	200 C V 10 . 2017		
	300 GeV, 10 cm, region 2017		
Cut	$\epsilon_i^{ m CMS}$	$\epsilon_i^{\mathrm{sim}},\mathrm{MLM}$	$\epsilon_i^{\rm sim}$ , MLM, no pileup
total	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$
trigger	$1.3^{+0.02}_{-0.02} \times 10^{-1}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
passes $p_{\mathrm{T}}^{\mathrm{miss}}$ filters	$1.3^{+0.02}_{-0.02} \times 10^{-1}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
$p_{\mathrm{T}}^{\mathrm{miss}} > 120\mathrm{GeV}$	$1.3^{+0.02}_{-0.02} \times 10^{-1}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
$\geq 1$ jet with $p_{ m T} > 110{ m GeV}$ and $ \eta  < 2.4$	$8.0^{+0.13}_{-0.13} \times 10^{-2}$	$5.5^{+0.07}_{-0.07} \times 10^{-2}$	$5.6^{+0.07}_{-0.07} \times 10^{-2}$
==0 pairs of jets with $\Delta \phi_{\rm jet,\ jet} > 2.5$	$7.0^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
$ \Delta\phi({ m leading jet}, \vec{p}_{ m T}^{ m miss})  > 0.5$	$7.0^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
$\geq 1$ track with $ \eta  < 2.1$	$6.8^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
$\geq 1 \text{ track with } p_{\mathrm{T}} > 55 \mathrm{GeV}$	$3.2^{+0.08}_{-0.08} \times 10^{-2}$	$4.5^{+0.07}_{-0.07} \times 10^{-2}$	$4.5^{+0.07}_{-0.07} \times 10^{-2}$
$\geq 1$ track passing fiducial selections	$2.2^{+0.07}_{-0.07} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$
$\geq 1$ track with $\geq 4$ pixel hits	$1.3^{+0.05}_{-0.05} \times 10^{-2}$	$1.4^{+0.04}_{-0.04} \times 10^{-2}$	$1.5^{+0.04}_{-0.04} \times 10^{-2}$
$\geq 1$ track with no missing inner hits	$1.3^{+0.05}_{-0.05} \times 10^{-2}$	$1.1^{+0.03}_{-0.03} \times 10^{-2}$	$1.2^{+0.03}_{-0.03} \times 10^{-2}$
$\geq 1$ track with no missing middle hits	$1.2^{+0.05}_{-0.05} \times 10^{-2}$	$1.1^{+0.03}_{-0.03} \times 10^{-2}$	$1.2^{+0.03}_{-0.03} \times 10^{-2}$
$\geq 1$ track with relative track isolation $< 5\%$	$5.8^{+0.34}_{-0.34} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1 \text{ track with }  d_{xy}  < 0.02  \text{cm}$	$5.7^{+0.34}_{-0.34} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1 \text{ track with }  d_z  < 0.5 \text{ cm}$	$5.7^{+0.34}_{-0.34} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1 \text{ track with } \Delta R(\text{track, jet}) > 0.5$	$5.5^{+0.33}_{-0.33} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.7^{+0.\overline{22}}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track}, \text{electron}) > 0.15$	$5.4^{+0.33}_{-0.33} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track}, \text{muon}) > 0.15$	$5.4^{+0.33}_{-0.33} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1 \text{ track with } \Delta R(\text{track}, \tau_{\text{h}}) > 0.15$	$\begin{bmatrix} 5.4^{+0.33}_{-0.33} \times 10^{-3} \\ 5.4^{+0.33}_{-0.33} \times 10^{-3} \\ 5.4^{+0.33}_{-0.33} \times 10^{-3} \end{bmatrix}$	$\begin{array}{l} -0.21 \times 10^{-3} \\ 4.3^{+0.21}_{-0.21} \times 10^{-3} \\ 4.3^{+0.21}_{-0.21} \times 10^{-3} \\ 4.3^{+0.21}_{-0.21} \times 10^{-3} \end{array}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}  4.6^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1 \text{ track with } E_{\text{calo}} < 10 \text{GeV}$	1 5 3 3 3 8 X 10 0	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\geq 3$ missing outer hits	$5.2^{+0.33}_{-0.33} \times 10^{-3}$	$\begin{array}{c} 4.2^{+0.21}_{-0.21} \times 10^{-3} \\ 1.8^{+0.14}_{-0.14} \times 10^{-3} \end{array}$	$\begin{array}{c} 4.5^{+0.22}_{-0.22} \times 10^{-3} \\ 2.0^{+0.14}_{-0.14} \times 10^{-3} \end{array}$
