



Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic:

Date:

Issue:

FOS Report for week 51, year 2021

from 20 DEC 2021 to 27 DEC 2021

1.0

1 General Comments

Activities scheduled for this week are those planned for the 51st calendar week of 2021:

20 DEC 2021 to 27 DEC 2021 (DoYs 354 to 361).

The following routine activities were planned this week (see Gantt chart on next page and CRF 1017).

- One Warm NIR Calibration on 22 DEC 2021 (DoY 356) with ETO 11:51:00z (orbit 63793; ASCENDING: thermally UNSTABLE) and with the following expected calibration values:
 - B.T. = 04.42°
 - R.M.S. = 01.61
 - Sun elevation = 31.87°
 - Moon elevation = -28.64°
 - R.A. = 250.82°
 - DEC. = -81.03°
- One PMS Offset on 23 DEC 2021 (DoY 357), including three Short Calibrations at 06:09:00.0z, 06:09:34.8z, and 06:10:09.6z (orbit 63804).
- Local Oscillator Calibrations every 10 minutes.
- X band Passes over ESAC and Svalbard.

2 Mission Planning Deviations

Because of MIRAS halt 21 DEC 2021 the following X band GS passes were not acquired (see Sect. 4) :

Station	AoS	LoS	Duration
Xband_SVAL	2021-12-21T09:56:08	2021-12-21T10:00:08	240
Xband_SVAL	2021-12-21T11:37:55	2021-12-21T11:41:38	223
Xband_SVAL	2021-12-21T13:18:26	2021-12-21T13:24:07	341
Xband_SVAL	2021-12-21T14:58:20	2021-12-21T15:06:18	477
Xband_SVAL	2021-12-21T16:37:59	2021-12-21T16:47:31	572
Xband_SVAL	2021-12-21T19:56:36	2021-12-21T20:07:03	626
Xband_SVAL	2021-12-21T21:35:33	2021-12-21T21:45:52	619
Xband_SVAL	2021-12-21T23:14:16	2021-12-21T23:24:32	615
Xband_SVAL	2021-12-22T00:52:57	2021-12-22T01:03:19	622
Xband_SVAL	2021-12-22T02:31:55	2021-12-22T02:42:22	626
Xband_SVAL	2021-12-22T04:11:58	2021-12-22T04:21:40	581
Xband_SVAL	2021-12-22T07:33:48	2021-12-22T07:40:55	426



