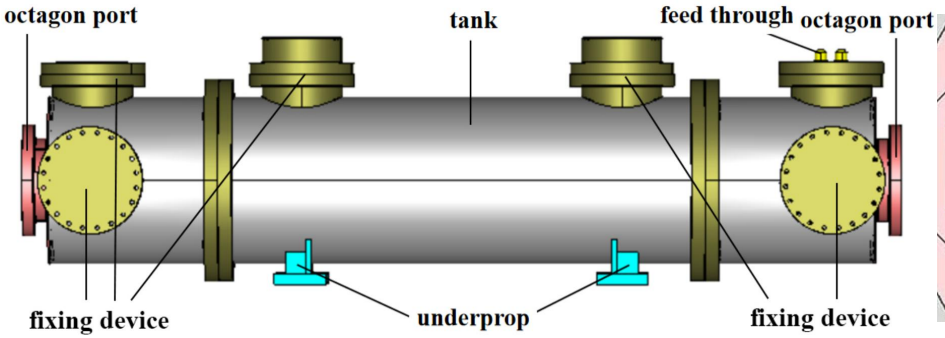
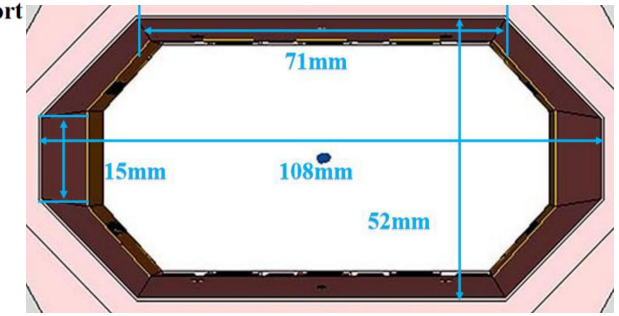
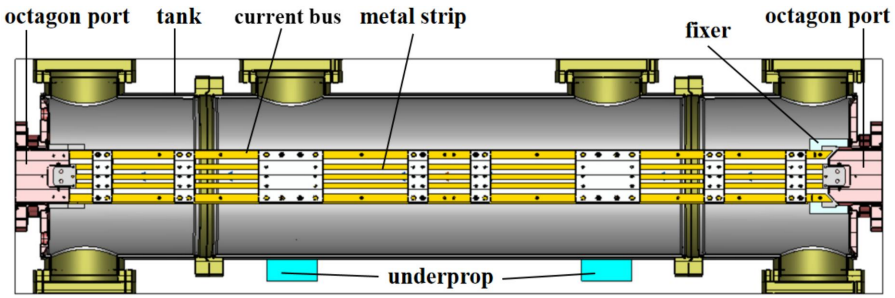
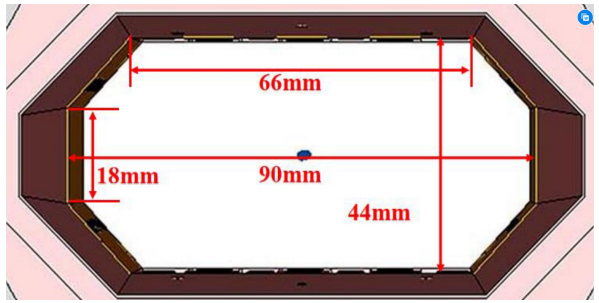
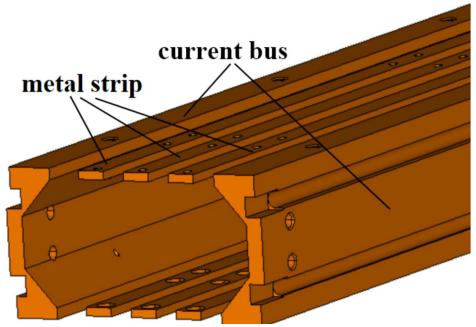
MECHANICAL STRUCTURE OF THE THREE-METAL-STRIP KICKER

