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Jostein Orvedal ▸ Public Oct 12, 2015

RFM69 Range Test

After having done some inital tests with some Anarduino with HopeRf RFM69HW installed, I found these units very easy to set up and the performance looks promising.
So this weekend i decided to do some more serious range tests.
I set up a a unit as transmitter at a fixed location sending a short message every 20seconds.
Bitrate was set to 55.5KBit/seconds, output power +20dBm.
Antennas used were commercially available 2.1dBi vertical antennas.
My receiving setup was an Anarduino connected to my laptop showing the signal strength of the received signal.
At a distance of 13Km the received signal strength shows a quite stable reception of about -95db.
By lowering the bitrate and activating the Sensitivity Boost I expect far more distance possible.

2015-10-11

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Jostein Orvedal Oct 19, 2015

The #HopeRF #RFM69 is impressive. This weekend I did a new successfull test. This time at a distance of 40Km ! The bitrate was now set to 1200bits/sek and "boost sensitivity" activated. The signal strength of the receiver was -106dB. But believe me, finding a location with sufficient line of sight of 40Km was not easy!

REPLY +1

Allan Bronden Mar 1, 2016

Jostein that is a fantastic achievement! Any chance you can share how you connected the antenna to the module? I have been batteling with the "long range" nrf24 needing 3 km range. But after your post I ordered two rfm69. Can you share what library you used.

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Jostein Orvedal Mar 2, 2016

My RFM69 nodes are based on http://www.anarduino.com/miniwireless/ modules. This is typically a low power node with an i2c temperature/ humidity sensor connected.
The software (arduino compatible) is based on the RFM69 library from LowPowerLab.
I have a common receiving node/gateway. This gateway is based on an RFM69 module connected to a raspberry pi. This gateway interprets the incoming messages and publish the sensor messages as Mqtt messages.
Libraries used for communication to the radio is https://github.com/etrombly/RFM69 which is a python port of the lowPowerLab library.

I have done some experiments with different antennas, for my gateway i have a homebuilt vertical quarter wave antanna placed on the roof at home. For the sensor nodes, i have found helical resonators soldered direct to the radio module. These are easily available on ebay.
I have succesessfully made enclosures from 32mm pvc tubing with end cap. Placine the radio and antenna as high as possible. Hint; use a low transmission rate eg. 1200 bits/sec, this increases the maximum range considerably.

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Mike Musskopf 31w

Nice results! I also have troubles finding a open-location for testing without driving a few Kms. You guys might be interested in this board version,

https://wisen.com.au/store/products/whisper-node-avr/,
designed to run directly from AA batteries!

Product: Talk² Whisper Node – AVR

talk2.wisen.com.au

REPLY +1

Hans Zimmer 31w

Hallo,

Do you have a link where I can buy the antennas used?
I've search for helical antennas on ebay and found the following:
ebay.at - Details zu 10pcs 433MHz antenna Helical antenna Remote Control for Arduino Raspberry pi D

Details zu 10pcs 433MHz antenna Helical antenna Remote Control for Arduino ...

ebay.at

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