$\geq 1$ track 4 layers	$3.0^{+0.25}_{-0.25} \times 10^{-3}$	$1.8^{+0.14}_{-0.14} \times 10^{-3}$	$2.0^{+0.14}_{-0.14} \times 10^{-3}$
$\geq 1$ track 5 layers	$1.2^{+0.15}_{-0.15} \times 10^{-3}$	$1.1^{+0.11}_{-0.11} \times 10^{-3}$	$9.5^{+1.01}_{-1.01} \times 10^{-4}$
$\geq 1$ track with $\geq 6$ layers	$1.0^{+0.15}_{-0.15} \times 10^{-3}$	$1.2^{+0.11}_{-0.11} \times 10^{-3}$	$1.5^{+0.13}_{-0.13} \times 10^{-3}$

Table 1: Cutflow comparison for 300 GeV, 10 cm, region 2017

	300 GeV, 10 cm, region 2018A		
Cut	$\epsilon_i^{ m CMS}$	$\epsilon_i^{\rm sim},{ m MLM}$	$\mid \epsilon_i^{ m sim},$ MLM, no pileup
total	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$
trigger	$9.1^{+0.13}_{-0.13} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
passes $p_{\mathrm{T}}^{\mathrm{miss}}$ filters	$9.1^{+0.13}_{-0.13} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
$p_{\mathrm{T}}^{\mathrm{miss}} > 120\mathrm{GeV}$	$8.9^{+0.13}_{-0.13} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
$\geq 1$ jet with $p_{ m T} > 110{ m GeV}$ and $ \eta  < 2.4$	$8.0^{+0.13}_{-0.13} \times 10^{-2}$	$5.5^{+0.07}_{-0.07} \times 10^{-2}$	$5.6^{+0.07}_{-0.07} \times 10^{-2}$
==0 pairs of jets with $\Delta \phi_{\rm jet,\ jet} > 2.5$	$7.0^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
$ \Delta\phi({ m leading\ jet}, ar{p}_{ m T}^{ m miss})  > 0.5$	$ \begin{array}{c c} 7.0^{+0.12}_{-0.12} \times 10^{-2} \\ 6.8^{+0.12}_{-0.12} \times 10^{-2} \end{array} $	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
$\geq 1$ track with $ \eta  < 2.1$	$6.8^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
$\geq 1 \text{ track with } p_{\mathrm{T}} > 55 \mathrm{GeV}$	$3.2^{+0.08}_{-0.08} \times 10^{-2}$	$4.5^{+0.07}_{-0.07} \times 10^{-2}$	$4.5^{+0.07}_{-0.07} \times 10^{-2}$
$\geq 1$ track passing fiducial selections	$\ 2.0^{+0.06}_{-0.06} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$
$\geq 1$ track with $\geq 4$ pixel hits	$1.1^{+0.05}_{-0.05} \times 10^{-2}$	$1.4^{+0.04}_{-0.04} \times 10^{-2}$	$1.5^{+0.04}_{-0.04} \times 10^{-2}$
$\geq 1$ track with no missing inner hits	$1.1^{+0.05}_{-0.05} \times 10^{-2}$	$1.1^{+0.03}_{-0.03} \times 10^{-2}$	$1.2^{+0.03}_{-0.03} \times 10^{-2}$
$\geq 1$ track with no missing middle hits	$1.0^{+0.05}_{-0.05} \times 10^{-2}$	$1.1^{+0.03}_{-0.03} \times 10^{-2}$	$1.2^{+0.03}_{-0.03} \times 10^{-2}$
