UVES Thorium-Argon Atlas

Setup: RED Echelle, CD#3 @ 580 nm

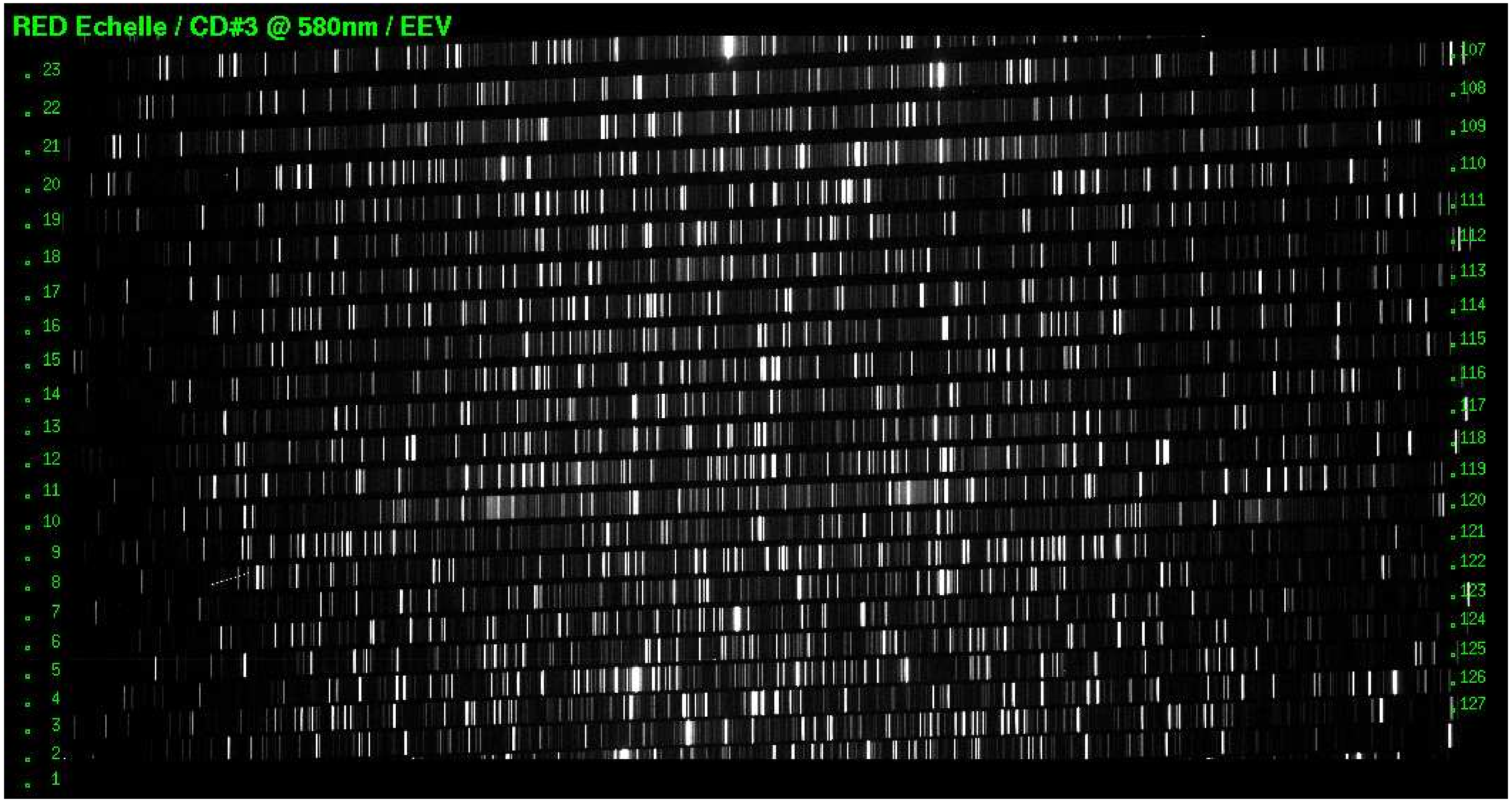
V0.1 2000-05-14 by A.Kaufer, ESO-Paranal

Contents:

- 2D image of the Thorium-Argon frame with
  - the instrument setup identified on the top,
  - the running number of the (extracted) order to the left,
  - the absolute order number to the right.
- plots of all extracted 1D orders with
  - the extracted order number, the absolute order number, and the instrument setup identified on the top,
  - the extracted Thorium-Argon spectrum in x-pixel coordinates
  - the lines identified by their wavelength (in blue)
- resolution plot as derived from the extracted Thorium-Argon spectrum

Information:

- The Thorium-Argon exposures have been taking with the following settings:
  - slitwidth: 0.5 arcsec
  - exposure time: 15 secs
  - CCD setup: readout-speed 225kHz, low gain, binning 1x1
- The CCD frames have been extracted and flipped/transposed with the S-PLIT/UVES tool available in the MIDAS context `uves`:
  - → the overscan regions are removed
  - → the orders are oriented to have a positive slope
  - → wavelengths are increasing from bottom to top


RED Echelle / CD#3 @ 580nm / EEV
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
107
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118
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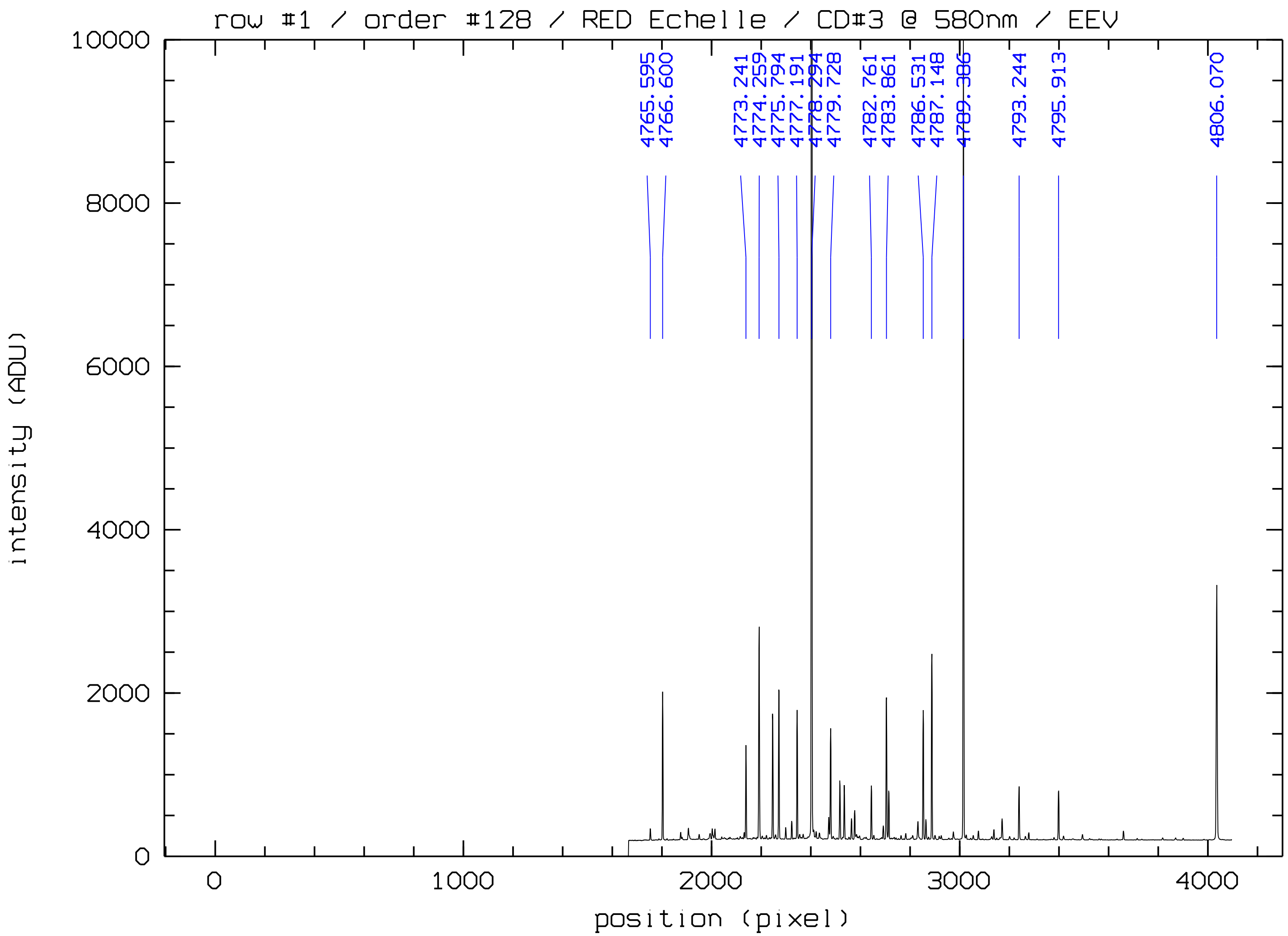
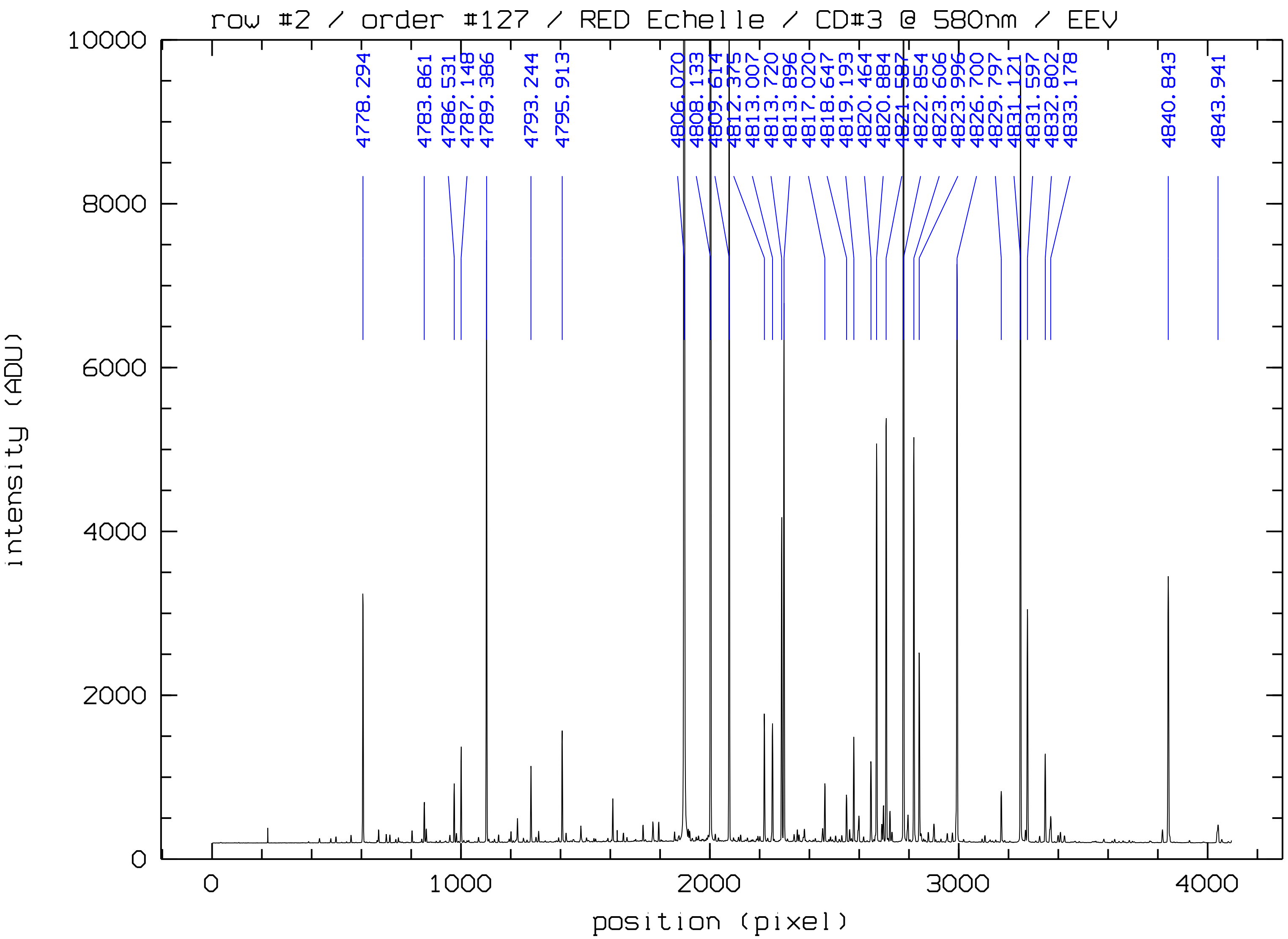
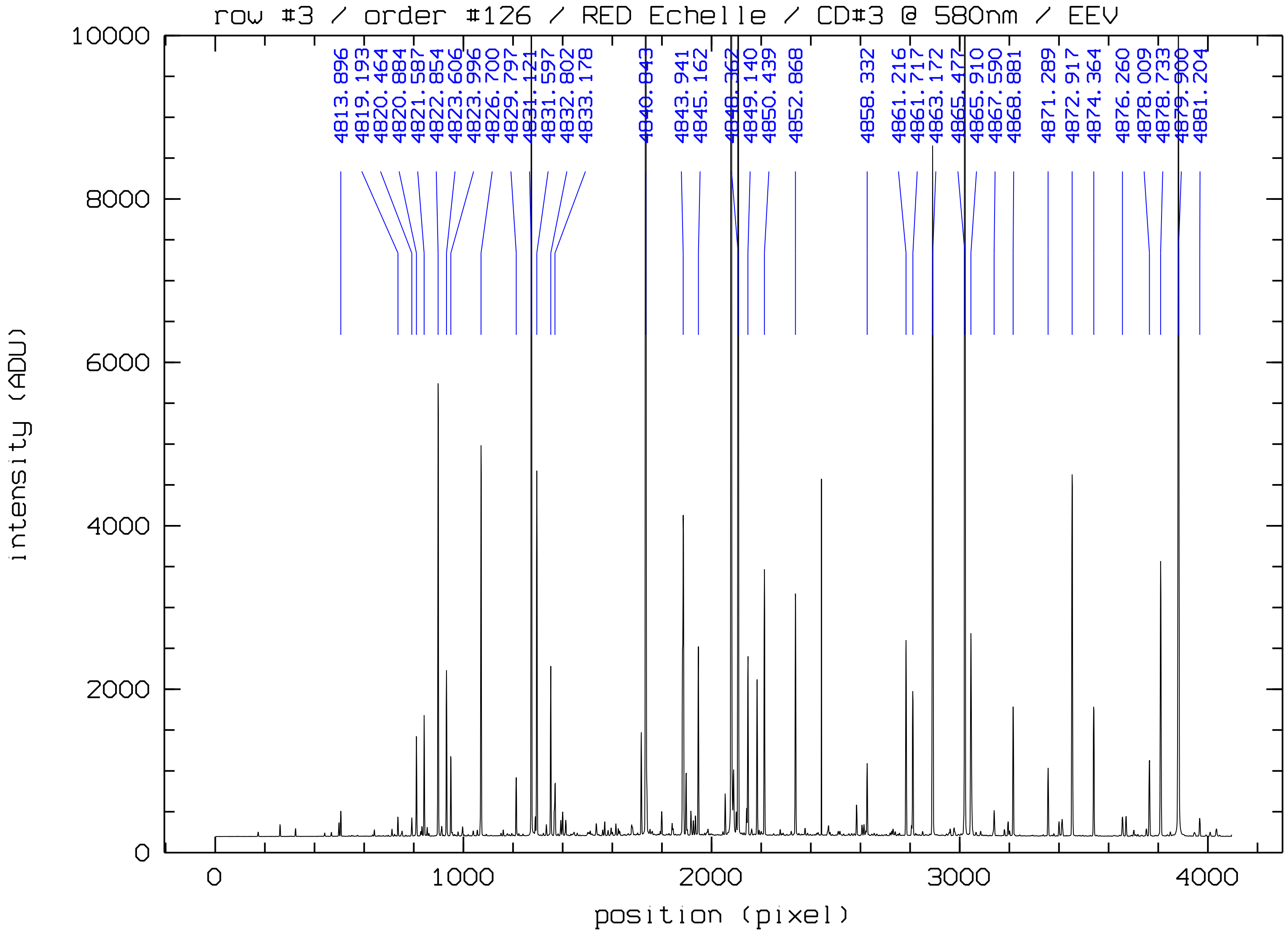
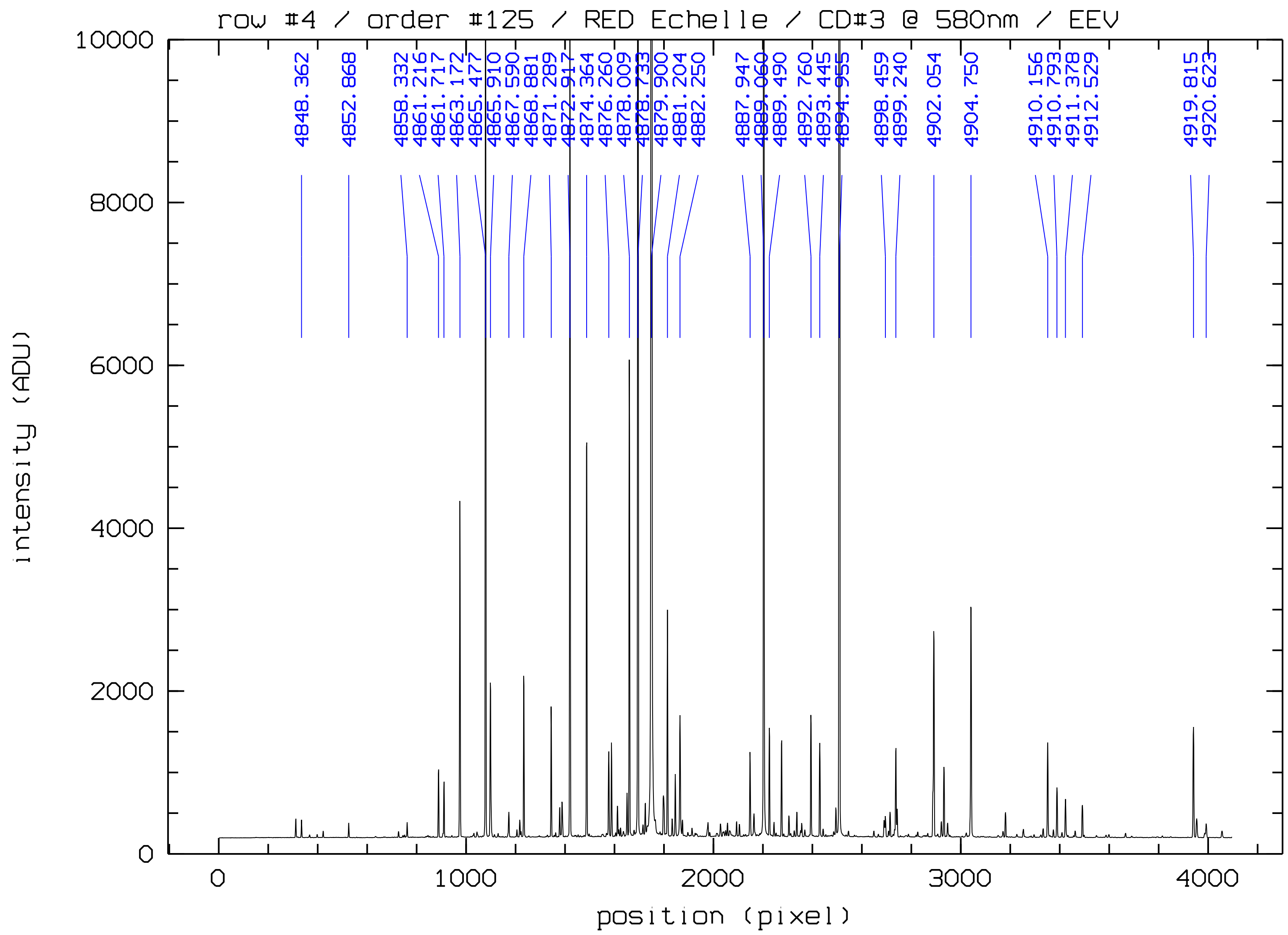
120
121
122
123
124
125
126
127

