

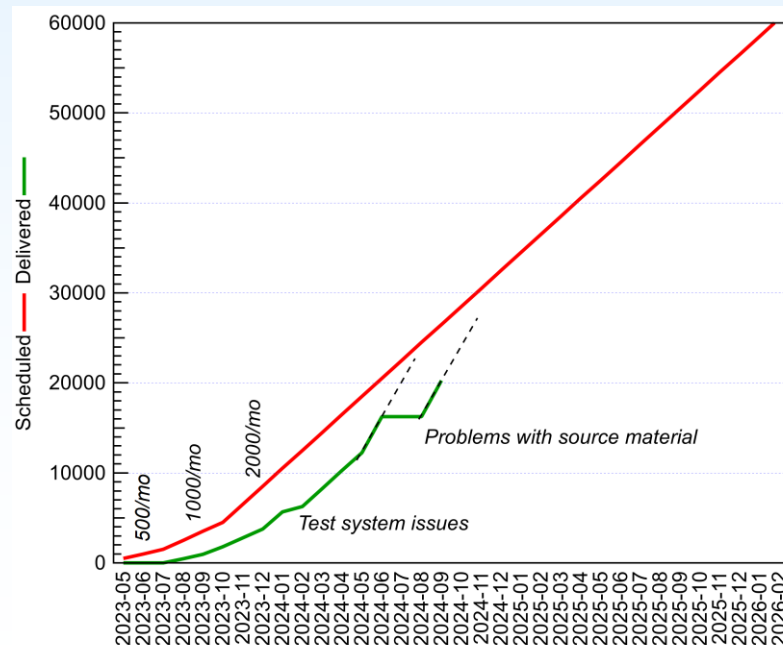
CERN VTRx+ Production Status Update

**Csaba Soos
2 October, 2024**



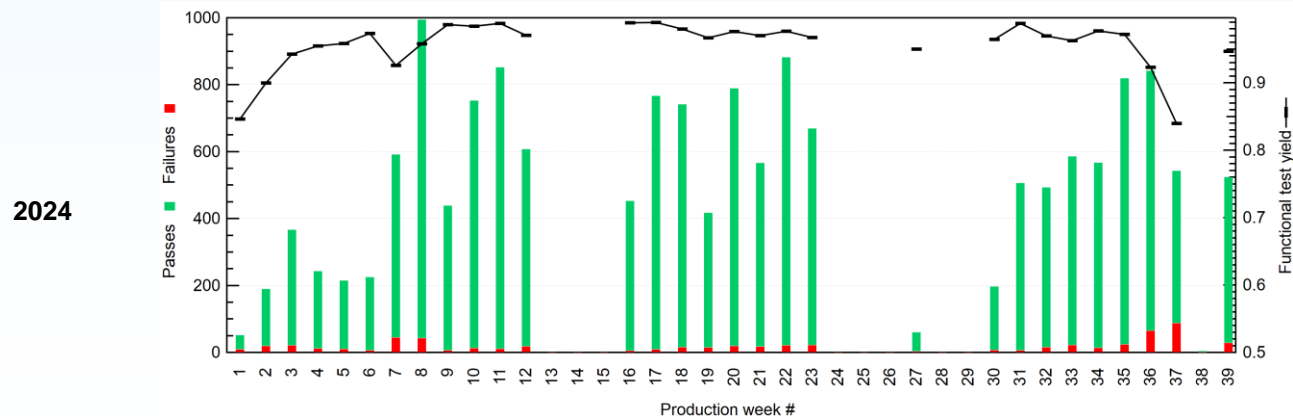
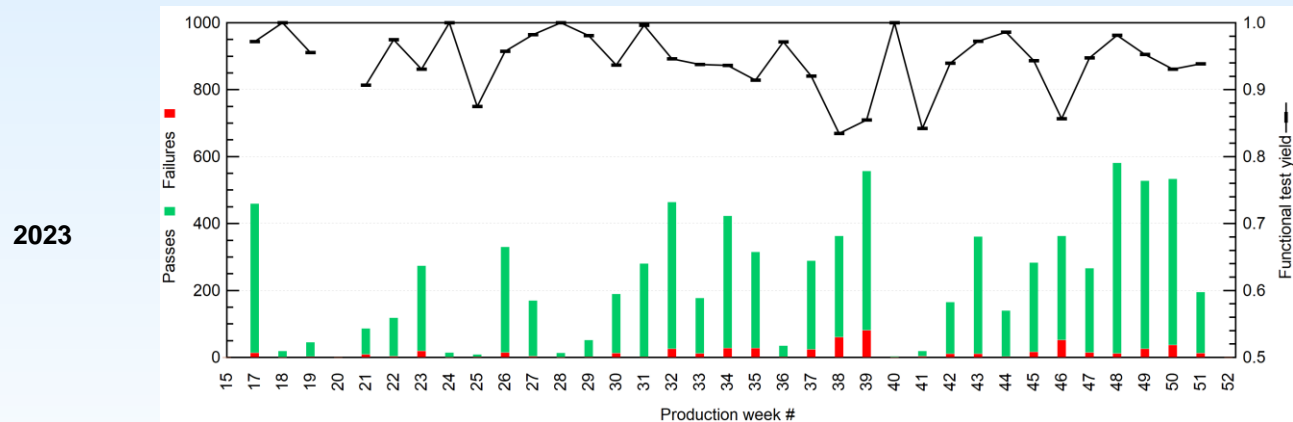
Production status

