

# 432 MHz Dish Feed System

by K4QI

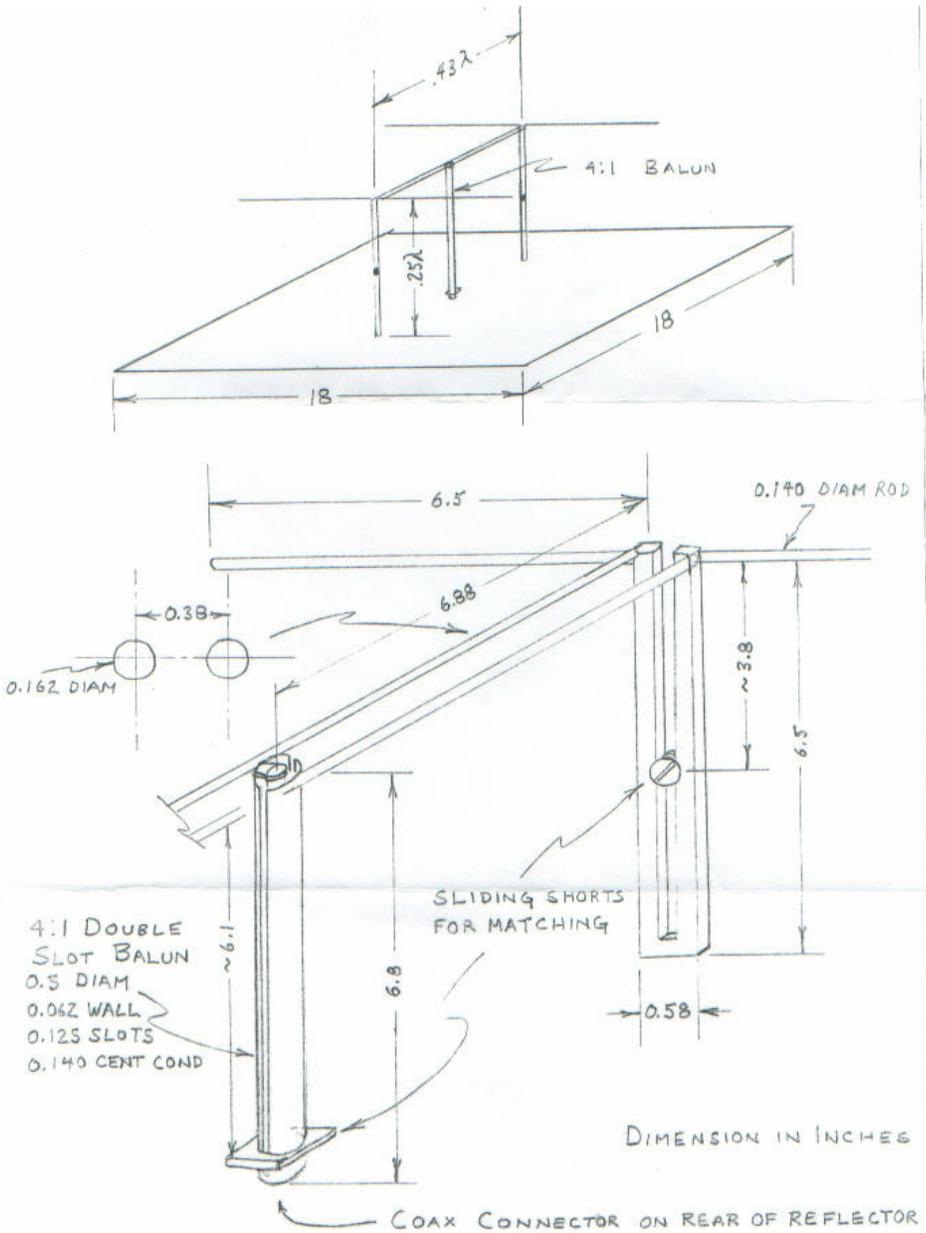
The feed system was derived from a NEC analysis attempting to design a dual feed with identical patterns in both E and H planes and a 10 dB illumination taper for a F/D of .45. NEC indicated that 2 dipoles spaced 0.43 wavelength at 0.25 wavelength above a square reflector 0.65 wavelength on a side would produce such a result. A prototype was built and measured and was found to produce results similar to the NEC prediction.

