

September 2012

[Telit Newsletter](#)

[Symmetry Electronics](#)

Top 6 Considerations in OEM Cellular Design

Written by:

Madhura Dhamne

Technical Marketing Engineer

Top 6 considerations in OEM cellular design

1. Wireless Carrier

Before starting your cellular design **choose the cellular network provider you are going to work with** or in simple words think about which SIM cards your customers will use. Different service providers are popular in different parts of the world such as **AT&T, T-Mobile, Verizon, and Sprint etc.** Various service providers' work on different cellular frequencies and this plays a major role in choosing a right radio for your application. **Depending on the carrier you would need to choose between GSM, GPRS, UMTS, CDMA type of module.**

- AT&T: 3G (UMTS, HSPA)
- Verizon, Sprint: CDMA

2. Testing & Certifications

Did you know that just designing a successful working prototype of your cellular product is not The End? There is still a post development part of 'Testing & Certifications' to be completed. **Cellular products have to go through regulatory certification and testing process specific to each country.** Basically, Government organizations or Network Service providers do the technical evaluation of your design and certify a product based on their standards. Some of the fields that would come under this section would be:

- Field Testing
- R&TTE/FCC Testing
- CE/UL Testing
- GCF/PTCRB Testing
- Operator Approvals

3. Antenna Requirements

Antenna is the important part of a cellular design. Most of us don't realize that depending on your design, placement and type, antenna can give different results. Most of the designs fail the certification requirements due to the antenna. Different network carriers have different requirements for antenna efficiency, ground plane, and gain and radiation values. So consult antenna engineers from the initial phase of your design. **Consider the effects of antenna placement, requirements for RF/ emission testing from beginning.**

4. Additional Functionalities?

Ask yourself what else you need in your cellular radio? GPS, Voice capability, TCP/IP stack? You have lot of options in the market for a cellular radio. **Make a list of essential specifications/functionalities** you want in the module to narrow down your options.

5. Budget

Things are changing too fast in the Wireless Industry from 2G to 3G and now 3G to LTE, carrier operators are coming up with new requirements every day. **Have the flexibility in your financial budget.** There could be many hidden factors that could add to a total cost. Testing and certification itself could run in \$25K + range. Using a latest and greatest technology means more money. Obviously 3G/4G modules would cost more than simple 2G modules. Think and plan ahead financially.

6. Future Roadmap

With the everyday changing technology, it is advisable to have a **strong future roadmap.** Preferably make your new design backward compatible. There are cellular modules available in the markets which have footprint compatible options to allow you to switch from 2G, 3G, CDMA or 4G at any time. Choose Wisely!!

Learn more. Visit SymmetryElectronics.com