

ISA.10

Initial System Review & Analysis



Outcomes and Deliverables

- High Level System Review.
- Antenna Performance Requirements Analysis.
- Antenna Selection Options.
- Antenna Integration Plan.
- Report and/or Interactive Technical Support.

Duration

5 days (this is a typical estimated duration – actual duration on quote may differ).

What We Need

- 3D CAD files – preferably STEP files.
- Mechanical drawings.
- PCB files and circuit schematics – preferably native Altium files.

What is the problem or concern we are addressing?

Your product requires one (or several) antennas for various radio technologies. Each antenna will have specific implementation goals that, when considered with the rest of the system requirements, drives the antenna selection and integration. Factors like performance, cost, weight, size, manufacturing complexity and physical reliability all contribute to antenna selection and integration. Taoglas can offer expert advice to ensure the optimal antenna solution is integrated into your product.

The Process

Part 1 – Review

The first step of the review process is for one of our sales representatives to have a call with you to discuss your product, your RF needs and forward the request to the relevant engineer. The rest of the review process depends

on your requirements from Taoglas. If you are interested in other services, and we do not expect much complexity in the integration, the entire review process can take place in a call with you and your technical team. However, if your main requirement is a technical analysis for antenna solutions, or if we determine the antenna integration to be complex, we will perform a formal integration review with the aim of providing you with a formal report and presentation.

At this point we will request the design files from you, and once the required files have been received by our engineers, we will start our review.

We will define clear performance requirements for the antennas in your system. For some radio technologies, RF performance is the main driving factor in order to meet performance or certification requirements. For other radio technologies, performance expectations are not as high and factors like cost and size are the main drivers.

Examples of performance requirements include:

- Antenna efficiency per cellular frequency band to meet carrier/ network operator requirements;
- Antenna gain requirements for a Wi-Fi link
- Polarization requirements for a GPS receiver antenna
- Frequency, polarization, and gain requirements for a satellite radio antenna
- RF isolation required between antennas of different radios to maintain functionality

Taoglas will use these details to define a set of antenna options relevant to each radio requirement in your product. We will list the pros and cons of the options and recommend a solution for each antenna that is required. Based on the antenna selections, Taoglas will help you understand the implementation requirements to achieve the level of performance defined for each radio in the product. Implementation is the key factor when using off the shelf antennas. They must be used as designed or risk

degraded RF performance, which means the antenna will not work as intended.

Because of the wide variety of devices, use cases, and markets, Taoglas cannot advise on every aspect of design or development

What does Taoglas need?

For Taoglas to accurately review your product design and provide you with antenna solution recommendations, we require as much information as you are able to provide. Typically this will include 3D CAD models, mechanical drawings, PDF design files and product description presentations. We need these documents to understand your desired project direction and to interactively evaluate various antenna options.

We require any 3D CAD and 2D design files you may have. We require these files to do cross sections, hide components and make accurate measurements. We accept a variety of 3D file formats, but STEP files are preferred.

We also require any documents you have relating to the PCB of the device. These documents should define the PCB stack-up, layer thicknesses, materials and finishes for the PCB. A bill of materials for each PCB is also recommended. Ideally these files should be native Altium files.

Circuit schematics of all the PCBs in your device are also required. This is to better understand the RF paths in your design. Once again, these files should ideally be native Altium files.

Taoglas will ONLY review electronic/mechanical design files/models. Taoglas will NOT perform hands-on integration as part of this service.

Part 2 – Reporting

Taoglas will supply you with the integration report for you to review and prepare any questions you may have. We will also arrange a date and time so that we can present our suggested antenna solution to you. This effort is typically interactive, either as a virtual or in-person meeting. During this meeting, Taoglas will provide an overview of our understanding of your product, summarize the antenna performance and integration requirements, and present in detail our suggested antenna solutions. After this presentation we will discuss which antenna solutions you prefer and answer any questions you may have.

Part 3 – Next Steps

Taoglas offers a number of services which would typically follow on from this service. These services are intended to optimize the RF performance and maximize likelihood of certification for your design.

These services include:

- **ISA.12:** PCB & Gerber Design RF Review
- **CSA.10:** Antenna Feasibility Study
- **CSA.20:** Passive Antenna Testing, Matching & Fine Tuning
- **CSA.50:** Custom Antenna Design

Visit [Taoglas Website](#) or contact [Taoglas sales](#) for further information.

Please note - devices, systems and equipment falling within the scope of Annex I of the EU Dual Use Regulation 821/2021 are not eligible for this service. For queries, please consult your legal department or contact exportcompliance@taoglas.com.