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## 1. GENERAL

### 1.1. Objective and scope of the document

The objective of this plan is to define the guidelines for the AGILE scientific delta-commissioning activities.

The pointing required is RA: 296.880, DEC: 34.501

### 1.2. Applicable and reference documents

**AD [1]:** AGILE Scientific Requirements, AGILE-IFC-SR-008 Issue 2

### 1.3. Reference documents

**RD [1]** AGILE Commissioning Plan – Engineering Phase, OPS-FSC-SAT-PLN-001-180.330 Issue 1

**RD [1]** AGILE Commissioning Plan – Scientific Phase, OPS-FSC-SAT-PLN-002-180.330 Issue 1

### 1.4. Acronyms

<b>AC</b>	Anti-Coincidence
<b>AC-LAT</b>	AC Lateral panel
<b>AC-TOP</b>	AC Top panel
<b>BBFP</b>	Burst Background Filtering Procedure
<b>DC</b>	Daisy Chain
<b>FEE</b>	Front-End Electronics
<b>FTB</b>	Front End and Trigger Board
<b>GRID</b>	Gamma-Ray Imaging Detector
<b>HE</b>	High Energy
<b>HK</b>	Housekeeping
<b>MCAL</b>	Mini-Calorimeter
<b>LE</b>	Low Energy
<b>LUT</b>	Look-Up Table
<b>PDHU</b>	Payload Data Handling Unit
<b>P/L</b>	Payload
<b>SA</b>	Super-AGILE
<b>SAA</b>	South Atlantic Anomaly
<b>SAFE</b>	Super-AGILE Front End Electronics
<b>SAIE</b>	Super-AGILE Interface Electronics
<b>SIT</b>	Short Integration Time
<b>ST</b>	Silicon Tracker

TC Telecommand  
TM Telemetry



## 2. AC FEE CONFIGURATION REFINING

### 2.1. AC-LAT 3.2 threshold increasing

Number of orbits	Description	Principal activities
140	AC FEE tuning	<p>This step shall be repeated n times in order to optimize the AC-LAT 3.2 behaviour.</p> <ul style="list-style-type: none"><li>• Send T33S5 in order to update the AC-LAT 3.2 threshold</li><li>• AC observation in Nominal and SAA phases</li><li>• Check of the AC ratemeters in the TM(32,01)</li></ul>

### 2.2. AC-TOP 2 threshold lowering

Number of orbits	Description	Principal activities
140	AC FEE tuning	<ul style="list-style-type: none"><li>• Send T33S5 in order to set the AC-TOP 2 threshold to the 236 digital value</li><li>• AC observation in Nominal and SAA phases</li><li>• Check of the AC ratemeters in the TM(32,01)</li></ul>

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3. AC VETO EFFICIENCY ESTIMATION		
Number of orbits	Description	Principal activities
4	Ac veto used by GRID Obs, SA Obs. and MCAL Stand-by.	<ul style="list-style-type: none"><li>• Send T33S5 in order to update the AC thresholds</li><li>• GRID Observation, SA Observation, MCAL in stand-by at PDHU level and AC Observation</li></ul>
4	GRID AC Veto efficiency estimation.	<ul style="list-style-type: none"><li>• Send T33S5 in order to update the AC thresholds</li><li>• GRID Physical Observation</li></ul>
4	MCAL Burst AC Veto efficiency estimation.	<ul style="list-style-type: none"><li>• Send T33S5 in order to update the AC thresholds</li><li>• MCAL Burst Physical Observation</li></ul>

