

System Check of Frequency Selective EMC/EMF-Measurement Systems

RefRad Model 3000

**the answer of ARC Seibersdorf research on the
increasing quality awareness of test labs**

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What is a System Check ?

- A System Check is a quick and reliable method to increase the confidence in measurement results of the test engineer the test lab and the customer.
- It detects failures in the measurement system: receive antenna, pre-amplifier, cable, spectrum analyser, measurement software.



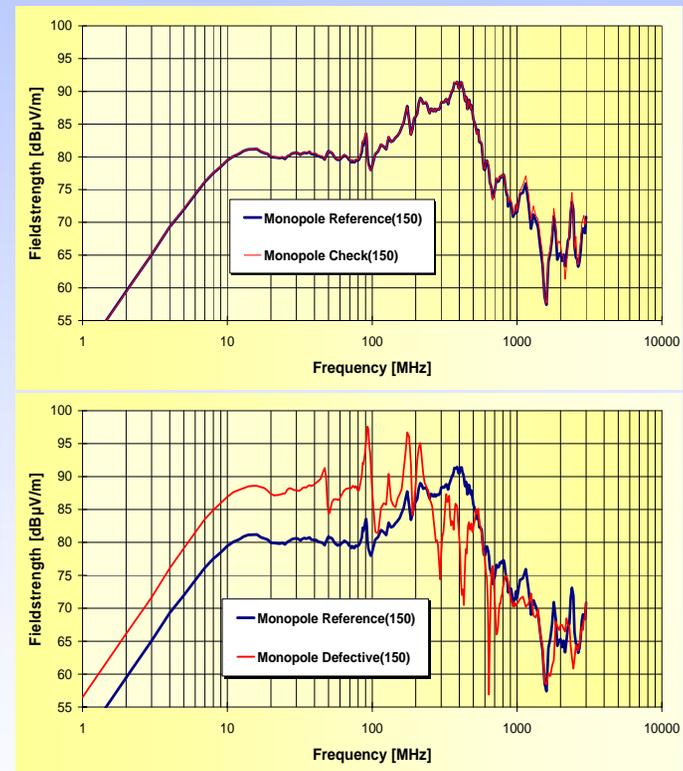
Why Do We Need a System Check ?

- To gain confidence in measurement results
- To detect defective instruments prior to testing
- To avoid costly re-testing
- To fulfill requirements of ISO 17025 which demands a regular check of the proper function of the test equipment



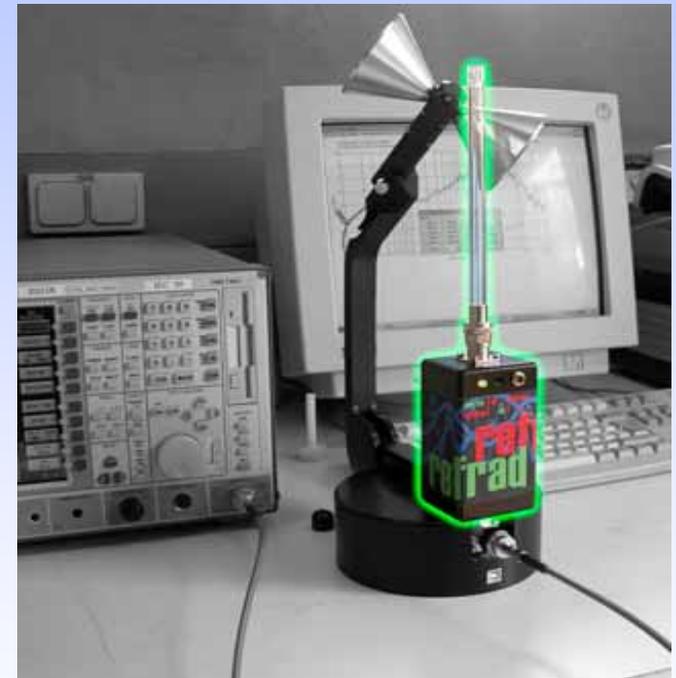
How to Perform a System Check?

