

Q&A Tekbox EMC Near-field Probes

1 What is the performance of Tekbox EMC probes at low frequencies?

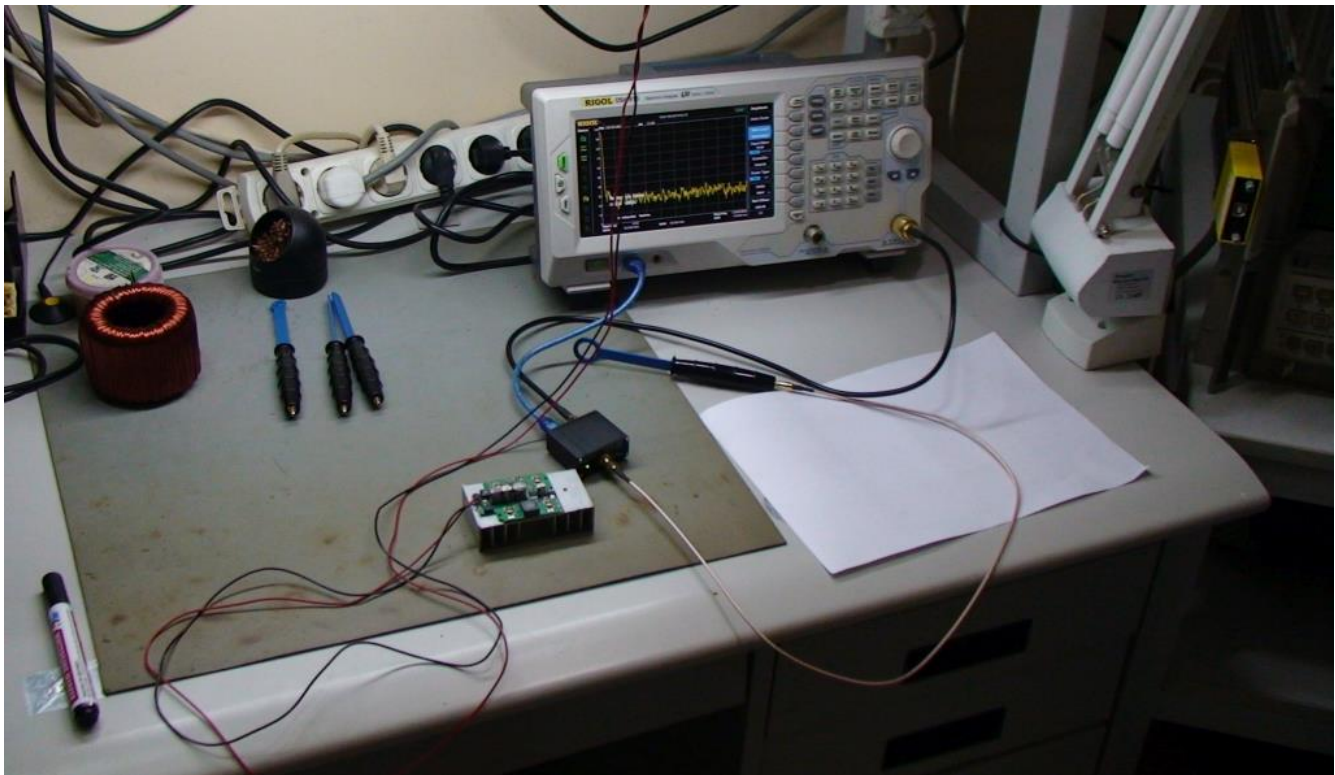
Tekbox probes are basically designed to work up to 3 GHz and beyond, however they are also useful to investigate EMC at low frequencies.

Applications at low frequencies are typically switched mode regulators or power supplies. Though there are probes at the market, which are optimized for the low frequency range, it does not necessarily mean that high sensitivity at low frequencies is an advantage. Magnetic fields in switched mode power supplies are relatively high in most cases. Having a highly sensitive probe at low frequencies can make it difficult to localize the origins on the PCB, especially as probes optimized for low frequencies tend to have large diameters. Tekbox probes, also the lower diameter ones, perform perfectly well at low frequencies to investigate EMC issues of DC/DC converters.

