

	Category A	Category B
Lepton selection	Same-sign $\mu\tau_h$ pair	$\mu\tau_h$ or $e\tau_h$ pair (category A events are removed)
Jet selection	At least two jets	At least three jets
$E_T^{\text{miss}}$ requirement	No $E_T^{\text{miss}}$ requirement	$E_T^{\text{miss}} > 50 \text{ GeV}$
$S_T$ and $\tau$ lepton $p_T$ requirements	Optimized for each LQ mass hypothesis	$S_T > 1000 \text{ GeV}, p_T^\tau > 20 \text{ GeV}$
Background estimation	Main component containing misidentified muons & $\tau$ leptons estimated using data events	Estimated via simulation, corrections applied for $\tau$ lepton misidentification rate and top quark and $W$ $p_T$ distributions
Search regions	2 search regions binned in $ \widetilde{\eta} $	8 search regions in 4 $\tau$ lepton $p_T$ regions for $\mu\tau_h$ and $e\tau_h$ channels