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# **NN DESIGN HUB VIRTUAL ANTENNA<sup>™</sup> for CST: DUO mXTEND<sup>™</sup>**

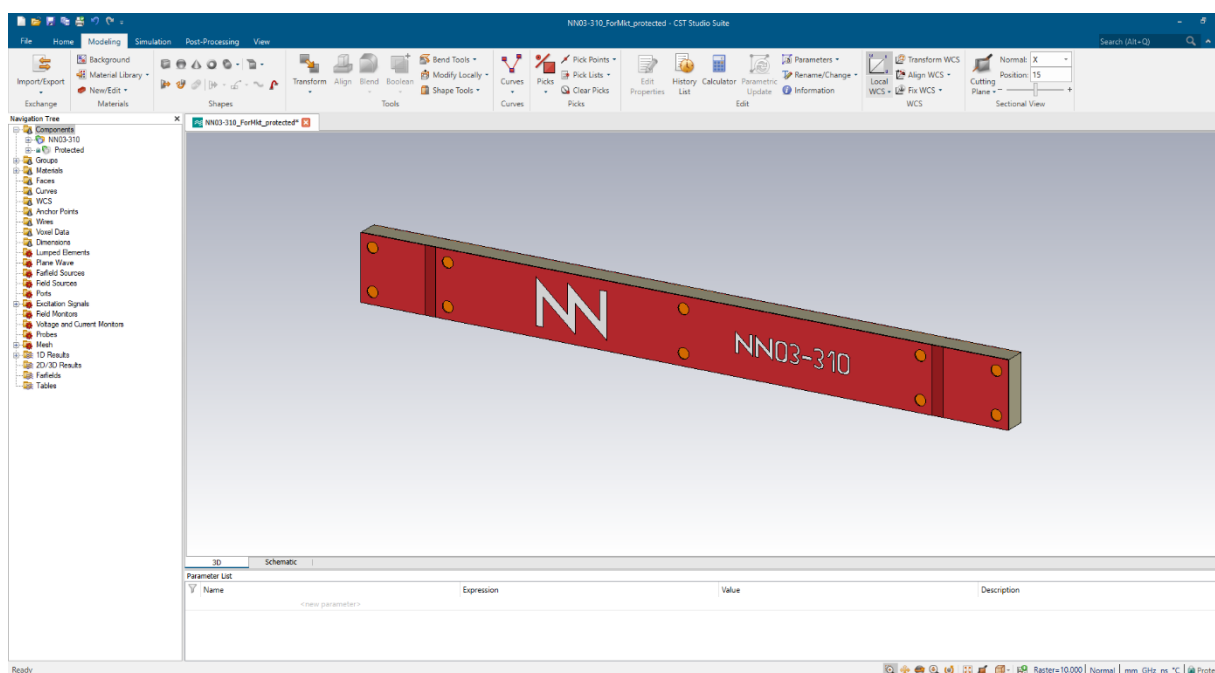
USER MANUAL

Virtual Antenna<sup>™</sup> for CST: TRIO mXTEND<sup>™</sup>

## NN DESIGN HUB VIRTUAL ANTENNA<sup>™</sup> for CST: TRIO mXTEND<sup>™</sup>

Virtual Antenna<sup>™</sup> components are now available in the CST Microwave Studio software, discover how to **embed a chip antenna component into any IoT platform**. Now you are ready to complete your own full RF wireless design including the antenna. With Virtual Antenna<sup>™</sup>, there is no need for complex custom antenna design anymore. The antenna component becomes packed in an off-the-shelf, SMD chip and the only thing needed for completing the design is finding the right spot and placement of the antenna into your device, together with the right matching network to shape its frequency response.

Ignion helps you with the antenna integration of your wireless device. Find in this user manual how easy is to integrate a Virtual Antenna<sup>™</sup> component, such the TRIO mXTEND<sup>™</sup>, in your device by using CST software. The TRIO mXTEND<sup>™</sup> is a general-purpose chip antenna that can be used at any frequency within the range 698 - 8000 MHz.

