



Fig. 4. (a) Map of “pixelated illumination” without an object: $\Delta R_i/R_{0,low}$, where $R_{0,low}$ is the measured total reflectance when all the pixels are off, i.e. the minimum reflectance of the modulator array. (b-d) Map of $\Delta R_i/\Delta R_{i0}$ for three different objects placed in the path of the reflected beam. ΔR_i is the detected difference when switching the i^{th} pixel on and off while keeping all other pixels off. The two red crossed pixels crossed did not show modulation due to fabrication issues. The sketches of the objects made from the absorber material are shown below each map. The close resemblance between the map and the object indicates the graphene modulator array can be used for imaging.

5. Conclusion

We have presented a proof-of-concept experiment showing that arrays of graphene electro-absorption modulators can be employed for THz imaging applications. Since no mechanical parts are involved these devices can potentially enable low-cost video rate imaging systems.

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