4.71
545.0000	18.0	6.9	4.94
550.0000	18.0	7.0	5.00
555.0000	18.0	7.1	5.08
560.0000	18.3	6.9	4.86
565.0000	18.5	6.7	4.73
570.0000	18.6	6.7	4.72
575.0000	18.5	6.9	4.88
580.0000	18.5	6.9	4.93
585.0000	18.7	6.8	4.82
590.0000	18.8	6.9	4.85
595.0000	19.0	6.7	4.70
600.0000	19.0	6.7	4.73
605.0000	18.7	7.1	5.18
610.0000	18.6	7.3	5.39
615.0000	18.7	7.3	5.32
620.0000	18.9	7.1	5.14
625.0000	19.1	7.0	5.06
630.0000	19.3	6.9	4.93
635.0000	19.3	7.0	4.97
640.0000	19.4	7.0	4.98
645.0000	19.4	6.9	4.95

650.0000	19.6	6.9	4.89
655.0000	19.6	7.0	4.97
660.0000	19.6	7.0	5.03
665.0000	19.7	7.0	4.98
670.0000	19.5	7.3	5.32
675.0000	19.4	7.4	5.50
680.0000	19.5	7.4	5.48
685.0000	19.7	7.2	5.21
690.0000	19.9	7.1	5.16
695.0000	19.9	7.2	5.20
700.0000	19.8	7.3	5.33
705.0000	19.8	7.4	5.44
710.0000	19.9	7.3	5.42
715.0000	20.1	7.2	5.25
720.0000	20.2	7.1	5.13
725.0000	20.3	7.1	5.12
730.0000	20.4	7.1	5.14
735.0000	20.4	7.1	5.11
740.0000	20.6	7.0	5.04
745.0000	20.8	6.9	4.86
750.0000	20.8	6.9	4.89
755.0000	20.6	7.1	5.17
760.0000	20.4	7.4	5.47
765.0000	20.4	7.4	5.54
770.0000	20.5	7.5	5.58
775.0000	20.4	7.6	5.69
780.0000	20.5	7.5	5.63
785.0000	20.7	7.4	5.47
790.0000	20.7	7.4	5.51
795.0000	20.8	7.4	5.47
800.0000	20.9	7.4	5.49
805.0000	20.9	7.4	5.47
810.0000	21.1	7.3	5.36
815.0000	21.0	7.4	5.47
820.0000	21.1	7.4	5.49
825.0000	21.2	7.3	5.37
830.0000	21.3	7.3	5.34
835.0000	21.3	7.3	5.43
840.0000	21.3	7.3	5.43
845.0000	21.4	7.3	5.37
850.0000	21.4	7.4	5.52
855.0000	21.4	7.4	5.52
860.0000	21.5	7.4	5.54
865.0000	21.6	7.3	5.40
870.0000	21.7	7.3	5.38
875.0000	21.7	7.3	5.40
880.0000	21.7	7.4	5.44
885.0000	21.7	7.4	5.50

890.0000	21.8	7.4	5.47
895.0000	21.9	7.3	5.41
900.0000	22.0	7.3	5.33
905.0000	22.1	7.2	5.28
910.0000	22.2	7.2	5.24
915.0000	22.3	7.1	5.14
920.0000	22.3	7.2	5.23
925.0000	22.3	7.2	5.24
930.0000	22.3	7.2	5.31
935.0000	22.4	7.3	5.32
940.0000	22.4	7.3	5.32
945.0000	22.3	7.4	5.53
950.0000	22.2	7.6	5.76
955.0000	22.2	7.6	5.80
960.0000	22.2	7.6	5.81
965.0000	22.2	7.7	5.86
970.0000	22.2	7.7	5.89
975.0000	22.4	7.6	5.79
980.0000	22.4	7.6	5.80
985.0000	22.5	7.6	5.75
990.0000	22.7	7.4	5.51
995.0000	23.0	7.2	5.25
1000.0000	23.0	7.2	5.20
1005.0000	22.7	7.6	5.74
1010.0000	22.8	7.5	5.64
1015.0000	22.9	7.5	5.58
1020.0000	23.0	7.4	5.47
1025.0000	23.1	7.3	5.43
1030.0000	23.1	7.4	5.45
1035.0000	23.1	7.4	5.55
1040.0000	23.1	7.4	5.55
1045.0000	23.1	7.4	5.55
1050.0000	23.2	7.5	5.57
1055.0000	23.3	7.4	5.47
1060.0000	23.4	7.3	5.35
1065.0000	23.4	7.4	5.43
1070.0000	23.4	7.4	5.50
1075.0000	23.3	7.5	5.65
1080.0000	23.3	7.6	5.74
1085.0000	23.3	7.6	5.78
1090.0000	23.3	7.7	5.88
1095.0000	23.2	7.7	5.95
1100.0000	23.3	7.8	5.96
1105.0000	23.3	7.8	5.97
1110.0000	23.3	7.8	5.97
1115.0000	23.4	7.7	5.90
1120.0000	23.5	7.7	5.86
1125.0000	23.5	7.7	5.89

