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MEMO

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To Carey Noll (ILRS Central Bureau)

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Subject: Galileo FOC Satellite's LRA Additional Information

1 INTRODUCTION

As response to your email on 6 August 2014 [RD-02], please find the requested information [RD-02], additional to the what was provided in the SLR Mission Support Request Form [RD-01] submitted on 21 July 2014. The technical data described in this memo are applicable to all FOC satellites, GSAT0201 to GSAT0222 (ILRS names, Galileo 201 to Galileo222).

2 REFERENCES

[RD-01] ILRS SLR Mission Support Request Form for Galileo 201 and 202 satellites, 18 July 2014

[RD-02] Email from Carey Noll, ILRS Central Bureau, 6 August 2014.

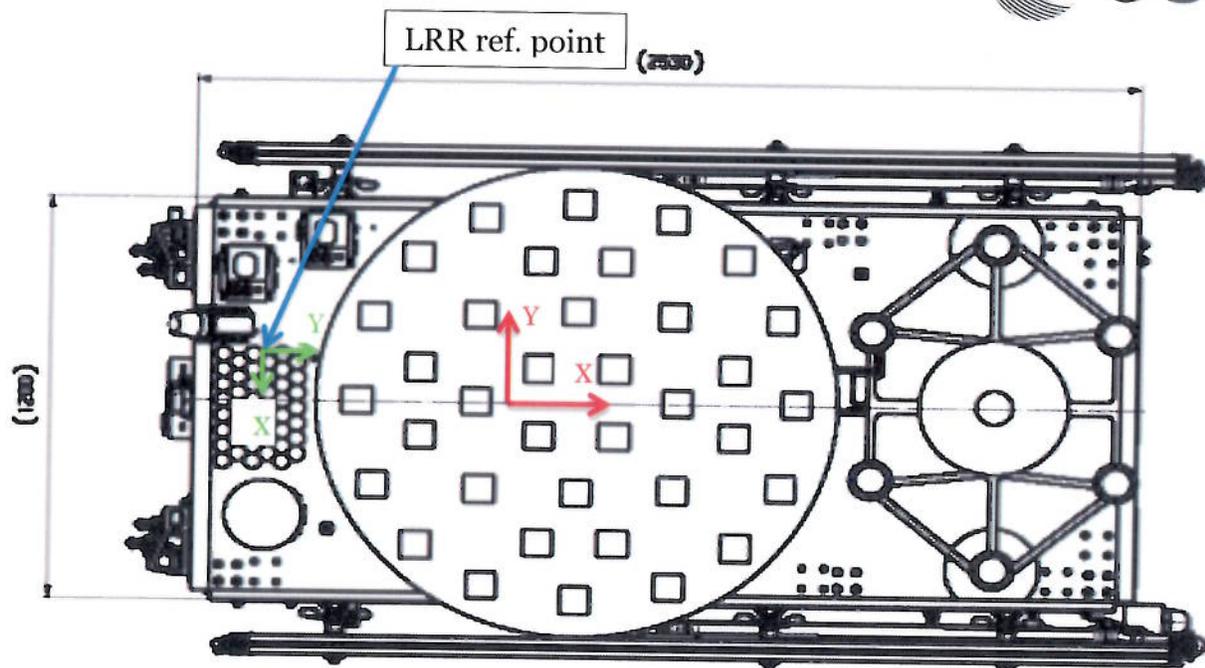


Figure 2: Nadir facing size of satellite, showing LRA (green) and S/C reference (red) axes direction. Z axis points toward Earth

4 XYZ COORDINATES FOR THE REFLECTORS AND ARRAY

The phase centre coordinates with respect the LRA reference point, as provided by the LRA manufacturer, IPIE, in the S/C reference directions, are:

- X = -9.5 mm
- Y = -165.5 mm
- Z = 17.45 mm

Given that there are 60 corner cubes, and that IPIE has provided the LRA centre of phase, we consider not necessary/convenient to provide the individual centre of phase for each of the corner cubes.

The LRA reference point coordinates with respect to the satellite reference origin, as provided by the satellite manufacturer is as follow:

- X = -693.4 mm
- Y = 138 mm
- Z = 1103 mm

The LRA centre of phase coordinates with respect to the satellite reference origin are:

- X = -703 mm
- Y = -27.5 mm
- Z = 1120.45 mm. Note that 3 mm difference with respect the value provided in the Mission Request [RD-01], this is due to a 3 mm width washer added as thermal interface between the satellite panel and the LRA.

5 **ADDITIONAL INFORMATION ABOUT THE CORNER CUBES:**

Number of Corner Cubes = 60
Optical Diameter = 28.2 mm
Total optical area ($\theta_{inc}=0^\circ$) = 374 cm²
Front to vertex dimension = 19.1 mm
Glass: Fused Silica
Refractive index at 532 nm, $n=1.461$
Front Coating Anti reflection coating for 532nm
Rear side coating Uncoated
Transmission of corner cubes ~90%

Resulting Performance:

Lidar Cross Section ($\theta_{zenith}=0^\circ$) 72 Million m²
Lidar Cross Section ($\theta_{zenith}=70^\circ$) 40 Million m²