[0025] According to embodiments of the present disclosure, there is provided another method for designing a metamaterial textile for providing wireless sensor networks. The method may comprise providing a metamaterial textile comprising: a sheet of metamaterial textile cut into a comb shape comprising a long base with a plurality of metamaterial textile teeth extending along and from the base, whereby a gap is present between every two adjacent teeth, whereby the comb shaped metamaterial textile may comprise a non-conductive layer attached to the comb shaped metamaterial textile; setting value of width of each of the plurality of metamaterial textile teeth with the addition of width of a gap to: $d = 0.2\lambda_s$; setting values of width of each of the plurality of metamaterial textile teeth and of width of the comb shaped base to specific values; setting value of length of each of the plurality of metamaterial textile teeth to: $h_0 = \frac{\pi c}{4\pi\varepsilon_{tex}r_0}r$; setting value of width of the bottom non-conductive layer to: $w = a + h$; providing thickness of the metamaterial comb shaped textile; implementing varying lengths of each of the plurality of metamaterial textile teeth between $0.5h_0$ and $2h_0$ into an eigenmode solver, thereby obtaining dispersion curve of the metamaterial textile; yielding the value for which $\beta = \beta_s$ wherein β_s is desired wavenumber based on the dispersion curve; and calculating $\lambda_s = 2\pi/\beta_s$, wherein λ_s is surface plasmon wavelength for providing wireless sensor networks.

[0026] Optionally, setting value of the width of each of the plurality of metamaterial textile teeth may comprise setting the value to $b = 0.75d$. Optionally, setting value of the width of the comb shaped base comprises setting the value to $a = 0.5d$.

[0027] Optionally, setting value of width of each of the plurality of metamaterial textile teeth with the addition of width of a gap comprises setting the value according to a different equation than $d = 0.2\lambda_s$.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] FIG. 1A is a schematic illustration of a sensor network interconnected by radio-waves confined on clothing, according to embodiments of the present disclosure;

[0029] FIG. 1B is a schematic illustration of a structure of the metamaterial textile, according to embodiments of the present disclosure;

[0030] FIG. 1C is a schematic illustration of simulation of the electric field distribution |Ez| emitted by a dipole above a metamaterial textile (top figure), unpatterned conductive textile (middle figure),