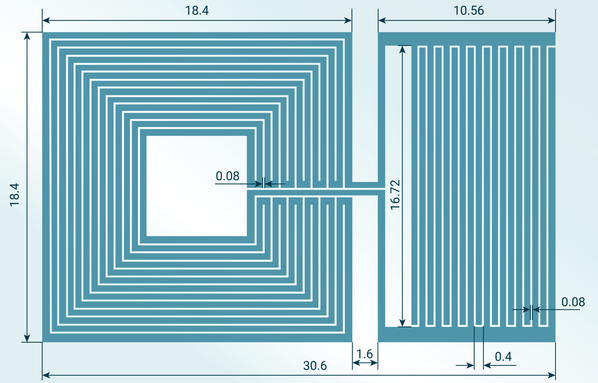
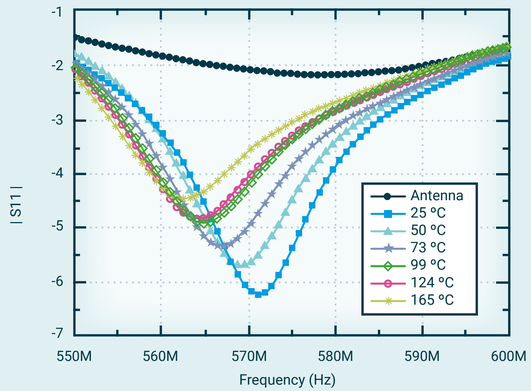
A WIRELESS LC SENSOR COATED WITH $Ba_{0.9}Bi_{0.066}TiO_3$ FOR MEASURING TEMPERATURE

The sensor was fabricated in LTCC technology, and barium bismuth titanate (BBT) thin film was coated over electrodes of an interdigitated capacitor. Hence, the temperature changes the permittivity of a BBT oxide layer which directly induces changes in the capacitance of the interdigitated capacitor.

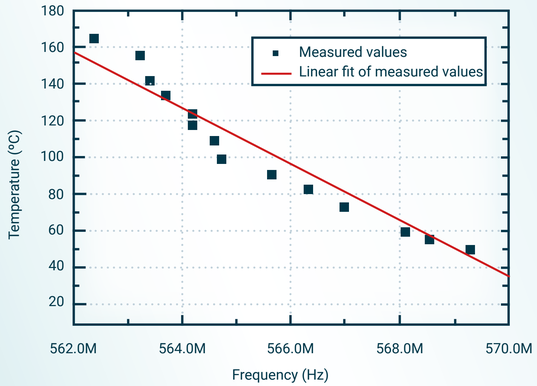
The sensor presented in this paper can operate in a temperature range from 25 °C to 165 °C. The advantage of our sensor is that it is passive, and there is no problem with the battery lifetime. Moreover, the proposed sensor design does not use vias and thus saves material, reduces fabrication time and most importantly, reduces the ultimate cost of the sensor.



The parameter |S11| as a function of frequency and temperature.



The temperature variation of the LC sensor as a function of resonant frequency.



X-ray diffractogram of the BBT powder.

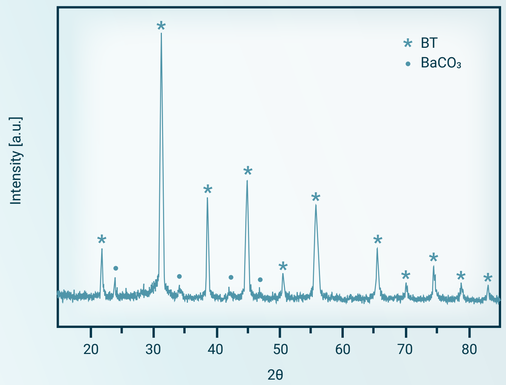
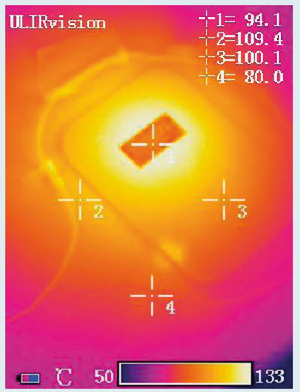


Image captured during the heating of the sensor using Infrared Camera.



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