



Spectrum Management

MSG Taitano

SFC Zimmerman



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MISSION

TO INSURE SPECTRUM ACCESS ALLOWING FOR A REALISTIC PORTRAYAL OF THE BATTLEFIELD WITH THE ABILITY TO MONITOR AND EVALUATE PLAYER UNITS, TO DEVELOP AFTER ACTION REVIEWS AND TO PROVIDE POSITIVE TRAINING VALUE, WHILE COMPLYING WITH THE NATIONAL RULES AND REGULATIONS FOR SPECTRUM USAGE IN THE UNITED STATES.



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AR 5-12

Army Management of the Electromagnetic Spectrum

1-8b- Policies and guidelines for use of the spectrum by all Federal Government agencies have been established in the National Tele-communications and Information Administration (NTIA) Manual and provisions of DoDD 4650.1. The Army is obligated to comply with these policies unless waived by the Army Spectrum Manager.

3-1c- The Army continues to assess measures for implementing the enforcement of proper spectrum use. Army users of the spectrum rely upon spectrum sharing agreements with other agencies, host nations, the FCC, and other Services in order to meet their increasing spectrum requirements. Increases in the density of spectrum dependant equipment operating on the same band result in increased operational conflict and a higher potential for interference. Without proper application of deconflicting procedures for the control of interference, operational failures will occur and liability claims may result from interference to commercial systems.

4-1b- The frequency allocation to equipment process is a spectrum requirement and exist to determine that:

- (1) If the equipment can operate in spectrum bands per the National and international tables of spectrum allocation.**
- (2) Equipment being brought into the Army inventory conforms with applicable spectrum management regulations, directives, standards, and Specifications.**

5-5b- Amateur Frequencies. The Army will not use frequencies designated for amateur radio users within the US&P during normal peace time conditions, except as authorized by the NTIA or FCC.