1130.0000	23.5	7.8	6.03
1135.0000	23.6	7.7	5.87
1140.0000	23.5	7.8	6.01
1145.0000	23.5	7.9	6.12
1150.0000	23.5	7.9	6.13
1155.0000	23.5	7.9	6.18
1160.0000	23.6	7.9	6.10
1165.0000	23.8	7.8	5.96
1170.0000	24.0	7.6	5.76
1175.0000	24.0	7.6	5.73
1180.0000	24.0	7.6	5.76
1185.0000	24.1	7.6	5.78
1190.0000	24.2	7.5	5.60
1195.0000	24.2	7.6	5.70
1200.0000	24.2	7.5	5.67
1205.0000	24.3	7.6	5.70
1210.0000	24.3	7.6	5.73
1215.0000	24.1	7.8	5.99
1220.0000	24.1	7.8	6.04
1225.0000	24.3	7.7	5.90
1230.0000	24.3	7.7	5.87
1235.0000	24.3	7.7	5.95
1240.0000	24.3	7.8	5.96
1245.0000	24.5	7.6	5.79
1250.0000	24.6	7.5	5.68
1255.0000	24.6	7.6	5.76
1260.0000	24.7	7.6	5.69
1265.0000	24.7	7.6	5.71
1270.0000	24.6	7.7	5.84
1275.0000	24.6	7.7	5.84
1280.0000	24.6	7.7	5.90
1285.0000	24.7	7.7	5.93
1290.0000	24.7	7.7	5.93
1295.0000	24.8	7.7	5.88
1300.0000	24.7	7.7	5.94
1305.0000	24.8	7.7	5.92
1310.0000	24.7	7.9	6.10
1315.0000	24.7	7.9	6.19
1320.0000	24.8	7.8	6.07
1325.0000	24.8	7.9	6.10
1330.0000	24.8	7.8	6.07
1335.0000	25.0	7.7	5.94
1340.0000	25.0	7.7	5.92
1345.0000	25.1	7.7	5.88
1350.0000	25.1	7.7	5.89
1355.0000	25.1	7.8	5.99
1360.0000	25.0	7.9	6.11
1365.0000	25.0	7.9	6.21

