

es-causl-iff^{0,22}

$\forall the_es:ES, e, e':E.$

$(e < e')$

\Leftrightarrow

$\neg \text{first}(e') \ \& \ (e < \text{pred}(e')) \vee e = \text{pred}(e') \vee \text{isrcv}(e') \ \& \ (e < \text{sender}(e')) \vee e = \text{sender}(e')$