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**JOINT SPECTRUM
INTERFERENCE
RESOLUTION (JSIR)
PROCEDURES**



**JOINT STAFF
WASHINGTON, D.C. 20318**

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JOINT SPECTRUM INTERFERENCE RESOLUTION (JSIR) PROCEDURES

References: See Enclosure I

1. Purpose. This manual outlines reporting, response, and resolution procedures for spectrum interference throughout the U.S. Department of Defense (DoD), and provides detailed guidance to the DoD regarding standard electromagnetic interference (EMI) detection, characterization, reporting, identification, geo-location, and resolution procedures for space and terrestrial systems.

2. Superseded/Cancellation. Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3320.02D, 3 June 2013, is hereby superseded.

3. Applicability. This manual applies to the Combatant Commands (CCMDs)/Services/agencies (C/S/A), joint task forces (JTFs), U.S. elements of combined commands, and DoD elements of the Intelligence Community (hereinafter referred to as "DoD components"). DoD components will develop procedures for implementing this manual.

4. Procedures. Effective management of the electromagnetic operational environment (EMOE) is key to successful military operations. Inherent in effective management of the EMOE is the rapid reporting and resolution of EMI, and minimizing the effects of electromagnetic warfare (EW) to friendly emitters. DoD components will develop specific procedures and training necessary to implement CJCSI 3320.02 (series), using procedures contained in this manual and the policy guidance given in the references.

5. Summary of Changes. This revision reflects DoD reporting process changes within the JSIR program and textual changes to improve clarity.

6. Releasability. UNRESTRICTED. This instruction is approved for public release; distribution is unlimited on NIPRNET. DoD Components (to include the CCMDs), other Federal agencies, and the public, may obtain copies of this

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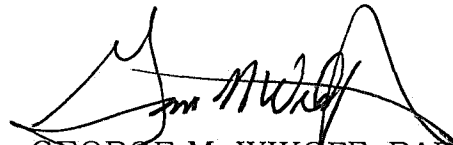
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directive through the Internet from the CJCS Directives Electronic Library at:
<https://jsportal.sp.pentagon.mil/sites/Matrix/DEL/SitePages/Home.aspx>
JS activities may also obtain access via the SIPR Directives Electronic Library
Websites.

7. Effective Date. This MANUAL is effective upon receipt.

For the Chairman of the Joint Chiefs of Staff:



GEORGE M. WIKOFF, RADM, USN
Vice Director, Joint Staff

Enclosures

- A --Joint Spectrum Interference Resolution (JSIR) Procedures
- B --JSIR Report Guide
- C --JSIR Report Recipients
- D --Security Classification
- E --Essential Resources and Points of Contact
- F --EMI Characterization and Resolution at the Local Level
- G --Natural Phenomena Effects
- H --Commercial SATCOM EMI Reporting Checklist
- I -- References
- GL--Glossary

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ENCLOSURE A

JSIR AUTHORITIES

1. General. Electromagnetic interference (EMI) is any electromagnetic (EM) disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics or electrical equipment. EMI can be induced intentionally in some forms of electronic warfare (EW), or unintentionally as a result of spurious emissions and responses, and intermodulation products (reference a). EMI impedes operations and hinders missions by degrading essential systems that use the electromagnetic spectrum (EMS). Timely and accurate identification, reporting, and resolution of EMI are key functions of EMS management in joint electromagnetic spectrum operations (JEMSO). Decisive EMI resolution plays a crucial role in assuring vital information is exchanged quickly and accurately, and is essential to obtaining and maintaining information and EMS superiority during military operations in war, operations other than war, and in peacetime. Since EMI can be caused by enemy, neutral, friendly, or natural sources, it generally must be resolved on a case-by-case basis.

a. The intent of these procedures is to resolve or mitigate EMI incidents at the lowest possible level within the command structure. After initial evaluation at the local unit level, the details of the incident shall be reported via JSIR Online (JSIRO) as discussed in Enclosure B (also see reference b), and per guidance provided in DoD Directives (DoDDs) 3222.4 and C-3222.5. These directives require that the installation of systems and facilities that are within one mile of “sensitive communications sites and platforms” concerning Intelligence, Surveillance, and Reconnaissance (ISR) be coordinated with the Director, National Security Agency (NSA). These directives also identify electromagnetic compatibility (EMC) technical guidelines that must be followed to ensure that harmful interference is not caused to ISR receiving systems.

b. To improve situational awareness (SA) and enhance future analysis, users must report all EMI, regardless of the severity, intensity, or duration. It is essential that efficient, practical local procedures be established to ensure EMI reporting and resolution. When the cause and victim of the interference are not within the same component force or supporting element, resolution may require assistance from the CCMD, JTF, Joint EMS Operations Cell (JEMSOC), Service EMSO Operations Cell (EMSOC), Service Frequency Management Offices (FMO), Spectrum Management Office (SMO) or Joint Spectrum Center (JSC). The C/S/A owning the affected equipment is responsible for implementing and funding recommended resolution actions.

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2. Background. The JSIR program was established by DoD to address persistent and recurring EMI problems affecting DoD systems. The objective of the JSIR program is to maintain and protect the EMS by preventing and identifying any types of EMI impacts that will constrain the Warfighter's abilities and capabilities to effectively communicate and/or radiate spectrum dependent systems/equipment in an anti-denial EMOE.

3. JSIR Program. The JSIR program focuses on EMI events and provides an actionable means to alert the appropriate C/S/A on interference issues. The program is coordinated and managed for the Joint Staff Command, Control, Communications, and Computer (C4)/Cyber Directorate (J-6) by the JSC in Annapolis, Maryland. The program itself is centrally managed; however, the execution process is highly decentralized. Each DoD component shares responsibility for successful execution of the JSIR program (reference b). The objective of the JSIR program is to report, track, archive, analyze, and resolve EMI. The resolution process for EMI events includes:

- a. Verification, characterization, and reporting.
- b. Geo-location, analysis, and identification.
- c. Developing and implementing corrective courses of action to regain use of the affected spectrum.
- d. Tracking the incident to closure, providing status updates, and archiving the incident for future reference.

4. Roles

a. Joint Staff/J-6. The Joint Staff may require inter-area of responsibility (AOR) CCMD cooperation or may coordinate with the State Department for International Affairs when CCMD liaison efforts fail or are not possible. The Joint Staff can request JSC JSIR technical support. The Joint Staff/J-6 will provide status of ongoing efforts to the Military Command, Control, Communications, and Computer Executive Board (MC4EB), via the Frequency Panel (FP) for use in policy development concerning EMS operations.

b. Joint Spectrum Center. The JSC serves as the center for EMI reporting, analysis, and tracking from the initial report through its resolution. The JSC manages the JSIR program, and provides interference resolution support to the unified and JTF commanders, and DoD components. This is accomplished by conducting research and analysis, as well as deploying personnel and equipment to assist C/S/As with on-site resolution of the EMI event, if required. The JSC shall monitor JSIRO to maintain a global awareness of

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developing EMI, and shall monitor SIPRNET e-mail for JSIRO alerts, including requests for JSC assistance. The JSC shall maintain deployable and local tools to assist in EMI resolution. The JSC is responsible for tracking the status of all persistent and recurring EMI problems affecting DoD systems. The JSC, on behalf of the Joint Staff, has Direct Liaison Authority to coordinate, consult, and request information from other involved organizations as deemed necessary to resolve EMI. The JSC may also assist and coordinate with federal and civil authorities when interference is United States and its possessions (US&P)-based, and involves civil spectrum use and U.S. critical infrastructure.

c. National Security Agency (NSA). The Director, NSA (DIRNSA) is the principal signals intelligence (SIGINT) and cybersecurity advisor to the Secretary of Defense, the Director of National Intelligence (DNI), the CJCS, and other national security leaders. As such, DIRNSA is responsible for providing SIGINT support for spectrum-use efforts of the combatant commanders and other commanders as designated by the CJCS. In addition, DIRNSA can task subordinate SIGINT resources to participate in the interference resolution process. NSA shall monitor JSIRO for situational awareness and SIPRNET e-mail for JSIRO alerts.

d. C/S/As

(1) C/S/As develop the necessary instructions and manuals to provide interference resolution guidelines to their respective organizations. C/S/As are responsible for developing local EMI detection, characterization, resolution, reporting, training, and procedures to meet the requirements of this manual. C/S/As shall:

(a) Report (if affected user has not reported), update, and track EMI using JSIRO.

(b) Establish and maintain JSIRO alerts for notification of reports submitted for their action.

(c) Monitor JSIRO for situational awareness and monitor SIPRNET e-mail for JSIRO alerts.

(2) In cases of EMI to terrestrial systems used outside the United States and its possessions (OUS&P), the C/S/A using the affected system is responsible for resolving the interference. When interference from one AOR affects another AOR, the CCMD responsible for the AOR where the interference source is located will support the affected AOR CCMD. If a functional relationship exists, the supporting CCMD will request host nation (HN) assistance to identify the interfering source and resolve the EMI. If no

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relationship exists, Joint Staff will coordinate through State Department channels. Cost of local interference resolution efforts is the responsibility of the affected C/S/A.

(3) In cases of terrestrial interference within US&P, to include satellite downlink interference, the C/S/A owning or operating the affected system is responsible for investigating and resolving the interference. Downlink interference is defined as the part of the transmission link reaching from the satellite to the ground. Funding responsibility is the same as for terrestrial interference. Uplink interference is defined as the part of the transmission link from the earth station to the satellite. DoD funding of uplink interference resolution is the responsibility of the C/S/A providing the operational constellation. U.S. Space Command (USSPACECOM) and the Joint Staff will coordinate funding requirements with the C/S/A. If funding to non-U.S. sources is required, USSPACECOM and the Joint Staff, and the Department of State will coordinate EMI resolution funding.

(4) If the interference cannot be resolved by the affected C/S/A, the C/S/A can request assistance through JSIRO on the JSIR form by specifying the type of assistance being requested.

(5) Implementation and costs associated with recommended EMI fixes are the responsibility of the C/S/A owning the equipment.

(6) Service SMOs are the appropriate offices for Service EMI issues and shall monitor JSIRO for situational awareness and SIPRNET e-mail for JSIRO alerts.

e. Combined Forces Command (CFC) and Joint Task Force. In addition to the above C/S/A responsibilities, the CFC and JTF (through the JEMSOC) may request assistance from the supported unified command, and then the JSC to resolve the EMI.

f. Joint Frequency Management Office (JFMO), JEMSOC, Area Frequency Coordinators (AFCs). JFMOs (if not incorporated into the JEMSOC) are the unified and sub unified command, resources responsible for management of the EMS within their respective AORs. JEMSOC's perform the same function for JTFs. The JFMO and JSME usually report to the command J-6. In addition to the above C/S/A responsibilities, the JFMOs and JEMSOCs are also responsible for requesting and coordinating interference resolution support from the JSC and participating in the JSIR program as mentioned in paragraph 3. AFCs are Service resources responsible for minimizing EMI at, among, and within line-of-sight of national and service test and training ranges.

