

Long-range Sub-1 GHz Connectivity in the Real World



Are you looking to connect devices to the Internet of Things (IoT) at a distance greater than 25 km? Or even 100 km?

Then you are probably going to want to add Sub-1 GHz technology to your product to achieve this connection. The combination of long range, low power, software flexibility and operation on a less crowded spectrum make Sub-1 GHz technology ideal for these long-range IoT applications.

TI's [Sub-1 GHz solutions](#), for operation in 169 MHz, 315 MHz, 433 MHz, 470MHz, 500 MHz, 868 MHz, 915 MHz and 920 MHz ISM bands, provide the longest real-world RF range with a proven distance greater than 100 km. With long distance, another requirement that is needed is robustness. Our Sub-1 GHz narrowband products provide the distance and robustness to meet any developer's needs for networks with the lowest power. This means the devices have the ability to transmit at a longer range, at the lowest power consumption, through concrete and cities without interruption from other sources.

To learn more about narrowband, long-range Sub-1 GHz technology read our three-part blog series on [Electronic Design](#) which covers different applications where narrowband is the de facto standard:

1. [Why did Europe choose narrowband for long-range smart gas meters?](#)
2. [Why should you use long range narrowband in a smoke detector?](#)
3. [How long range narrowband can improve efficiency in agriculture](#)

Additional resources related to [Sub-1 GHz](#) technology:

- Why Sub-1 GHz technology? Watch this [video](#).
- Read our long-range, narrowband RF communication white paper
- Learn how Sub-1 GHz technology is diversifying the IoT in this white paper
- Watch these videos that demonstrate the range of narrowband technology:
 - [Range test of CC1120 sub-1 GHz performance line](#)
 - [CC112x range test in Cape Town, can you go farther than 25k](#)
 - [More than 100 km range with no data loss using long range narrowband](#)

Looking to get started with Sub-1 GHz, check out the below products and reference designs:

- [CC1120 RF transceiver](#)
- [CC1200 RF transceiver](#)
- [CC1125 RF transceiver](#)
- [CC1190 range extender](#)
- [SimpleLink™ CC1310 wireless MCU](#) or [CC1312R wireless MCU](#)

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