

The logo for EMAC (Electromagnetic Mission Assurance Center) features the letters 'EMAC' in a large, bold, white sans-serif font. The background of the logo is a dark blue and purple gradient with a faint, stylized globe and various military and industrial imagery.

ELECTROMAGNETIC
MISSION
ASSURANCE
CENTER

NAVAL SURFACE WARFARE CENTER
DAHLGREN DIVISION



MILITARY RFID

Navy HERO & E3 Requirements

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E3 Assessment & Evaluation Branch (Q52)



AGENDA

- **HERO Requirements** (NOSSA, Mr. Charles Wakefield)
 - Open Area Applications
 - Transportation, Storage & Buildup Areas
 - Complex Cavity Issues vs Free Space SSD
- **E³ (EMI/EMV, ESD)** (SEA05W43, Mr. Mark Johnson)
 - Evaluation Criteria
 - Radiated Susceptibility
 - Conducted Susceptibility
 - Conducted Emissions
 - Radiated Emissions
 - Electrostatic Discharge (ESD)
- **Spectrum Usage**
- **EMCON**



HERO Requirements

- HERO, OP3565 Vol 2
 - Open Area Applications
 - Safe Separation Distance (SSD)
 - May Be Calculated or Measured
 - » OP3565 SSD Calculator
 - » Measured IAW OP3565, AIT Cert. Process (107dBuv)
 - Enclosed Spaces (electrically reflective)
 - Magazines = Case by case analysis
 - Total EIRP limited by OP3565 HERO UNSAFE curve
 - Requires cavity characterization
 - Cumulative effect of multiple emitters

E³ Requirements

A disciplined approach...

- **Handheld & Portable Equipment (RFID Readers, PDAs, etc...)**
 - Radiated Susceptibility, MIL-STD-464A, Tailored Deck Environment
 - In most cases up to 200 V/m, CW & PO
 - Radiated Emissions, MIL-STD-461E
 - RE101, Magnetic Field, 30 Hz to 100 kHz
 - RE102, Electric Field, 10 kHz to 18 GHz
 - Tailored to include in-band EIRP assessment
 - Electrostatic Discharge
 - Requirements based on MIL-STD-331
 - Equipment exposed to human borne ESD = 25 kV direct strike
 - VERTREP & UNREP exposure = 300 kV indirect strike

E³ Requirements

- Permanent, Fixed Installations

- Radiated Susceptibility, MIL-STD-464A

- Above Deck Installations, MIL-STD-464A, Above Deck Environment
 - Below Deck Installations, MIL-STD-464A, Below Deck Environment

- Conducted Susceptibility, MIL-STD-461E

- CS101, Power Leads, 30 Hz to 150 kHz

- Radiated Emissions, MIL-STD-461E

- RE101, Magnetic Field, 30 Hz to 100 kHz
 - RE102, Electric Field, 10 kHz to 18 GHz
 - Tailored to include in-band EIRP assessment

- Conducted Emissions, MIL-STD-461E

- CE101, Power Leads, 30 Hz to 10 kHz
 - CE102, Power Leads, 10 kHz to 10 MHz



General Awareness

• Spectrum Usage

- DD Form 1494 is mandated for all spectrum dependant equipment.
 - Both afloat and ashore usages
 - Transmitters require host nation agreement
 - It is illegal to use any emitter without this approval !

• EMCON

- May need variable Tx power to meet ship spec.

Information Will Be Required To Support



Navy POCs

•HERO

- Mike Slocum (540) 653-2212, michael.slocum@navy.mil
- Marquette Poston (540) 653-0265, marquette.poston@navy.mil
- Richard Magrogan (540) 653-3445, richard.magrogan@navy.mil

•E³

–Requirements

- J. Don Pierce (202) 781-4214, james.d.pierce1@navy.mil

–Test and Analysis

- Wayne Lutzen (843) 218-5723, wayne.lutzen@navy.mil (ship & shore)
- Craig Derewiany (401) 832-5723, derewianyfc@npt.nuwc.navy.mil (subs)

–Spectrum Allocation

- Will Miles (757) 493-7133, Willie.Miles@gdit.com

–Electrostatic Discharge (ESD)

