RFD cavity antennae
Thermal evaluation of pickup and HOM antennas

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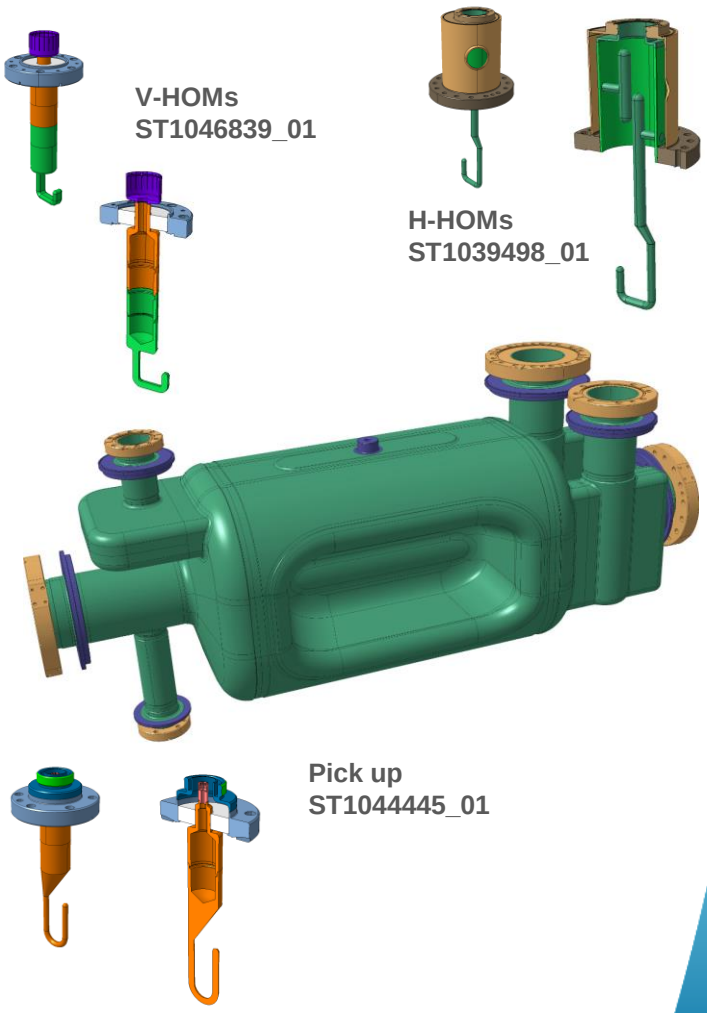
Introduction

- RFD presents a vertical pickup antenna, VHOM and HHOM.
- Last models provided by Teddy – 25 Ohm
- Thermal evaluation:
  - Pickup in copper
  - VHOM in copper body + Nb hook – Effect of moving the Nb boundary
  - HHOM in Nb
- Thermal evaluation accounting for the temperature-dependency of material properties

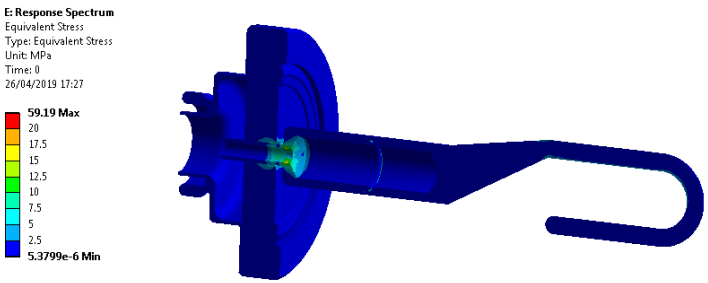


Results

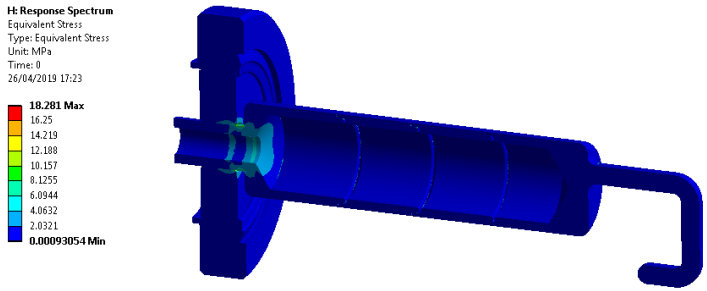
- Shock of 10g, 20 ms as previous analyses
- Random vibration as previous analyses