1370.0000	24.9	8.0	6.29
1375.0000	24.9	8.1	6.46
1380.0000	25.0	8.0	6.37
1385.0000	25.1	8.0	6.25
1390.0000	25.1	8.0	6.27
1395.0000	25.1	8.0	6.27
1400.0000	25.1	8.0	6.33
1405.0000	25.2	8.0	6.31
1410.0000	25.2	7.9	6.22
1415.0000	25.2	8.0	6.26
1420.0000	25.3	7.9	6.21
1425.0000	25.3	8.0	6.25
1430.0000	25.4	7.9	6.21
1435.0000	25.4	7.9	6.20
1440.0000	25.4	7.9	6.20
1445.0000	25.4	8.0	6.24
1450.0000	25.5	7.9	6.23
1455.0000	25.6	7.9	6.14
1460.0000	25.7	7.8	6.01
1465.0000	25.8	7.8	5.97
1470.0000	25.9	7.7	5.86
1475.0000	25.9	7.7	5.84
1480.0000	25.9	7.7	5.88
1485.0000	26.0	7.6	5.79
1490.0000	26.1	7.6	5.70
1495.0000	26.3	7.4	5.50
1500.0000	26.4	7.4	5.45
1505.0000	26.5	7.2	5.30
1510.0000	26.5	7.3	5.31
1515.0000	26.5	7.3	5.34
1520.0000	26.5	7.3	5.37
1525.0000	26.4	7.5	5.59
1530.0000	26.4	7.5	5.68
1535.0000	26.4	7.6	5.70
1540.0000	26.4	7.6	5.75
1545.0000	26.3	7.7	5.85
1550.0000	26.1	7.9	6.13
1555.0000	26.1	8.0	6.25
1560.0000	26.1	8.0	6.27
1565.0000	26.1	8.0	6.35
1570.0000	26.0	8.1	6.43
1575.0000	26.1	8.1	6.42
1580.0000	26.1	8.1	6.44
1585.0000	26.0	8.2	6.66
1590.0000	26.1	8.2	6.57
1595.0000	26.1	8.2	6.56
1600.0000	26.1	8.1	6.52
1605.0000	26.3	8.1	6.39

1610.0000	26.4	7.9	6.20
1615.0000	26.5	7.9	6.13
1620.0000	26.6	7.8	6.07
1625.0000	26.6	7.8	6.04
1630.0000	26.8	7.7	5.84
1635.0000	26.8	7.6	5.80
1640.0000	26.9	7.6	5.82
1645.0000	27.0	7.6	5.71
1650.0000	27.0	7.5	5.63
1655.0000	27.2	7.4	5.48
1660.0000	27.3	7.3	5.43
1665.0000	27.2	7.4	5.50
1670.0000	27.3	7.4	5.49
1675.0000	27.3	7.4	5.51
1680.0000	27.4	7.3	5.39
1685.0000	27.5	7.2	5.30
1690.0000	27.6	7.2	5.23
1695.0000	27.6	7.2	5.28
1700.0000	27.5	7.4	5.44
1705.0000	27.4	7.4	5.50
1710.0000	27.5	7.4	5.47
1715.0000	27.5	7.4	5.46
1720.0000	27.6	7.3	5.40
1725.0000	27.7	7.2	5.31
1730.0000	27.6	7.4	5.43
1735.0000	27.7	7.3	5.36
1740.0000	27.7	7.3	5.43
1745.0000	27.7	7.3	5.41
1750.0000	27.7	7.4	5.44
1755.0000	27.7	7.4	5.50
1760.0000	27.7	7.4	5.47
1765.0000	27.8	7.4	5.47
1770.0000	27.8	7.4	5.49
1775.0000	27.9	7.3	5.38
1780.0000	27.8	7.4	5.56
1785.0000	27.8	7.4	5.55
1790.0000	27.7	7.5	5.68
1795.0000	27.7	7.6	5.71
1800.0000	27.9	7.4	5.52
1805.0000	27.6	7.7	5.91
1810.0000	27.7	7.6	5.79
1815.0000	27.8	7.5	5.68
1820.0000	27.9	7.5	5.67
1825.0000	28.0	7.4	5.54
1830.0000	28.0	7.5	5.60
1835.0000	28.1	7.4	5.45
1840.0000	28.1	7.4	5.46
1845.0000	28.3	7.2	5.30