2 Screenshots of the probe output at low frequencies

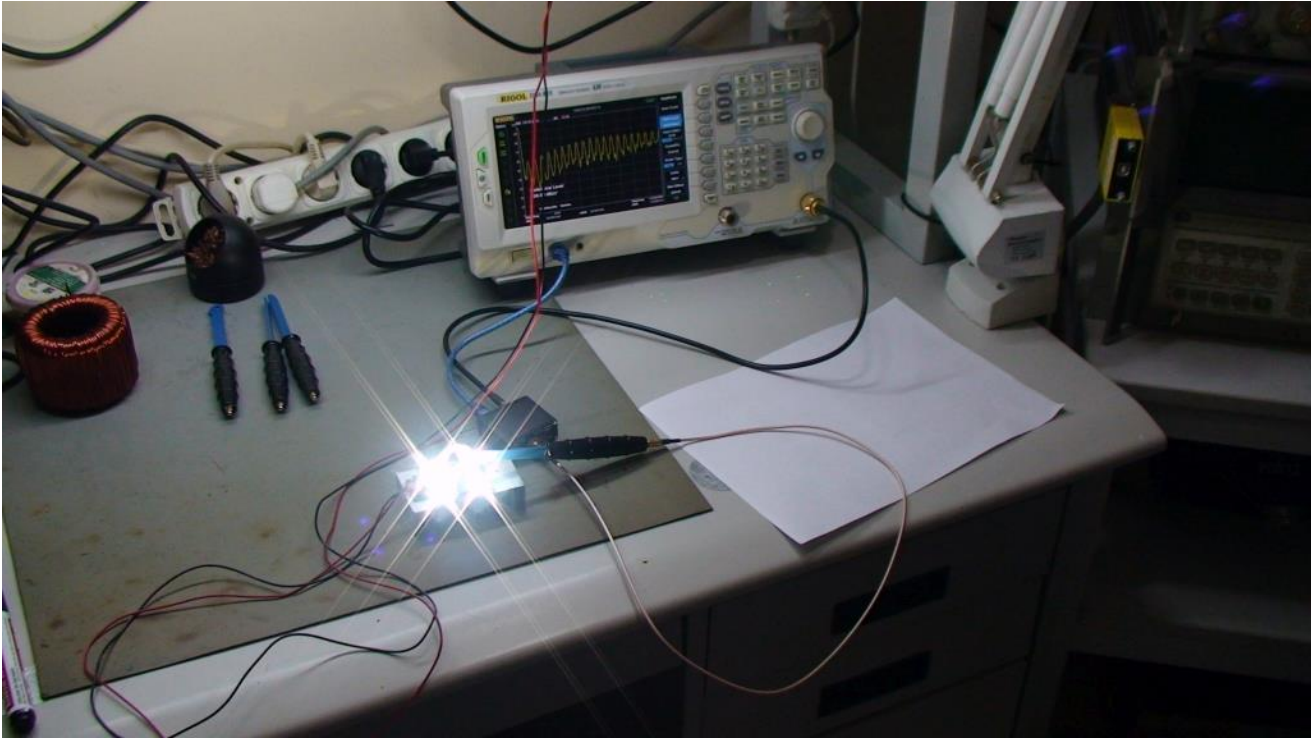
The following screenshots were taken using the H20, H10, H5 and E5 probes with 40 dB amplifier connected to a Rigol DSA815.

DUT is a 800 Lumen LED beam driven by a buck boost converter. The screenshots show the setup and measured spectrum using the Tekbox probes in the range 9kHz to 3MHz.

