

MTG LI procurement status, expected performances, & commissioning plan

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14th MTG LI Mission Advisory Group
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Development models

- ❑ *OC VM (Verification Model)*
 - All planned activities completed

- ❑ *EM → investigations on LOH functional issues + FCV + ESD*
 - Functional Chain Validation (FCV) (part on EM) completed
 - EMC Radiated Emission (RE) “hybrid test” with filter connections completed
 - Electrostatic Discharge (ESD) on LI Main Electronics (LME) EM and Focal Plane Assembly (FPA)/Front End Electronics (FEE) EM completed
 - EM TRB/DRB completed
 - All planned activities completed

LME

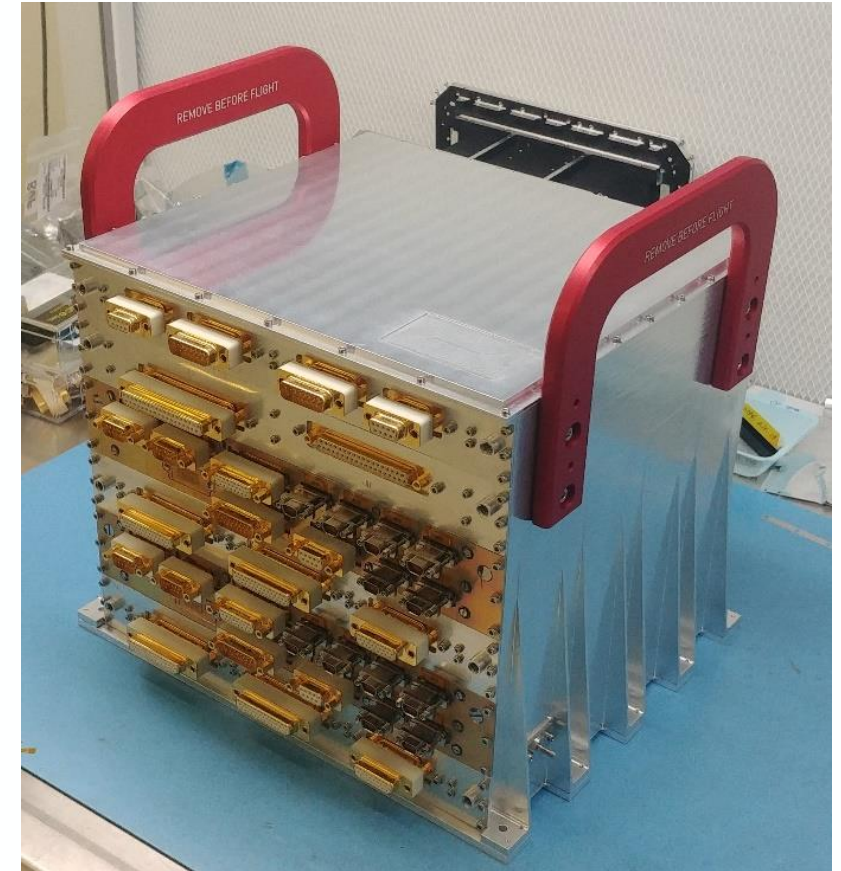
No change since MAG #12

LME PFM

- Delivered to TAS for the hybrid satellite testing
- Returned to LDO in July
- Being used by LDO for completion of LI PFM testing
 - ✓ EMC, FCV, TVAC, ASW
- To be refurbished for LI FM2