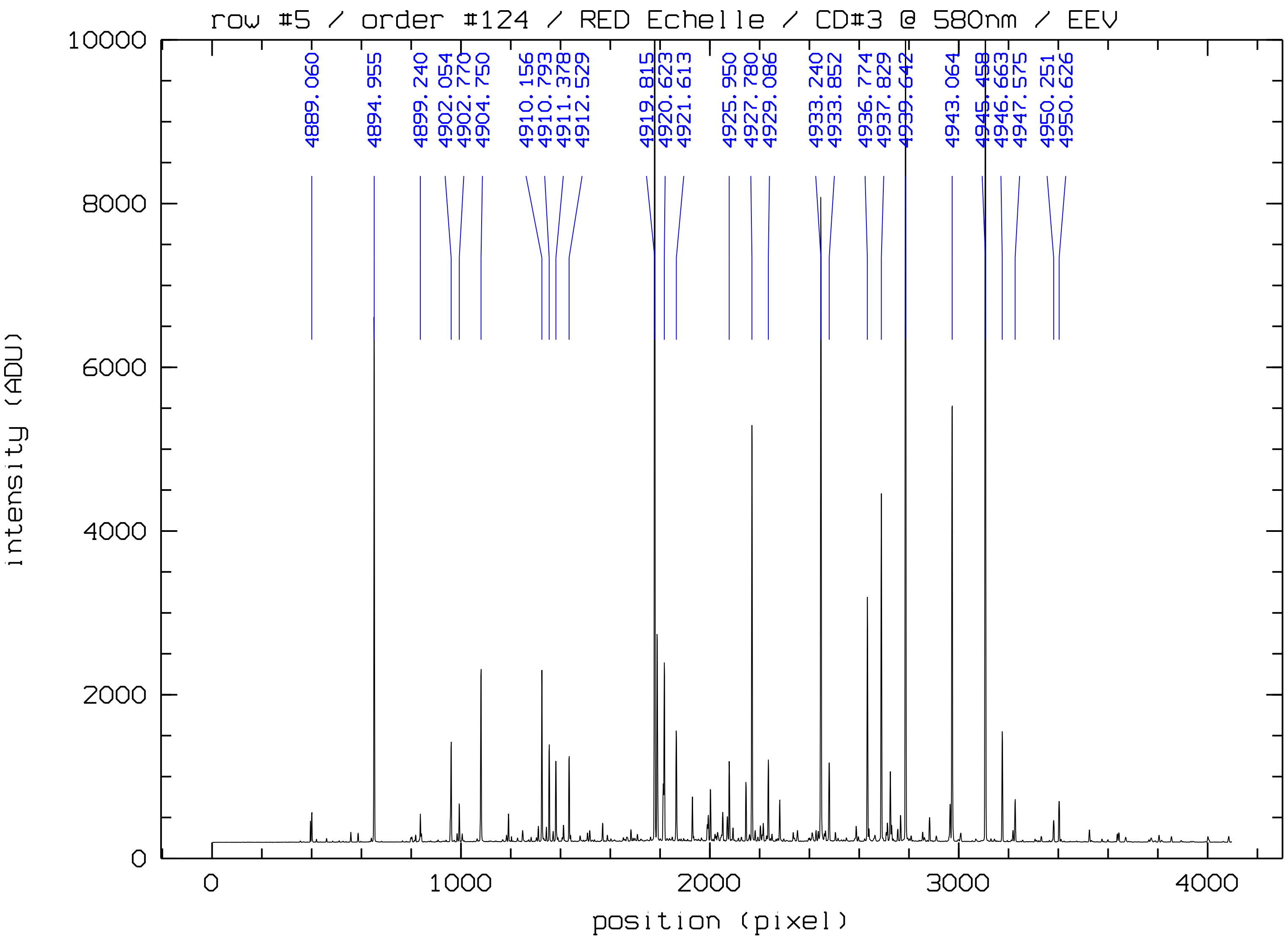

row #1 / order #128 / RED Echelle / CD#3 @ 580nm / EEV
4765.595
4766.600
4773.241
4774.259
4775.794
4777.191
4778.294
4779.728
4782.761
4783.861
4786.531
4787.148
4789.386
4793.244
4795.913
4806.070
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000

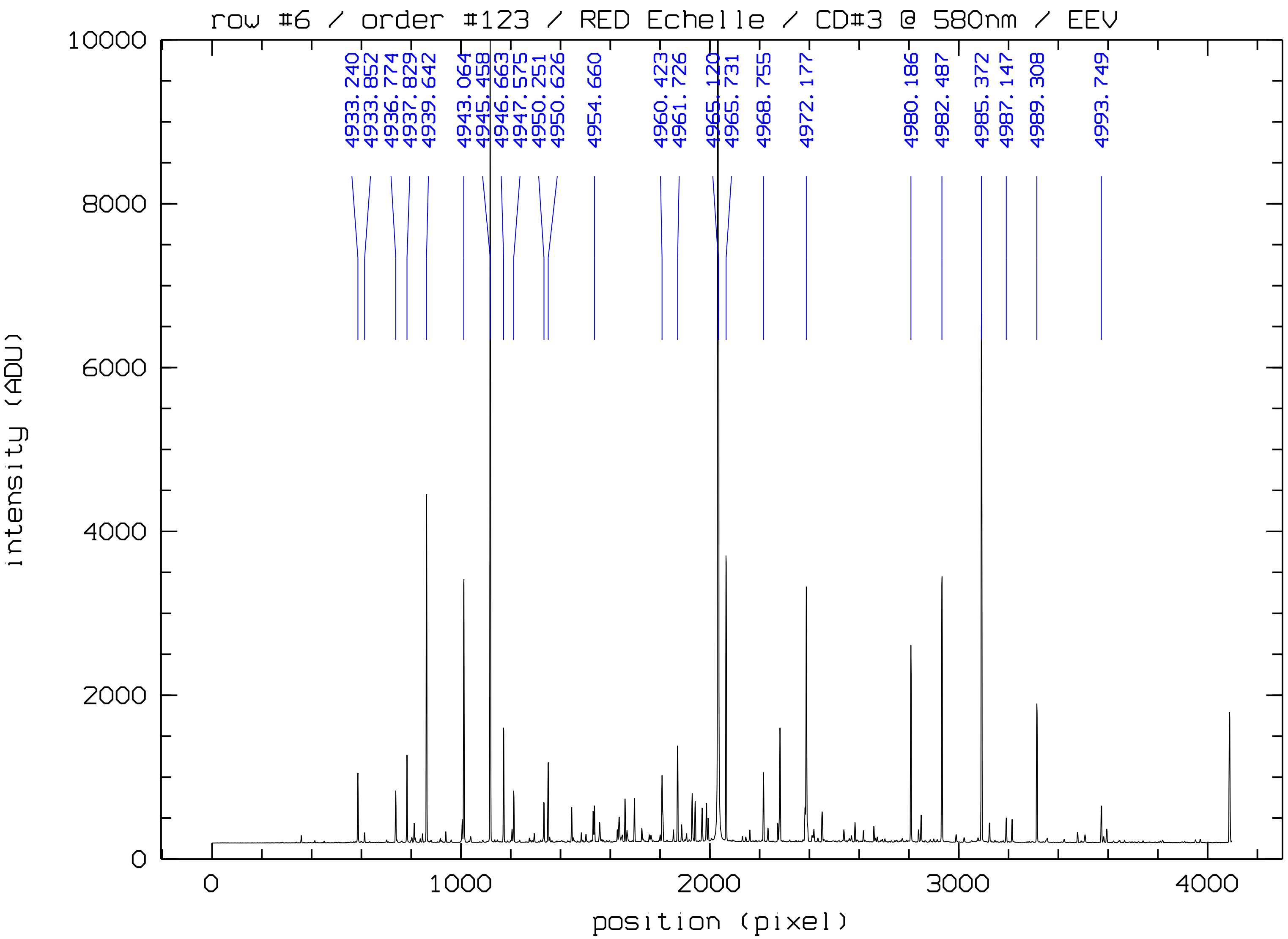


row #2 / order #127 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
4778.294
4783.861
4786.531
4787.148
4789.386
4793.244
4795.913
4806.070
4808.133
4809.614
4812.375
4813.007
4813.720
4813.896
4817.020
4818.647
4819.193
4820.464
4820.884
4821.587
4822.854
4823.606
4823.996
4826.700
4829.797
4831.121
4831.597
4832.802
4833.178
4840.843
4843.941

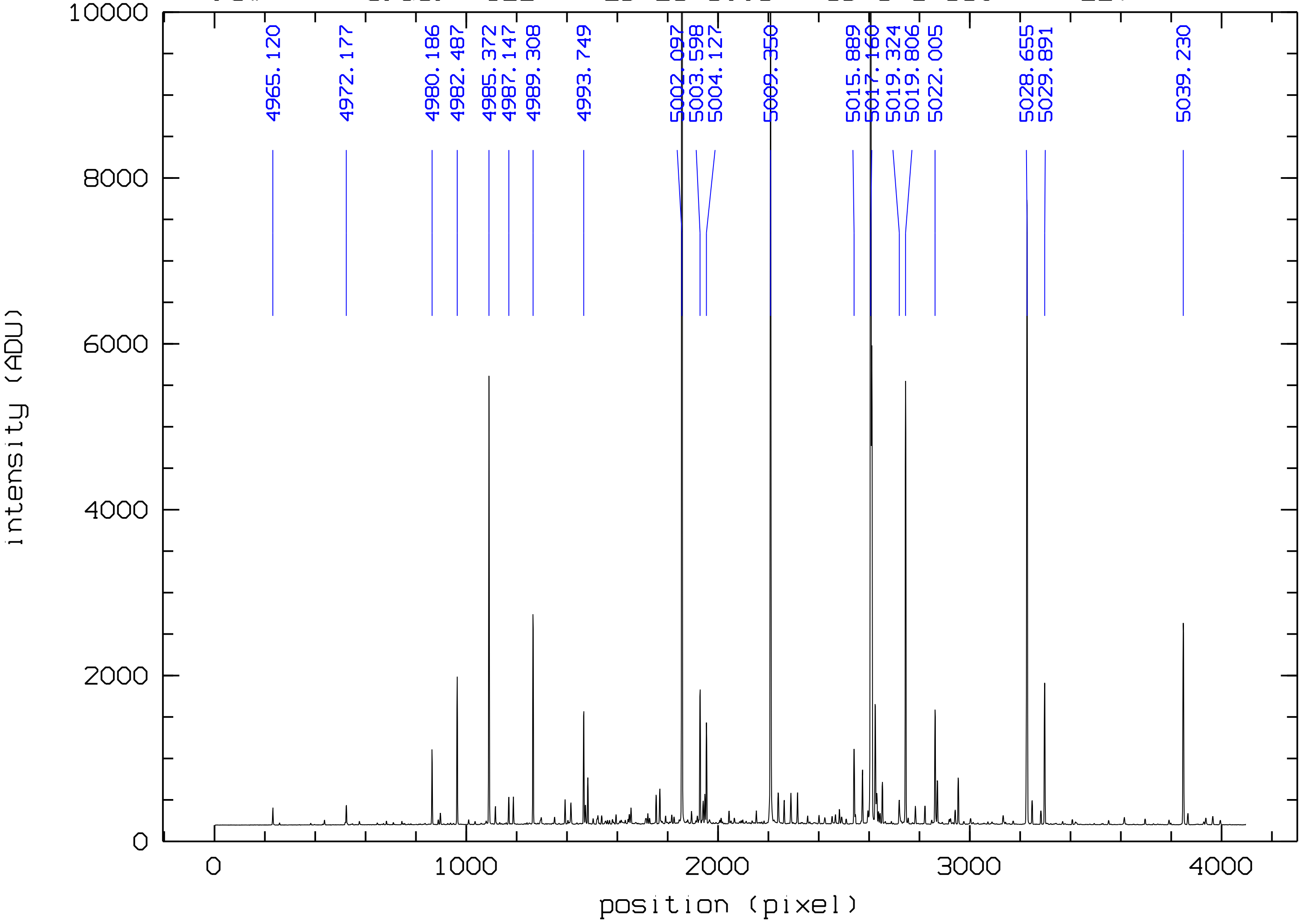

row #3 / order #126 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
4813.896
4819.193
4820.464
4820.884
4821.587
4822.854
4823.606
4823.996
4826.700
4829.797
4831.121
4831.597
4832.802
4833.178
4840.843
4843.941
4845.162
4848.362
4849.140
4850.439
4852.868
4858.332
4861.216
4861.717
4863.172
4865.477
4865.910
4867.590
4868.881
4871.289
4872.917
4874.364
4876.260
4878.009
4878.733
4879.900
4881.204


row #4 / order #125 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
4848.362
4852.868
4858.332
4861.216
4861.717
4863.172
4865.477
4865.910
4867.590
4868.881
4871.289
4872.917
4874.364
4876.260
4878.009
4878.733
4879.900
4881.204
4882.250
4887.947
4889.060
4889.490
4892.760
4893.445
4894.955
4898.459
4899.240
4902.054
4904.750
4910.156
4910.793
4911.378
4912.529
4919.815
4920.623

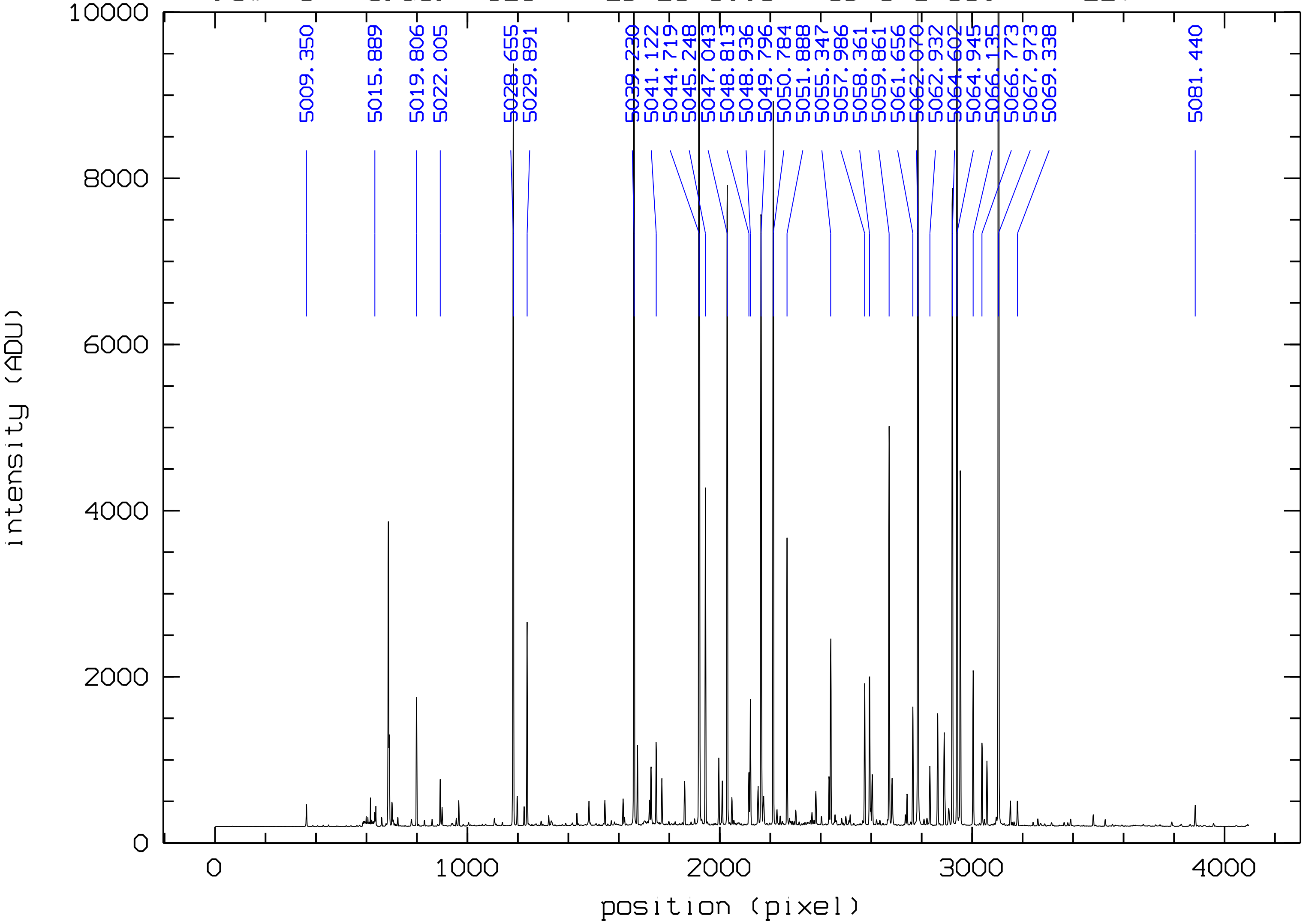

row #5 / order #124 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
4889.060
4894.955
4899.240
4902.054
4902.770
4904.750
4910.156
4910.793
4911.378
4912.529
4919.815
4920.623
4921.613
4925.950
4927.780
4929.086
4933.240
4933.852
4936.774
4937.829
4939.642
4943.064
4945.458
4946.663
4947.575
4950.251
4950.626

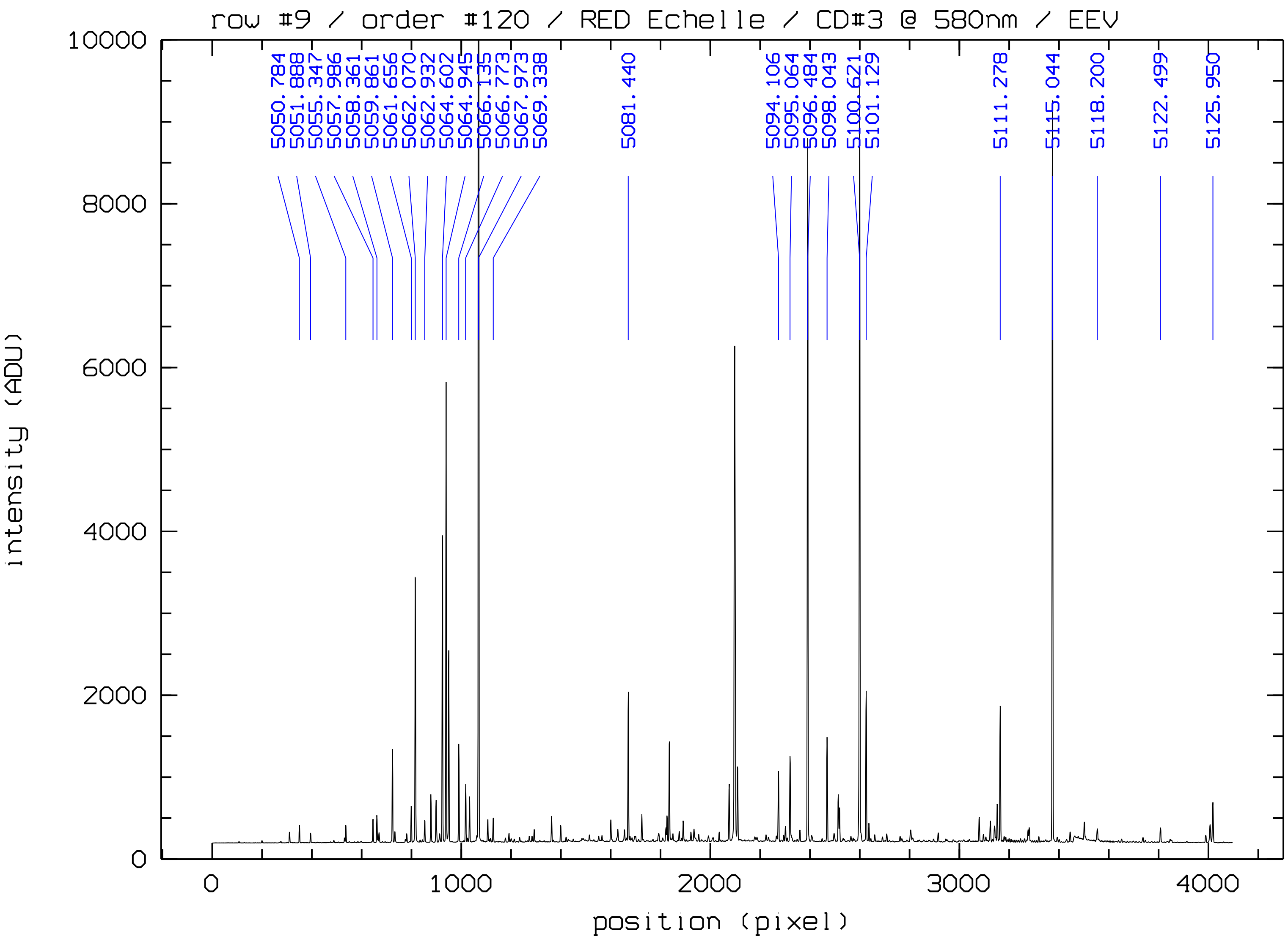

row #6 / order #123 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
4933.240
4933.852
4936.774
4937.829
4939.642
4943.064
4945.458
4946.663
4947.575
4950.251
4950.626
4954.660
4960.423
4961.726
4965.120
4965.731
4968.755
4972.177
4980.186
4982.487
4985.372
4987.147
4989.308
4993.749

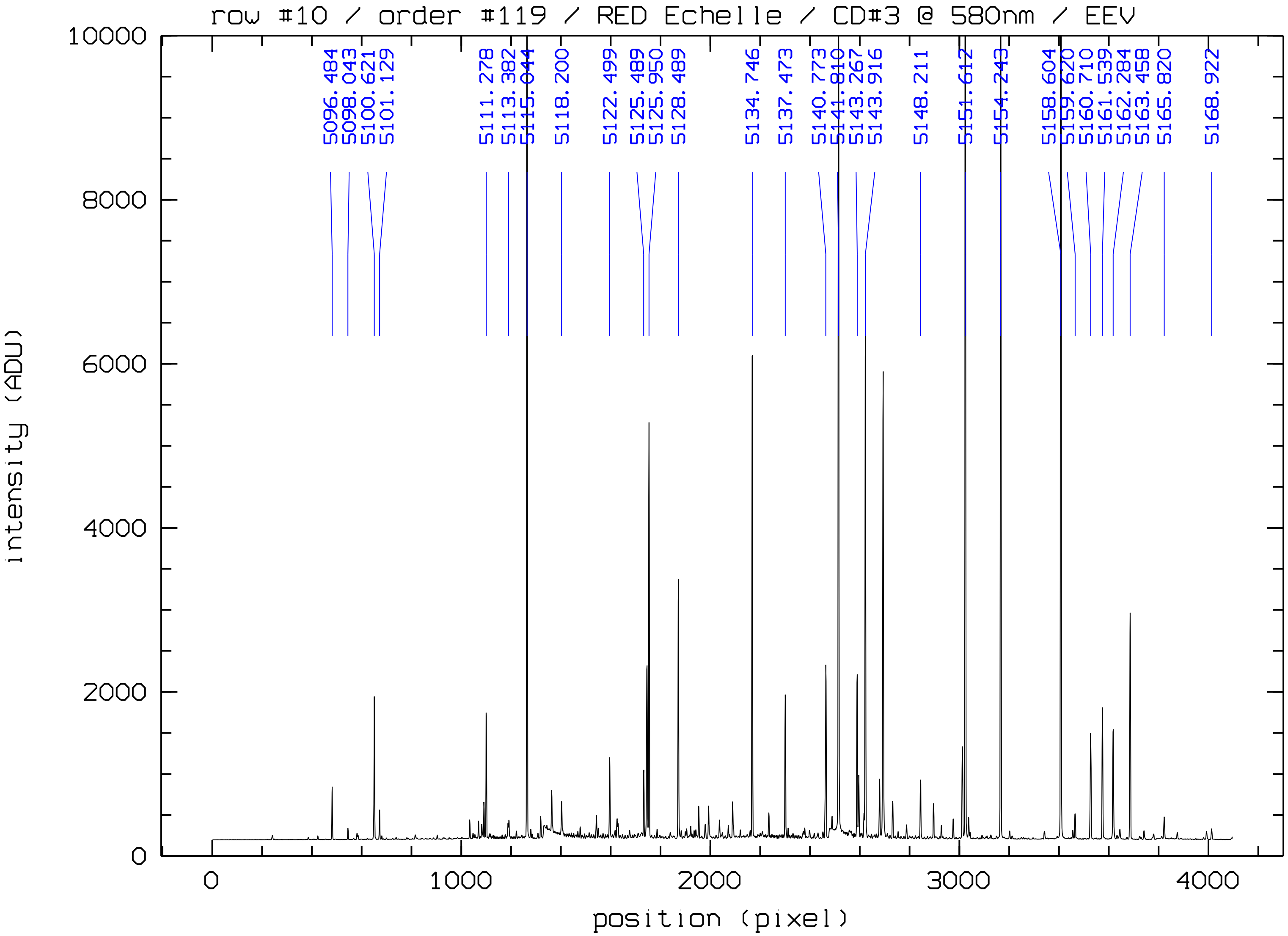
row #7 / order #122 / RED Echelle / CD#3 @ 580nm / EEV