- Measurement of the radiated emissions of a known source, e.g. comb generator with antenna
- 1. Reference Measurement
- 2. Check Measurement
- 3. Comparison
- 4. Evaluation:
System OK or Defect

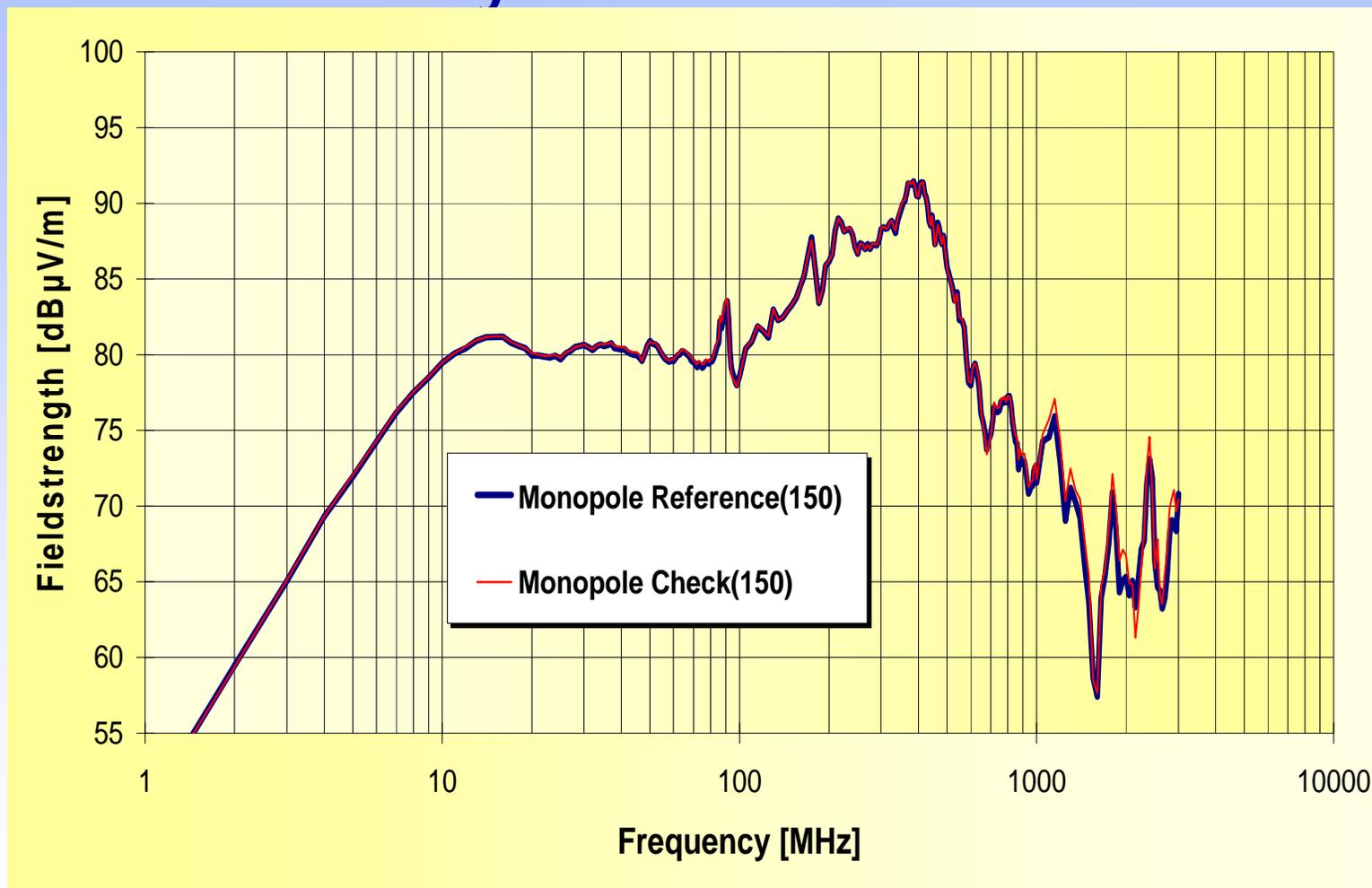


Comb/Noise Generator with Monopole

