

ELECTROMAGNETIC INTERFERENCE (EMI)

- EMI occurs when a device's performance is disturbed or interrupted by electromagnetic radiation/conduction
Naturally occurring or manmade, unintentional or intentional: MOST IS UNINTENTIONAL
GPS enabled devices are highly susceptible to EMI due to the very weak GPS signal received

RECOGNIZING EMI

- Certain devices, such as the DAGR, can provide a visual indication of EMI
If no visual indicator, follow device specific troubleshooting procedures to ensure it is operating properly



ALL SUSPECTED EMI MUST BE REPORTED!!!

See report format on page 6 and CJCSM 3320.02C and D for additional information - submit report in accordance with local unit SOP. Classify report IAW system specific security classification guide.

CRYPTOGRAPHIC KEY

- Military GPS enabled devices/receivers - such as the Defense Advanced GPS Receiver (DAGR) - are capable of receiving the secure GPS signal - civilian receivers cannot
Keyed devices: 10 times more resistant to unintentional interference than un-keyed devices
DoD Policy: ALL combat & combat support operations are required to use DoD-approved sources as primary means of obtaining PNT information.

- Antenna Diversity: Use a directional antenna - limits EMI direct access; Employ multiple separate receivers or a multi-antenna receiver; Effective against spoofing signals - increases technical difficulty required to mount a successful attack.
Terrain Masking: For mounted or dismounted operations, use natural terrain features (hills, buildings, rock formations) or create a barrier to block the offending signal.
Body Mass Shielding: Use your body to block the interference by placing your body between the offending signal transmitter (e.g. radar, jammer) and the receiver (e.g. DAGR).
Body Mass Shielding: Hold receiver very close to your body with screen pointed away.
Body Mass Shielding: Rotate body slowly (~90 degrees) until receiver is no longer affected by the EMI - allow sufficient time (~2 minutes) for receiver to acquire or lose signal from each position tested.



- ACTIONS FOR KNOWN & POTENTIAL GPS EMI
Change recommended system settings (e.g. FBCB2 (JBC-P)) for the position report (ICON) refresh rates to improve Joint Friendly Force Tracking (JFFT) Situational Awareness (SA)
a. STALE (Dark Blue to Light Blue): 1 minute, 300 meters
b. OLD (Light Blue to Black): 60 minutes
c. PURGE (ICON removed) - 8 hours (no change)
Aids higher headquarters in identifying likely areas of GPS EMI
Report indications of EMI IAW local SOP
EMI MITIGATION TECHNIQUES
Body Mass Shielding

Fold Here First

JOINT SPECTRUM INTERFERENCE RESOLUTION REPORT

CLASSIFICATION\* (TS/S/C/U) (when filled in)

WHEN STARTED, ZULU\*\* (Format must be a valid date in the spreadsheet "date format", e.g., 1/1/2010 not 012233ZJAN10)

AFFECTED SYSTEM\*\*

AFFECTED FREQ MHZ\*\*\* (Format must be numeric, e.g., 1234.234, not M1234.234)

CHANNEL\*\*\*

LOCATION OF AFFECTED RECEIVER\*\*

COUNTRY OF AFFECTED RECEIVER

DESCRIPTION OF EMI EVENT

(Include what it sounds like, actions taken so far, suspected cause, and other comments)

VICTIM POC NAME

VICTIM UNIT

COCOM/SERVICE/AGENCY

\*Refer to system specific security classification guide

\*\*Required item

\*\*At least one of these items is required

MHZ: megahertz

Preferred method of submission is online via JSIR-Online (JSIR-O), available on Intelink on SIPRnet.

CLASSIFICATION\* (TS/S/C/U) (when filled in)

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GTA 40-01-002
Army Space Training Strategy
Home Station Training
Student Quick Reference Card

Electromagnetic Interference (EMI)
Mitigation Tactics, Techniques, and
Procedures (TTPs) for
Global Positioning System (GPS)
Enabled Devices

U.S. Army Space and Missile Defense Command/
Army Forces Strategic Command
G31 Training, Readiness & Exercise (TRES)
Army Space Training Integration Branch

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- ACTIONS FOR KNOWN & POTENTIAL GPS EMI (aka "Jamming")
1. Load DAGR with current crypto PRIOR TO MISSION (Requires a special fill cable (NSN 5995-01-521-3185) (Simple Key Loader "SKL") until instructed to do so.
a. Power DAGR on and push "menu" key twice
b. Select "Receiver Setup;" push "enter"
c. Select "Crypto Fill;" push "enter"
d. Push "enter" to highlight a field
e. Arrows to select "CV Loading Interface;" push "enter"
f. Select "DS-101;" push "enter"
g. Connect the crypto key fill cable to the J1 connector on the back of the DAGR
h. Ensure Simple Key Loader (SKL) has correct COMSEC key to transfer to DAGR (red or black)
i. Once "Ready to Send Key" screen displays on the SKL continue to load DAGR
j. Connect fill device to the crypto key fill cable
k. Press OK on the SKL "Ready to Send" Screen
l. Acknowledge any DAGR messages and observe the "CV Status" field on the Crypto Fill page
m. After the key is loaded, disconnect fill cable from both devices.

Fold Here Second

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