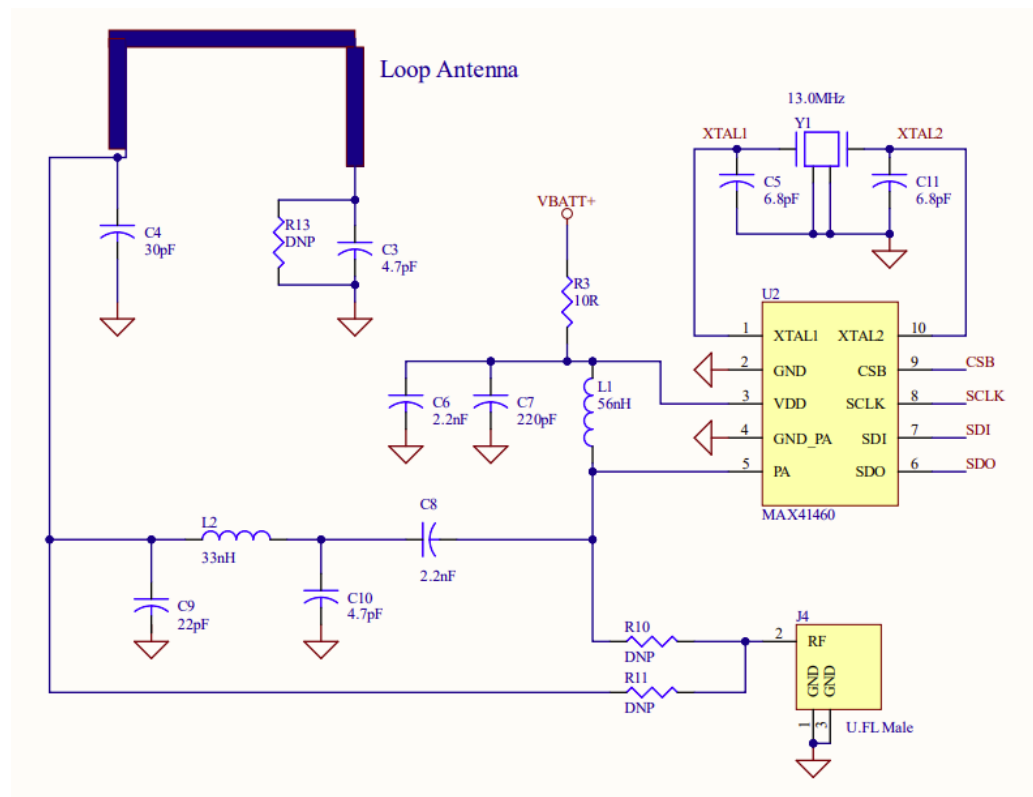


SHOCK-319 Sensor (319.5MHz): Loop Antenna – Circuit and Gain Calculation (Measured)

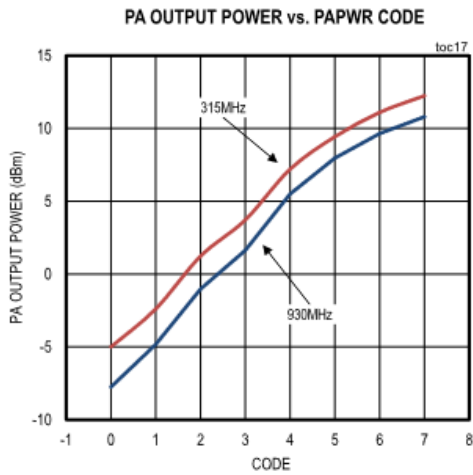
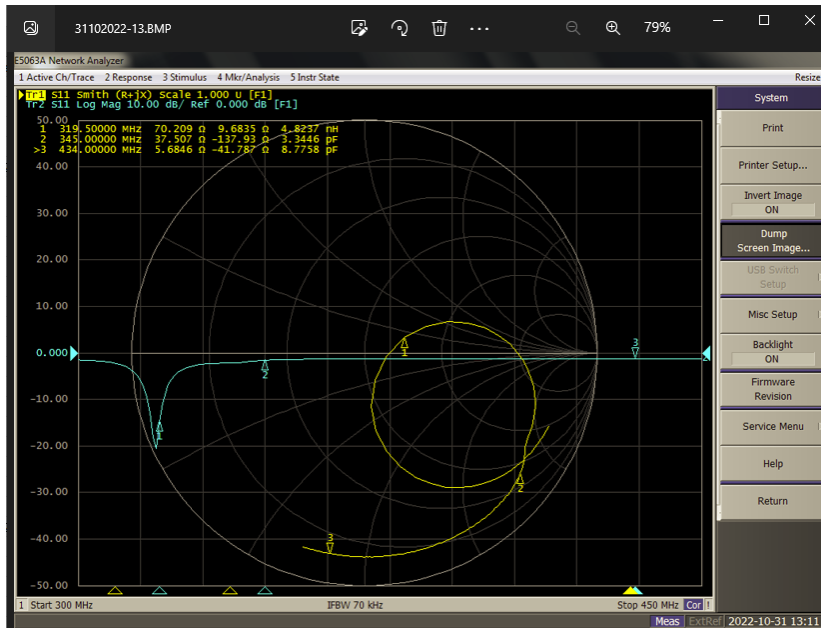
The SHOCK-319 uses a simple Split Capacitor Loop Antenna design followed by a Low Pass Filter for reducing Harmonics.

The Loop Antenna is made from a printed trace on the PCB in rectangular form approximately 1" x 0.75" on the sides. The split capacitor circuit uses C3 (4.7pF) and C4 (30pF) to tune the antenna, and is followed by a PI (cap/ind/cap) Low Pass Filter C9(22pF), L2(33nH), and C10(4.7pF). L1(56nH) provides minor tuning for the capacitance of the MAX41460 PA output, and C8 simply acts as a DC blocking capacitor and has no effect on the match.

The final match seen by the output of the MAX41460 is approximately 70 ohms.



Loop Antenna is a printed trace on the PCB.



The MAX41460 is set to operate at a PA PWR code of 6 = 11dBm (approximately).

The Gain of the Loop Antenna is derived from the test results of the 3m test at QAI (Test House), and is as follows:

Measured at 3m Antenna: 86.71 dBuV/m

(Using a Radiated Power Calculator on the web) Tx EIRP (dBm) = -9dBm

Transmit into Loop Antenna: 11dBm

Therefore Gant = Tx EIRP (-9dBm) - Tx (11dBm) = -20dB