Revision of US Military HF Radio Standards

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Defense Standardization Program

- Policy and Procedures
  - DoD 4120.24-M

- Standardization Directory
  - SD-1 (current issue is 1 Sep 2006)

- DoD Single Stock Point for standards
  - Online: http://assist.daps.dla.mil/quicksearch/

Standardization Area: TCSS

- Establishes uniform engineering criteria for
  - Terminal equipment
  - Transmission equipment
  - Switching equipment

- to ensure interoperability
  - within military telecommunications systems
  - with federal systems and common carriers

Lead Standardization Activity

- Defense Information Systems Agency (DISA)

- Responsibilities:

  - Manages and coordinates standardization efforts

  - Serves as DoD-wide technical focal point

  - Evaluates and approves requests for projects

  - Resolves conflicts in the process

Preparing Activity

- Oklahoma City Air Logistics Center, USAF
  - HFGCS (SCOPE Command) Program Office

- Responsibilities:

  - Develop, update, and cancel standards
  - Coordinate with DoD activities, civilian agencies, and industry, as appropriate
  - Resolve comments, approve, submit to DoDSSP

Custodians

- Represent their Military Department or Defense Agency on requirements and technical issues involving a standard

- Resolve and consolidate Review Activity comments in their Department/Agency

- Present a unified position on a standardization document to the Preparing Activity

- Work with the Preparing Activity to resolve their Department/Agency's essential comments

Custodians – HF Standards

- Air Force
  - Oklahoma City Air Logistics Center

- Army
  - Communications – Electronics Command

- Navy
  - Space and Naval Warfare Systems Command

- Others?

Working Group

- Voting members represent
  - Lead Standardization Activity
  - Preparing Activity
  - Custodians

- Observers
  - Industry
  - Academia

Technical Advisory Committee

- Informal team reporting to Working Group
- Small group of technical experts
  - Government, industry, academia reps
- Provides technical "sanity check" on proposed changes to standards
- Corporate/agency marketing/political issues remain outside the TAC

Development Process

- Unofficial TAC Draft(s)
- Working Group Draft
- Comments
  - Essential
  - Suggested
- Resolution Meeting
- Approval

Current Status of HF Standards

MIL-STD-187-721D

- "Interoperability and Performance Standard for Advanced Adaptive HF Radio," 1 Mar 99

- Planning standard for advanced features

- Features of interest have been moved into MIL-STD-188-141B

- Remainder is obsolete and will be deleted.

MIL-STD-188-110B

- "Interoperability and Performance Standards for Data Modems"

- Current issue is original -110B, dated 27 April 2000

MIL-STD-188-110B

- Change Notice 1 Draft 1:

  - Performance specs for *embedded* modems

  - Base doc: clarifications, Ethernet ICD, simulator specs

  - Appendix B: correct performance requirements

  - Appendix C: simulator specs

  - Appendix F: correct bit 0 definition

- This draft extensively revised by TAC in June

MIL-STD-188-110B Notice 1

- TAC recommendations for Draft 2 – Major surgery:
    - Remove wireline, LF, and UHF modems
    - Remove Appendix A (16-tone waveform)
    - Appendix B (39 tone) not recommended for new systems
    - Remove Appendix D (subnetwork interface)
    - Remove Appendix E (data link protocol)
    - New Appendix G (LAN interface)
    - New Appendix H (channel simulator specs)

MIL-STD-188-110B Notice 1

- TAC recommendations for Draft 2 – Fine tuning:
  - Clean up electrical interface specs
  - Unused D1/D2 codes now reserved for future use
  - Some SNR degradation allowed for embedded modems
    - 1 dB for PSK modem (5.3.2)
    - 2 dB for HDR modem (Appendix C), 3 dB at 9600 bps
  - Appendix B performance specs relaxed by 1 dB
  - Appendix C: recommend Square Root Nyquist filter
  - Corrected channel 0 definition in Appendix F

MIL-STD-188-110B Notice 1

- TAC recommendations for Draft 2 – Editorial:
  - Update references (e.g., EIA-422 vs MIL-STD-188-114)
  - Add STANAG 4591 (MELP) digital voice
  - Modem driver software "documented" not "standardized"

MIL-STD-188-141B

- "Interoperability and Performance Standards for Medium- and High-Frequency Radio Systems"

- Current issue is Change Notice 1, dated 31 August 2001

MIL-STD-188-141B

- Change Notice 2 Draft 1
  - Base doc, App A, B: minor tweaks, clarifications
  - Appendix C: changes to match STANAG 4538
  - Appendix E: changes to track STANAG 5066a1

- This draft extensively revised by TAC in June

MIL-STD-188-141B Notice 2

- TAC recommendations for Draft 2 – Major surgery:
  - Appendix C (3G): replace with reference to STANAG 4538
    - Need research and Working Group guidance on which LSU mode
  - Appendix D (HF networking): Revise or remove
  - Appendix E (HF Applications) to be informative only
  - Appendix F (Anti-jam): Remove
  - Appendix G (2G data link protocol): Remove
  - Appendix H (HF MIB): Remove

MIL-STD-188-141B Notice 2

- TAC recommendations for Draft 2 – Radio specs:
    - New (optional) operation in 6, 12, and 24-kHz channels
    - Removed narrowband FM operation
    - Line-level analog interface optional with internal modem
    - Co-sited operation explained
    - Broadband and discrete emission requirements clarified
    - Electrical interface specs clarified
    - AGC specs revised

MIL-STD-188-141B Notice 2

- TAC recommendations for Draft 2
  ### Appendix A – 2G ALE specs:
  - Clarified mandatory *vs* optional in
    - Programmable operating parameters (A.4.3.4)
    - Orderwire commands (Table A-XVI)
  - Time exchange mandatory only with AL-2 or higher LP
  - Slot wait timing formulas corrected; added an example

Questions?