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g. USSPACECOM. In addition to the above C/S/A responsibilities, USSPACECOM will act as the focal point for incidents of SATCOM interference and electromagnetic attack (EA) affecting DoD space systems, to include spacecraft, ground control sites, and associated user terminals in accordance with reference c. USSPACECOM may request assistance from the JSC and from the Joint Staff J-6 in the resolution of space-related interference or EA. In the event that USSPACECOM receives reports of interference and EA that do not affect DoD space systems, USSPACECOM shall direct the affected C/S/A to submit the report via the JSIRO portal.

h. Combined Force Space Component Command (CFSCC)/Combined Space Operations Center (CSpOC). In addition to the above C/S/A responsibilities, and if EMI has been determined to be hostile, CFSCC/CSpOC will coordinate requests for geo-location with appropriate agencies to locate the origin of satellite interference and initiate Defensive Space Control in accordance with USSPACECOM procedures (reference c pertains).

i. Naval Computer and Telecommunications Area Master Station (NCTAMS), Regional Satellite Communications (SATCOM) Support Center (RSSC), CSpOC, Wideband Satellite Operations Center (WSOC), Network Control Stations (NECOS). In accordance with reference c, the NCTAMS, RSSC, CSpOC, WSOC, and NECOS shall perform, for their respective Supported Commanders, the C/S/A responsibilities specified above for incidents of interference and EA affecting DoD space systems.

j. National Telecommunications and Information Administration (NTIA). NTIA is an agency in the U.S. Department of Commerce that serves as the executive branch agency principally responsible for advising the President on telecommunications and information policies. The Office of Spectrum Management (OSM) is responsible for managing the federal government's use of the radio frequency (RF) spectrum. OSM provides support and measurement capabilities to resolve EMI problems concerning interference among federal agencies and between federal agencies and the private sector.

k. Federal Communications Commission (FCC). The FCC provides support to the DoD with direction finding and assists with EMI issues concerning U.S. civil entities within US&P.

l. Affected Units. Affected units shall report EMI within 48 hours and in accordance with C/S/A procedures.

5. JSIR Process. EMI occurring in an operational environment is to be considered hostile until a determination can be made as to the source of the problem. For EMI affecting Services, interference events are to be handled at

the lowest level possible in the operational chain of command and, if no resolution is possible at that level, are to be elevated up the chain of command, with each higher level attempting resolution. Procedures shall be implemented by the C/S/A, Unified Command, Sub- Unified Command, JTF, and CFC reporting the EMI event to ensure the proper update, maintenance, and closure/resolution of the JSIR record is performed to maintain proper SA. Proper hand-off procedures must be in place to ensure that the transfer of responsibility is assigned as the JSIR report is escalated in the resolution process. The following steps are to be used as a guide when specific C/S/A guidance is not available to resolve interference or potential jamming:

a. Identification and Verification. When EMI is suspected, the unit experiencing the EMI will use the procedures provided in Enclosures D and F to rule out local causes, such as equipment problems, nonexistent/invalid frequency assignments, and space weather.

b. Characterization and Reporting. The C/S/A will attempt to resolve EMI problems at the lowest possible level in the operational chain of command. Interference incidents shall be entered into JSIRO as soon as practicable while resolution using local organic assets or HN assistance is pursued. If circumstances prohibit an affected unit from reporting EMI, local procedures should ensure the EMI is reported to someone who can submit the report using JSIRO. JSIRO and its use are described in Enclosure B. Enclosure B also provides alternatives to reporting in the event of poor or no connectivity. Checklists to assist in making this determination are included in Enclosures F and G and are also posted on JSIRO. Continued efforts to rule out local causes should not delay reporting the interference.

(1) The JSIR report will include details of the problem, the steps taken to resolve the problem, and characterization of the interference signal. The originator of the interference report must classify the report appropriately by evaluating the security sensitivity of the interference on the affected system, and by considering the classification of the text contents.

(2) Guidelines for classifying interference incidents are contained in Enclosure D. Appropriate C/S/As for the report are specified in Enclosure C, and will automatically receive alerts when the incident is reported on JSIRO, and again each time the report is updated. As the report is escalated, with C/S/A attempting to determine the source of the interference, the online report is to be updated with additional details and/or attachments as they become available. If EMI is suspected to be intrusion or jamming, it should be reported immediately and identified as "Suspected Hostile EA" in the JSIR report. JSIRO will issue an immediate alert to the local intelligence directorate (J-2) and appropriate C/S/As.

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c. Geo-location/Direction Finding (DF). Users requiring geo-location or DF services can request these services of their higher command through a JSIR report or update. C/S/A and JTF intelligence collection assets should be used if not prohibited by regulation or treaty. C/S/As shall document organic DF and geo-location capabilities, and the process for tasking. Having local personnel trained and equipped to conduct spectrum analysis decreases the time it takes to identify the interference source at the local level. This will also support Service-level efforts to fund the fielding of spectrum analyzer equipment. Posting this information, or links to it, on the Spectrum Contacts page of JSIRO is required. When C/S/A resources have been exhausted, contact the JSC for analytical, DF, and geo-location support. Updating the JSIR report in JSIRO with an indication that assistance is required will issue an alert to the JSC.

d. Satellite Communications (SATCOM) EMI. DoD Regional Satellite Support Center (RSSC) promulgates a unit's Satellite Access Assignment (SAA) mission number via Joint Integrated SATCOM Tool (JIST). A unit experiencing EMI will be required to submit a JSIRO identifying the EMI. When JSIRO is submitted, RSSC will respond by issuing a new or modified SAA. For units not submitting a JSIRO, RSSC will not take action or issues a new SAA.

e. Resolution. Resolution may require a change of frequency, a physical separation of interfering transmit and victim receive antennas, additional transmit/receive filtering, or other technical fixes. The resolution process depends on where the affected system and interference source are located, who owns the affected system and interfering source, and who uses the affected system and interference source, as specified below and illustrated in Figures A-1 through A-3. The originator of the report, the JSC, the CCMD JEMSOC, supporting EMSOCs, and interested parties will be kept informed by JSIRO as to the progress of the interference investigation through direct communication (for expediency) and SIPRNET e-mail alerts when the record is updated to document the resolution process.

f. US&P Terrestrial EMI Resolution. In cases of terrestrial interference within US&P, the C/S/A owning or operating the affected system will be responsible for resolving the interference, depending on the interference source.

(a) When the interfering signal emanates from a DoD unit, appropriate C/S/As will coordinate with appropriate frequency management authorities to resolve the problem.

(b) When the interfering signal emanates from a U.S. Government (USG) source other than the DoD, the affected C/S/A will coordinate the

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interference resolution with the USG agency responsible for the interference source. Joint Staff (J-6) intervention may be required if inter-C/S/A coordination fails.

(c) When the interfering signal emanates from a civil source, the affected C/S/A will coordinate a resolution with the FCC. The cost of implementing resolution measures will be the responsibility of the C/S/A that owns the affected system.

g. OUS&P Terrestrial EMI Resolution. The following actions are to be taken depending on the origination of the interfering signal:

(a) When the interfering signal emanates from DoD operations, the CCMD or JTF will coordinate with appropriate frequency management authorities to resolve the problem.

(b) When the interfering signal emanates from a coalition, or HN transmitter, the CCMD or JTF will coordinate with the appropriate CCMD for resolution. In cases where the CCMD is unable to coordinate with the coalition or HN frequency management authorities, the Joint Staff/J-6, with notification to the Joint Staff/J-6 Spectrum Branch, will act as the focal point for resolution with assistance from the CCMD, JSC, and the Department of State.

(c) When the interfering signal emanates from a USG source other than the DoD, the CCMD or JTF will coordinate the interference resolution with the USG agency responsible for the interference source.

(d) When the interfering signal emanates from a jammer (DoD or non-DoD), the JSC, and the Joint Staff/J-6/J-2/J-3 Deputy Director for Information Operations (DDIO) will respond to the CCMD or JTF to provide further action and assistance.

