Board Statement on Early Science

At its meeting on November 16th-18th2010, the ALMA Board noted the tremendous recent progress in construction and commissioning of the array and recorded its thanks to the ALMA and regional Executive staff and contractors for their many contributions. Eight of the 66 antennas have already been deployed at the 5,000-m elevation site. The accompanying test images illustrate the potential of the full array for unprecedented scientific discovery in the cold Universe.

In preparation for the announcement of the commencement of Early Science with a subset of the ALMA array capabilities, the Board received reports and recommendations from a number of comprehensive reviews of the ALMA project. They enthusiastically endorse the review conclusions that ALMA is on track to begin Early Science observations in the second half of 2011, as planned. While many challenges remain, it is already clear that 'ALMA works'.

It is anticipated that a call for proposals for Early Science will be released in the first quarter of 2011. That announcement will provide more details of the expected timeline and capabilities to be offered.

Figure 1. Eight antennas at the Array Operations Site. (Credit: S. Argandoña.)

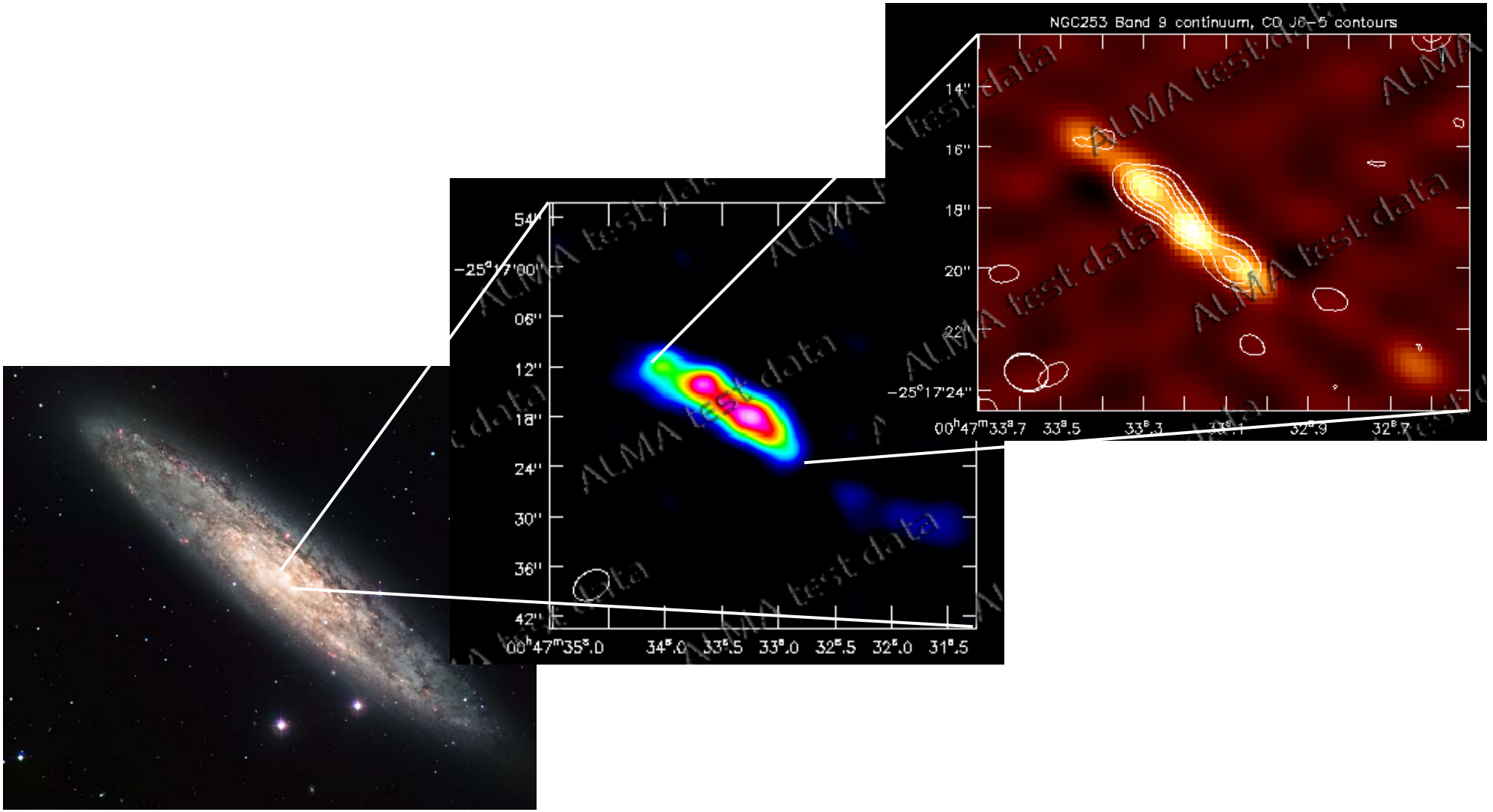

Figure 2. This shows the well-known spiral NGC253, with an optical image of the whole galaxy on the left (credit: ESO). The ALMA test images show dense clouds of gas in the central regions of the galaxy: (middle) the CO J = 2-1 line at 230 GHz and (right) the continuum and CO J = 6-5 line at 690 GHz.

