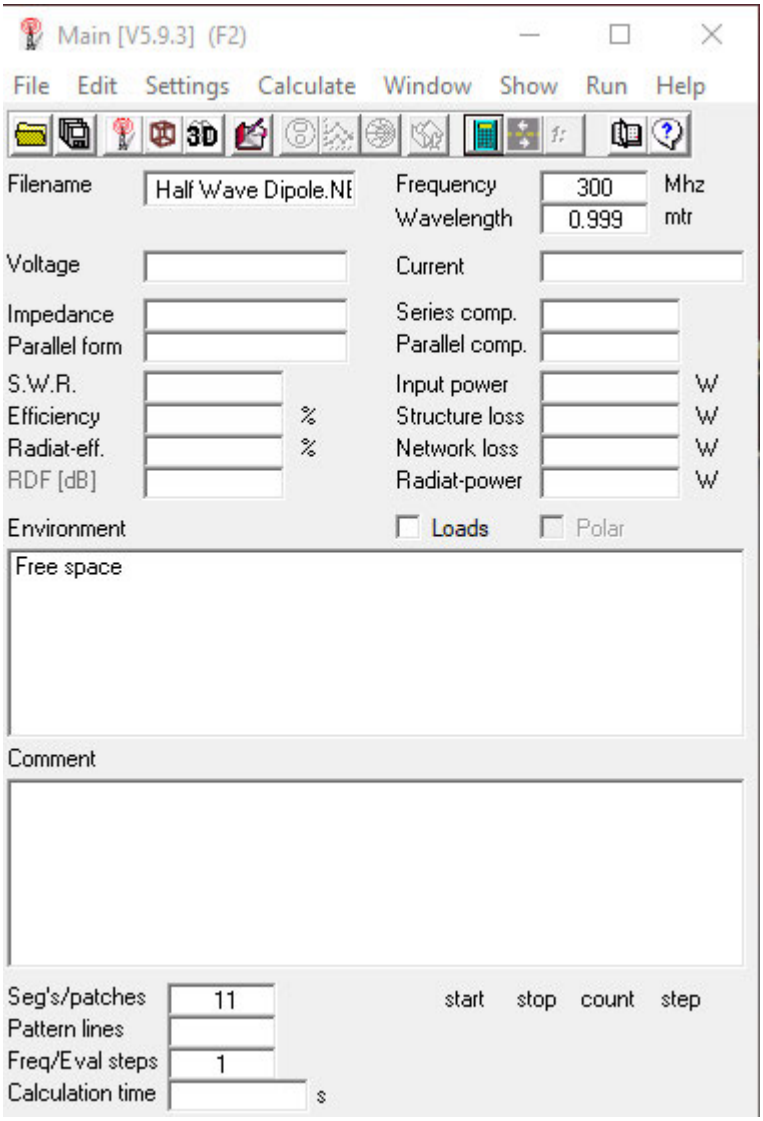
Saitwadekar Valay Angar

49 TE CMPN 22-23

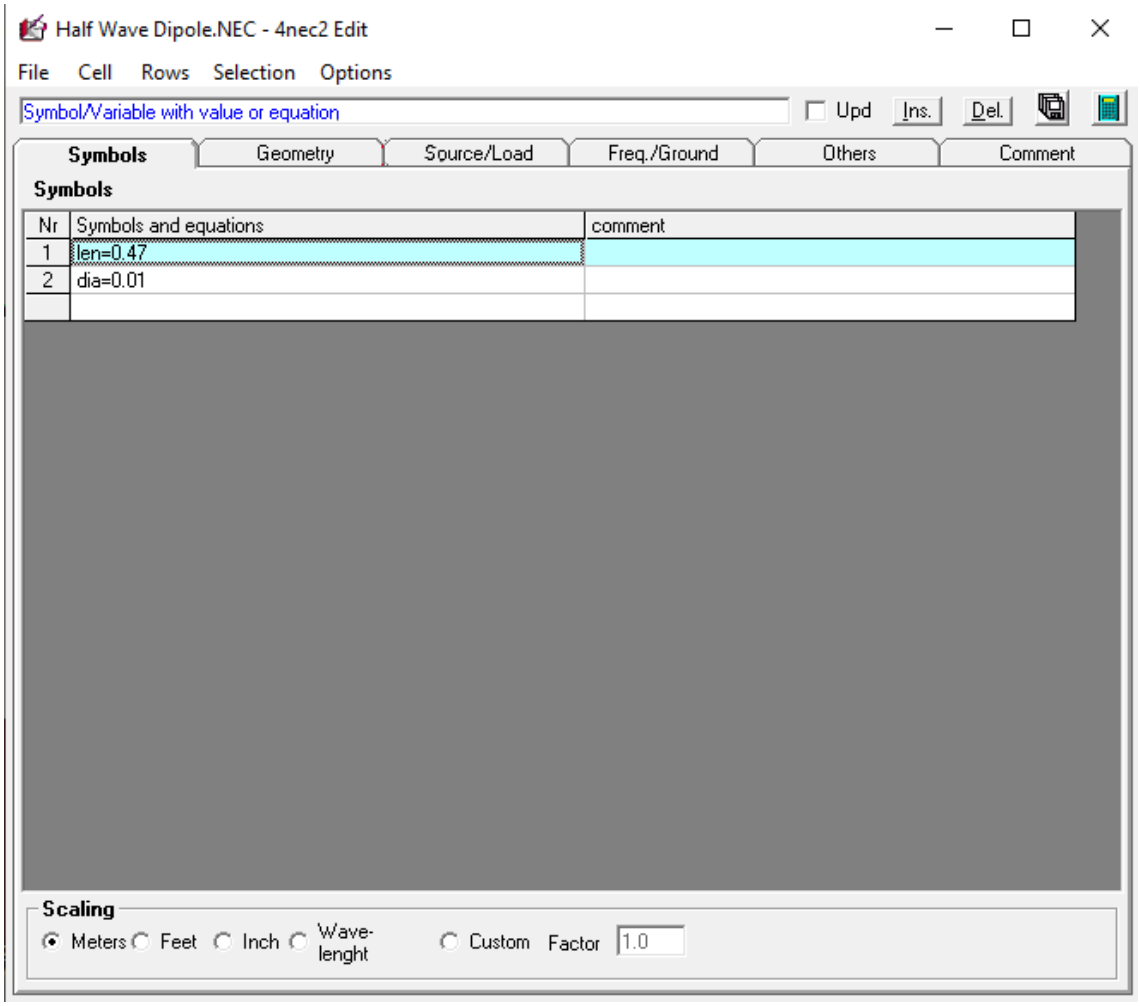
Assignment Number 1

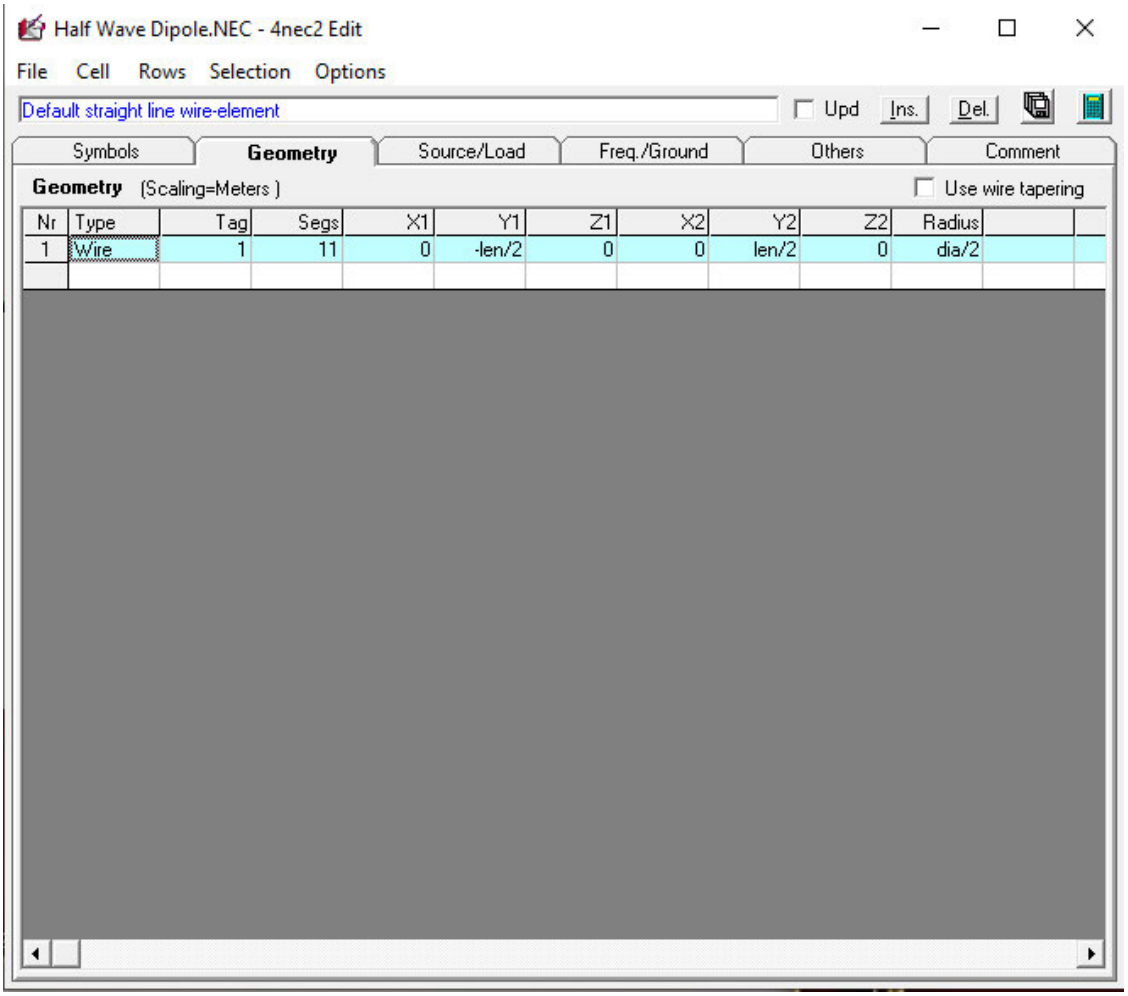
Half Wave Dipole Antenna

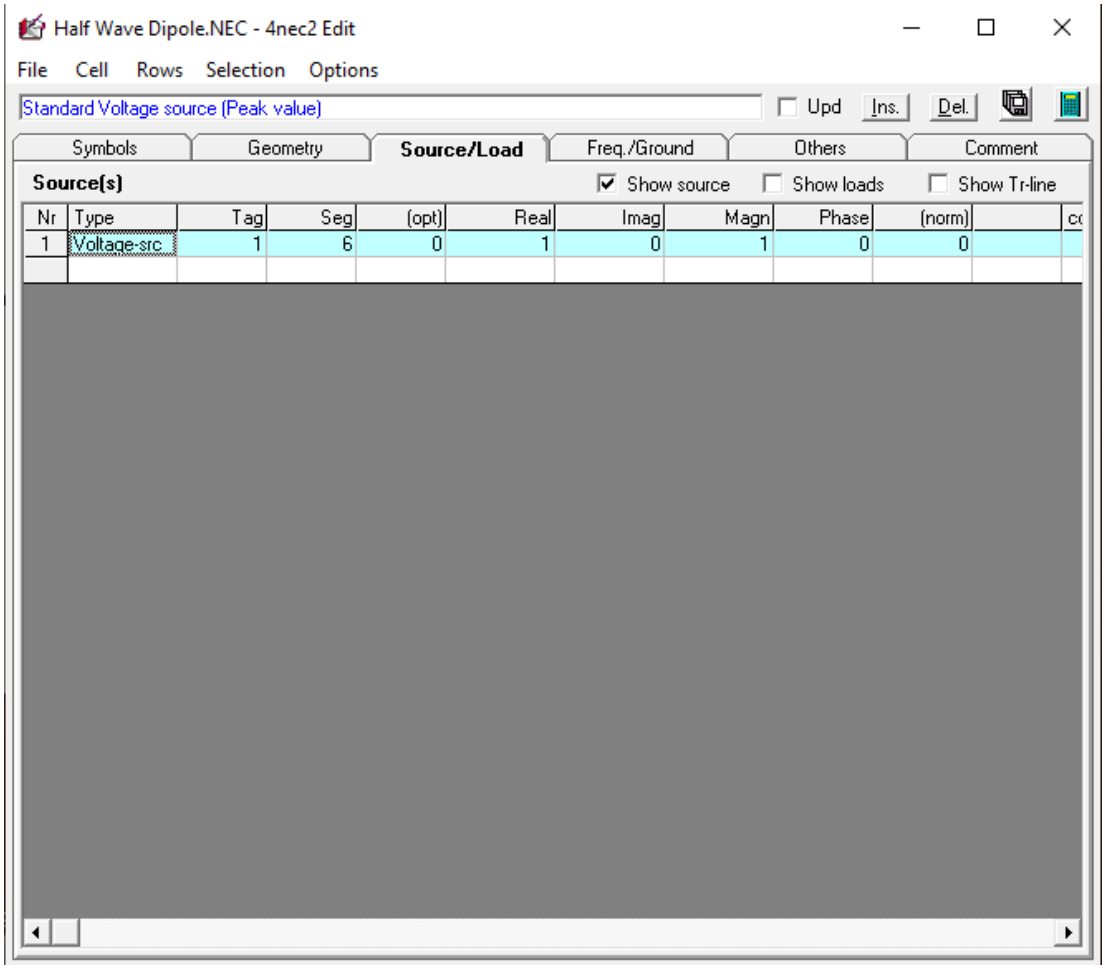


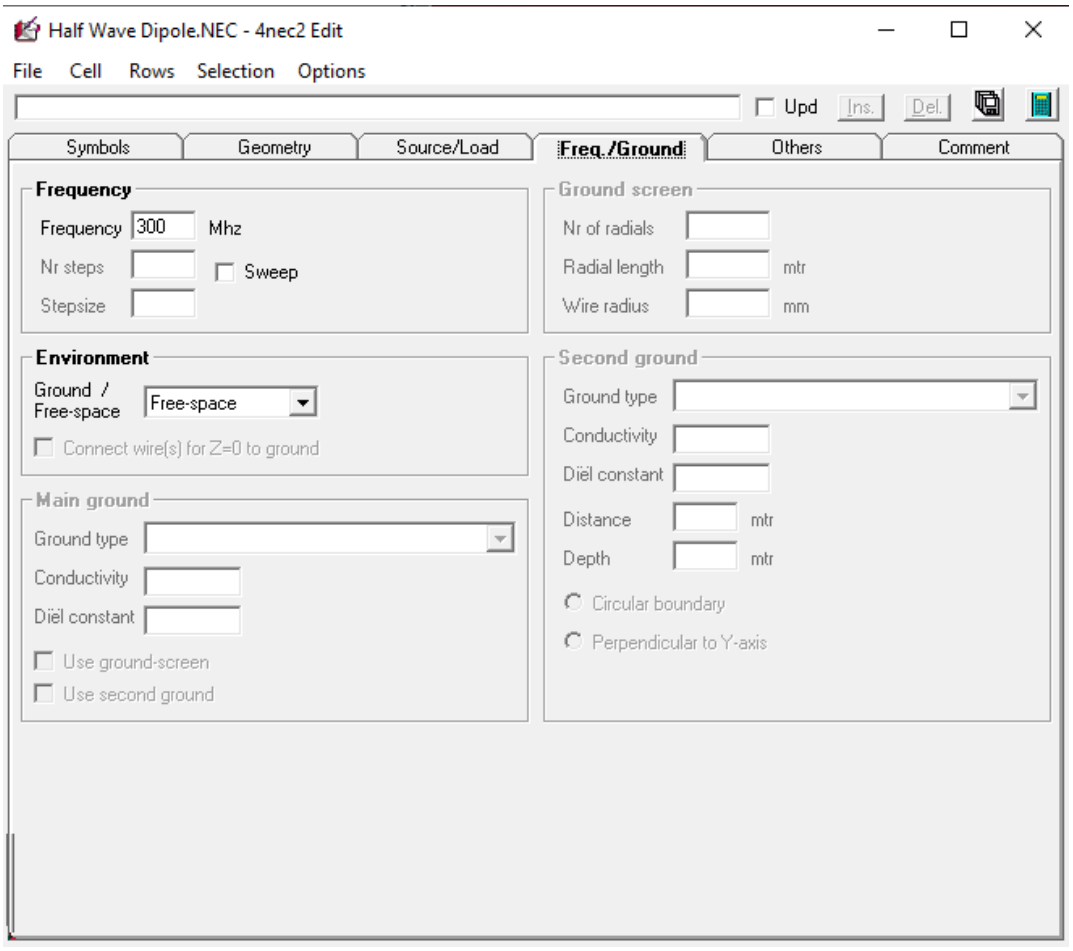
Create New File and Save File as Half Wave Dipole

