**Improving Antenna Design & Performance with CMT's AnTune Software Integration**

Alf Friman, the proprietor of AnTune, uses Copper Mountain Technologies' R60 1-Port 6 GHz Analyzer to save time on various antenna projects. In addition to his personal use of the R60, he has enabled AnTune's antenna design and measurement software to support the use of CMT VNAs for increased functionality and performance in all kinds of RF impedance-related design applications.

AnTune's antenna design and measurement software aids in designing antennas and RF impedance networks. The software delivers optimized network matching results based on live feed data from a VNA or by importing S-parameters from file. The software's focus is to improve embedded antennas and SMD RF filter performance. AnTune's free to download software runs on PC with Windows OS and can communicate with a vector network analyzer over GPIB/USB/LAN for automatic design optimization.
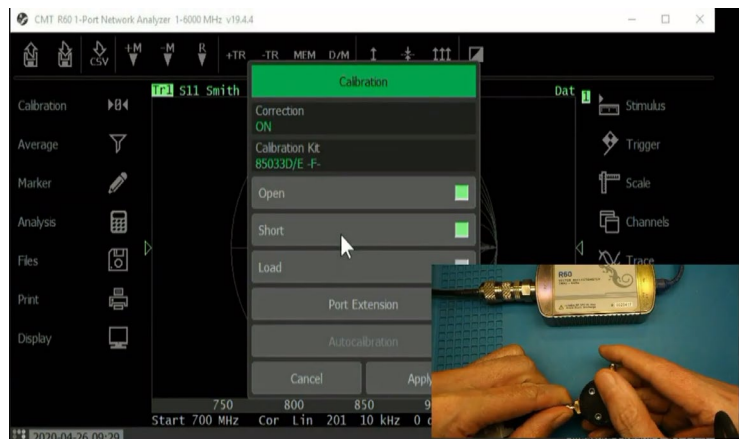
Friman has an extensive background working with various antenna types and is the developer of AnTune software. Alf first discovered Copper Mountain Technologies when one of his customers was using a CMT analyzer and asked to have a software interface built. He was initially skeptical because at that time all the smaller USB VNAs he had experience with were of poor quality. But Alf's home lab needed an upgrade. It was filled with older, sometimes unreliable equipment that produced a lot of heat and noise.

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With CMT's R60 VNA, Alf found a modern instrument that ran much quieter and more reliably than his other equipment. Having the R60 makes it possible for Alf to spend more time on antenna development without the purchase of a large, expensive analyzer. Alf's main VNA use is to design cell phone antennas for customers local to Sweden who have limited antenna development experience. Some of his recent projects include developing embeddable antennas for medical devices such as pacemakers, and a patent granted wideband PCB antenna, that he helped develop for RangeAnt to optimize antenna efficiency over a wide frequency range.

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Alf Friman, AnTune

In addition to purchasing the R60, Alf worked closely with CMT engineers to solve software problems and successfully interface CMT VNAs with AnTune's antenna software. With AnTune's software CMT VNA users can vastly improve design freedom without a difficult learning curve. "Anyone that has used a VNA for antenna impedance matching with discrete components will fully understand AnTune in just minutes. It improves basic VNA functions and makes an RF engineer much more productive," says Friman. Once finished with the design, the user has a well-documented antenna performance along with the recommended impedance network. Results are saved in the form of an already completed antenna report. Antenna designs that used to take two weeks can now be developed in just a few hours with the use of the R60 and AnTune's software integration.

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