Figure A-1. US&P Terrestrial JSIR Process

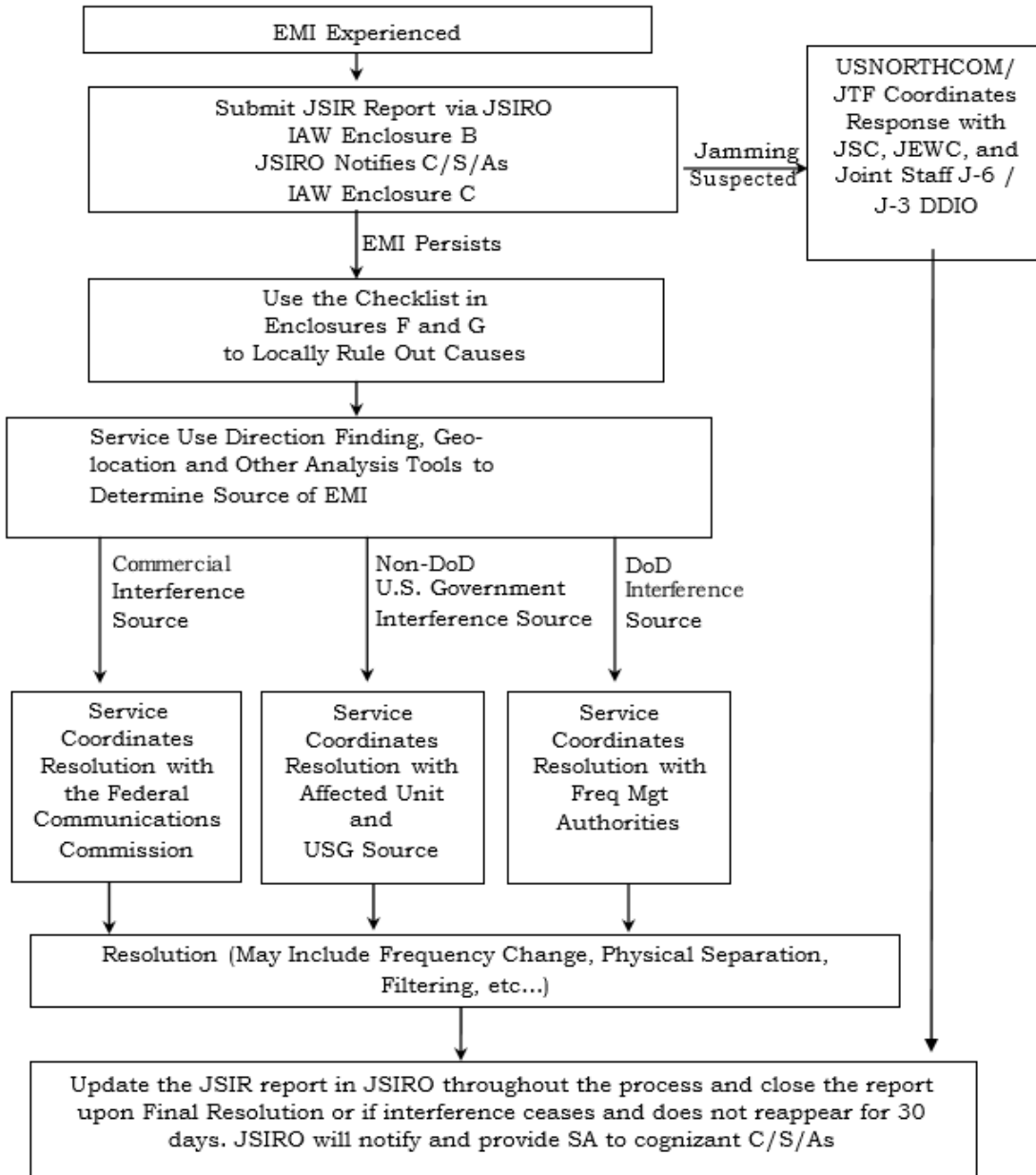


Figure A-2. OUS&P Terrestrial JSIR Process

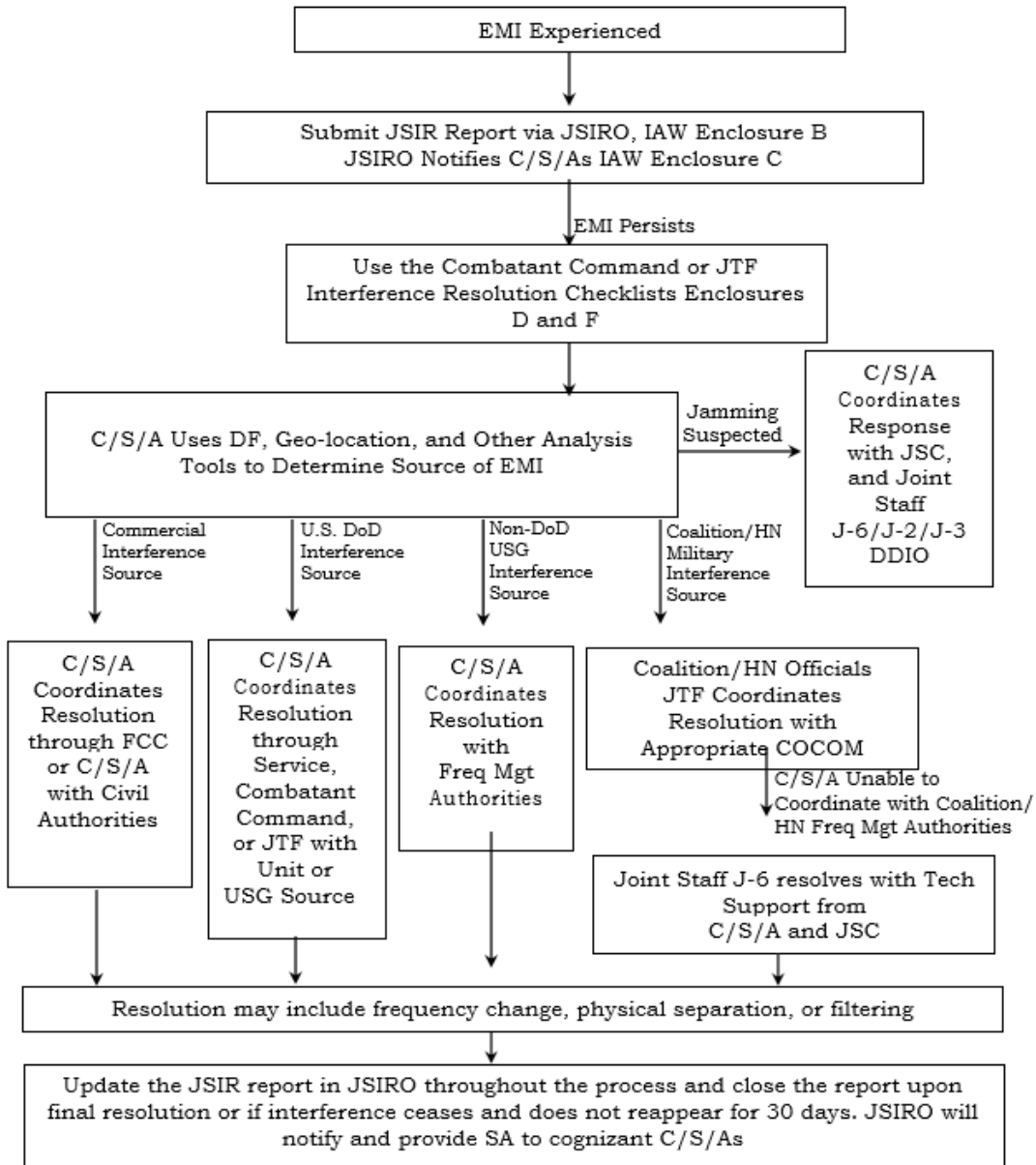
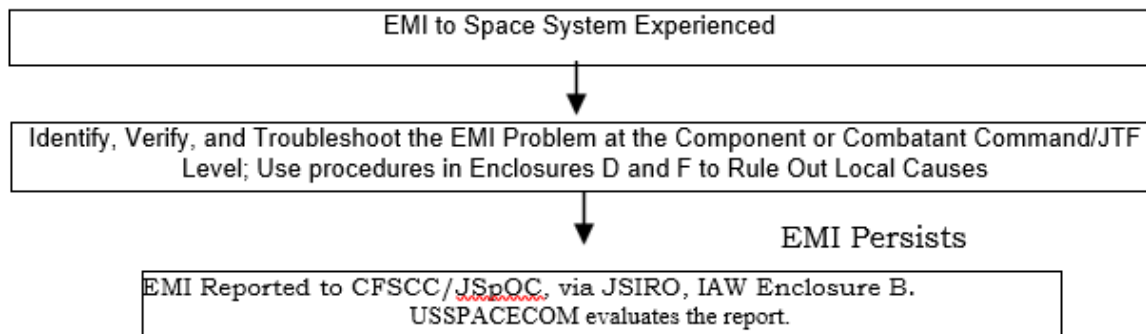


Figure A-3. Space System EMI Resolution Process



h. Satellite Uplink EMI Resolution. Satellite systems are defined for the purposes of this manual as SATCOM systems, the Global Positioning System (GPS), and other space systems. SATCOM systems are DoD owned and/or contracted and operated satellite assets used for voice or digital communications supporting military operations, including the ground, space, and telemetry, tracking, and commanding (TT&C) systems. Other space systems include systems such as the Defense Support Program.

(1) There are three categories of EMI to satellite systems: (1) EMI isolated to the uplink, (2) EMI isolated to the downlink, and (3) EMI isolated to crosslinks. EMI isolated to the downlink is considered to be terrestrial interference and the above procedures for terrestrial EMI resolution apply. EMI isolated to uplink and crosslink segments are distinctly different and fall under the following procedures:

(2) In the event of EMI to a satellite communications uplink, the CSpOC is the first responder and will direct other agencies to support in the resolution process. Duties and responsibilities to report EMI detected on the uplink frequencies shall be carried out in accordance with reference c, and through JSIRO in accordance with Enclosure C. Both uplink and downlink EMI shall be submitted in JSIRO to centrally track all EMI, provide the basis for future analysis supporting the fast identification of hostile EA, and restore operation. Situational awareness of both uplink and downlink EMI is required by the Joint Staff/J-3 and J-6 regarding all EMI being reported.

i. Source Location Determines Responsibility for Coordination. Once the geographic area of the interference source is identified (and depending on the area), coordination through the CCMD responsible for the geographic area of

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the interference source may be requested to initiate discussions with the interference source owner.

j. Interference Source within US&P. When the interference source is determined to be within US&P, USSPACECOM/CFSCC will be contacted and requested to coordinate and resolve the interference.

k. Interfering Signal Emanates from a DoD Unit. The supporting Satellite Support Center will coordinate with the supported geographical CCMD(s) to resolve the event.

l. Interfering Signal from a USG Source Other than the DoD. The JSC and/or Joint Staff (J-6) will coordinate the interference resolution with the affected C/S/A and the government agency responsible for the interference source. If the interference cannot be resolved directly with a federal agency, the interference should be brought to the attention of the NTIA.

m. Interfering Signal Emanates from a U.S. Civil Source. The JSC and/or Joint Staff will coordinate a resolution solution with the FCC.

n. Interference to a US&P C/S/A Originating from OUS&P. CFSCC will coordinate a response with the CCMD responsible for the geographic area where the interference source is located. If direct military-to-military coordination with the HN is not possible or is not likely to result in successful resolution of the EMI, the Joint Staff will initiate coordination with the HN through USSPACECOM and Department of State channels. The Joint Staff will also adjudicate any CCMD differences over the resolution of the interference or jamming.

o. EMI Originating from a RF Jammer. USSPACECOM will contact the JSC, and the Joint Staff/J-6/J-3 DDIO (at a minimum) for further action and assistance.

p. GPS EMI Resolution. When interference is detected on a GPS frequency, the interference will be reported immediately through JSIRO to the GPS Operations Center for further analysis to determine if the EMI is related to a satellite outage.

q. EMI Not Due to Satellite-wide Outage. If the GPS Operations Center determines the interference is not related to a satellite outage, the JSIR will be updated and the local frequency manager will assume responsibility for resolution.

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r. Interfering Signal Emanates from US&P. USSPACECOM and USNORTHCOM will be notified via JSIRO and requested to help resolve the EMI.

5. Laser Event Reporting. The National Air and Space Intelligence Center (NASIC) will collect and maintain data on laser events against air, ground, and naval assets to include personnel. Data collection on laser events is necessary to understand the nature of the threat and to develop countermeasures. DoD components will report laser incidents through a reporting process administered by NASIC. DoD components may report through the Avionics Directed Energy Branch with reports and questions at the following numbers:

Commercial: 937-522-4820/4818/4885/4817

DSN: 672-4820/4818/4885/4817

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ENCLOSURE B

JSIR REPORT GUIDE

1. General. The intent of the JSIR program is to keep the reporting procedures as simple as possible to allow a report to be submitted quickly and concisely, early after the troubleshooting stage of resolution, and with enough information so that the analysts, action officers, and intelligence officers can begin resolving the interference upon receipt of the report.

a. The operator or user experiencing the interference is responsible for submitting the initial EMI report. To expedite the detection of EA and the restoration of communication, as well as increase SA for all, the reporting of interference shall occur via the JSIRO collaboration portal, developed for this purpose. JSIRO is a Web-based, centralized application containing data and correspondence for reported EMI, intrusion, and jamming incidents, dating back to 1970.

b. JSIRO is the repository for the results of analyses, collected data, and supporting documentation for EMI resolution to support both trend and future interference resolution analysis. JSIRO can be accessed on Intelink at references e and f.

2. Report Format. There are two report formats: online format, using JSIRO, and off-line format, using a spreadsheet. C/S/As or individual units that are unable to report EMI using either of these two formats will be assisted on a case-by-case basis, by the JSC.

a. Online Report Format. When reporting online, JSIRO prompts the user for required information using a fill-in-the-blank form. Check boxes and drop down menus supply choices where possible, and space is provided for free text. Text from e-mail and other documents can be copied and included into the JSIRO report, and/or can be added as attachments. Submitted reports can be updated as further information becomes available. The formatting of each item is handled by the portal in three ways: (1) providing only allowable choices, for entries such a security classification, (2) giving error messages if required items, which have an asterisk on the form, are left blank, and (3) giving error messages if items are entered in the wrong format (correct formats are indicated next to the entry point for each item, e.g., frequency must only contain numbers).

b. Offline Report Format. The spreadsheet format is intended to be used when access to the online is not possible, to document EMI events until access is restored. A downloadable spreadsheet format template and instructions are

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available at JSIRO. Using this format enables creation of JSIR reports for later import onto the portal. The downloadable template format is given below. Note that the columns must be limited to and in exactly the same order as follows:

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

*Required item

**At least one of these items is required

These items are further defined in section 3, Report Content. Unless otherwise indicated above, no special formatting is required.

