BuckMaster Antenna Response Analysis

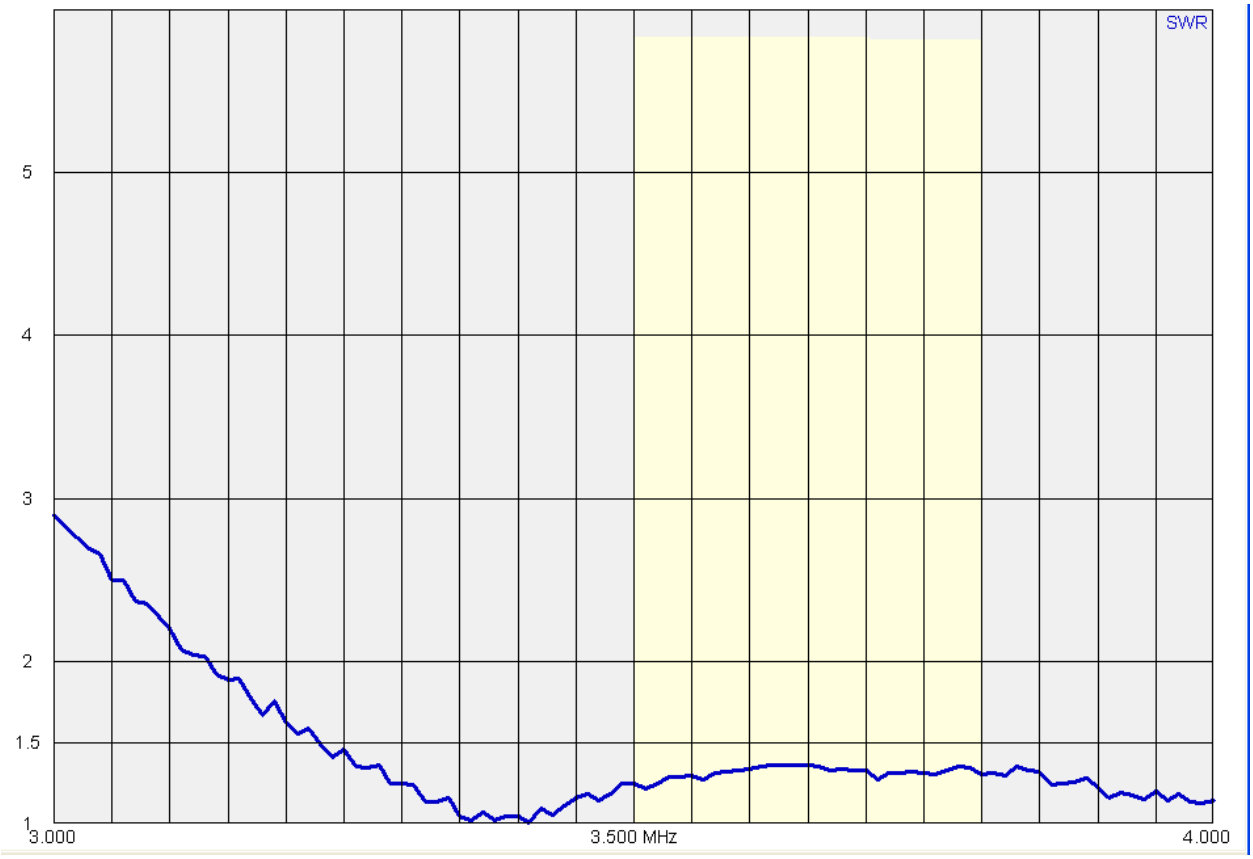
This document contains the response curves of my Off Center Feed [OFC] dipole BuckMaster. The response curves are obtained directly from the antenna that is located 65 feet in the trees. The antenna is configured as an inverted Vee pattern with the legs of the antenna 30 & 20 feet off the ground.

Hugh Bowen
ARS : wc1t

This document contains the response curves of my 3kw Off Center Feed [OFD] Dipole from BuckMaster. The response curves are obtained directly from the antenna that is configured in an Inverted vee pattern, and located approximately 65 feet off the ground at that feed point. The legs of the antenna are approximately 30 feet off the ground, for the short [45 foot]leg, and 20 feet off the ground for the longer [90 foot] leg.