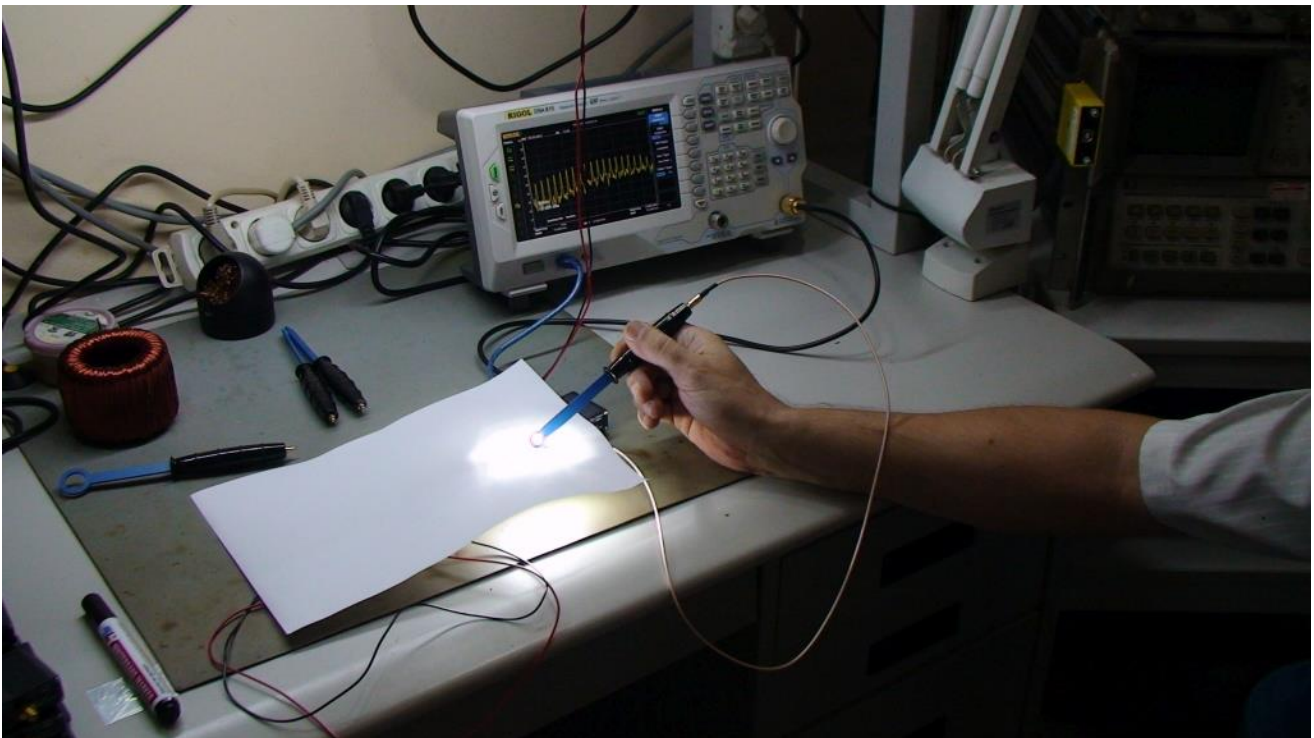


Picture 1 – DUT, unpowered

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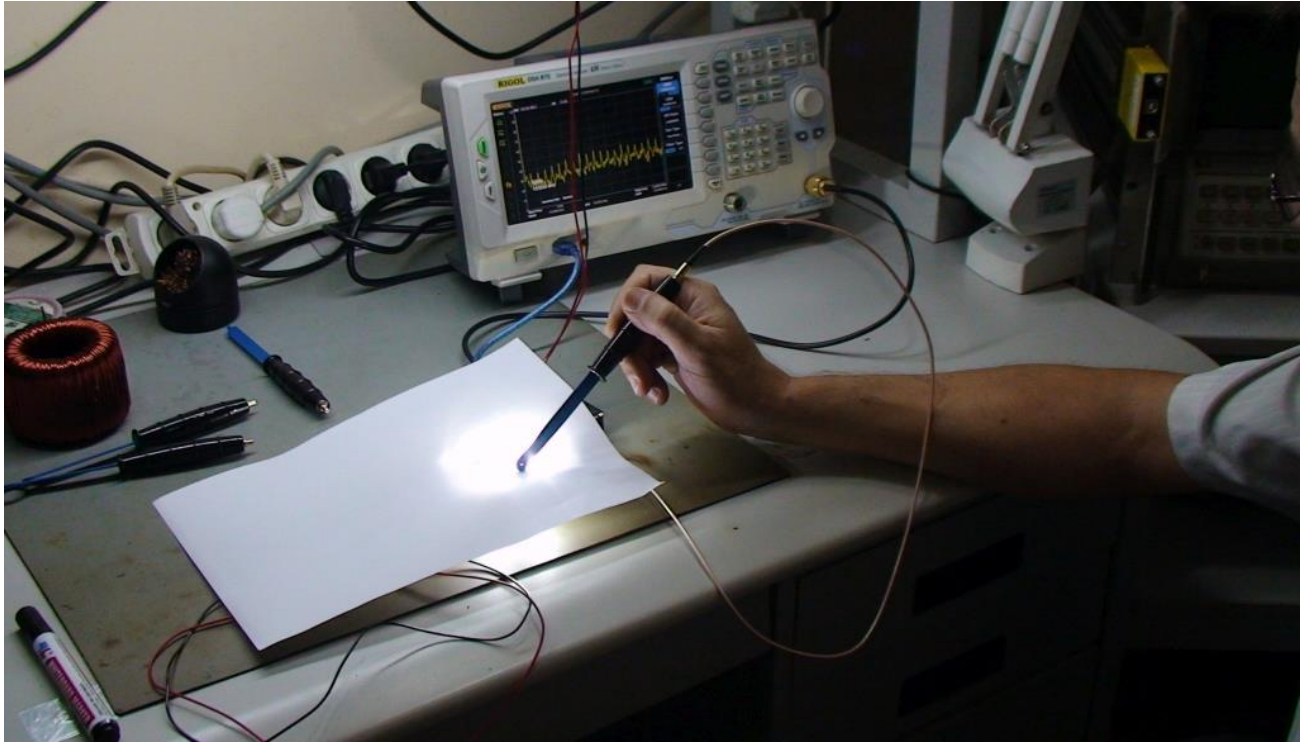