LME FM2

- Delivered to TAS early August 2021
- Integrated on MTG-I PFM platform

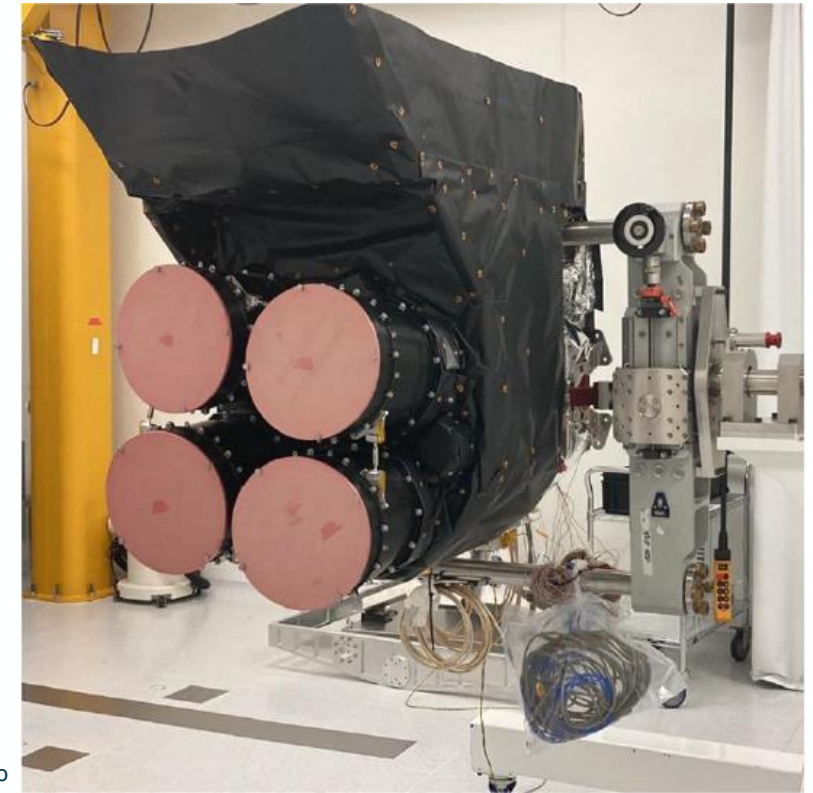


LME FM2 integrated and electrical test completed
- courtesy Leonardo

LOH PFM

□ *Consent to Ship completed March 2022*

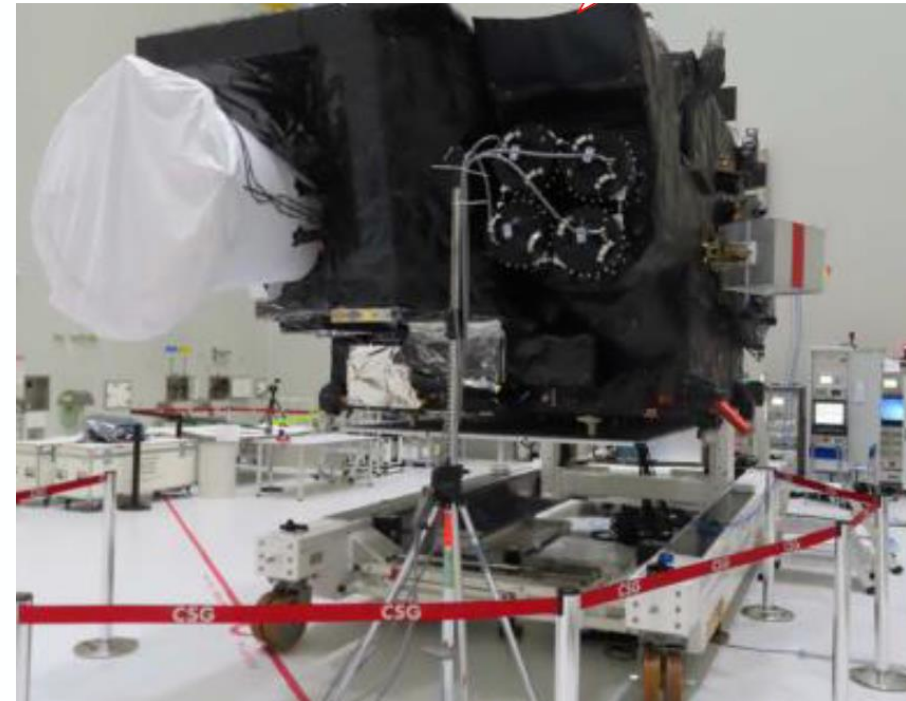
- Validation of the ASW solutions on PFM hardware
- EMC on PFM completed
 - RS test postponed to FM2 but considered low risk
- One of the Optical Channels was found not to start at the intended cold start temperature (return from survival mode). A specific PFM cold start procedure is in place to ensure correct start up.
 - No risk to the hardware
 - Fixed by design for recurrent models
- Re-ordered AIT sequence at MTG-I level



LOH PFM
- courtesy Leonardo

LI PFM

- ❑ *LI installed on MTG-I1 satellite in TAS and shipped to Kourou: launch scheduled 13th December!*
- ❑ *Some issues discovered at satellite level and resolved*
 - *LI was overly loquacious*
 - *Data rate >60 Mbps instead of the expected 30 Mbps*
 - *Solved with a platform workaround*
 - *Optical head alignment*
 - *Initial satellite measurements suggested a small alignment error*
 - *Spare OGSE-S shipped to Kourou*
 - *Alignment OK, error in OGSE*
- ❑ *Some issues discovered at satellite level and under resolution*
 - *Survival thermal control has hysteresis 10° C more than expected*
 - *Tests in TVAC were OK*
 - *Ambient test configuration not representative of flight, but not yet understood*
- ❑ *No LI issues blocking launch*



LI PFM on satellite - courtesy TAS

LI Qualification Review (QR)

- ❑ QR kick-off April 2022
 - Board in July 2022
 - Close-out status in September 2022
 - Considered 80% complete
 - Most remaining actions addressed
 - QR closure imminent – should be before MTG-I1 launch

- ❑ Qualification at lower levels completed except
 - Surface mount process qualification affected by a fire at Ciretec
 - ✓ Some PCBs/test vehicle destroyed
 - ✓ 50% of test vehicles now at MIP
 - ✓ Completion of surface mount qualification planned March 2023 (some test vehicles sooner)

