Lunch meeting

24.03.2022

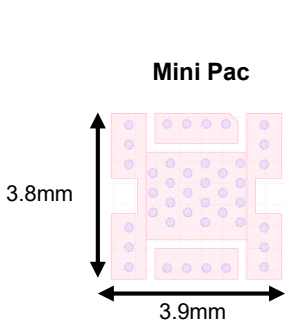
Agenda

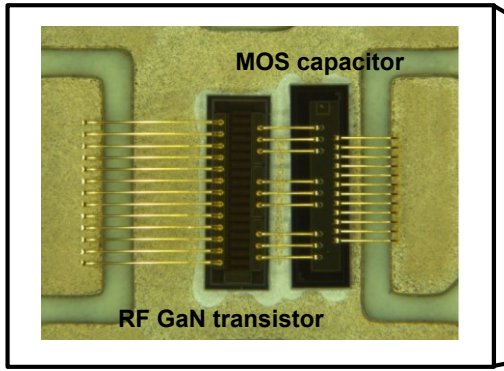
- Special topics
- Individual weekly

Andrea’s weekly

	Done last week	Planned coming week
PAM2.0+	• Back-up Mohamed • Pre-driver execution	• Back-up Mohamed • Pre-driver execution
Tx baseline	• Preparation steering review • Execution of Mini Pac task • Alignment with stakholder on expectations and strategy • Structuring the project	• F2F with stakhlder in MUC • Execution of Mini Pac tasks
Other	Input WBSO	Follow-up WBSO

Mini Pac DoEs – Empirical approach for **building block design**





DoE matrix

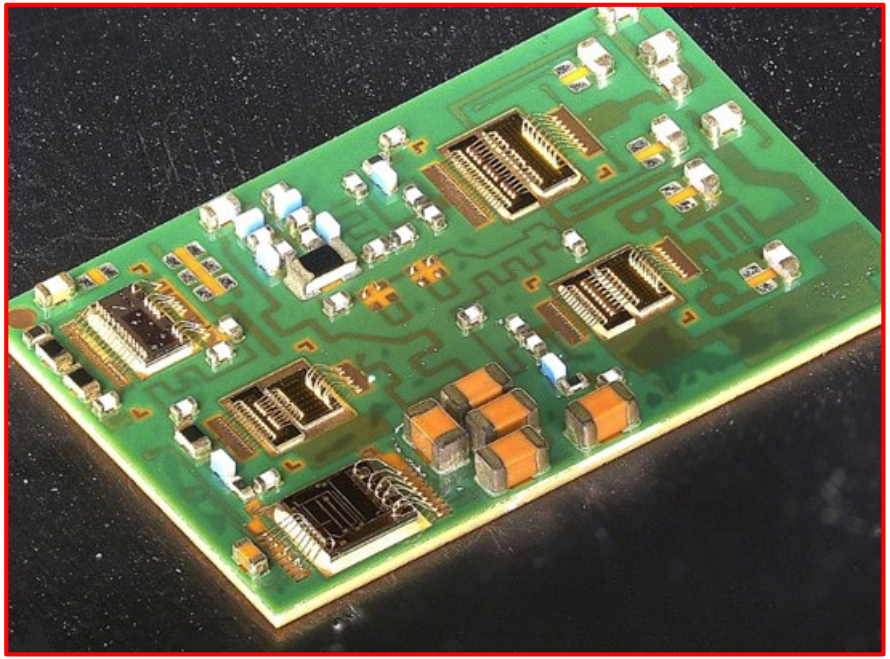
		MOS Capacitor	N9500B_V6	N9500B_V6	N9500B_V5	N9500B_V5	-	N9501B_V1	N9501B_V1	N9501B_V4	N9501B_V4	-	⋮	⋮
			•	•	•	•	•							
	P6							•	•	•	•	•		
(30x160µm)	P3												⋮	⋮
5.12 (16x320µm)	P14													
10.1 (42x240µm)	P76													
12 (30x400µm)	P53													
11.52 (36x320µm)	P39													
10.24 (32x320µm)	P35													
2.4 (6x400µm)	T9507B_2													
1.92 (8x240µm)	2P4													
3.84 (12x320µm)	P13													
3.84 (16x240µm)	P10													
6.40 (20x320µm)	P15													
4.8 (12x400µm)	P55													

