

433 MHz Inverted F Blade Antenna

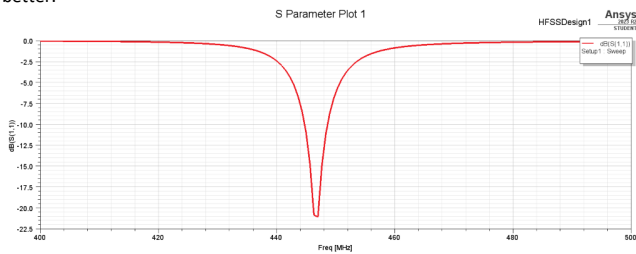
V3 – Based off of thin aerodynamic designs like this. Commonly used on high-speed aircraft and missiles. Trying to make this design work to reduce aero loads and machining difficulty.



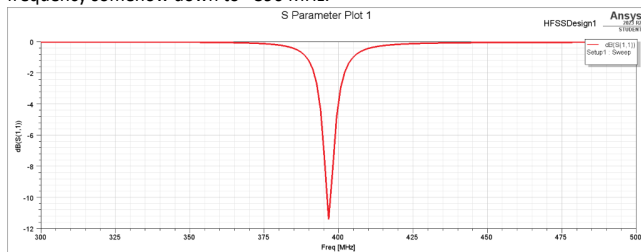
Main Issue – Tweaking the distance between the feed (2) and the vertical short (1) for impedance matching.



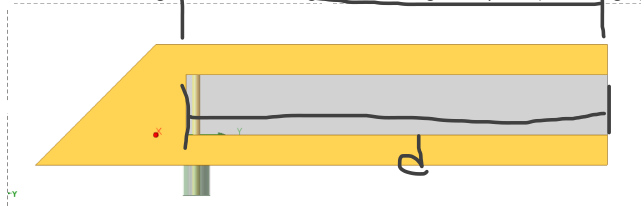
Current Status – Distance of 4mm yields return loss of 21 dB, which isn't bad at all but I want to get it better.



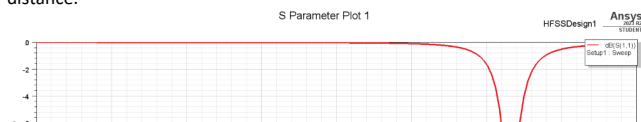
Decreasing the distance to 3.5 results in the entire match getting screwed up, bringing the matching frequency somehow down to ~390 MHz.

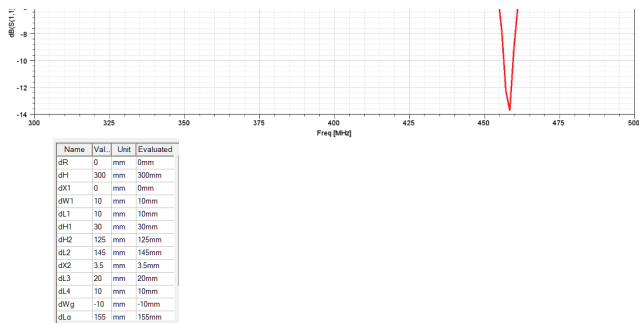


Let's tweak the lengths of the radiating element and ground plane (same length)

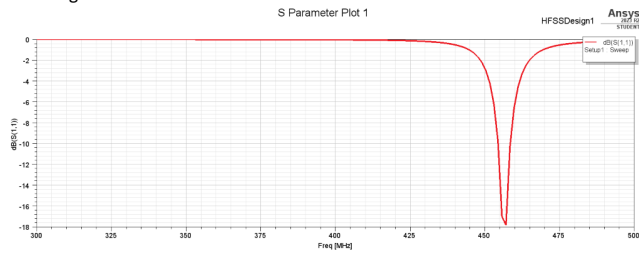


Reducing the length by 5mm to 145mm yields the following. Very weird jump for a 5mm decrease in distance.

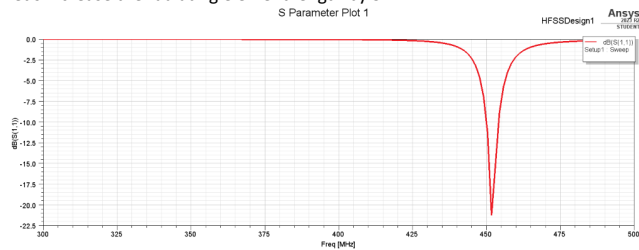




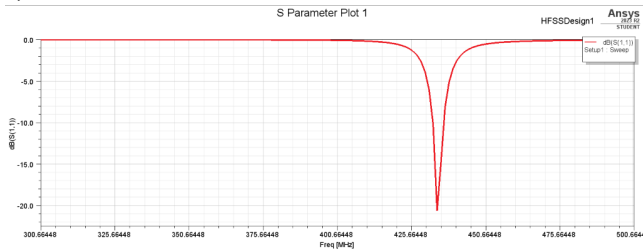
Increasing the distance from the feed to short back up to 4mm with the same radiating length has the following result.



Let's increase the radiating element length by 3mm



By another 7mm



Name	Val	Unit	Evaluated
dR	0	mm	0mm
dH	300	mm	300mm
dx1	0	mm	0mm
dW1	10	mm	10mm
dl1	10	mm	10mm
dh1	30	mm	30mm
dh2	125	mm	125mm
dl2	155	mm	155mm
dx2	4	mm	4mm
dl3	20	mm	20mm
dl4	10	mm	10mm
dWg	-10	mm	-10mm
dl0	165	mm	165mm

And just like that we are practically back to where we started!! I think it might be difficult to get an antenna with this small of a ground plane to match any better than it already is. Right now the SWR match is 1.2 to 1 which isn't bad, but I would really like to make it better. Might have to go with a design with a slightly larger ground plane like V4

