

# Tests of FBK pre-production SiPMs boards

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Photo-sensors Meeting

5<sup>th</sup> December 2023

# First delivery for production validation

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**100 SiPMs boards** (600 SiPMs) received for the validation of the mass production at FBK. We should provide an answer in one month to don't delay the mass production.



5 Trays x 20 boards

# Tests proposal

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- **Detailed characterization** of 5 boards following the standard procedure:
  - ✓ Room Temp.: I-V characterization (Vbd and Rq)
  - ✓ LN2 1st cycle : I-V characterization
  - ✓ + 17 Cycles LN2 - RT (around 20min each). Can be done in one day for all the boards.
  - ✓ LN2 19th cycle : I-V characterization
  - ✓ LN2 20th cycle: Gain, DCR, Xtalk and After-pulses (at three OV)
  
- Test the rest of the boards (95) on a massive test site.
  
- **Check physical dimensions** of 10 boards to verify that they are into the tolerance specs.
  
- At CIEMAT we will perform the detailed testing of **5 boards** (30 SiPMs) and the **dimensions checking of 10 boards**. I-V measurements on-going.

# First observations

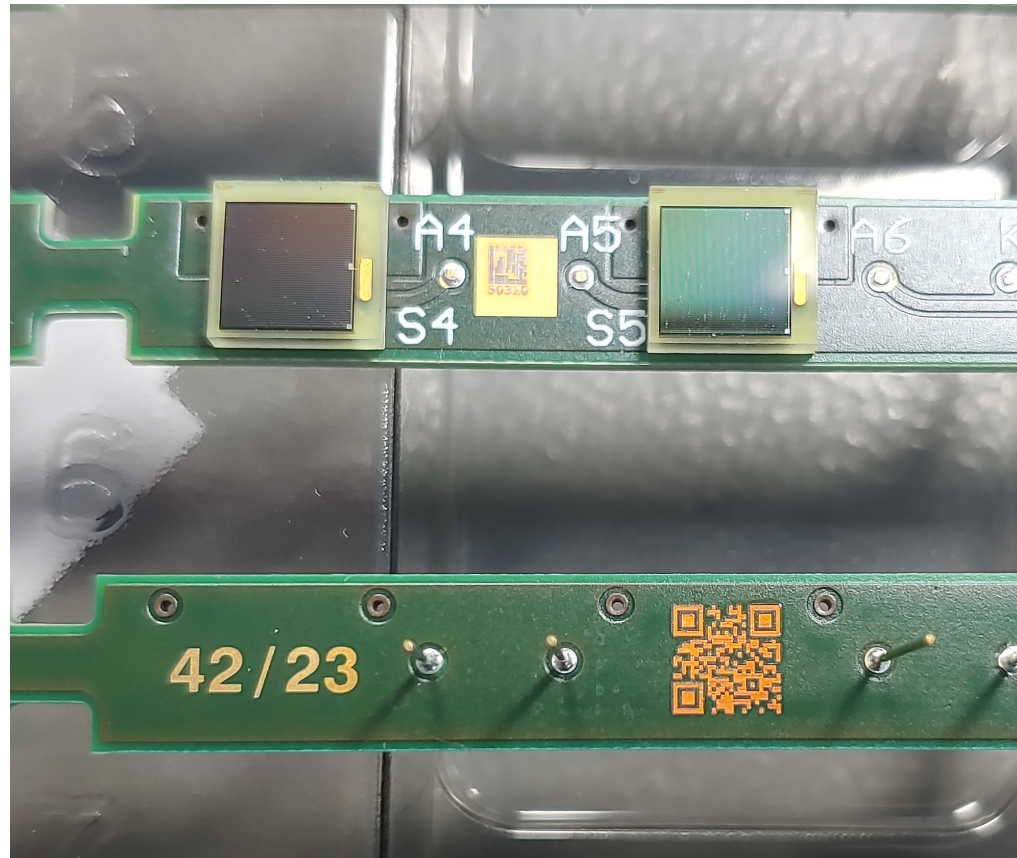
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Inhomogeneous placement of silicon in the packages

