

f2f+-p+-equiv-causal^{11,40}

$\forall es:ES, ff:FIFO, f2f+:F2F+-decls.$

$\text{plus-ify}\{i:l\}(es;ff;is_req;is_ack;awaiting;owes_ack)$

$\Rightarrow (\forall sdr, rcvr:ff.C, e, e':E.$

$([e: sdr \dashv\vdash is_req \rightarrow rcvr] \vee [e: rcvr \dashv\vdash is_ack \rightarrow sdr])$

$\Rightarrow ([e': sdr \dashv\vdash is_req \rightarrow rcvr] \vee [e': rcvr \dashv\vdash is_ack \rightarrow sdr])$

$\Rightarrow ((e < e') \iff (f2f+-p+(e,e'))))$