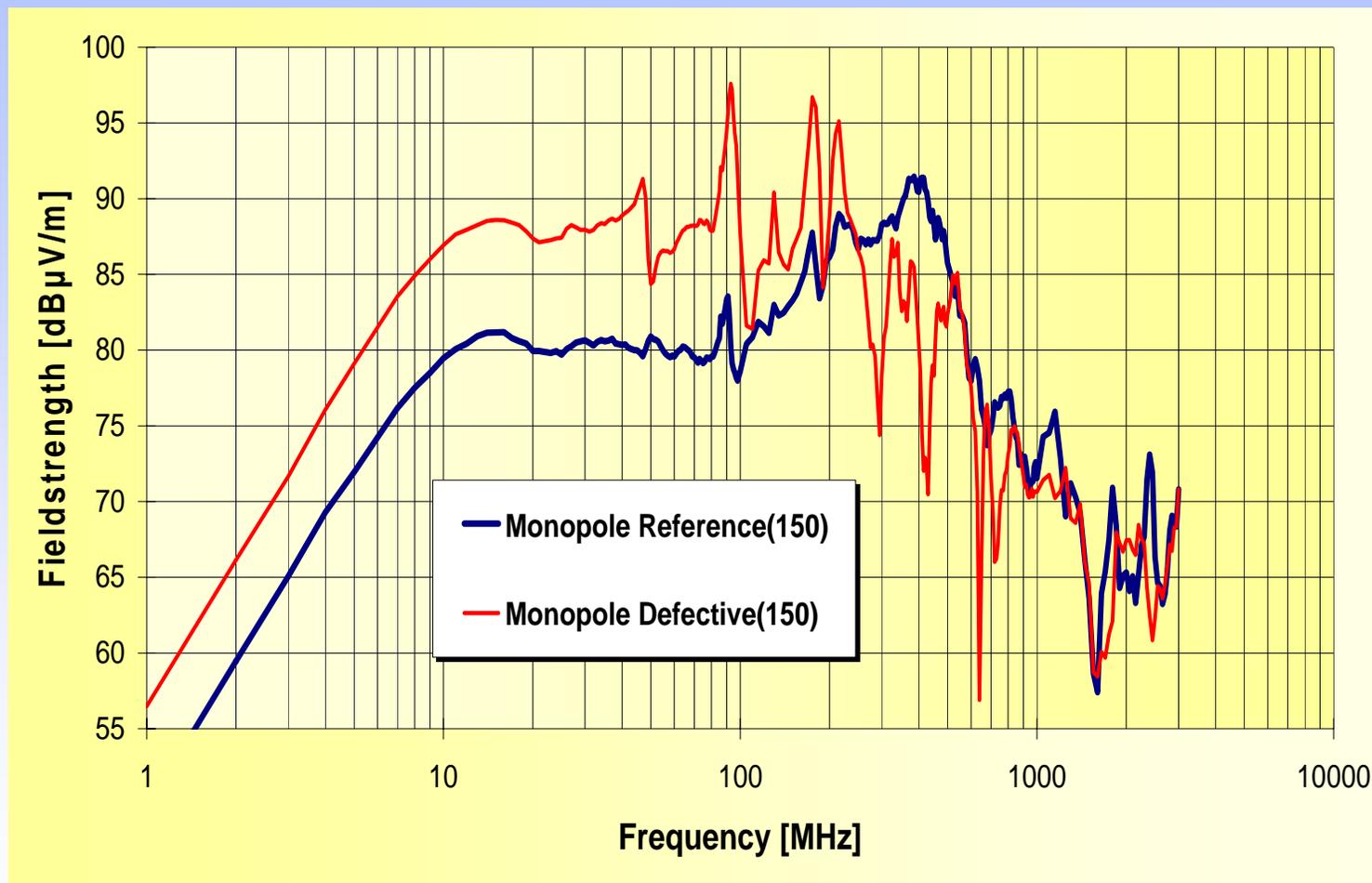
- Generally used equipment
- Well suited for controlled environment (anechoic chamber)
- Test site is part of the evaluation
- Not suitable if the EUT is already set up or for „in situ“ EMC and EMF testing