3. Report Content

a. Description of Affected System

(1) AFFECTED SYSTEM: Include function, name, nomenclature, manufacturer with model number, equipment characteristics of the affected receiver, such as receiver bandwidth, antenna type/size, and information about any installed frequency band filters. For commercial SATCOM, include affected satellite, satellite location (east or west longitude), transponder ID, uplink frequency, downlink frequency, and downlink polarization.

(2) FREQUENCIES AFFECTED: If satellite, then include uplink frequencies, downlink frequencies, and satellite channel(s).

(3) NETWORK CONTROL STATION & PRINCIPAL USER(s): Users and network circuits affected by the interference. This information may be used to determine the priority of the restoration attempts.

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(4) OTHER STATIONS/UNITS EXPERIENCING INTERFERENCE: Other stations or units affected by the interference; include geographical location, coordinates, and line-of-bearing and distance from reporting site.

(5) LOCATION OF AFFECTED SYSTEM(S): Location of system(s) affected by the interference, i.e., latitude, longitude, and site name.

(6) OPERATING MODE: Operating mode of the affected system, if applicable (frequency agile, pulse Doppler, search, upper/lower sideband, etc.). For commercial SATCOM, include the user's signal bandwidth (MHz) and whether digital or analog.

(7) GPS AFFECTED: Indicate if the interference affects GPS reception.

b. Characterization of EMI

(1) INTERFERENCE FREQUENCY, BANDWIDTH, AND SIGNAL STRENGTH: Record the frequency and bandwidth (in kHz, MHz, etc.) at which the EMI is most apparent and the EMI signal strength (in dBm, dBW, etc.).

(2) INTERFERENCE CHARACTERISTICS: CONTINUOUS, INTERMITTENT, RANDOM, or CHARACTERISTIC pattern; VARIED or CONSTANT amplitude; NOISE and/or PULSED. Include any other information that may assist in determining the source of the problem. For commercial SATCOM, does the interfering signal appear to be modulated? If so, include the downlink bandwidth and power of the interfering signal (MHz) and whether power and/or frequency are steady or varying. If the power is varying, is it pulsing or slow increase/ decrease? If the frequency is varying, sweeping, or erratic, include the center of the swept bandwidth and the bandwidth affected (both in MHz). To assist with determining potential source request submitter provide audio recording (when feasible) of actual EMI heard, as many devices/sources produce a characteristic sound.

(3) SYSTEM IMPACT AND CIRCUIT RELIABILITY: Description of interference effects on performance, e.g., one or more of the following: usable or unusable for data or voice, garbled, frame loss, steady receive indication, reduced range, false targets, reduced intelligibility, data errors, etc. For commercial SATCOM, if the user's signal is digital, provide the bit error rate (BER) before the event and the worst case BER during the event.

(4) INTERFERENCE CAUSE(S) AND SOURCE(S): For example, solar weather, atmospheric conditions, terrestrial or structural blockage, stuck carrier or cryptographic phase, another unit (include unit name, geographical coordinates, and line-of-bearing and distance from reporting site, if available).

For commercial SATCOM, does it appear that the user's signal is the focus of the interfering signal? Is this the first event of this nature on the user's signal?

(5) DATES AND TIMES: Give the dates and times of the interference commencement and cessation, or indicate "ongoing." Indicate whether the duration of the interference is continuous or intermittent, the approximate repetition rate of the interference, and whether the amplitude of the interference is varying or constant. Indicate if the interference is occurring at a regular or irregular time of day, and if the occurrence of the interference is coincident with any ongoing local activity.

c. Resolution

(1) SPECIFIC ACTIONS TAKEN TO MITIGATE, NULLIFY, IDENTIFY SOURCE(S) OF & RESOLVE INTERFERENCE: Include clear, concise description of steps taken to mitigate or nullify, isolate source(s) of, and resolve interference. Add additional narrative of anything else known or suspected about interference that might be helpful in technical analysis. Specify whether assessment is based on technical measurement, observation, or estimation.

(2) RESOLUTION STATUS: Indicate whether the problem has been identified and resolved.

(3) REQUEST FOR RESOLUTION ASSISTANCE: Indicate if technical assistance is desired or anticipated by the DoD component; request should be directed to operational chain of command. Include recommendation for specific action.

d. Additional Information. Include anything not addressed in previous paragraphs.

4. Distribution and Feedback. JSIRO provides an automated distribution and feedback capability that alerts appropriate C/S/As and EMI victims via e-mail when JSIR reports are submitted or updated.

a. Responsible C/S/As are determined based on the type of JSIR report, as specified in Enclosure C. Responsible C/S/As shall set up alerts based on the type of report, so that they will automatically be notified of reports submitted for their action or SA.

b. JSIRO alerts can be created and customized by users. Units reporting are encouraged to use this mechanism to track progress, and C/S/As are encouraged to use this mechanism to automate local procedures. C/S/As are

responsible for monitoring and responding to alerts, as specified in the Enclosure A and Enclosure C.

5. Reporting Guidelines

a. Every effort should be made to complete as much of the required information as possible in the initial report. However, the search for information should not delay the timely transmission of a report. Instead, update the online report to provide additional information as it becomes available.

b. EMI reports shall be submitted using JSIRO. The portal provides the proper distribution of the reports, based on alerts managed by responsible C/S/As.

c. Local procedures shall name the office/group/action officer responsible for reporting, updating, and closing reports in the JSIRO collaboration portal, and may delegate/allow reporting at lower operational levels.

d. All EMI will be reported regardless of type, frequency, occurrences or source. This will supplement the JSIRO repository, which can be used to determine trends in the area of interference and to resolve future similar incidents.

e. Do not use C/S/A or program-specific terminology, acronyms, or abbreviations in the report. Terminology differences between the C/S/As can create confusion and misunderstanding.

f. No reporting shall occur via unclassified means, such as NIPRNET.

g. Only the unified theater commander endorses a JSIR report to higher authority outside the theater of operations.

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Enclosure B

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ENCLOSURE C

JSIR REPORT RECIPIENTS

1. Background. DoD EMI reports are to be submitted via JSIRO. When a report is submitted, JSIRO will issue e-mail alerts to appropriate C/S/As. Appropriate C/S/As shall monitor e-mail and respond to these alerts, updating the report online as resolution progresses. Appropriate C/S/A for each category of reports is specified below. JSIRO is accessible in accordance with Enclosure B.

2. Recipients. C/S/A and local procedures shall identify appropriate recipients to maintain accounts for JSIRO. The following “For Action” recipients will automatically be notified by JSIRO of incidents reported as designated in each of the categories specified below. “For SA” recipients shall set up JSIRO alerts in accordance with local procedures; with the JSC assisting upon request. C/S/As will semi-annually review and update the Action and SA points of contact on the JSIRO collaboration portal spectrum contacts page.

a. CCMD, JTF, or Service Requests for JSC JSIR Support

For Action: JSC

b. Reports Affecting Satellite Communications Links

For Action:

JSC

USSPACECOM J36/J361/J362

RSSC West

RSSC East

RSSC Europe RSSC Pacific

CSpOC/SIOD

C-SSEs

JOINT STAFF J6 (Priority One and JCS channels)

For SA:

Chain of command of reporting unit Local Spectrum Manager

Appropriate Area Frequency Coordinator (CONUS EMI)

Supporting satellite operations center

CSpOC

CMOC SCC Cheyenne Mountain AFS, CO

Military Department POC

Appropriate CCMD or JTF JEMSOC

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DSCS NETWORK MANAGER Washington, DC (DSCS interference only)
HQ AFWA Offutt AFB, NE – XOGS (Space weather and other natural phenomena effect issues only)

DIRNSA Ft George G Meade, MD - S33/S35/S331/S33152/S35155

DIA Washington, DC

TWI - 3A/CL/DCCC SCO

DISA Washington DC - D314-1/TWI-3A/D34-F (DSCS)

DISAGNOSC Washington, DC (DSCS & commercial)

DISA EUR Vaihingen, Germany – RNOSC (DSCS & commercial)

DISA PAC Wheeler AAF, HI – RNOSC (DSCS & commercial)

DISA Scott AFB, IL - RNOSC

HQ SpOC DCG-O S3/6CR (Spectrum) Peterson AFB, CO

NAVNETWARCOM Norfolk, VA - N3/N32

FLTCYBERCOM/10th FLT Ft George G Meade, MD - N6

NMCSO San Diego CA

CNO Washington, DC N71

CMC Washington, DC C4 (SC)

NAVMARSPECCEN Fort George G Meade MD

ARMY SPECTRUM MG- Fort George G Meade, MD - SAIS-AOS-O

AFSMO Fort George G Meade, MD – SQ

JOINT STAFF Washington, DC - J6 (For the appropriate region)

JCMA Ft George G Meade, MD - X52/X524/PISCES

BAD AIBLING STATION Bad Aibling, Germany - F7633/FIREBACK

CDR MENWITH HILL STATION Harrogate, UK - F773C/SPRINKLER

NCPAC Honolulu, HI - F405/WATERCUP

NCTAMS EURCENT Naples, IT - N3/N30/JFTOC

NCTAMS LANT Norfolk, VA - N3/N31/JFTOC

NCTAMS PAC Honolulu, HI - N3/N35/JFTOC

NMCSO CENT Bahrain

NMCSO EUROPE Naples, IT

NMCSO LANT Norfolk, VA

NMCSO PAC Honolulu, HI

NMCSO Puget Sound, WA

HQ USEUCOM Vaihingen, Germany - JFMO/ECJ63

Communications Squadron/Facility (as appropriate to affected and adjacent areas)

85 EIS Keesler AFB, MS – SCYM

c. Reports Affecting GPS Space Systems

For Action:

CSPOC OPS

GPS OPERATIONS CENTER

SPACEAF - A3/A33

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For SA:

Chain of command of reporting unit

Local spectrum manager

Appropriate area frequency coordinator

CSPOC OPS

CMOC SCC Cheyenne Mountain AFS, CO

JSC

CNO Washington, DC - N71

NAVMARSPECEN WASHINGTON, DC (SC)

CMC Washington, DC C4 (SC) J3

HQ AFWA Offutt AFB, NE – XOGS (Space weather and other natural phenomena effect issues only)

Appropriate CCMD or JTF JEMSOC

DIRNSA Fort George G Meade, MD - S33/S35/S331/S33152/S35155

DIA Washington, DC - TWI-3A/CL/DCCC SCO

d. Reports Affecting Other Space Systems

For Action: CSPOC OPS

For SA:

Chain of command of reporting unit

Local spectrum manager

Appropriate area frequency coordinator

NRO Washington, DC - COM/OSF

CMOC SCC Cheyenne Mountain AFS, CO

JSC

CNO Washington, DC N71 (USN)