1850.0000	28.5	7.1	5.09
1855.0000	28.6	7.0	5.02
1860.0000	28.6	7.0	4.98
1865.0000	28.8	6.8	4.84
1870.0000	29.0	6.7	4.66
1875.0000	29.1	6.6	4.55
1880.0000	29.4	6.3	4.24
1885.0000	29.5	6.2	4.20
1890.0000	29.6	6.2	4.13
1895.0000	29.8	6.0	3.96
1900.0000	29.8	5.9	3.93
1905.0000	29.9	5.9	3.92
1910.0000	30.0	5.8	3.82
1915.0000	30.1	5.8	3.78
1920.0000	30.0	5.9	3.89
1925.0000	30.1	5.7	3.76
1930.0000	30.2	5.7	3.74
1935.0000	30.2	5.7	3.75
1940.0000	30.1	5.9	3.88
1945.0000	30.1	5.9	3.89
1950.0000	30.1	5.9	3.93
1955.0000	30.1	5.9	3.94
1960.0000	29.9	6.1	4.07
1965.0000	29.9	6.1	4.11
1970.0000	29.9	6.2	4.14
1975.0000	30.0	6.1	4.09
1980.0000	29.9	6.2	4.22
1985.0000	30.1	6.1	4.04
1990.0000	30.0	6.2	4.18
1995.0000	30.0	6.2	4.15
2000.0000	29.9	6.3	4.31

Date of Calibration: 08/06/2000

Date Printed On: Tuesday, August 08, 2000 11:04 AM

Customer Name: Electronics Test Centre

Antenna Manufacturer: Tensor

Antenna Model: 4105

Antenna Serial No.: 2082

Temperature (Deg C): 21

Humidity (%): 49

Measurement Distance in Meters = 3

Antenna Polarization = HORZ

NOTES:

CAL CERT #: 8602

FREQ MHz	ACF dB/m	Gain dBi	NUM Gain
1000.0000	24.7	5.5	3.55
1500.0000	26.7	7.0	4.99
2000.0000	29.3	7.0	4.96
2500.0000	30.6	7.6	5.74
3000.0000	31.3	8.4	6.94
3500.0000	33.0	8.1	6.47
4000.0000	34.0	8.2	6.62
4500.0000	33.7	9.6	9.05
5000.0000	35.1	9.1	8.09
5500.0000	36.1	8.9	7.83
6000.0000	36.9	8.8	7.64
6500.0000	36.8	9.7	9.31
7000.0000	37.3	9.8	9.49
7500.0000	37.8	9.9	9.78
8000.0000	37.9	10.4	10.97
8500.0000	38.1	10.7	11.72
9000.0000	40.4	8.9	7.79
9500.0000	38.5	11.3	13.44
10000.0000	38.6	11.6	14.55
10500.0000	39.4	11.2	13.16
11000.0000	39.9	11.1	12.97
11500.0000	40.4	11.0	12.63
12000.0000	42.5	9.3	8.54
12500.0000	45.2	6.9	4.90
13000.0000	47.5	5.0	3.15
13500.0000	47.5	5.3	3.42
14000.0000	48.4	4.8	2.99
14500.0000	47.0	6.5	4.42
15000.0000	44.3	9.4	8.69

15500.0000	43.2	10.8	12.12
16000.0000	42.6	11.7	14.73
16500.0000	42.0	12.5	17.99
17000.0000	42.0	12.8	19.09
17500.0000	46.3	8.8	7.52
18000.0000	45.8	9.5	8.86

Date of Calibration: 08/06/2000

Date Printed On: Tuesday, August 08, 2000 11:04 AM

Customer Name: Electronics Test Centre

Antenna Manufacturer: Tensor

Antenna Model: 4105

Antenna Serial No.: 2082

Temperature (Deg C): 21

Humidity (%): 49

Measurement Distance in Meters = 3

Antenna Polarization = HORZ

NOTES:

