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Use of impedance matching material for promising radar system radiating elements

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The usage of impedance matching materials in antenna systems is a promising direction in the development of modern radar stations that allows unifying nomenclature of radiating elements. One of possible appliances of impedance matching materials is transfer of working frequencies of radiating elements to bands with greater wavelength. The usage of several impedance matching mediums, for example, with $\varepsilon_r = \mu_r = 2$ $\varepsilon_r = \mu_r = 4$ $\varepsilon_r = \mu_r = 8$ $\varepsilon_r = \mu_r = 10$ allows to extend waveband of the radiating element by 2, 4, 8 and 10 times. We have provided some works of foreign scientists and suggested some methods to use impedance matching materials to increase working wavelength of existing radiating elements. We have provided the results of numerical electromagnetic simulation of slotted waveguide radiating element, whose operating wavelength is increased by 10 times. Dimensions of impedance matching antenna are limited by sphere radius and the possibility of creating materials like that for required bandwidth. Key problems with the dimensions of antennas are relevant in the long-wave band (frequencies below 1 GHz), while such materials are created for this bandwidth.

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Next generation networks – 5G

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Next generation networks, a term often referred to as 5G, is currently an open vessel into which everyone pours their hopes and dreams. Every technology advance is included as part of the 5G future. Every potential consumer benefit is suggested as being included in the 5G definition. If 5G is to be something more than just faster internet, it must start with accessibility. Next generation networks are about creating connectivity everywhere, for everyone, seamless access without bounds. If this is going to be something truly different and meaningful, it must start with that premise. Access everywhere and for everyone will require a blend of technologies and business plans, and it must have access to spectrum. 5G will require significantly more spectrum for broadband systems than is currently available. The only realistic way to make this spectrum available is through aggressive use of dynamic access technology. Author will address how dynamic access, using collection sensing, location monitoring and database technologies, is the only way to work with incumbent users in a manner that allows use of spectrum when and where it is not being utilized. He will describe how dynamic access protects incumbent use while enabling enormous efficiency gains in spectrum utilization; and how unlicensed and lightly-licensed regulatory structures will need to sit side by side with licensed regimes to enable the spectrum access that is vital to the next generation networks future.

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