- Jack Nial (301) 744-4466, john.nial@navy.mil
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Questions & Discussion

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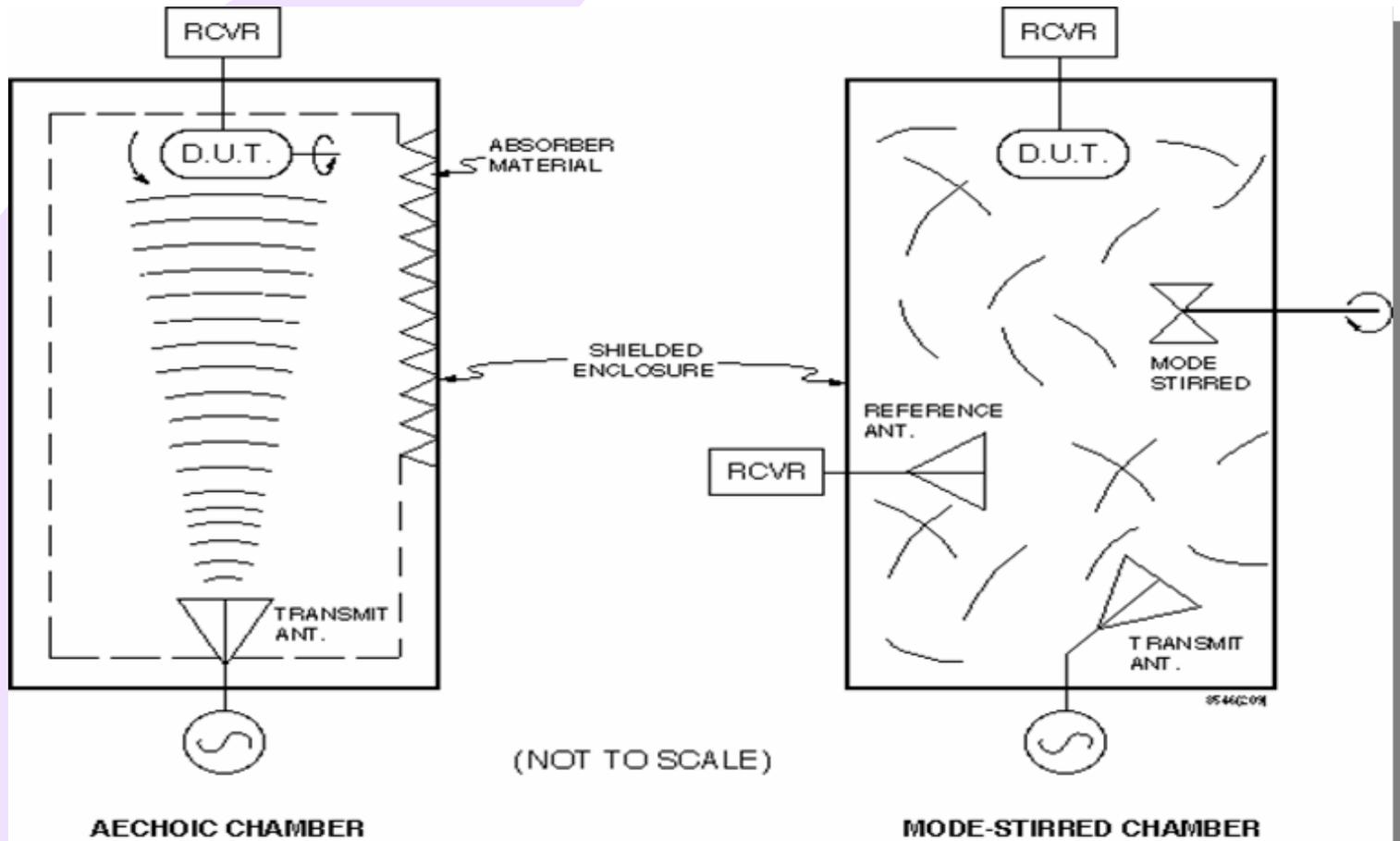


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BACKUP



Complex Cavity Effect





Complex Cavity Effect

