Title : **GOCE L1b Data Quality Control Report**
August 2011

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Distribution : GOCE Users Community

DOCUMENT CHANGE RECORD

Issue	Date	Reason for Change	Changed Pages/Paragraphs
1.0	10/10/2012	First issue	

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1. INTRODUCTION

1.1 Purpose and Scope

This document contains the Quality report for GOCE L1b data for August 2011.

The latest version of this document is available on the GOCE Data Quality portal at:

http://earth.esa.int/GOCE/ → "Level 1b QC" → "Monthly"

The GOCE Data Quality portal is the principal source for any quality-related information on GOCE products.

http://earth.esa.int/GOCE/ → "Level 1b QC".

1.2 Glossary

The following acronyms and abbreviations have been used in this report.

| ABBREVIATION	MEANING
EGG	Electrostatic Gravity Gradiometer
DFACS	Drag Free and Attitude control system
SST-I	Satellite-to-satellite tracking instrument
CTR	Control Voltages
STR	Star Tracker
Trace SD	Trace Spectral Density
ICM	Inverse Calibration Matrix
GAR	Gradiometer Angular Rates
FPM	Fine Pointing Mode

2. AUGUST 2011 OVERVIEW

- Trace SD out of spec due to CM outlier around UTC 06/08/2011 00:13:04.

- Instrument Calibration operations were performed on August 23rd. EGG data are not produced during Calibration Operations. Aug 23rd and 24th data are affected by these operations.

- S/C Anomaly: coherency failure of ASH2 and ASH5.

- Beam Out event at UTC 26/08/2011 02:24:01.
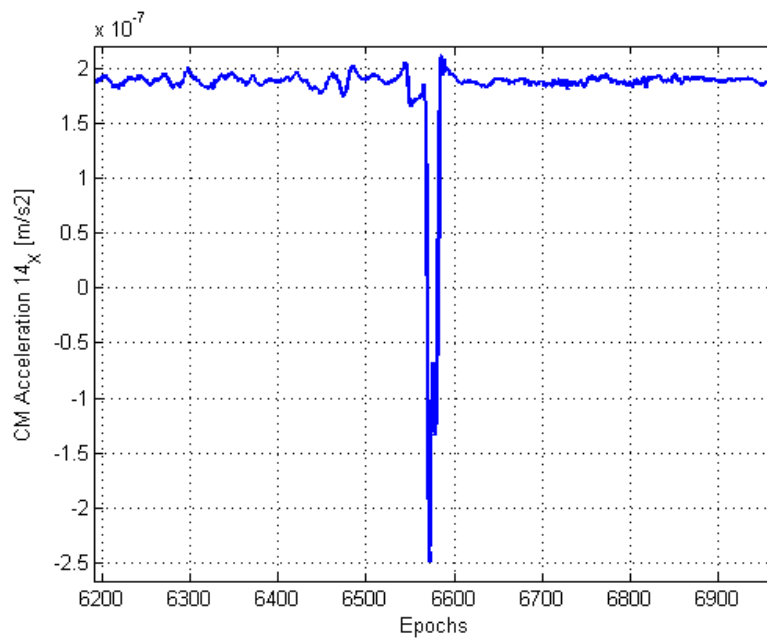
3. AUGUST 2011 DATA QUALITY ANALYSIS