Picture 2 – DUT, powered, spectrum 9kHz-3MHz, H20 probe

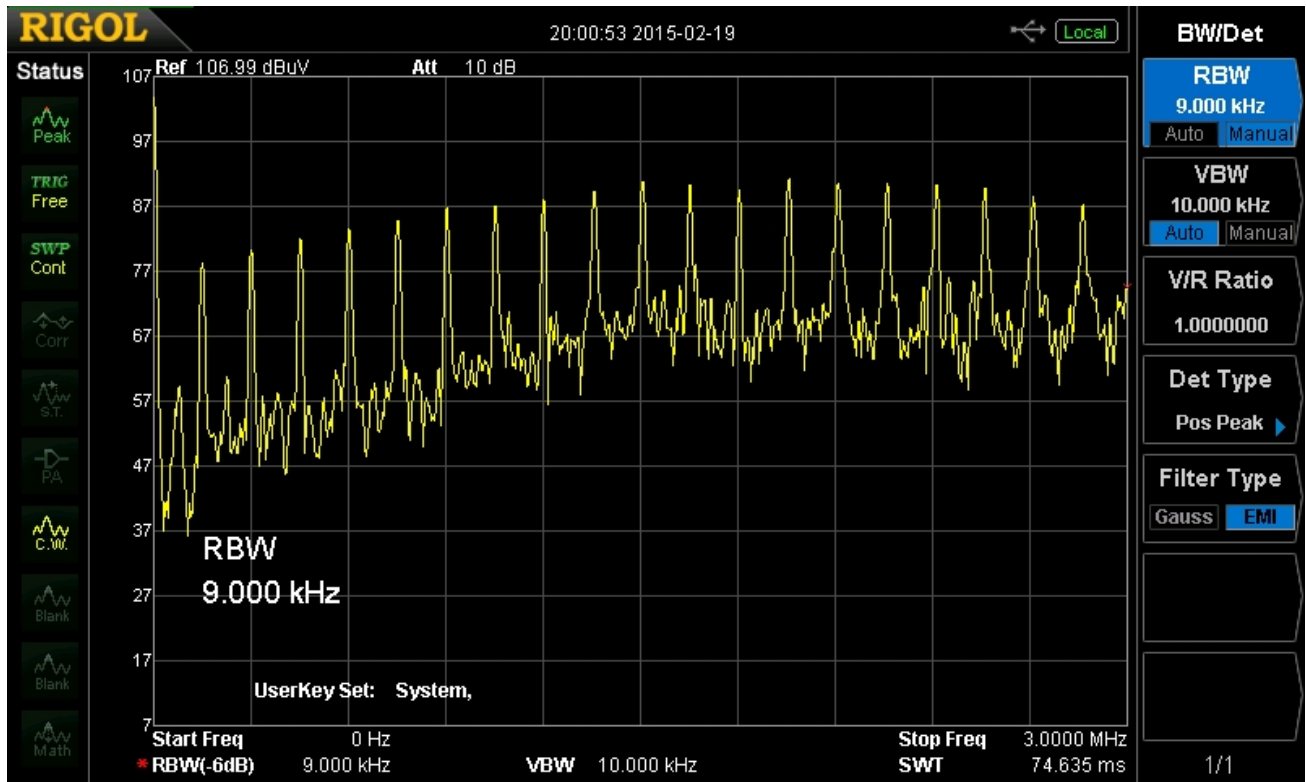


Picture 3 – DUT, powered, spectrum 