Press Edit NEC Input-File

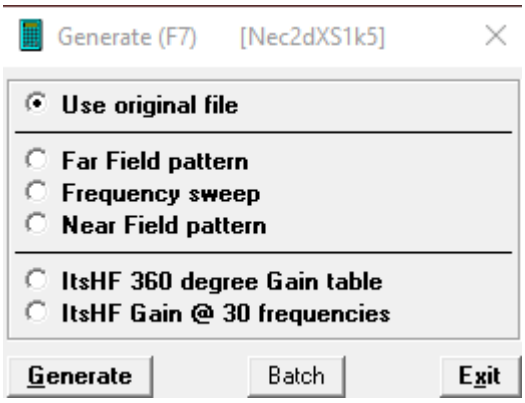

Half Wave Dipole.NEC - 4nec2 Edit
File Cell Rows Selection Options
Symbol/Variable with value or equation
Upd Ins. Del.
Symbols Geometry Source/Load Freq./Ground Others Comment
Symbols
Nr Symbols and equations comment
1 len=0.47
2 dia=0.01
Scaling
Meters Feet Inch Wave-lenght Custom Factor 1.0


Half Wave Dipole.NEC - 4nec2 Edit
File Cell Rows Selection Options
Default straight line wire-element
Upd Ins. Del.
Symbols Geometry Source/Load Freq./Ground Others Comment
Geometry (Scaling=Meters)
Use wire tapering
Nr Type Tag Segs X1 Y1 Z1 X2 Y2 Z2 Radius
1 Wire 1 11 0 -len/2 0 0 len/2 0 dia/2