3.1 CM outlier on 06th of August

The Gravity gradients trace spectral density is not nominal, during the 06th August reference period. Trace SD is reported below.
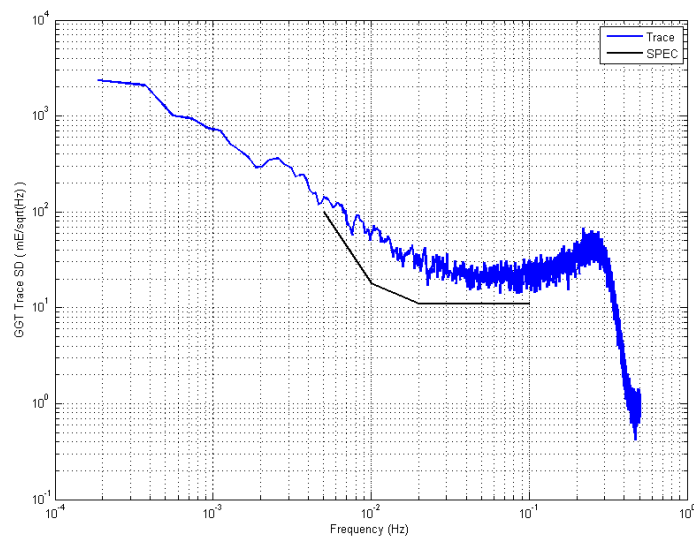
Figure 1 Trace PSD

The not nominal behaviour of the trace PSD is due to an anomalous oscillation which affects the CM time series occurred on 06th of August at 00:13:14:

Figure 2 CM 14_X anomaly

3.2 Instrument calibration

Special Spacecraft Operations for Instrument Calibration were performed on 23rd August 2011, from

- 20110823T073725

to

- 20110824T073303

EGG_NOM_1b data are unavailable during this period, i.e. between products:

- GO_CONS_EGG_NOM_1b_20110823T060741_20110823T073725

and

- GO_CONS_EGG_NOM_1b_20110824T073303_20110824T090247

3.3 S/C anomaly: coherency failure on ASH2 and ASH5

An isolated EGG Validation_Failed event was generated at 237.06.45.21 (25/08/2011) due to a coherency failure on ASH2 and ASH5. At the same time a large spike in the DFACS measured x-axis linear acceleration was visible. No failing of the DFAC EGG Linear and Angular acceleration Validity flags could be seen in the TM.

The EGG status after this event was nominal. The effect of this event in the science data is reported.

Trace and Gradients

The anomaly is clearly visible in the components Uyy and Uzz time series of the gravity gradients and in their respective PSDs, as reported below:
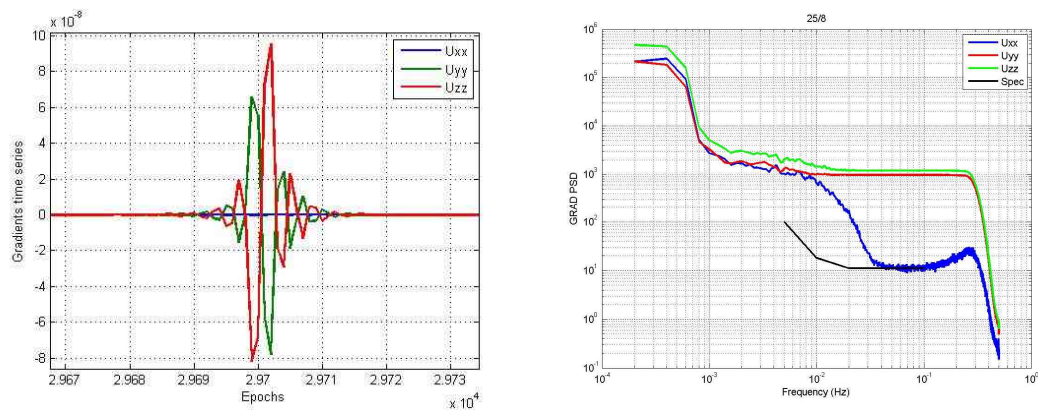