# First observations

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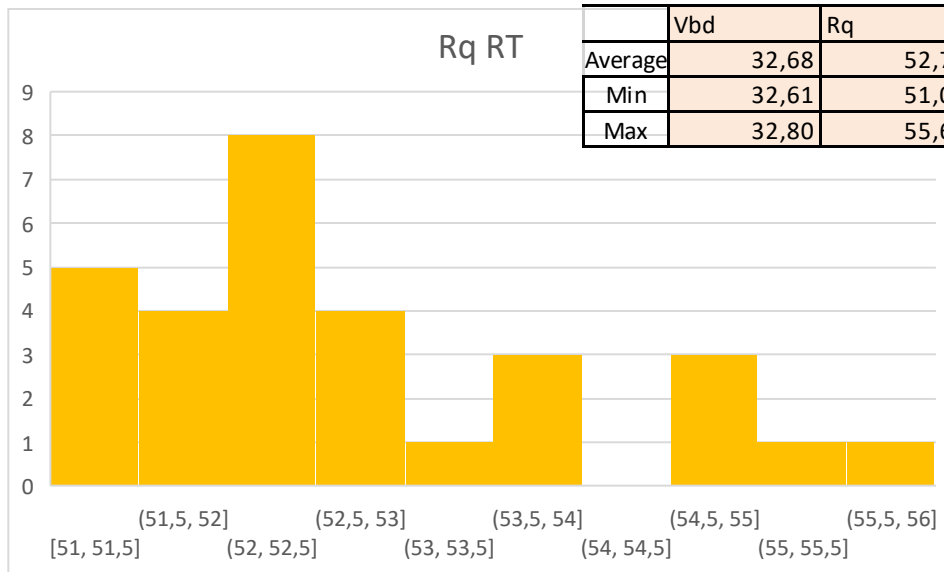
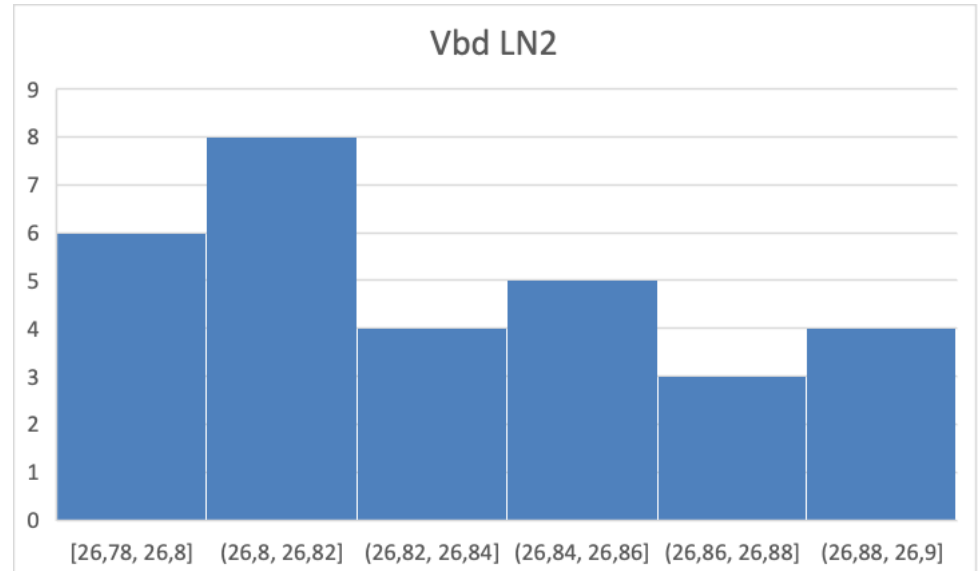
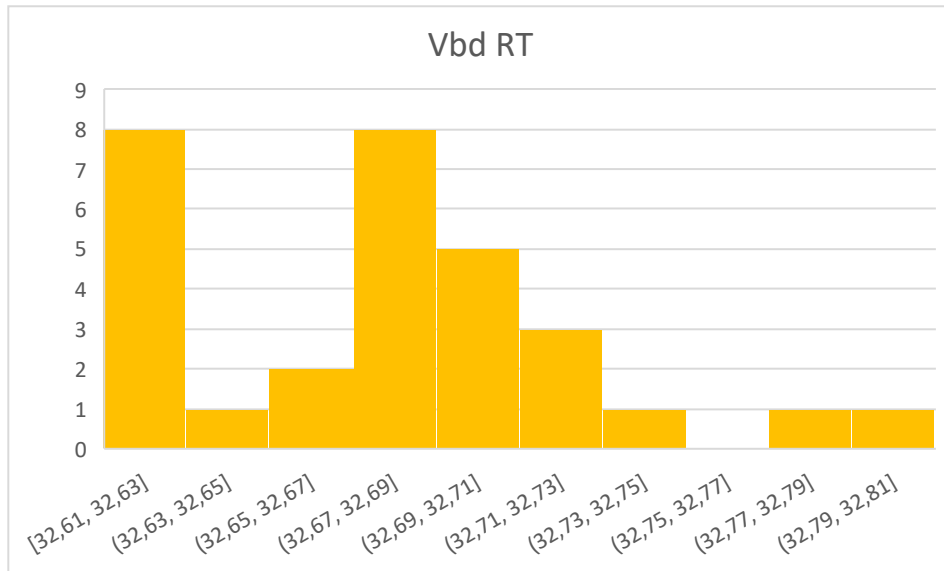


