

ISA.15

5G mmWave Array Sub-System Analysis



Service name:

ISA.15 5G mmWave Array Sub-System Analysis

Deliverables:

Report

Duration:

10 Days (Typical)

Items:

A Initial requirements review and array design iteration

What is the problem or concern we are addressing?

With the advent of 5G applications and system requirements, there is a need for the specification, design, and development of 2D Hybrid array sub-systems for use in high data rate millimetre-wave communication systems. This sub-system contains the antenna array, beamformer RFICs, and a multi-layer PCB to support a mix of power, digital, and RF signalling. This configuration, termed a hybrid array, provides the capability to beam steer the array in one or two-dimensions to ensure good communication link performance.

What are we going to do?

Prior to a full project design engagement, Taoglas will start with a review of the project requirements to determine array sub-system sizing and electrical characteristics. This review is the basis of the ISA.10 Array Sub-system Analysis. The project array requirements will be reviewed, and an initial set of array simulations will be performed to determine array size, i.e. element count, nominal element spacing, and element disposition in relation to azimuth and elevation axes. This initial array sizing will take into account transmit and receive array gain requirements along with EIRP and receive sensitivity.

A millimetre wave array sub-system design will require input from multiple engineering disciplines, and Taoglas has the experience and expertise to carry a project forward. The initial array sub-system analysis will bring in input from a mix of antenna, RF system, mechanical, and thermal management engineering to determine feasibility of the array design.

At the conclusion of this initial array analysis, Taoglas engineering team will provide a report and meet or teleconference with you to go over a proposed array design for the project at hand.



What does Taoglas need from you?

Obtaining the array sub-system requirements from you will be the starting point for the Taoglas team to launch the array sub-system analysis. Information on the interface to the transceiver to allow for control signal and connector selection will also be needed. Some basic information on the application such as indoor or outdoor installation, environmental requirements, etc will be helpful to add to the relevance of the analysis.

What happens next?

An array sub-system being a complex design, we anticipate a series of meetings and an interactive approach with you to verify objectives are met as the design takes shape. Reports containing simulations and measured data on prototypes will be shared and reviewed with your engineering team on a regular basis. We will work with your team each step of the way to make sure the array sub-system design integrates well into the rest of the communication system.

Deliverables:

The email from the review meetings will include:

A full report detailing a proposed array configuration along with gain and radiation pattern estimates will be provided. From this initial analysis, array size and element count along with number of beamformer RFIC ports will be detailed.

Visit www.taoglas.com/solutions/design/ or contact Taoglas sales for further information.