Figure 3 Anomaly in the Uyy and Uzz gradients time series and PSDs

The anomaly has a severe impact on the data quality also in terms of trace PSD, as reported below:
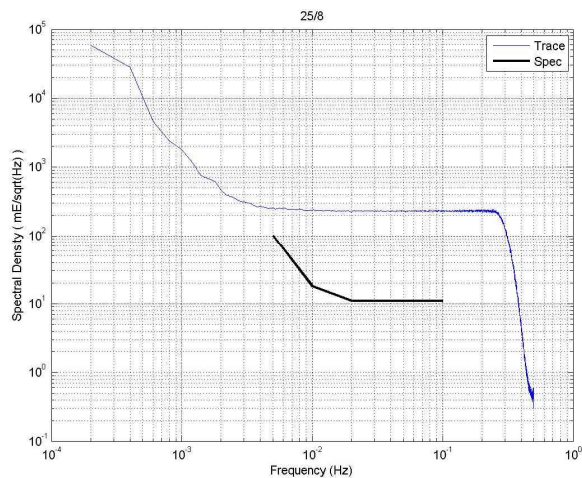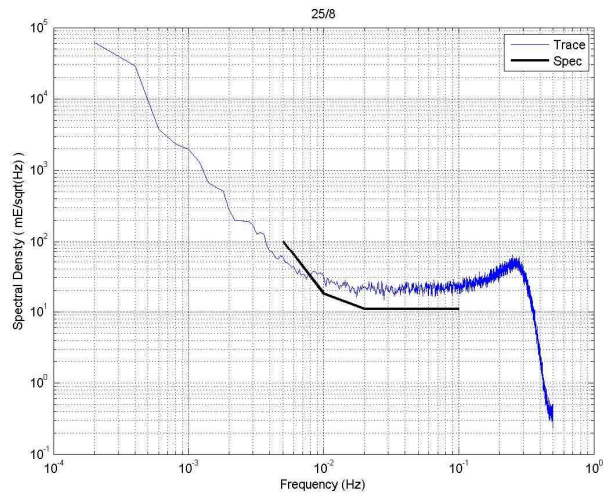

Figure 4 Trace PSD 25/08

The effect is isolated and does not have impacts on a long term. The trace immediately after the anomaly is nominal, as reported below:

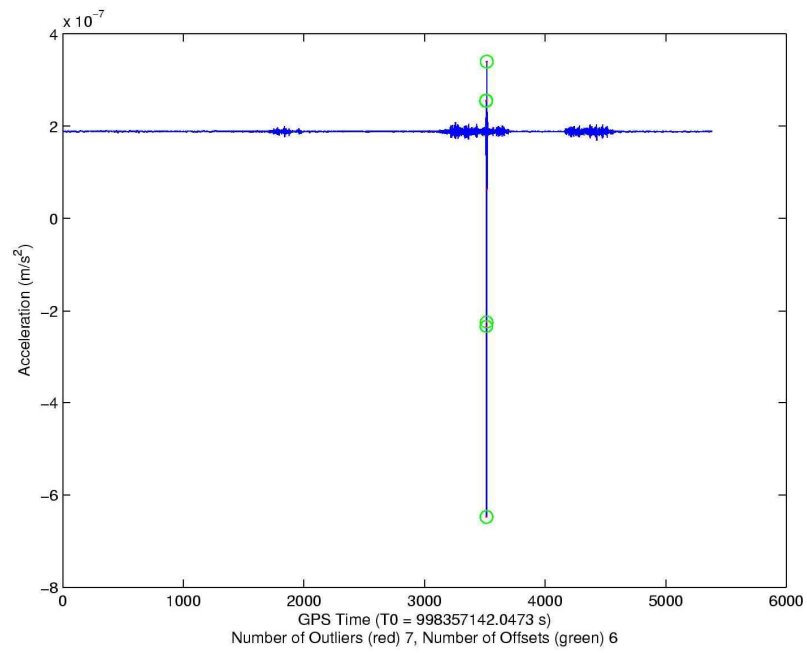**Figure 5 Trace PSD after the anomaly**

3.4   Beam Out event

One Beam Out events occurred at the following UTC time during August 2011 reference frame:

EVENT NUMBER	UTC TIME
1	26/08/2011 02:24:01

Table 1 Beam out event

Below, the effects of the Beam Out in the common mode acceleration, component 14_x, are displayed.

Figure 6 Beam Out event on 26th of August

The Beam Out event enters in the gradients time series notably in the Uxx component without any relevant impacts on performance.