4. SA FEE CONFIGURATION REFINING		
4.1. AC Heaters thresholds lowering *		
Number of orbits	Description	Principal activities
14	AC heater thresholds: -28°C/-22°C.	<ul style="list-style-type: none"> <li>AC heaters thresholds updating: -28°C/-22°C</li> <li>AC temperatures (survival HKs) and SA temperatures monitoring</li> </ul>
14	AC heater thresholds: -30°C/-25°C.	<ul style="list-style-type: none"> <li>AC heaters thresholds updating: -30°C/-25°C</li> <li>AC temperatures (survival HKs) and SA temperatures monitoring</li> </ul>
4.2. SA Gain Electrical Calibration		
Number of orbits	Description	Principal activities
1	SA Gain Calibration	<ul style="list-style-type: none"> <li>Send 4 T33S12 for Electrical Calibration of the SAIE-0 and SAIE-1 with 255 pulses</li> <li>AC heaters thresholds updated</li> <li>SA Electrical Calibration performed before SAA</li> </ul>

\*N.B.: The task “AC heaters thresholds lowering” is not yet approved by the Mission Director.

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4.3. SA FEE parameters update		
Number of orbits	Description	Principal activities
4	SA FEE Parameters update	<ul style="list-style-type: none"><li>• Send T33S10 to update the DC thresholds.</li><li>• Send 48 T33S11 updating the XAA1 Reg-in</li><li>• SA Observation in all phases</li></ul>
4.4. SA Gain Electrical Calibration		
Number of orbits	Description	Principal activities
1	SA Gain Calibration	<ul style="list-style-type: none"><li>• Send 4 T33S12 for Electrical Calibration of the SAIE-0 and SAIE-1 with 255 pulses</li><li>• AC heaters thresholds updated</li><li>• SA Electrical Calibration performed before SAA</li></ul>

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5. GRID CONFIGURATION REFINING		
Number of orbits	Description	Principal activities
1	GRID Pedestal runs	<ul style="list-style-type: none"><li>• Send T33S2 with the Pedestal AC Veto set to "Particle 1".</li><li>• 10 repetitions of the GRID Pedestal observation with AC in "Off" mode.</li></ul>
2	ST TAA1 reg-in updating	<ul style="list-style-type: none"><li>• Send the 96 T33S8 setting the TAA1 Reg-in.</li><li>• Check the FTB analog HKs.</li><li>• GRID Observation</li></ul>
1	GRID trigger parameters updating	<p>This step shall be repeated n times in order to optimize the GRID PDHU setup.</p> <ul style="list-style-type: none"><li>• Send the T33S2, T33S3, T33S4 and the T33S37 in order to optimize the GRID trigger logic.</li><li>• Upload a set of the GRID LUTs in order to optimize the GRID trigger logic.</li><li>• GRID Observation</li></ul>

6. ST PLANES ALIGNMENT ESTIMATION		
Number of orbits	Description	Principal activities
130	GRID Physical Calibration	<ul style="list-style-type: none"><li>GRID Physical Calibration</li></ul>
7. MCAL GENERAL VERIFICATION		
7.1. GRID and MCAL Physical Calibration		
Number of orbits	Description	Principal activities
6	GRID and MCAL Ph. Calibration	<ul style="list-style-type: none"><li>Send the T33S5 in order to set the AC veto signal with width=0 and delay=0.</li><li>Send the T33S13 in order to increase the MCAL Burst FEE thresholds.</li><li>GRID Physical Calibration and MCAL Physical Calibration</li></ul>
7.2. Background estimation		
Number of orbits	Description	Principal activities
5	MCAL Ph. Calibration	<ul style="list-style-type: none"><li>Send the T33S5 in order to set the AC veto signal with width=0 and delay=0.</li><li>Send the T33S13 in order to increase the MCAL Burst FEE thresholds.</li><li>MCAL Physical Calibration</li></ul>

7.3. MCAL Electrical Calibration		
Number of orbits	Description	Principal activities
1	MCAL Electrical Calibration	<ul style="list-style-type: none"><li>• Send T33S13 and T33S14 for the Electrical Calibration setup I</li><li>• MCAL Electrical calibration (20 minutes)</li><li>• Send T33S13 and T33S14 for the Electrical Calibration setup II</li><li>• MCAL Electrical calibration (20 minutes)</li><li>• Send T33S13 in order to restore the MCAL FEE configuration</li></ul>
8. MCAL BURST TRIGGER TUNING		
8.1. Scientific Ratemeters offsets updating		
Number of orbits	Description	Principal activities
1	MCAL offsets updating	<ul style="list-style-type: none"><li>• Patch the offsets used by the MCAL scientific ratemeters logic.</li></ul>

