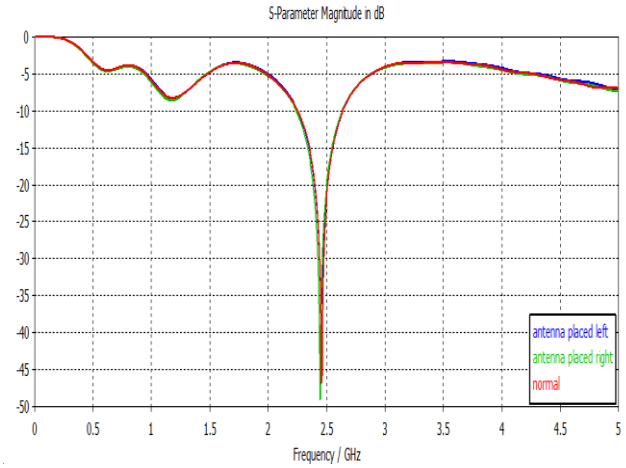

Figure 21. Return-loss of the cancer covering all the inner cheeks and lips walls compared with those of the normal tissues

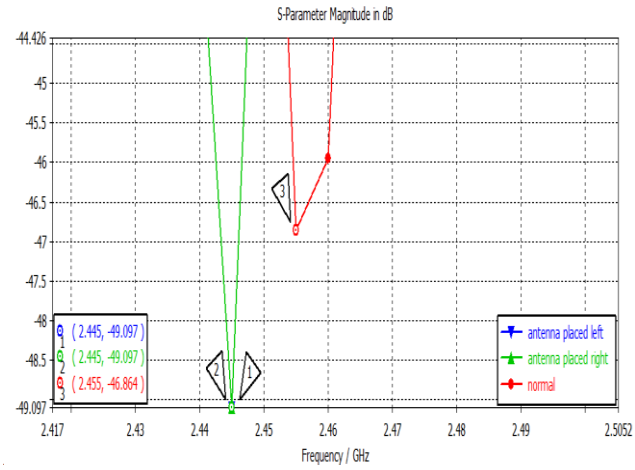

Figure 22. Zoom on figure 21 with markers

One notices that there is a resonance shift in the range of 10000 - 20000 kHz which can achieve cancer diagnosis.

V. CONCLUSION AND FUTURE WORK

The main objective of this project is to design an antenna to be placed on the human mouth. Due to the emphasis on the role of early detection for oral cancer tumors on its treatment, studies are focused on finding ways for early detection of the tumor. The variation of electrical properties of the normal oral tissues and the malignant tissues are used to observe the change in the antenna performance. Thus by comparing both cases, one can detect according to the outcome whether there exists a tumor or not. A spiral PIFA antenna working in the ISM band is designed. It is simulated on my built CST mouth model to get an idea of what to expect when testing on people. The antenna is manufactured and tested on two different persons using the network analyzer. Due to the lack of phantoms simulating the malignant tumors in the mouth, the antenna is only tested on the mouth model in which the cancer cells are added. The simulated and measured results show a good agreement, and there is a noted difference between the healthy simulated tissues and the defected ones.

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