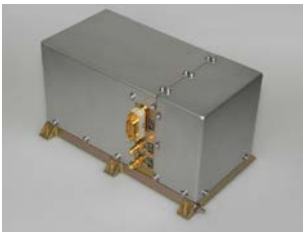
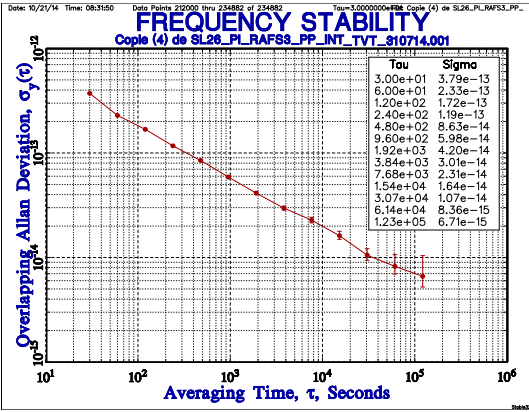


<b>Title:</b>	<i>“ Design, Development and Validation of Robust RAFS Design”</i>																														
<b>Contract type</b>	<i>EGEP (ID 47)</i>	<b>Budget (K€)</b>	<b>1000 K€</b>																												
<b>Company (-ies) (including country)</b>	Orolia Switzerland SA (Spectratime) Switzerland																														
<b>Team (name of the participant in the project)</b>	<ul style="list-style-type: none"> <li>- Fabien Droz</li> <li>- Pascal Rochat</li> <li>- Sébastien Boillat</li> <li>- Batiste Scheidegger</li> </ul>																														
<b>(*) Speaker (s)</b>	Fabien Droz	<b>Email</b>	droz@spectratime.com																												
<b>Short Speaker Information (experience and involvement in this project)</b>	<p>Involved in space atomic clock development since 1999. In charge of the production and delivery of already 67 space clocks flying on-board of 26 satellites since that time. In charge of the technical and management tasks of the project.</p>																														
<b>Summary of the activity (maximum 400 words)</b>	<p>In order to improve the robustness of the existing GALILEO FOC design, the occurrence and the amplitude of frequency anomalies were strongly reduced. The strategy was to reduce the influence of the identified causes through their intrinsic coefficients. Mainly the light shift and the power shift coefficients are concerned.</p> <p>The critical coefficients were reduced by significant factors:</p> <ul style="list-style-type: none"> <li>- light shift coefficient: reduction factor of 10,</li> <li>- power shift coefficient: reduction factor of 5.</li> </ul> <p>In addition to that, the atomic line bandwidth was reduced from 1.2KHz to 300Hz leading to a better clock frequency stability both in short and long term. Performances achievements during uninterrupted operation of several months demonstrate a monotonic behavior, a typical stability of <math>1 \times 10^{-14}</math> @ <math>10^5</math> sec.</p> <p>It must be noted that the new design do not introduced new processes in order to benefit of the previous qualification heritage.</p>																														
	<div style="display: flex; align-items: center;">  <div>  <table border="1" style="font-size: small; border-collapse: collapse;"> <thead> <tr> <th>Tau</th> <th>Sigma</th> </tr> </thead> <tbody> <tr><td>3.00e+01</td><td>3.79e-13</td></tr> <tr><td>6.00e+01</td><td>2.33e-13</td></tr> <tr><td>1.20e+02</td><td>1.72e-13</td></tr> <tr><td>2.40e+02</td><td>1.19e-13</td></tr> <tr><td>4.80e+02</td><td>8.63e-14</td></tr> <tr><td>9.60e+02</td><td>5.98e-14</td></tr> <tr><td>1.92e+03</td><td>4.20e-14</td></tr> <tr><td>3.84e+03</td><td>3.01e-14</td></tr> <tr><td>7.68e+03</td><td>2.31e-14</td></tr> <tr><td>1.54e+04</td><td>1.64e-14</td></tr> <tr><td>3.07e+04</td><td>1.07e-14</td></tr> <tr><td>6.14e+04</td><td>8.36e-15</td></tr> <tr><td>1.23e+05</td><td>6.71e-15</td></tr> </tbody> </table> </div> </div>			Tau	Sigma	3.00e+01	3.79e-13	6.00e+01	2.33e-13	1.20e+02	1.72e-13	2.40e+02	1.19e-13	4.80e+02	8.63e-14	9.60e+02	5.98e-14	1.92e+03	4.20e-14	3.84e+03	3.01e-14	7.68e+03	2.31e-14	1.54e+04	1.64e-14	3.07e+04	1.07e-14	6.14e+04	8.36e-15	1.23e+05	6.71e-15
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(\*) The speaker needs to do the registration through the [website](#)