8.2. SIT $\geq$ 64ms Burst trigger tuning		
Number of orbits	Description	Principal activities
1	MCAL Burst trigger	<ul style="list-style-type: none"> <li>Send the T33S15, the T33S16 and the 4 T33S19 in order to disable the Burst search on SIT&lt;64ms and to configure the other channels on the “dynamic trigger strategy”.</li> <li>Send the T33S13 in order to increase the MCAL Burst FEE thresholds.</li> <li>MCAL Burst Observation with selection of the Trigger LUT “all rejected”.</li> </ul>
14	MCAL Burst trigger	<p>This step shall be repeated several times with different configurations (starting from the last setup used in the June-July commissioning phase) in order to optimize the SW Burst Search setup.</p> <ul style="list-style-type: none"> <li>Send the T33S15, the T33S16 and the 4 T33S19 in order to disable the Burst search on SIT&lt;64ms and to configure the other channels with different settings.</li> <li>MCAL Burst Observation with selection of the Trigger LUT “all rejected”.</li> </ul>
2	MCAL Burst acquisition	<ul style="list-style-type: none"> <li>Send the T33S15, the T33S16 and the 4 T33S19 in order to disable the Burst search on SIT&lt;64ms and to configure the other channels with the optimal setup.</li> <li>Update of a the MCAL Burst Trigger LUTs.</li> <li>MCAL Burst Observation with selection of a Trigger LUT enabling the Burst telemetry download.</li> </ul>
8.3. 1ms $\leq$ SIT<64ms Burst trigger tuning		
Number of orbits	Description	Principal activities



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14	MCAL Burst trigger	<p>This step shall be repeated several times with different configurations (starting from the last setup used in the June-July commissioning phase) in order to optimize the HW Burst Search setup.</p> <ul style="list-style-type: none"><li>• Send the T33S15, the T33S16 and the 4 T33S19 in order to disable the Burst search on <math>SIT \geq 64ms</math>, to disable the sub-millisecond and to configure the other channels with different settings.</li><li>• MCAL Burst Observation with selection of the BBFP LUTs “all rejected”.</li></ul>
2	MCAL Burst trigger	<ul style="list-style-type: none"><li>• Send the T33S15, the T33S16 and the 4 T33S19 in order to disable the Burst search on <math>SIT \geq 64ms</math>, to disable the sub-millisecond and to configure the other channels with optimal setup.</li><li>• Update of a the BBFP LUTs.</li><li>• MCAL Burst Observation with selection of the BBFP LUTs enabling the Burst telemetry download.</li></ul>

<b>8.4. Sub-millisecond Burst trigger tuning</b>		
<b>Number of orbits</b>	<b>Description</b>	<b>Principal activities</b>
5	MCAL Burst trigger	<p>This step shall be repeated several times with different configurations (starting from the last setup used in the June-July commissioning phase) in order to optimize the Sub-millisecond Burst Search.</p> <ul style="list-style-type: none"><li>• Send the T33S15, the T33S16 and the 4 T33S19 in order to disable the Burst search on <math>SIT \geq 1\text{ms}</math> and to enable the sub-millisecond configured with different settings.</li><li>• MCAL Burst Observation.</li></ul>
<b>8.5. MCAL Burst acquisition</b>		
<b>Number of orbits</b>	<b>Description</b>	<b>Principal activities</b>
4	MCAL Burst trigger	<ul style="list-style-type: none"><li>• Send the T33S15, the T33S16 and the 4 T33S19 with optimal setup.</li><li>• MCAL Burst Observation with selection of the optimal LUTs.</li></ul>