CMC Washington, DC C4 (SC)

35 SPACE DIVISION USSPACECOM (SC)

Military Department POC

Appropriate CCMD, JTF, or JEMSOC

HQ AFWA Offutt AFB, NE - XOGS

DIRNSA Ft George G Meade, MD - S33/S35/S331/S33152/S35155

DIA Washington, DC - TWI-3A/CL/DCCC SCO

AFSMO Fort George G Meade, MD – SQ

ARMY SPECTRUM MGT- Fort George G Meade - SAIS-AOS-O (for USA incidents)

NAVMARSPECEN Fort George G Meade MD

85 EIS Keesler AFB, MS – SCYM

e. Reports of Suspected Jamming or Hostile Electromagnetic attack

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For Action:
JSC
CSPOC OPS

For SA:
Joint Staff Washington, DC - J6
CMOC SCC Cheyenne Mountain AFS, CO
JEWIC San Antonio, TX - EW
DIRNSA Fort George G Meade, MD - S33/S35/S331/S33152/S35155
DIA Washington, DC - TWI-3A/CL/DCCC SCO
AFSMO Fort George G Meade, MD - SQ
ARMY SPECTRUM MGT- Fort George G Meade, MD - SAIS-AOS-O (for USA incidents)
NAVMARSPECCEN Washington, DC (USN/USMC)
CNO Washington, DC N71 (USN)
CMC Washington, DC C4 (SC)
USSPACECOM Offutt AFB, NE - J3 DIR GLOBAL
Military Department POC
Appropriate CCMD or JTF JSM
HQ AFIIWC Kelly AFB, TX
DISA Washington, DC - D34-F
HQ AFIIWC Kelly AFB, TX
COMNAVSPACECOM Dahlgren, VA - N33
NCTAMS EURCENT Naples, IT - N3/N30/JFTOC
NCTAMS LANT Norfolk, VA - N3/N31/JFTOC
NCTAMS PAC Honolulu, HI - N3/N35/JFTOC
Communications Squadron/Facility (for appropriate to affected and adjacent areas)
HQ SpOC DCG-O S3/6CR Peterson AFB, CO
COMARSPACE Colorado Springs, CO - SMDC-AR-OS
NMCSO CENT Bahrain
NMCSO EUROPE Naples, IT
NMCSO LANT Norfolk, VA
NMCSO PAC Honolulu, HI
NMCSO Puget Sound, WA
NMCSO San Diego, CA
85 EIS Keesler AFB, MS - SCYM
HQ USEUCOM Vaihingen, Germany - JFMO/ECJ3

f. Reports Affecting US&P Terrestrial Systems

For Action:

AFSMO Fort George G Meade, MD – SQ

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ARMY SPECTRUM MGT
NAVMARSPECCEN
CMC WASHINGTON DC C4 (SC)
USNORTHCOM J6
CSPOC OPS

For SA:

JSC
CNO Washington, DC - N71
DA Washington, DC - DAMO-FDC
HQ USAF Washington, DC - XOFE/XORR
CMC Washington, DC - C4 (SC)
COMDT COGARD Washington, DC
NAVNETWARCOM Norfolk, VA - /N3/N32
FLTCYBERCOM/10th FLT Fort George G Meade, MD - N6
NAVMARSPECCEN Washington, DC
ARMY SPECTRUM MGT- Fort George G Meade, MD - NETC-EST-TS
AFSMO Fort George G Meade, MD - SQ
HQ AFIWC Kelly AFB, TX
SPAWARSYSCEN San Diego, CA - D841
JFMO PAC Honolulu, HI - J653
NMCSO LANT Norfolk, VA
NMCSO PAC Honolulu, HI
NMCSO Puget Sound, WA
NMCSO San Diego CA
85 EIS Keesler AFB, MS - SCYM
affected and adjacent regional FLTCYBERCOM/10th FLT activities
AFISR Agency/A4MY, San Antonio, TX
USAINSCOM/IALO-E, Fort Belvoir, VA

g. Reports Affecting OUS&P Terrestrial Systems

For Action:

Appropriate CCMD/JTF JSME CSPOC OPS

For SA:

Chain of command of reporting unit Local spectrum manager
JSC
CNO Washington, DC - N71
DA Washington, DC - DAMO-FDC
HQ USAF Washington, DC - XOFE/XORR
MAJCOM/MACOM frequency management authorities
CMC Washington, DC - C4 (SC)
COMDT COGARD Washington, DC

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NAVNETWARCOM Norfolk, VA - N3/N32
FLTCYBERCOM/10th FLT Fort George G Meade, MD - N6
NAVMARSPECCEN Washington, DC
ARMY SPECTRUM MGT- Ft George G Meade, MD //NETC-EST-TS
AFSMO Fort George G Meade, MD - SQ
HQ AFIWC Kelly AFB, TX
SPAWARSYSCEN San Diego, CA - D841
JFMO PAC Honolulu, HI - J653
NMCSO CENT Bahrain
NMCSO EUROPE Naples, IT
NMCSO PAC Honolulu, HI
85 EIS Keesler AFB, MS - SCYM
HQ USEUCOM Vaihingen, Germany - JFMO/ECJ3
Affected and adjacent regional NAVSECGRU activities
AFISR Agency/A4MY, San Antonio, TX
USAINSCOM/IALO-E, Fort Belvoir, VA

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ENCLOSURE D

SECURITY CLASSIFICATION

1. Guidelines. Security classification of interference incidents and reports is determined principally by nationality and location of the implied or stated source of the interference and the security sensitivity of the affected military system. Stations located in combat areas or having a sensitive military mission generally must classify all interference reports. The following are guidelines for classifying interference incidents and reports:

a. The specific identification of an unfriendly platform or location by country or coordinates as the source of interference or EW will be classified as SECRET. Category: 1.4(c), reference g.

b. Specific susceptibility or vulnerability of U.S. electromagnetic equipment and systems will be classified at a minimum level of SECRET. Category: 1.4(g), reference h. The classification guide for the affected system should be consulted for specific guidance.

c. Parametric data of classified U.S. electromagnetic equipment and systems will be classified in accordance with the classification guide for the equipment affected. Classify correspondence equal to the security category assigned to the affected system.

d. Suspected interference from unidentified sources while operating in or near hostile countries will be classified SECRET. Category: 1.4(g), reference h.

e. Interference to U.S. electromagnetic equipment and systems caused by EW exercises in foreign nations will be classified as CONFIDENTIAL. Category: 1.4(g), reference h.

f. Suspected interference from friendly sources can be treated as UNCLASSIFIED unless it reveals a specific system vulnerability, in which case it will be classified at a minimum level of SECRET. Category: 1.4(c), reference h.

g. Suspected interference from unknown sources will be classified at a minimum level of CONFIDENTIAL. The classification guide for the affected system should be consulted for specific guidance.

h. References to JSIR and stating that JSIR analyses are a function of the JSC, is UNCLASSIFIED.

2. Duration of Classification

a. In accordance with Executive Order (EO) 13526 at the time of original classification, the original classification authority shall attempt to establish a specific date or event for declassification based upon the duration of the national security sensitivity of the information. Upon reaching the date or event, the information shall be automatically declassified. The date or event shall not exceed the time frame established in paragraph b.

b. If the original classification authority cannot determine an earlier specific date or event for declassification, information shall be marked for declassification 10 years from the date of the original decision, unless the original classification authority otherwise determines that the sensitivity of the information requires that it shall be marked for declassification for up to 25 years from the date of the original decision.

ENCLOSURE E

ESSENTIAL RESOURCES AND POINTS OF CONTACT

1. Resources

- a. General EMI Resolution Support. The U.S. Air Force's (USAF) interference reduction services are provided by the 85th EIS.
- b. EMI Resolution Support for the Warfighter. JSC support to determine the source of the interference is provided at no cost to the warfighter.
- c. EMI Resolution Support for Naval Surface Ships and Submarines. The U.S. Navy provides funding for the rapid deployment of EMI teams, interference resolution, and quick fix installation of EMI solutions for all surface ships and submarines via the Naval Sea Systems Command (NAVSEA) and the Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP). The travel costs associated with deploying these NAVSEA SEMCIP services are funded by the SEMCIP program.
- d. EMI Resolution Support to Naval Aviation Units. The U.S. Navy provides funding for technical assistance with fleet-experienced EMI for all naval aviation units via the Naval Air Systems Command (NAVAIR) and the Air Systems EMI Corrective Action Program (ASEMICAP). Costs associated with NAVAIR ASEMICAP EMI resolution services are funded by ASEMICAP.
- e. Electromagnetic Space Analysis Center (ESAC). ESAC (reference h) serves as a DoD focal point for ALL-SOURCE intelligence support to the EW customer striving to provide users with any potential means of access to the EW target. ESAC is located at NSA and can provide access to other SIGINT organizations in support of EMI/EW issues.
- f. NSA Spectrum Services. NSA Spectrum Services (SS) is the focal point within NSA/CSS for spectrum management oversight, associated policy, procedures, spectrum-related all-source intelligence, programs and planning. Spectrum Services manages, reports, tracks, analyzes and protects NSA/CSS' RF spectrum equities, enabling and enhancing RF operations, ensuring compliance and compatibility, preventing interference and encroachment of spectrum users, ensuring effective and efficient use of electromagnetic frequency spectrum and minimizing impact to other federal, DoD, civil, commercial and international users.

2. Joint Spectrum Center

JSC Help Desk, JSIR Team and Duty Officer

Phone number: (410) 293-HELP (4357)/9850/9819

DSN 281

NIPRNET: disa.annapolis.dso.list.jsc-j3-vault-ops@mail.mil

SIPRNET: jscoperations@disa.smil.mil

JWICS: operations@jsc.ic.gov

NIPRNET: <http://www.disa.mil/Services/Spectrum/Occupational-Support>

SIPRNET: <http://intelshare.intelink.sgov.gov/sites/jsir>

JWICS: <http://intelshare.intelink.ic.gov/sites/jsir/default.aspx>

3. USSPACECOM/GPS Operations Center

Phone number: DSN: 560-2541 or commercial: (719) 567-2541 (after hours, calls are forwarded to 2SOPS @ DSN 560-2461)

SIPRNET: gps_support@spacecom.smil.mil

NIPRNET: gps_support@scheiver.af.mil

4. USSPACECOM/CSPoC

Phone number: DSN 275-9999 or commercial (805) 605-9999

SIPRNET: CSpOCCFP.OMB@afspc.af.smil.mil

NIPRNET: CSpOCCCombatOps@vandenbergh.af.mil

JWICS e-mail: CSpOCCCombatOps@14af.ic.gov

Website: <http://jfccspace.afspc.af.smil.mil>

5. Air Force Space Weather Center

DSN 272-8070 Comm (402) 232-8070

NIPRNET: space@afawa.af.mil7. E-Space Help Desk

SIPRNET: espace_helpdesk@smil.mil

JWICS: espace_helpdesk@nsa.ic.gov

Phone number: (DSN) 689-6327, (NSTS) 966-6327, and (Comm) 443-479-6327

6 US Army SMDC/ARSTRAT: Space Operations Coordination/SATCOM EMI Team

COMM: 719-554-6883, DSN: 692-6883

Email: usarmy.peterson.smdc.mbx.satcom-emi@mail.smil.mil

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7. Combined Space Operations Center (CSpOC) EMI Duty Operator (EDO)

COMM: 805-605-6540

Email: usaf.vandenberg.afspc.mbx.cspoc-edo@mail.smil.mil

8. Joint Navigation Warfare Center (JNWC)

DSN: 263-0549 (STE)

COMM: 505-853-0549 (STE)

TSVoIP: 919-6111

SVoIP: 302-513-3968

Email: usaf.kirtland.afmc.mbx.joint-navigation-warfare-center@mail.smil.mil

Website: <https://intelshare.intelink.sgov.gov/sites/jnwc/default.aspx>

9. JNWC Homepage for EMI Trends Analysis

Website: <https://cognos.titan.nga.smil.mil/jnwc/home>

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Enclosure E

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ENCLOSURE F

EMI CHARACTERIZATION AND RESOLUTION AT THE LOCAL LEVEL

Table F-1 is an example of steps to resolve EMI locally.