9kHz-3MHz, H10 probe

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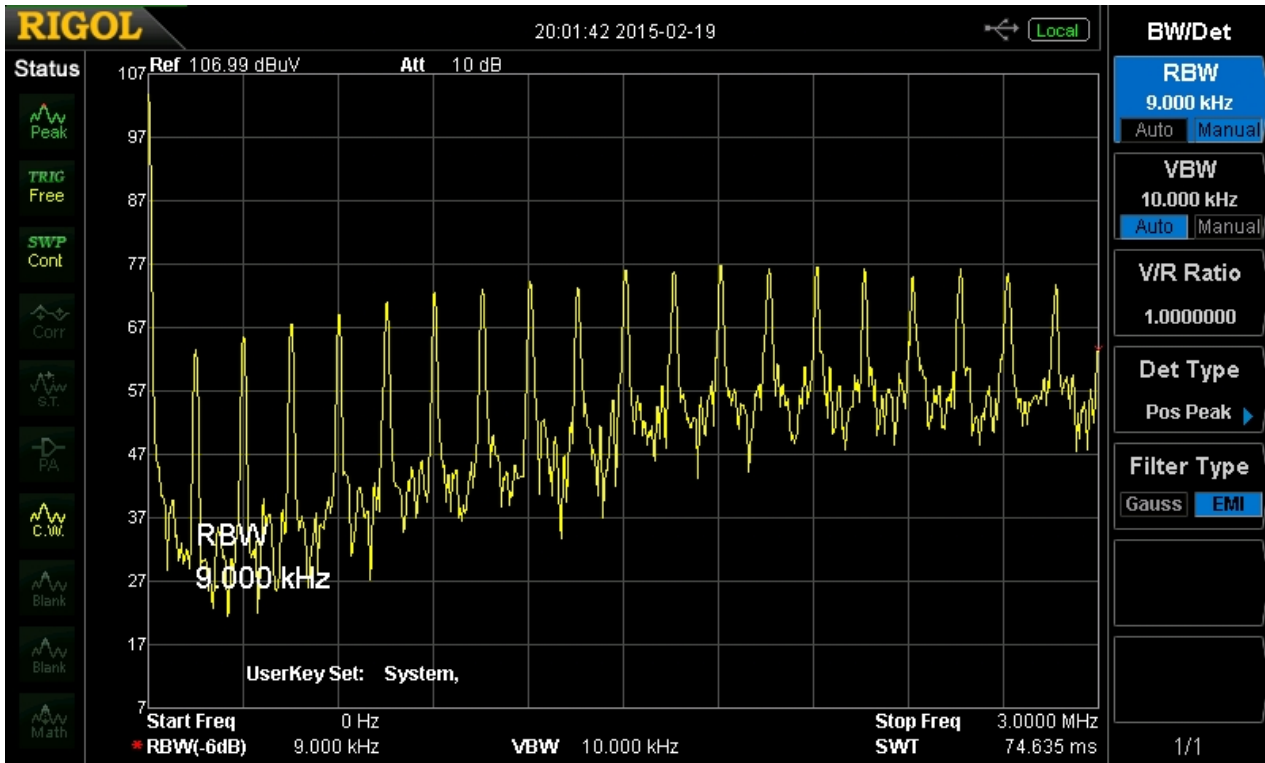


