

High Efficiency EMC Pretest Solution

GW Instek EMC Pretest Solution



EMI Test - Faster - Easier!



Isolation Transformer



LISN



Transient Limiter



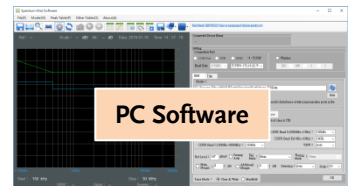
Spectrum Analyzer GSP-9330

- Frequency Range : 3.25GHz
- EMC Pretest dedicated functions
- Peak, QP, Average detectors
- PreAmp, Lin/Log Scale



GKT-008 EMI Probe Set

Sensing probes: ANT-04, ANT-05
Contact probes: AC & RF probes

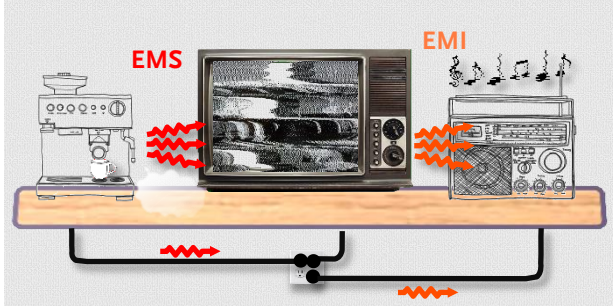


PC Software

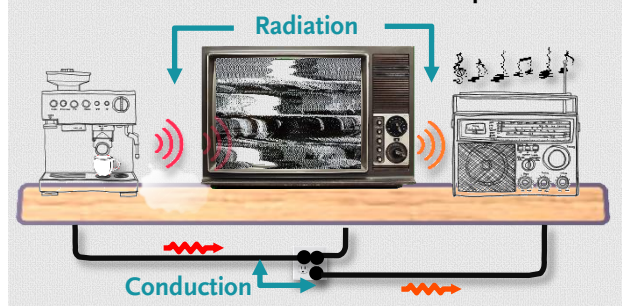
SpectrumShot

EMC and Coupling Paths

$$\text{EMC} = \text{EMS} + \text{EMI}$$



Radiation via air & Conduction via power



GSP-9330 EMC Pretest Dedicated Functions

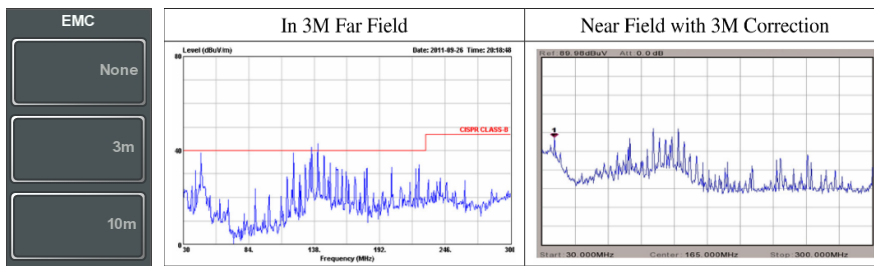
EMC	EMC	EMC	EMC	EMC
On	EMC Off	BandA 9-150kHz	BandB 30M-300MHz	Scale Type Log
EMF Test>	BandB 150k-30MHz	Amb.Noise Reject None	GLN-5040A 10dB Comp Off	EN55022A
FieldSensor>	BandA+B 9kHz-30MHz	Correction None	Limit line offset 0.000dB	EN55022B
Source Contact Probe>	BandC 30-300MHz	Recall limit On	QP Analysis>	FCC A
AC Voltage Probe>	BandD 300M-1GHz	Peak Table On		FCC B
EMS Test>	BandC+D 30M-1GHz	More 1/2		EN55015
	More 1/2	Return	Return	User Define>

Built-in EMI Test Standards



Log Scale Frequency Axis

GSP-9330 Built-in GKT-008 Associated Functions

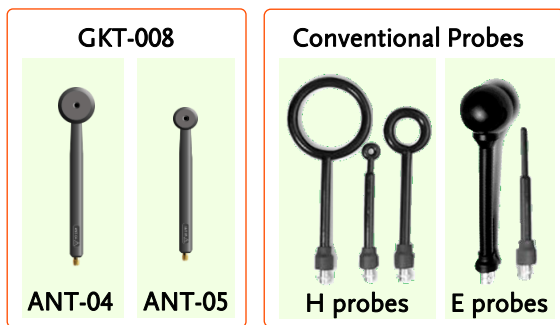


Far Field Response Estimation

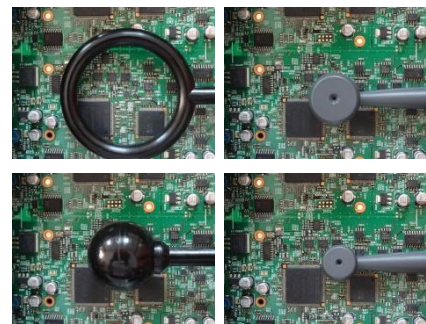
- Convert the near field measurement results to far field response (3m or 10m can be selected).
- Helpful to confirm whether the EMI trimming works or not.