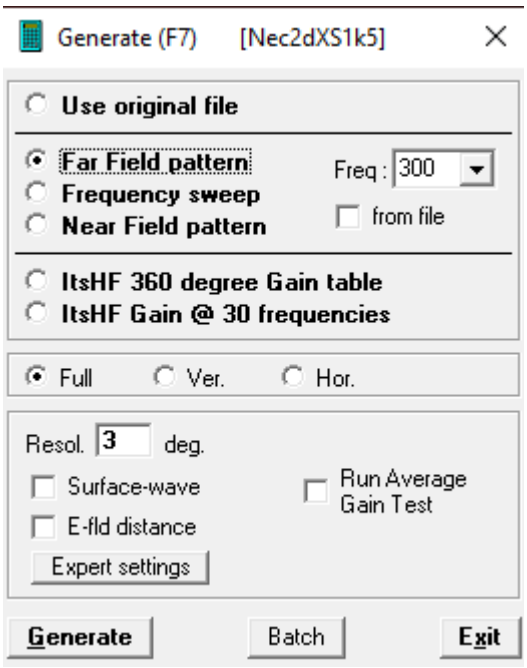

Half Wave Dipole.NEC - 4nec2 Edit
File Cell Rows Selection Options
Standard Voltage source (Peak value)
Upd Ins. Del.
Symbols Geometry Source/Load Freq./Ground Others Comment
Source(s)
Show source Show loads Show Tr-line
Nr Type Tag Seg (opt) Real Imag Magn Phase (norm)
1 Voltage-src 1 6 0 1 0 1 0 0


Half Wave Dipole.NEC - 4nec2 Edit
File Cell Rows Selection Options
Upd Ins. Del.
Symbols Geometry Source/Load Freq./Ground Others Comment
Frequency
Frequency 300 Mhz
Nr steps Sweep
Stepsize
Ground screen
Nr of radials
Radial length mtr
Wire radius mm
Environment
Ground / Free-space Free-space
Connect wire(s) for Z=0 to ground
Second ground
Ground type
Conductivity
Diël constant
Distance mtr
Depth mtr
Circular boundary
Perpendicular to Y-axis
Main ground
Ground type
Conductivity
Diël constant
Use ground-screen
Use second ground

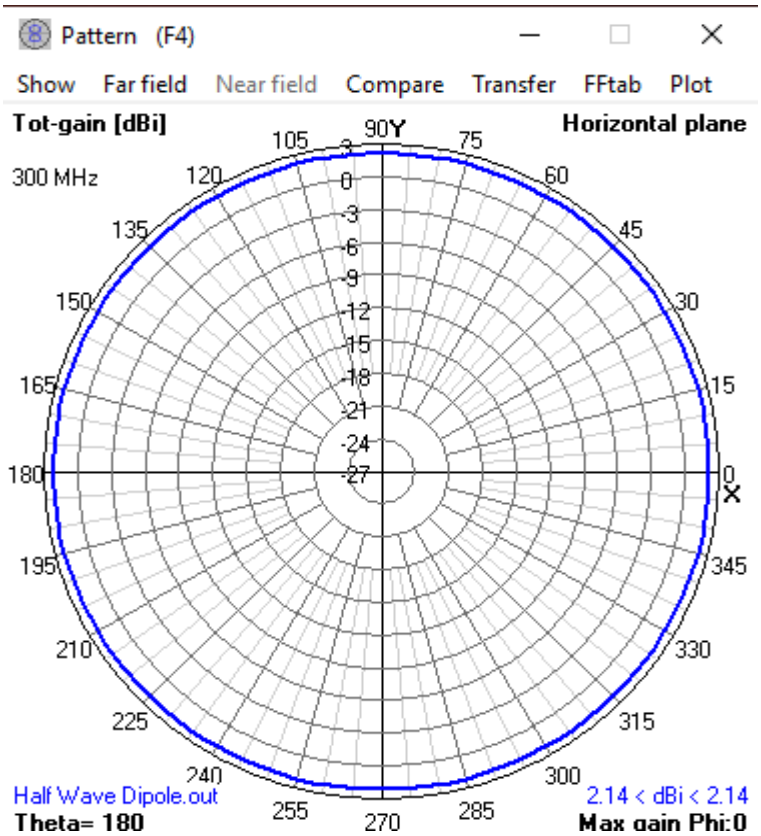
Click on Calculate New Output-Data (Run NEC) or Press F7



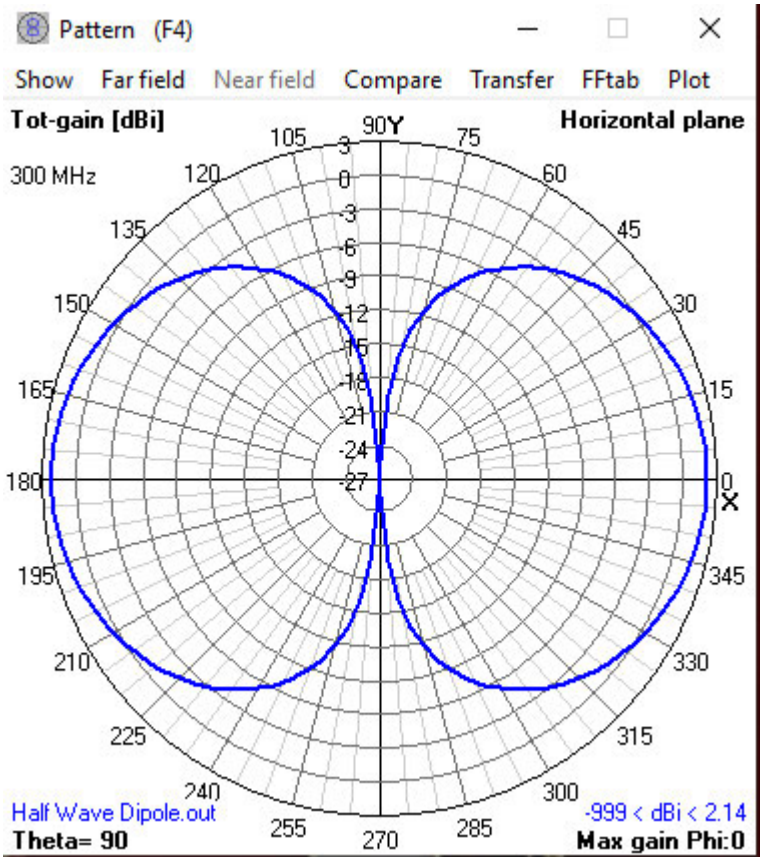
Click on Far Field Pattern and enter the Parameters