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8.6. MCAL Burst trigger fake inhibition		
Number of orbits	Description	Principal activities
4	MCAL Burst trigger	<ul style="list-style-type: none"><li>• Send the T33S15, the T33S16 and the 4 T33S19 with optimal setup.</li><li>• Send Earth Occ. phase transition TCs time-tagged respect to the eclipse exit with special delay/width.</li><li>• MCAL Burst Observation with selection of the optimal LUTs.</li></ul>

## 9. SA BURST TRIGGER TUNING

### 9.1. SIT $\geq$ 64ms Burst trigger tuning

Number of orbits	Description	Principal activities
4	SA Burst trigger SIT=64ms	<p>This step shall be repeated 4 times with different trigger configurations in order to optimize the Burst Search setup.</p> <ul style="list-style-type: none"><li>• Send the T33S15, the T33S16 in order to disable the Burst search on SIT&lt;64ms and to configure the SA Burst Search Energy channels.</li><li>• Send 4 T33S17 in order to configure the Burst Search of the D0-LE channel on the 64ms and disabling the other channels and the other SITs.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=64ms in order to configure the Burst Search of the D0-LE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=64ms in order to configure the Burst Search of the D0-HE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=64ms in order to configure the Burst Search of the D1-LE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=64ms in order to configure the Burst Search of the D1-HE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=64ms in order to configure the Burst Search of the D2-LE channel on and disabling the other channels.</li></ul>

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		<ul style="list-style-type: none"> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=64ms in order to configure the Burst Search of the D2-HE channel on and disabling the other channels.</li> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=64ms in order to configure the Burst Search of the D3-LE channel on and disabling the other channels.</li> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=64ms in order to configure the Burst Search of the D3-HE channel on and disabling the other channels.</li> <li>• SA Burst Observation (10 minutes TBC)</li> </ul>
4	SA Burst trigger SIT=256ms	<p>This step shall be repeated 4 times with different trigger configurations in order to optimize the Burst Search setup.</p> <ul style="list-style-type: none"> <li>• Send the T33S15, the T33S16 in order to disable the Burst search on SIT&lt;256ms and to configure the SA Burst Search Energy channels.</li> <li>• Send 4 T33S17 in order to configure the Burst Search of the D0-LE channel on the 256ms and disabling the other channels and the other SITs.</li> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=256ms in order to configure the Burst Search of the D0-LE channel on and disabling the other channels.</li> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=256ms in order to configure the Burst Search of the D0-HE channel on and disabling the other channels.</li> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=256ms in order to configure the Burst Search of the D1-LE channel on and disabling the other channels.</li> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=256ms in order to configure the Burst Search of the D1-HE</li> </ul>

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		<p>channel on and disabling the other channels.</p> <ul style="list-style-type: none"><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=256ms in order to configure the Burst Search of the D2-LE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=256ms in order to configure the Burst Search of the D2-HE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=256ms in order to configure the Burst Search of the D3-LE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=256ms in order to configure the Burst Search of the D3-HE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li></ul>
4	SA Burst trigger SIT=1024ms	<p>This step shall be repeated 4 times with different trigger configurations in order to optimize the Burst Search setup.</p> <ul style="list-style-type: none"><li>• Send the T33S15, the T33S16 in order to disable the Burst search on SIT&lt;1024ms and to configure the SA Burst Search Energy channels.</li><li>• Send 4 T33S17 in order to configure the Burst Search of the D0-LE channel on the 1024ms and disabling the other channels and the other SITs.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=1024ms in order to configure the Burst Search of the D0-LE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=1024ms in order to configure the Burst Search of the D0-HE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li></ul>