From the feed point of the antenna, the impedance is  $50 + j0$  ohms. Going through the 1:4 balun, the impedance transforms to  $200 + j0$  meaning that each phasing line must present  $400 + j0$ . As an approximation, the phasing lines were constructed for impedance of the geometric mean of 400 and 73 ohms or 173 ohms. Because the phasing lines are shorter than 0.25 wavelengths, the impedance presented to the dipole is approximately  $78 - j35$  ohm. The real part is very close to the desired value but the reactive component must be tuned out. The susceptance equivalency of this impedance presents a parallel capacitance that can be tuned out by a parallel inductance. This inductance is formed by a "hair pin" built into the support for the dipoles.

Sliding shorts are provided in each dipole support and at the base of the 4:1 slot balun. By adjusting these shorts, the return loss can be trimmed to well below 30 dB but only over a relative over a narrow band. A good compromise is probably around 26 dB, which will give a couple MHz of bandwidth.

With the feed point on the rear of the reflector, a relay and preamp enclosure can be conveniently built in this location. Dimensions are given in inches. With the tuning flexibility of the sliding shorts, dimensions should not be particularly critical within reason. This is especially true of element diameters.

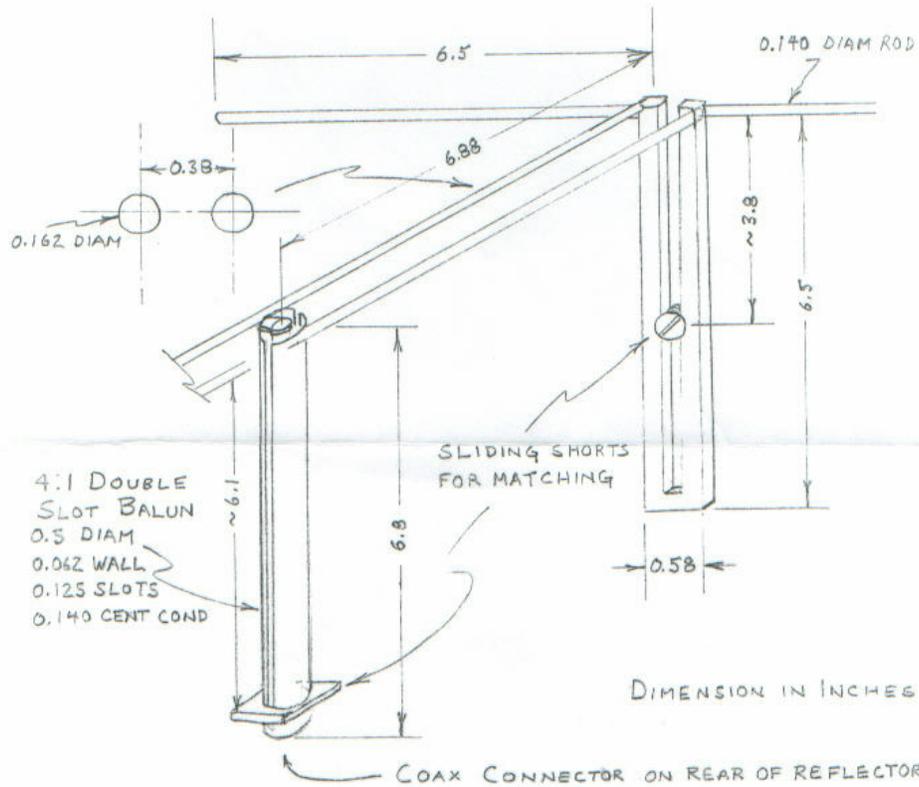
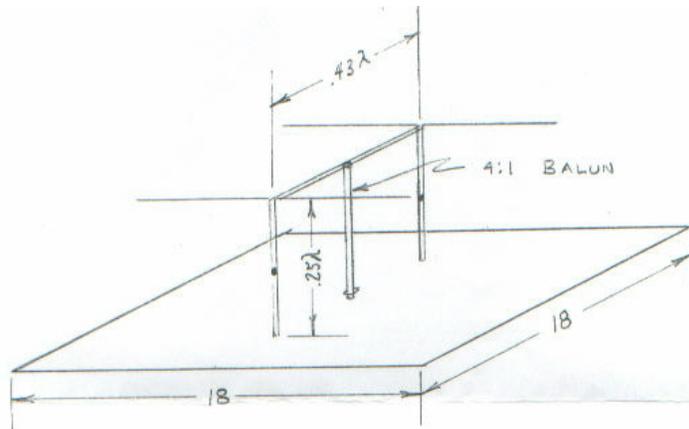
13.752  
 13.753  
 13.754  
 13.755  
 13.756  
 13.757  
 13.758  
 13.759  
 13.760  
 13.761  
 13.762  
 13.763  
 13.764  
 13.765  
 13.766  
 13.767  
 13.768  
 13.769  
 13.770  
 13.771  
 13.772  
 13.773  
 13.774  
 13.775  
 13.776  
 13.777  
 13.778  
 13.779  
 13.780  
 13.781  
 13.782  
 13.783  
 13.784  
 13.785  
 13.786  
 13.787  
 13.788  
 13.789  
 13.790  
 13.791  
 13.792  
 13.793  
 13.794  
 13.795  
 13.796  
 13.797  
 13.798  
 13.799  
 13.800  
 13.801  
 13.802  
 13.803  
