Description of Additional Supplementary Files

File name: Supplementary Movie 1
Description: Magnetic field profile in the meander resonator: The video B profile.mp4 shows the local field B(x) and the perpendicular component of the induced field Bind profiles averaged along the y-axis in the resonator region. The horizontal orange line indicates the applied field μ0Ha. The middle panel shows the magneto-optical imaging in the frame where the averaged profiles have been acquired. The outer rim of the ground plane is located at the right-hand side of the animation. Point-like avalanches occurring in the ground plane of the meander offer a path for relaxing the magnetic pressure in the vicinity of the resonator line and the gap, which manifests itself by simultaneous sudden reductions of the paramagnetic-like magnetization of the gaps and diamagnetic-like one in the ground plane. It should be noted that although the gaps are made of non superconducting materials (air and sapphire, $\mu r = 1$ for both), their magnetization is zero before the magnetic penetration event at 0.4 mT, then non-zero and oriented along the applied field during the hysteresis loop, which witnesses the flux focusing effect as it implies that $B > \mu 0Ha$.

File name: Supplementary Movie 2
Description: Hysteresis loop over the meander: The video B Ha.mp4 shows both unfolded hysteresis loops for Bind(Ha) and B(Ha), averaged over the y-axis and swept over the x-axis (the red line on the MOI image indicates for which vertical line the data is shown). This animation highlights the different paramagnetic and diamagnetic behaviours of the three regions of interest, namely the resonator line, the ground plane inside the meander and the gap between both. Note that the gaps exhibit a pronounced paramagnetic behaviour due to the magnetic focusing effect, and that it saturates once the diamagnetic behaviour of the ground planes saturates, stopped by the nucleation of point avalanches locally suppressing the superconducting state and relieving the magnetic pressure.

File name: Supplementary Movie 3
Description: Full MOI magnetic sweep at different temperatures: The video MOI 5 9 12K.mp4 shows full scale MOI images taken at 5, 9 and 12 K. The first row contains the background subtracted MOI images. One should note that avalanches occur sooner (i.e. at lower magnetic fields) at lower temperatures, and that no avalanche occur at 12K, in agreement with what is presented in the Fig. 3 of the manuscript. The second row contains histograms summarizing the general distribution of the B values over the entire image. The sliding orange line represents the value of μ0Ha. When taking a look at the histogram at 5 K, the single zero-centered peak splits in two peaks. The one fixed at $B = 0$ mT corresponds to the center of the device, where the applied field is screened by the superconductor. The second one centered on the applied field corresponds to the surrounding of the sample (where $B = \mu 0Ha$) and to the part of the sample in which avalanches occur. As more and more avalanches take place, the latter is reinforced while the zerocentered one disappears. A thin distribution centered around the applied field such as the one

observed at 12 K indicates a weak superconducting state. The 9 K sweep is an intermediate between these two cases as smooth penetration occurs first followed by avalanches.