Written test for Application Engineer positions.

A customer has sent us the following request:

Customer name: Michael Huang
Subject: nRF24LE1 problems
Related product: nRF24LE1

Message:

I have a project where I'm going to build a remote temperature and moisture sensor, using RF to send data from the sensor to a PC.

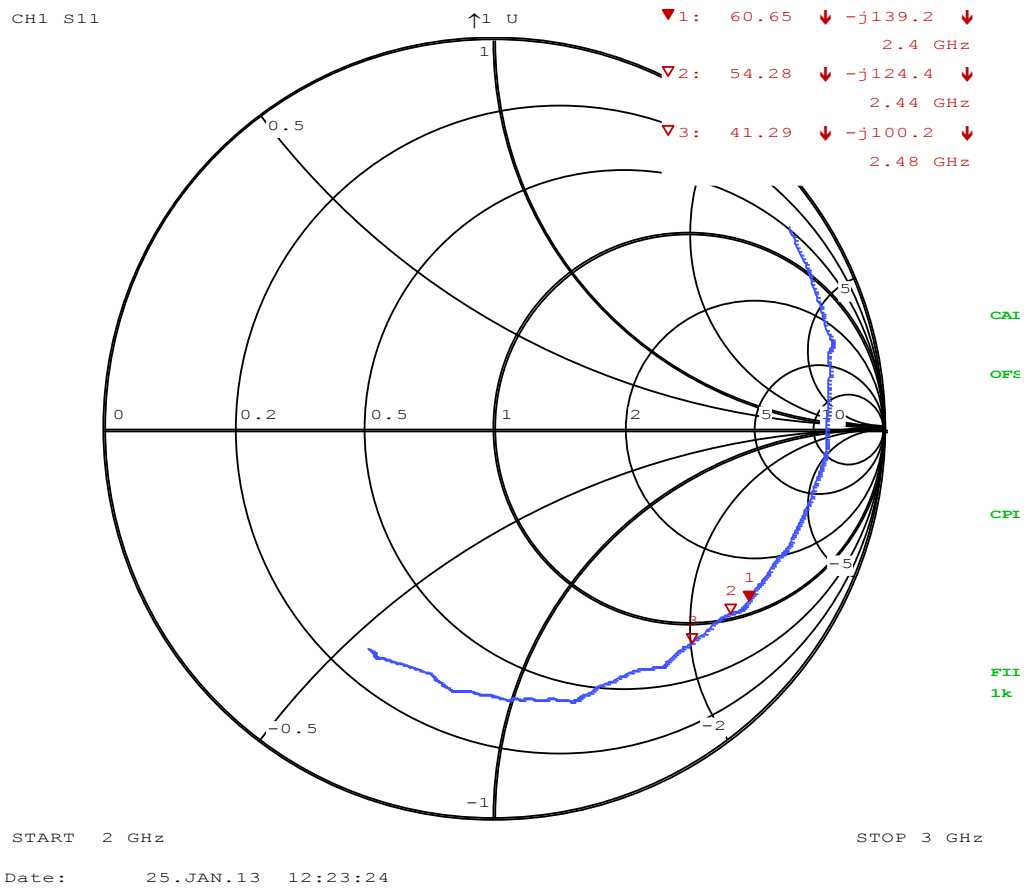
For this wireless sensor I'm thinking that the nRF24LE1 will be suitable, and that the nRF24LU1+ is best for the PC end. I'm currently looking at your nRF24LE1 product specification found on your web site.

In chapter 18 you describe the SPI peripheral module. I'm about to draw a schematics including the32 pin version of nRF24LE1 as the SPI master and two SPI slaves. How should I connect the 3 chips together in a SPI bus?

The next step will be to draw a PCB. In chapter 28 you show the mechanical drawing of the chip. From these drawings, I can't figure out the space between the chip pins. Could you tell me the typical value for this space?

I'm also concerned about the regulatory tests my application needs to pass. My goal is to have the application pass both ETSI and FCC regulatory tests. Could you tell me what the limits are for harmonics?

In my design I use a chip antenna and when I measure it with my network analyzer I get the following Smith chart plot:



I turn to you and ask for an advice on how to get the antenna to be 50 Ohm at 2.44 GHz. What causes the antenna not be 50 ohm on my board?

Finally, I have found a crystal with part number “ABM2-16.000MHZ-J4A-T” at digikey.com. The datasheet can be downloaded here. Can I use this crystal with the nRF24LE1?

I really need your assistance, and I’m looking forward to your reply!

Best regards,

Michael Huang

Please write an answer to Michaels request and send it to jon.gunnar.sponaas@nordicsemi.no as soon as possible.