System Check: OK



System Check: DEFECT

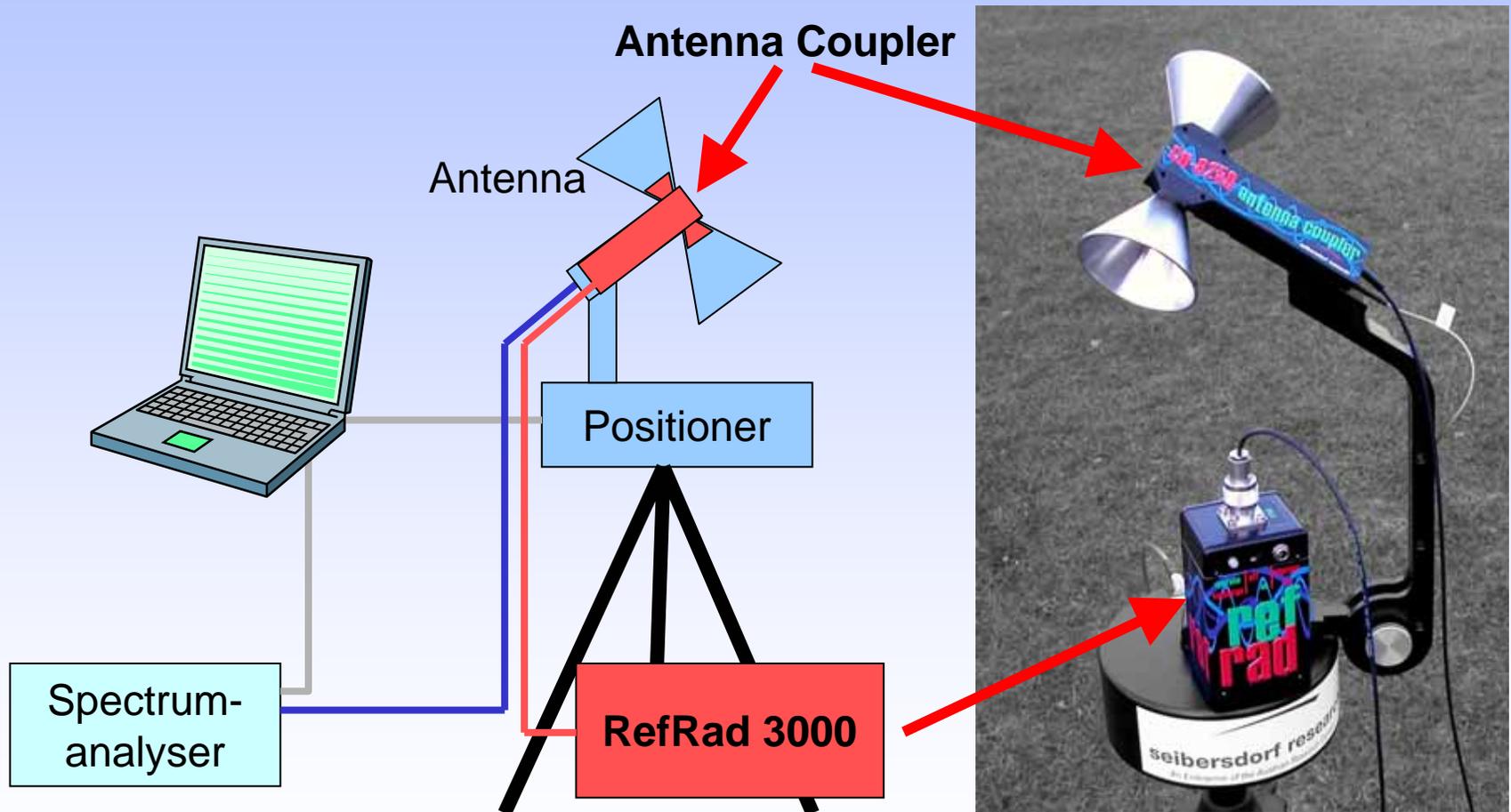


RefRad 3000 with Antenna Coupler

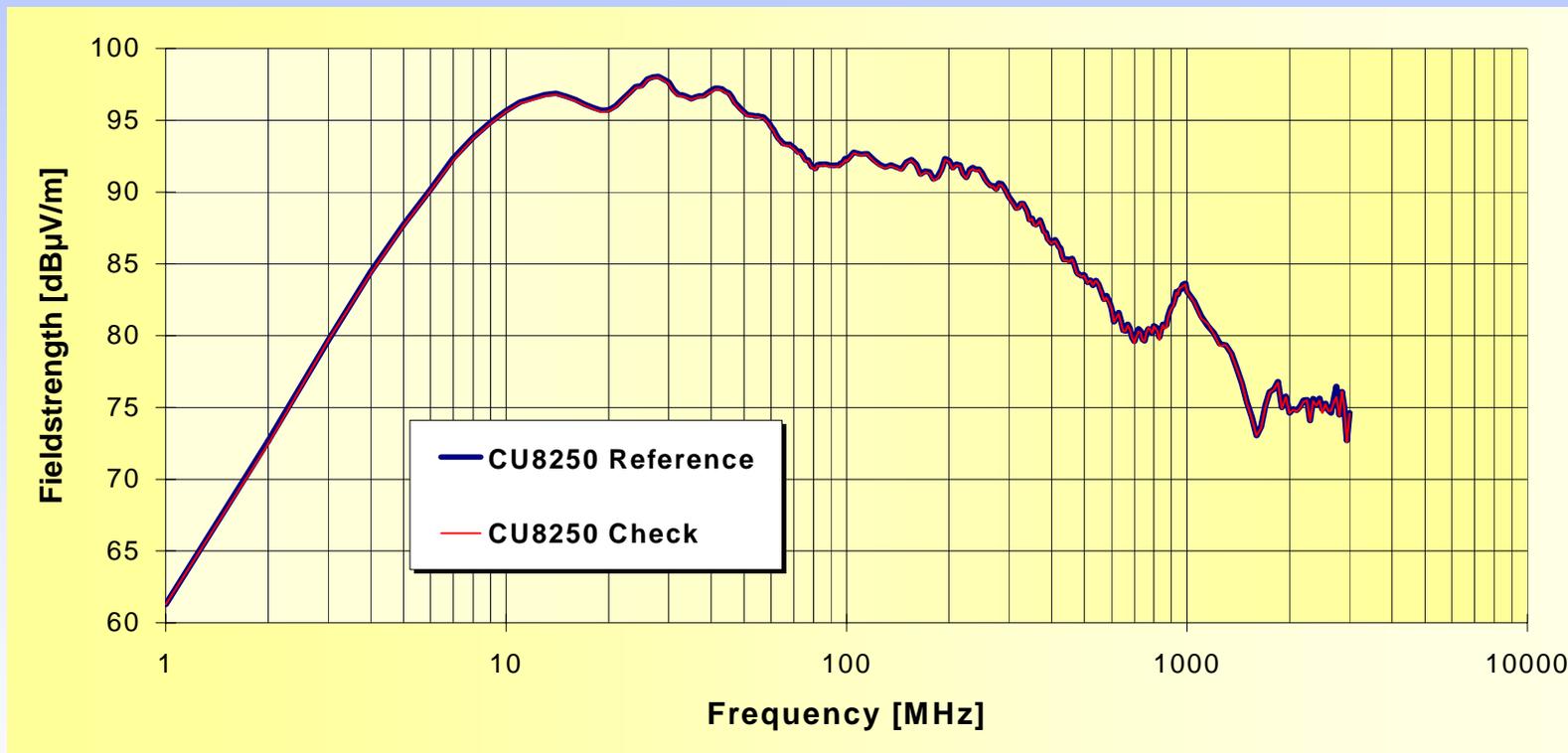
- Generates a field extremely close and at a well defined and repeatable position at the receive antenna
- Low sensitivity to the environment
- Well suitable for System Check with set up EUT and for "in situ" EMC and EMF testing
- Patent pending



