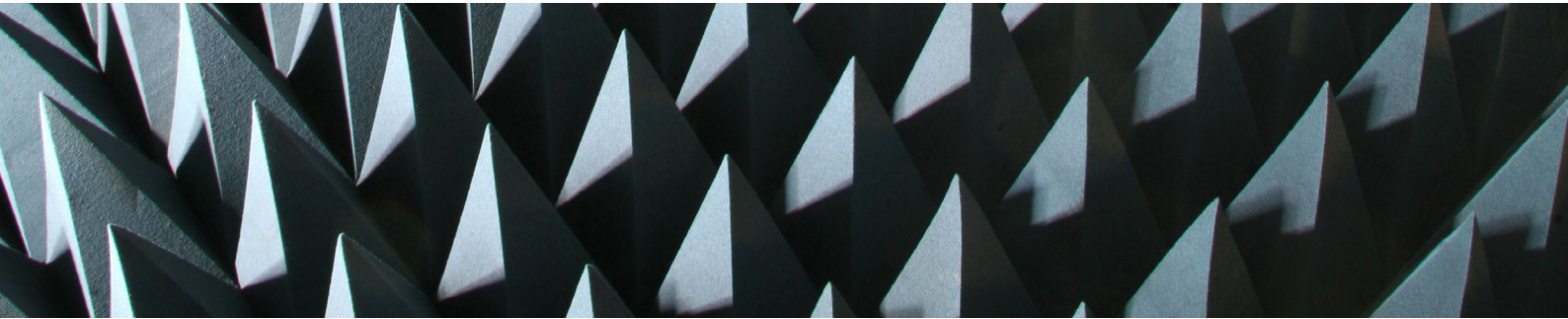


UWB.10

Antenna Passive Mode Testing



Service name:

UWB.10 Antenna Passive Mode Testing

Duration:

1 Week

Items:

- A** Antenna installed on a customer device prototype board, with extra antenna prototypes.
- B** Matching circuit diagram and documentation of values if relevant (or cable routing diagram, antenna position/ mounting etc.).
- C** Final antenna position and integration method.
- D** Return Loss, VSWR, Average Gain, Efficiency, Passive Antenna Group Delay;

Specifically Group Delay Peak-to-Peak Variation with a VNA Peak Gain, Radiation Patterns.

Documented performance measurements

- A** What is the problem or concern we are addressing?
- B** Post-integration optimization of antenna performance through physical and electrical matching as well as orientation and position changes.



Service Product Definition

Taoglas produces the highest-quality off-the-shelf antennas available. However, we recognize our standard product may not fit or be optimal for every device. To offer the best performance possible for your device, Taoglas offers custom antenna design and production. All antennas are sensitive to their surrounding environment. Once an antenna is integrated into a product it is very common for the exact tuning of the antenna to differ from the design target or development board implementation. The resonant frequencies for most antennas can be adjusted either by implementing a lumped element electrical matching network, or through small physical modifications to the antenna itself. This tuning effort results in optimal performance of the product as a whole.

The Processes

Part 1

Taoglas will modify your prototype device to allow for direct access to the antenna feed point at the beginning of your feed transmission line. We will measure radiation pattern and efficiency installed in the device or on the board and in as much as the real use case as possible. We complete report detailing test set up, results and conclusion. What can Taoglas offer you?

1. Materials

We are not committed to one material technology. We use a wide variety of materials and are constantly researching the latest developments. We ship antennas made from high grade Ceramics, FR4, Metal, Fiberglass, PTFE, Mylar and flexible PCB.

2. Surface Mount Technology

Taoglas are the worldwide leaders of high performance surface mounted antenna solutions Surface Mount Technology Taoglas are the worldwide leaders of high performance surface mounted ceramic antenna solutions for UWB with unique (patent pending) products. These products are delivered on tape and reel and connect to our customers devices during the standard reflow process.

We are first in the market to provide automotive approved SMT UWB ceramic antenna products and unique UWB channel specific LTCC UWB antennas with integrated WiFi notch filters to offer high efficiency and performance off the shelf in a small footprint. This integrated filter technology can also be applied to mitigate certain coexisting wireless protocols within the UWB frequency bands. Ceramics also offer some immunity to thermal conductivity which makes them less susceptible to thermal noise from the electronics.

3. Antenna Design Techniques

We select the antenna design that is right for the individual project, application or market; Rigid FR4 PCB antennas, FPCB polyimide/ Kapton antennas, ceramic SMT antennas, stamped folded metal, LDS on plastic housing, and larger external horn antennas for instance. We are not limited by design methodology, we use software and practical tried and tested procedures to deliver the most effective and efficient antenna.

This means we are also not limited by antenna frequency we have the ability to deliver all antennas for the project. For the device itself you may need to have multiple antenna types GPS, multi band cellular, diversity, WiFi, Bluetooth, RFID etc.

It is best to have one antenna company provide all the antennas because it cuts development time by half while also availing of bulk buying discounts. We can design and deliver an antenna at any frequency and we have a huge amount of experience in being challenged to design with small spaces and high target specifications. This means we can provide full antenna network solutions - base station antennas, external/remote/mobile and embedded antennas.

4. M2M Focused

Taoglas employees have built up years of practical international experience in different markets, and have worked on thousands of custom M2M devices. Simply put, we know what designs work and what do not. We also stay close to M2M module developments and offer performance test services for a complete radio product with our UWB antenna integrated in your product. We would typically test for EIRP and Receiver Sensitivity using a reference kit as receiver.

Part 2

Taoglas engineering in consultation with the customer on the final report will determine if the measured performance factors are sufficient for the product to meet its performance and certification requirements. If the antenna performance is not acceptable, Taoglas sales and engineering can make recommendations to improve the antenna performance. If the antenna performance is acceptable the next step would be active device performance measurements such as EIRP and EIS, TIS and RSE testing. Taoglas offers a number of followon test services; your Taoglas sales contact can cover all the various options.

What does Taoglas need?

- We will need 2 copies of your device including all the bits and pieces. Things like any battery, LCD display, peripherals, cables, etc. all mounted in some sort of enclosure that's at least close to what the final enclosure will be like. SLA or FDM proto enclosures are sufficient but the final plastic material can yield slight differences in performance.
- 3D PDF or eDrawing files for your mechanical assembly. We really do need the ability to hide parts, do cross sections and make measurements so an eDrawing with these features turned on is highly recommended.
- We need the schematic for all the boards in the device. PDF format at a minimum and native Altium files if you happen to use Altium.
- PDFs of your PCB layout for each board, all layers. Again if you use Altium, then native Altium files would also be helpful.
- Please include a document defining the PCB stackup, layer thicknesses, materials and finishes for the PCB.
- A spreadsheet of your bill of material for each PC.

Deliverables

Taoglas will compile a report on the antenna measurements including:

- Passive Mode Testing Report

* Note that tuning is not comparable to a custom antenna. It is a simpler onboard or transmission line or cable modification that can be implemented to improve performance but use the same antenna part number and avoid new parts that require new design techniques and tooling etc. to implement that part.

**Note that while the device itself may have more than one physical use-case, the tuning of the antenna is limited to a single use-case unless active tuning is implemented, which is beyond the scope of this effort.