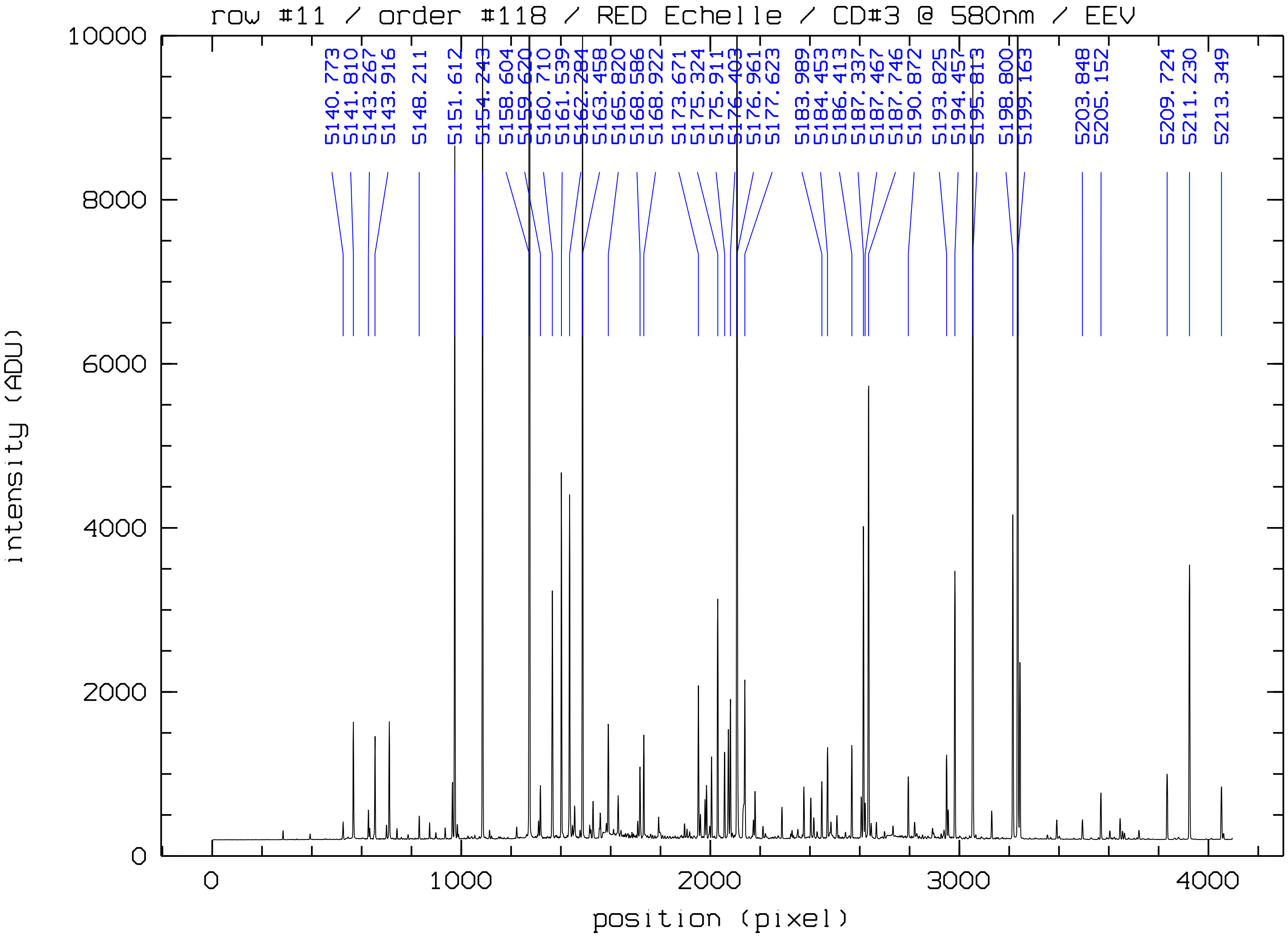


row #8 / order #121 / RED Echelle / CD#3 @ 580nm / EEV

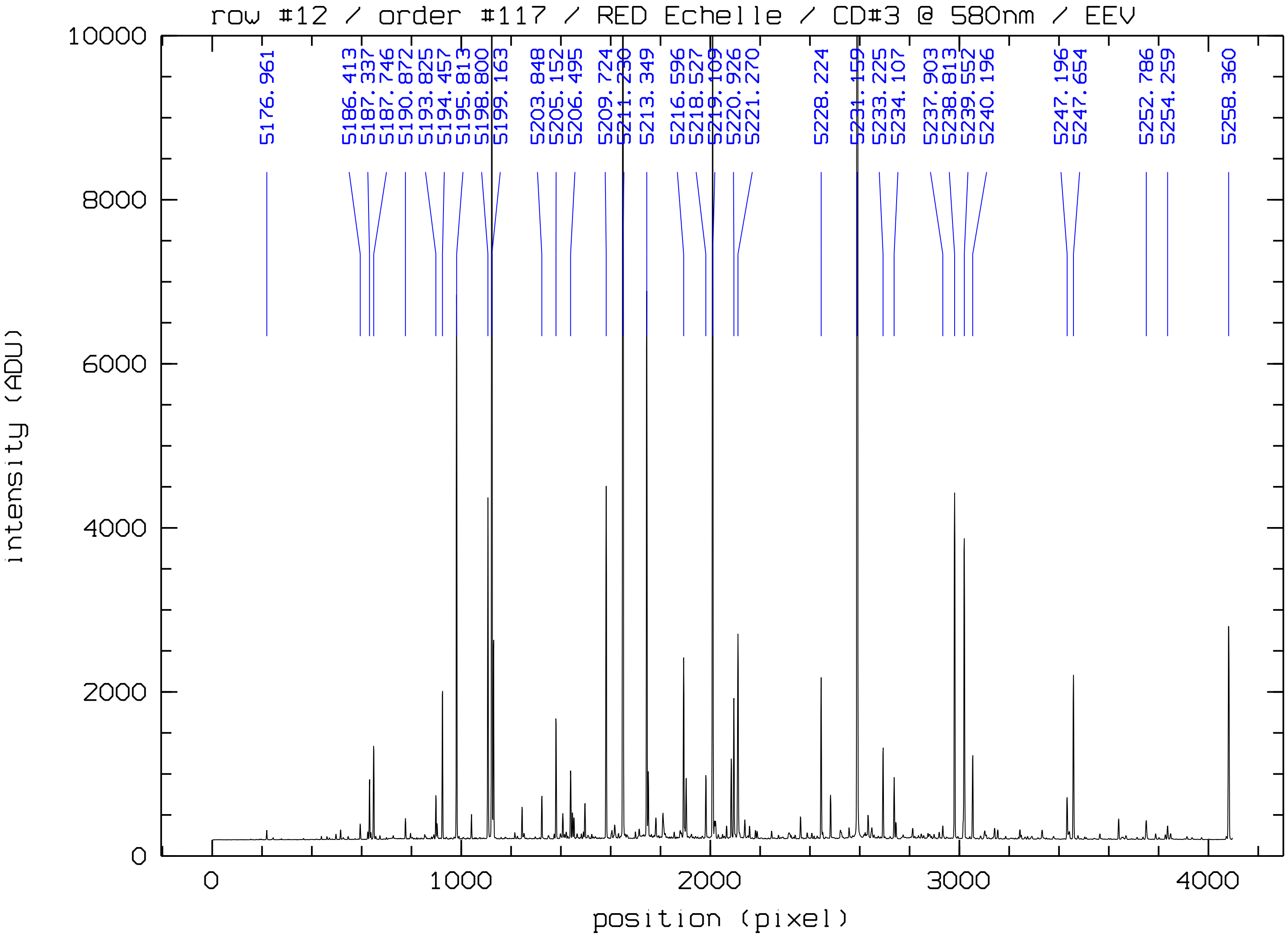


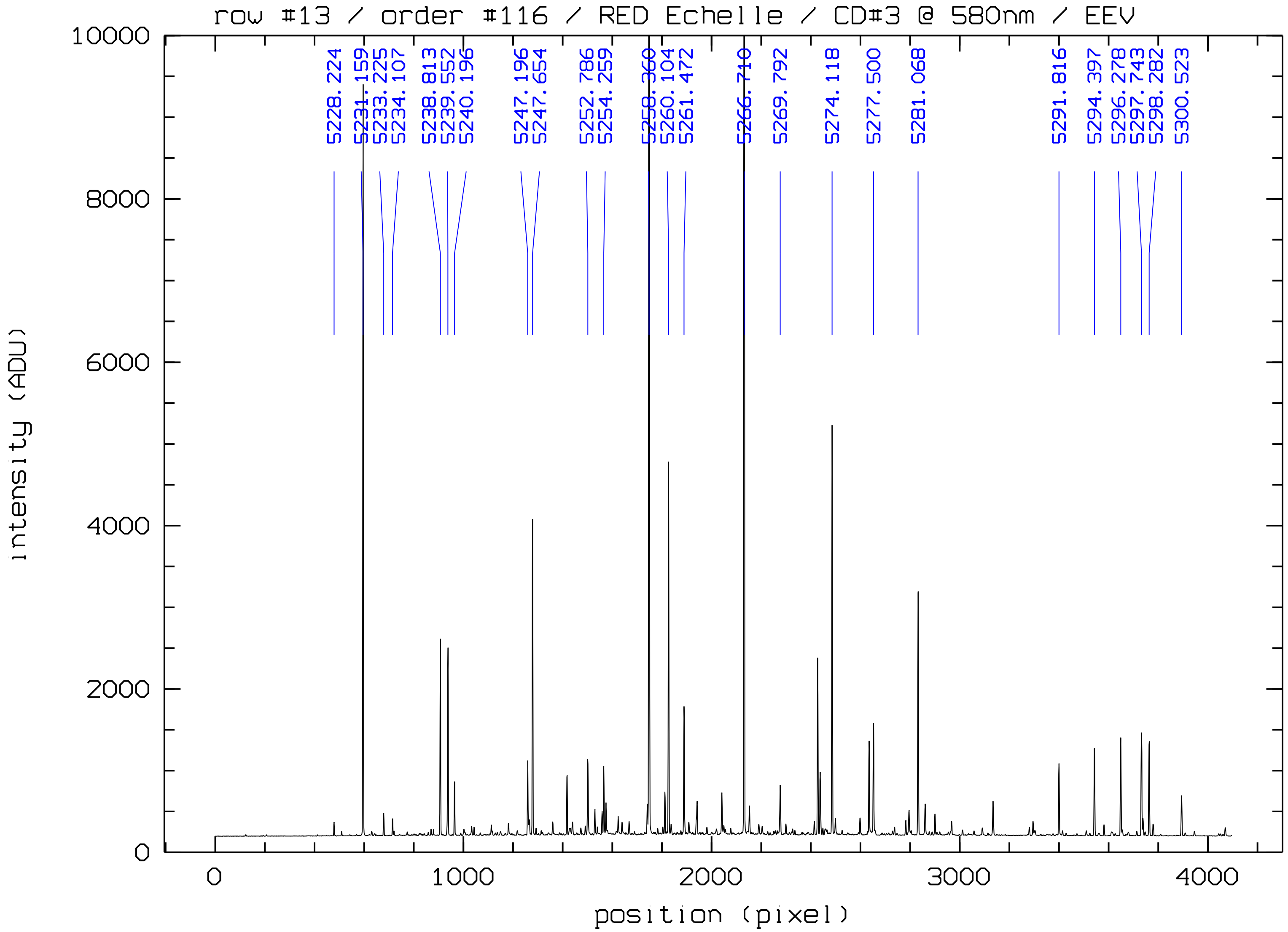

row #9 / order #120 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
1000
3000
5050.784
5051.888
5055.347
5057.986
5058.361
5059.861
5061.656
5062.070
5062.932
5064.602
5064.945
5066.135
5066.773
5067.973
5069.338
5081.440
5094.106
5095.064
5096.484
5098.043
5100.621
5101.129
5111.278
5115.044
5118.200
5122.499
5125.950

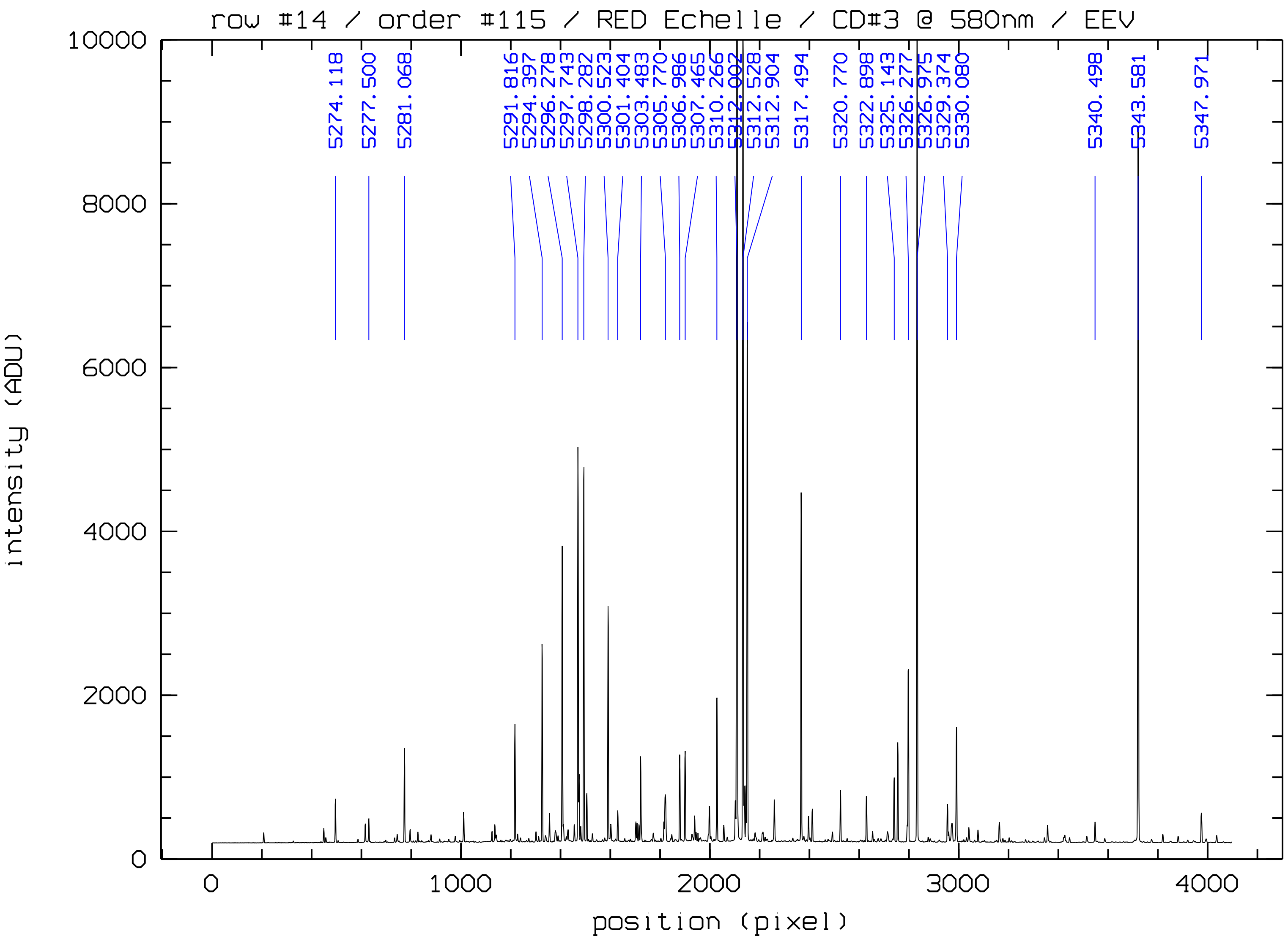

row #10 / order #119 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
5096.484
5098.043
5100.621
5101.129
5111.278
5113.382
5115.044
5118.200
5122.499
5125.489
5125.950
5128.489
5134.746
5137.473
5140.773
5141.810
5143.267
5143.916
5148.211
5151.612
5154.243
5158.604
5159.620
5160.710
5161.539
5162.284
5163.458
5165.820
5168.922



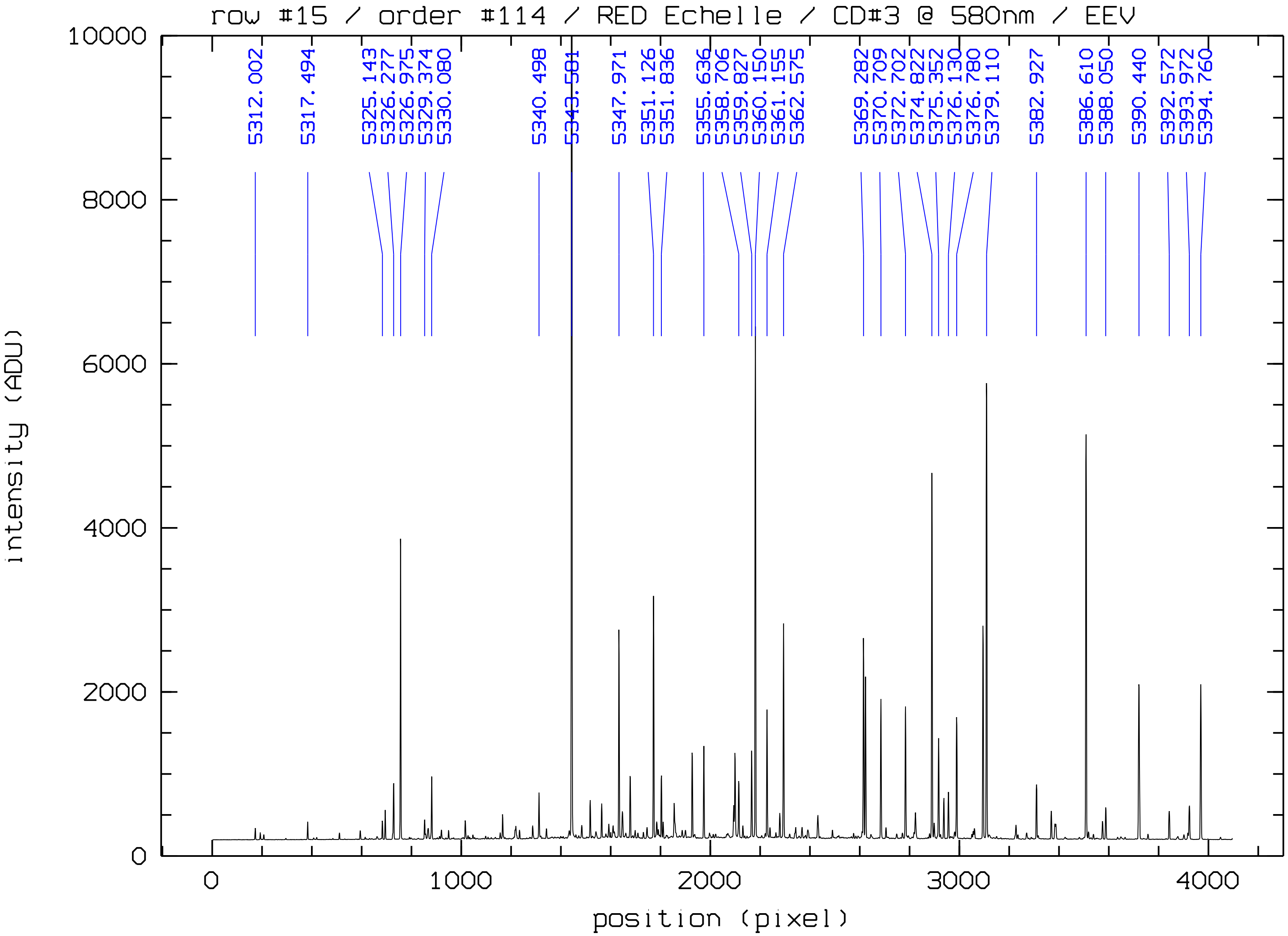
row #11 / order #118 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
5140.773
5141.810
5143.267
5143.916
5148.211
5151.612
5154.243
5158.604
5159.620
5160.710
5161.539
5162.284
5163.458
5165.820
5168.586
5168.922
5173.671
5175.324
5175.911
5176.403
5176.961
5177.623
5183.989
5184.453
5186.413
5187.337
5187.467
5187.746
5190.872
5193.825
5194.457
5195.813
5198.800
5199.163
5203.848
5205.152
5209.724
5211.230
5213.349