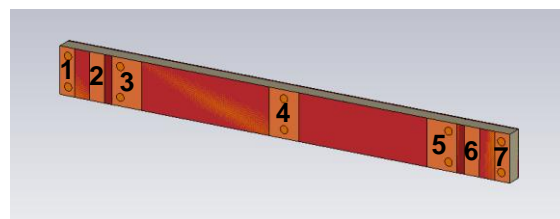
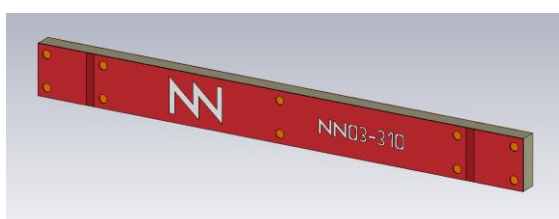


TRIO mXTEND<sup>™</sup> chip antenna component view in CST Microwave Studio

# 1. QUICK GUIDELINES TO EMBED YOUR ANTENNA IN 1-2-3

## 1.1. PLACING THE ANTENNA COMPONENT

- To use the TRIO mXTEND<sup>™</sup> model created for CST, you can easily add it in your CST file that contains your device. If needed, you can even also add another Virtual Antenna<sup>™</sup> model.
- If possible, please place the antenna at a corner edge of the PCB of your device, better take the longest side. See some examples of where you can place the antenna depending on different platform shapes by watching this [video tutorial](#).
- The tiny antenna component also needs a clearance area on the ground plane layer and a keep-out space free of any metallic elements in all direction, less than 5 mm could be too close.
- The TRIO mXTEND<sup>™</sup> includes seven pads on the antenna bottom that are used for mounting the piece on your PCB and for connecting it to the rest of the radiating structure of your wireless device.
- One of those pads is connected to a strip feeding line that connects the Virtual Antenna<sup>™</sup> component to a ground plane layer through a matching network, which can be implemented by yourself with CST or by means of an RF circuit CAD software.
- More information about the TRIO mXTEND<sup>™</sup> chip antenna component and how to mount and integrate it on your PCB is available in this [User Manual](#).



**Left:** TRIO mXTEND<sup>™</sup> antenna top. **Right:** TRIO mXTEND<sup>™</sup> antenna bottom with pads

### PADS HIGHLIGHT

The location of the pads 1, 2 and 3 is fully symmetrical to the pads 5, 6 and 7. Once the feeding pad is selected (1), the other pads will become mounting pads so you do not have to connect them to the feeding line. Align the feed pad with the feeding line on the PCB. See [User Manual](#).

## 1.2. DESIGN YOUR MATCHING NETWORK

- VAT components are non-resonant components, so a matching network is needed to shape its frequency response.
- You can use any RF circuit design CAD tool to design your matching network. You can see examples on how easily synthesize it with Cadence AWR Microwave Office, Optenni-Lab, or any other RF CAD tool: see [NN Libraries\[S\]](#).
- See an example of a matching network design by watching of this [video tutorial](#). You can also watch here a [multiband matching network example](#).
- Do you want Ignion to design a matching network for you? Fill out our [NN Wireless Fast Track Service](#) form and we will provide you an antenna design for free in 24h<sup>1</sup>.

## 1.3. TEST YOUR DEVICE

- Get from CST the radiation patterns and efficiency of your design and make sure if it is compliant with your needs.
- Your design is now ready for the prototyping phase.

Start now and embed your ready-to-use chip antenna for your wireless device by using the NN Virtual Antenna™ components in the CST Microwave Studio.

## 2. FURTHER HELP

Need further support to complete your design? Contact us at [support@ignion.io](mailto:support@ignion.io) or use our **NN Wireless Fast Track Service** and get an antenna design for your wireless/IoT device in just 24h<sup>1</sup> hours: <https://ignion.io/fast-track-project/>.

### NN WIRELESS FAST TRACK SERVICE

By filling out [this form](#) you will get a ready-to-test antenna design for your Mobile/IoT device:

1. Fill a form
2. Submit it
3. Get your answer in 24h<sup>1</sup>

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<sup>1</sup> See terms and conditions for a free NN Wireless Fast-Track service in 24h at: <https://www.ignion.io/fast-track-project/>



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