$\geq 1$ track with relative track isolation $< 5\%$	$5.1^{+0.32}_{-0.32} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $ d_{xy}  < 0.02\mathrm{cm}$	$5.1^{+0.32}_{-0.32} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $ d_z  < 0.5\mathrm{cm}$	$5.1^{+0.32}_{-0.32} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track}, \text{jet}) > 0.5$	$5.0^{+0.32}_{-0.32} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track}, \text{electron}) > 0.15$	$4.9^{+0.31}_{-0.31} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1 \text{ track with } \Delta R(\text{track, muon}) > 0.15$	$\begin{array}{c} 4.9_{-0.31} \times 10 \\ 4.9_{-0.31}^{+0.31} \times 10^{-3} \\ 4.9_{-0.31}^{+0.31} \times 10^{-3} \\ 4.9_{-0.31}^{+0.31} \times 10^{-3} \end{array}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$ $4.3^{+0.21}_{-0.21} \times 10^{-3}$ $4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$ $4.6^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1 \text{ track with } \Delta R(\text{track}, \tau_{\text{h}}) > 0.15$	$4.9^{+0.31}_{-0.31} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1 \text{ track with } E_{\text{calo}} < 10 \text{GeV}$	$\parallel 4.8^{+0.31}_{-0.31} \times 10^{-3}$	$ 4.3^{+0.21}_{-0.21} \times 10^{-5}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\geq 3$ missing outer hits	$4.8^{+0.31}_{-0.31} \times 10^{-3}$	$4.2^{+0.21}_{-0.21} \times 10^{-3}$	$4.5^{-0.22}_{-0.22} \times 10^{-3} 2.0^{+0.14}_{-0.14} \times 10^{-3}$
$\geq 1$ track 4 layers	$2.6^{+0.23}_{-0.23} \times 10^{-3}$	$1.9^{+0.14}_{-0.14} \times 10^{-3}$	$2.0^{+0.14}_{-0.14} \times 10^{-3}$
$\geq 1$ track 5 layers	$1.1_{-0.15}^{+0.15} \times 10^{-3}$	$1.1^{+0.11}_{-0.11} \times 10^{-3}$	$9.9^{+1.02}_{-1.02} \times 10^{-4}$
$\geq 1$ track with $\geq 6$ layers	$1.1^{+0.15}_{-0.15} \times 10^{-3}$	$1.2^{+0.11}_{-0.11} \times 10^{-3}$	$1.6^{+0.13}_{-0.13} \times 10^{-3}$

Table 2: Cutflow comparison for 300 GeV, 10 cm, region 2018 A

	300 GeV, 10 cm, region 2018B		
Cut	$\epsilon_i^{ ext{CMS}}$	$\epsilon_i^{\rm sim},{ m MLM}$	$\epsilon_i^{ m sim},$ MLM, no pileup
total	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$
trigger		$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
passes $p_{\mathrm{T}}^{\mathrm{miss}}$ filters	$  0.1^{+0.14} \times 10^{-2}  $	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
$p_{\mathrm{T}}^{\mathrm{miss}} > 120\mathrm{GeV}$	$ \begin{vmatrix} 9.1^{+0.14}_{-0.14} \times 10^{-2} \\ 9.1^{+0.14}_{-0.14} \times 10^{-2} \\ 8.9^{+0.13}_{-0.13} \times 10^{-2} \end{vmatrix} $	$8.2^{+0.09}_{-0.00} \times 10^{-2}$	$\begin{array}{c} 8.2^{+0.09}_{-0.09} \times 10^{-2} \\ 8.2^{+0.09}_{-0.09} \times 10^{-2} \\ 8.2^{+0.09}_{-0.09} \times 10^{-2} \end{array}$
$\geq 1$ jet with $p_{\mathrm{T}} > 110\mathrm{GeV}$ and $ \eta  < 2.4$	$8.0^{+0.13}_{-0.13} \times 10^{-2}$	$5.5^{+0.07}_{-0.07} \times 10^{-2}$	$5.6^{+0.07}_{-0.07} \times 10^{-2}$
==0 pairs of jets with $\Delta \phi_{\rm jet,\ jet} > 2.5$	$7.0^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
$ \Delta\phi({ m leading\ jet}, ec{p}_{ m T}^{ m miss})  > 0.5$	$7.0^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
$\geq 1$ track with $ \eta  < 2.1$	$ 0.8_{-0.12} \times 10^{-2} $	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
$\geq 1 \text{ track with } p_{\mathrm{T}} > 55 \mathrm{GeV}$	$3.2^{+0.08}_{-0.08} \times 10^{-2}$	$4.5^{+0.07}_{-0.07} \times 10^{-2}$	$4.5^{+0.07}_{-0.07} \times 10^{-2}$