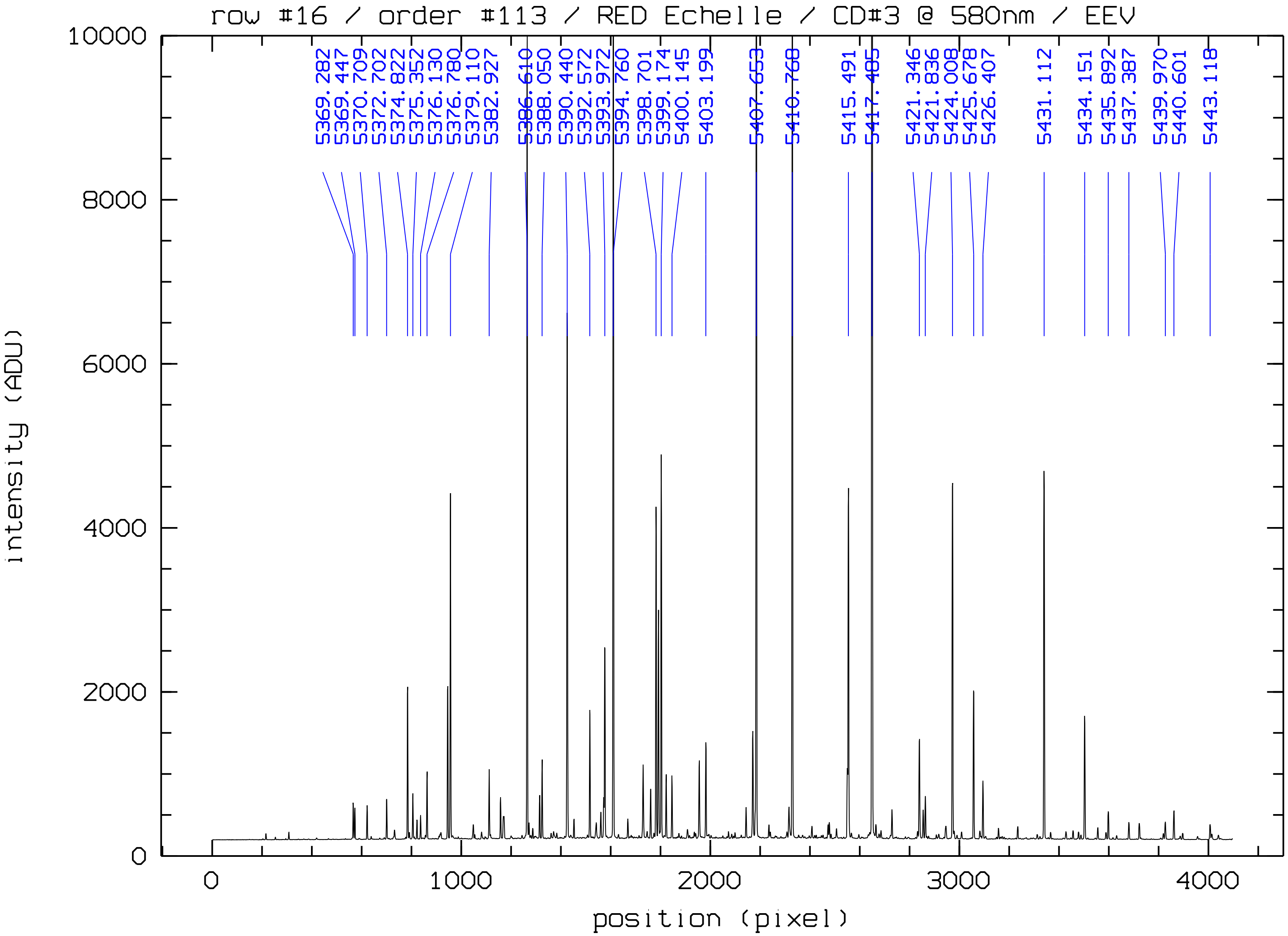

row #12 / order #117 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
5176.961
5186.413
5187.337
5187.746
5190.872
5193.825
5194.457
5195.813
5198.800
5199.163
5203.848
5205.152
5206.495
5209.724
5211.230
5213.349
5216.596
5218.527
5219.109
5220.926
5221.270
5228.224
5231.159
5233.225
5234.107
5237.903
5238.813
5239.552
5240.196
5247.196
5247.654
5252.786
5254.259
5258.360

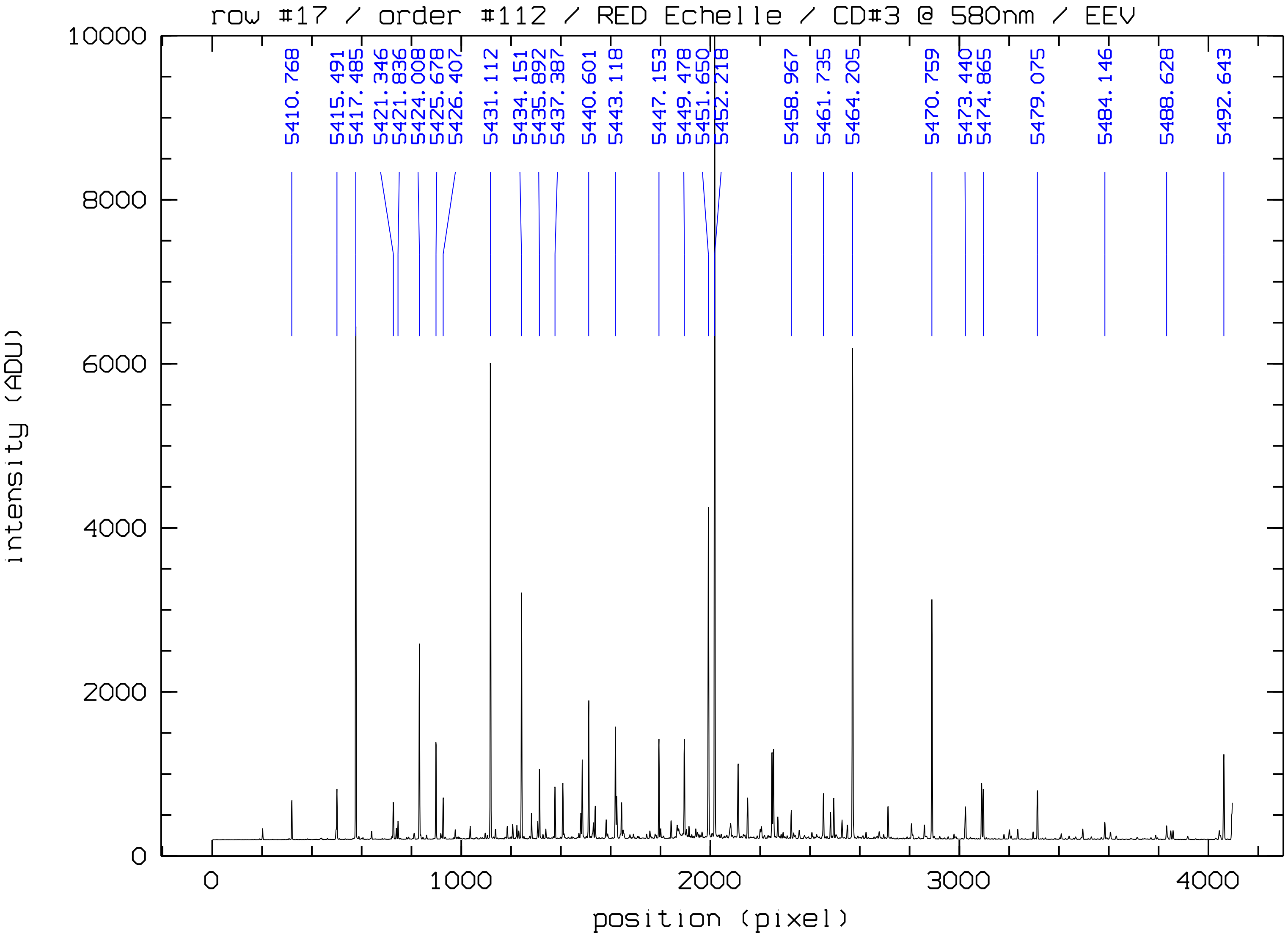

row #13 / order #116 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
5228.224
5231.159
5233.225
5234.107
5238.813
5239.552
5240.196
5247.196
5247.654
5252.786
5254.259
5258.360
5260.104
5261.472
5266.710
5269.792
5274.118
5277.500
5281.068
5291.816
5294.397
5296.278
5297.743
5298.282
5300.523



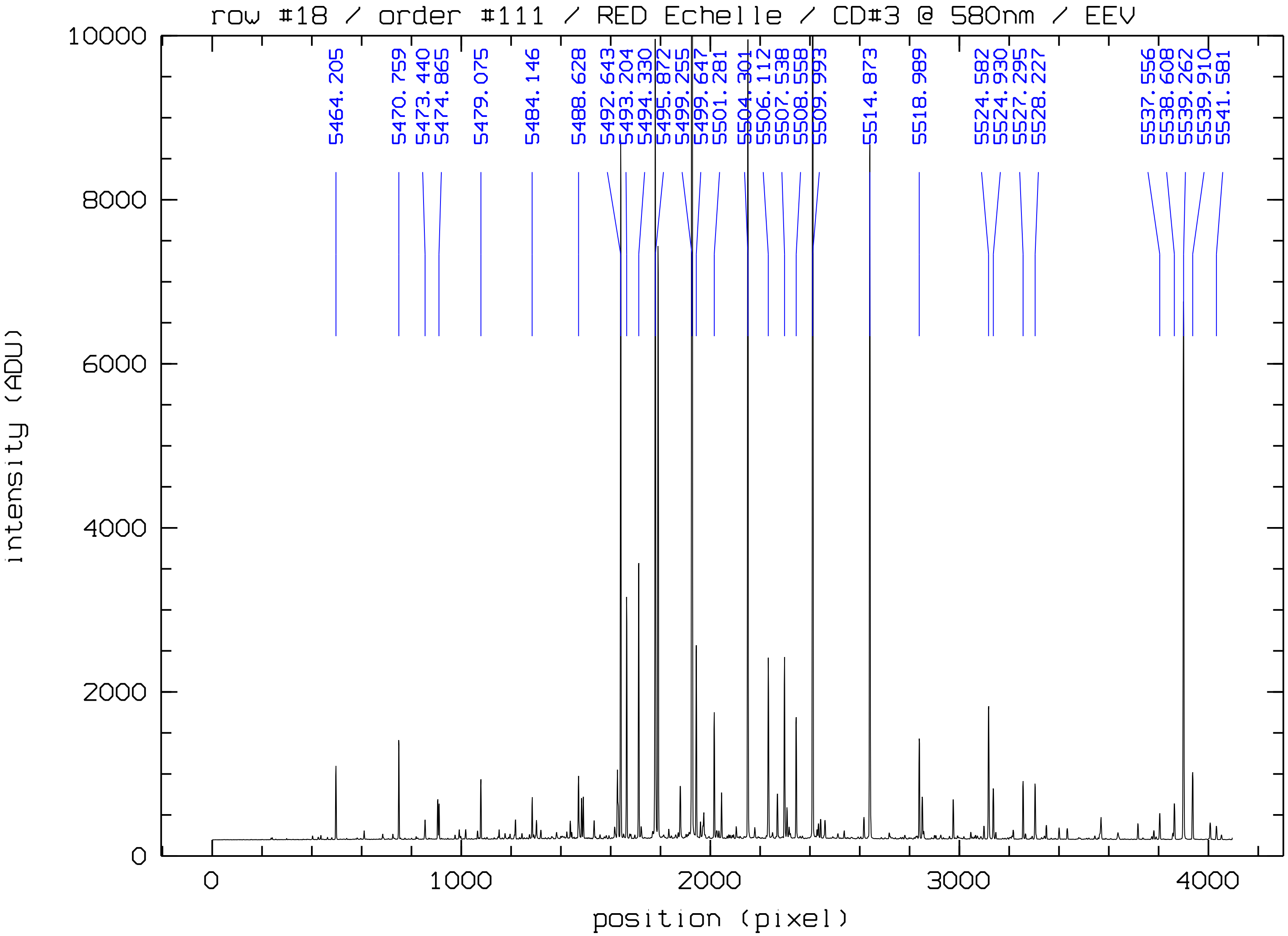
row #14 / order #115 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
5274.118
5277.500
5281.068
5291.816
5294.397
5296.278
5297.743
5298.282
5300.523
5301.404
5303.483
5305.770
5306.986
5307.465
5310.266
5312.002
5312.528
5312.904
5317.494
5320.770
5322.898
5325.143
5326.277
5326.975
5329.374
5330.080
5340.498
5343.581
5347.971


row #15 / order #114 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
5312.002
5317.494
5325.143
5326.277
5326.975
5329.374
5330.080
5340.498
5343.581
5347.971
5351.126
5351.836
5355.636
5358.706
5359.827
5360.150
5361.155
5362.575
5369.282
5370.709
5372.702
5374.822
5375.352
5376.130
5376.780
5379.110
5382.927
5386.610
5388.050
5390.440
5392.572
5393.972
5394.760

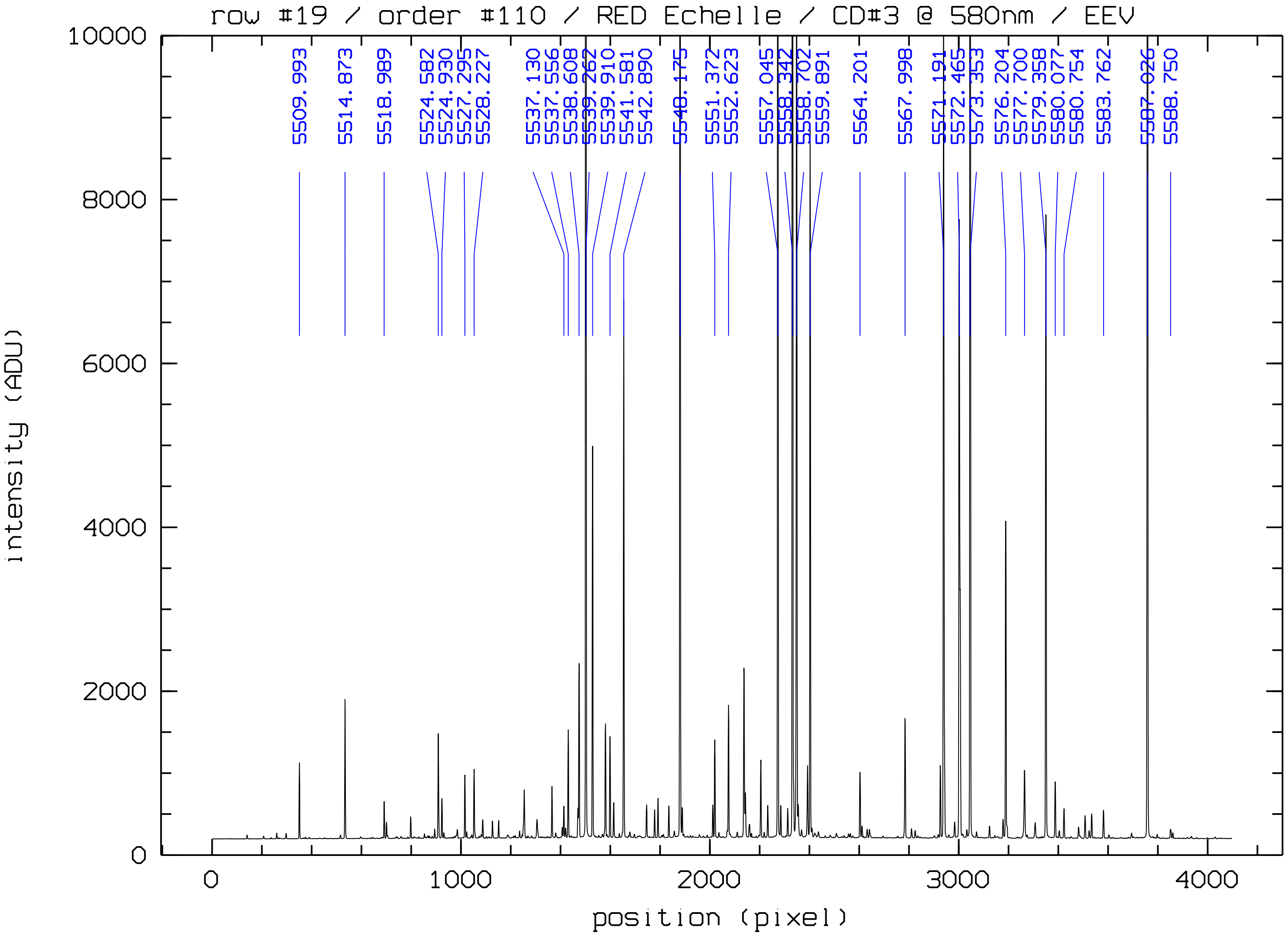

row #16 / order #113 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
5369.282
5369.447
5370.709
5372.702
5374.822
5375.352
5376.130
5376.780
5379.110
5382.927
5386.610
5388.050
5390.440
5392.572
5393.972
5394.760
5398.701
5399.174
5400.145
5403.199
5407.653
5410.768
5415.491
5417.485
5421.346
5421.836
5424.008
5425.678
5426.407
5431.112
5434.151
5435.892
5437.387
5439.970
5440.601
5443.118

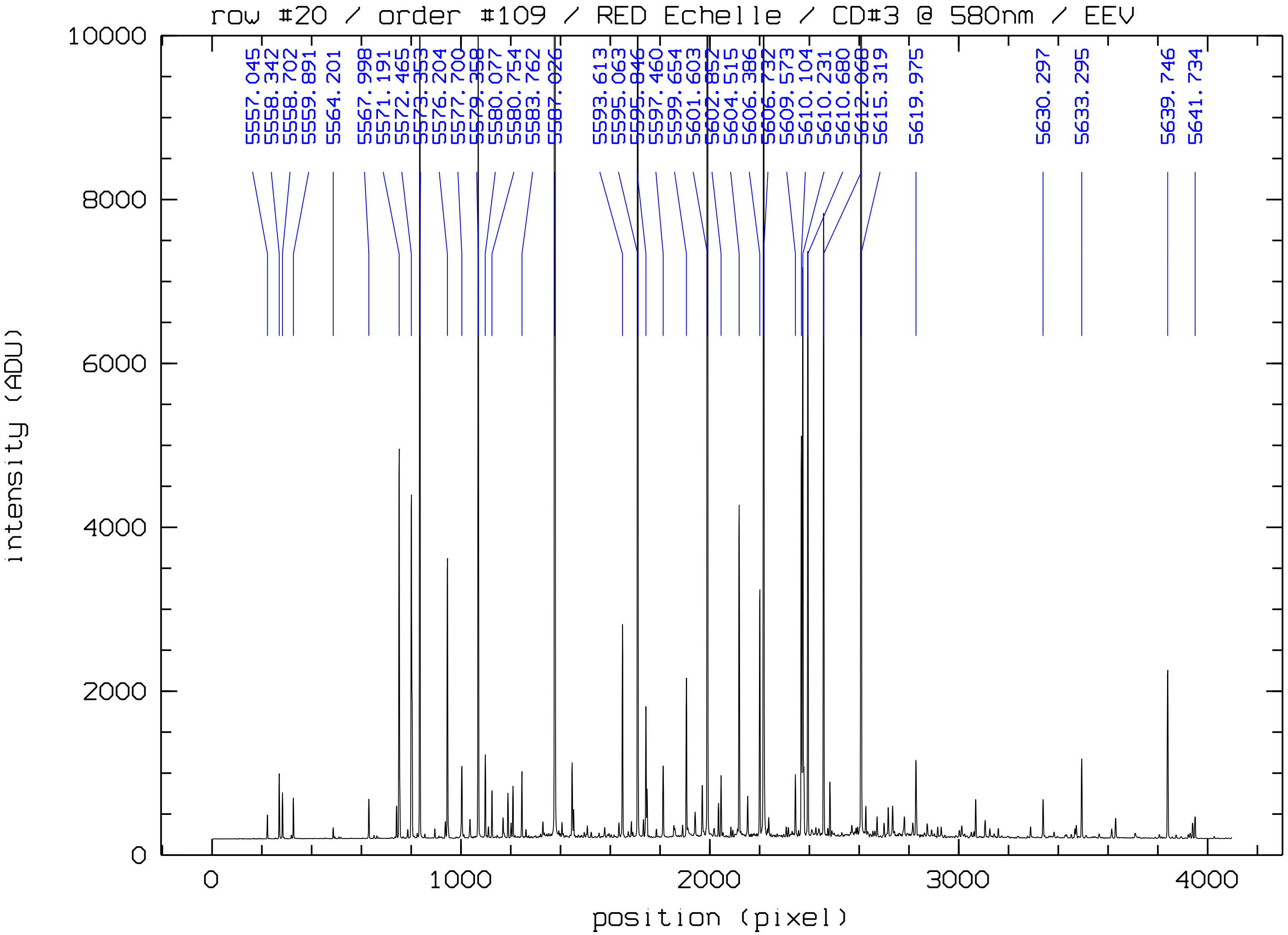


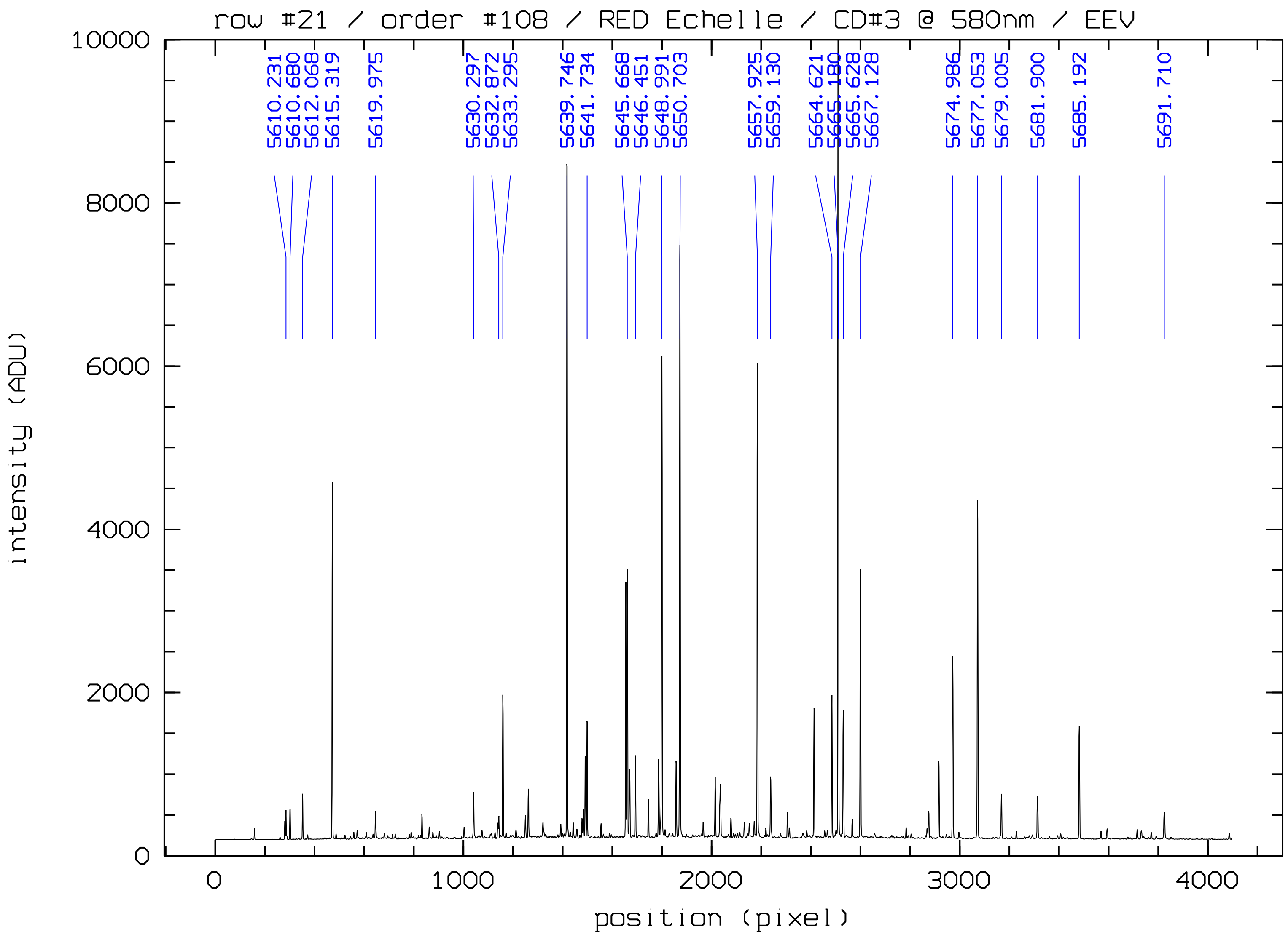
row #17 / order #112 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
5410.768
5415.491
5417.485
5421.346
5421.836
5424.008
5425.678
5426.407
5431.112
5434.151
5435.892
5437.387
5440.601
5443.118
5447.153
5449.478
5451.650
5452.218
5458.967
5461.735
5464.205
5470.759
5473.440
5474.865
5479.075
5484.146
5488.628
5492.643