Table F-1. Local EMI Resolution Example Checklist

STEP	ACTION	COMPLETE Y/N
001	Start a log and collect as much information as possible.	
001-01	Determine if EMI poses a safety hazard. If determined, immediately contact C/S/A safety department representatives.	
002	Record what interference sounds like. If appropriate measurement equipment is available, an attempt should be made to quantify the characteristics of the interference signal. These characteristics include the interfering source center frequency, bandwidth, relative amplitude, modulation, direction of interference, time of occurrence, and any other characteristics that can be obtained.	
003	Geographical Information	
003-01	Check with other units in the geographical area to determine the area affected.	
003-02	Verify exact location of receiver using GPS, if available.	
004	Determine interference start and stop times.	
005	Ensure affected system is operating correctly.	
005-01	Ensure all connectors are tight.	
005-02	Ensure antenna cables are in good condition.	
005-03	Have maintenance personnel ensure equipment is operating IAW technical manual specifications and frequency assignment parameters.	

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006	Verify antenna is on the correct azimuth and elevation.	
007	Environment Information	
007-01	Contact all nearby units to determine if there is any recently installed equipment.	
007-02	Contact organizational Electromagnetic Warfare Officer (EWO) to determine if new equipment has been installed or operating characteristics have changed. If air or ground EA assets are suspect, validate with spectrum analyzer and have EWO validate. Develop electromagnetic protection (EP) plan for your emitter(s) to mitigate EA effects.	
007-03	Check with equipment maintenance personnel to determine if the interference is the result of maintenance actions or an equipment malfunction. This should include non RF equipment that can cause spark-type interference used to support the operation of RF equipment (e.g., thermostat-controlled devices, electric motors, welders, etc.)	
007-04	If possible, conduct a site survey looking for other users and environmental considerations that may impact affected emitter, e.g., power lines, UAS launch platform in line of site of combat convoy marshaling area.	
007-05	Check to see if construction is being conducted in the immediate area.	
007-06	Determine whether the natural environment is the cause of the problem; see Enclosure F.	
008	Frequency Assignment Information	
008-01	Verify through C/S/A component or JTF spectrum manager that a valid frequency assignment.	
008-02	If no assignment exists, cease transmission and request valid frequency.	
008-03	If valid assignment exists, change to alternate frequency and determine if interference is present. If interference is to a satellite communications system, skip to step 9.	
008-04	If a valid assignment exists and the interference goes away after changing to an alternate frequency, submit an interference report through next higher headquarters and info JSC.	
008-05	Where co-channel or adjacent channel interference is suspected (i.e., the interfering signal overlaps the operating bandwidth of the victim receiver), check with local and area frequency management personnel to determine if other locally operated equipment has been recently assigned a co-channel or adjacent channel frequency.	

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009	Satellite Communications Interference for SATCOM	
009-01	<p>For SATCOM EMI events follow the CSpOC Local EMI Checklist Section located at:</p> <p>http://portal.eis.afspc.af.smil.mil/unit/jtf_gno/emi/REFERENCES/Forms/AllItems.aspx</p> <ul style="list-style-type: none">• UHF checklist can be found in Section 1.1.1 on table 1.1• Commercial checklist can be found in Section 1.1.2 on table 1.2• SHF/WIDEBAND SATCOM EMI checklist can be found in Section 1.1.3 on table 1.3• EHF checklist can be found in section 1.1.4 on table 1.4	
009-02	<p>If the problem is not resolved locally, the user/operator continues with the EMI resolution procedures as per USSPACECOM Instruction (SPI) 3250.01A located at:</p> <p>http://portal.eis.afspc.af.smil.mil/unit/jtf_gno/References/Forms/AllItems.aspx</p> <ul style="list-style-type: none">• Paragraph 3.5. - UHF SATCOM EMI Resolution Procedures• Paragraph 4.4. - Commercial SATCOM EMI Resolution Procedures• Paragraph 5.4. - Wideband SATCOM EMI Resolution Procedures.• Paragraph 6.4. - EHF SATCOM EMI Resolution Procedures.	
010	<p>Intentional or Unintentional</p> <p>For detailed checklists regarding whether or not the interference is intentional, please follow the JSIR links kept by the JSC at the J-32 Space and Intel pages at http://jsc.disa.smil.mil for both SIPRNET and JWICS.</p>	
011	General Characterization	
011-01	<p>Determine if the following are true to help characterize the interference:</p> <ul style="list-style-type: none">• The interfering signal is encrypted.• The interfering signal is understandable, e.g., voice.• Note all settings (demods, bandwidths, gains, etc.) of your receiver equipment that enabled you to hear intelligible information on the interfering signal.• The interfering signal appears to be one illegally passing traffic over a known channel, e.g., channel pirating. <p>The interference is due to a steady receive key indicating equipment failures, glitches, or lapses in operational discipline</p>	
012	GPS Interference	

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012-01	GPS interference will be routed directly to the GPS Support Center with your SM support channel courtesy copied, and call COD Space immediately (see Enclosure 4). After notifying COD Space of the problem, submit a JSIR in CSRS.	
012-02	<p>Check with area AFC/ISM to ensure there are no frequency assignments (or necessary bandwidth overlap) between 1563.42-1587.42 MHz (for L1) and 1215.60-1239.60 MHz (for L2).</p> <p>High-Capacity LOS (HCLOS) AN/GRC-245, Digital Wideband Transmission System (DWTS), AN/MRC-142, is capable of tuning in these frequency ranges and are likely sources of GPS interference.</p> <p>NOTE: CCMD policy should prohibit the use of frequencies between 1563.42-1587.42 MHz (for L1) and 1215.60-1239.60 MHz (for L2).</p>	
012-03	<p>Ensure GPS is utilizing current Crypto Variable Monthly (CVM) key. Civilian GPS receivers and un-keyed military receivers are highly susceptible to interference and jamming. Commercial-Off-the-Shelf GPS receivers are not authorized for critical military applications.</p> <p>NOTE: See DoD GPS Security Policy, dated April 4, 2006, for more information on GPS used in a military environment.</p>	
012-04	Utilize a spectrum analyzer to determine if interfering signal is on or near L1 (1575.42 MHz) or L2 (1227.6 MHz). Try to locate source by DF.	
012-05	<p>Troubleshooting actions to determine if EMI is affecting L1 or L2:</p> <ul style="list-style-type: none">• Operate GPS with crypto not loaded. If EMI is experienced, then the L1 frequency is being affected.• Operate GPS with current CVM key loaded. If EMI is experienced, then L1 and/or L2 is affected.	

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ENCLOSURE G

NATURAL PHENOMENA EFFECTS

1. This guide is used to help determine whether the natural environment is the cause of the EMI. Procedures will depend upon the particular system's vulnerability to the environment. For example, a SATCOM terminal whose side lobes intersect the sun may experience significant EMI during a solar radio burst or noise storm. Space or terrestrial weather products and data sources or meteorological and oceanographic (METOC) personnel can help to determine if the natural environment could be the cause of the interference.

2. Standard procedures should be established and implemented to assure rapid assessment of this as a potential EMI source. Local METOC or space support team personnel may be able to provide support relevant to your particular system and mission (references i and j). Table G-1 shows major types of systems impacted by various aspects of the natural environment. Natural phenomena that may produce EMI include variations in ionosphere properties, radio noise bursts from the sun, flares from the sun, and terrestrial atmospheric effects such as high rain rates. If natural interference is suspected as the source of EMI, provide Air Force Weather Agency (AFWA) (See Enclosure E) with an information copy of the report.

Table G-1. Natural Phenomena Effects

System	Potential Natural Sources of EMI	Remarks
UHF SATCOM	Solar radio bursts or noise storms, ionospheric scintillation	For solar radio EMI resolution, determine if the link line of sight (LOS) is aligned with the sun and if side lobes of antennae intersect the sun's radio output. For ionospheric scintillation, determine if communication links intersect a region of ionospheric scintillation. Real-time and forecast space weather data and products may be obtained from AFWA, which addresses the natural EMI sources described above. For information concerning near-real-time solar radio emissions, AFWA disseminates solar radio burst and noise storm messages and analyses. For information concerning the observed and forecast location and timing of ionospheric scintillation, AFWA produces scintillation region observations and forecasts.

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SHF SATCOM	Solar radio bursts or noise storms; rain attenuation	For solar radio EMI resolution, determine if link LOS is aligned with the sun and if the side lobes of antennae intersect the sun's radio output. Real-time and forecast space and terrestrial weather data and products may be obtained from AFWA, which addresses both sources described above. For rain attenuation, the impact severity will increase with increasing rain rate and depends upon the link intersection with a precipitation area.
EHF SATCOM	Solar radio bursts or noise storms; rain attenuation	For solar radio EMI resolution, determine if link LOS is aligned with the sun and if the side lobes of antennae intersect the sun's radio output. Real-time and forecast space and terrestrial weather data and products may be obtained from AFWA, which addresses both sources described above. For rain attenuation, impact severity will increase with increasing rain rate and depends upon the link LOS intersection with the precipitation region.
HF Communications	Solar flares (induce "short-wave fades"); ionospheric storms; auroral impacts; solar radio bursts; noise storms	HF propagation conditions depend upon the condition of the ionosphere, which is directly influenced by solar activity. At the time of impact, this activity may be mistaken as either an equipment or man-made EMI problem. AFWA has a variety of real-time and forecast products that can be accessed to determine whether the natural environment is a factor in HF communications problems.
Radar	Solar radio bursts or noise storms; ionospheric storms; auroral activity; rain attenuation	For solar radio EMI resolution, determine if the radar field of view (including side lobes) intersects the sun's radio output. Real-time and forecast space and terrestrial weather data and products may be obtained from AFWA, which addresses both sources described above. For rain attenuation, impact severity will increase with increasing rain rate and depend upon droplet size and the operating frequency of the radar.
Microwave LOS	Solar radio bursts or noise storms; rain attenuation	For solar radio EMI resolution, determine if the link LOS is aligned with the sun and if side lobes of antennae intersect the sun's radio output. Real-time and forecast space and terrestrial weather data and products may be obtained from AFWA, which addresses both sources described above. For rain