Key features of GKT-008

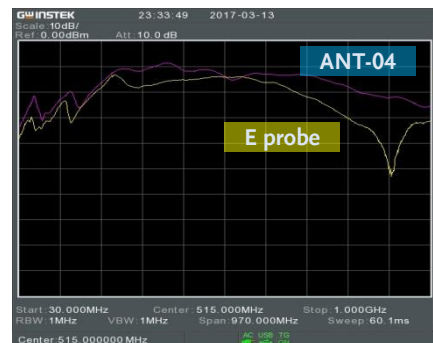
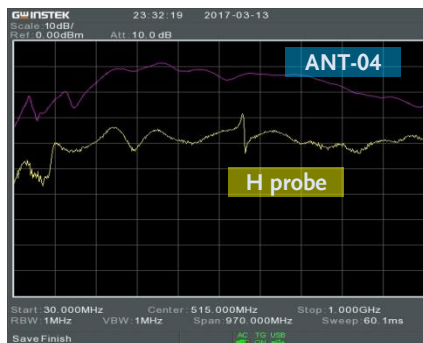
Small Size , High Sensitivity



GKT-008 vs conventional probes

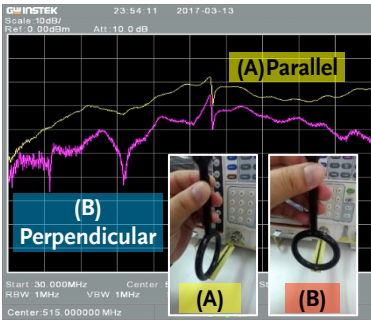


Identify EMI source better by small size

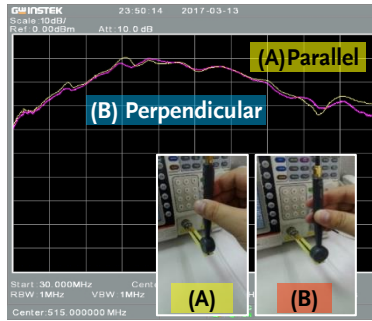


ANT-04: higher sensitivity than H probe and E probe

No directivity issues for ANT-04, ANT-05



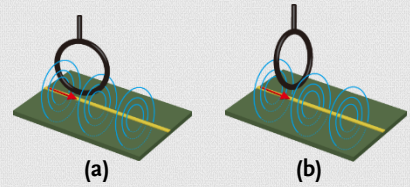
H probe: Different results with different angles



ANT-04: Similar results with different angles

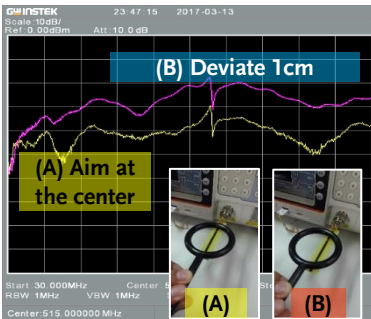
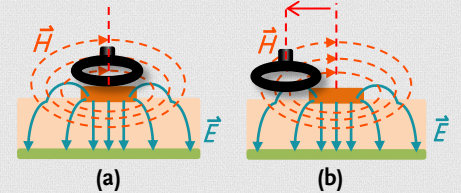
Working principle of H probe (I)

H probe works as a loop antenna. If more magnetic field passes through loop, more signal is detected as shown in fig. (a). If it is parallel to loop surface, magnetic field can't be detected.

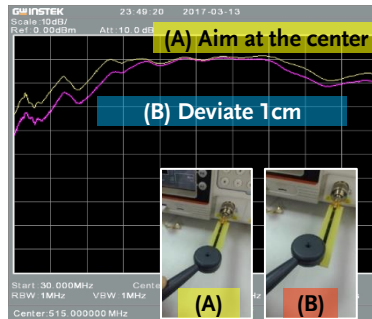


Working principle of H probe (II)

According to the working principle, H probe deviates from the PCB center shown in fig. (b) will detect more passing magnetic field. In fig. (a) H probe aims at the center will detect less magnetic field. This will leave incorrect clue to engineer.

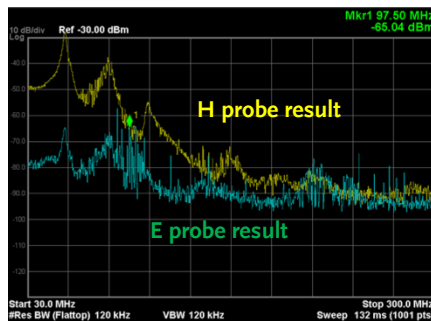


H probe detects much more while deviating 1cm



ANT-04 detects more while aiming the center

Detecting Separate H-field and E-field vs Sensing EMI Energy



H probe's results differ from E probe



H field & E field are two components of EMI

The actual electromagnetic energy is the vector outer product of E and H fields. This operation can't be done by the measurement of spectrum analyzer. The information is not complete for engineers to identify the EMI source.