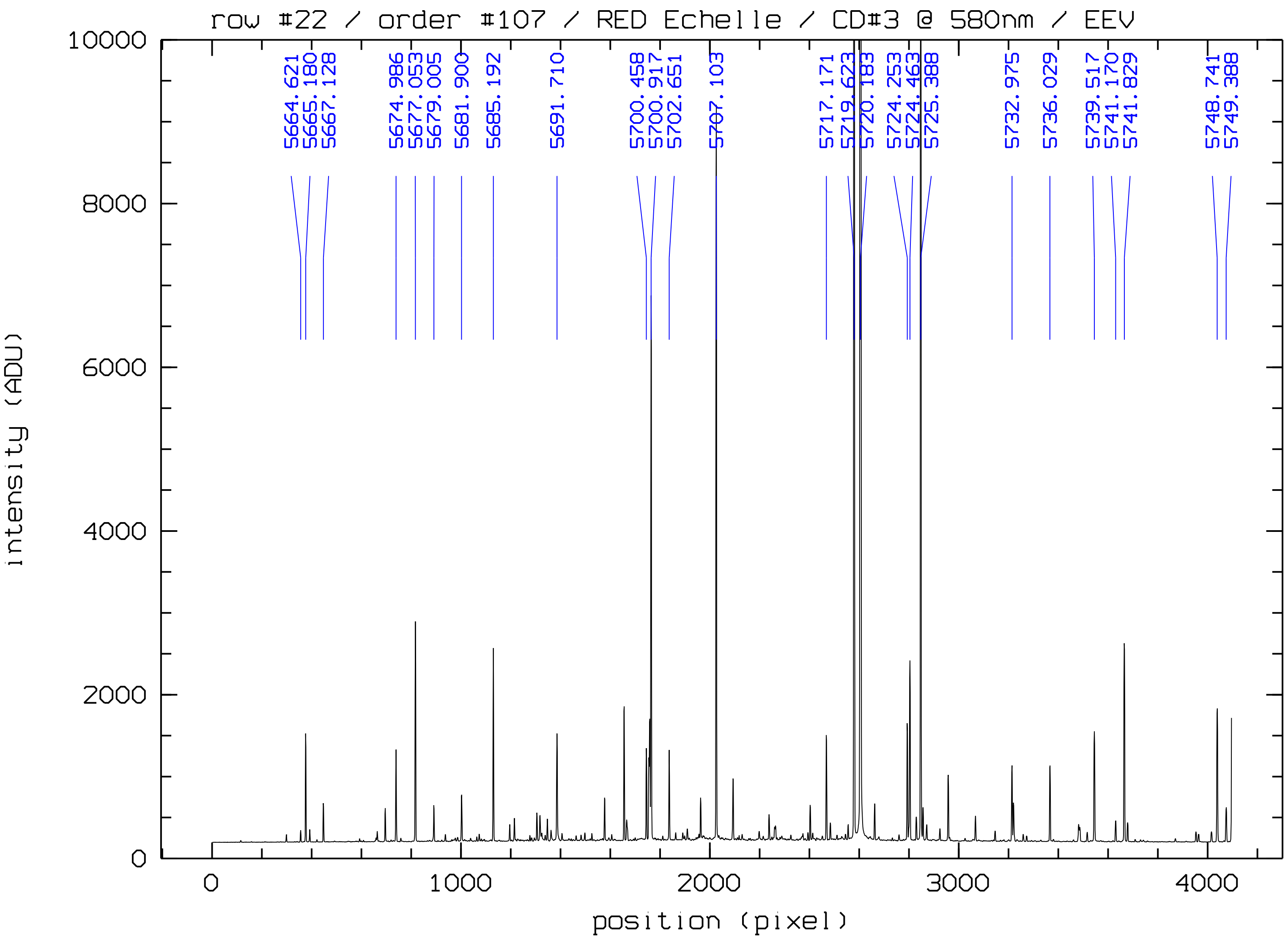


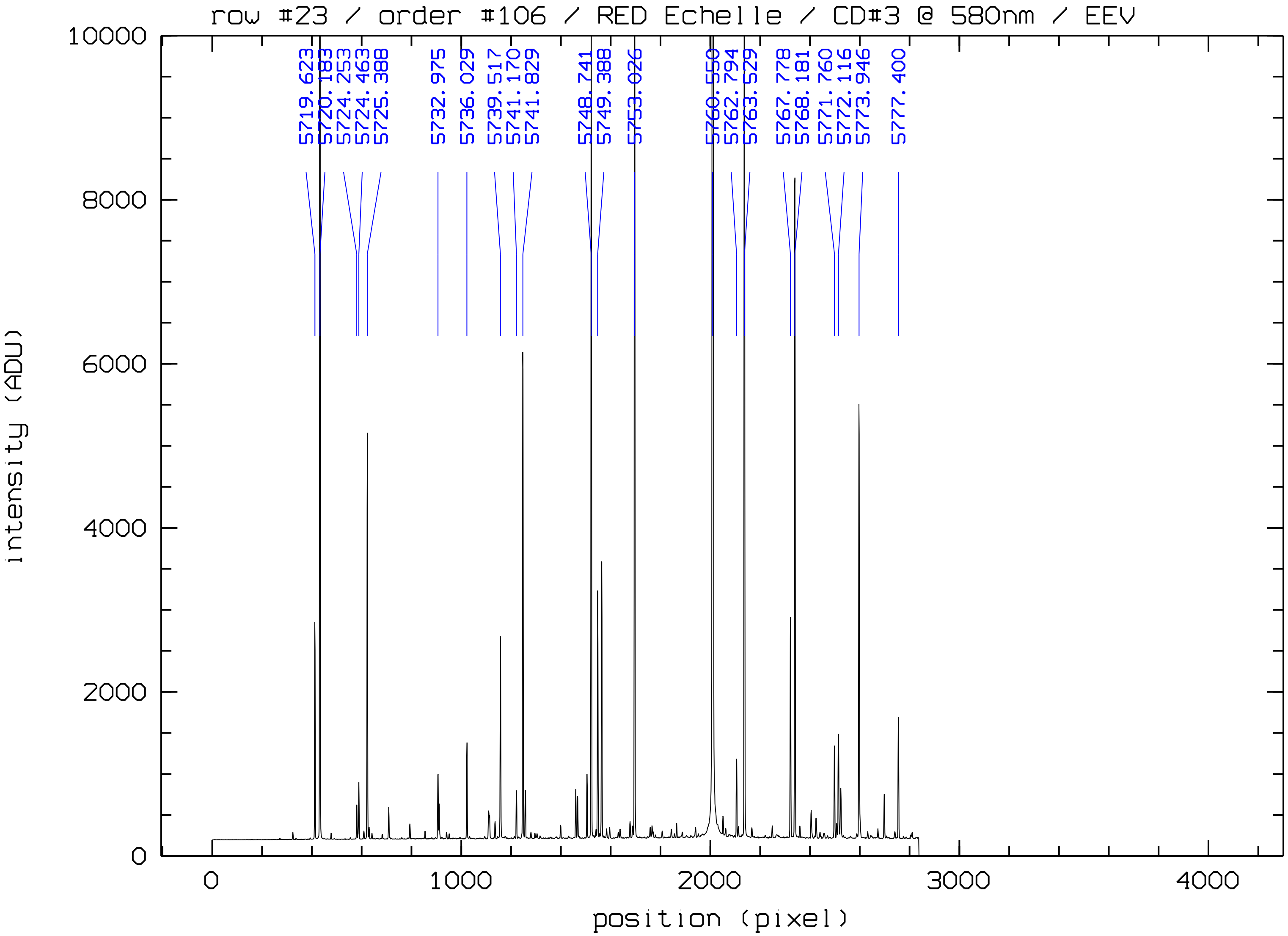
row #18 / order #111 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
5464.205
5470.759
5473.440
5474.865
5479.075
5484.146
5488.628
5492.643
5493.204
5494.330
5495.872
5499.255
5499.647
5501.281
5504.301
5506.112
5507.538
5508.558
5509.993
5514.873
5518.989
5524.582
5524.930
5527.295
5528.227
5537.556
5538.608
5539.262
5539.910
5541.581


row #19 / order #110 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
1000
3000
5509.993
5514.873
5518.989
5524.582
5524.930
5527.295
5528.227
5537.130
5537.556
5538.608
5539.262
5539.910
5541.581
5542.890
5548.175
5551.372
5552.623
5557.045
5558.342
5558.702
5559.891
5564.201
5567.998
5571.191
5572.465
5573.353
5576.204
5577.700
5579.358
5580.077
5580.754
5583.762
5587.026
5588.750


row #20 / order #109 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
1000
2000
3000
4000
2000
4000
6000
8000
10000
5557.045
5558.342
5558.702
5559.891
5564.201
5567.998
5571.191
5572.465
5573.353
5576.204
5577.700
5579.358
5580.077
5580.754
5583.762
5587.026
5593.613
5595.063
5595.846
5597.460
5599.654
5601.603
5602.852
5604.515
5606.386
5606.732
5609.573
5610.104
5610.231
5610.680
5612.068
5615.319
5619.975
5630.297
5633.295
5639.746
5641.734

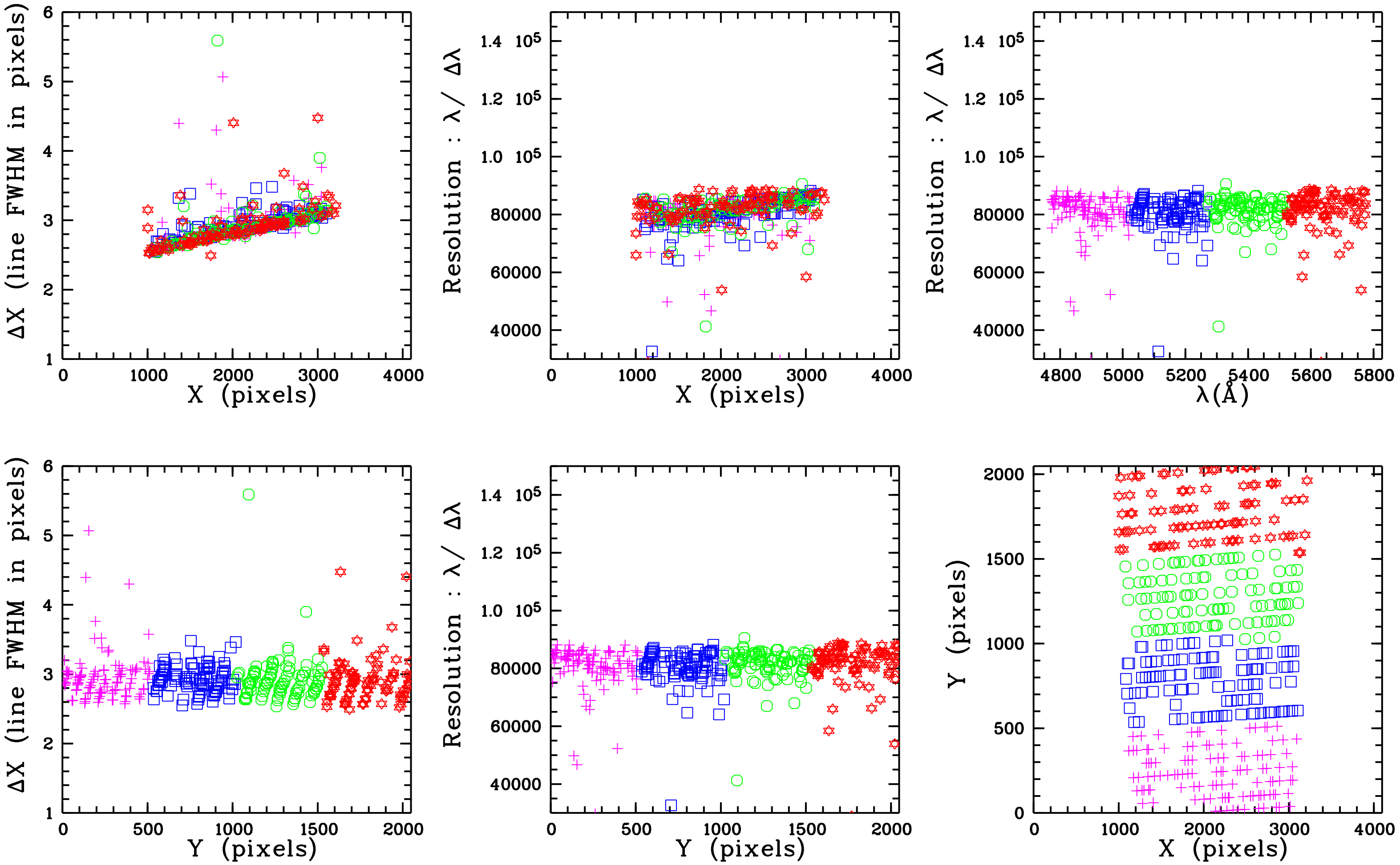

row #21 / order #108 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
5610.231
5610.680
5612.068
5615.319
5619.975
5630.297
5632.872
5633.295
5639.746
5641.734
5645.668
5646.451
5648.991
5650.703
5657.925
5659.130
5664.621
5665.180
5665.628
5667.128
5674.986
5677.053
5679.005
5681.900
5685.192
5691.710


row #22 / order #107 / RED Echelle / CD#3 @ 580nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
5664.621
5665.180
5667.128
5674.986
5677.053
5679.005
5681.900
5685.192
5691.710
5700.458
5700.917
5702.651
5707.103
5717.171
5719.623
5720.183
5724.253
5724.463
5725.388
5732.975
5736.029
5739.517
5741.170
5741.829
5748.741
5749.388

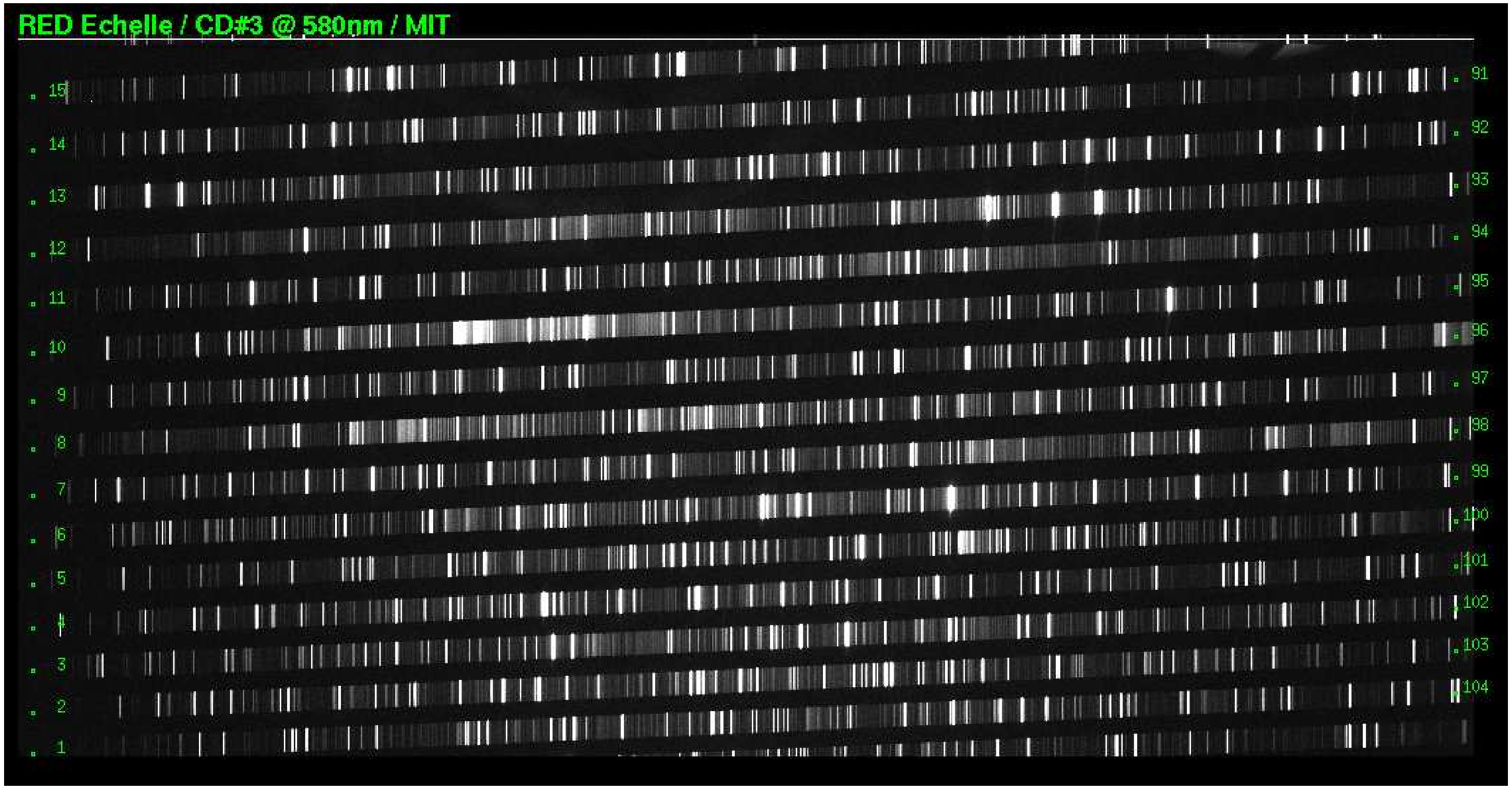


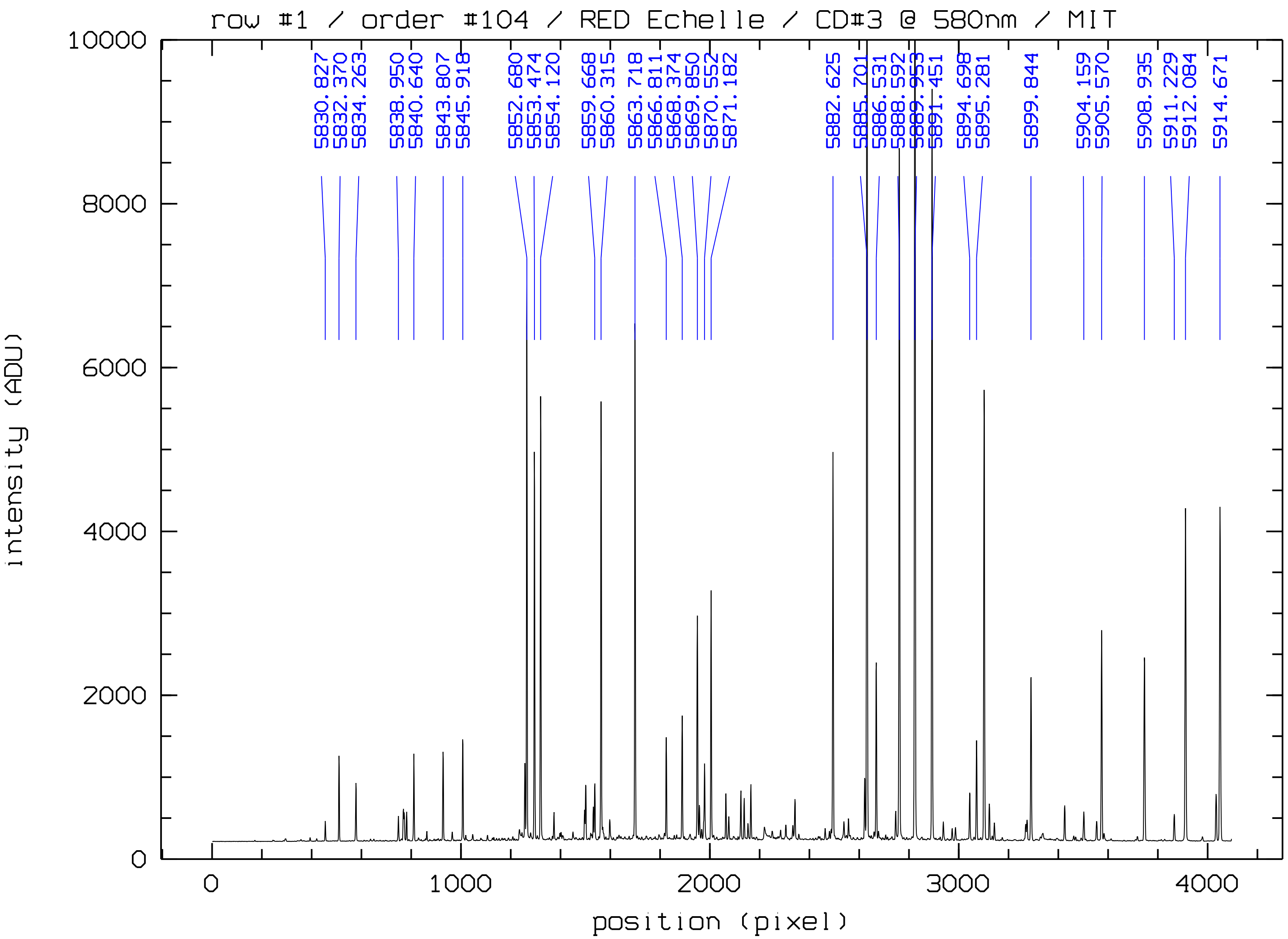
row #23 / order #106 / RED Echelle / CD#3 @ 580nm / EEV
5719.623
5720.183
5724.253
5724.463
5725.388
5732.975
5736.029
5739.517
5741.170
5741.829
5748.741
5749.388
5753.026
5760.550
5762.794
5763.529
5767.778
5768.181
5771.760
5772.116
5773.946
5777.400
intensity (ADU)
position (pixel)

