$\tau_{\text{lep}}\tau_{\text{had}}$ signal region	$\Delta\phi(\tau,\ell) > 2.4$, $m_{\text{T}}(\ell, E_{\text{T}}^{\text{miss}}) < 40$ *GeV*, Veto $80 < m_{e,\tau} < 110$ *GeV* for $\tau_e\tau_{\text{had}}$, $N_{b\text{-tag}} \geq 1$ (b-tag category), $N_{b\text{-tag}} = 0$ (b-veto category) or no requirement (Z' category)
W+jets/$t\bar{t}$ fake-factor control region	$m_{\text{T}}(\ell, E_{\text{T}}^{\text{miss}}) > 70$ (60) GeV for $\tau_e\tau_{\text{had}}$ ($\tau_\mu\tau_{\text{had}}$), different $\tau_{\text{had-vis}}$ identification for anti-τ_{had} sub-region
$t\bar{t}$ validation region	$N_{b\text{-tag}} \geq 1$, $m_{\text{T}}(\ell, E_{\text{T}}^{\text{miss}}) > 100$ *GeV*
Multi-jet fake-factor control region	invert e, μ isolation requirement, different $\tau_{\text{had-vis}}$ identification for anti-τ_{had} sub-region
Multi-jet control region for r_{MJ} estimation	$m_{\text{T}}(\ell, E_{\text{T}}^{\text{miss}}) < 30$ GeV, no e, μ isolation requirement, no $\tau_{\text{had-vis}}$ passing loose identification, $N_{\text{jet}} \geq 1$ (b-veto category), $N_{\text{jet}} \geq 2$ (b-tag category)
Control region for correction of electrons misidentified as $\tau_{\text{had-vis}}$	$80 < m_{e,\tau} < 110$ *GeV* for 1-track $\tau_{\text{had-vis}}$ $90 < m_{e,\tau} < 100$ *GeV* for 3-track $\tau_{\text{had-vis}}$

$\tau_{\text{had}}\tau_{\text{had}}$ selection	$\Delta\phi(\tau_{\text{had-vis},1}, \tau_{\text{had-vis},2}) > 2.7$, $N_{b\text{-tag}} \geq 1$ (b-tag category), $N_{b\text{-tag}} = 0$ (b-veto category) or no requirement (Z' category)
Multi-jet fake-factor control region	pass single-jet trigger, leading $\tau_{\text{had-vis}}$ fails medium identification, no tracks, nor charge requirements for leading $\tau_{\text{had-vis}}$, $\frac{p_{\text{T}}^{\tau_{\text{had-vis},2}}}{p_{\text{T}}^{\tau_{\text{had-vis},1}}} > 0.3$, no $\Delta\phi(\tau_{\text{had-vis},1}, \tau_{\text{had-vis},2})$ requirement
Fake-rate control region	pass single-muon trigger, isolated muon with $p_{\text{T}} > 55$ *GeV*, $\tau_{\text{had-vis}}$ with $p_{\text{T}} > 50$ *GeV*, $\Delta\phi(\mu, \tau_{\text{had-vis}}) > 2.4$, $\sum_{L=\mu,\tau} \cos\Delta\phi(L, E_{\text{T}}^{\text{miss}}) < 0$ (for b-veto category only)
$W \to \mu\nu$ control region for W+jets $m_{\text{T}}^{\text{tot}}$ correction	pass single-muon trigger, isolated muon with $p_{\text{T}} > 110$ *GeV*, $\tau_{\text{had-vis}}$ with $p_{\text{T}} > 55$ *GeV*