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Reference:
HP-ASED-FX-0684-04
Date:
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Subject: Expected Instrument Interface Temperatures at PLM EQM Testing

Dear All,

Please find attached the estimated L0, L1, L2 and L3 temperatures which will be achieved at PLM EQM testing. This information will be included in the next update of the HP-2-ASED-PL-0021.

This closes AI 3 of HP-ASP-MN-5359.

Kind regards

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From: Siegmund Idler
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Attachment

Expected I/F Temperatures for CQM testing in the modified ISO EQM cryostat

	Interface	I/F Requirement for in-orbit		EQM
		Heat Load	Temperature	Temperature
Level 0	PACS Red Detector	0.8 mW	1.6 K ... 1.75 K	<1.75 K
	PACS Blue Detector	2.0 mW	1.6 K ... 2 K	<2 K
	PACS Cooler Pump	2.0 mW	1.6 K ... 5 K	<2 K
		500 mW (peak)	1.6 K ... 10 K	<10 K
	PACS Cooler Evapor.	15 mW	1.6 K ... 1.85 K	<1.85 K
	SPIRE Detector	4 mW	< 2 K	<2 K
		1 mW (goal)	< 1.71 K (goal)	<1.71 K
	SPIRE Cooler Pump	2 mW	< 2 K	<2 K
		500 mW (peak)	< 10 K (peak)	<10 K
	SPIRE Cooler Evapor.	15 mW	< 1.85 K	<1.85 K
		15 mW (goal)	< 1.75 K (goal)	<1.75 K
	HIFI Detector	6.8 mW	< 2 K	<2 K
Level 1	PACS FPU	30 mW	2 K ... 5 K	2-5 K*
	SPIRE FPU	15 mW	< 5.5 K	<5.5 K*
		13 mW (goal)	< 3.7 K (goal)	<3.7 K*
	HIFI L1	15.5 mW	< 6 K	<6K
Level 2	OBP near PACS	0 mW	< 12 K	<16 K
	OBP near SPIRE	0 mW	< 12 K	<16 K
		0 mW (goal)	< 8K (goal)	
	Instr. Shield / SPIRE	0 mW	< 16 K	<20 K
	HIFI FPU	22 mW	< 20 K	<20 K
Level 3	SPIRE PM-JFET	50 mW	< 15 K	<20 K
	SPIRE SM-JFET	25 mW	< 15 K	<20 K
LOU	LOU (HIFI)	7000 mW	90 K ...150 K	<300 K

Notes:

- The temperature values do not correspond to a similar helium mass flow rate as in orbit
- The AXT temperature will be adjusted to achieve Level 0 values
- The heat loads will be different compared to in orbit conditions due to higher Level 2 temperatures resulting from the CVV at room temperature (e.g. LOU windows)

* The values apply to the Level 1I/F. The FPU housings itself might be warmer because they are directly related to the absorptivity/emissivity of the FPU outer surfaces, which is outside of the responsibility of ASED.