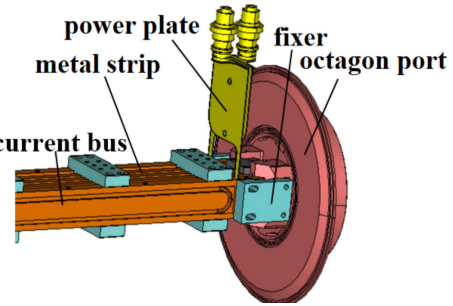


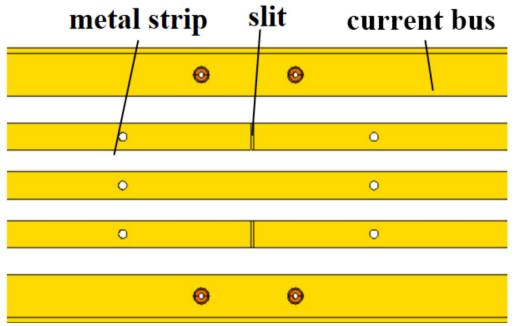






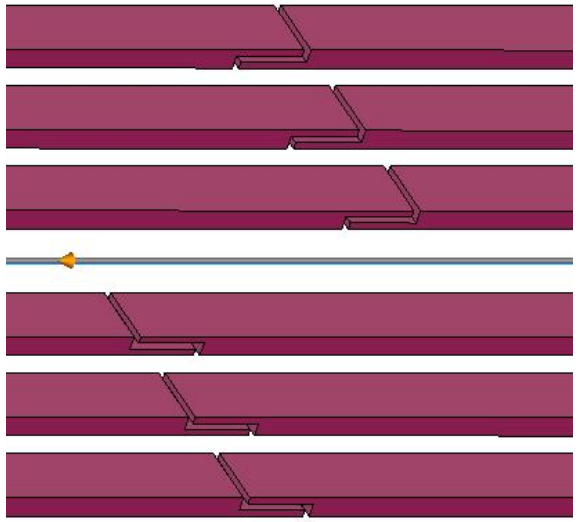


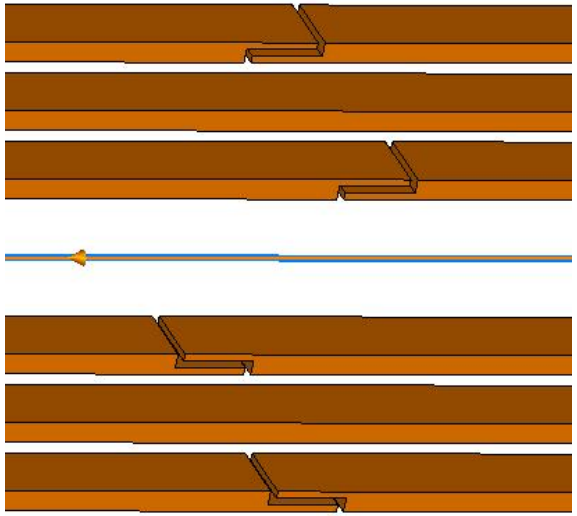


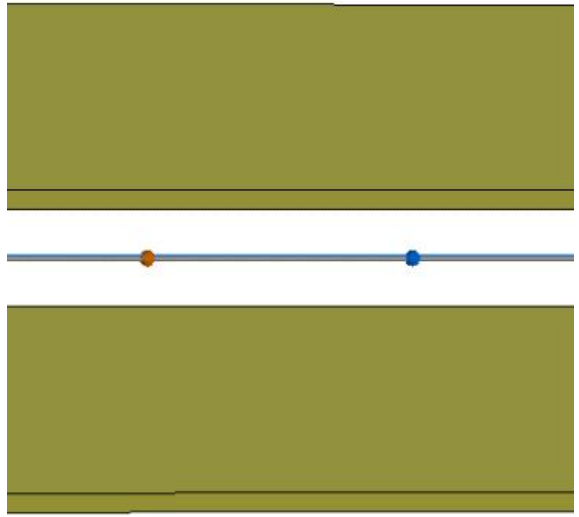


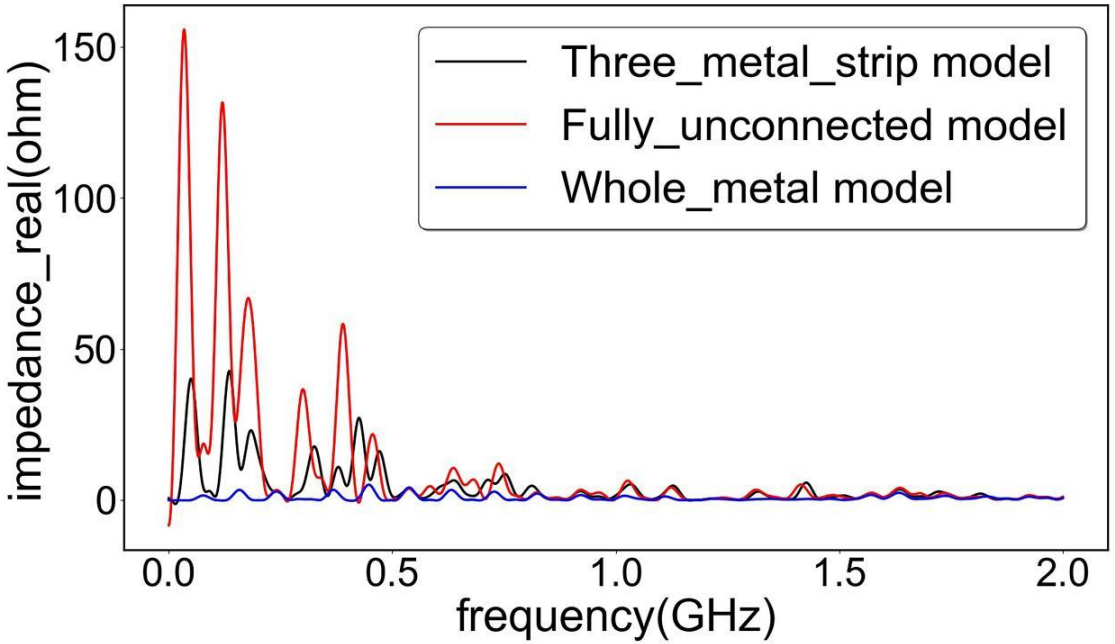
With a longitudinal port-to-port length of 1706mm and transverse tank width of 305mm, the three-metal-strip kicker is quasi-symmetric. The two kicker octagon ports have the same dimensions and the outer diameter (52mm) is slightly larger than the inner diameter (44mm), forming a longitudinal taper. The feedthrough is connected with the current buses through two power plates. Two long current buses lie on the two sides of kicker. Two groups of three metal strips are located above and under the beam axis, working as the image current path. Among the three metal strips, two side strips have a slit of 1mm in the middle which could ensure the maximum passage of the magnetic field. The gap between strips is 8mm wide and the gap between strip and current buses is 10mm wide.