Click on Generate

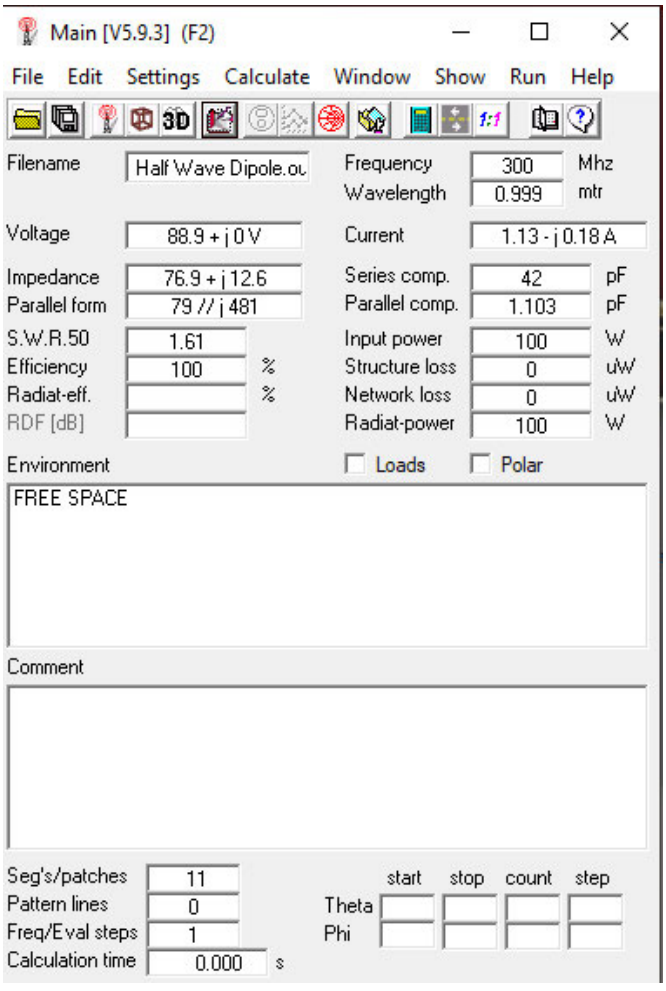


Press Spacebar to change from Vertical to Horizontal Plane

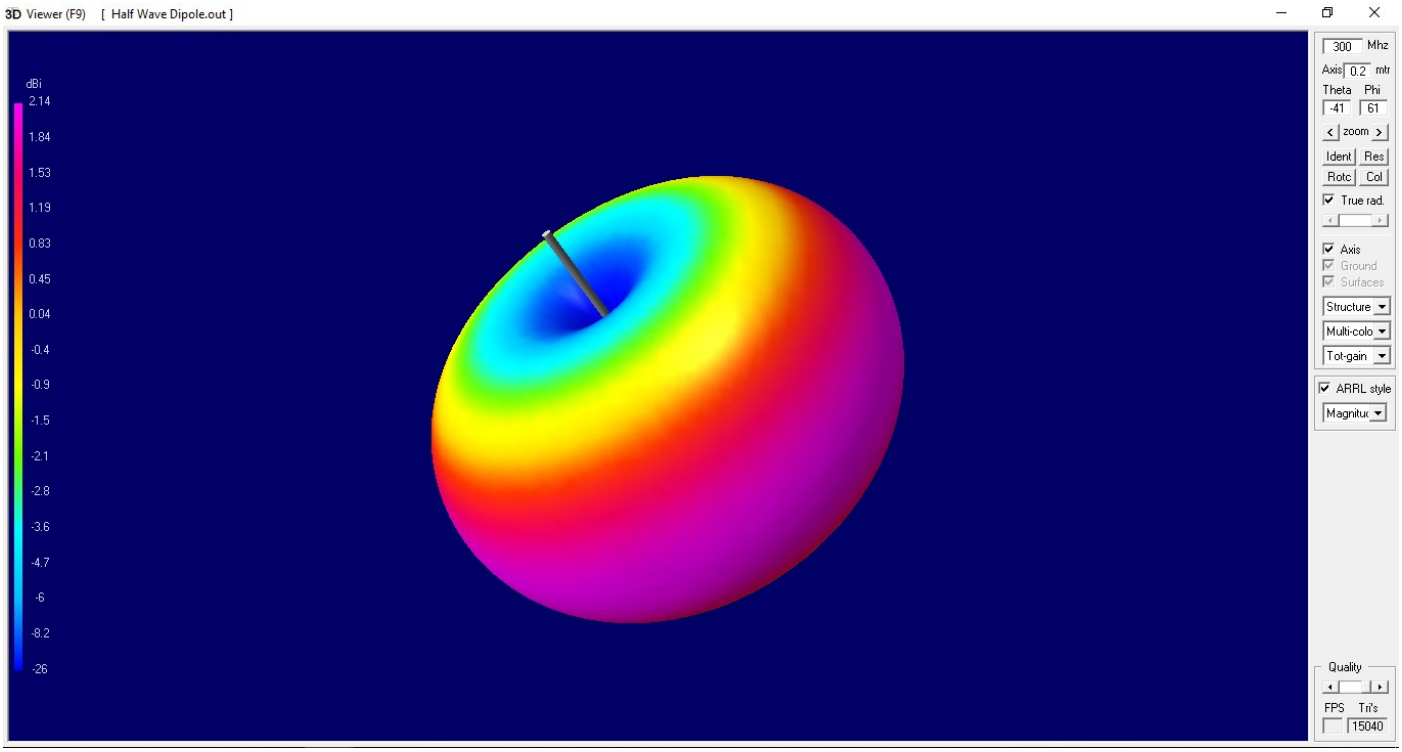


Press Up/Down or Left/Right Arrows to change the Angle

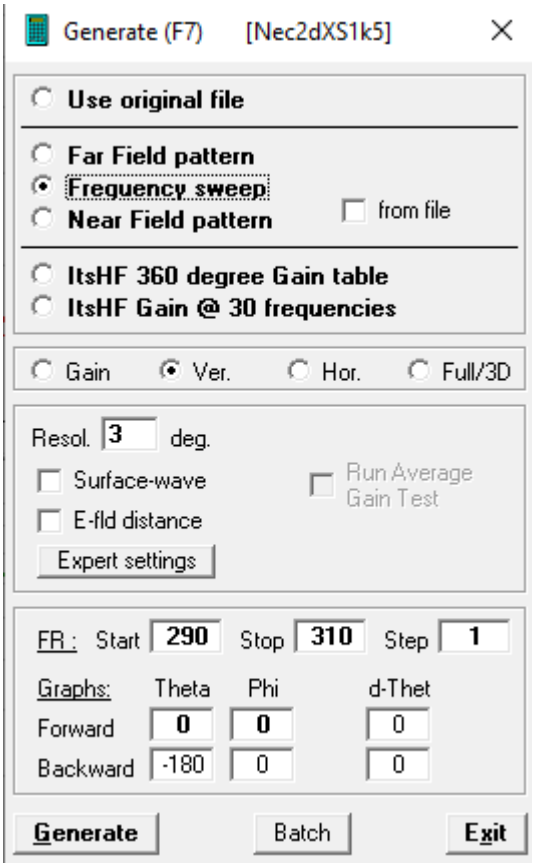
