Terrestrial Gamma Flashes Candidates detected by the AGILE Satellite

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The AGILE Satellite, launched the 23rd April 2007, is an italian mission devoted to high energy gamma-ray astrophysics in the 30 MeV - 50 GeV range, with a window in the hard-X domain 18-60 keV. One of the onboard detectors, the Mini-Calorimeter (MCAL), was also designed to detect transient events in the energy range 0.3-100 MeV. The main purpose of this feature is the detection of cosmological Gamma-Ray-Bursts (GRB). The dedicated on board trigger logic operating on MCAL data can trigger transient events with an excess of counts above the background lasting from few milliseconds to several seconds. When a trigger is issued, MCAL detected events are sent to ground on photon by photon basis, with a time resolution of about 2 microsec, so energy and time binning is simply limited by counting statistics. During four months of operation of the onboard trigger logic, MCAL detected twelve transient events with a very brief duration, few msec, that does not match timing and spectral features of known cosmic GRB. These events more likely agree with the features of typical Terrestrial Gamma-Ray Flashes as described in the literature and previously detected by the BATSE instrument onboard the Compton Gamma Ray Observatory and the RHESSI satellite. The characteristics of the

detected TGF candidate events, as well as their geographical distribution will be presented and discussed.