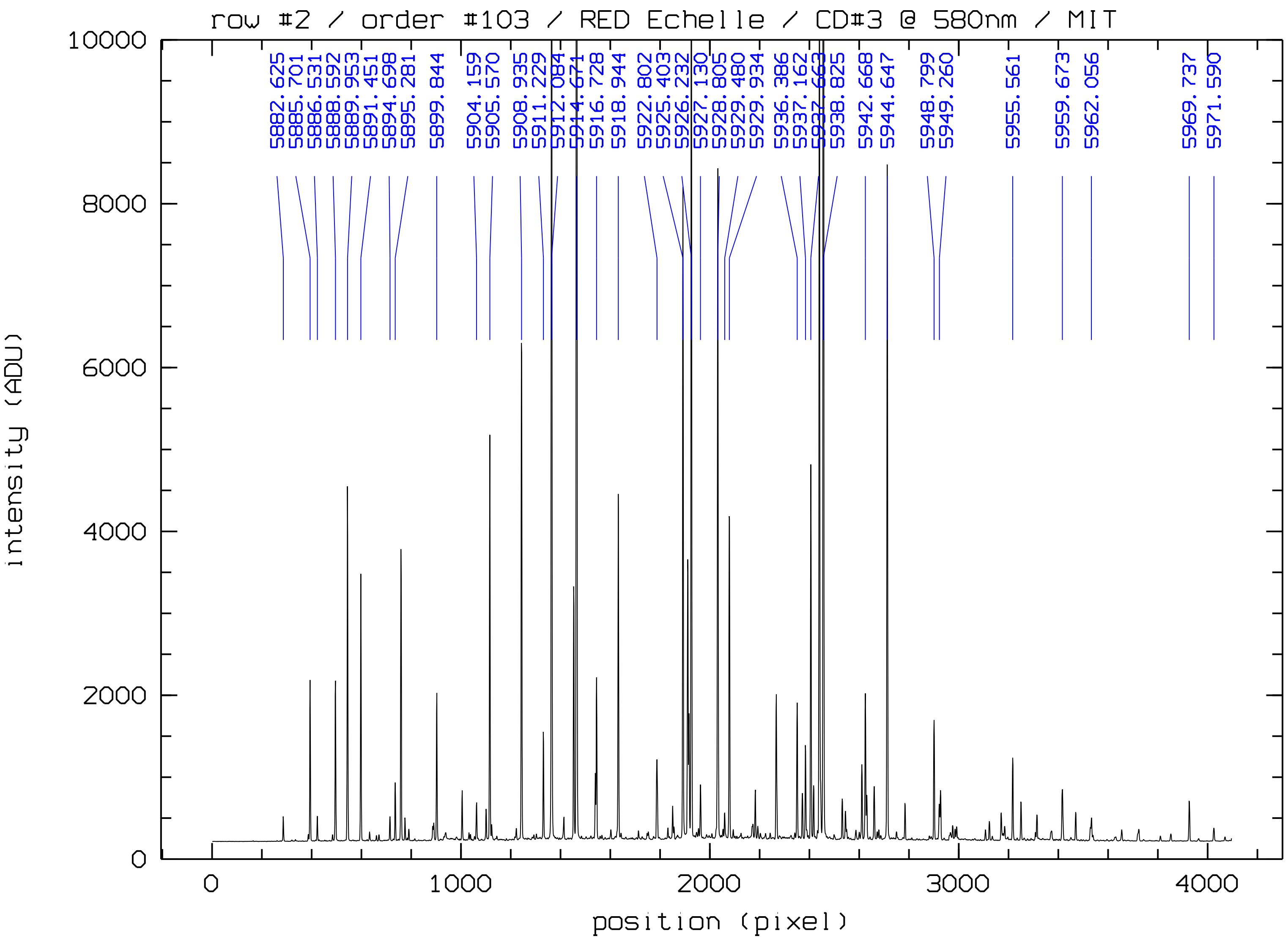
Central wavelength: 580.0 nm, slit: 0.5 arcsec, CCD: EEV, 9.8 °C
Filename : UVES_RED_CAL134.1.fits, Observ. date: 2000-05-13T20:33:23
Median(DX) = 2.903 pix , Mean(DX) = 3.0 pix , σ(DX) = 0.6 pix
Median(RES) = 82315.016 , Mean(RES) = 80737.0 , σ(RES) = 7690.3

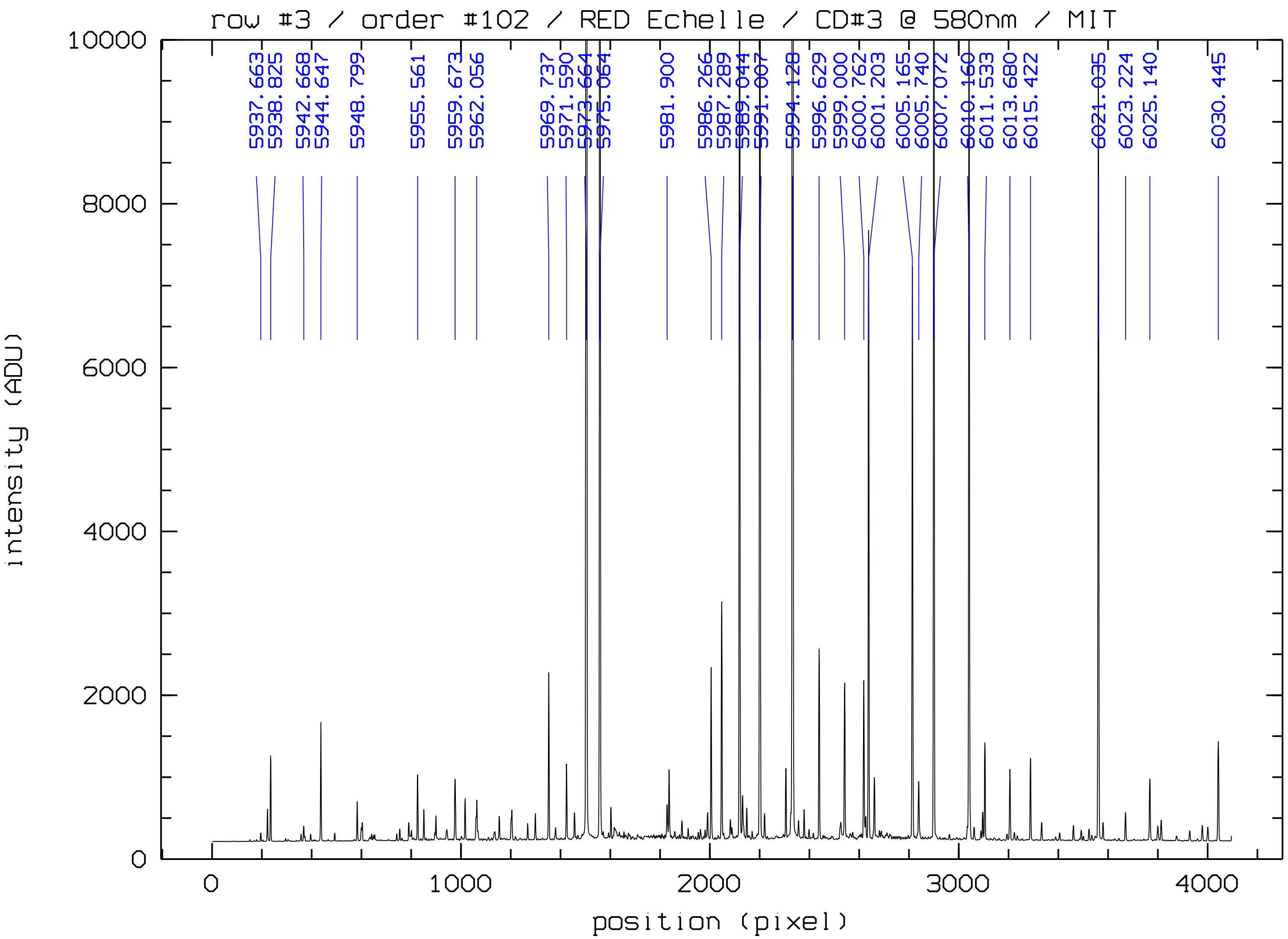


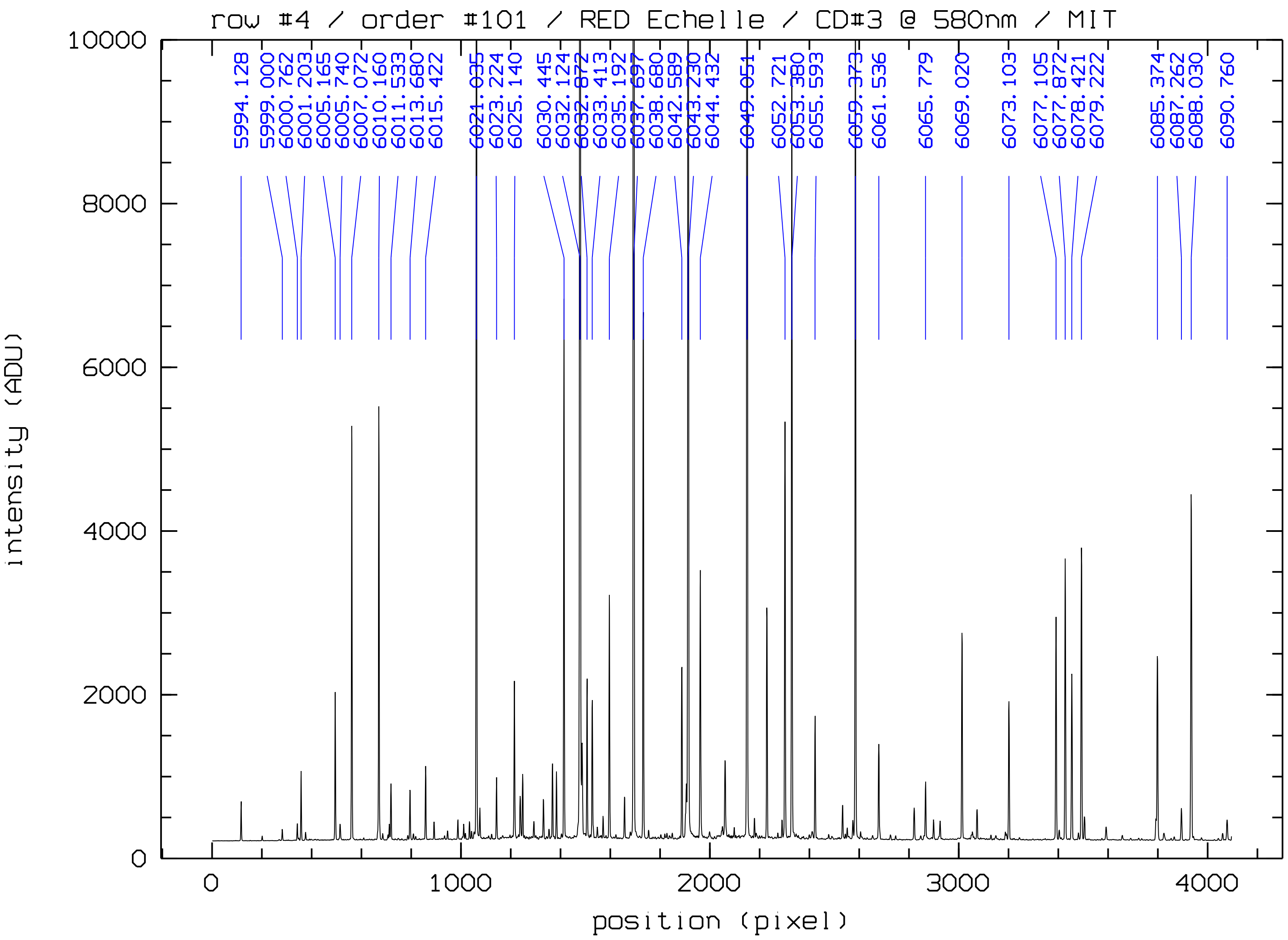
Sa, 13 May 2000 22:38:08; USER: pipeline


RED Echelle / CD#3 @ 580nm / MIT
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
91
92
93
94
95
96
97
98
99
100
101
102
103
104

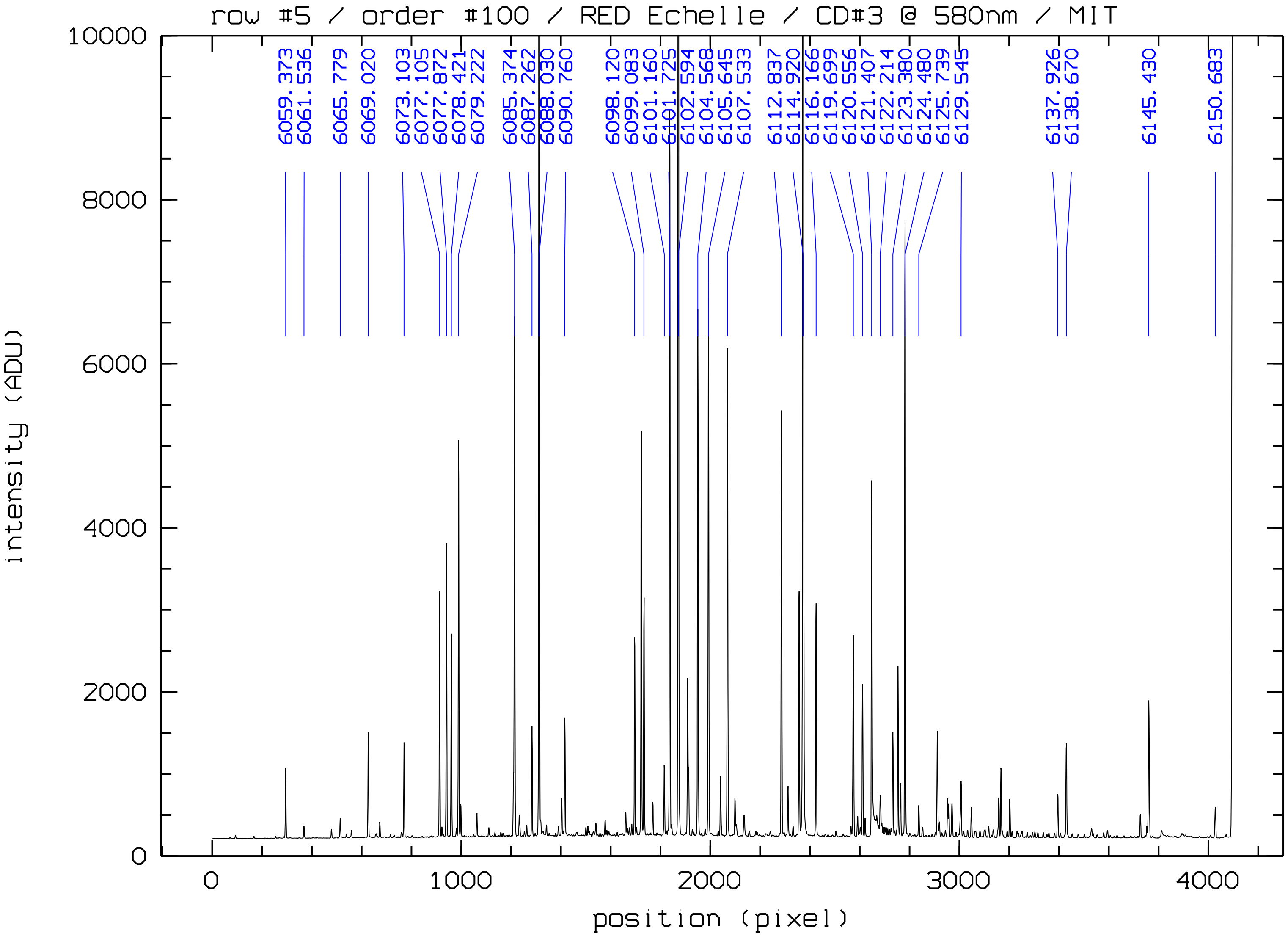

row #1 / order #104 / RED Echelle / CD#3 @ 580nm / MIT
intensity (ADU)
position (pixel)
5830.827
5832.370
5834.263
5838.950
5840.640
5843.807
5845.918
5852.680
5853.474
5854.120
5859.668
5860.315
5863.718
5866.811
5868.374
5869.850
5870.552
5871.182
5882.625
5885.701
5886.531
5888.592
5889.953
5891.451
5894.698
5895.281
5899.844
5904.159
5905.570
5908.935
5911.229
5912.084
5914.671


row #2 / order #103 / RED Echelle / CD#3 @ 580nm / MIT
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
5882.625
5885.701
5886.531
5888.592
5889.953
5891.451
5894.698
5895.281
5899.844
5904.159
5905.570
5908.935
5911.229
5912.084
5914.671
5916.728
5918.944
5922.802
5925.403
5926.232
5927.130
5928.805
5929.480
5929.934
5936.386
5937.162
5937.663
5938.825
5942.668
5944.647
5948.799
5949.260
5955.561
5959.673
5962.056
5969.737
5971.590

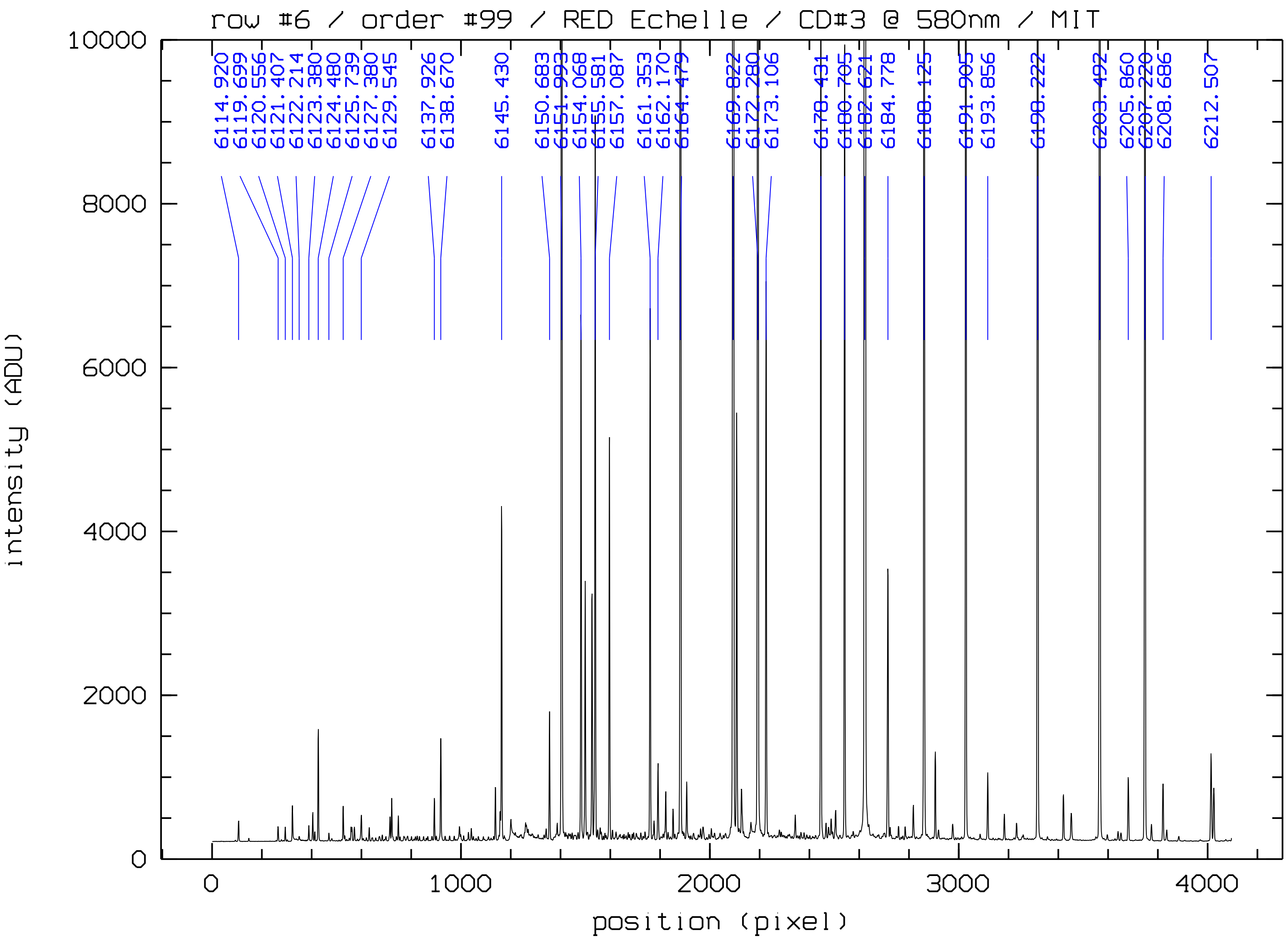

row #3 / order #102 / RED Echelle / CD#3 @ 580nm / MIT
intensity (ADU)
position (pixel)
0
1000
2000
3000
4000
2000
4000
6000
8000
10000
5937.663
5938.825
5942.668
5944.647
5948.799
5955.561
5959.673
5962.056
5969.737
5971.590
5973.664
5975.064
5981.900
5986.266
5987.289
5989.044
5991.007
5994.128
5996.629
5999.000
6000.762
6001.203
6005.165
6005.740
6007.072
6010.160
6011.533
6013.680
6015.422
6021.035
6023.224
6025.140
6030.445