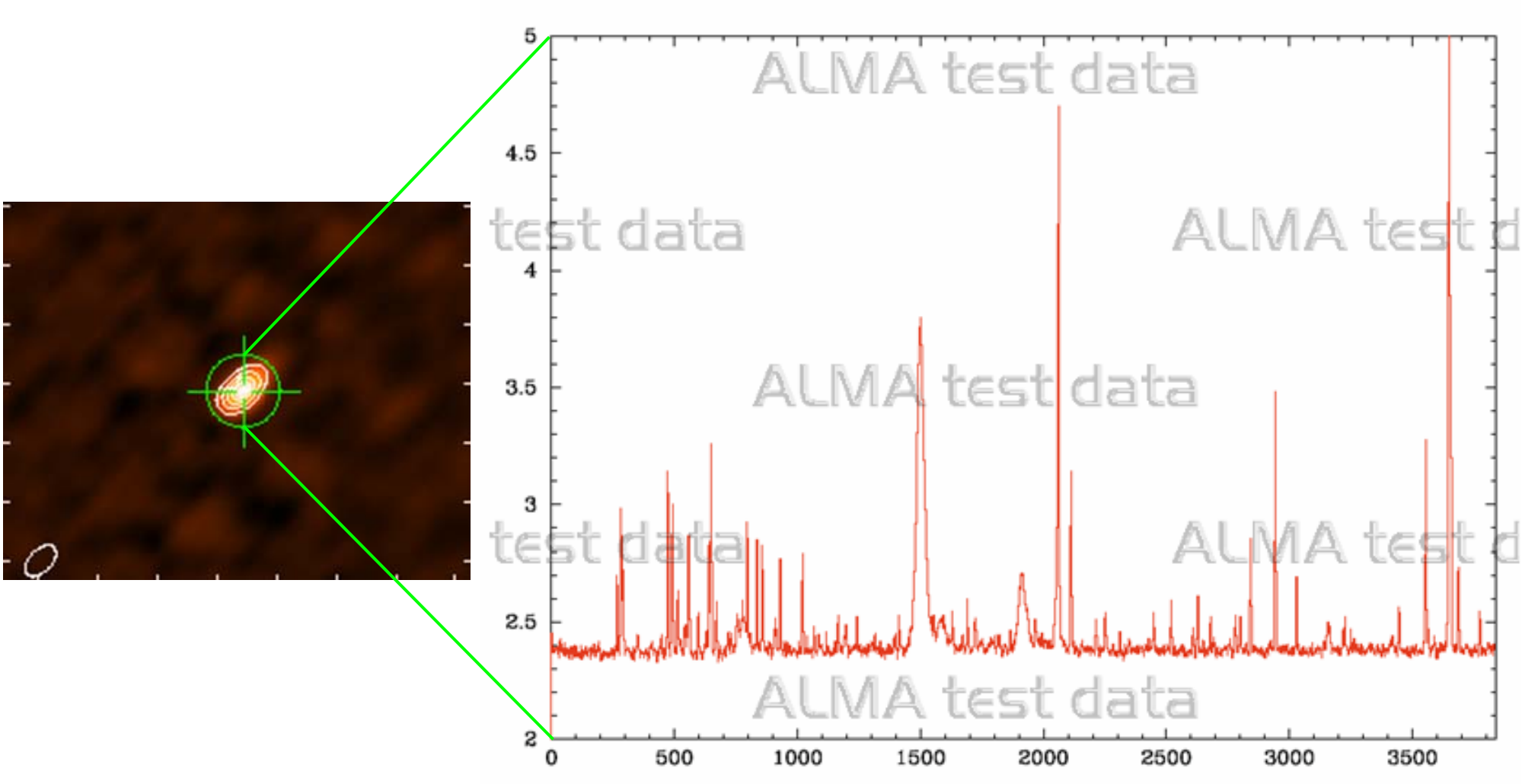

Figure 3. An example of ALMA's potential as a spectroscopic instrument: on the left is the map of the molecular "hot core" G34.26+0.15, which is unresolved with the short baselines that we are presently using, whereas a section of the spectrum near 100 GHz shows a "forest" of molecular lines.

