



## 5G vs 5Gbps vs 3GHz

You may wonder “How can you test to 5G if you only go to 3GHz?”

This is a common area of confusion, brought on by the multiple purpose abbreviation “G”.

G is short for ‘giga’, which means a billion. So a 3GHz tester can test up to 3GHz or 3 billion cycles per second.

When discussing Ethernet, we are generally referring to the speed of the Ethernet as expressed in bits per second or bps. So a 10G Ethernet link means it can transfer data at 10 billion bits per second. The TestPro has an Ethernet transceiver capable of handling Ethernet speeds up to 10Gbps, which is completely unrelated to its measurement hardware that tests cables up to 3GHz.

Finally, the newest mobile phones talk about ‘5G’. What they are referring to here has nothing to do with GHz or Gbps. 5G in this case refers to “5<sup>th</sup> Generation”, meaning it’s the 5<sup>th</sup> major advance in cellular handset technology. The actual transfer rate you will see with 5G handsets will depend upon many factors, including which version of 5G your handset supports, the type of 5G radio access network, the type of 5G core network, the distance you are from a tower, whether there are obstructions, and other factors.

In practice the main confusion comes when someone refers to 5Gbps Ethernet as ‘5G Ethernet’. 5G Ethernet has nothing to do with mobile phones, it simply means the Ethernet has a transfer rate of 5 billion bits per second.

Simply check whether the ‘G’ they are referring to relates to mobile communications, copper/fiber Ethernet, or test bandwidth and the context should clarify the meaning.

- 5G means fifth generation mobile communications technology
- 5Gbps means a transfer rate of 5 billions bits per second over Ethernet
- 3GHz means a frequency of 3 billions cycles per second