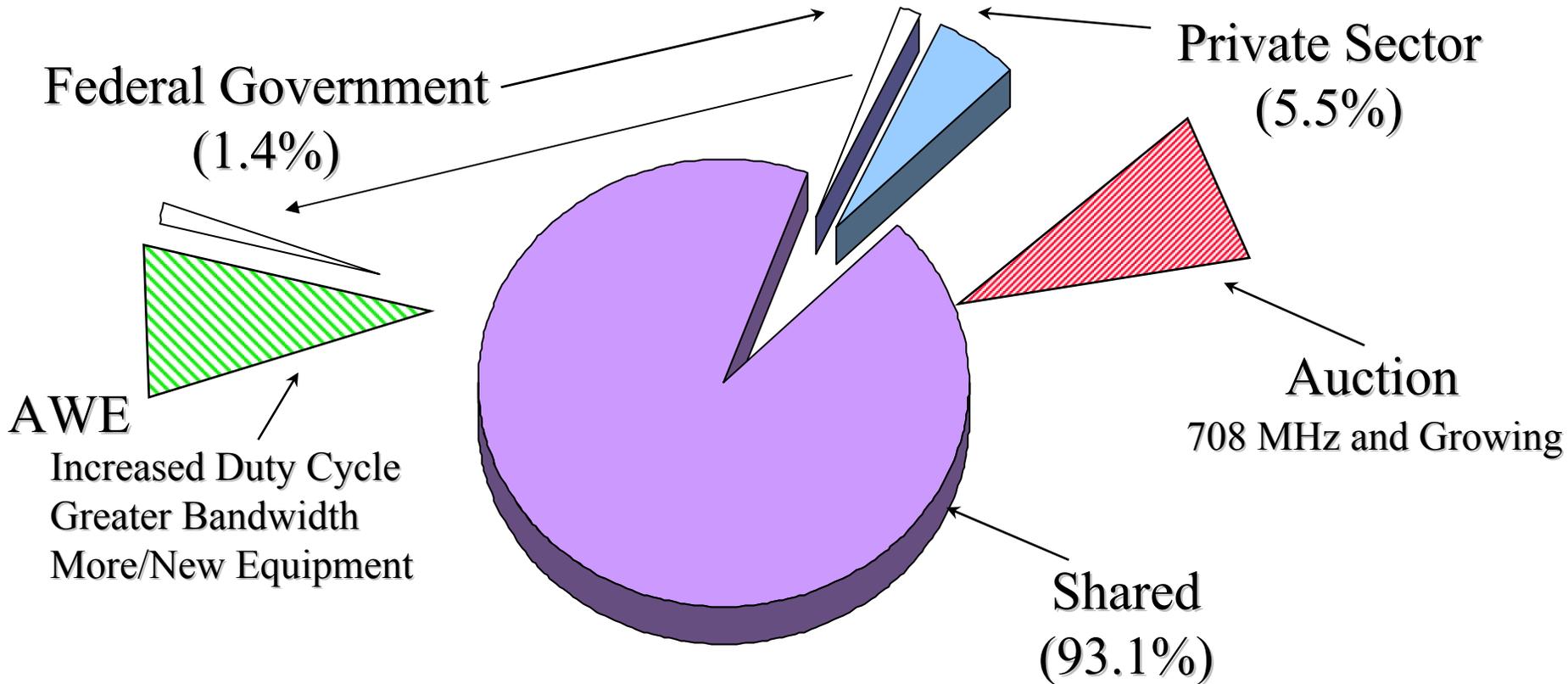
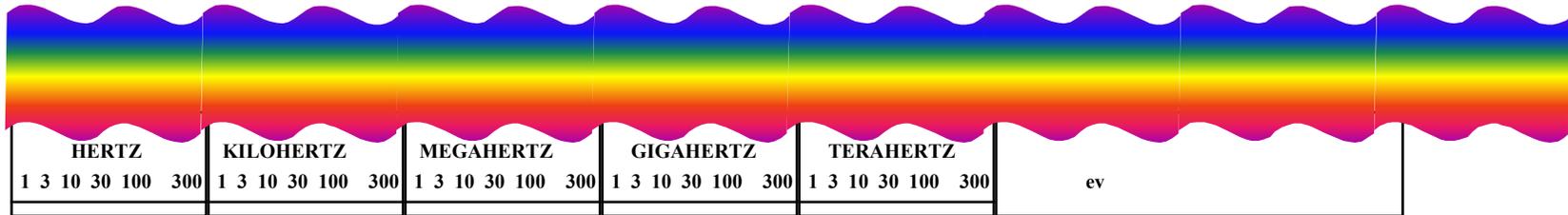
Non-Interference Basis- If the user causes interference the system must be shut down, the user is willing to accept the interference to their system.



SPECTRUM MANAGEMENT DIVISION



PRESSURES ON THE SPECTRUM



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DIGITIZATION

- **87.8% of frequency assets required to support a current Rotation are borrowed. Issued an additional 55.3% increase to support Digitized Brigades.**
- **Permanent Assignments for a rotation (BLUEFOR) = 245 (12.2%)**
- **To support a:**

Current Rotation 02-07

Digitized Bde Rotation

Required

Borrowed

Required

Increase

2009

Government Shared

3120

1111 = 55.3%

487 = 24.2%

FCC

*Permanent Assignments = 7.9%

1277 = 63.6%

Spectrum Engineering and Testing

- **Spectrum testing is conducted to ensure electromagnetic compatibility in the RF environment.**
- **Test new and modified RF devices and systems to protect NTC Instrumentation systems, critical NTC Communications and NASA from harmful RF interference.**
 - **Conducted over the air in a field environment.**
 - **Verifies data provided on DD1494 or manufacture's data sheet.**
 - **Measures bandwidth.**
 - **Checks for spurious signals.**
 - **Conducted on a reimbursable basis.**
 - **Verifies non-interference with NTC IS.**

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Commercial Of The Shelf (COTS)

Organizations are purchasing commercial equipment.
Circumventing the Spectrum Certification process.

