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Demonstrated control of a Transmon using a Reciprocal Quantum Logic digital circuit - Part 2 JAMES MEDFORD, MICAH STOUTIMORE, QUENTIN HERR, OFER NAAMAN, HAROLD HEARNE, JOEL STRAND, ANTHONY PRZYBYSZ, AARON PESETSKI, JOHN PRZYBYSZ, Northrop Grumman Corporation — We demonstrate coherent manipulation of a 2D asymmetric Transmon qubit using a Reciprocal Quantum Logic (RQL) [1] distributed output amplifier mounted at 20 mK. The RQL amplifier provided active isolation and amplification for signals generated by room temperature equipment. We measured a 30% suppression of the Transmon lifetime when connected to the RQL circuit, which we primarily attributed to static power dissipation associated with the on-chip 50 Ohm source termination of the amplifier.

[1] J. Appl. Phys 109, 103903 (2011)

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