Picture 4 – DUT, powered, spectrum 9kHz-3MHz, H5 probe

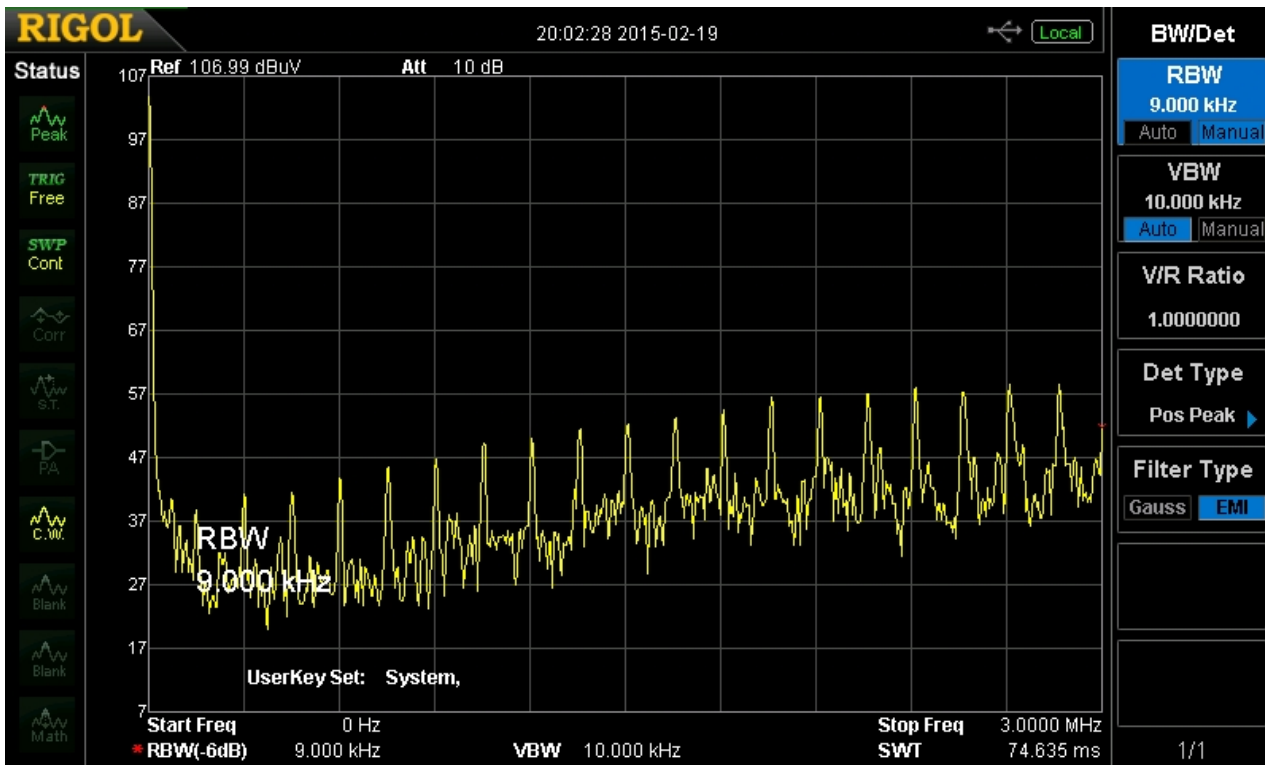


Picture 5 – DUT, powered, spectrum 9kHz-3MHz, H20 probe

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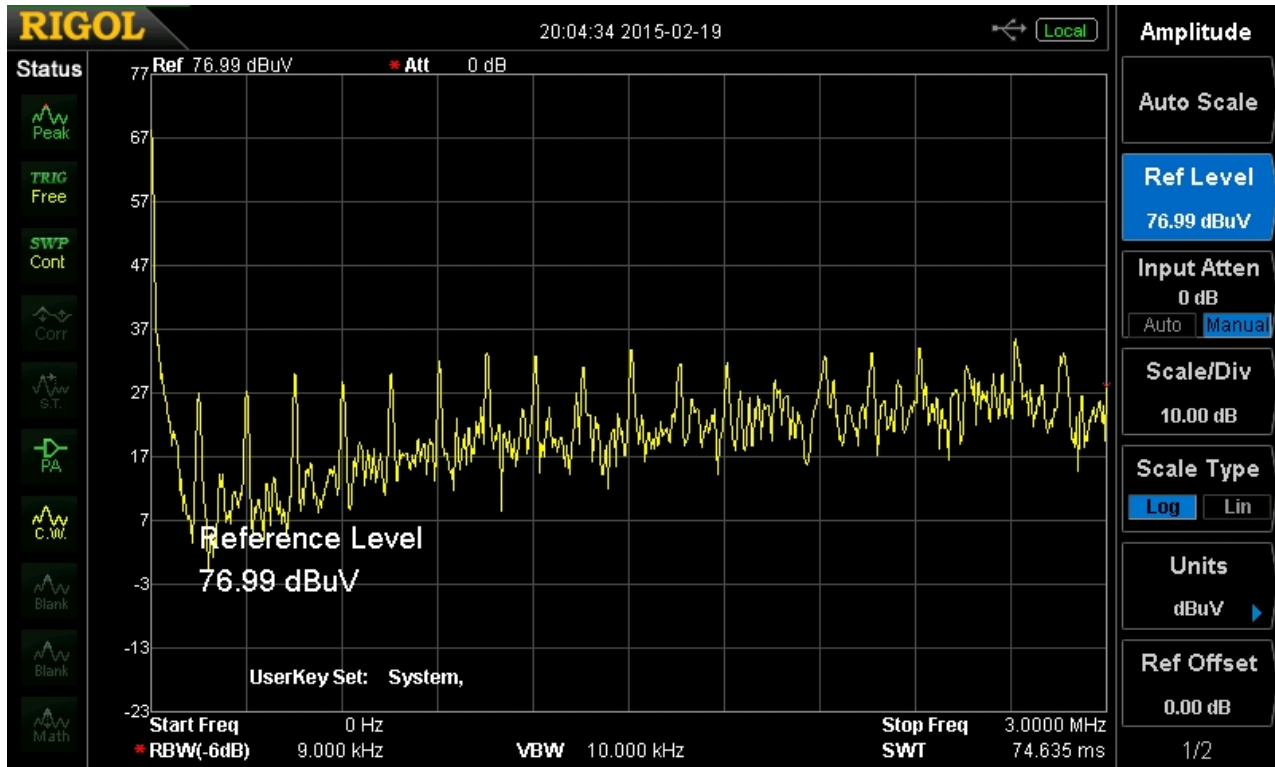