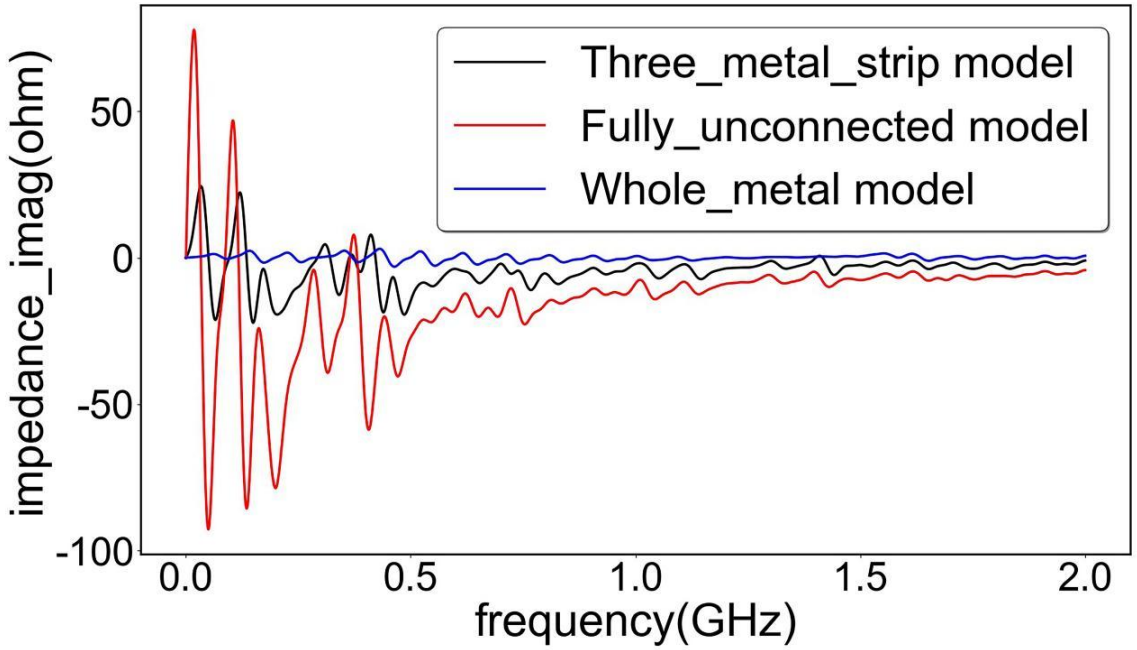
IMPEDANCE SIMULATION OF THREE KICKER MODELS