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		<p>attenuation, impact severity will increase with increasing rain rate and depend upon droplet size and whether or not the link is intersecting a precipitation region.</p>
GPS Systems	<p>Solar radio bursts or noise storms; ionospheric scintillation; ionospheric storms (for single frequency receivers)</p>	<p>For solar radio EMI resolution, determine if the link LOS is aligned with the sun and if side lobes of antennae intersect the sun's radio output. For ionospheric scintillation, determine if communications link intersects a region of ionospheric scintillation. Real-time and forecast space weather data and products may be obtained from AFWA, which addresses both natural EMI sources described above. For solar radio as a source, AFWA disseminates solar radio burst and noise storm messages and analyses. For information concerning the observed and forecast location and timing of ionospheric scintillation, AFWA produces scintillation region observations and forecasts.</p>
Satellite Operations (TT&C)	<p>Solar radio bursts or noise storms; ionospheric scintillation (UHF only); rain attenuation (SHF and EHF only)</p>	<p>For solar radio EMI resolution, determine if link LOS is aligned with the sun and if side lobes of antennae intersect the sun's radio output. Real-time and forecast space and terrestrial weather data and products may be obtained from AFWA. For information concerning the observed and forecast location and timing of ionospheric scintillation and its potential impact on UHF links, AFWA produces scintillation region observations and forecasts. If UHF TT&C links intersect these regions, there is potential for degradation of link quality. For rain attenuation (SHF and EHF), severity of impact will increase with increasing rain rate, increasing frequency, and whether the link intersects a precipitation region.</p>

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Enclosure G

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ENCLOSURE H

COMMERCIAL SATCOM EMI REPORTING CHECKLIST

1. This checklist outlines information to be reported to the CSpOC/SIOD, either directly or via JSIRO, upon encountering an interfering signal that affects the user's signal performance. EMI information reported directly to CSpOC will be inputted into JSIRO. Users experiencing EMI with access to JSIRO will be required to submit their EMI directly.

2. Commercial SATCOM Owner-Operator will IMMEDIATELY contact the COMSATCOM Watch Officer (CWO) at (719) 554-0103 to report the below collected information.

3. SATCOM EMI REPORTING CHECKLIST

For commercial upchannel reporting, all items are required; for UHF upchannel reporting, only the lines with an asterisk (*) are required.

a. GENERAL

(1) *DOES IT APPEAR THAT THE USER'S SIGNAL IS THE FOCUS OF THIS EMI? (YES/NO/UNDER INVESTIGATION)

(2) *IS THIS THE FIRST EVENT OF THIS NATURE AGAINST THE USER'S SIGNAL? (YES/NO/UNDER INVESTIGATION)

(3) IS THE EMI CROSS POLARIZATION INTERFERENCE? (YES/NO/UNDER INVESTIGATION)

(4) *IS THE EMI ADJACENT SATELLITE INTERFERENCE? (YES/NO/UNDER INVESTIGATION)

(5) *HAVE THE USERS BEEN ELIMINATED AS THE INTERFERENCE SOURCE? (YES/NO/UNDER INVESTIGATION)

(6) *START TIME OF EMI EVENT (AS REPORTED BY DoD ASSET)

(7) CONTRACT VEHICLE/MISSION NUMBER (UHF)

(8) *DELIVERY ORDER (DO), TASK ORDER (TO) NUMBER/MISSION NUMBER (UHF)

(9) TRANSMISSION PLAN (TP) REVISION

b. VENDOR AND AFFECTED SATELLITE INFORMATION

- (1) *AFFECTED SATELLITE (COMMON NAME)
- (2) *SATELLITE SCC (SATELLITE SPACE COMPUTATION CENTER)
NUMBER
- (3) *SATELLITE LOCATION (LONGITUDE)
- (4) SATELLITE OWNER/PRIMARY SUPPORT (UHF)
- (5) DOWNLINK (RECEIVE) TERMINAL INFORMATION
- (6) DOWNLINK TERMINAL LOCATION (LAT/LONG)
- (7) *ANTENNA TERMINAL TYPE/RADIO TYPE (UHF)
- (8) ANTENNA SIZE (METERS)
- (9) G/T (dB/K)* (Ratio of gain to the satellite to the thermal noise temperature. Measured in decibel (dB) per degree Kelvin (K).)

c. DOWNLINK (RECEIVE) INFORMATION

- (1) *DOWNLINK TRANSPONDER NAME/CHANNEL (UHF)
- (2) *DOWNLINK (RECEIVE) CENTER FREQUENCY/DOWNLINK FREQ
(UHF)
- (3) DOWNLINK (RECEIVE) POLARITY
- (4) DOWNLINK BEAM (SHORT NAME)

d. UPLINK (TRANSMIT) TERMINAL INFORMATION

- (1) UPLINK TERMINAL LOCATION (LAT/LONG)
- (2) ANTENNA TERMINAL TYPE/MODEL
- (3) ANTENNA SIZE
- (4) Effective Isotropic Radiated Power (EIRP) (dB/W)
- (5) UPLINK (TRANSMIT) INFORMATION

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(6) UPLINK (TRANSMIT) TRANSPONDER NAME/CHANNEL

(7) *UPLINK (TRANSMIT) CENTER FREQUENCY/UPLINK FREQ
(UHF)

(8) UPLINK TRANSPONDER POLARITY

(9) UPLINK BEAM (SHORT NAME)

e. OTHER INFORMATION

(1) *ALLOCATED BANDWIDTH (MHZ/KHZ)

(2) *MODULATION

(3) AFFECTED USER'S SIGNAL (DIGITAL OR ANALOG)

(4) (IF DIGITAL) BIT ERROR RATE (BER) BEFORE EVENT

(5) (IF DIGITAL) BIT ERROR RATE (BER) DURING EVENT

(6) *TRANSLATION FREQUENCY (MHZ/KHZ)

f. INTERFERING SIGNAL DESCRIPTION

(1) *FREQUENCY OF INTERFERING SIGNAL APPEARS (STEADY (OR)
VARYING)

(2) *(IF STEADY) CENTER FREQUENCY OF INTERFERING SIGNAL
(MHZ/KHZ)

(3) *(IF VARYING) DRIFTING (OR) SWEEPING (OR) ERRATIC (OR)
HOPPING CONTINUOUS WAVE

(4) *(IF DRIFTING OR SWEEPING) CENTER OF LIMITS OF
SWEEP/DRIFT (MHZ/KHZ)

(5) *(IF DRIFTING OR SWEEPING) BANDWIDTH WITHIN LIMITS OF
SWEEP/DRIFT (MHZ/KHZ)

(6) *(IF ERRATIC) DESCRIBE (OPEN TEXT)

(7) *(IF HOPPING CONTINUOUS WAVE) LIST FREQUENCY PEAK
LOCATIONS

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(8) *INTERFERING SIGNAL APPEARS (MODULATED/CONTINUOUS WAVE)

(9) (IF MODULATED) HALF-POWER BANDWIDTH OF INTERFERING SIGNAL (MHZ)

(10) POWER/AMPLITUDE OF INTERFERING SIGNAL APPEARS (STEADY (OR) VARYING)

(11) (IF STEADY) SIGNAL-TO-NOISE RATIO (DB)

(12) (IF VARYING) PULSING (OR) SLOW INCREASE (OR) SLOW DECREASE

(13) (IF VARYING) MAXIMUM SIGNAL-TO-NOISE RATIO (DB)

(14) WATCH OFFICER (WO) IS REQUIRED TO OBTAIN THE CALLER'S NAME, ORGANIZATION/COMPANY, AND TELEPHONE NUMBER.

(15) WO WILL ASK THE CALLER FOR MISSION IMPACT AS REPORTED BY THE USER. IF THE CALLER DOES NOT HAVE THIS INFO, THE WO WILL ASK THE CALLER TO GET THE INFO AND CALL THE CS_pOC.

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ENCLOSURE I

REFERENCES

- a. Joint Publication 3-85, 22 May 2020, "Joint Electromagnetic Spectrum Operations (JEMSO)
- b. Allied Communications Publication (ACP) 190 (D), February 2013, "Guide to Electromagnetic Spectrum Management in Military Operations"
- c. CJCS Instruction 3320.02 Series, "Joint Spectrum Interference Resolution (JSIR)"
- d. Joint Publication 3-14, 10 April 2018, "Space Operations"
- e. Space Instruction 3250.01a, 18 May 2020, "Satellite Communications"
- f. Laser Incident Reporting Page,
<http://www.naic.wrightpatterson.af.smil.mil/dew/glider/> (ACCESSED: 12 February 2013)
- g. JSIR Online Intelink SIPR Web site,
<http://intelshare.intelink.sgov.gov/sites/jsir/default.aspx> (ACCESSED: 12 February 2013) THIS LINK WILL CHANGE TO GEMISIS URL in April of 2022
- h. DoD Instruction 4650.01, CHG.1 17 October 2017, "Policy and Procedures for Management and Use of the Electromagnetic Spectrum"
- i. Weapons and Space Portal (formerly E-Space),
https://intelshare/intelink.sgov.gov/sites/espace/_layouts/15/start.aspx#/SitePages/Home.aspx (ACCESSED: 20 December 2021)
- j. Joint Publication 3-13, CHG. 1, 20 November 2017, Incorporating CH1, 20 November 2014, "Information Operations"
- k. Joint Publication 3-59, 10 January 2018, "Meteorological and Oceanographic Operations"

OTHER RELEVANT PUBLICATIONS

1. Coast Guard Instruction, COMDTINST M2400.1H, "Spectrum Management Policy and Procedures," October 2011

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2. Army Regulation, AR 5-12, 8 February 2020, "Army Use of the Electromagnetic Spectrum"
3. CJCS Instruction 3320.01 Series, "Joint Electromagnetic Spectrum Operations"
4. CJCS Instruction 6250.01 Series, "Satellite Communications"
5. DoD Instruction 3222.03, 25 August 2014, Incorporating CH2, 10 October 2017, "DoD Electromagnetic Environmental Effects (E3) Program"
6. DoD Instruction 5200.01, 21 April 2016, Incorporating CH2, 1 October 2020, "DoD Information Security Program and Protection of Sensitive Compartmented Information"
7. DoD Instruction C-3222.5, 10 October 2017, "DoD Electromagnetic Environment Effects (E3) Program"
8. Executive Order 13526, 29 December 2009, "Classified National Security Information" Executive Order 12958, 17 April 1995, "Classified National Security Information"
9. Joint Publication 6-01, 10 June 2015, "Joint Communications System"
10. Marine Corps Order, MCO 2400.2, 7 October 2009, "Marine Corps Management and use of the Electromagnetic Spectrum"
11. Naval Telecommunications Procedures 6 (E), Navy Electromagnetic Spectrum (EMS) Guide

