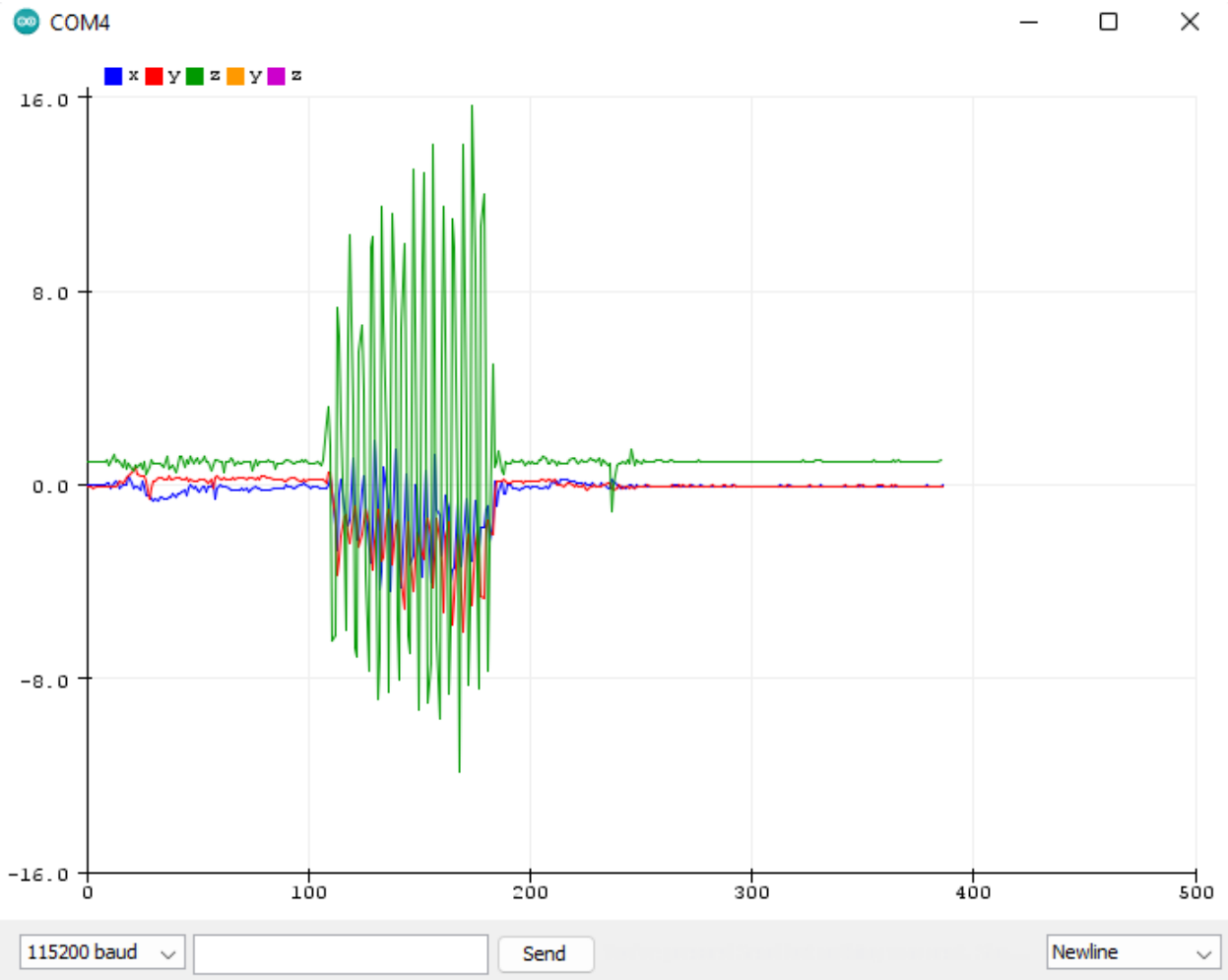
Setting the accelerometer range to 2G using high resolution, I do indeed notice that the sensor only outputs values up to 2/-2 G. Looking at the serial monitor, I also see slight changes of 0.01 which means that there should be a resolution of at least 0.01G. This means we have a dynamic range of $\frac{2-(-2)}{0.01} = 400$ which is low since we should have $2^{12} = 4096$ values in high resolution mode.

Switching to a range of 16G:



I have reached about 16Gs and I still see variations of 0.01 in the serial monitor so we can do the same calculation as above, assuming that the sensor also reaches -16G:

$\frac{16-(-16)}{0.01} = 3200$ which is much closer to the 4096 possibilities as given by the datasheet.

```
x:-0.06  y:-0.05  z:0.95
x:-0.05  y:-0.06  z:0.98
x:-0.06  y:-0.06  z:0.96
x:-0.08  y:-0.06  z:0.96
x:-0.06  y:-0.08  z:0.95
x:-0.04  y:-0.06  z:0.96
```

Turning off High resolution mode, I can immediately see that the precision is much less. I can only see jumps of more than 0.05. I am still in 16G range.

```
x:0.00  y:-0.10  z:0.90
x:0.00  y:-0.15  z:0.90
x:0.05  y:-0.15  z:0.90
x:0.00  y:-0.10  z:0.95
x:0.00  y:-0.10  z:0.90
x:0.00  y:-0.20  z:1.05
x:0.00  y:-0.10  z:0.95
```

This gives us: $\frac{16-(-16)}{0.05} = 640$. This is somewhat far from the advertised 10-bit resolution which should give us 1024 distinct values, but it is still coherent.

Still in 16G range, setting the device to low-power mode, we obtain the following output:

```
x:0.00  y:-0.20  z:0.80
x:0.00  y:0.00  z:0.80
x:0.00  y:-0.20  z:0.80
x:0.00  y:-0.20  z:1.00
x:0.00  y:-0.20  z:0.80
x:0.00  y:-0.20  z:1.00
```

We are now only getting a precision of 0.2.

Again, computing: $\frac{16-(-16)}{0.2} = 160$ values, which is coherent with the 8-bit resolution that is advertised, which should be $2^8 = 256$ values.

Repeating this process with all the ranges and we can organize the results in a table:

Range	**High Precision Mode**		**Normal Mode**		**Low-Power Mode**	
	Distinct Values	*Precision*	*Distinct Values*	*Precision*	*Distinct Values*	*Precision*
2G	400	0.01	400	0.01	400	0.01
4G	800	0.01	800	0.01	266	0.03
8G	1600	0.01	533	0.03	228	0.07
16G	3200	0.01	640	0.05	160	0.20

Number of distinct values and precision observed