

Revision of US Military HF Radio Standards

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Eric E. Johnson

New Mexico State University
Klipsch School of Electrical and Computer Engineering
and Physical Science Laboratory

eejohnson @ ieee.org

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 should be deleted.

MIL-STD-188-110B

- “Interoperability and Performance Standards for Data Modems”
- Current issue is original -110B, dated 27 April 2000
- <http://wireless.nmsu.edu/hf/standards/MIL/>
(login and password required)

MIL-STD-188-110B

- Change Notice 1 is at 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
- Major changes under consideration in JTRS

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
- <http://wireless.nmsu.edu/hf/standards/MIL/>
(login and password required)

MIL-STD-188-141B

- Change Notice 2 is at Draft 1
 - Base doc, App A, B: minor tweaks, clarifications
 - Appendix C: changes to match STANAG 4538
 - Appendix E: changes to track STANAG 5066a1
- Major changes under consideration in JTRS
- New developments in NATO working group

MIL-STD-188-141B

- New developments for Appendix C

HDL+ ARQ using 12,800 bps waveform
with code combining (duplex?)

MDL Multicast data link
(designed for ACP-142 P-MUL)

JTRS HF Waveform Update

JTRS HF Waveform Status

(17 April 2006)

- Cluster 1: cost overruns and schedule slips at prime contractor
- Rockwell HF waveform software
 - Doing good job
 - 90% done
 - Stop Work order issued despite this
 - Use of Ada is a problem for Cluster 5

JTRS HF Waveform: Industry Day

- Program Office issued Request for Information to industry
- 6 April 2006: Industry Day
 - Briefings by Program Office and HF industry
 - Industry recommended spiral development, deleting some requirements
- 17 April 2006: Program Office consolidates industry comments

Current Status of HF in JTRS

(as of January 2007)

- HF waveform work restarted in October '06
- Only Spiral 1 is funded so far

Spiral One

- 188-110B – FSK, Serial Tone, App C
- STANAG 4285
- 188-141B – Radio, 2G ALE (incl AQC), LP (AL0-3)
- STANAG 5066 w/Annex A/B/C/D
- Clear voice – analog
- Secure voice – LPC-10 and MELP
- ACES, AKMS processing

Future Spiral(s)

- 188-110B – App F (ISB Operation)
- STANAG 4415 and 4539
- Third Generation ALE
 - 188-141B or STANAG 4538?
- Frequency Hopping
 - 188-148A or STANAG 4444?
 - 188-141B Appendix F

Industry-Recommended Deletions

- MIL-STD-188-141B
 - NBFM
 - AME
 - CW
 - App B: Linking Protection - AL4
 - App D: Networking
 - App E: Application Protocols (defer to 5066)
 - App H: HF MIB

Industry-Recommended Deletions

- 188-110B
 - App A: 16-tone
 - App B: 39-tone
 - App D: Modem interface
 - App E: Data link protocol
- STANAG 4529
- Improved Data Modem Interface
- ANDVT – 16/39 Tone (M-C-28883)

Questions?