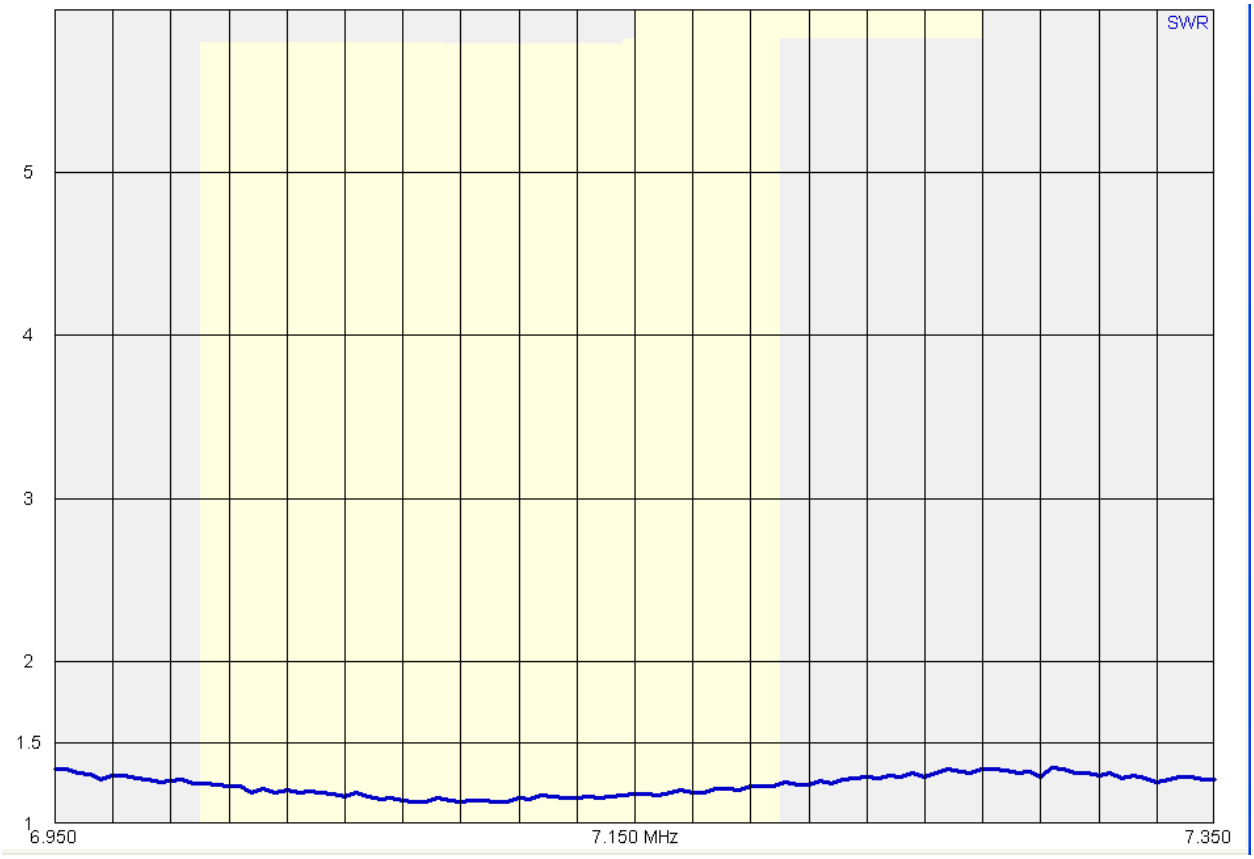
The feed line of the antenna system was initially configured using one hundred and twenty five (125) runs of RG213, and connected to the 6:1 balun that was provided by BuckMaster.

This set of response curves, with supporting data, was captured immediately after the antenna was placed in position. The initial results motivated me to understanding how the antenna is going to operate at my location. The more I captured the data, the more I became motivated to understand the antenna response curves, and investigate if a simple feed line modification would improve the overall response on all bands, or whether I should just leave it as is..