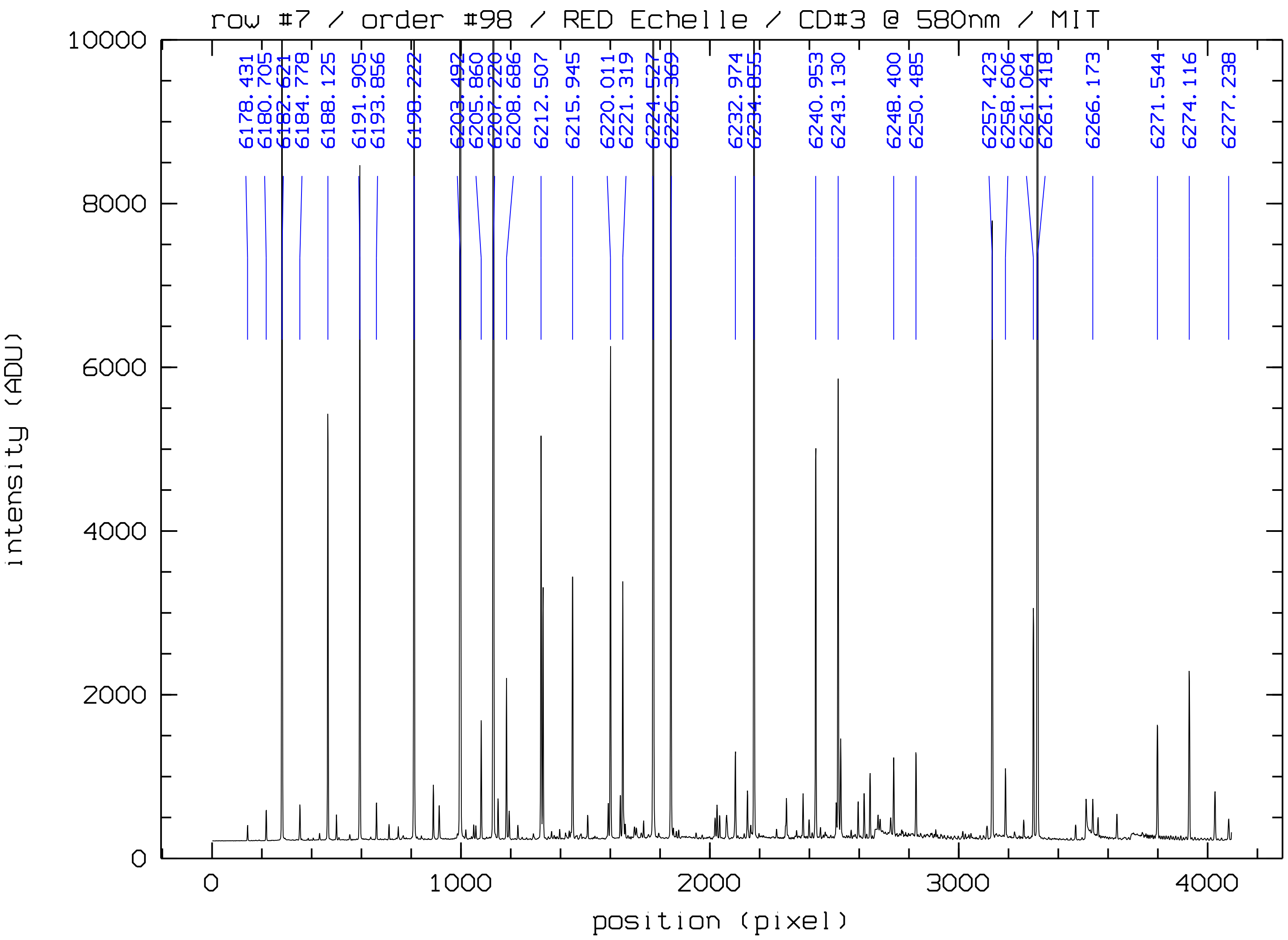


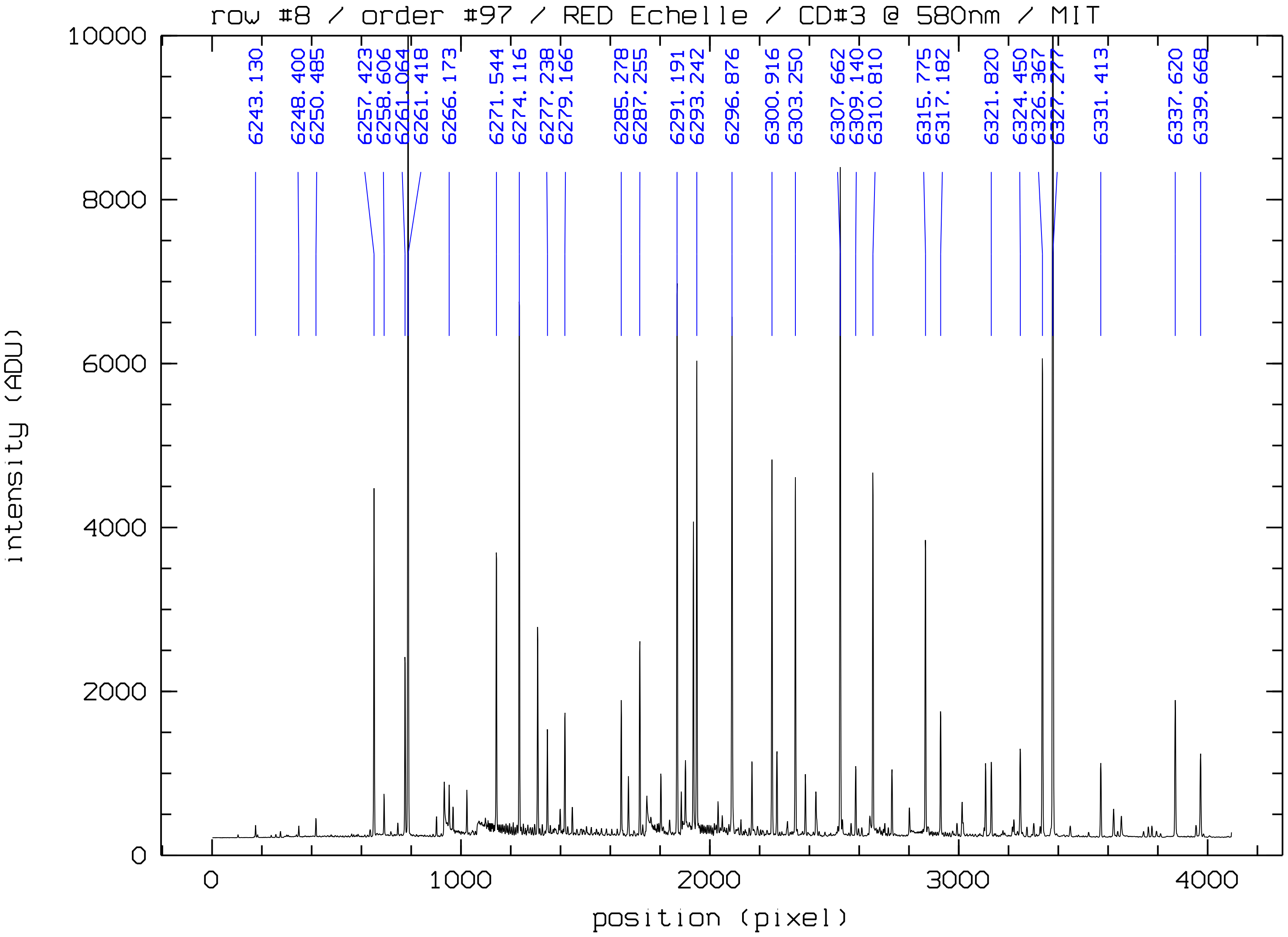
row #4 / order #101 / RED Echelle / CD#3 @ 580nm / MIT
5994.128
5999.000
6000.762
6001.203
6005.165
6005.740
6007.072
6010.160
6011.533
6013.680
6015.422
6021.035
6023.224
6025.140
6030.445
6032.124
6032.872
6033.413
6035.192
6037.697
6038.680
6042.589
6043.230
6044.432
6049.051
6052.721
6053.380
6055.593
6059.373
6061.536
6065.779
6069.020
6073.103
6077.105
6077.872
6078.421
6079.222
6085.374
6087.262
6088.030
6090.760
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000



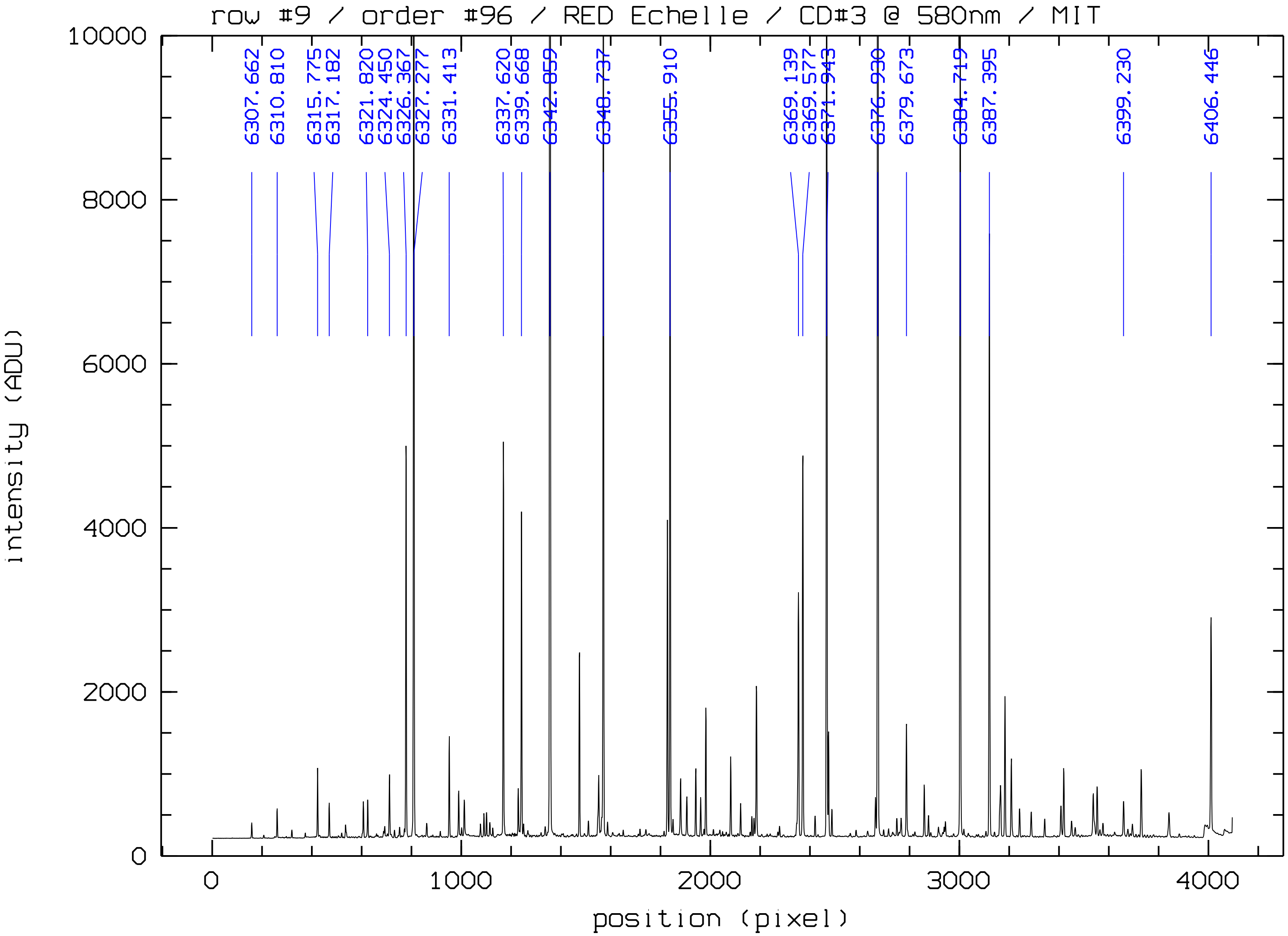
row #5 / order #100 / RED Echelle / CD#3 @ 580nm / MIT
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
6059.373
6061.536
6065.779
6069.020
6073.103
6077.105
6077.872
6078.421
6079.222
6085.374
6087.262
6088.030
6090.760
6098.120
6099.083
6101.160
6101.725
6102.594
6104.568
6105.645
6107.533
6112.837
6114.920
6116.166
6119.699
6120.556
6121.407
6122.214
6123.380
6124.480
6125.739
6129.545
6137.926
6138.670
6145.430
6150.683


row #6 / order #99 / RED Echelle / CD#3 @ 580nm / MIT
intensity (ADU)
position (pixel)
0
1000
2000
3000
4000
0
2000
4000
6000
8000
10000
6114.920
6119.699
6120.556
6121.407
6122.214
6123.380
6124.480
6125.739
6127.380
6129.545
6137.926
6138.670
6145.430
6150.683
6151.993
6154.068
6155.581
6157.087
6161.353
6162.170
6164.479
6169.822
6172.280
6173.106
6178.431
6180.705
6182.621
6184.778
6188.125
6191.905
6193.856
6198.222
6203.492
6205.860
6207.220
6208.686
6212.507

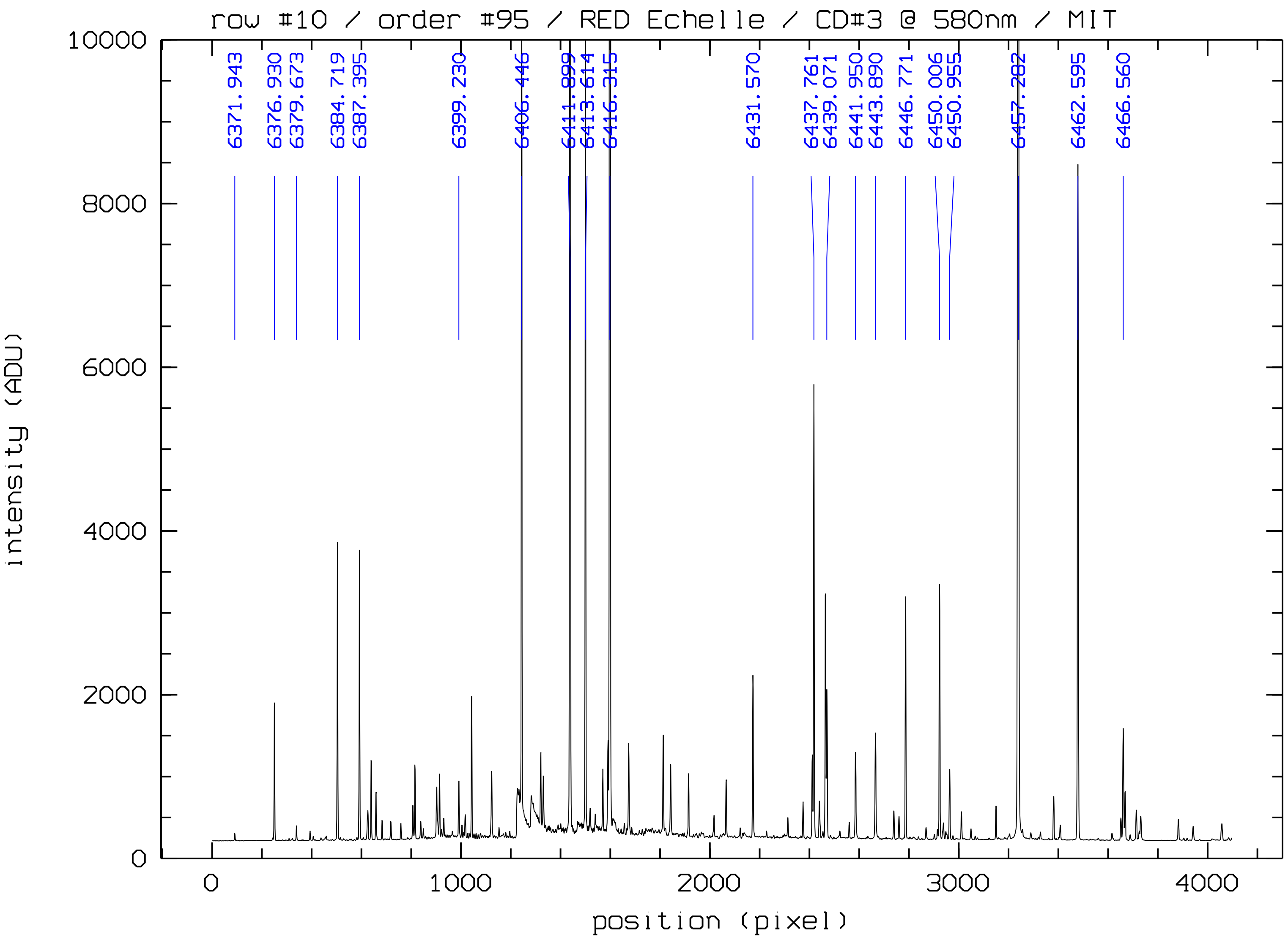

row #7 / order #98 / RED Echelle / CD#3 @ 580nm / MIT
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
6178.431
6180.705
6182.621
6184.778
6188.125
6191.905
6193.856
6198.222
6203.492
6205.860
6207.220
6208.686
6212.507
6215.945
6220.011
6221.319
6224.527
6226.369
6232.974
6234.855
6240.953
6243.130
6248.400
6250.485
6257.423
6258.606
6261.064
6261.418
6266.173
6271.544
6274.116
6277.238

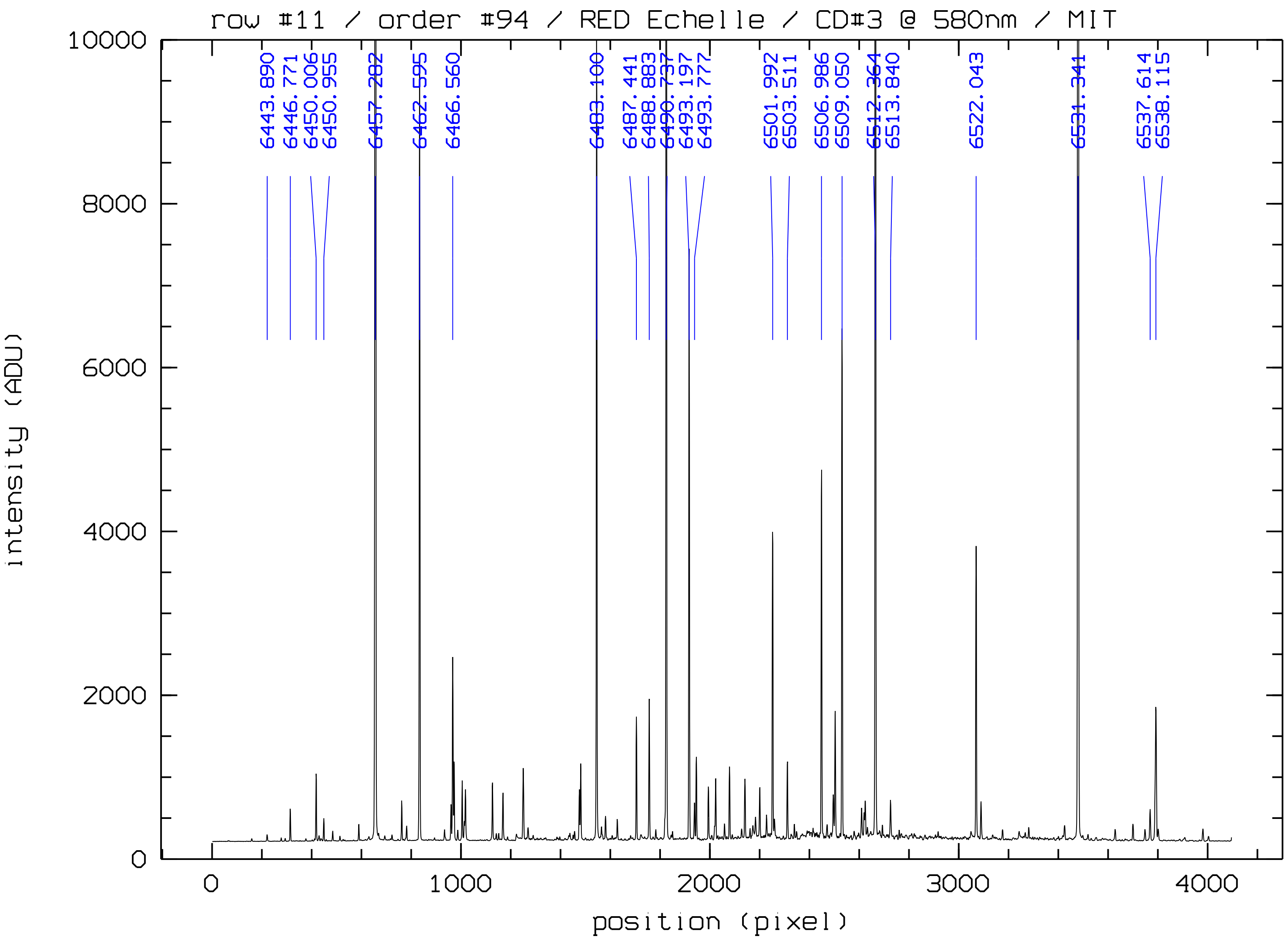


row #8 / order #97 / RED Echelle / CD#3 @ 580nm / MIT
6243.130
6248.400
6250.485
6257.423
6258.606
6261.064
6261.418
6266.173
6271.544
6274.116
6277.238
6279.166
6285.278
6287.255
6291.191
6293.242
6296.876
6300.916
6303.250
6307.662
6309.140
6310.810
6315.775
6317.182
6321.820
6324.450
6326.367
6327.277
6331.413
6337.620
6339.668
intensity (ADU)
position (pixel)