Click 3D on the Main Window



Change the Parameters Accordingly to obtain the following 3D figure

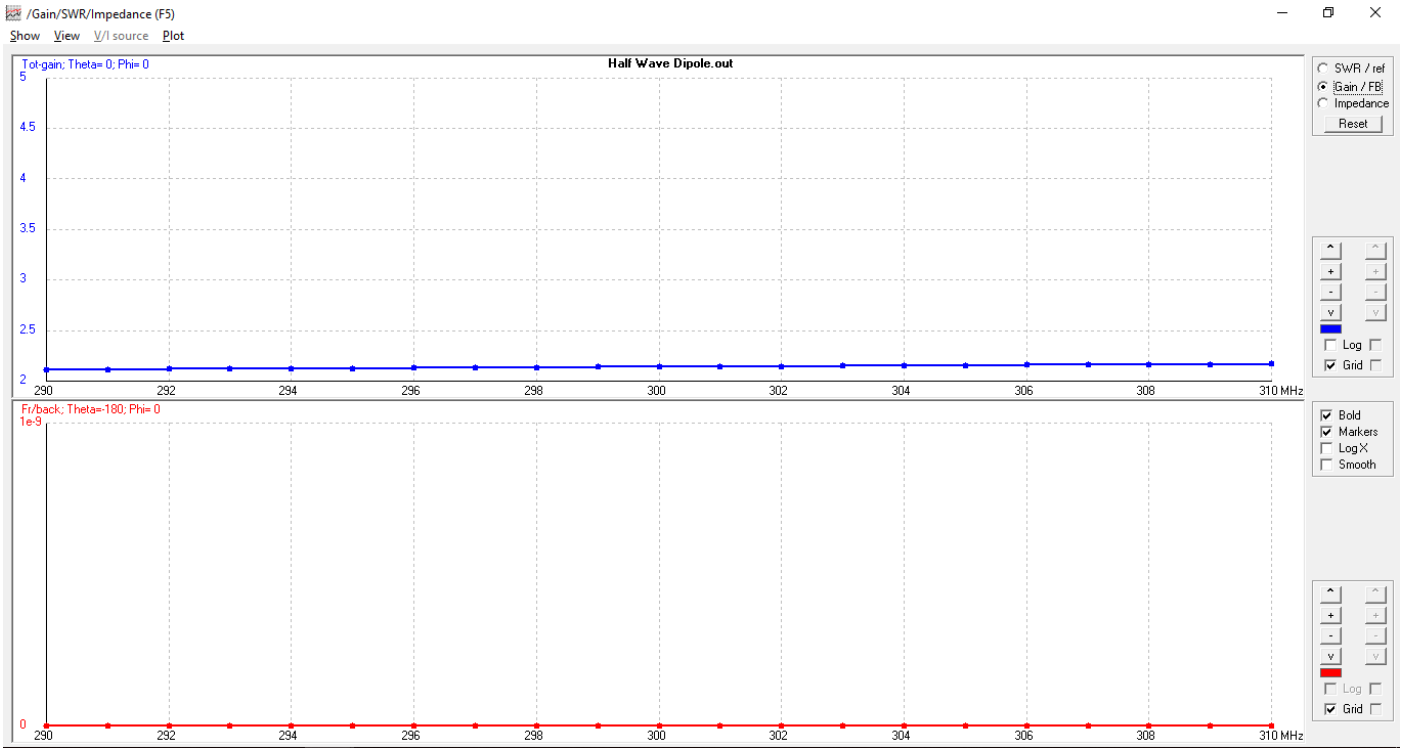


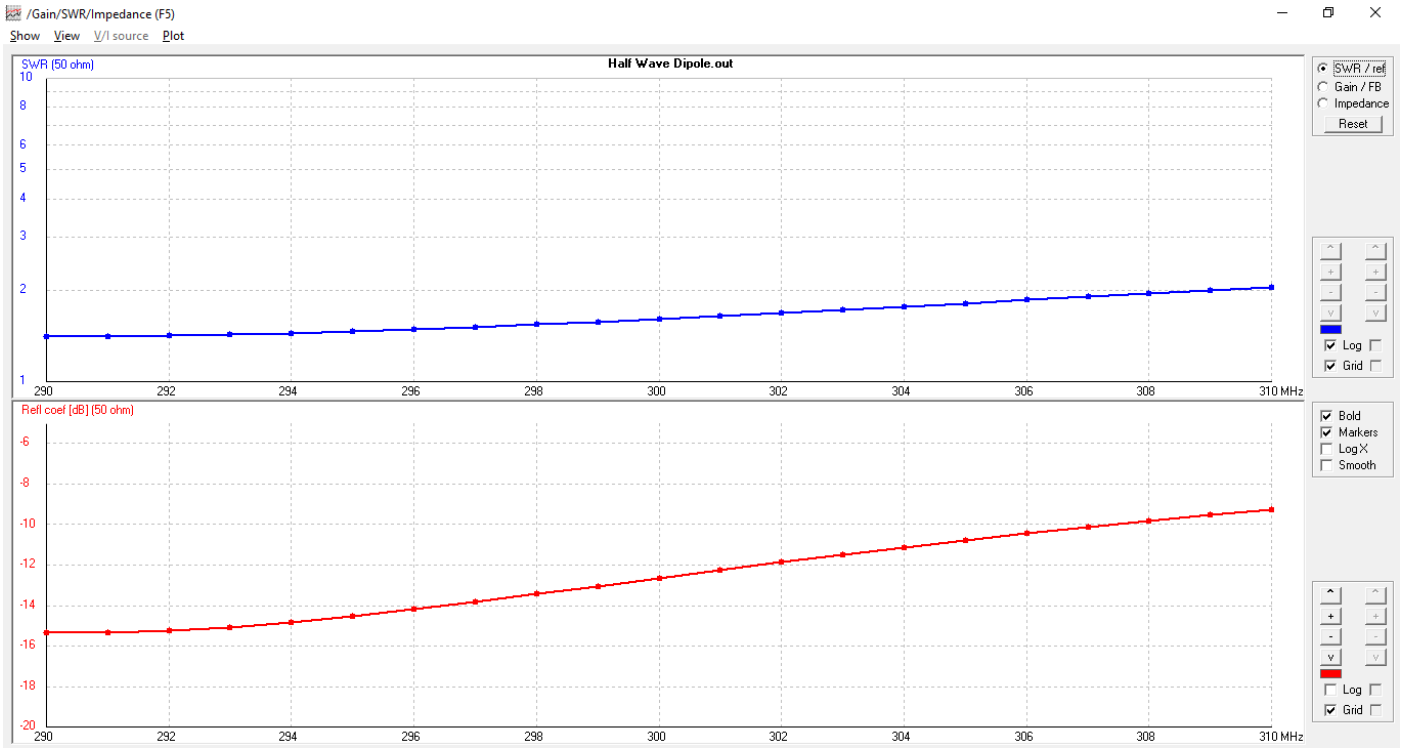
Again Go to Generate and Select Frequency Sweep



