

Common selection	$p_{\text{T}}^{\ell 1, \ell 2} > 25 \text{ GeV}, \eta^{\ell 1, \ell 2} < 2.5$ for electron channel $p_{\text{T}}^{\ell 1, \ell 2} > 20 \text{ GeV}, \eta^{\ell 1, \ell 2} < 2.4$ for muon channel $p_{\text{T}}^{\gamma} > 20 \text{ GeV}, \eta^{\gamma} < 1.442$ or $1.566 < \eta^{\gamma} < 2.500$ $p_{\text{T}}^{j 1, j 2} > 30 \text{ GeV}, \eta^{j 1, j 2} < 4.7$ $70 < m_{\ell\ell} < 110 \text{ GeV}, m_{\text{Z}\gamma} > 100 \text{ GeV}$ $\Delta R_{jj}, \Delta R_{j\gamma}, \Delta R_{j\ell} > 0.5, \Delta R_{\ell\gamma} > 0.7$
Fiducial volume	Common selection, $m_{jj} > 500 \text{ GeV}, \Delta\eta_{jj} > 2.5$
Control region	Common selection, $150 < m_{jj} < 500 \text{ GeV}$
EW signal region	Common selection, $m_{jj} > 500 \text{ GeV}, \Delta\eta_{jj} > 2.5,$ $\eta^* < 2.4, \Delta\phi_{\text{Z}\gamma, jj} > 1.9$
aQGC search region	Common selection, $m_{jj} > 500 \text{ GeV}, \Delta\eta_{jj} > 2.5,$ $p_{\text{T}}^{\gamma} > 120 \text{ GeV}$