 13.804  
 13.805  
 13.806  
 13.807  
 13.808  
 13.809  
 13.810  
 13.811  
 13.812  
 13.813  
 13.814  
 13.815  
 13.816  
 13.817  
 13.818  
 13.819  
 13.820  
 13.821  
 13.822  
 13.823  
 13.824  
 13.825  
 13.826  
 13.827  
 13.828  
 13.829  
 13.830  
 13.831  
 13.832  
 13.833  
 13.834  
 13.835  
 13.836  
 13.837  
 13.838  
 13.839  
 13.840  
 13.841  
 13.842  
 13.843  
 13.844  
 13.845  
 13.846  
 13.847  
 13.848  
 13.849  
 13.850  
 13.851  
 13.852  
 13.853  
 13.854  
 13.855  
 13.856  
 13.857  
 13.858  
 13.859  
 13.860  
 13.861  
 13.862  
 13.863  
 13.864  
 13.865  
 13.866  
 13.867  
 13.868  
 13.869  
 13.870  
 13.871  
 13.872  
 13.873  
 13.874  
 13.875  
 13.876  
 13.877  
 13.878  
 13.879  
 13.880  
 13.881  
 13.882  
 13.883  
 13.884  
 13.885  
 13.886  
 13.887  
 13.888  
 13.889  
 13.890  
 13.891  
 13.892  
 13.893  
 13.894  
 13.895  
 13.896  
 13.897  
 13.898  
 13.899  
 13.900  
 13.901  
 13.902  
 13.903  
 13.904  
 13.905  
 13.906  
 13.907  
 13.908  
 13.909  
 13.910  
 13.911  
 13.912  
 13.913  
 13.914  
 13.915  
 13.916  
 13.917  
 13.918  
 13.919  
 13.920  
 13.921  
 13.922  
 13.923  
 13.924  
 13.925  
 13.926  
 13.927  
 13.928  
 13.929  
 13.930  
 13.931  
 13.932  
 13.933  
 13.934  
 13.935  
 13.936  
 13.937  
 13.938  
 13.939  
 13.940  
 13.941  
 13.942  
 13.943  
 13.944  
 13.945  
 13.946  
 13.947  
 13.948  
 13.949  
 13.950  
 13.951  
 13.952  
 13.953  
 13.954  
 13.955  
 13.956  
 13.957  
 13.958  
 13.959  
 13.960  
 13.961  
 13.962  
 13.963  
 13.964  
 13.965  
 13.966  
 13.967  
 13.968  
 13.969  
 13.970  
 13.971  
 13.972  
 13.973  
 13.974  
 13.975  
 13.976  
 13.977  
 13.978  
 13.979  
 13.980  
 13.981  
 13.982  
 13.983  
 13.984  
 13.985  
 13.986  
 13.987  
 13.988  
 13.989  
 13.990  
 13.991  
 13.992  
 13.993  
 13.994  
 13.995  
 13.996  
 13.997  
 13.998  
 13.999  
 14.000