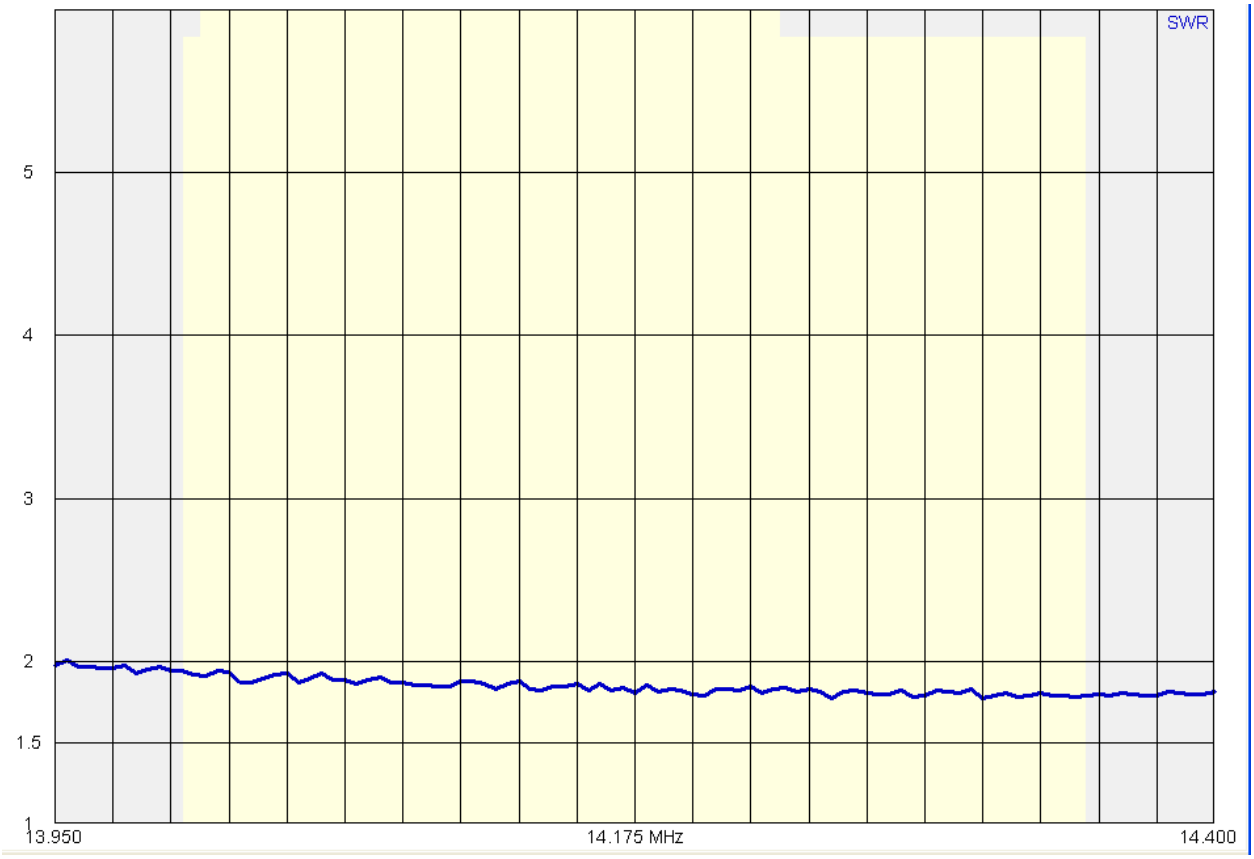
This is the response curves of the BuckMaster on 75 meters… @ Fq 3.500 MHz the following data points were captured.

SWR = 1.25
Return Loss = 19.09 db
Z = 40+j3 Ohms , |Z| = 40 Ohm
L = 169 nH
Zpar = 4- + j446 Ohm
Lpar = 20295 nH
Len(1/4) =14.14 m
Len(1/2) = 28.29 m



This is the response curves of the BuckMaster on 40 meters… @ Fq 7.150 MHz the following data points were captured.