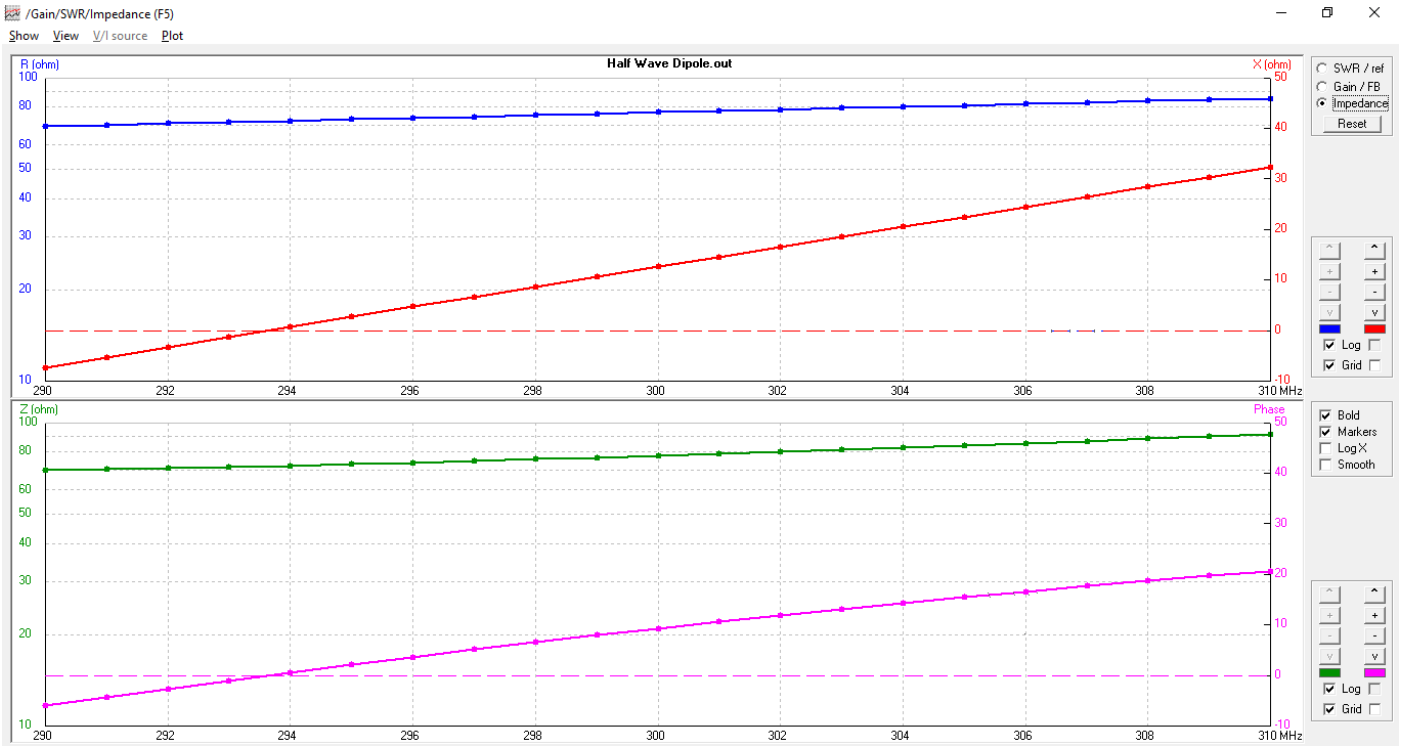
Change the Parameters accordingly

Observe the Graphs

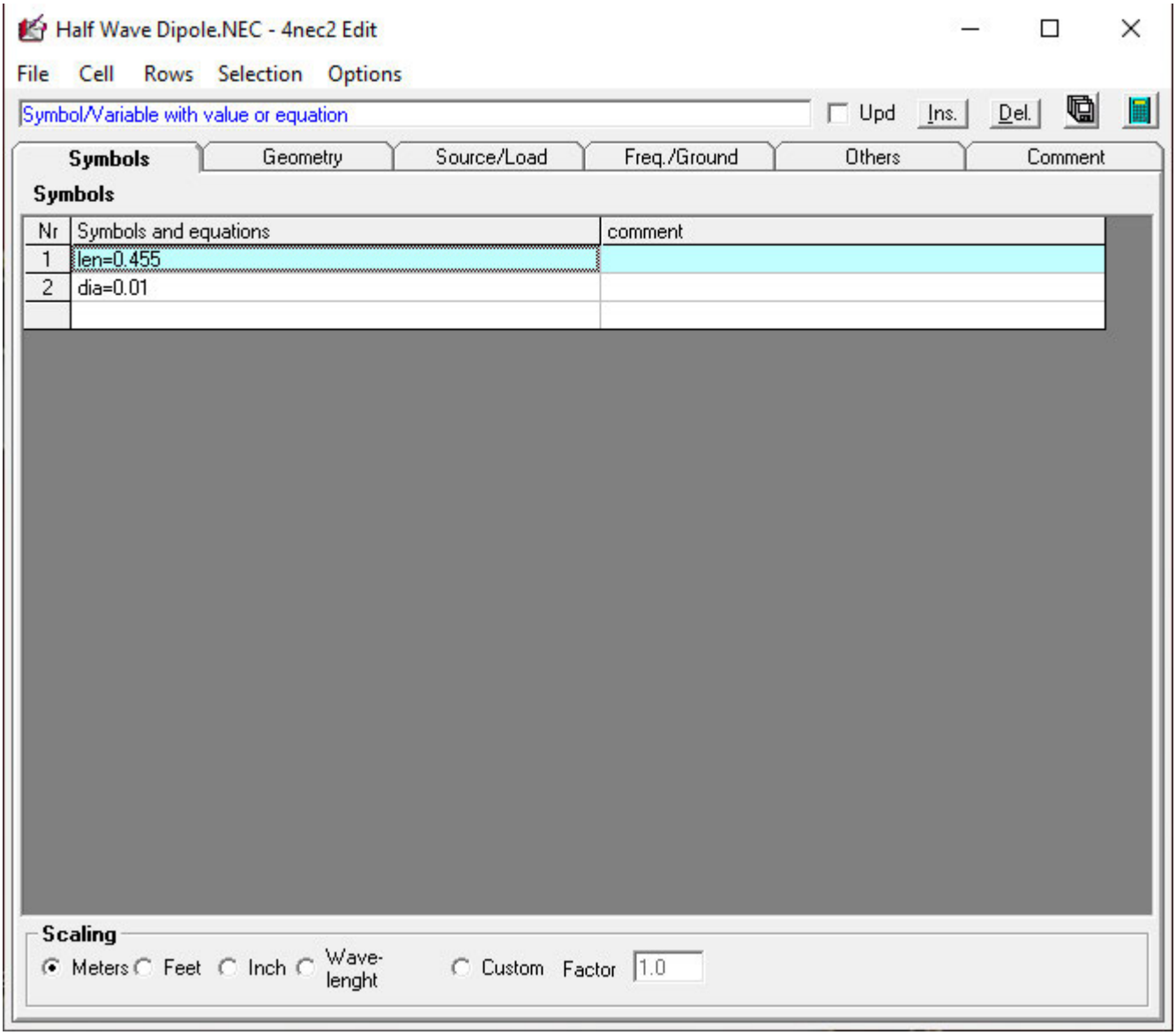


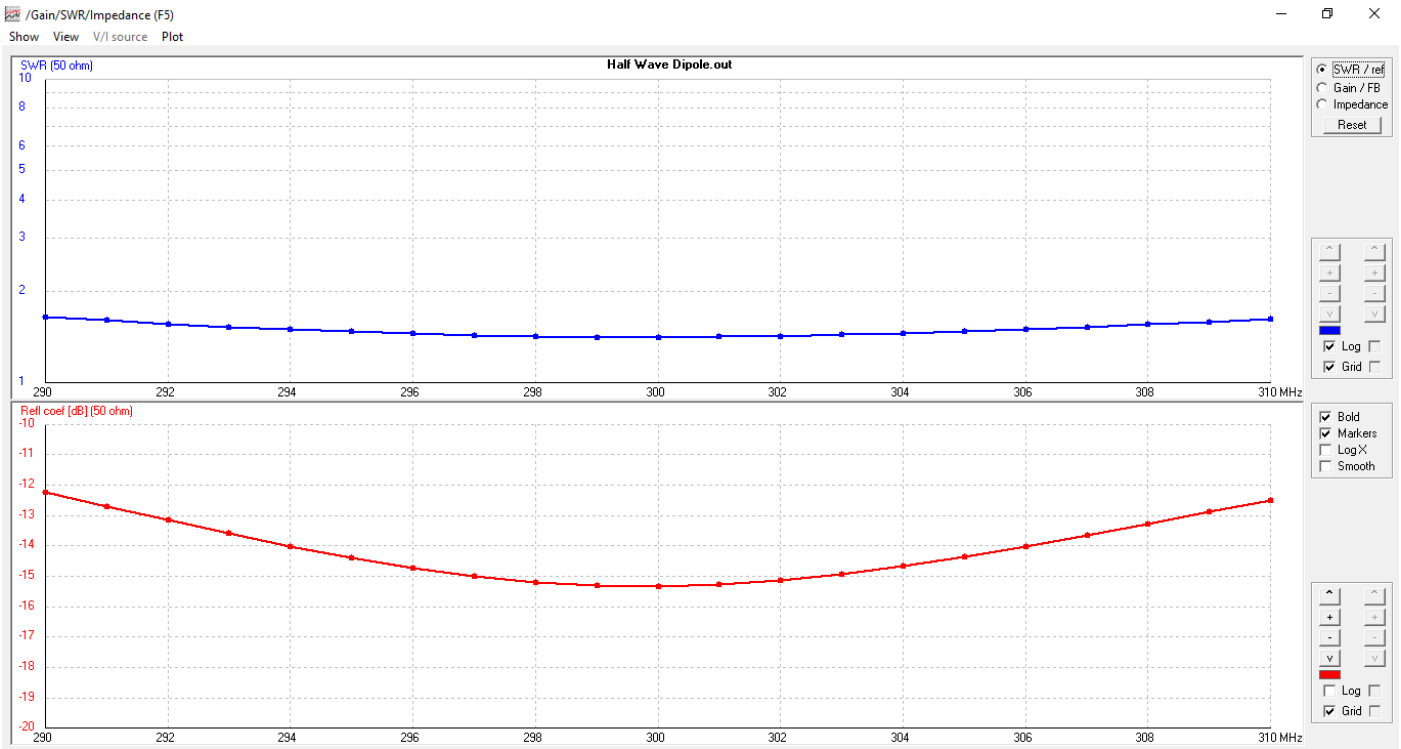


Changing the Length of the Antenna to 0.455



We see the difference in SWR as follows




/Gain/SWR/Impedance (F5)
Show View V/I source Plot
Half Wave Dipole.out
SWR (50 ohm)
10
8
6
5
4
3
2
1
290 292 294 296 298 300 302 304 306 308 310 MHz
Refl coef [dB] (50 ohm)
-10
-11
-12
-13
-14
-15
-16
-17
-18
-19
-20
290 292 294 296 298 300 302 304 306 308 310 MHz
SWR / ref
Gain / FB
Impedance
Reset
Log
Grid
Bold
Markers
Log X
Smooth
Log
Grid