1. Can an organization use their COTS equipment for training and real world deployments?
2. Are organizations willing to sacrifice our primary means of communications and security?
3. COTS equipment's operating within the FCC Frequency Bands is on a NIB. Can you afford to lose that capability?
4. COTS equipment precludes interoperability between organizations because of **NO FIELDING PLAN ESTABLISHED.**

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ROTATIONAL TIMELINE

- **C-220 DAYS: SMD PROVIDES DOIM SOP, OPS GROUP SIGNAL LOI, AND NTC-5-12.**
- **C-180 DAYS: VTC WITH ROTATIONAL UNIT, COORDINATION OF SPECTRUM ISSUES.**
- **C-120 DAYS: UNITS SUBMITS THE EMITTER LIST AND COORDINATE FOR TEST OF NEW SYSTEMS. (All Emitters must be on UNIT 1060R or Exceptions list approved by FORSCOM)**
- **C-115 DAYS: UNITS SUBMIT SFAF REQUEST TO SMD FOR ALL SOI AND/OR NON-SOI FREQUENCIES.**
- **C-100 DAYS: SMD WILL PROVIDE UNIT WITH FREQUENCY RESOURCES, EXCEPT FOR THOSE REQUIRING NATIONAL LEVEL COORDINATION.**
- **NATIONAL LEVEL ASSIGNMENTS WILL BE ISSUED TO THE UNIT UPON APPROVAL.**

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ROTATIONAL TIMELINE

- **C-90 DAYS: ROTATIONAL UNIT MUST SCHEDULE TESTING OF NEW EQUIPMENT.**
- **C-70 DAYS: UNIT PROVIDES SMD WITH SOI, TIME PERIOD ONE, FOR REVIEW AND GENERATION.**
- **C-60 DAYS: SMD REVIEWS ONE TIME PERIOD SOI AND GENERATES DRAFT SOI AND COMPUTER TRANSFER TO ROTATIONAL UNIT FOR FINAL REVIEW AND COMMENTS.**
- **C-30 DAYS: SMD PROVIDES UNIT APPROVAL OF ALL NON-SOI FREQUENCIES. COMPLETE AND COMPUTER TRANSFER FINAL SOI FOR UNIT IMPLEMENTATION AND DISTRIBUTION. CONDUCT FREQUENCY COMPARISON/DECONFLICTION AND BUILDS EW LIST FOR BLUFOR, OPFOR AND OPERATIONS GROUP.**
- **C-15 DAYS: SMD ISSUES BLUFOR SOI, LOAD SETS, SPREADSHEETS, AND EW LIST TO OPERATIONS GROUP - LIZARD 30 (L30)**

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CHALLENGES AND CONCERNS

- EQUIPMENT REGISTRATION
- EQUIPMENT SUPPORTABILITY
- NEW EQUIPMENT TRAINING
- THE FUTURE



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EQUIPMENT REGISTRATION

New equipment is being fielded without proper paper work or JF/12 numbers for the frequency manager to create SFAF for temporary or permanent assignments. Many last minute requests for frequency clearances

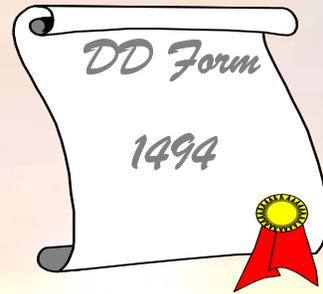
RESOLUTIONS:

Frequency managers need to work hand in hand with the contractors to ensure that proper paperwork has been approved for usage.

Ensure that database of SPECTRUM XXI Spectrum Certification System is continuously updated (at least monthly).



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Equipment Supportability

“ This approval for equipment support is not an authorization for frequency use. Separate technical liaison channel document requesting frequency support is necessary to complete this action. Request for frequency clearance must be submitted within 90 days of the date of this document. Failure to submit follow-up will result in cancellation of this equipment support ”.

UNCLASSIFIED

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NEW EQUIPMENT TRAINING

Most frequency managers are not trained on a variety of systems. Example: SMART-T, EPLRS, NTDR, Trojan, HCLOS, SPITFIRE, and AN/PRC-150's. This includes training on specific spectrum management software/systems (ie; JACES and SPECTRUM XXI)

RESOLUTION:

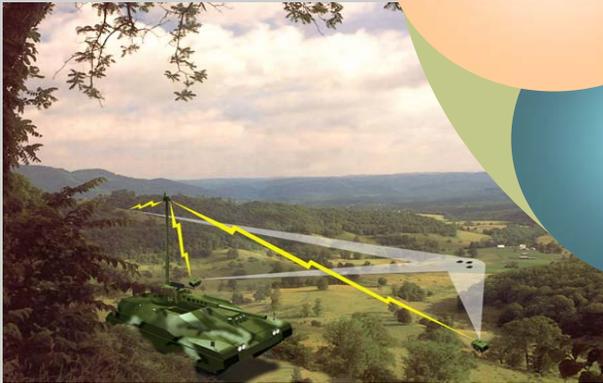
Commanders must ensure proper training be given to the frequency manager.