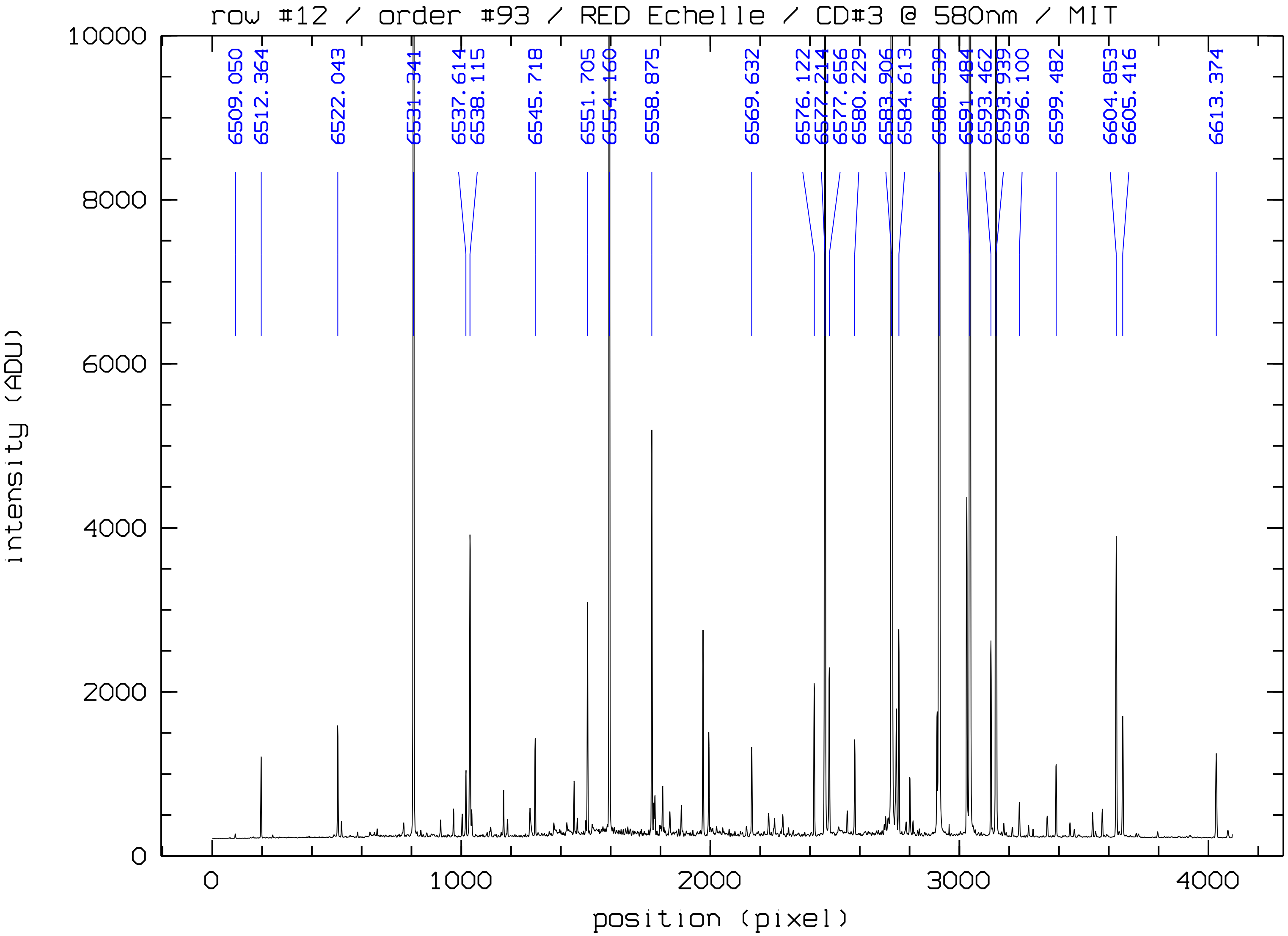


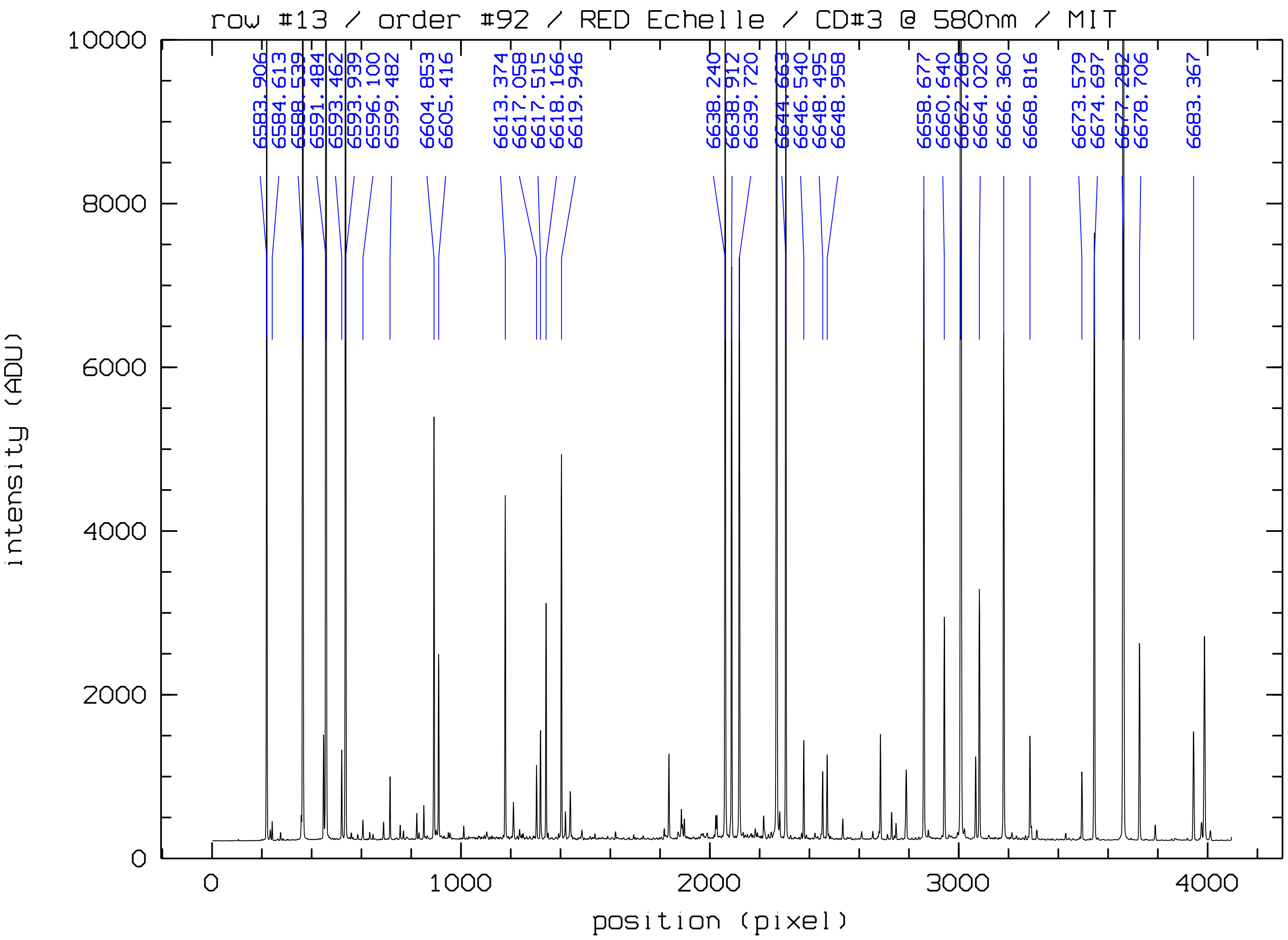
row #9 / order #96 / RED Echelle / CD#3 @ 580nm / MIT
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
6307.662
6310.810
6315.775
6317.182
6321.820
6324.450
6326.367
6327.277
6331.413
6337.620
6339.668
6342.859
6348.737
6355.910
6369.139
6369.577
6371.943
6376.930
6379.673
6384.719
6387.395
6399.230
6406.446

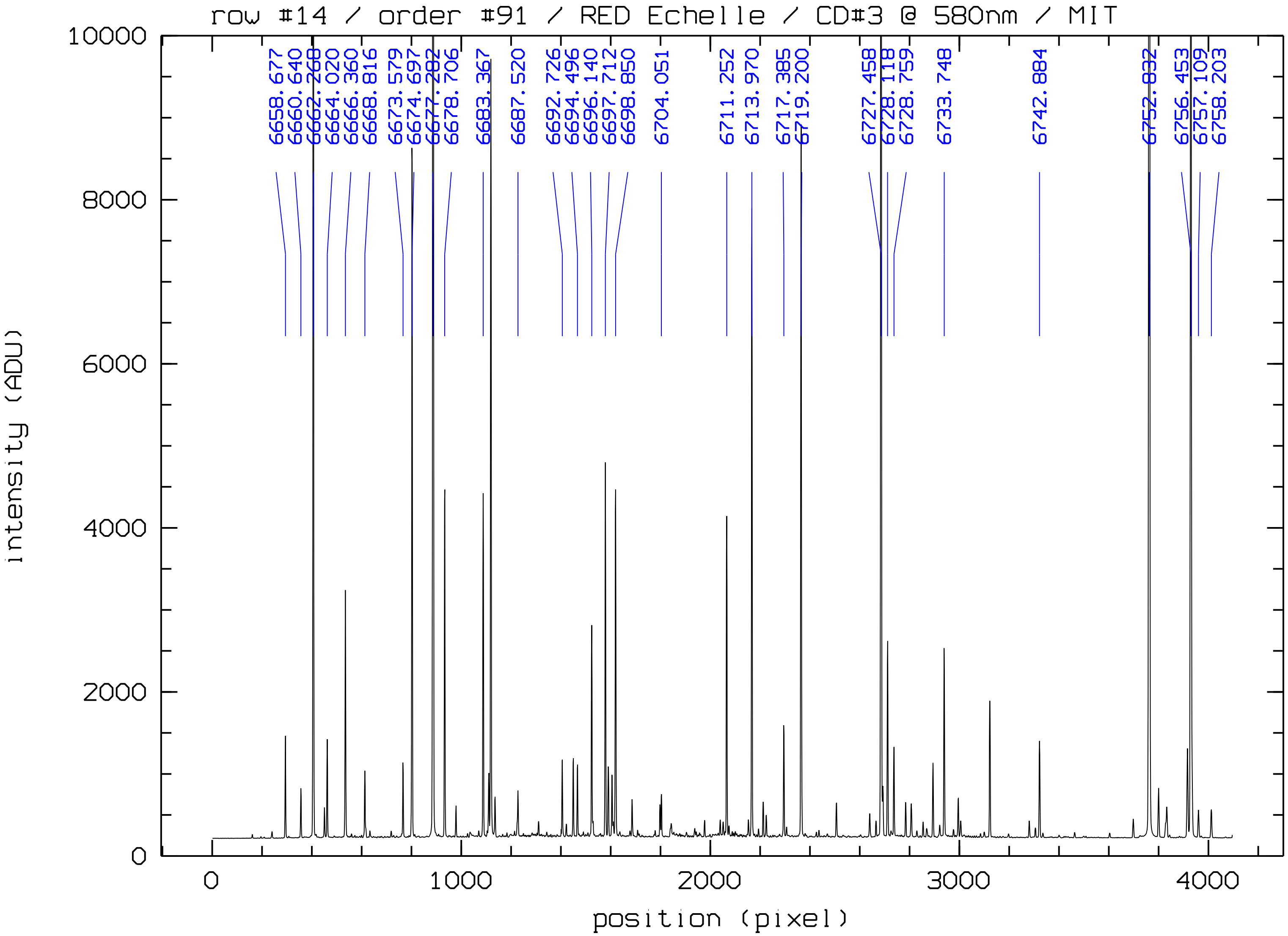

row #10 / order #95 / RED Echelle / CD#3 @ 580nm / MIT
6371.943
6376.930
6379.673
6384.719
6387.395
6399.230
6406.446
6411.899
6413.614
6416.315
6431.570
6437.761
6439.071
6441.950
6443.890
6446.771
6450.006
6450.955
6457.282
6462.595
6466.560
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000

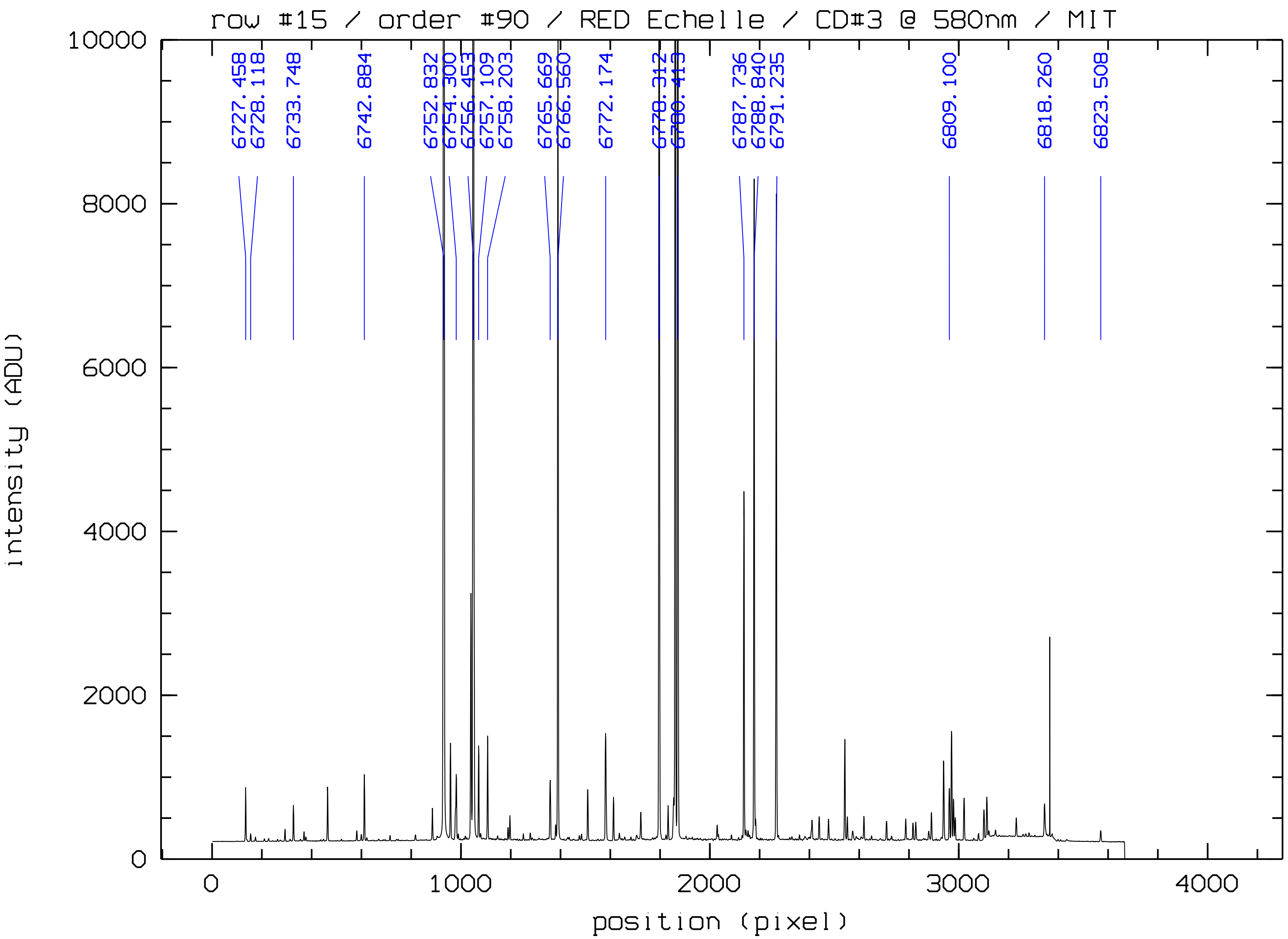


row #11 / order #94 / RED Echelle / CD#3 @ 580nm / MIT
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
6443.890
6446.771
6450.006
6450.955
6457.282
6462.595
6466.560
6483.100
6487.441
6488.883
6490.737
6493.197
6493.777
6501.992
6503.511
6506.986
6509.050
6512.364
6513.840
6522.043
6531.341
6537.614
6538.115


row #12 / order #93 / RED Echelle / CD#3 @ 580nm / MIT
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
6509.050
6512.364
6522.043
6531.341
6537.614
6538.115
6545.718
6551.705
6554.160
6558.875
6569.632
6576.122
6577.214
6577.656
6580.229
6583.906
6584.613
6588.539
6591.484
6593.462
6593.939
6596.100
6599.482
6604.853
6605.416
6613.374


row #13 / order #92 / RED Echelle / CD#3 @ 580nm / MIT
intensity (ADU)
position (pixel)
0
1000
2000
3000
4000
2000
4000
6000
8000
10000
6583.906
6584.613
6588.539
6591.484
6593.462
6593.939
6596.100
6599.482
6604.853
6605.416
6613.374
6617.058
6617.515
6618.166
6619.946
6638.240
6638.912
6639.720
6644.663
6646.540
6648.495
6648.958
6658.677
6660.640
6662.268
6664.020
6666.360
6668.816
6673.579
6674.697
6677.282
6678.706
6683.367


row #14 / order #91 / RED Echelle / CD#3 @ 580nm / MIT
intensity (ADU)
position (pixel)
0
2000
4000
6000
8000
10000
0
1000
2000
3000
4000
6658.677
6660.640
6662.268
6664.020
6666.360
6668.816
6673.579
6674.697
6677.282
6678.706
6683.367
6687.520
6692.726
6694.496
6696.140
6697.712
6698.850
6704.051
6711.252
6713.970
6717.385
6719.200
6727.458
6728.118
6728.759
6733.748
6742.884
6752.832
6756.453
6757.109
6758.203

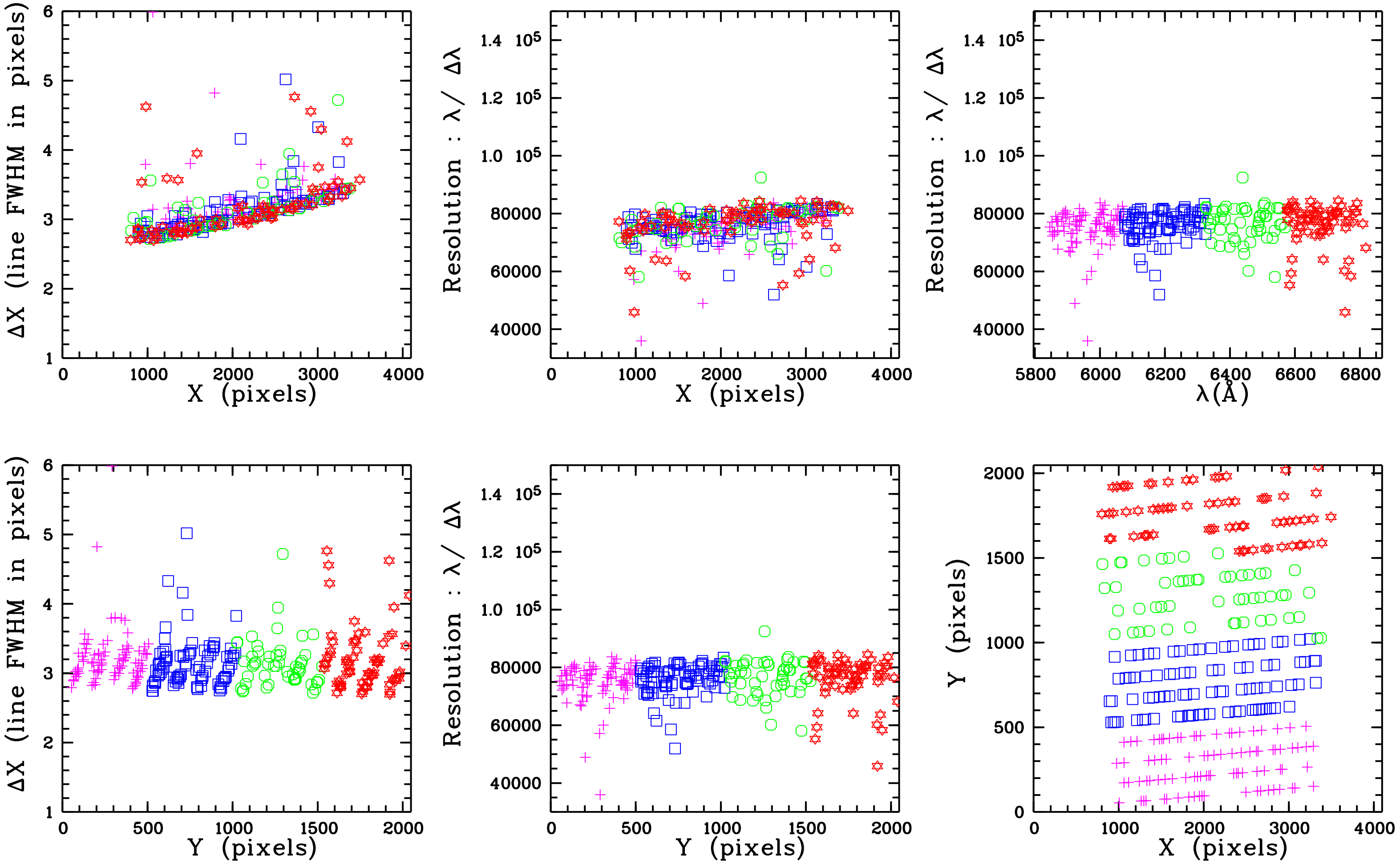

row #15 / order #90 / RED Echelle / CD#3 @ 580nm / MIT
intensity (ADU)
position (pixel)
6727.458
6728.118
6733.748
6742.884
6752.832
6754.300
6756.453
6757.109
6758.203
6765.669
6766.560
6772.174
6778.312
6780.413
6787.736
6788.840
6791.235
6809.100
6818.260
6823.508

Central wavelength: 580.0 nm, slit: 0.5 arcsec, CCD: MIT, 9.8 °C

Filename : UVES_RED_CAL134.1.fits, Observ. date: 2000-05-13T20:33:23

Median(DX) = 3.11 pix , Mean(DX) = 3.2 pix , σ(DX) = 0.7 pix

Median(RES) = 77027.047 , Mean(RES) = 75588.297 , σ(RES) = 7200.5



Sa, 13 May 2000 22:41:57; USER: pipeline