It sounds as if you should start over. These are the steps, assuming that the sample is presented to the instrument in a sample cell:

1. Determine the spectral precision of both instruments

1. Take a thoroughly-blended sample of the material with which you are working

2. Scan the sample 10 times, with cleaning and re-loading the cell between scans

Record the mean absorbance and SD and coefficient of variance (CV) of the absorbance

readings at 1680 and 2300 nm. This gives you the reproducibility.

3. Leave the 10th scan in the sample cell and re-scan it 9 more times without moving the cell

between scans. Record the same data. This gives you the repeatability, which should be much better than the reproducibility, because the error induced by loading has been removed. The repeatability data shows how well the instrument is reading the sample with no interference

from the operator.

Do this for both instruments. The mean absorbance values should agree to ideally the third, but definitely better than the second place of decimals. The CV for reproducibility should be less than 2%, and the CV for repeatability should be less than 1%. If instruments do not meet these criteria and disagree with each other considerably on the mean absorbance data you should contact your instrument service centre.

Assuming that both instruments pass these criteria and you can accept their performance go to step 2:

2. Identify all of the major sources of variance in the material with which you are working

3. Prepare a bulk sample to use as a control check throughout your work. Scan the sample several times during each day

4. Determine the reproducibility of your laboratory reference analysis of the check sample

5. Assemble at least 100 samples with a range in composition, and each source of variance replicated at least 3 times

6. Scan all of the samples on both instruments in duplicate, with cleaning and re-loading the sample cell between duplicates

7. Develop the calibration model using all of the spectral data from both instruments. It is a good idea to develop calibration models for single and duplicate scans. If the calibrations are

satisfactory for single scans this will double your throughput

8. Set the calibration into both instruments and scan 10-12 fresh samples on both instruments. The predicted results should now agree with each other

9. Test the control sample 10 times with cleaning and re-loading the cell between scans. Determine the reproducibility. It should be equal to, or better than that of the laboratory reference testing

10. If you have more than a single sample cell check that all cells give essentially the same absorbance values on the control sample. You can do this using Step 1, but only the first 10 scans are necessary for this.

This sounds like a lot of work, but all of the scanning for steps 1 and 2/10 can be carried out within a day