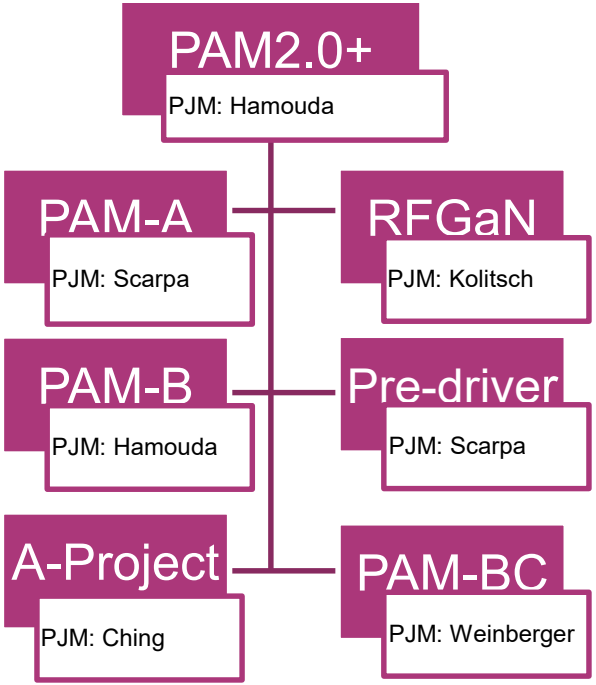
› Goals of the semi-empirical approach:
- Down-selection of best possible RF GaN devices for module design
- Collection of data to assess model accuracy and optimize it

› **The required performance needs to be measured at this level to maximize the chances to be obtained at the Module level**

back

PAM2.0+ module





Part of your life. Part of tomorrow.

Agenda

- TX baseline – Chip & Wire design
- RF Lab Nijmegen
- Guide to new comers

Bhagath’s weekly

	Done last week	Planned coming week
Tx baseline	• Chip & wire design using 12mm die	• Delivery by Monday 12mm die chip & wire design
Other	• RF lab overiew, quotation	• LP measurements Antevrta planning • Quotation

Power calculation: Asymmetric Doherty

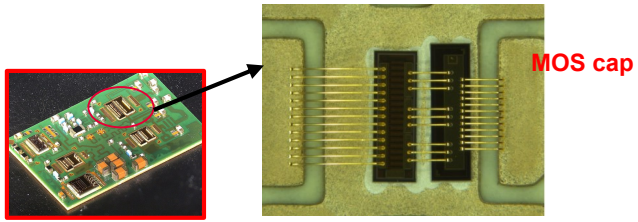
Specification				
Project	**Frequency-Range (MHz)**	**P3dB (dBm)**	**P3dB (W)**	**PAR**
PAM 2.0+	3400 - 3800	47,4	54,95	8,4
		Pavg (dBm)	**Pavg (W)**	
		39	7,94	

Doherty Topology	**Remark**	**Ratio**	**Main (W)**	**Peak (W)**
2-way asymmetric	To maximize efficiency	2	18,32	36,64

Estimation including loss

	Required power (W)	**Required power (dBm)**	**Loss (dBm)**	**Total required power (dBm)**	**Total required power (W)**	**Ratio**	**Total power (W)**	**Total power (dBm)**
Main	18,32	42,63	0,8	43,43	22,02			
						3,01	66,07	48,2
Peak	36,64	45,64	0,8	46,44	44,05			

	Total output power (dBm)	**PAR**	**Power @ MXE (dBm)**	**Margin (dB)**	**Power @ MXE (dB**	**Power @ MXE (W)**	**MXP (W)**	**MXP(dBm)**
	48,2	8,4					66,07	48,20
Main			39,8	1,00	40,80	12,02	22,02	43,43
Peak			Peak_start_ideal		Peak_start	0,01	44,05	46,44