In turn, the frequency manager will train and evaluate others as to fill in the gaps as a subject matter expert and to identify frequency conflicts and interference issues.

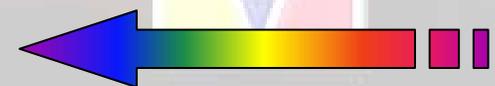
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The Soldier is the Centerpiece of Technology



Wireless & Networked



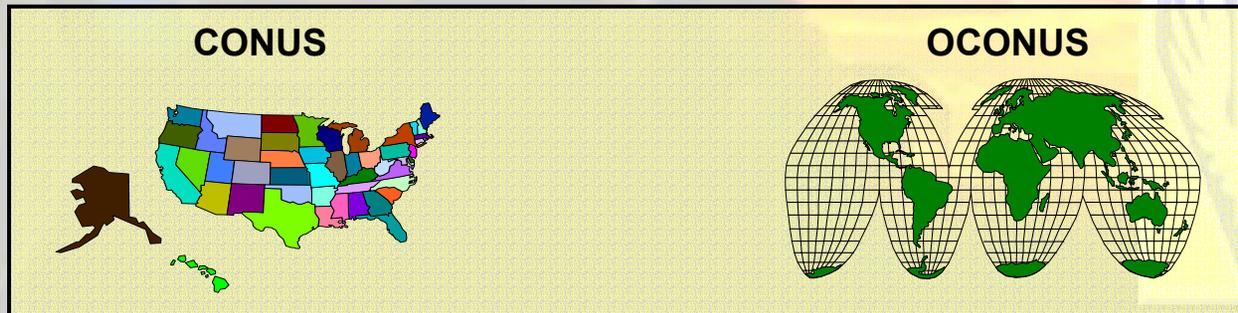
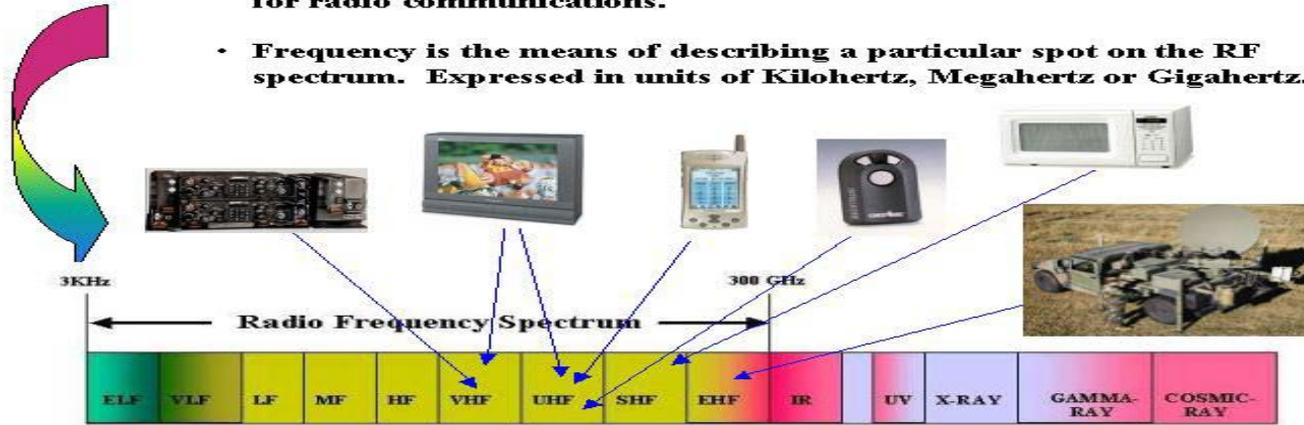
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All Spectrum is not Created Equally