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		<ul style="list-style-type: none"> <li>• Send T33S17 with SIT=1024ms in order to configure the Burst Search of the D1-LE channel on and disabling the other channels.</li> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=1024ms in order to configure the Burst Search of the D1-HE channel on and disabling the other channels.</li> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=1024ms in order to configure the Burst Search of the D2-LE channel on and disabling the other channels.</li> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=1024ms in order to configure the Burst Search of the D2-HE channel on and disabling the other channels.</li> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=1024ms in order to configure the Burst Search of the D3-LE channel on and disabling the other channels.</li> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=1024ms in order to configure the Burst Search of the D3-HE channel on and disabling the other channels.</li> <li>• SA Burst Observation (10 minutes TBC)</li> </ul>
4	SA Burst trigger SIT=8192ms	<p>This step shall be repeated 4 times with different trigger configurations in order to optimize the Burst Search setup.</p> <ul style="list-style-type: none"> <li>• Send the T33S15, the T33S16 in order to disable the Burst search on SIT&lt;8192ms and to configure the SA Burst Search Energy channels.</li> <li>• Send 4 T33S17 in order to configure the Burst Search of the D0-LE channel on the 8192ms and disabling the other channels and the other SITs.</li> <li>• SA Burst Observation (10 minutes TBC)</li> <li>• Send T33S17 with SIT=8192ms in order to configure the Burst Search of the D0-LE channel on and disabling the other channels.</li> </ul>

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	<ul style="list-style-type: none"><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=8192ms in order to configure the Burst Search of the D0-HE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=8192ms in order to configure the Burst Search of the D1-LE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=8192ms in order to configure the Burst Search of the D1-HE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=8192ms in order to configure the Burst Search of the D2-LE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=8192ms in order to configure the Burst Search of the D2-HE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=8192ms in order to configure the Burst Search of the D3-LE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li><li>• Send T33S17 with SIT=8192ms in order to configure the Burst Search of the D3-HE channel on and disabling the other channels.</li><li>• SA Burst Observation (10 minutes TBC)</li></ul>
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<b>9.2. <math>1\text{ms} \leq \text{SIT} &lt; 64\text{ms}</math> Burst trigger tuning</b>		
<b>Number of orbits</b>	<b>Description</b>	<b>Principal activities</b>
14	SA Burst trigger $1\text{ms} \leq \text{SIT} < 64\text{ms}$	<p>This step shall be repeated several times with different configurations (starting from the last setup used in the June-July commissioning phase) in order to optimize the HW Burst Search setup.</p> <ul style="list-style-type: none"><li>Send the T33S15, the T33S16 and the 4 T33S19 in order to disable the Burst search on <math>\text{SIT} \geq 64\text{ms}</math>, to disable the sub-millisecond and to configure the other channels with different settings.</li><li>SA Burst Observation.</li></ul>
<b>9.3. Sub-millisecond Burst Trigger tuning</b>		
<b>Number of orbits</b>	<b>Description</b>	<b>Principal activities</b>
5	SA Burst trigger $\text{SIT} < 1\text{ms}$	<p>This step shall be repeated several times with different configurations (starting from the last setup used in the June-July commissioning phase) in order to optimize the Sub-millisecond Burst Search.</p> <ul style="list-style-type: none"><li>Send the T33S15, the T33S16 and the 4 T33S19 in order to disable the Burst search on <math>\text{SIT} \geq 1\text{ms}</math>, to enable the sub-millisecond configured with different settings and to enable the OR between the MCAL and the SA Burst trigger.</li><li>MCAL Burst Observation and SA Burst Observation.</li></ul>

10. SA RAW IMAGING TUNING		
10.1. Integration time and detector images verification		
Number of orbits	Description	Principal activities
1	SA photon-by-photon and raw imaging	<ul style="list-style-type: none"><li>• Send the T33S18 in order to set the imaging integration time to 128s and the attitude correction X and Z parameters to 0.</li><li>• SA photon-by-photon and raw imaging activation (<b>no standard configuration</b>)</li></ul>

<b>10.2. X attitude correction parameter scan</b>		
<b>Number of orbits</b>	<b>Description</b>	<b>Principal activities</b>
1	SA photon-by-photon and raw imaging	<ul style="list-style-type: none"> <li>• Send T33S18 with the X attitude corr. parameter set to 1.00 and the Z parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the X attitude corr. parameter set to 1.05 and the Z parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the X attitude corr. parameter set to 1.10 and the Z parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the X attitude corr. parameter set to 1.15 and the Z parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the X attitude corr. parameter set to 1.20 and the Z parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the X attitude corr. parameter set to 1.25 and the Z parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the X attitude corr. parameter set to 1.30 and the Z parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the X attitude corr. parameter set to 1.35 and the Z parameter set to 0.</li> </ul>