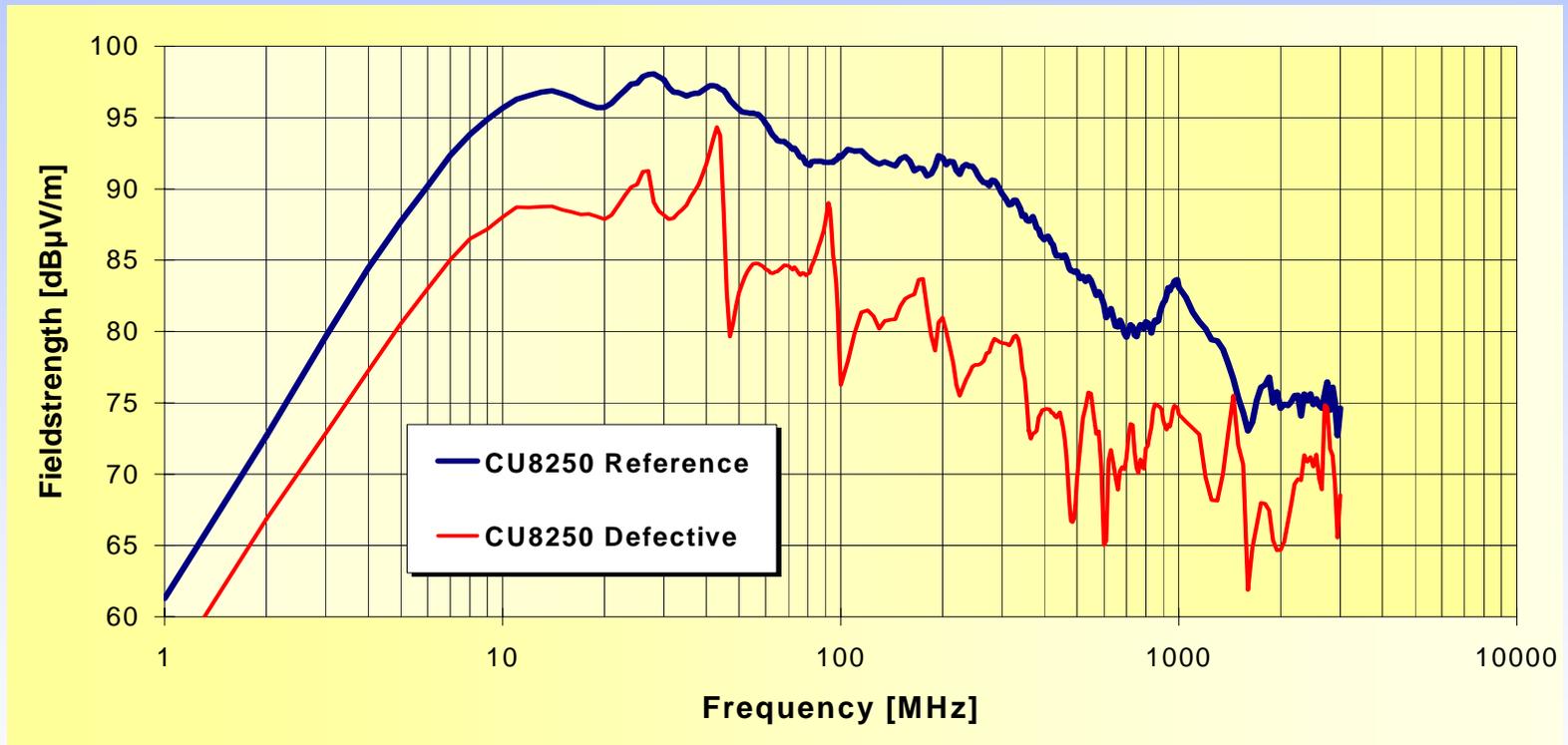
Beispiel: EMF System Check



System Check: OK



System Check: DEFECT



Comparison of the System Check Methods

	Generator with Monopole	Generator with Antenna Coupler
Easy and Fast	✓	✓
Check of Test Site	✓	-
Reproducibility	-	✓
Clear Error Distinction	-	✓
Environmental insensitive	-	✓