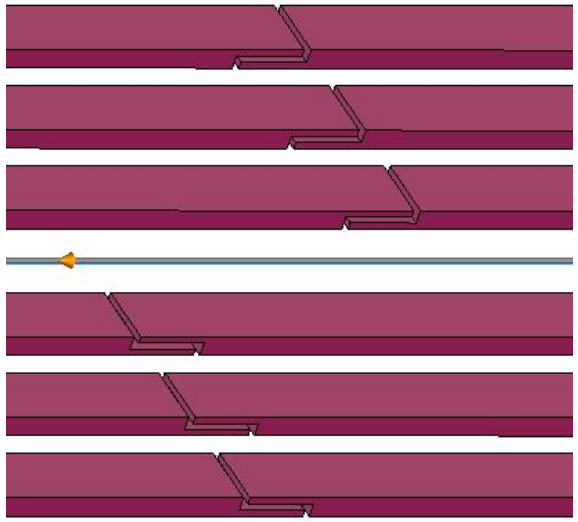


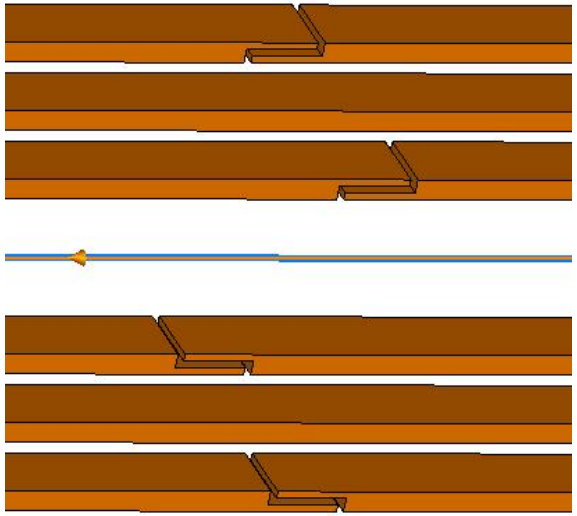


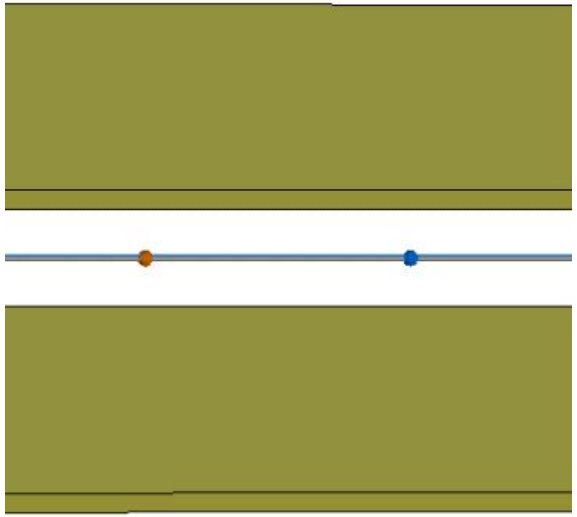


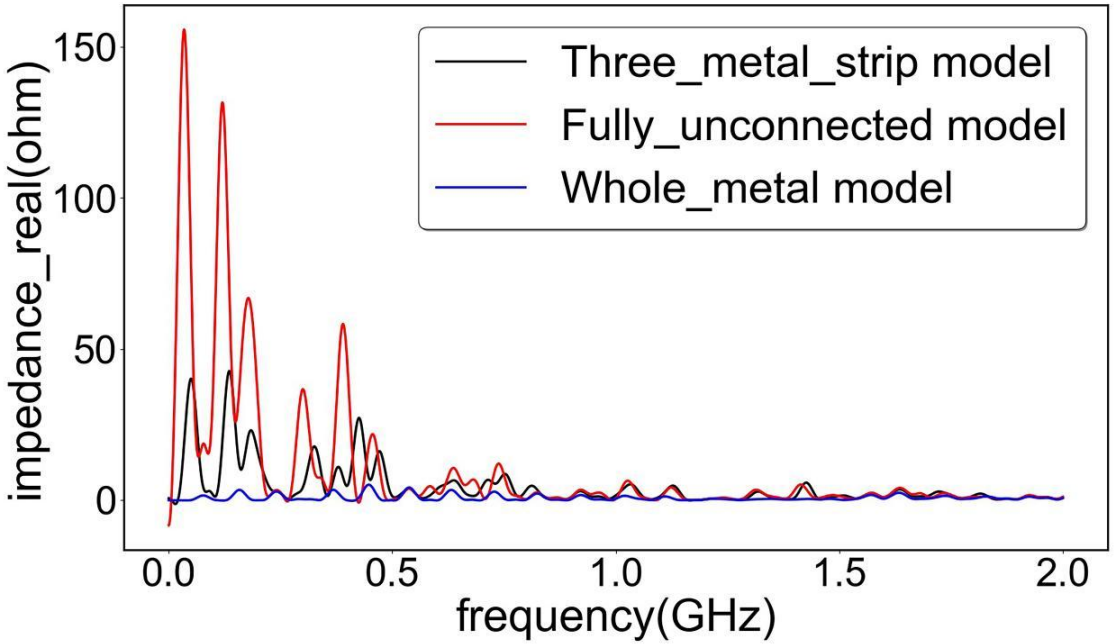


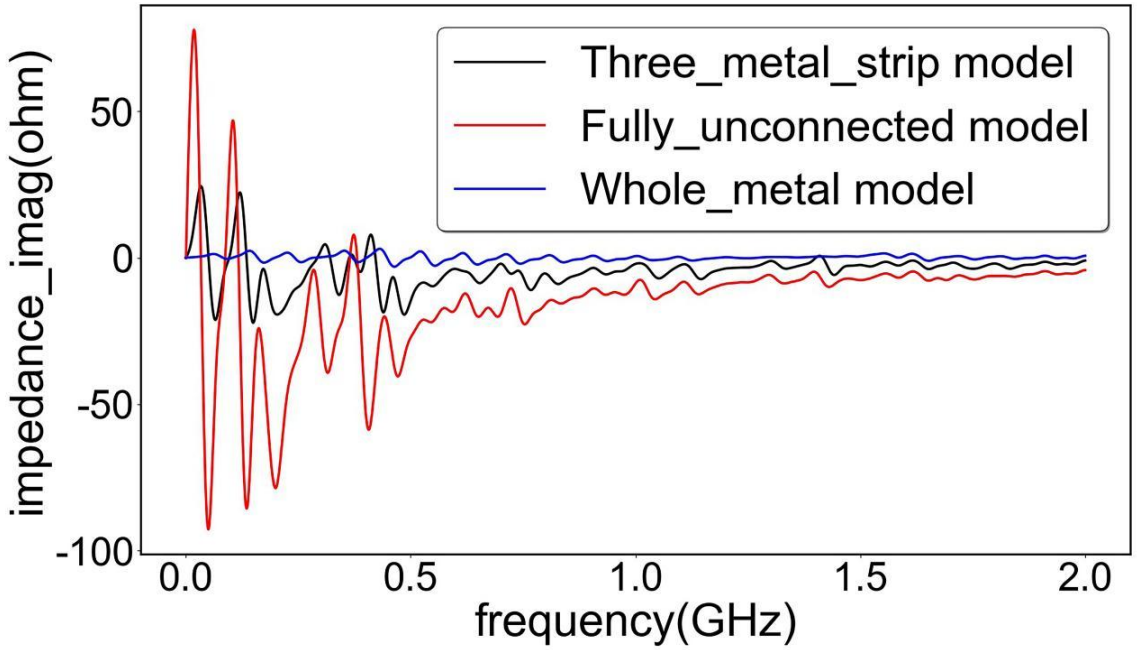
IMPEDANCE BENCH EXPERIMENT



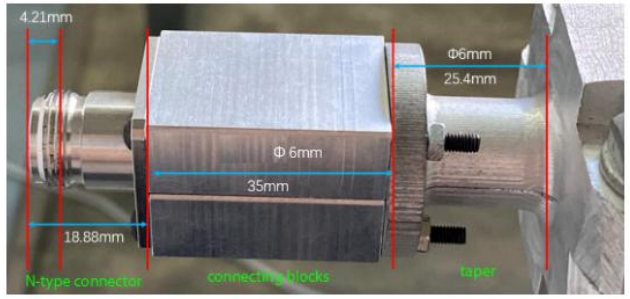


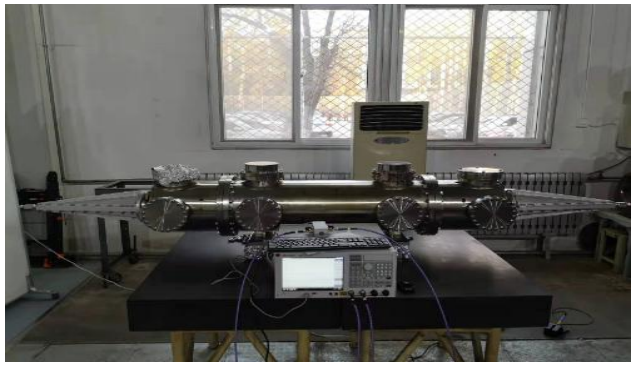