CAL CERT #: 8602

FREQ MHz	ACF dB/m	Gain dBi	NUM Gain
1000.0000	24.7	5.5	3.55
1500.0000	26.7	7.0	4.99
2000.0000	29.3	7.0	4.96
2500.0000	30.6	7.6	5.74
3000.0000	31.3	8.4	6.94
3500.0000	33.0	8.1	6.47
4000.0000	34.0	8.2	6.62
4500.0000	33.7	9.6	9.05
5000.0000	35.1	9.1	8.09
5500.0000	36.1	8.9	7.83
6000.0000	36.9	8.8	7.64
6500.0000	36.8	9.7	9.31
7000.0000	37.3	9.8	9.49
7500.0000	37.8	9.9	9.78
8000.0000	37.9	10.4	10.97
8500.0000	38.1	10.7	11.72
9000.0000	40.4	8.9	7.79
9500.0000	38.5	11.3	13.44
10000.0000	38.6	11.6	14.55
10500.0000	39.4	11.2	13.16
11000.0000	39.9	11.1	12.97
11500.0000	40.4	11.0	12.63
12000.0000	42.5	9.3	8.54
12500.0000	45.2	6.9	4.90
13000.0000	47.5	5.0	3.15
13500.0000	47.5	5.3	3.42
14000.0000	48.4	4.8	2.99
14500.0000	47.0	6.5	4.42
15000.0000	44.3	9.4	8.69

15500.0000	43.2	10.8	12.12
16000.0000	42.6	11.7	14.73
16500.0000	42.0	12.5	17.99
17000.0000	42.0	12.8	19.09
17500.0000	46.3	8.8	7.52
18000.0000	45.8	9.5	8.86

Attenuator Report - Attenuator Data

Date: 01 March, 2000

Attenuator: -60.0dB

Asset #: 4354

LNA at 60 dB and 1.2 GHz HPF

#

Frequency Loss

(MHz) (dB)

#

800.000000	-8.600000
810.000000	-8.900000
820.000000	-8.600000
830.000000	-19.400000
840.000000	-10.000000
850.000000	-9.900000
860.000000	-10.700000
870.000000	-12.100000
880.000000	-13.200000
890.000000	-14.700000
900.000000	-15.900000
910.000000	-17.900000
920.000000	-18.500000
930.000000	-20.400000
940.000000	-22.200000
950.000000	-23.700000
960.000000	-25.400000
970.000000	-27.200000
980.000000	-29.100000
990.000000	-30.900000
1000.000000	-32.500000
1020.000000	-36.000000
1040.000000	-40.000000
1060.000000	-44.100000
1080.000000	-48.500000
1100.000000	-52.900000
1120.000000	-57.800000
1140.000000	-60.900000
1160.000000	-61.800000
1180.000000	-61.700000
1200.000000	-61.600000
1220.000000	-61.900000
1240.000000	-62.100000
1260.000000	-62.200000
1280.000000	-62.400000
1300.000000	-62.400000
1320.000000	-62.500000
1340.000000	-62.400000
1360.000000	-62.400000

1380.000000	-62.500000
1400.000000	-62.500000
1500.000000	-62.500000
1600.000000	-62.000000
1700.000000	-61.900000
1800.000000	-62.300000
1900.000000	-62.600000
2000.000000	-62.600000
2200.000000	-62.200000
2400.000000	-62.200000
2600.000000	-62.900000
2800.000000	-62.400000
3000.000000	-61.800000
3200.000000	-62.600000
3400.000000	-62.400000
3600.000000	-62.600000
3800.000000	-62.700000
4000.000000	-62.400000
4200.000000	-62.900000
4400.000000	-61.600000
4600.000000	-61.600000
4800.000000	-63.700000
5000.000000	-62.400000
5500.000000	-62.500000
6000.000000	-60.000000
6500.000000	-60.600000
7000.000000	-60.900000
7500.000000	-59.800000
8000.000000	-59.700000
8500.000000	-58.300000
9000.000000	-59.500000
9500.000000	-58.800000
10000.000000	-58.300000
10500.000000	-57.400000
11000.000000	-58.800000
11500.000000	-59.400000
12000.000000	-60.100000
12500.000000	-60.200000
13000.000000	-59.400000
13500.000000	-57.900000
14000.000000	-60.300000
14500.000000	-61.200000
15000.000000	-60.400000
15500.000000	-61.800000
16000.000000	-60.800000
16500.000000	-55.500000
17000.000000	-48.000000
17500.000000	-56.200000

18000.000000	-57.500000
18500.000000	-56.600000
19000.000000	-54.800000
19500.000000	-51.100000
20000.000000	-44.500000
20500.000000	-32.000000
21000.000000	-51.200000
21500.000000	-44.500000
22000.000000	-42.300000