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GLOSSARY

PART I-ABBREVIATIONS AND ACRONYMS

AFC	area frequency coordinator
AFSMO	Air Force Spectrum Management Office
AFWA	Air Force Weather Agency
AOR	area of responsibility
ASEMICAP	Air Systems Electromagnetic Interference Corrective Action Program
BER	bit error rate
C2	command and control
C4	command, control, communications, and computers
CFC	Combined Forces Command
CSpOC	Combined Space Operations Center
CJCS	Chairman of the Joint Chiefs of Staff
COMSEC	Communications Security
C/S/A	Combatant command/Services/Agencies
DF	direction finding
DIRNSA	Director, National Security Agency DISA Defense Information Systems Agency
DoD	Department of Defense
DOS	Department of State
EA	electromagnetic attack
EIS	Engineering Installation Squadron
EHF	extremely high frequency
EMI	electromagnetic interference
EMOE	Electromagnetic Operating Environment
EP	electromagnetic protection
EW	electromagnetic warfare
EWO	Electromagnetic Warfare Officer
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
GPS	global positioning system
HF	high frequency
HN	host nation

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HQ	headquarters
JCMA	joint communications security (COMSEC) monitoring activity
JDAWS	Joint Spectrum Center database access Webserver
JFMO	Joint Frequency Management Office
JP	joint publication
JSC	Joint Spectrum Center
JSIR	Joint Spectrum Interference Resolution
JSIRO	Joint Spectrum Interference Resolution Online
JTF	joint task force
JWICS	Joint Worldwide Intelligence Communication System
kHz	kilohertz
LOS	line of sight
MACOM	major command (USA)
MAJCOM	major command (USAF)
METOC	meteorological and oceanographic
MHz	megahertz
NASIC	National Air & Space Intelligence Center
NAVAIR	Naval Air Systems Command
NAVSEA	Naval Sea Systems Command
NAVSECGRU	Naval Security Group
NECOS	Network Control Station
NSA	National Security Agency
NTIA	National Telecommunications and Information Administration
OSM	Office of Spectrum Management
OUS&P	Outside the United States and its Possessions
POC	point of contact
QFIRC	Quick-Fix Interference Reduction Capability
RF	radio frequency
RFI	radio frequency interference
RRURC	Rapid Response Up Channel Reporting Checklist
RSSC	Regional Satellite Communications Support Center

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SATCOM	satellite communications
SEMCIP	Shipboard Electromagnetic Compatibility Improvement Program
SHF	super high frequency
SIGINT	signals intelligence
SIPRNET	SECRET internet protocol routing network
TT&C	telemetry, tracking, and commanding
UHF	ultrahigh frequency
US&P	United States and its possessions
WSOC	Wideband Satellite Operations Center

PART II--DEFINITIONS

Area of Influence -- A geographical area wherein a commander is directly capable of influencing operations by maneuver or fire support systems normally under the commander's command or control.

Area of Interest -- That area of concern to the commander, including the area of influence, areas adjacent thereto, and extending into enemy territory to the objectives of current or planned operations. This area also includes areas occupied by enemy forces that could jeopardize the accomplishment of the mission. Also called AOI.

Area of Responsibility -- a. The geographical area associated with a Combatant Command within which a Combatant Commander has authority to plan and conduct operations. b. In naval usage, a predefined area of enemy terrain for which supporting ships are responsible for covering by fire on known targets or targets of opportunity and by observation. Also called AOR.

Combatant Command -- A unified or specified command with a broad continuing mission under a single commander established and so designated by the President, through the Secretary of Defense and with the advice and assistance of the Chairman of the Joint Chiefs of Staff. Combatant commands typically have geographic or functional responsibilities. Also called CCMD.

Combatant Command (command authority) -- Nontransferable command authority established by title 10 ("Armed Forces"), U.S. Code, section 164, exercised only by commanders of unified or specified combatant commands unless otherwise directed by the President or the Secretary of Defense. Combatant command (command authority) cannot be delegated and is the authority of a combatant commander to perform those functions of command

over assigned forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction over all aspects of military operations, joint training, and logistics necessary to accomplish the missions assigned to the command. Combatant command (command authority) should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Combatant Command (command authority) provides full authority to organize and employ commands and forces as the combatant commander considers necessary to accomplish assigned missions. Operational control is inherent in combatant command (command authority). Also called COCOM.

Communications Security -- The protection resulting from all measures designed to deny unauthorized persons information of value that might be derived from the possession and study of telecommunications, or to mislead unauthorized persons in their interpretation of the results of such possession and study. Communications security includes crypto security, transmission security, emission security and physical security of communications security materials and information. Also called COMSEC.

Crisis -- An incident or situation involving a threat to the United States, its territories, citizens, military forces, possessions or vital interests that develops rapidly and creates a condition of such diplomatic, economic, political or military importance that commitment of U.S. military forces and resources is contemplated in order to achieve national objectives.

Deconfliction -- A systematic management procedure to coordinate the use of the EMS for operations, communications, and intelligence functions. This procedure minimizes possible interference issues that might arise after frequency assignment.

Defensive Information Operations -- The integration and coordination of policies and procedures, operations, personnel, and technology to protect and defend information and information systems. Defensive information operations are conducted through information assurance, physical security, operations security, counter deception, counter psychological operations, counterintelligence, electromagnetic warfare, and special information operations. Defensive information operations ensure timely, accurate, and relevant information access while denying adversaries the opportunity to exploit friendly information and information systems for their own purposes.

Electromagnetic Environment -- The resulting product of the power and time distribution, in various frequency ranges, of the radiated or conducted electromagnetic emissions levels encountered by a military force, system, or

platform when performing its assigned mission in its intended operational environment. Also called EME.

Electromagnetic Compatibility -- The ability of systems, equipment and devices that utilize the EMS to operate in their intended operational environments without suffering unacceptable degradation or causing unintentional degradation because of electromagnetic radiation or response. Also call EMC.

Electromagnetic Interference -- Any electromagnetic disturbance, induced intentionally or unintentionally, that interrupts, obstructs, or otherwise degrades or limits the effective performance of electromagnetic spectrum-dependent systems and electrical equipment. Also called EMI.

Electromagnetic Operational Environment -- The EMOE is a composite of the actual and potential electromagnetic energy radiation, conditions, circumstances, and influences that affect the employment of capabilities and the decisions of the commander. It includes the existing background radiation (i.e., electromagnetic environment) as well as the friendly, neutral, adversary, and enemy electromagnetic systems able to radiate within the electromagnetic area of influence. This includes systems currently radiating or receiving, or those that may radiate, that can potentially affect joint operations. Also called the EMOE.

Electromagnetic Attack -- Division of electromagnetic warfare involving the use of electromagnetic energy, directed energy, or anti-radiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability and is considered a form of fires. Also called EA.

Electromagnetic Protection -- Division of electromagnetic warfare involving actions taken to protect personnel, facilities, and equipment from any effects of friendly or enemy use of the EMS that degrade, neutralize, or destroy friendly combat capability. Also called EP.

Electromagnetic Spectrum Management -- The operational, engineering administrative procedures to plan, and coordinate operations within the electromagnetic operational environment.

Electromagnetic Warfare -- Military action involving the use of electromagnetic and directed energy to control the EMS or to attack the enemy. Electromagnetic warfare consists of three divisions: electromagnetic attack, electromagnetic protection, and electromagnetic warfare support. Also called EW.

Electromagnetic Warfare Support -- Division of electromagnetic warfare

involving actions tasked by, or under direct control of, an operational commander to search for, intercept, identify, and locate or localize sources of intentional and unintentional radiated electromagnetic energy for the purpose of immediate threat recognition, targeting, planning and conduct of future operations. Also called ES.

Information Operations -- Actions taken to affect adversary information and information systems while defending one's own information and information systems. Also called IO.

Intrusion -- The deliberate insertion of false information into communications circuits designed to mislead the recipient of the information. Example: a counterfeit station entering a call-for-fire net with an artillery fire mission on friendly troops.

Jamming -- The deliberate radiation, re-radiation, or reflection of electromagnetic energy to disrupt use of electronic devices, equipment, or systems.

Joint Force Commander -- A general term applied to a combatant commander, sub unified commander or joint task force commander authorized to exercise combatant command (command authority) or operational control over a joint force. Also called JFC.

Joint Task Force -- A joint force that is constituted and so designated by the Secretary of Defense, a combatant commander, a sub unified commander or an existing joint task force commander. Also called JTF.

Natural Interference -- The interference caused by the natural environment. Example: a solar radio burst or an ionosphere disturbance may cause extreme interference on some military communications systems.

Offensive Information Operations -- The integrated use of assigned and supporting capabilities and activities mutually supported by intelligence, to affect adversary decision makers to achieve or promote specific objectives. These capabilities and activities include, but are not limited to: operations security; military deception; psychological operations; electromagnetic warfare; physical attack and/or destruction; and special information operations and could include computer network attack. (This term and its definition reduce to an acceptable level the vulnerabilities of friendly actions to adversary exploitation.

Quick Fix Interference Reduction Capability -- An immediate action to reduce or eliminate unintentional ("friendly") electromagnetic interference (EMI)

associated with the Air Force operational equipment. The Quick Fix Interference Reduction Capability service analyzes and recommends corrective actions for reported EMI problems. The 85th Engineering Installation Squadron (EIS), located at Keesler Air Force Base, Mississippi, provides Quick Fix Interference Reduction Capability to all Air Force units. Approval and tasking for the 85th EIS Quick Fix Interference Reduction Capability services are requested through AFSPC or AFSMO. Also called QFIRC.

Regional Satellite Communications Support Centers -- Centers that provide the day-to-day management of satellite communications resources in support of the designated combat commands, Services, and Defense agencies and other users. The three regional satellite communications support centers (Europe, Pacific, and US&P) were created in 1998. Also called RSSCs.

Specified Command -- A command that has a broad, continuing mission, normally functional and is established and so designated by the President through the Secretary of Defense with the advice and assistance of the Chairman of the Joint Chiefs of Staff. It normally is composed of forces from a single Military Department. Also called specified combatant command.

Subordinate Command -- A command consisting of the commander and all those individuals, units, detachments, organizations or installations that have been placed under the command by the authority establishing the subordinate command.

Supported Commander -- The commander having primary responsibility for all aspects of a task assigned by the Joint Strategic Capabilities Plan or other joint operation planning authority. In the context of joint operation planning, this term refers to the commander who prepares operation plans or operation orders in response to requirements of the Chairman of the Joint Chiefs of Staff.

Satellite Support Center -- Term used when generically referring to either a regional or global satellite communications support center. Also called SSC.

Space System -- All of the devices and organizations forming the space network. These consist of: spacecraft; mission package(s); ground stations; data links among spacecraft, mission or user terminals, which may include initial reception, processing, and exploitation; launch systems; and directly related supporting infrastructure, including space surveillance and battle management and/or command, control, communications and computers.

Unified Command -- A command with a broad continuing mission under a single commander and composed of significant assigned components of two or more Military Departments, that is established and so designated by the

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President through the Secretary of Defense with the advice and assistance of the Chairman of the Joint Chiefs of Staff. Also called unified combatant command.

Unintentional Manmade Interference -- The unintentional disruption of electronic devices, equipment, or systems. The difference between jamming and interference is intent. Example: the transmission of a military system that unintentionally disrupts a civilian radio broadcast.

United States and its Possessions -- The Continental United States and its territorial possessions over which the NTIA and/or FCC have spectrum regulatory jurisdiction.