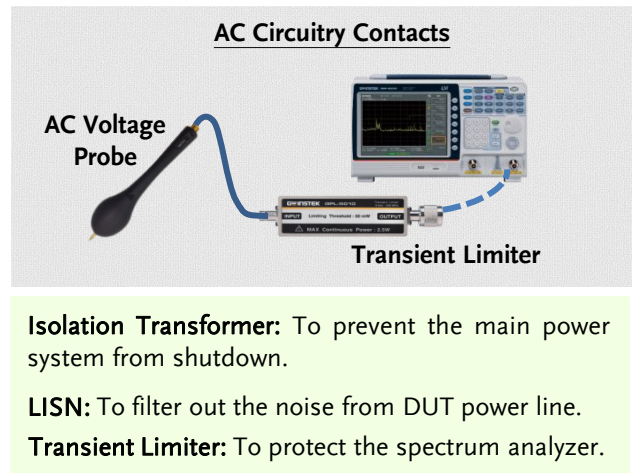
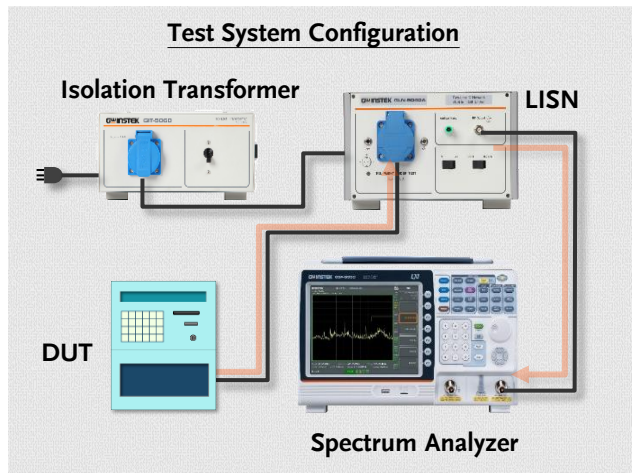
$$S = E \times H = \begin{bmatrix} i & j & k \\ E_1 & E_2 & E_3 \\ H_1 & H_2 & H_3 \end{bmatrix}$$



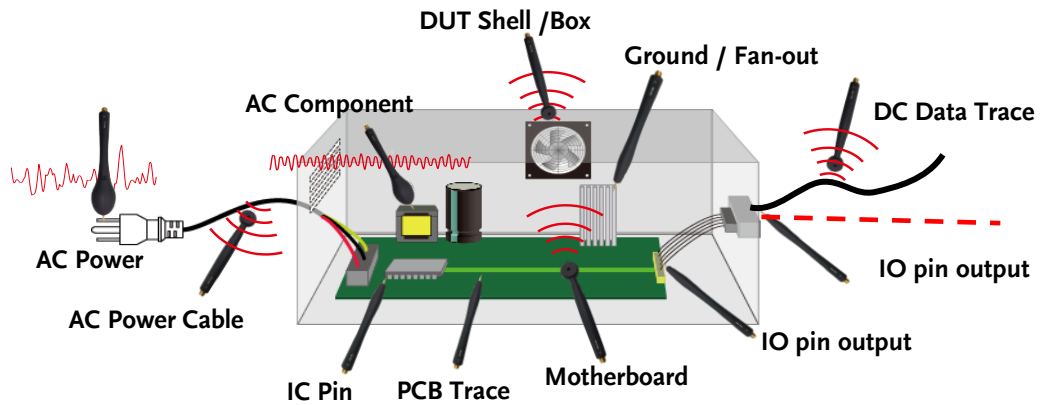
ANT-04 and 05 directly sense EMI energy

Patent designed ANT-04 & ANT-05 can directly detect EMI energy, no any intermediate operation is necessary. With the compact size and high sensitivity, the EMI source spots can be easily discovered.

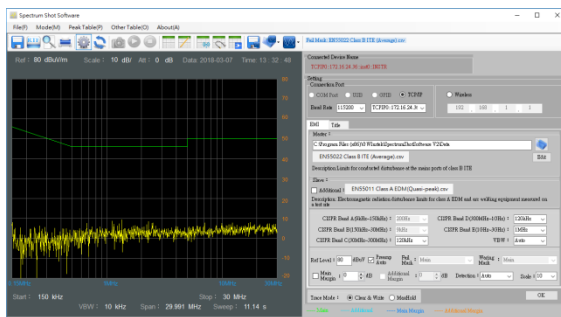
Conducted EMI Test Solution



Test Applications of GKT-008



EMI Dedicated PC Software



Free PC software - SpectrumShot

Ordering Information

Products	Model
Spectrum analyzer	GSP-9330 + TG (optional)
Near-field Probe	GKT-008
LISN	GLN-5040A
Isolation Transformer	GIT-5060
Transient Limiter	GPL-5010
EMI Software	SpectrumShot

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GW INSTEK

Simply Reliable