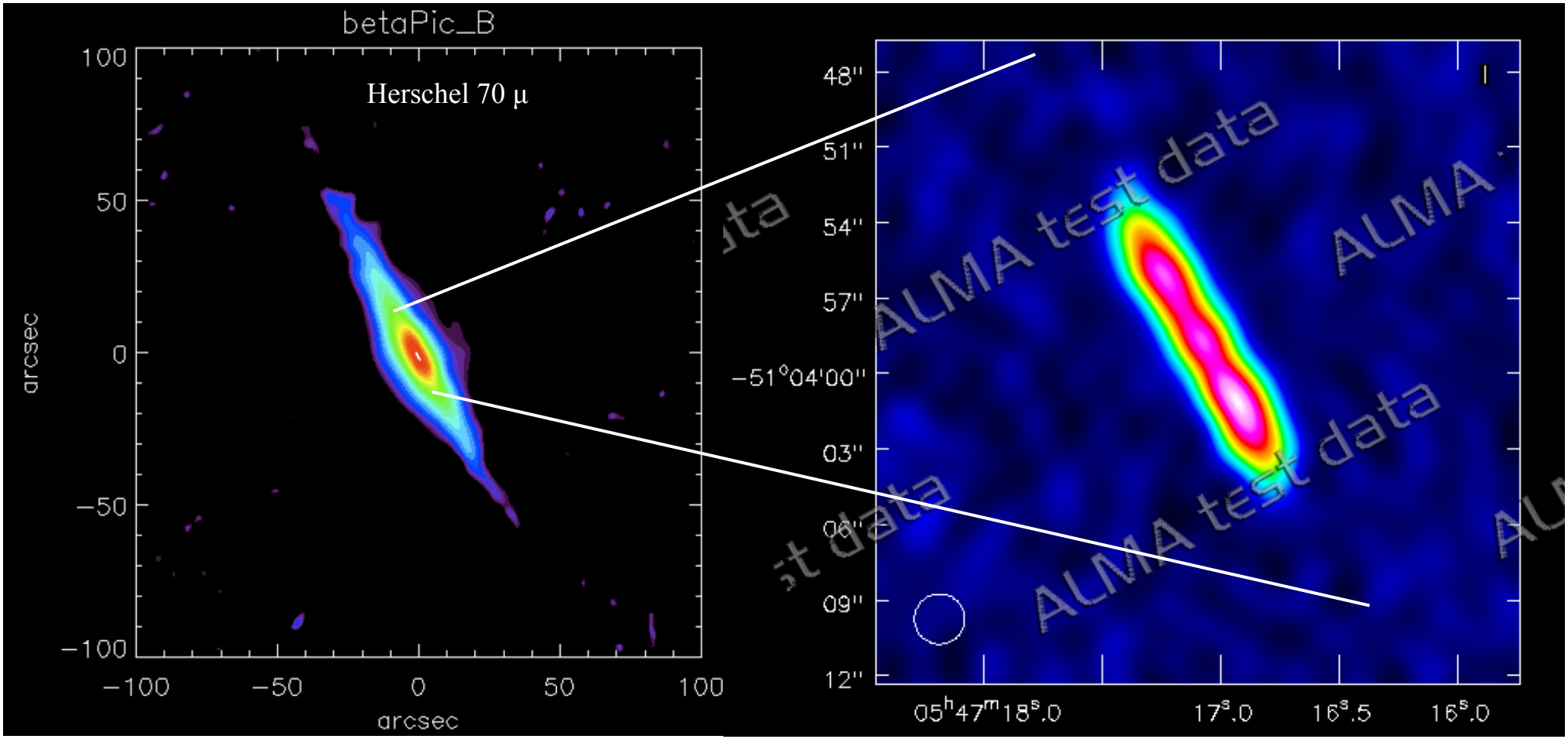

Figure 4. This shows the emission from the disk of dust surrounding the star Beta-Pictoris. On the left is an image at 70 microns wavelength made with Herschel, (Olofsson et al., SDP Presentations, Madrid, Dec 2009) and on the right is the ALMA test data at 870 microns showing the denser material in the central region of the disk.

