



**The Institute of Electrical and Electronics Engineers(IEEE)
Galveston Bay Section
EMC Chapter Meeting**



January 21st (Monday 11:30am-1pm)

SPEAKER: Dr. Stephan Braun

PRESENTATION: FFT-based EMI Measurement for MIL461G and CISPR, EMI Testing and Full Automation

Using the FFT-based measurement systems for EMI testing can reduce test time and improve the repeatability of EMI tests. With the availability of high-speed high-resolution ADCs and large computation power today, FFT-based measurement systems exceed the performance of traditional EMI receivers, regarding noise floor, measurement speed and accuracy. Today a real-time analysis bandwidth up to 685 MHz for Quasi-Peak in full compliance mode is available, reducing the test time from 9 hours down to 3 seconds. Using the fast measurement speed for pre-scanning is an option that allows speeding up the measurement. However we see this only as an intermediate step towards full characterization of EUTs with Peak, Quasi-Peak and Average. For conducted EMI testing the measurements can be directly carried to using Peak, Quasi-Peak and Average. For radiated EMI testing real-time Quasi Peak measurements allow to directly characterize all angular positions with Quasi-Peak. Using a FAR the test is completed within less than 1 minute in the range from 30 MHz – 1 GHz. Above 1 GHz real-time scanning allows to speed up the testing in a similar way. For the SAC measurements the measurement of all angular positions as well as the height scan can be performed very fast, reducing the test time from hours down to minutes. During the presentation the technological and mathematical background of FFT-based measurement according to CISPR 16-1-1 and MIL461 is explained. The requirements of CISPR 16-1-1 and MIL461G regarding the implementation as well as the equivalence to a traditional EMI receiver ensure traceability and the same test results. The difference between an FFT-analyzer, a Real-time spectrum analyzer and the FFT-based measurement system are explained.

SPEAKER: Stephan Braun studied Electrical Engineering at Munich University of Technology (TUM), and received his Dipl.-Ing. Degree in 2003. From 2003-2009 he was Research Assistant at the Institute for High frequency engineering, where he received in 2007 his Dr.-Ing. Degree. During this time the research was focused on the Theory and Application of Full Compliant EMI Testing using Time-domain (FFT-based) Methods. He has worked actively since 2007 for DKE and CISPR and has contributed to the inclusion and definition of the FFT-based measuring instrument according to CISPR 16-1-1, CISPR 16-3 and CISPR 16-2-X. In 2010 this novel method became standard and is today referenced by almost all EMI Testing standards, including MIL461G. He is co-founder and managing director of GAUSS INSTRUMENTS International. He is Member of VDE, Electrosuisse and IEEE. He supports the IEEE Continued Education Program of the German Chapter and well as the IEEE EMC Bootcamp. He is author of more than 100 papers and is inventor of several patents, mainly about EMI testing, real-time signal processing and microwave circuits.

Boeing Bldg Rm 5C300 – 3700 Bay Area Blvd (just east of UH-Clear Lake)

Free parking in front of Boeing Building as well as in the adjacent parking garage.
Interested non-IEEE engineers, technicians, scientists, IEEE Members are all welcome!

11:30 AM – Lunch (Bring your own)

12:00 - 1PM – Program and Q&A

Boeing Badge or temporary badge is required: US Citizens please RSVP to george.c.may@boeing.com with your name, complete home address & company/govt org; non-US Citizens can only attend virtually.

For those who will not be able to attend in person, Webex information is available in the announcement email.