RefRad 3000 System Components

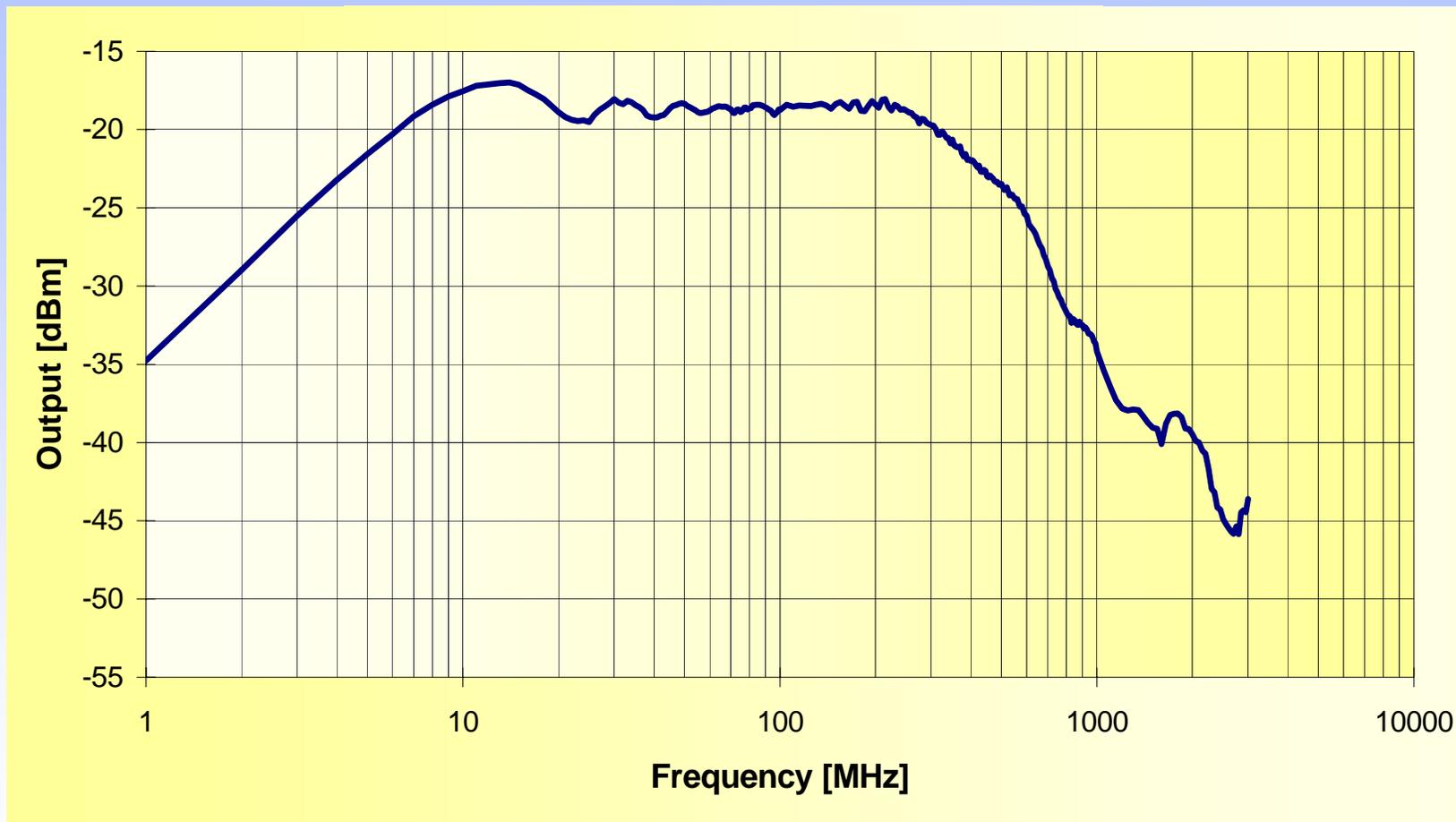
- Comb generator: battery operated, stable, high power with coaxial output connector
- Antenna coupling units: for high repeatability and high reproducibility **system check**
- Monopole for universal **function check**
- Protective attenuator: 20 dB for conducted measurements
- Battery charger
- Calibration data
- Transport case



Technical Data Comb Generator

Frequency range:	1 MHz – 3 GHz
Frequency spacing:	1 MHz
Frequency stability:	50 ppm over 0 – 40°C
Amplitude per line (coaxial):	-18 dBm to -50 dBm
Amplitude stability:	+/- 0.2 dB over battery voltage cycle +/- 0.5 dB over 0 – 40°C
Batteries:	internal, NiMH
Battery operation time:	20 hours typical
Battery charge time:	6 hours
Output Connector:	N-female

Coaxial Output Power



refrad

reference radiator

model 3000

seibersdorf research

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