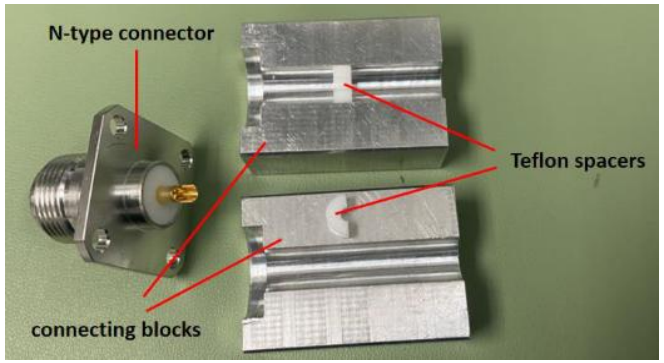




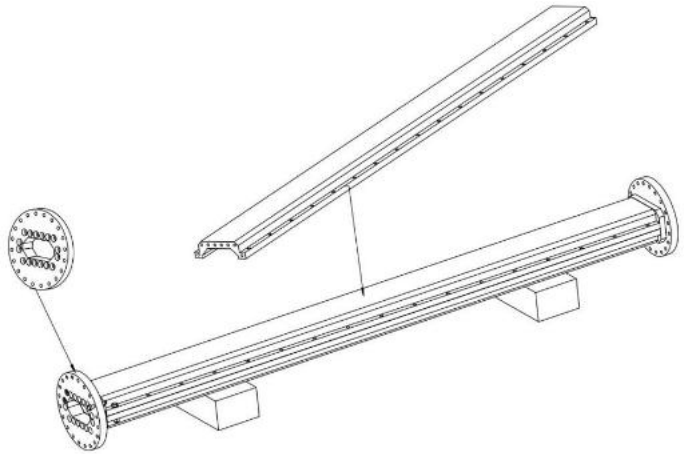
IMPEDANCE BENCH EXPERIMENT



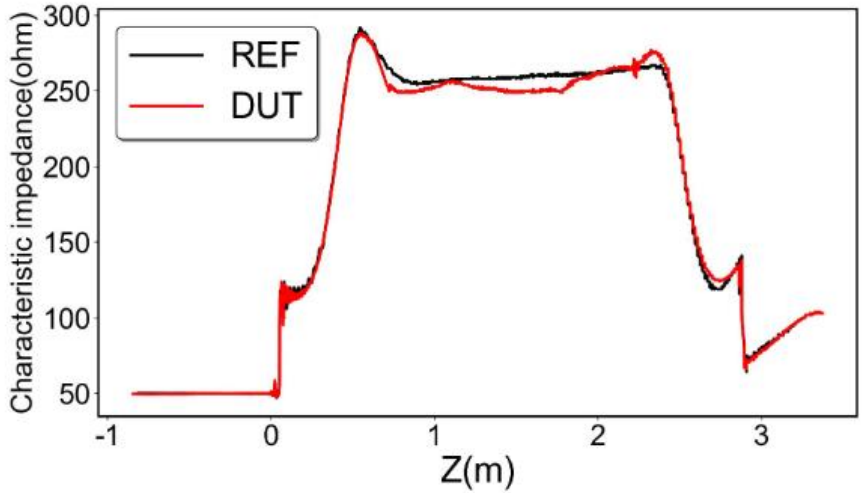




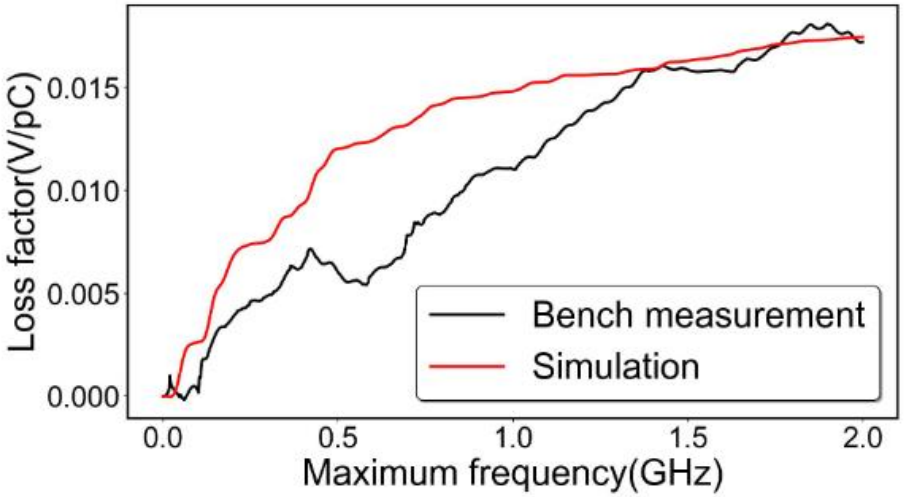
Device Under Test



REF
The REF ports are the same as DUT's, but the DUT has a much more complicated structure.

