

Characterization

Temperature and Radiation

Characterizations for sensor: 1506

TEMPERATURE CHARACTERIZATION

The temperature characterization is conducted using the temperature system CTS T-40/50 at the company facilities. Each sample is exposed at a temperature drift from 10°C to 75°C during one hour with measures every second. The data collected during the

temperature steps is processed and extracted the lineal regression equation. The regression equation permits to compensate the sensor output against the reference output and eliminate most of the temperature effect on the sensor readout.

Temperature readout (digits)	Sensor Frequency Output (Hz) - y	Reference Frequency Output (Hz) - x
107	46104	44020
127	46204	44164
143	46304	44288

Lineal regression equation: $y = mx + b$

m: 1,34 b: -15282

Temperature Offset: 86

Characterization

Temperature and Radiation

RADIATION CHARACTERIZATION

The radiation characterization is carried out using the 60-Co source of the Radiation Physics Laboratory at the University of Santiago de Compostela (USC). The radiation procedure consists of a non-biased irradiation of the sample at 30 rad(Si)/h dose rate for an

accumulated Total Ionizing Dose (TID) of rad(Si). The measures are carried out before and after the irradiation at the company facilities. From the data collected it is extracted the sensitivity for each sensor.

Pre-irradiation sensor value (Hz) - pre*	Post-irradiation sensor value (Hz) - post*
766.085	-5935.72

Sensor sensitivity: $s = (\text{pre} - \text{post}) / 15$

$$s = 447 \text{ Hz/rad}$$

* Temperature compensated

Characterization

Temperature and Radiation

Characterizations for sensor: **1507**

TEMPERATURE CHARACTERIZATION

The temperature characterization is conducted using the temperature system CTS T-40/50 at the company facilities. Each sample is exposed at a temperature drift from 10°C to 75°C during one hour with measures every second. The data collected during the

temperature steps is processed and extracted the lineal regression equation. The regression equation permits to compensate the sensor output against the reference output and eliminate most of the temperature effect on the sensor readout.

Temperature readout (digits)	Sensor Frequency Output (Hz) - y	Reference Frequency Output (Hz) - x
110	48956	48152
130	49064	48300
146	49156	48416

Lineal regression equation: $y = mx + b$

m: 1,29 b: -14961

Temperature Offset: 89

Characterization

Temperature and Radiation

RADIATION CHARACTERIZATION

The radiation characterization is carried out using the 60-Co source of the Radiation Physics Laboratory at the University of Santiago de Compostela (USC). The radiation procedure consists of a non-biased irradiation of the sample at 30 rad(Si)/h dose

rate for an accumulated Total Ionizing Dose (TID) of rad(Si). The measures are carried out before and after the irradiation at the company facilities. From the data collected it is extracted the sensitivity for each sensor.

Pre-irradiation sensor value (Hz) - pre*	Post-irradiation sensor value (Hz) - post*
16.6196	-6286.58

Sensor sensitivity: $s = (\text{pre} - \text{post}) / 15$

$$s = 421 \text{ Hz/rad}$$

* Temperature compensated