The Radio Frequency ("RF") Spectrum

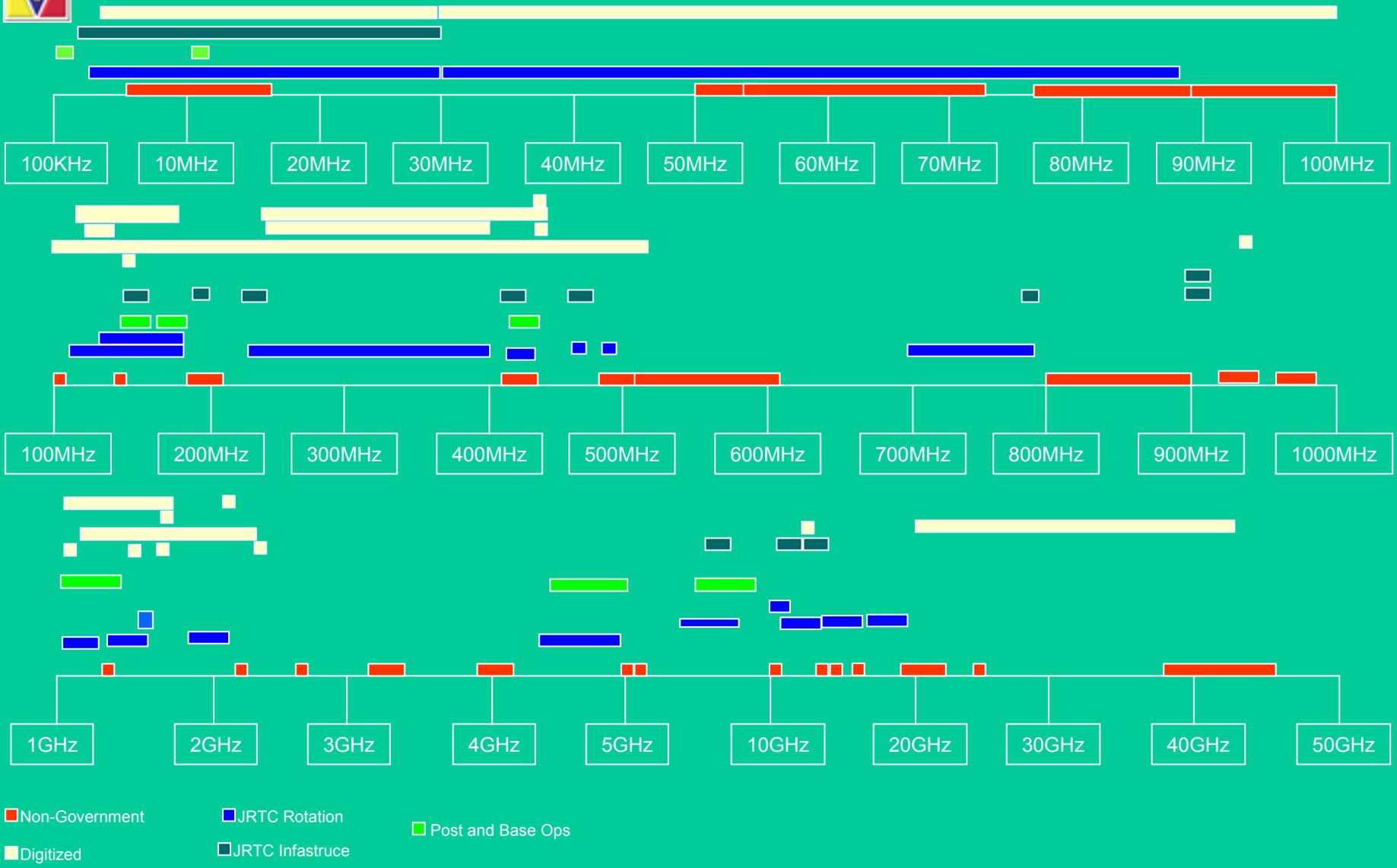
- That portion of the Electromagnetic Spectrum most commonly used for radio communications.
- Frequency is the means of describing a particular spot on the RF spectrum. Expressed in units of KiloHertz, Megahertz or Gigahertz.



