

1:1 Bhagath/Sergio

Bhagath, Sergio
2022

restricted



Week 06

Previous week actions

- › Familiarized with background of chip & wire design, TX baseline project, modeling approach.
- › Finalized the setup of ADS work environment, libraries & testbenches.
- › Doherty study.
- › Started chip & wire design of 4.8 mm GaN die.
- › Discussion about the IFX Nijmegen RF lab.

Highs & Lows

- › **Highs**
 - › Got access to the final library "rfmcmt". Will now be able to look into details, simulate the designs.
 - › Familiar with the background of the Tx baseline project.
 - › Able to load-pull the GaN die and see impedances and expected performance.
- › **Lows**

Plan for this week

- › Prepare an overview for LP system equipment, availability, functionality and pricing estimation.
- › Continue Doherty study using the chip and wire design and derive a Doherty, simulation, design, tuning, testing workflow.
- › Continue the chip & wire design of 4.8mm die for Baseline project.

Week 07

Previous week actions

- › Prepare an overview for LP system equipment, availability, functionality and pricing estimation.
- › Continue the chip & wire design of 4.8mm die for Baseline project.
- › Continue Doherty study using the chip and wire design and derive a Doherty, simulation, design, tuning, testing workflow.

Highs & Lows

- › **Lows**
 - › Not so clear picture to get and overview regarding the lab needs (Power level, Frequency)
- › **Highs**
 - › Able to have good conclusive discussion with lab team.
 - › Knowing the core team of lab equipment H/W, S/W experts within IFX Munich & Villach.

Plan for this week

- › Chip and wire design of 4.8 mm die
- › Finalize equipment for at least 1 verification bench.
- › Follow up on IFX lab setup: Measurement method, H/w & S/W harmonization.
- › Maury, IVCAD LP setup follow up.

Week 08

Previous week actions

- › Chip and wire design of 4.8 mm die
- › Finalize equipment for at least 1 verification bench.
- › Follow up on IFX lab setup: Measurement method, H/w & S/W harmonization.
- › Maury, IVCAD LP setup follow up.

Highs & Lows

- › Lows
- › No progress on LP equipment
- › Highs

Plan for this week

- › Meet and discuss with team in Munich
- › Lab tour Munich and Villach
- › Follow up on IFX lab setup: Measurement method, H/w & S/W harmonization.
- › Discussion on chip & wire design 4.8 mm with Theepak.

Week 09

Previous week actions

- › Chip and wire design of 4.8 mm die
- › Finalize equipment for at least 1 verification bench.
- › Follow up on IFX lab setup: Measurement method, H/w & S/W harmonization.
- › Maury, IVCAD LP setup follow up.

Highs & Lows

- › Lows
- › Highs
- › Get to know with team in MUC and VIH
- › Lab tour and VB finalization

Plan for this week

- › Prepare overview based on MUC and VIH lab tour
- › Start and continue chip and wire design
- › Participate /continue discussion on H/W harmonization across sites

Week 10

Previous week actions

- › Prepare overview based on MUC and VIH lab tour
- › Start and continue chip and wire design
- › Participate /continue discussion on H/W harmonization across sites

Highs & Lows

- › Lows
- › Input impedance of bigger dies (10.1 mm) is very low ($0.1 + j 2.2$)
- › Highs

Plan for this week

- › Design of 10.1 mm die chip & wire
- › Discussion with Keysight, R&S for lab equipment
- › Participate /continue discussion on H/W harmonization across sites
- › Attend Tx-Modules design workshop

Week 11

Previous week actions

- › Design of 10.1 mm die chip & wire
- › Discussion with Keysight, R&S for lab equipment
- › Participate /continue discussion on H/W harmonization across sites
- › Attend Tx-Modules design workshop

Highs & Lows

- › **Remark**
- › Change of design from 10.1 mm to 12 mm
- › Design on Laminate starting from build #3

Plan for this week

- › Design of 12 mm die chip & wire
- › Finalize VB bench quotation Keysight, R & S
- › Update lab file with quotation for other lab equipment (rework station, Amplifiers). Handover the file ?
- › Participate /continue discussion on H/W harmonization across sites and update lab

Week 12

Previous week actions

- › Design of 12 mm die chip & wire
- › Finalize VB bench quotation Keysight, R &S
- › Update lab file with quotation for other lab equipment (rework station, Amplifiers). Handover the file ?
- › Participate /continue discussion on H/W harmonization across sites and update lab

Highs & Lows

- › **Highlights**
- › Quotation finalized for key lab equipment. Can proceed with procurement
- › **Lowlights**
- › Design going at slow pace initially, will catch up speed this week.