QR instead of DM code at the bottom of the board  
DM at the top but too small and difficult to read

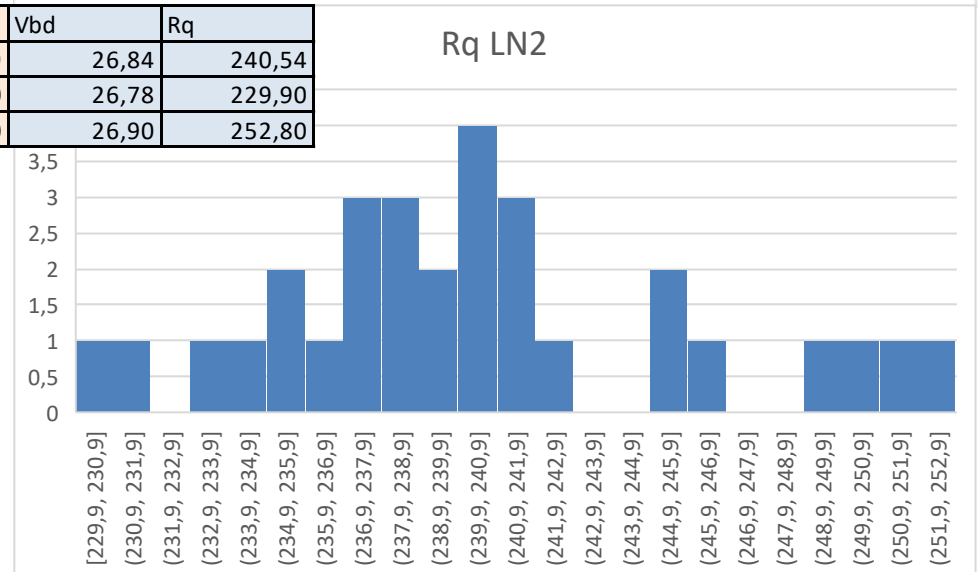
# First Measurements

Board	SiPM	Room Temp		LN2	
		Vbd	Rq	Vbd	Rq
337	1	32,63	54	26,8	251,1
	2	32,63	54,9	26,82	252,8
	3	32,68	53,8	26,82	246,5
	4	32,68	52,5	26,8	239,9
	5	32,67	52,7	26,82	238,9
	6	32,70	51,7	26,82	231,5
225	1	32,68	52,4	26,86	239,8
	2	32,68	52,2	26,88	237,6
	3	32,63	53,5	26,84	249,6
	4	32,80	51,6	26,82	233,8
	5	32,68	54,8	26,86	240,5
	6	32,67	53	26,84	240,8
247	1	32,70	52,4	26,82	245,6
	2	32,63	52,5	26,86	245,7
	3	32,78	53,7	26,86	250,1
	4	32,72	52,5	26,9	242,1
	5	32,63	54,8	26,78	238,4
	6	32,70	51,7	26,82	241,4
310	1	32,75	51,3	26,9	234,6
	2	32,61	52,3	26,86	241,4
	3	32,63	52,9	26,84	240,9
	4	32,65	52,9	26,9	236,6
	5	32,68	55,6	26,88	241,1
	6	32,72	52,3	26,8	240,8
295	1	32,72	51,2	26,8	237,6
	2	32,68	51	26,8	235,2
	3	32,70	51,9	26,88	238,6
	4	32,63	51	26,82	235,9
	5	32,70	55,3	26,84	229,9
	6	32,68	51,3	26,9	237,5

# First Measurements



	Vbd	Rq	Vbd	Rq
Average	32,68	52,79	26,84	240,54
Min	32,61	51,00	26,78	229,90
Max	32,80	55,60	26,90	252,80



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Thank you !