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JRTC Frequency Information



D9 Future Issues

BCT/IBCT/SBCT

Software Programmable Radios

NEXGEN Radios

HF ALE - Aviation Long Haul

JTRS

RBECS vs. JACES (ACES)- Training issues in operations

Standard Frequency Action Format (SFAF)

Shadow TUAV/UAV (FCC Band)

De-conflicting of Joint Battle Space

EM Environment is a major factor in Joint and Combined operations

D9 Replacement/ D9 Shortages at the CTC's



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JRTC Domain: <http://www.jrtc-polk.army.mil>

POC: SFC Michael Zimmerman DSN: 863-2701
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Irwin Domain: <http://www.irwin.army.mil>

Spectrum Management: http://www.Irwin.army/g3/dsp_working/dsp/ntcprep.htm

DOIM SOP

Operations Group Letter

NTC 5-12, FP 5-12, AR 5-12

Rotation Information

POC: MSG John Taitano DSN: 470-4437
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Summary

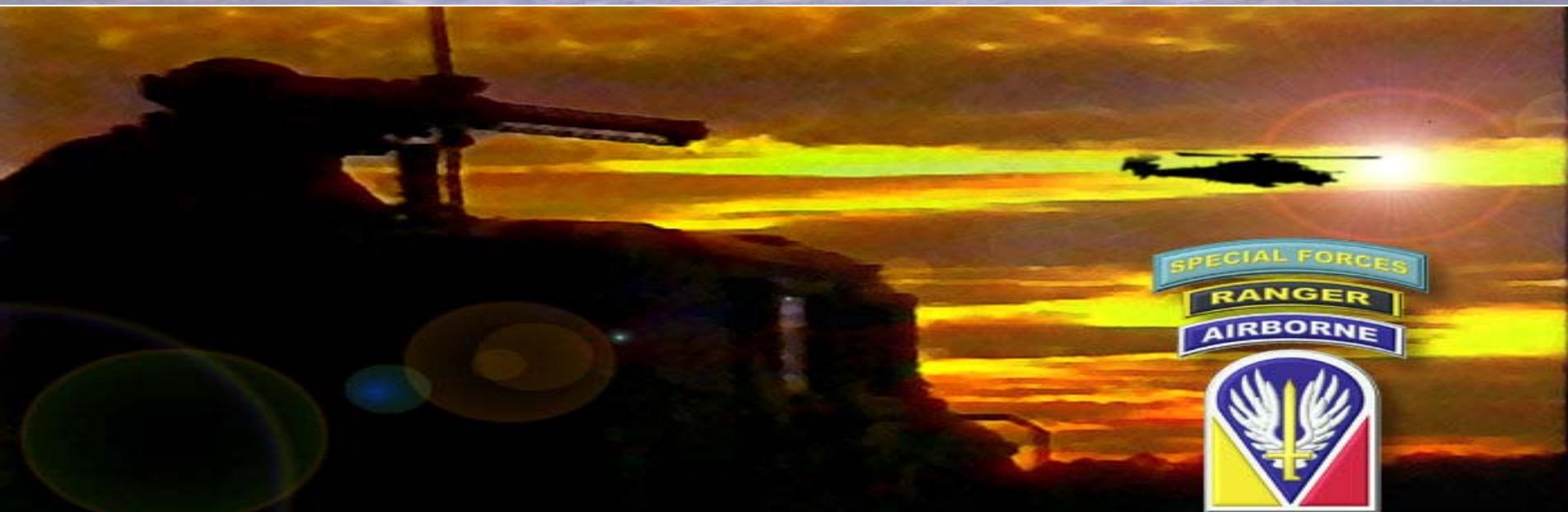
- * THE ELECTROMAGNETIC SPECTRUM IS THE KEY TO OUR SUCCESSFUL USE OF TECHNOLOGICAL ADVANTAGES OF TODAY AND TOMMORROW.
- * OUR MOVE TO THE 21ST CENTURY REQUIRES US TO ENGINEER OUR SYSTEMS TO OPERATE COMPATIBLY-- TOLERANT OF OTHER USES.
- * QUANTIFIABLE SPECTRUM EFFECTS DURING CTC ROTATIONS MUST BE CONSIDERED IN THE ARMY DEVELOPMENT PROCESS.
- * **LEADER & DEVELOPMENT OF SKILLED SPECTRUM MANAGERS A MUST**



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