SWR = 1.19
Return Loss = 21.42 db
Z = 46 –j7 Ohms , |Z| = 47 Ohm
C = 2909 pF
Zpar = 48 – j295 Ohm
Cpar = 75 pF
Len (1/4) = 6.92 m
Len(1/2) = 13.85 m



This is the response curves of the BuckMaster on 20 meters… @ Fq 14.175 MHz the following data points were captured.

SWR = 1.81

Return Loss = 10.83 db

Z = 31 –j15 Ohms , |Z| = 35 Ohm

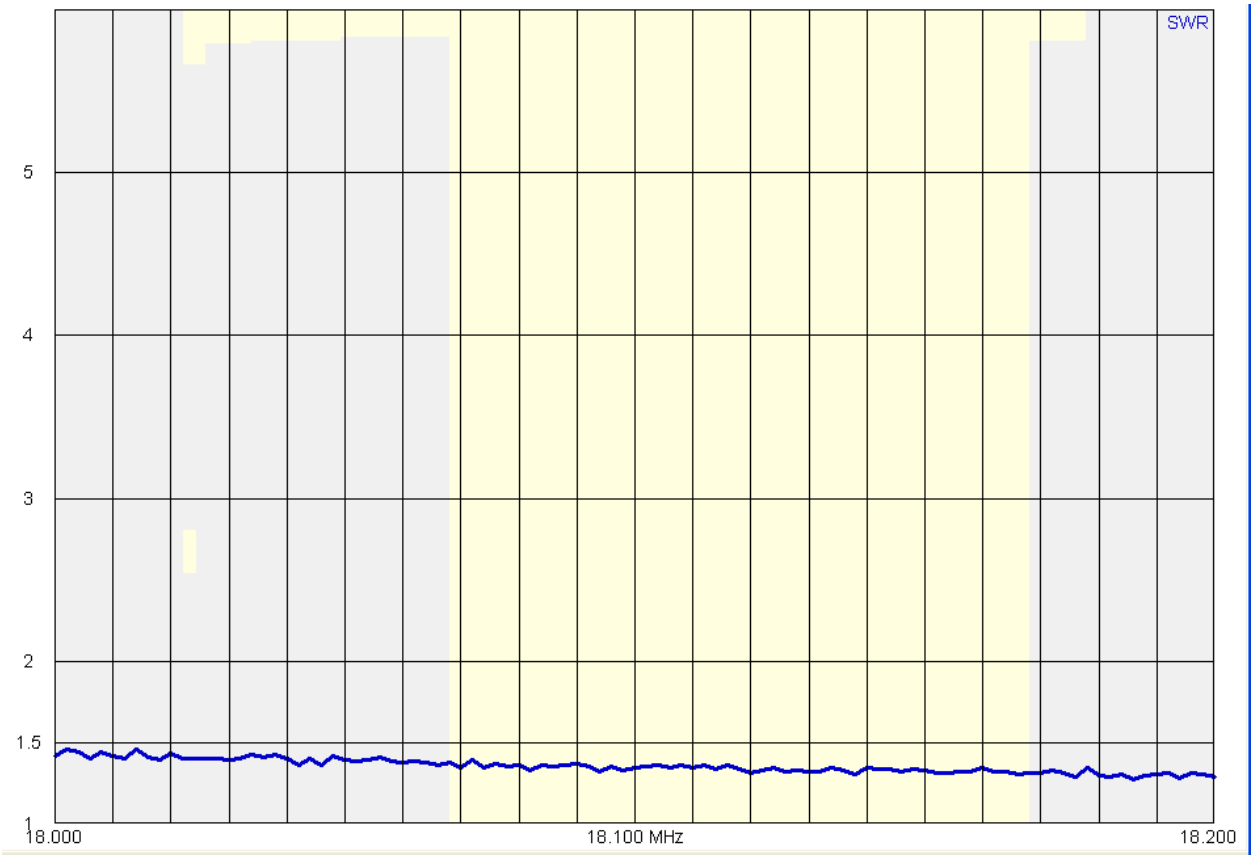
L = 175 uH

Zpar = 39 + j80 Ohm

Lpar = 940 nH

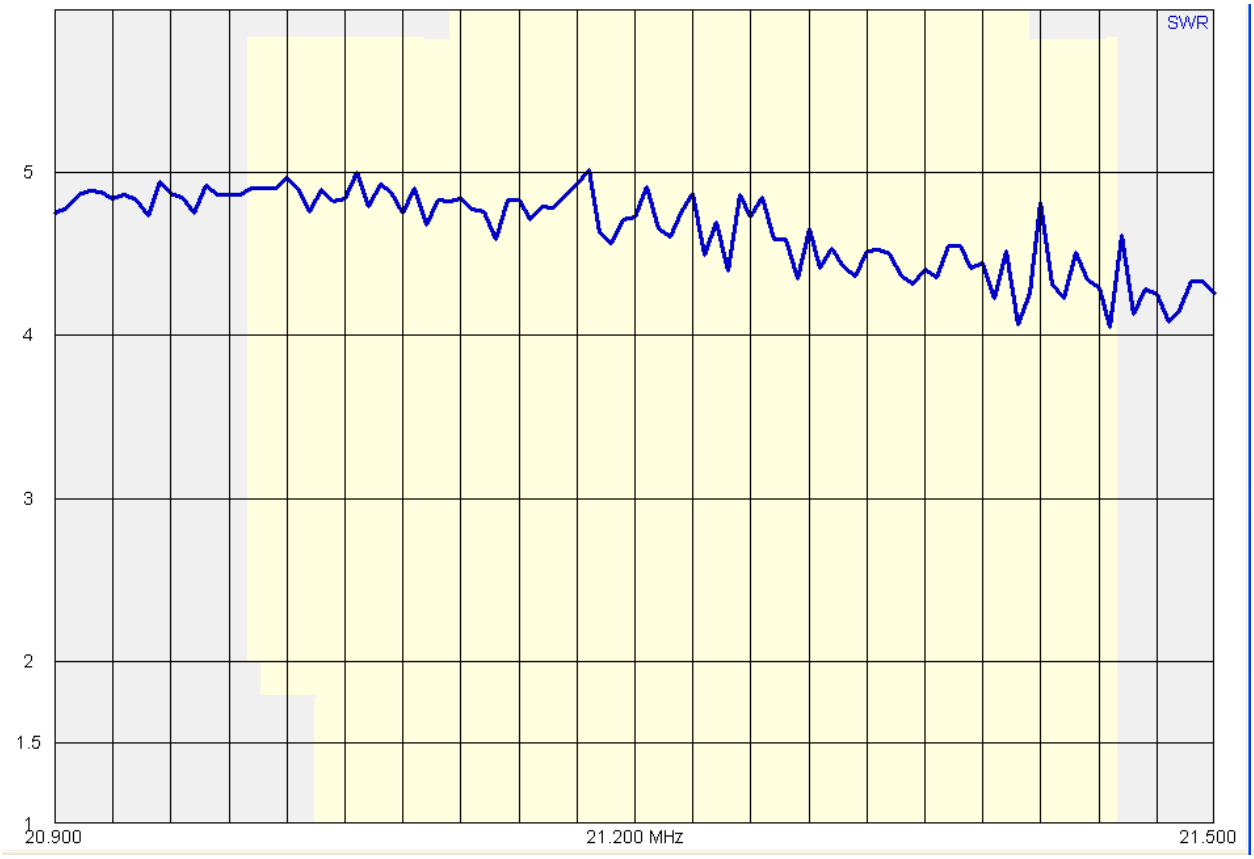
Len (1/4) = 3.49 m

Len(1/2) = 6.98 m



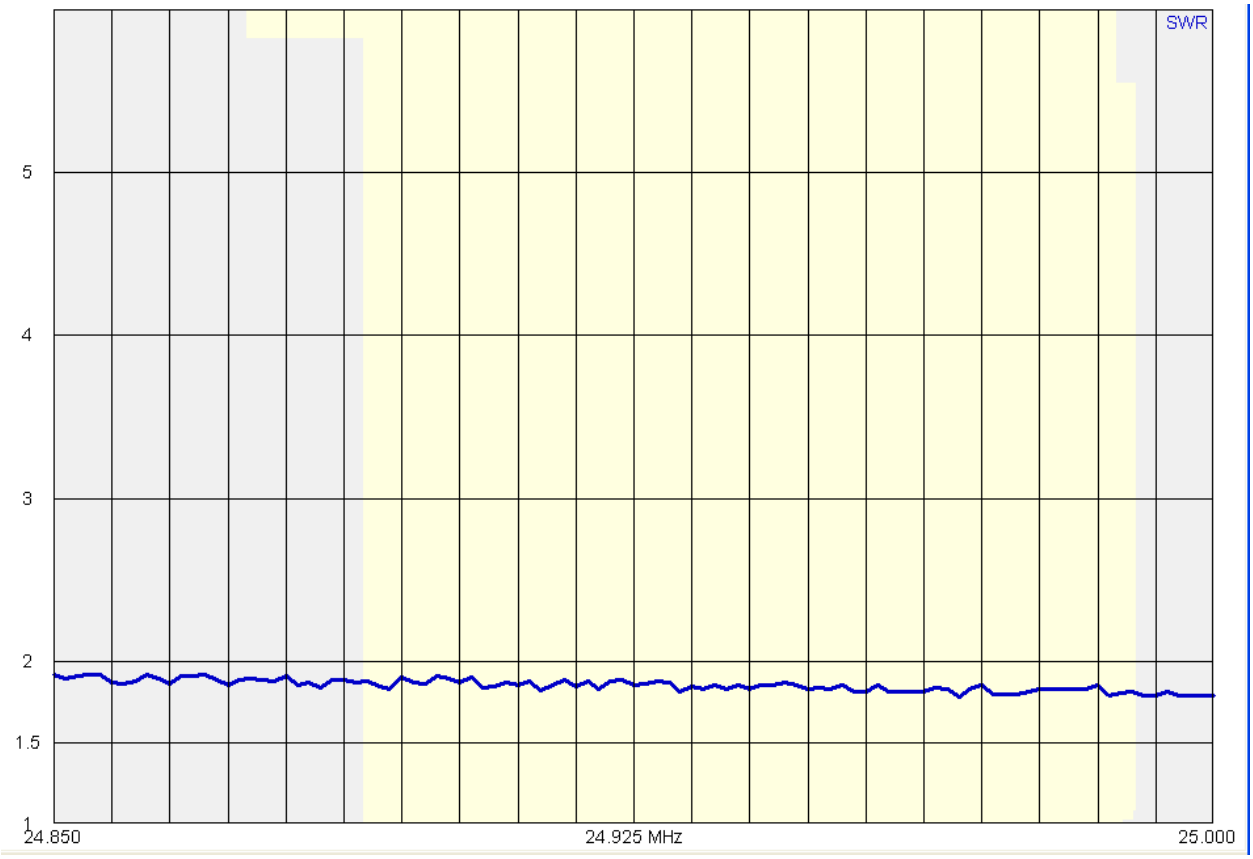
This is the response curves of the Buckmaster on 17 meters… @ Fq 18.100 MHz the following data points were captured.

SWR = 1.34
Return Loss = 16.68 db
Z = 38 –j5 Ohms , |Z| = 38 Ohm
C = 1682 pF
Zpar = 38 – j284 Ohm
Cpar = 30 pF
Len (1/4) = 2.73 m
Len(1/2) = 5.47 m



