Emissions measurements of the electrical field strength in the frequency range of 1 GHz to 40 GHz are carried out in an anechoic chamber or at an open area test site. Usually these measurements are very time-consuming as the points of maximum radiation have to be found over all angular positions of the device under test (DUT) as well as over all antenna heights. DUTs with strongly directed radiation patern above 1 GHz require high angular resolution, which means very small angular steps of the turntable to get the accurate position of the maximum emission, making the testing procedure even more time-consuming.

In the past, therefore a pre- and final scan test procedure has been performed usually - trying to reduce the overall test time. During the pre-scan procedure, which is just a quick overview measurement by the way, the critical frequencies with maximum emissions are going to be identified. Afterwards detecting these critical frequencies the final measurement is carried out then in the single frequency mode with much longer dwell times now to achieve a more accurate result.

Now, GAUSS INSTRUMENTS introduces a novel real-time scanning feature for their TDEMI X test receiver series providing a several Gigahertz real-time bandwidth (Option QCDSP-UG, UFSPA-UG). Thus the final maximization can be performed at all frequencies simultaneously in just one step. By the newly designed very powerful hardware module, such measurements across several Gigahertzs can be performed in the real-time spectrum analyzer mode. E. g. in the frequency range from 1 GHz to 18 GHz all frequency points can be directly measured with a very high resolution in time and the result can be maximized instantaneously. Over the entire frequency range the results are displayed in real-time. The detectors peak, average, and RMS are available in this mode. Further the video bandwidths, which are required according to the standards, can be applied. Of course all the measurements according to the standards CISPR 16-1-1, MIL 461, DO 160 as well as many other national and international standards are fully covered.

For the very first time, a typical emission measurement in the range of 1 GHz up to 18 GHz the full frequency range is scanned in real-time now by testing with the TDEMI X test receiver of GAUSS INSTRUMENTS. The DUT is rotated in just one continuous movement and the angular position as well as the maximum level of emission is recorded. All the requirements of the standards CISPR 16-2-3 as well as the ANSI and FCC standards are fulfilled by the TDEMI X receiver.

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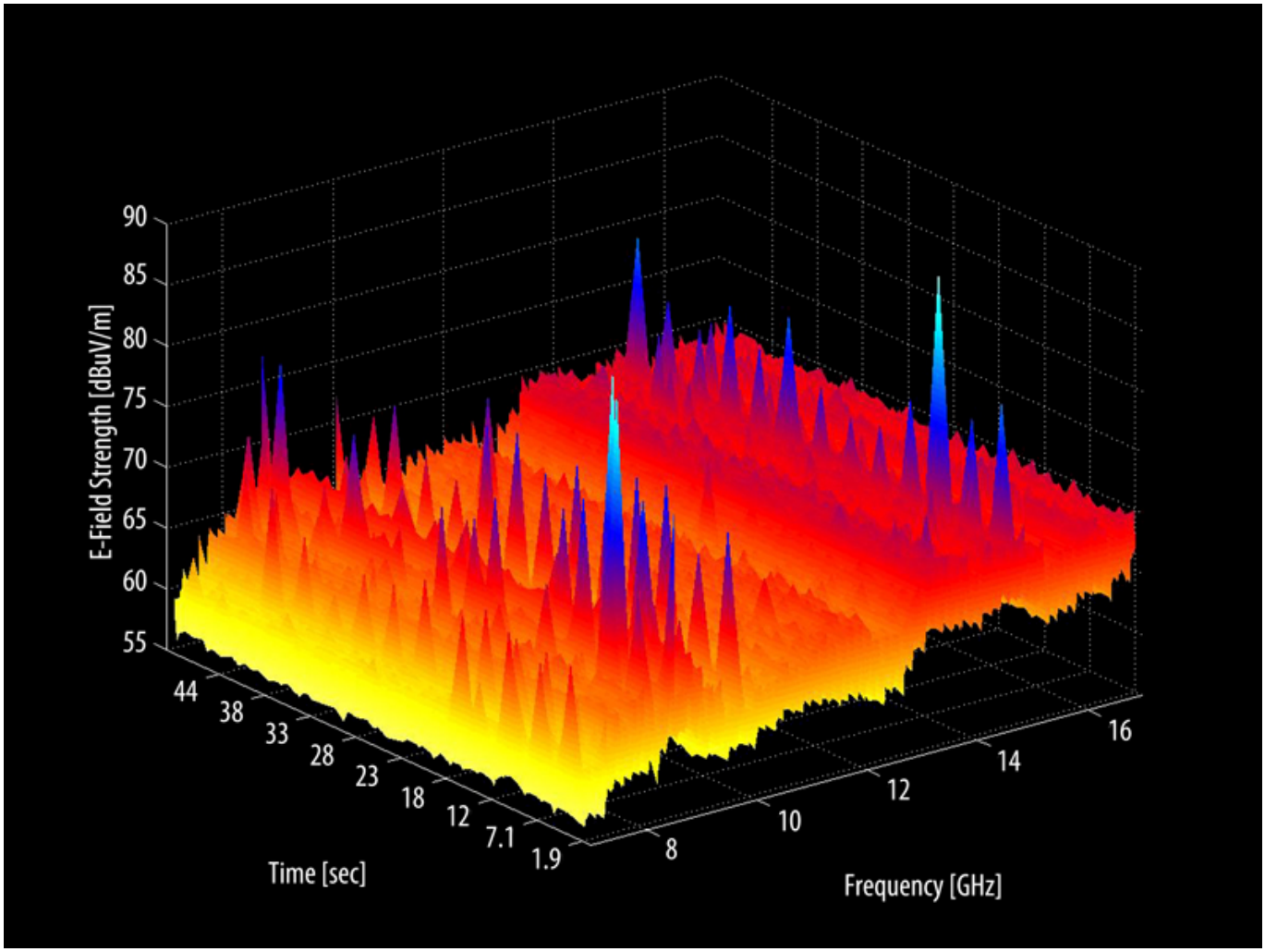


Fig.: – **Real-time measurement of a microwave oven up to 18 GHz.**

Thus, challenging measurement tasks, for example the measurement of microwave ovens, can be performed in a very fast and highly efficient manner. The pre-selection, which is available over the entire frequency range of DC – 40 GHz in all operation modes, in particular even in the real-time measurement mode, allows for example the measurement of the signal harmonics of an ISM band with highest precision as well as highest dynamic. With the achieved standard deviation which is typically 0.27 dB for the frequency range from 1 GHz up to 18 GHz, the TDEMI X is setting the benchmark also regarding the measurement accuracy of EMI test receivers. Thus, all the operation modes of your DUT can be measured in a very simple and highly efficient manner. A former time-consuming pre- and final scan test strategy is past now and not longer needed anymore. Also the evaluation against the limit lines as well as the documentation and reporting of the measurements are performed fully automated by the integrated report generator module and stored as MS-Word document. By an optional remote control software it is also possible to fully automate such measurements including controlling turntable and antenna mast and to create test reports including radiation patterns of your DUTs.

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