The following table is from the Particle Data Group.[1]

μ MEAN LIFE τ

Measurements with an error > 0.001×10^{-6} s have been omitted.

VALUE (10^{-6} s)	DOCUMENT ID	TECN	CHG	COMMENT
2.1969811±0.0000022 OUR AVERAGE				
2.1969803±0.0000021±0.0000007	[1] TISHCHENKO 13	CNTR	+	Surface μ^+ at PSI
2.197083 ±0.000032 ±0.000015	BARCZYK 08	CNTR	+	Muons from π^+ decay at rest
2.197013 ±0.000021 ±0.000011	CHITWOOD 07	CNTR	+	Surface μ^+ at PSI
2.197078 ±0.000073	BARDIN 84	CNTR	+	
2.197025 ±0.000155	BARDIN 84	CNTR	−	
2.19695 ±0.00006	GIOVANETTI 84	CNTR	+	
2.19711 ±0.00008	BALANDIN 74	CNTR	+	
2.1973 ±0.0003	DUCLOS 73	CNTR	+	
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.1969803±0.0000022	WEBBER 11	CNTR	+	Surface μ^+ at PSI

[1] TISHCHENKO 13 uses 1.6×10^{12} μ^+ events and supersedes WEBBER 11.

Let us compute muon decay time from theory and compare it to the average measured value of 2.1969811 microseconds.

The result from QED theory is the following formula for muon mean life τ.

$$\tau = \frac{96\pi^2 h}{G_F^2 \left(m_\mu c^2\right)^5}$$

G_F is Fermi coupling constant, m_μ is muon rest mass.

From NIST[2] we have

$$\begin{aligned}
G_F &= 1.1663787 \times 10^{-5}\ \text{GeV}^{-2} \\
m_\mu &= 1.883531627 \times 10^{-28}\ \text{kilogram} \\
h &= 6.62607015 \times 10^{-34}\ \text{joule second (exact)} \\
c &= 299792458\ \text{meter second}^{-1}\ \text{(exact)} \\
1\,\text{eV} &= 1.602176634 \times 10^{-19}\ \text{joule (exact)}
\end{aligned}$$

Hence

$$\tau = 2.18735 \times 10^{-6}\,\text{second}$$

The result is a bit smaller than the measured value.

$$\frac{\tau}{2.1969811 \times 10^{-6}\ \text{second}} = 0.9956$$

[1] https://pdg.lbl.gov/2020/listings/rpp2020-list-muon.pdf
[2] https://physics.nist.gov/cuu/Constants/index.html