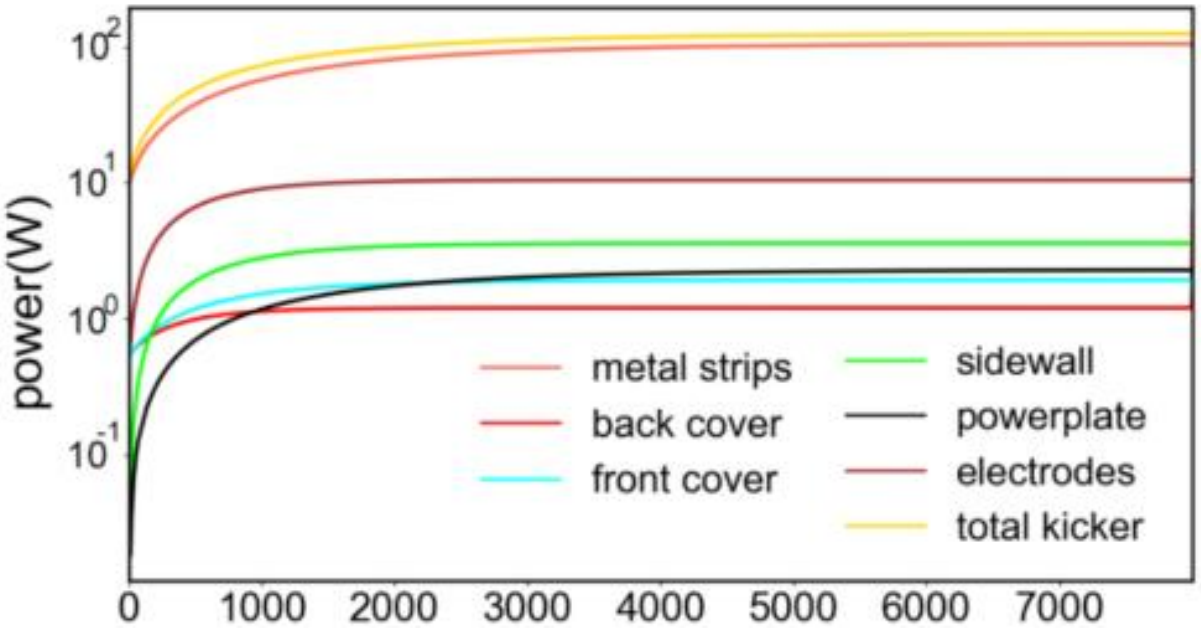


characteristic impedance with VNA-realised TDR



Loss factor within different frequency ranges

HEAT DEPOSITION POWER SIMULATION



PART	LOWER LIMIT(W)	UPPER LIMIT(W)	AVERAGE(W)
electrodes	9.897	10.976	10.51
metal strips	95.29	112.82	105.08
power plates	2.222	2.366	2.29
back end	0.57	13.72	1.21
front end	1.28	13.20	1.93
sidewall	3.582	3.645	3.61
kicker	113.3	131.5	124.63

parasitic loss power of the beam over one turn from measurement

122.50W

parasitic loss power of the beam over one turn from simulation

123.99W

converged heat deposition power average on the kicker from simulation

124.63W