Picture 6 – DUT, powered, spectrum 9kHz-3MHz, H10 probe

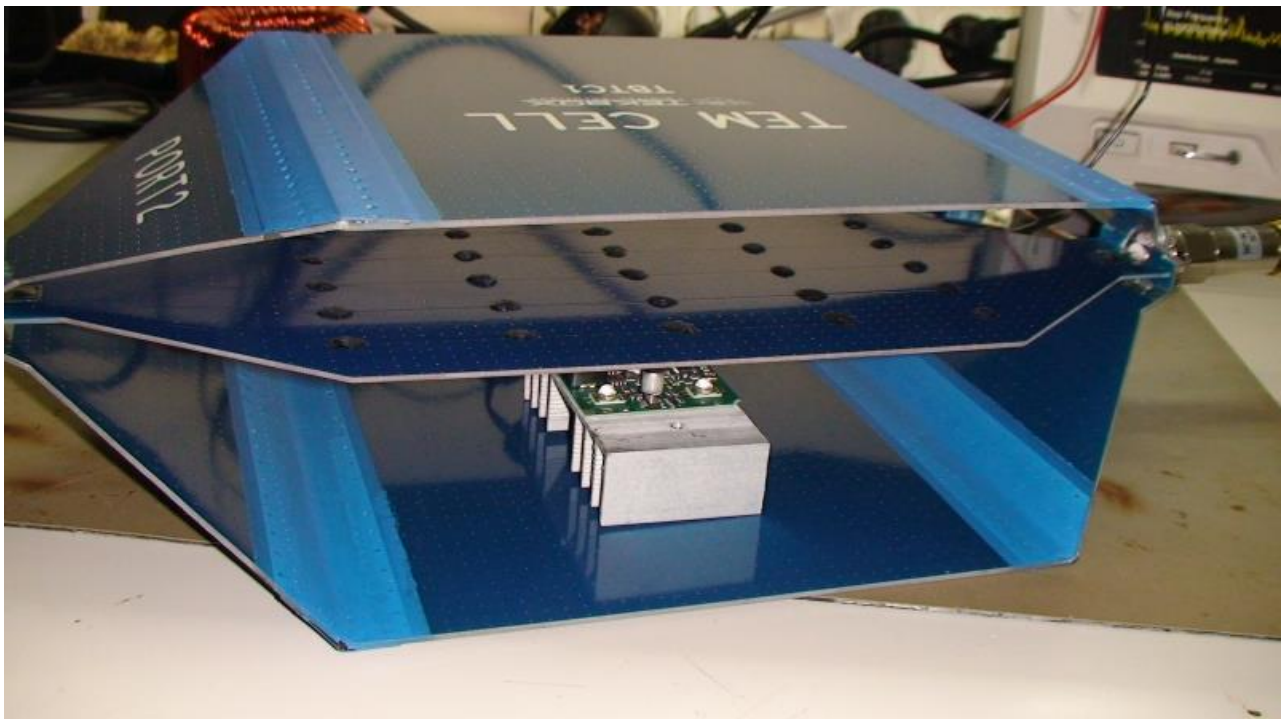


Picture 7 – DUT, powered, spectrum 9kHz-3MHz, H5 probe

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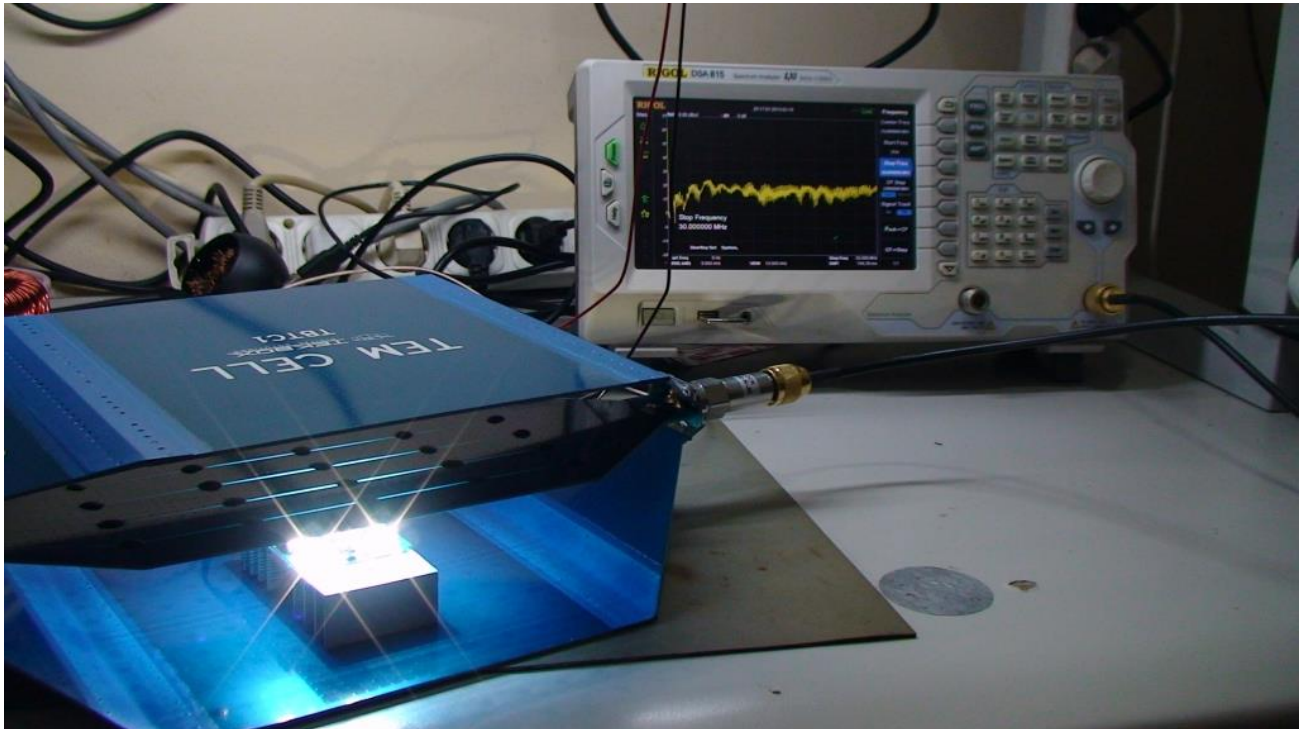