432 MHZ EQUAL E & H FIELD DISH FEED

K4QI  
2/16/98

13.752  
 13.753  
 13.754  
 13.755  
 13.756  
 13.757  
 13.758  
 13.759  
 13.760  
 13.761  
 13.762  
 13.763  
 13.764  
 13.765  
 13.766  
 13.767  
 13.768  
 13.769  
 13.770  
 13.771  
 13.772  
 13.773  
 13.774  
 13.775  
 13.776  
 13.777  
 13.778  
 13.779  
 13.780  
 13.781  
 13.782  
 13.783  
 13.784  
 13.785  
 13.786  
 13.787  
 13.788  
 13.789  
 13.790  
 13.791  
 13.792  
 13.793  
 13.794  
 13.795  
 13.796  
 13.797  
 13.798  
 13.799  
 13.800  
 13.801  
 13.802  
 13.803  
 13.804  
 13.805  
 13.806  
 13.807  
 13.808  
 13.809  
 13.810  
 13.811  
 13.812  
 13.813  
 13.814  
 13.815  
 13.816  
 13.817  
 13.818  
 13.819  
 13.820  
 13.821  
 13.822  
 13.823  
 13.824  
 13.825  
 13.826  
 13.827  
 13.828  
 13.829  
 13.830  
 13.831  
 13.832  
 13.833  
 13.834  
 13.835  
 13.836  
 13.837  
 13.838  
 13.839  
 13.840  
 13.841  
 13.842  
 13.843  
 13.844  
 13.845  
 13.846  
 13.847  
 13.848  
 13.849  
 13.850  
 13.851  
 13.852  
 13.853  
 13.854  
 13.855  
 13.856  
 13.857  
 13.858  
 13.859  
 13.860  
 13.861  
 13.862  
 13.863  
 13.864  
 13.865  
 13.866  
 13.867  
 13.868  
 13.869  
 13.870  
 13.871  
 13.872  
 13.873  
 13.874  
 13.875  
 13.876  
 13.877  
 13.878  
 13.879  
 13.880  
 13.881  
 13.882  
 13.883  
 13.884  
 13.885  
 13.886  
 13.887  
 13.888  
 13.889  
 13.890  
 13.891  
 13.892  
 13.893  
 13.894  
 13.895  
 13.896  
 13.897  
 13.898  
 13.899  
 13.900  
 13.901  
 13.902  
 13.903  
 13.904  
 13.905  
 13.906  
 13.907  
 13.908  
 13.909  
 13.910  
 13.911  
 13.912  
 13.913  
 13.914  
 13.915  
 13.916  
 13.917  
 13.918  
 13.919  
 13.920  
 13.921  
 13.922  
 13.923  
 13.924  
 13.925  
 13.926  
 13.927  
 13.928  
 13.929  
 13.930  
 13.931  
 13.932  
 13.933  
 13.934  
 13.935  
 13.936  
 13.937  
 13.938  
 13.939  
 13.940  
 13.941  
 13.942  
 13.943  
 13.944  
 13.945  
 13.946  
 13.947  
 13.948  
 13.949  
 13.950  
 13.951  
 13.952  
 13.953  
 13.954  
 13.955  
 13.956  
 13.957  
 13.958  
 13.959  
 13.960  
 13.961  
 13.962  
 13.963  
 13.964  
 13.965  
 13.966  
 13.967  
 13.968  
 13.969  
 13.970  
 13.971  
 13.972  
 13.973  
 13.974  
 13.975  
 13.976  
 13.977  
 13.978  
 13.979  
 13.980  
 13.981  
 13.982  
 13.983  
 13.984  
 13.985  
 13.986  
 13.987  
 13.988  
 13.989  
 13.990  
 13.991  
 13.992  
 13.993  
 13.994  
 13.995  
 13.996  
 13.997  
 13.998  
 13.999  
 14.000



432 MHZ EQUAL E & H FIELD DISH FEED

K4QI  
2/16/98