LI Recurrent Models

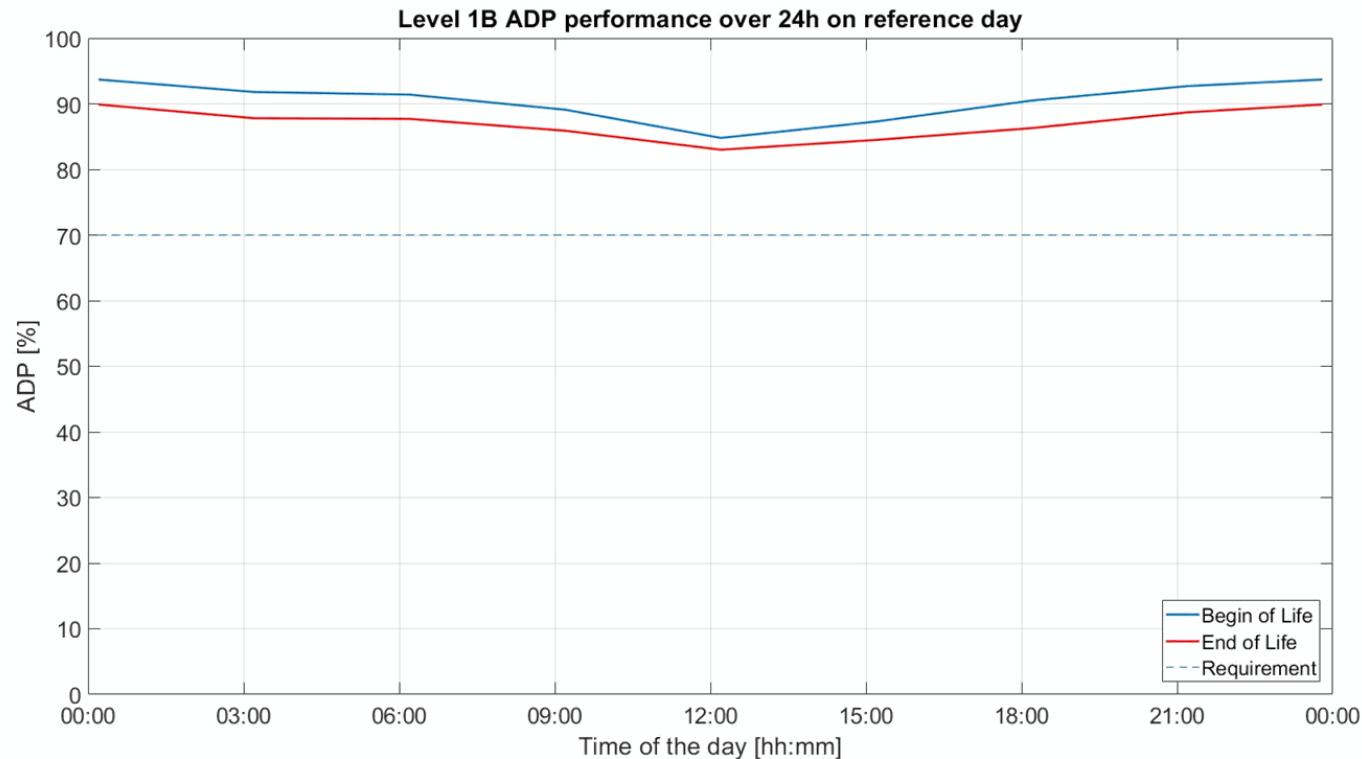
- Design Check Point held for recurrent models
 - Design adjustments known and actions agreed: “Lessons Learnt” from PFM

- LIPP#2 ASIC for LI FM2
 - World semiconductor supply issues causing significant delay in procurement
 - ✓ New flight ASIC available May 2023

- PCB supply affected by Ciretec fire
 - New supplier

- LI FM2 DRB scheduled Q4 2023
 - Currently not delaying MTG-I FM2

- After the end of the on-ground LI PFM characterization and calibration test campaign, the LI end-to-end simulator was correlated to the measurements in Oct21.
- Final before-launch estimation of the ADP (Average engineering pulse Detection Performance) performance improved with respect to previous simulations, well above requirements.



With a FAR at L1b < 6k/s (req is <35k/s), tunable

- ❑ The LI PFM has been completed and tested
 - It works!
 - Performances are extremely good

- ❑ LI is a completely new instrument
 - We will need to learn how best to use it
 - ✓ It isn't "Plug & Play"
 - ✓ Expect time to be needed to be operational

- ❑ LI is highly adaptable by design
 - The SBC architecture allows flexibility
 - ✓ Highly configurable through software

- ❑ LI is on the satellite and ready to fly !
 - Launch date December 13th