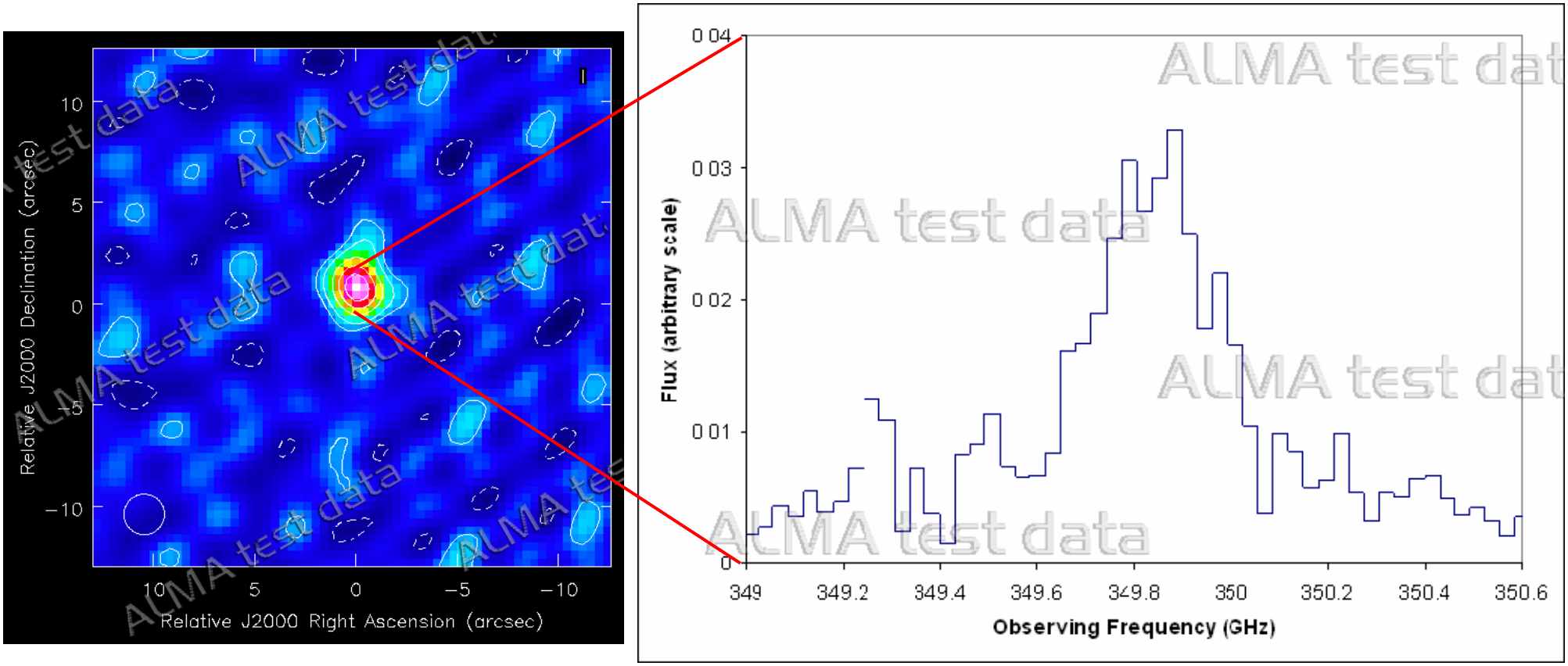

Figure 5. As a test of ALMA's ability to measure broad spectral lines, we observed the quasar BRI 0952-0115, which is at a red-shift of z = 4.43. The object is again unresolved on short baselines, but the 158 micron line from ionized carbon is clearly detected in the spectrum, which is impressive given that this observation took only one hour in total.