PU & VHOM

First mode: 240 Hz

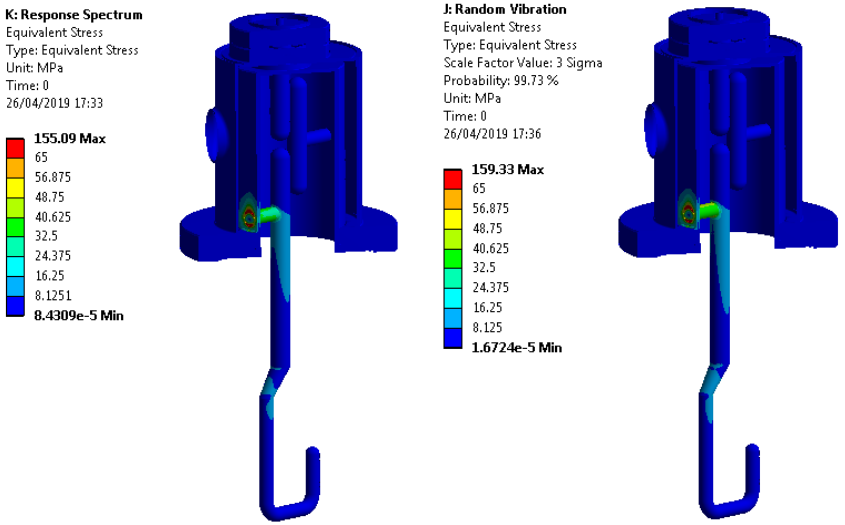


First mode: 460 Hz



- Maximum values in the Cu-Al2O3 border
- Random vibration presents values a factor of 3 smaller

HHOM

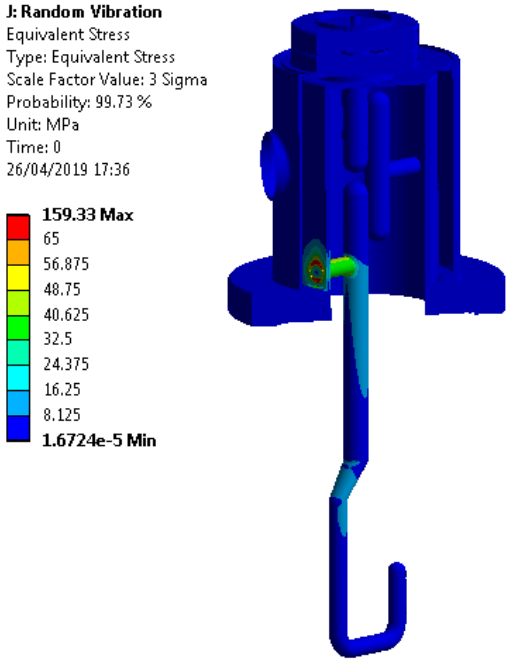


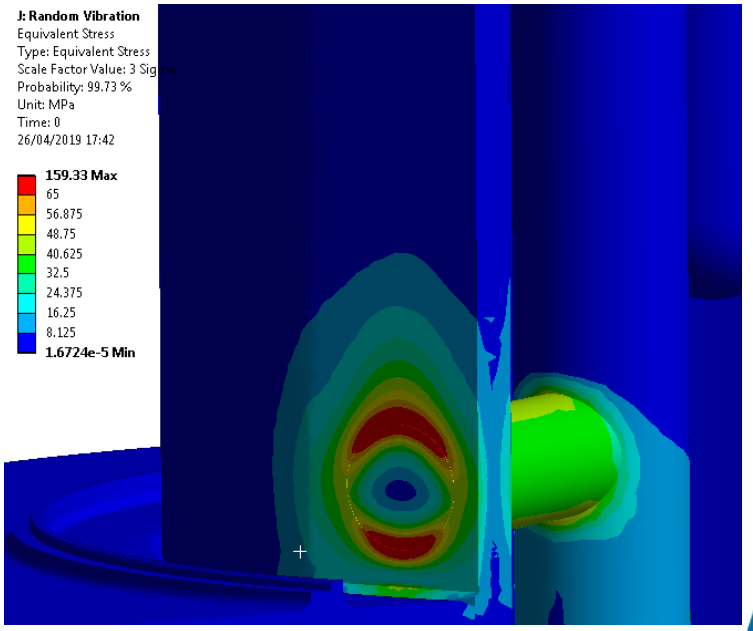
- Large stresses in both the shock and random analyses.
- Contact region of the antenna seems critical

Results - HHOM

- Mesh refinement performed
- No peak effect
- Several modes below 500 Hz

Mode	f [Hz]	Mode	f [Hz]
1	57	6	390
2	69	7	439
3	332	8	476
4	343	9	483
5	375	10	492





Thank you for your attention!