- Intentional ramp at the beginning
 - Ramp-up was even slower (witness VCSEL issue, detailed yield analysis, test system issues)
 - Rate increased after initial difficulties were sorted out
- Earlier this year the module PCB panels had to be rejected
 - Manufacturing of the replacement PCBs introduced delays
 - Production resumed in July
- Ultimate production rate exceeds requests allowing recovery of the delay



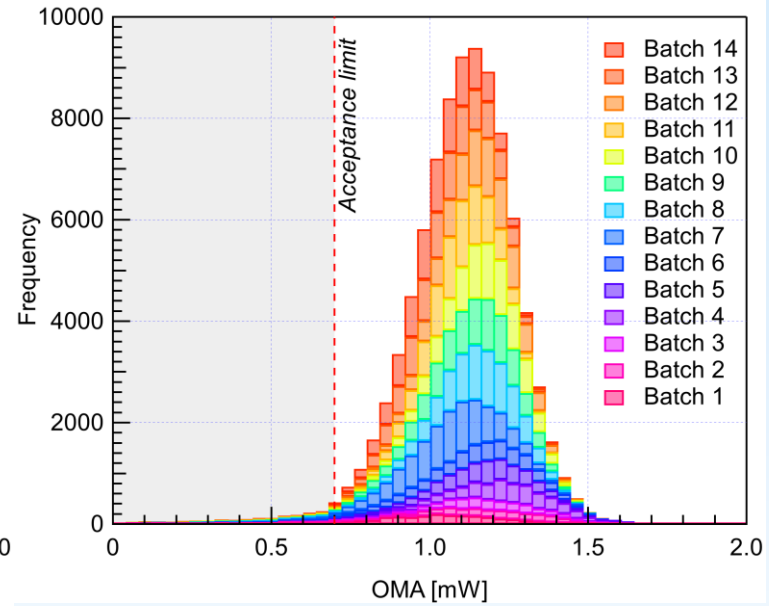
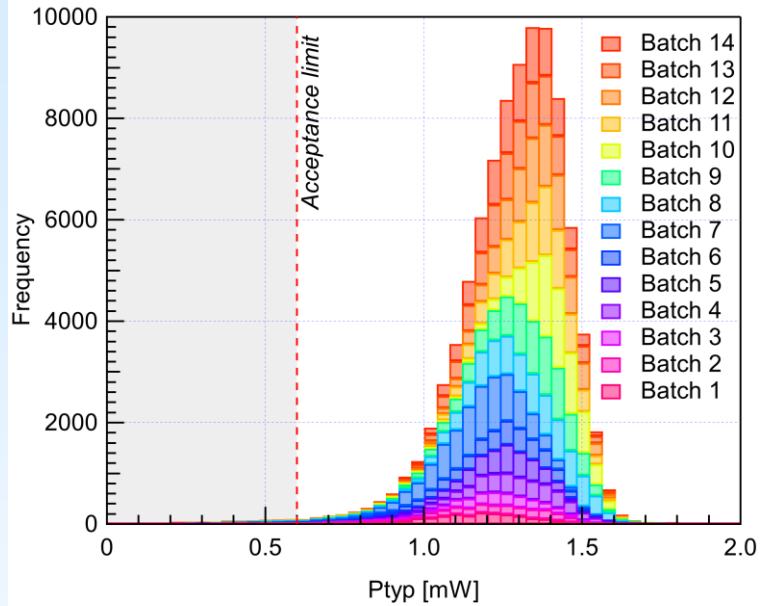
Manufacturing yield

- Overall manufacturing yield is ~90%
- The functional test yield stabilised around 95% in mid 2024
- Recent yield drop is being investigated