RF GaN transistor		**MOS Capacitor**	N9500B_V6	N9500B_V6	N9500B_V5	N9500B_V5	-	N9501B_V1	N9501B_V1	N9501B_V4	N9501B_V4	-	...	...
5.76 (24x240µm)	P19		•	•	•	•								
5.76 (36x160µm)	P6							•	•	•	•			
4.8 (30x160µm)	P3													
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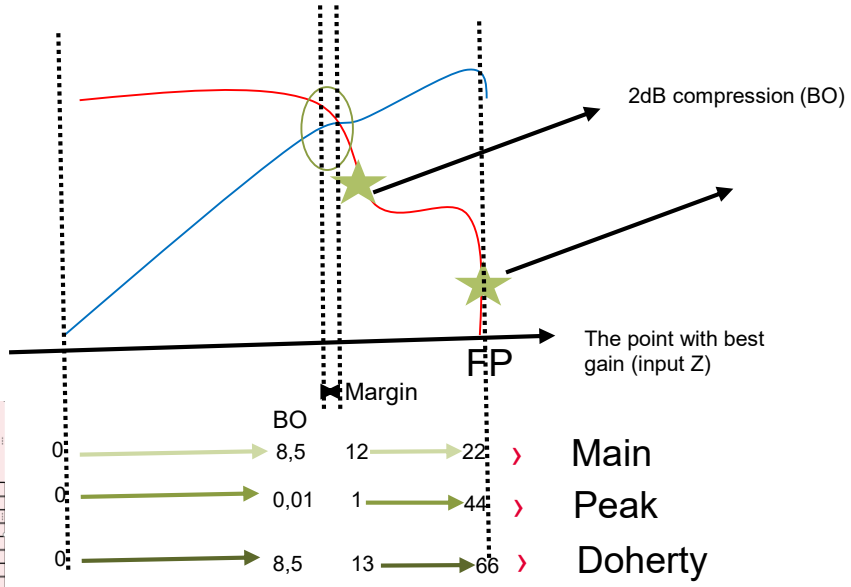
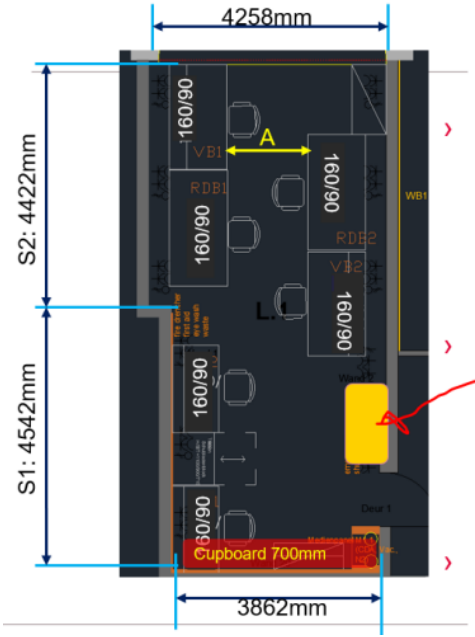
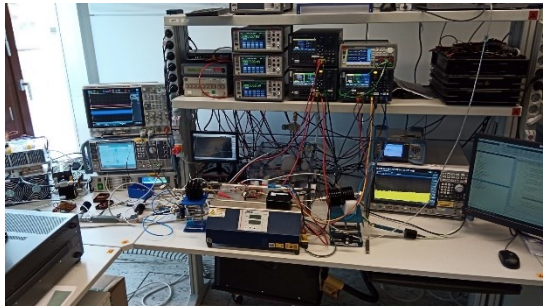
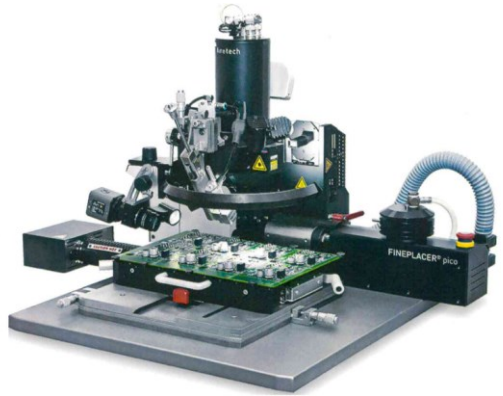


- Maximize Gain
  - Main section gain as high as possible while maintaining Power @ MXE
  - Peak section gain as high as possible while maintaining MXP

RF lab Nijmegen







Overview Lab Equipment (Nijmegen)					
Sl. No	Supplier	Quotation No.	Type	Description	Cost (K€)
1	Rhode & Schwarz	585783.0	VSG	SMW200A (26 GHz) R & S Signal generator	164,96 €
			VSA	FSW (26GHz) R&S Signal analyzer (SA)	181,70 €
			PM	Power Meter(R & S) NRP18S ?	8,50 €
2	Keysight	2465937-3	VNA	PNA-X (26 GHz) Keysight Vector network analyzer	282,99 €
			FG	Keysight 33500B series, 20 MHz, 2-channel with arb	3,26 €
			PS	DC power supply, dual-output, auto-range: 2 x 60 V, 10 A, 400 W: LAN, USB (2 channel high power supply)	2,70 €
				DC power supply, triple-output, 6 V, 5 A and 2 x 25 V, 1 A, 80 W: LAN, USB (3 channel low power supply)	4,44 €
			OSC	1 X Keysight 4-channel, 100 MHzOscilloscope	4,65 €
			CS	Current Probe, 100 MHz AC/DC with AutoProbe	7,30 €
			SC	1 X Keysight 11713E Attenuator/Swithch driver	5,26 €
			MM	Digital multimeter, 6 1/2 digit, Truevolt DMM	9,13 €
3	FineTech	14481126	RW	Fineplacer Pico Rework/assembly station	89,14 €
4	EMC	AN220269	TC	1 x Mechanical Devices MaxTC G4	27,55 €
5	TECA	9-35KB-1-C31	Hot plate	2 x Hot plate TECA AHP-1200C31	13,81 €
6	Mini-Circuits		Drive PA	ZVE-3W-83W+, P1dB = 33 dBm, 2-8GHz	1,30 €
			Reverse PA	Mini circuits ZVA-183W-S+(100 MHz - 18 GHz), P1dB = 26 dBm	1,30 €
			Total		807,99 €