

## MEETING MINUTES

**Location:** Vidyo  
**Date:** 20 Oct. 2020  
**Time:** 11am EDT  
**Indico event:** <https://indico.cern.ch/category/8972/>  
**Attendees:** Silvia, Manuele, Paolo, Suba, Jean, Eric, Jamie, Zenghai.  
**Minute taker:** Silvia  
**Reviewed:** N/A

---

### SCOPE OF THE MEETING

Weekly HL-LHC RFD HOM couplers follow-up meetings.

### NEXT MEETING

27 Oct. 2020

### DISCUSSION POINTS

- First two feedthroughs built last week – not perfect, issues with brazing, currently being repaired. By the end of the week Eric expects to have all components for first cavity. EB welding of antennas will follow.
- Jamie showed 25 Ohm qualification tests plan.
  - Blue is used for 25 Ohms; red is for 50 Ohm.
  - NA + gate signal to measure 25 Ohm part, no transformer used between 50 and 25 Ohm. The NA + gate signal requires calibrating the cable length.
  - Everything inside VTF is 25 Ohm. Transition from 25 Ohm to 50 Ohm is outside VTF, in air.
  - Suba updated test probe diameter to 7 mm. Jamie mentions that making it 7 mm diameter is because it is compatible with current feedthroughs used for other applications. Eric mentions that making circular cross section is ok even if probes are machined instead of formed.
  - Jean raises a concern of how external Q will be measured in VTA if gating involves pulsed mode.
  - CERN will take Suba's design of test box to fabricate their test box, so the project uses the same test box across all the teams involved in the RFD.
  - **ACTION ITEM:** AUP needs to review tolerances of test box and provide feedback to Eric before CERN proceeds with fabrication.

### ACTION ITEMS

	Action	Responsible	Status	Update
	Provide feedback to CERN about tolerances of test box	Suba	Pending (Oct. 20, 2020)	

7	Provide sacrificial feedthroughs for transport evaluation.	Eric	Pending (Oct. 16, 2019)	Eric will provide 2-3 sacrificial feedthroughs by beginning of next year to FNAL. On-going. Currently qualifying thickness of inner tube (Feb. 18, 2020).
8	Check NA configuration to measure directly at 25 Ohm, incl. calibration requirements for 25 Ohm option.	Eric, Jamie	On-going (Oct. 16, 2019)	Email Nov. 12 2019. Jamie will send follow-up email with explanation.
10	Design of room-temperature test box with 2 HOM couplers	Eric	On-going (Oct. 16, 2019)	
11	Add accelerometer in the shock tests.	Eric	Pending (Oct. 16, 2019)	Eric inquired about accelerometer type/brand for shock test.
20	Which g force do the RF ancillaries need to survive in the shock test?	Kurt, Ofelia, Mikael	Pending (Oct. 22, 2019)	Parallel effort at FNAL (structural analysis – prelim shows 5g is ok -- and tests with feedthroughs from CERN)
30	Share tooling drawings with Naeem	Eric	Closed	
31	Send 3D mech design of RF ancillaries to Suba, Naeem, others and upload in EDMS	Eric	Closed	
37	Upload STP of 3D vacuum model in EDMS 2366191 v2. Ensure that parameterization for RFD RF ancillaries is in the same EDMS doc.	Jamie	Closed	Files in DocDB now also in EDMS 2366191 v2 Zenghai provided links to 3D vacuum model STP file, step-by-step procedure for building up vacuum model, and impedance table by email on April 21, 2020.
38	Share with Jean the brazing procedure for feedthroughs with titanium flange	Eric	Closed	
40	Calculate conversion of 10W power leakage from fundamental mode through HOM filters to the unit (dB) which is more useful in warm qualification of HOM filters.	Zenghai	Closed	

41	Confirm brazing materials to Naeem and verify materials list.	Eric	Closed	
42	Assembly procedures should include control step to verify 0.1 mm gap between port flange and feedthrough flange	Eric	Pending (Sep. 1, 2020)	See meeting Sep. 1, 2020.
	Add EDMS No. of HOM drawings to EDMS 2363558 (summary of models and studies reference)	Silvia	Closed	Drawings listed in the ICD.
	Generate summary drawing with RF ancillaries dimensions	Eric	Pending (Apr. 07, 2020)	Not needed anymore.
	Provide markup with corrected numbers	Naeem	Closed	On June 2, 2020, Naeem showed different dimensions for HHOM wall thickness between CERN and AUP drawings.
	Confirm material used for flanges of each RFD RF ancillary	Eric	Closed	Now in the drawings. Check in the drawings.
	Review dimension difference for HHOM wall thickness between CERN and AUP drawings	Eric	Closed	
	Upload heat load breakdown for RF ancillaries and tolerance study to EDMS. Add reference to summary of engineering and multi-physics studies (EDMS 2363558)	Zenghai	Closed, see FDR	
	Upload materials to past meetings in the Indico website: <a href="https://indico.cern.ch/category/8972/">https://indico.cern.ch/category/8972/</a>	Zenghai	Closed (May 01, 2020)	

	Send LARP test box model to Eric	Suba	Closed (Apr. 21, 2020)	<a href="https://indico.cern.ch/event/891360/">https://indico.cern.ch/event/891360/</a>
	Send EDMS Doc. No. to Eric with summary of engineering studies for the RFD crab cavity	Silvia	Closed (Apr. 21, 2020)	<a href="https://edms.cern.ch/document/2363558/0.2">https://edms.cern.ch/document/2363558/0.2</a>
	Share link to trim tuning procedure for RFD.	Alex	Closed (Oct. 23, 2019)	Email Oct. 23, 2019
	Check RFD RF ancillaries drawings	Zenghai/Suba /Paolo/Naee m	Closed (Nov. 26, 2019)	Propagating new design modifications from Zenghai
	Provide thermal simulations for VHOM and temperature distribution around the flange connection.	Eric, Ofelia	Closed (Jan. 28, 2020)	Uploaded in Indico 7 Jan. 2020: <a href="https://indico.cern.ch/event/891345/">https://indico.cern.ch/event/891345/</a>
	Ask accelerator model number	Leonardo	Closed (Oct. 22, 2019)	Email Oct. 22, 2019
	Check calculations for transport of HOM couplers.	Eric, Ofelia	Closed (Nov. 12, 2019)	Plastic deformation from transport of RFD HHOM coupler is negligible.
	Confirm that the HHOM helium jacket gets sufficient cooling through single inlet (in the past there was inlet and outlet for active cooling): LHCACFH0169	Eric, Ofelia	Closed (Nov. 26, 2019)	Discussion during meeting at CERN (week of Nov. 20).
	Add guiding pin to flange in LHCACFH0164	Eric	Closed (Nov. 12 2019)	No good for cleaning room
	Create Indico event for these meetings	Eric	Closed (18 Feb 2020)	<a href="https://indico.cern.ch/category/8972/">https://indico.cern.ch/category/8972/</a>
	Inform Suba about drawings that were corrected on Feb. 3, 2020.	Eric	Closed (email, Feb. 20, 2020)	<a href="https://edms.cern.ch/ui/#!/master/navigator/document?D:100502025:100502025:subDocs">https://edms.cern.ch/ui/#!/master/navigator/document?D:100502025:100502025:subDocs</a>
	Share FDR agenda with CERN	Leonardo	Closed (Mar. 31, 2020)	<a href="https://indico.fnal.gov/event/23353/">https://indico.fnal.gov/event/23353/</a> (link for the dry-run agenda, which mirrors the actual agenda for the FDR – note that the dates are for the dry-run)