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		<ul style="list-style-type: none"> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the X attitude corr. parameter set to 1.40 and the Z parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> </ul>
<b>10.3. Z attitude correction parameter scan</b>		
Number of orbits	Description	Principal activities
1	SA photon-by-photon and raw imaging	<ul style="list-style-type: none"> <li>• Send T33S18 with the Z attitude corr. parameter set to 1.00 and the X parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the Z attitude corr. parameter set to 1.05 and the X parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the Z attitude corr. parameter set to 1.10 and the X parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the Z attitude corr. parameter set to 1.15 and the X parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the Z attitude corr. parameter set to 1.20 and the X parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> <li>• Send T33S18 with the Z attitude corr. parameter set to 1.25 and the X parameter set to 0.</li> <li>• SA Burst Observation (7 minutes TBC)</li> </ul>

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		<ul style="list-style-type: none"><li>• Send T33S18 with the Z attitude corr. parameter set to 1.30 and the X parameter set to 0.</li><li>• SA Burst Observation (7 minutes TBC)</li><li>• Send T33S18 with the Z attitude corr. parameter set to 1.35 and the X parameter set to 0.</li><li>• SA Burst Observation (7 minutes TBC)</li><li>• Send T33S18 with the Z attitude corr. parameter set to 1.40 and the X parameter set to 0.</li><li>• SA Burst Observation (7 minutes TBC)</li></ul>
<b>10.4. Co-adding parameters tuning</b>		
<b>Number of orbits</b>	<b>Description</b>	<b>Principal activities</b>
1	SA photon-by-photon and raw imaging	<ul style="list-style-type: none"><li>• Send the T33S18 in order to set the imaging integration time to 128s, the attitude correction X and Z parameters to the optimal values determined above and the X and Z.</li><li>• SA photon-by-photon and raw imaging activation (<b>no standard configuration</b>)</li></ul>

## 11. SA BURST IMAGING TUNING

### 11.1. T\_Stop logic tuning

Number of orbits	Description	Principal activities
1	SA Burst Observation	<ul style="list-style-type: none"><li>• Send T33S17 with SIT=8192s containing the trigger static logic enabled and the threshold set to 1.</li><li>• Send the T33S18 in order to set the imaging integration time to 128s, the T_stop calculation enabled and the X and Z imaging thresholds set to 0.</li><li>• SA Burst Observation.</li></ul>

### 11.2. Reconstructed Burst pixel test

Number of orbits	Description	Principal activities
1	SA Burst Observation	<p>The task hereafter shall be performed with the Payload in <b>Test mode</b>.</p> <ul style="list-style-type: none"><li>• Send T33S10 with all the SA DCs disabled.</li><li>• Send T33S17 with SIT=8192s containing the trigger static logic enabled and the threshold set to 1.</li><li>• Upload special X and Z Skycoord. LUTs.</li><li>• Send the T33S18 in order to set the imaging integration time to 128s and the T_stop calculation disabled (T_stop fixed value set to 200s TBC).</li><li>• Enter Observation mode</li><li>• Enter Test mode</li><li>• After 4 minutes send T33S10 with all the SA DCs enabled.</li></ul>