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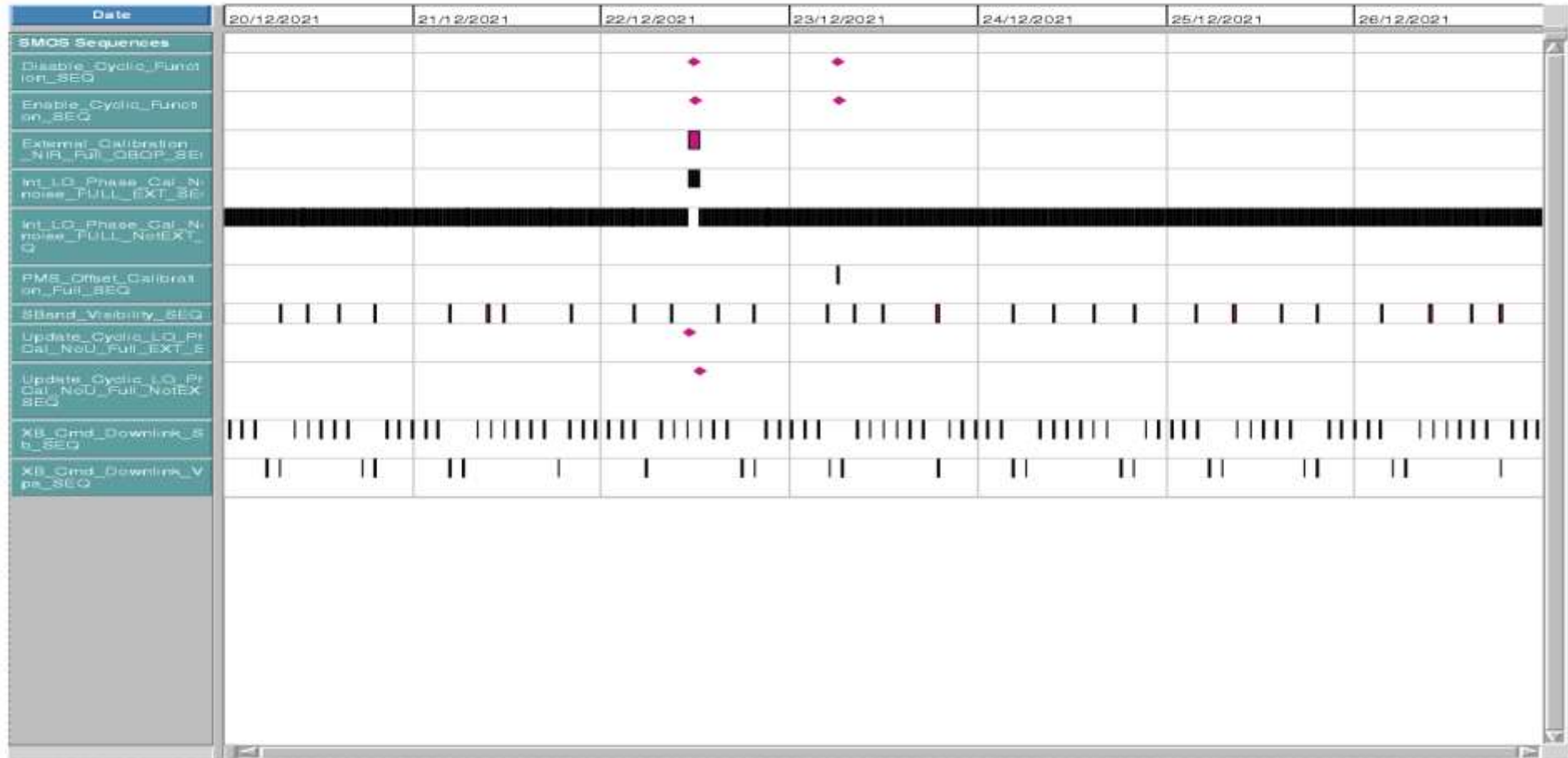
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Schedule Name: 2021_w51_or ### Display start: 20-12-2021 00:00:00.000 ### Display end: 27-12-2021 00:00:00.000





3 TC Failures

None.

4 On Board Anomalies

- MIRAS instrument MM, partition P11, latched up 2021-12-20T17:18:00,933z (DoY 354).

The following parameters went out of limits in the PLPC system:

2021.354.17.18.00,933z DMASME01 LU Switch P11

2021.354.17.18.00,933z DMASME37 SDD LU Detected

This anomaly was geolocated northeast of the Island of Komsomolets (Russia):

LAT. = 81.52°

LONG. = 108.84°

There were no science data losses associated with this anomaly because it affected partition P11 (i.e. a spare partition), while the Read and Write pointers were both in partition P2.

Recovery was scheduled 21 DEC 2021, at 13:22:21z (CRF 1018), but it didn't take place (see anomalies below and previous FOS weekly report).

At the time of the anomaly the position of the MM pointers were as follows:

READ = 1081514 (partition P2)

WRITE = 1337415 (partition P2)

- MIRAS instrument MM, partition P2, latched up 2021-12-21T09:27:28,024z (DoY 355).

The following parameters went out of limits in the PLPC system:

2021.355.09.27.28,024z DMASME10 LU Switch P2

2021.355.09.27.28,024z DMASME37 SDD LU Detected

This anomaly was geolocated over the Estado de São Paulo (Brazil):

LAT. = -23.74°

LONG. = 312.18°

There were no science data losses associated with this anomaly because it affected partition P2, while the Read and Write pointers were both in partition P8.

