
To the question of reliability support of radioelectronic devices on nanocomponents

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Developed a mathematical model for the design and technological optimization of radio electronic devices based on the new generation of devices that operate on quantum effects in their semiconductor heterostructures. It is shown that the choice of rational design and technology solutions enables a given level of reliability of modern products. One of the major problems hindering the widespread using of these products in various radio electronic devices is an insufficient level of their reliability (gamma-percent working hours according to published reports is 3–4 years on the level of “four nines”. It is not enough for radio electronic devices used in fields of engineering where the failure is extremely not advisable. So for Aviation Instrument Engineering required receiving and transmitting device with gamma-interest operating time of twice, for the space industry — three or four times. That’s why ensuring of reliability of these devices is topical and important issue. The authors have developed a mathematical model and algorithm of design and technological optimization of new-generation-radio electronic tools based on devices which works by quantum effects in their semiconductor heterostructures. Development is made by of reliability of those devices. It is shown that the choice of rational design and technology solutions enables a given level of reliability of these products.

Keywords: *nanotechnology, nanoinstrument, reliability, engineering and technology optimization, radio electronic devices based on the new generation of devices, devices that operate on quantum effects, semiconductor heterostructures.*

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