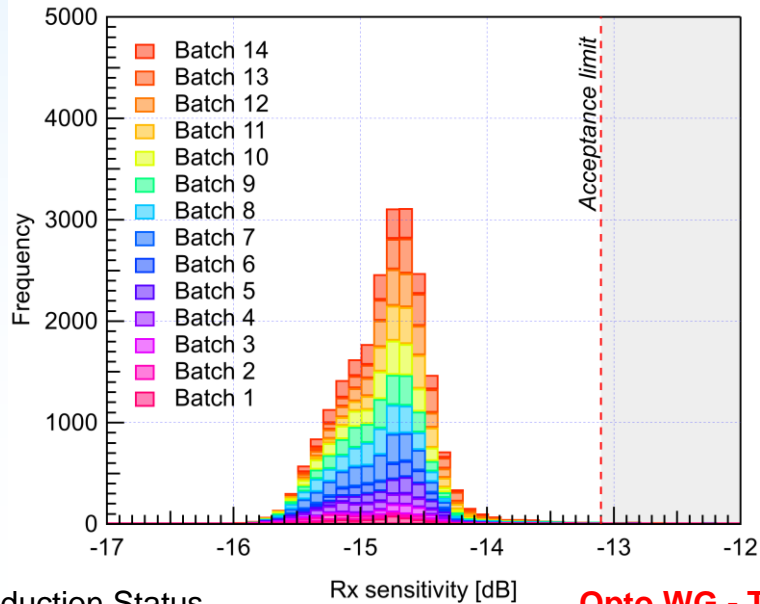


Test results

TX

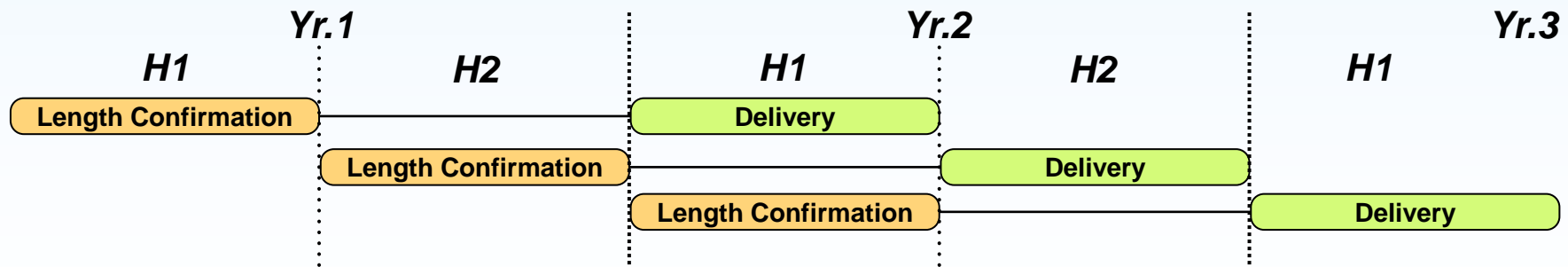


RX



Reminder : ordering process

- Production schedule is being updated according to the requests and the available production capacity
- There will be a sliding window for updating the length distribution planned production
 - Orders in a given six-month period will be delivered 6-12 months after the end of the ordering period
- Length confirmation: October and March



Ordering additional VTRx+ modules

- CERN asked CM about the possibility of ordering additional VTRx+ modules
 - Assembly contract already includes some options, but the price is provided only up to 20k additional modules
 - CM agreed to update the pricing for 30k additional modules and to provide estimate concerning the NRE (process requalification, new tooling, etc.)
- We need to make sure that the VTRx+ manufacturing continues without a gap beyond the current plan ending in February 2026
- Additional modules will be manufactured using new VCSEL component
 - Same functionality, but only available in different format (6-inch wafer)
 - New process qualification will be necessary 1 year before the new order
- Users should confirm the order quantities by the end of 2024
- Pigtail ordering will be carried out according to the rolling scheme implemented for ATLAS and CMS
 - We cannot allocate maximum fibre length for everyone; not enough rad-hard fibre

Back-up

CMS (May 2024 – October 2024)

Detector	Pigtail code	May '24	June '24	July '24	August '24	September '24	October '24
OT	01-00009	600		600		600	
	01-00012	400		400		400	
	01-00017	50		50		50	
	01-00022						
	01-00027	50		50		50	
IT	01-00X25	20		50			
	01-00X47	100		100		100	
	01-00017			50		50	
ETL	01-00X25	200		200		200	
ECAL	00-00032		300		100		300
HGCAL	00-00197				200		
DT	00-0X185		400		400		260
	00-00047		130		170		
Total		1420	830	1500	870	1450	560

ATLAS (May 2024 – October 2024)

Detector	Pigtail code	May '24	June '24	July '24	August '24	September '24	October '24
ITK Pixel	00-00017	100		200		200	200
ITK Strip	00-00027	50			200		100
	00-00037				180	100	140
LAr	00-00027	200		300		250	250
	00-00037		750		750		750
	00-00046		320				
HGTD	00-00027	70					
Total		420	1070	500	1130	550	1440