Picture 8 – DUT, powered, spectrum 9kHz-3MHz, E5 probe

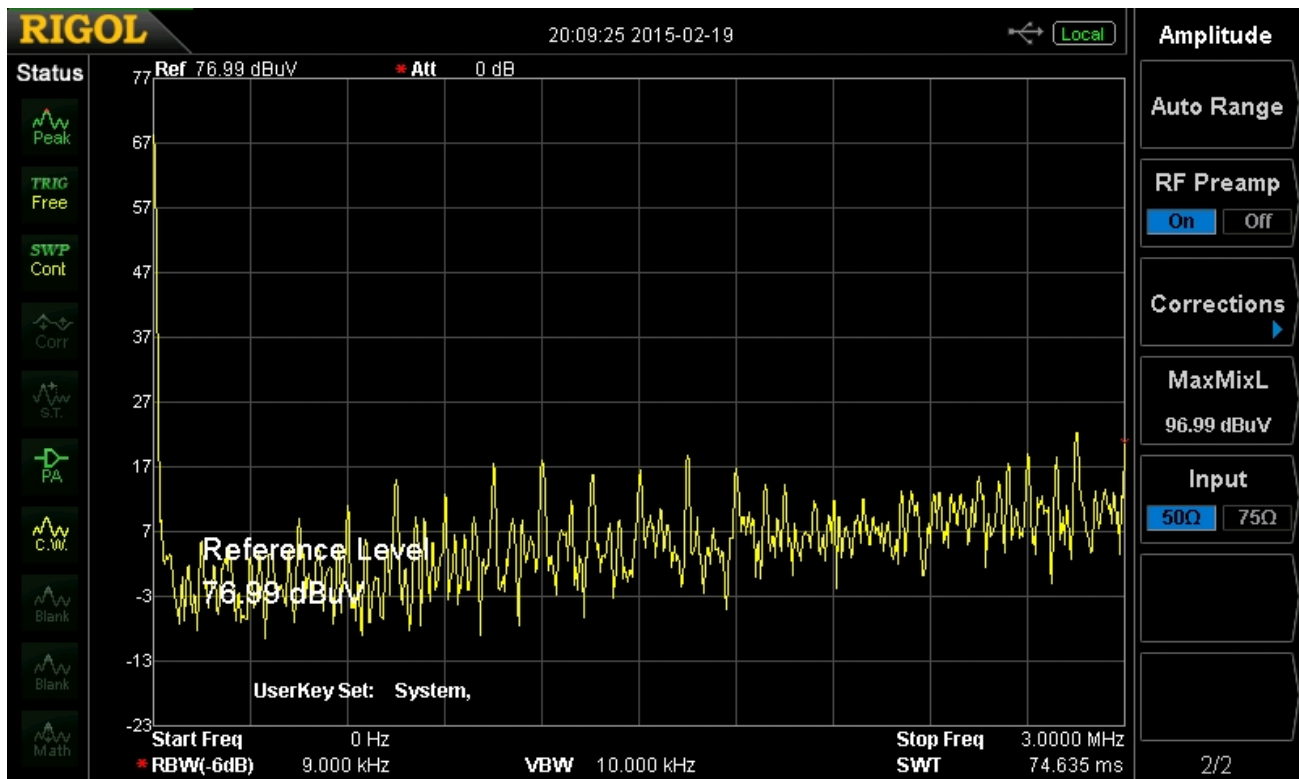


Picture 9 – setup, DUT in TEM Cell, unpowered

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Picture 10 – setup, DUT in TEM Cell, powered, 9kHz-30MHz



Picture 11 – DUT in TEM Cell, spectrum 9kHz-3MHz