

Wireless Communication: Antenna Quality Matters!

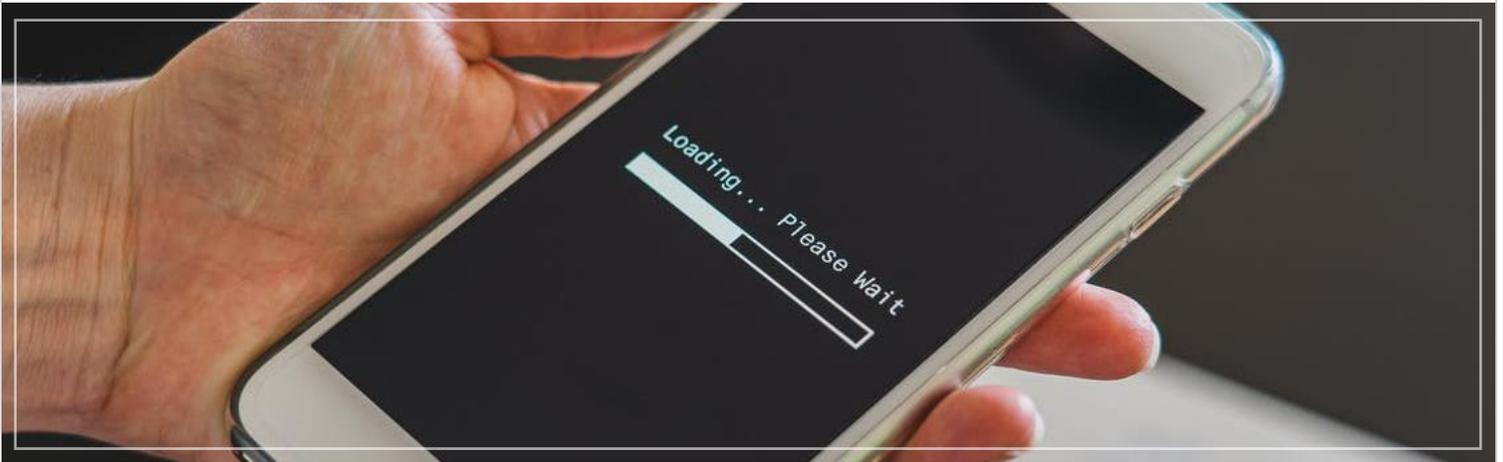
Wireless communication is the fastest growing and most exciting field in the telecommunication industry. While this technology has been around for over a century, only in the past 20 years has it made tremendous strides. Wireless communication is now more prevalent than ever before. We send all types of information through the air using electromagnetic radio frequency (RF), infrared radiation (IR), and satellite waves. Wireless devices such as GPS mobile phones, Wi-Fi laptops & tablets, Bluetooth speakers & headphones, IR remote controls, and satellite TVs are part of our everyday lives.



Wireless communication has also been fueled by mobile applications such as streaming video and social media. Today's younger generation couldn't fathom life without wireless devices. To keep up with demand, wireless communication networks must provide service that delivers anytime-anywhere high-quality content. In turn this demand has caused wireless infrastructure cost to skyrocket. The Total cost of a mobile wireless network, including maintenance can cost thousands

to millions of dollars. Therefore, it is natural for IT administrators to cut costs wherever possible. However, IT managers must be cautious where cuts are made to ensure network expectations aren't compromised.

There are many critical components in a wireless network, and of all the critical components, the antenna is probably the most overlooked. Antennas are used to radiate electromagnetic RF, IR, and satellite waves that are transmitted or received by mobile communication devices. This critical component is often overlooked because infrastructure installations are run under tight budgets and deadlines. Since antennas are often last to be installed, they're also the last to be purchased. This rush for efficiency leads system integrators to purchase whatever antennas a distributor has in stock that meets the minimum performance requirements.



Purchasing decisions on key wireless system components should be made by the wireless system designer. This is because installing low quality components can lead to overall system issues. Low quality antennas are known to be the root cause of signal interference, minimal throughput, and limited traffic capacity. The main downside is that these issues compromise the overall reliability of the network. The price range for most mobile antennas range from \$30 to \$300. This is an extremely inexpensive investment when you consider the overall cost of a wireless network.

Some companies invest in the latest technology as a mean to achieve growth and profit expectations. These companies are the first to adopt new technologies. In addition, they purchase the best software and wireless communication equipment, such as network adapters, routers, wireless access points, radios, and base stations. Signals that are transmitted and received by the antennas on these devices determines data transmission quality. It is incomprehensible why anyone would spend thousands to millions of dollars on expensive wireless equipment, only to save a few dollars on low quality antennas. Investing in high quality antennas ensures optimal performance and reliability of the wireless network. Optimal network performance leads to satisfied customers. On the other hand, any cost savings made up front by purchasing low quality antennas is immediately nullified if a site requires repair work due to poor antenna performance.



Navigating through the abundance of wireless communication equipment available in the market can be overwhelming. However, wireless network designers shouldn't simply rely on information specified on a product datasheet. A key aspect of network development is to research available band/spectrum and antenna arrangement. Another important factor is the impact of antenna quality on the overall performance of deployments. Selecting the right antenna is critical for optimizing network performance. An antenna must match the receiver's capabilities and specifications, as well as meet size, weight, environmental, and mechanical specifications for the intended application.

Some wireless system integrators simply use information specified in manufacture datasheets to calculate data throughput, coverage, capacity, and overall network performance. This is inaccurate because manufactures of low-quality antennas often claim superior performance or that they meet performance requirement. However they often fall short when tested by a reputable 3rd party laboratory. Using low quality antennas that do not perform as specified hinders the entire network from operating as expected. Always lookout for low-quality antennas made with cheap materials. This can be an indication of poor antenna performance. The worst-case scenario for antennas is total failure, and will need to be replaced. Furthermore, this can delay site ramp-up or require a site visit.



Mobile Mark has been in the wireless industry for over 35 years, with roots in the early Cellular trials. We have grown and evolved over the years, along with the industry. Our customers have been our partners along the way. We believe in taking the time to understand our customers' individual needs. Through close consultation with clients, our sales, product marketing, and RF design engineers work together, all under same roof, to deliver innovative, tailored solutions that meet customer antenna requirements. Mobile Mark benefits from enhanced design capabilities and expanded production capacity right here in the US - along with a greater understanding of new and emerging markets - all of which has allowed us to become one of the best antenna developers in our field. With locations in both the US and UK, we are positioned to respond to customer requirements quickly.

Jamie Duran,
Product Manager



Mobile Mark, Inc. designs and manufactures site, mobile and device antennas for 30 MHz - 6 GHz. Applications include GPS Tracking & Fleet Management, Cellular 4G LTE & 5G Ready, Wi-Fi, RFID, Public Safety FirstNet, M2M & IoT, Smart City Networks and Autonomous & Connected Cars. Engineering and custom design services are available. Mobile Mark's global headquarters, research facilities and manufacturing plant, are located near Chicago, IL. An additional manufacturing and sales facility is located near Birmingham, UK.



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