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11.3. X and Z Skycoord LUTs updating		
Number of orbits	Description	Principal activities
1	SA Burst Observation	<p>The task hereafter shall be performed with the Payload in <b>Test mode</b>.</p> <ul style="list-style-type: none"><li>• Send T33S10 with all the SA DCs disabled.</li><li>• Send T33S17 with SIT=8192s containing the trigger static logic enabled and the threshold set to 1.</li><li>• Upload updated X and Z Skycoord. LUTs.</li><li>• Send the T33S18 in order to set the imaging integration time to 128s and the T_stop calculation disabled (T_stop fixed value set to 200s TBC).</li><li>• Enter Observation mode</li><li>• Enter Test mode</li><li>• After 4 minutes send T33S10 with all the SA DCs enabled.</li></ul>
11.4. ORBCOMM Burst Alert verification		
Number of orbits	Description	Principal activities
1	SA Burst Observation	<p>The task hereafter shall be performed with the Payload in <b>Test mode</b>.</p> <ul style="list-style-type: none"><li>• Send T33S10 with all the SA DCs disabled.</li><li>• Send T33S17 with SIT=8192s containing the trigger static logic enabled and the threshold set to 1.</li><li>• Send the T33S18 in order to set the imaging integration time to 128s and the T_stop calculation disabled (T_stop fixed value set to 600s TBC).</li><li>• Enter Observation mode</li><li>• Enter Test mode</li></ul>

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		<ul style="list-style-type: none"><li>• After 4 minutes send T33S10 with all the SA DCs enabled.</li><li>• ORBCOMM messages verification</li></ul>
<b>12. FINAL OBSERVATION</b>		
<b>Number of orbits</b>	<b>Description</b>	<b>Principal activities</b>
60	Final Observation	<ul style="list-style-type: none"><li>• Set ST, SA, AC and MCAL FEEs with final configuration.</li><li>• Set SA and MCAL Burst with final configuration (OR between SA and MCA Burst trigger enabled)</li><li>• Ac Observation, GRID Observation, SA Observation, SA Burst Observation and MCAL Burst Observation</li></ul>



13. DATA EEPROM UPDATE		
Number of orbits	Description	Principal activities
	DATA EEPROM configuration	<ul style="list-style-type: none"> <li>• Send T33S2 with MID='DATA EEPROM'.</li> <li>• Send T33S3 with MID='DATA EEPROM'.</li> <li>• Send T33S4 with MID='DATA EEPROM'.</li> <li>• Send T33S5 with MID='DATA EEPROM'.</li> <li>• Send T33S6 with MID='DATA EEPROM'.</li> <li>• Send T33S7 with MID='DATA EEPROM'.</li> <li>• Send 96 T33S8 with MID='DATA EEPROM'.</li> <li>• Send T33S9 with MID='DATA EEPROM'.</li> <li>• Send T33S10 with MID='DATA EEPROM'.</li> <li>• Send 48 T33S11 with MID='DATA EEPROM'.</li> <li>• Send 4 T33S12 with MID='DATA EEPROM'.</li> <li>• Send T33S13 with MID='DATA EEPROM'.</li> <li>• Send T33S15 with MID='DATA EEPROM'.</li> <li>• Send T33S16 with MID='DATA EEPROM'.</li> <li>• Send 4 T33S17 with MID='DATA EEPROM'.</li> <li>• Send T33S18 with MID='DATA EEPROM'.</li> <li>• Send 4 T33S19 with MID='DATA EEPROM'.</li> <li>• Send T33S37 with MID='DATA EEPROM'</li> <li>• Dump of TC queue every 6 TCs sent.</li> <li>• At the end, dump of the entire DATA EEPROM</li> </ul>

## 14. DELTA-COMMISSIONING PLANNING

ID	Task Name	Duration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14
1	AC FEE configuration	9 days	[Task bar]													
2	ST FEE configuration	1 day	[Task bar]													
3	ST planes alignment	8 days		[Task bar]												
4	MCAL general verification	2 days	[Task bar]													
5	MCAL Burst trigger tuning	7 days		[Task bar]												
6	SA FEE configuration	2 days	[Task bar]													
7	SA Burst trigger tuning	3 days		[Task bar]												
8	SA Raw Imaging tuning	1 day						[Task bar]								
9	SA Burst Imaging tuning	3 days							[Task bar]							
10	AC Veto efficiency estimation	1 day										[Task bar]				
11	Final observation	3 days											[Task bar]			
12	DATA EEPROM update	1 day														[Task bar]

N.B.: The duration of the task “AC heaters thresholds lowering” (see section 4.1) is not considered in this planning.