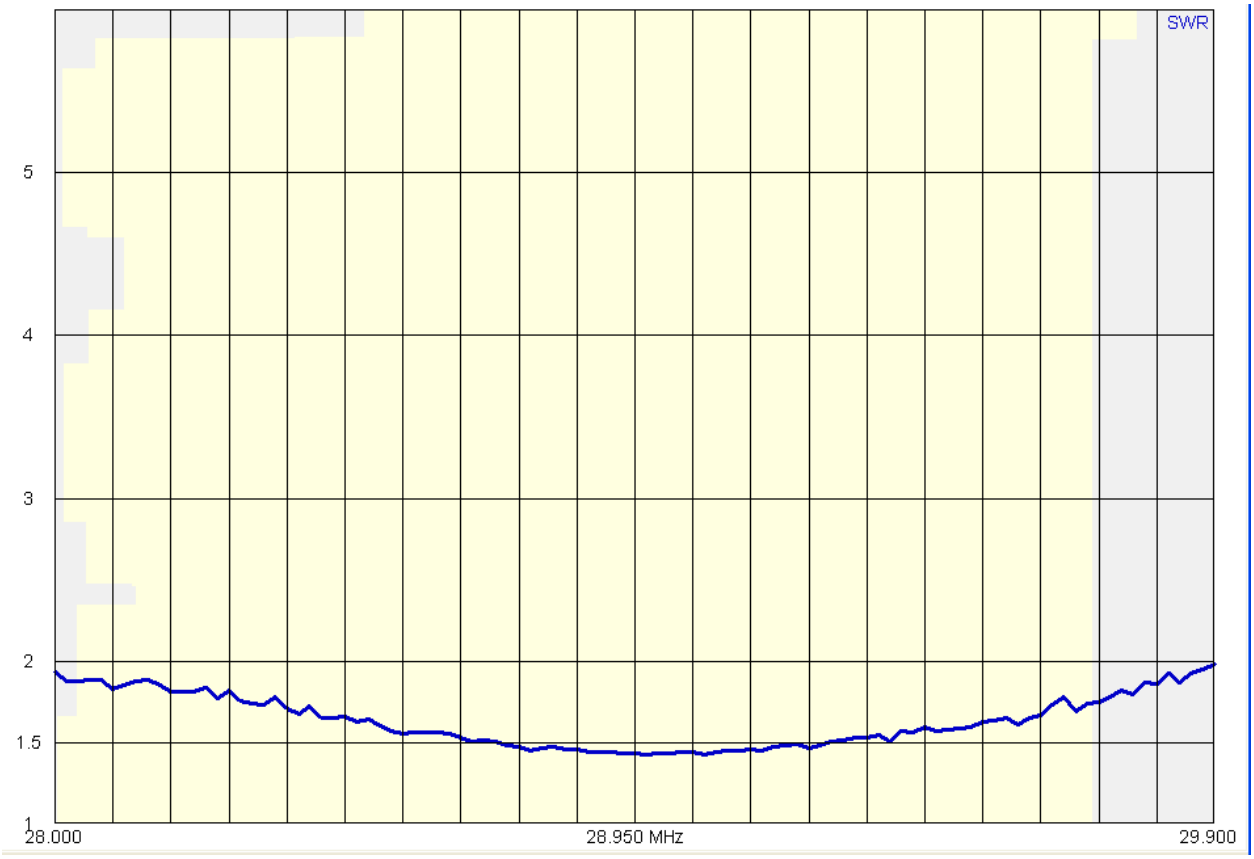
This is the response curves of the BuckMaster on 15 meters… @ Fq 21.200 MHz the following data points were captured. This is by far the worst curve. It is a typical response that you would see for an antenna that performs on even harmonics.

SWR = 4.72
Return Loss = 3.73 db
Z = 24 + j53 Ohms , |Z| = 59 Ohm
L = 405 uH
Zpar = 144 + j64 Ohm
Lpar = 487 nH
Len (1/4) = 2.33 m
Len(1/2) = 4.67 m



This is the response curves of the BuckMaster on 12 meters… @ Fq 24.925 MHz the following data points were captured.

SWR = 1.86
Return Loss = 10.46 db
Z = 29 +j12 Ohms , |Z| = 32 Ohm
L = 80 uH
Zpar = 34 + j81 Ohm
Lpar = 519 nH
Len (1/4) = 1.99 m
Len(1/2) = 3.97 m



This is the response curves of the BuckMaster on 10 meters… @ Fq. 28.950 MHz the following data points were captured.

SWR = 1.43
Return Loss = 14.96 db
Z = 43 –j15 Ohms , |Z| = 46 Ohm
C = 352 pF
Zpar = 49 – j136 Ohm
Cpar = 40 pF
Len (1/4) = 1.71 m
Len(1/2) = 3.42 m