Answer

The formula is an action whose meaning is a Boolean-valued mapping on pairs of states. It is true iff its meaning maps all pairs of states to TRUE. Its meaning is computed as follows:

$$
\begin{aligned}
&[\![(A \equiv B) \;\Rightarrow\; ((\text{ENABLED } A) \equiv (\text{ENABLED } B))]\!](\langle s, t\rangle) \\
&\quad\equiv\quad ([\![A]\!](\langle s, t\rangle) \equiv [\![B]\!](\langle s, t\rangle)) \;\Rightarrow \\
&\qquad\qquad\qquad ([\![\text{ENABLED } A]\!](\langle s, t\rangle) \equiv [\![\text{ENABLED } B]\!](\langle s, t\rangle)) \\
&\quad\equiv\quad ([\![A]\!](\langle s, t\rangle) \equiv [\![B]\!](\langle s, t\rangle)) \;\Rightarrow \\
&\qquad\qquad\qquad ((\exists t : [\![A]\!](\langle s, t\rangle)) \equiv (\exists t : [\![B]\!](\langle s, t\rangle)))
\end{aligned}
$$

Note that in the last formula, the left-hand side depends on t but the right-hand side doesn't. Let A be the action FALSE and find an action B and states s and t such that $[\![B]\!](\langle s, t\rangle)$ equals FALSE and $\exists t : [\![B]\!](\langle s, t\rangle)$ equals TRUE.

To show that the rule isn't valid, you need to need to remember what it means for state predicates and actions to be true on a behavior and use the definition of $\Vdash$.

CLOSE