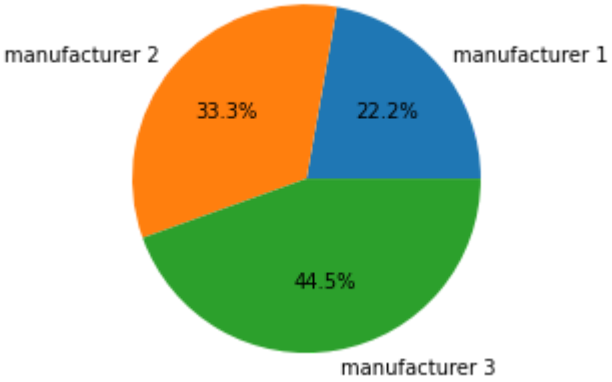
In [ ]:
```
# importing libraries.
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
```

In [ ]:
```
def transformer_prob_of_out_of_spec(n_transformers, prob_of_out_of_spec):
    pos = 0
    for t in range(1, n_transformers+1):
        pos += prob_of_out_of_spec**t
    return pos
```

In [ ]:
```
m1 = transformer_prob_of_out_of_spec(8, 2/1000)
m2 = transformer_prob_of_out_of_spec(5, 3/1000)
m3 = transformer_prob_of_out_of_spec(20, 4/1000)
```

In [ ]:
```
ms = np.array([m1,m2,m3])
mylabels = ["manufacturer 1", "manufacturer 2", "manufacturer 3"]

plt.pie(ms, labels = mylabels, autopct='%1.1f%%')
plt.show()
```



The probability that it is from manufacturer 1 is 22.2%