$\geq 1$ track passing fiducial selections	$2.1^{+0.06}_{-0.06} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$
$\geq 1$ track with $\geq 4$ pixel hits	$1.1^{+0.05}_{-0.05} \times 10^{-2}$	$1.4^{+0.04}_{-0.04} \times 10^{-2}$	$1.5^{+0.04}_{-0.04} \times 10^{-2}$
$\geq 1$ track with no missing inner hits	$1.1^{+0.05}_{-0.05} \times 10^{-2}$	$1.1^{+0.03}_{-0.03} \times 10^{-2}$	$1.2^{+0.03}_{-0.03} \times 10^{-2}$
$\geq 1$ track with no missing middle hits	$1.0^{+0.05}_{-0.05} \times 10^{-2}$	$1.1^{+0.03}_{-0.03} \times 10^{-2}$	$1.2^{+0.03}_{-0.03} \times 10^{-2}  4.7^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with relative track isolation $< 5\%$	$5.1^{+0.32}_{-0.32} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1 \text{ track with }  d_{xy}  < 0.02  \text{cm}$	$ \begin{array}{c} -0.32 \\ 5.1_{-0.32}^{+0.32} \times 10^{-3} \\ 5.1_{-0.32}^{+0.32} \times 10^{-3} \\ 5.1_{-0.32}^{+0.32} \times 10^{-3} \\ \end{array} $	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1 \text{ track with }  d_z  < 0.5 \text{ cm}$	$5.1^{+0.32}_{-0.32} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, jet}) > 0.5$	$ 5.0^{+0.32}_{-0.32} \times 10^{-3} $	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track}, \text{electron}) > 0.15$	$4.9^{+0.31}_{-0.31} \times 10^{-3}$	$\begin{array}{c} 4.4^{+0.22}_{-0.22} \times 10^{-3} \\ 4.4^{+0.21}_{-0.21} \times 10^{-3} \\ 4.3^{+0.21}_{-0.21} \times 10^{-3} \\ 4.3^{+0.21}_{-0.21} \times 10^{-3} \end{array}$	$\begin{array}{c} 4.7^{+0.22}_{-0.22} \times 10^{-3} \\ 4.7^{+0.22}_{-0.22} \times 10^{-3} \\ 4.7^{+0.22}_{-0.22} \times 10^{-3} \\ 4.6^{+0.22}_{-0.22} \times 10^{-3} \end{array}$
$\geq 1$ track with $\Delta R(\text{track}, \text{muon}) > 0.15$	$ 4.8^{+0.31}_{-0.31} \times 10^{-3} $	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1 \text{ track with } \Delta R(\text{track}, \tau_{\text{h}}) > 0.15$	$4.8^{+0.31}_{-0.31} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1 \text{ track with } E_{\text{calo}} < 10 \text{GeV}$	$4.8^{+0.31}_{-0.31} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\geq 3$ missing outer hits	$4.7^{+0.31}_{-0.31} \times 10^{-3}$	$4.2^{+0.21}_{-0.21} \times 10^{-3}$	$4.5^{+0.22}_{-0.22} \times 10^{-3}$
$\phi(p_{\rm T}^{\rm miss}) < -1.6 \text{ or } \phi(p_{\rm T}^{\rm miss}) > -0.6$	$4.0^{+0.28}_{-0.28} \times 10^{-3}$	$3.5^{+0.\overline{19}}_{-0.19} \times 10^{-3}$	$3.7^{+0.\overline{20}}_{-0.20} \times 10^{-3}$
$\geq 1$ track 4 layers	$\begin{array}{ c c c c c }\hline 2.2^{+0.21}_{-0.21} \times 10^{-3} \\ 9.4^{+1.39}_{-1.39} \times 10^{-4} \\ \end{array}$	$1.5^{+0.13}_{-0.13} \times 10^{-3}$	$1.7^{+0.13}_{-0.13} \times 10^{-3}$
$\geq 1$ track 5 layers	$9.4^{+1.39}_{-1.39} \times 10^{-4}$	$9.1^{+0.98}_{-0.98} \times 10^{-4}$	$1.7^{+0.13}_{-0.13} \times 10^{-3} 7.6^{+0.90}_{-0.90} \times 10^{-4}$
$\geq 1$ track with $\geq 6$ layers	$9.2^{+1.34}_{-1.34} \times 10^{-4}$	$10.0^{+1.03}_{-1.03} \times 10^{-4}$	$1.3^{+0.12}_{-0.12} \times 10^{-3}$

Table 3: Cutflow comparison for 300 GeV, 10 cm, region 2018B