However, this was the fourth MM partition latched-up in a row. As a result, science production ceased on-board. Consequently, a latch-up recovery was not scheduled (see anomaly below and previous FOS weekly report).

At the time of the anomaly the position of the MM pointers were as follows:

READ = 3619092 (partition P8)



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WRITE = 3806278 (partition P8)

- MIRAS stopped writing science TM in its MM 21 DEC 2021 at 09:27:27z, consequence of high solar activity that triggered four MM partitions to latch up in a short lapse of time (see anomalies above and previous FOS weekly report). About 3.5 hours of science TM were lost. This is a known anomaly seen few times during commissioning in 2010.

A procedure to recover MM latched-up partitions, scheduled 21 DEC 2021 at 13:22:21z, was too late. It is important to highlight that an alternative, earlier recovery time would have avoided MIRAS halt, yet equally caused significant data losses.

FOS commanded a manual reset of the instrument during S band pass IVK-16 (AoS=2021-12-21T11:28:20z) to recover all four MM latched-up partitions, and to recommence nominal activities. The procedure successfully ended the anomaly.

- MIRAS instrument MM, partition P11, latched up 2021-12-22T21:35:01,033z (DoY 356).

The following parameters went out of limits in the PLPC system:

2021.356.21.35.01,033z DMASME01 LU Switch P11

2021.356.21.35.01,033z DMASME37 SDD LU Detected

This anomaly was geolocated over the Provincia de Entre Ríos (Argentina):

LAT. = -33.10°

LONG. = 301.06°

There were no science data losses associated with this anomaly because it affected partition P11 (i.e. a spare partition), while the Read and Write pointers were both in partition P2.

Recovery took place 23 DEC 2021, at 12:30:00z (CRF 1023).

At the time of the anomaly the position of the MM pointers were as follows:

READ = 1036672 (partition P2)

WRITE = 1132121 (partition P2)

5 On Board Events Telemetry

The following RAM Single Bit errors befell this week:

Event Description	Packet ID	Severity	Event Time	Parameters
RAM Single Bit Error	730	WARNING	2021.355.10.30.27,355	221CBCC
RAM Single Bit Error	730	WARNING	2021.355.15.09.43,900	221CBCC
RAM Single Bit Error	730	WARNING	2021.360.17.40.48,720	2362DE8

6 FOS Systems Status

All FOS systems nominal.



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7 Data Reception from CNES

All S band passes were correctly received from CNES and successfully processed by the FOS PLPC system.

8 X Band Data Reception in PXMF

None, all S band passes successfully received and processed.

9 Exceptional Activities

None.

10 AOB

None.



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APPENDIX A: OOLs

The following OOLs befell at the time the MIRAS instrument MM, partition P11, latched up 2021-12-20T17:18:00,933z (DoY 354):

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2021.354.19.34.23,998	2021.354.17.18.00,933	DMASME01	LU Switch P11	OFF	ON
2021.354.19.34.23,998	2021.354.17.18.00,933	DMASME37	SDD LU Detected	FALSE	TRUE

The following OOLs befell at the time the MIRAS instrument MM, partition P2, latched up 2021-12-21T09:27:28,024z (DoY 355):

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2021.355.10.05.37,363	2021.355.09.27.28,024	DMASME10	LU Switch P2	OFF	ON
2021.355.10.05.37,363	2021.355.09.27.28,024	DMASME37	SDD LU Detected	FALSE	TRUE

The following OOLs befell at the time the MIRAS instrument MM, partition P11, latched up 2021-12-22T21:35:01,033z (DoY 356):

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2021.357.05.11.09,672	2021.356.21.35.01,033	DMASME01	LU Switch P11	OFF	ON
2021.357.05.11.09,672	2021.356.21.35.01,033	DMASME37	SDD LU Detected	FALSE	TRUE