Plan for this week

- › Complete design of 12mm chip & wire
- › Handover lab equipment file ?
- › Participate /continue discussion on H/W harmonization across sites and update lab
- › Prepare/organize LP measurements of minipack devices at Anteverta

Week 14

Previous week actions

- › Complete design of 12mm chip & wire (DOE6)
- › Handover lab equipment file ?
- › Participate /continue discussion on H/W harmonization across sites and update lab
- › Prepare/organize LP measurements of minipack devices at Anteverta

Highs & Lows

- › **Highlights**
 - › Visited Anteverta to discuss LP measurements.
 - › Design almost done (Moscap: 5.5 pF & 10 pF):
 - › Gain around ≥ 15 dB, Eff. $\geq 70\%$, Enough power @ P1 dB (min. 46.8 dBm)
- › **Lowlights**
 - › DOE6
 - › $Zin \{Re\} = 0,5 \text{ Ohm}$

Plan for this week

- › Prepare design review 12mm Chip and wire design (DOE6)
- › Delivery of DOE6 on Friday 8th April
- › Participate /continue discussion on H/W harmonization across sites and update lab
- › Prepare/organize LP measurements of minipack devices at Anteverta
 - › Discussion on measurement requirements and finalize request form and send to Anteverta.

Week 16

Previous week actions

- › Prepare design review 12mm Chip and wire design (DOE6)
- › Delivery of DOE6 on Friday 8th April
- › Participate /continue discussion on H/W harmonization across sites and update lab
- › Prepare/organize LP measurements of minipack devices at Anteverta
 - › Discussion on measurement requirements and finalize request form and send to Anteverta.

Highs & Lows

- › **Highlights**
- › Build #3 DOE6 design is ready.
- › **Lowlights**
- › DOE6
 - › $Z_{in} \{Re\} = 0,5 \text{ Ohm}$

Plan for this week

- › Update documentation for DOE6 design
- › Alignment on next build
- › Lab harmonization and prepare CV updates/overview.
- › Follow up and arrangements for LP at Anteverta.

Week 18

Previous week actions

- › Update documentation for DOE6 design..
- › Alignment on next build.
- › Lab harmonization and prepare CV updates/overview.
- › Follow up and arrangements for LP at Anteverta.
- › Alignment on LP data readout & driver design.
- › MUC business trip

Highs & Lows

- › **Highlights**
- › First LP measurements at Anteverta finished. Alignment FOCUS vs Anteverta is planned.
 - › DOE6 is ready to go for assembly.
 - › Anteverta viewer is available for 30 days. FOCUS viewer is also available and doesn't need license it seems
- › **Lowlights**
- › Not starting with a strategy with the LP measurements.
 - › LP only 2 samples, DC-IV could not be completed due to oscillations.
 - › Partial information sharing regarding test fixture, already performed LP measurements, oscillations.

Plan for this week

- › Design of DOE7 2.4mm die.
- › LP data readout & data display template.
- › Finalize LP measurements with Anteverta & Report. Come up with LP measurement flow.

Week 20

Previous week actions

- › Design of DOE7 2.4mm die.
- › LP data readout & data display template.
- › Finalize LP measurements with Anteverta & Report. Come up with LP measurement flow.

Highs & Lows

- › **Highlights**
 - › Measurements with SMA as reference plane are performed. Align with measurements from Villach (not yet the same sample measured)
 - › DOE7 2.4 mm design, review & drawings finalized and checked in
- › **Lowlights**
 - › We will for now use Pin1 as Gate for Tx baseline pjt. Later we have to change to Pin1 as Drain.

Plan for this week

- › Design of DOE9 11.52mm die.
- › LP data readout & data display template.
- › Finalize LP measurements with Anteverta

Week 22

Previous week actions

- › Design of DOE9 11.52mm die.
- › LP data readout & data display template.
- › Finalize LP measurements with Anteverta (communication with Anteverta and Villach on measurement method)
- › PO review and Support Lab equipment ordering

Highs & Lows

- › Highlights
- › The LP measurement method and optimization process are now available for both FOCUS and Anteverta systems
- › Lowlights

Plan for this week

- › Design of DOE11 3,84mm die.
- › LP data readout & data display template.
- › CV measurement overview and tracking
- › ERO training
- › LDMOS measurement @ Anteverta



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