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# WEARABLE TEXTILE PATCH DSSRS ANTENNA FOR BODY TUMORS DETECTION WITH REDUCED SAR

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[HABAEBI, MOHAMED HADI<sup>b</sup>](#); [SAKIB, NAZMUS<sup>c</sup>](#); [BALADI, ELHAM<sup>d</sup>](#) [Save all to author list](#)<sup>a</sup> Department of Electrical and Computer Engineering, Concordia University, Montreal, QC, Canada<sup>b</sup> Department of Electrical and Computer Engineering, International Islamic University, Malaysia<sup>c</sup> of Science and Technology, Gunma University, Japan<sup>d</sup> Department of Electrical Engineering, Polytechnique Montréal, QC, Canada [View PDF](#) [Full text options](#) [Export](#) **Abstract**[Author keywords](#)[Sustainable Development Goals](#)[SciVal Topics](#)[Metrics](#)[Funding details](#)**Abstract**

The purpose of this study is to present a lightweight wearable (jeans) monopole antenna configuration for body area network (BAN) communication, breast and head tumors detections with back lobe reduction (i.e., low SAR), and it does so without introducing any special methodologies like as, AMC, EBG, HIS. The planned antenna has dual symmetrical slots as well as a ring-shaped slot (DSSRS) at the top, and it is in the form of a radiating rectangular patch with a ground plane. The design procedure has been finished with the help of CST MWS, and the next step will be to fine-tune the parameters of the antenna structure to achieve resonance at the ISM band (5.79 GHz). Testing for BAN, breast, and brain tumor detection was done using this prototype. With the proper impedance matching, the antenna achieves an operational bandwidth of 5.798 GHz (5.739–5.865 GHz), 5.77 GHz (5.715–5.838 GHz), 5.77 GHz (5.718–5.843 GHz) and 5.78 GHz (5.725–5.834 GHz), with an overall peak gain of 8.18 dBi, 7.69 dBi, 5.73 dBi, and 4.59 dBi; when proposed antenna placed on the free space, on the body, on the breast, and the head respectively. The suggested antenna meets the specific absorption rate (SAR) standards given by the FCC (1 gm) and the ICNIRP (10 gm). © (2025), (International Islamic University Malaysia). All rights reserved.

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