MIL-HDBK-188
31 JULY 1985

MILITARY HANDBOOK

GUIDE FOR DEVELOPERS AND USERS OF COMMUNICATIONS SYSTEMS STANDARDS IN THE MIL-STD-188 SERIES

VOLUME III OF 3 VOLUMES

SELECTION GUIDE FOR PUBLISHED TELECOMMUNICATIONS-RELATED STANDARDS SPECIFICATIONS AND HANDBOOKS

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DEPARTMENT OF DEFENSE
WASHINGTON, D.C. 20360-5100

MIL-HDBK-188 (VOL III)
GUIDE FOR DEVELOPERS AND USERS OF COMMUNICATIONS
SYSTEMS STANDARDS IN THE MIL-STD-188 SERIES

1. This Military Handbook is approved for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Space and Warfare Systems Command, Attn: SPAWAR-8111, Washington, D.C. 20360-5100, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FOREWORD

1. Originally, Military Standard 188 (MIL-STD-188) covered technical standards for tactical and long haul communications, but later evolved through revisions (MIL-STD-188A, MIL-STD-188B) into a document applicable to tactical communications only (MIL-STD-188C).

2. The Defense Communications Agency (DCA) published DCA Circulars (DCAC) promulgating standards and engineering criteria applicable to the long haul Defense Communications System (DCS) and to the technical support of the National Military Command System (NMCS).

3. As a result of a Joint Chiefs of Staff (JCS) action, standards for all military communications are now being published in a MIL-STD-188 series of documents. The MIL-STD-188 series is subdivided into a MIL-STD-188-100 series covering common standards for tactical and long haul communications, a MIL-STD-188-200 series covering standards for tactical communications only, and a MIL-STD-188-300 series covering standards for long haul communications only. Emphasis Is being placed on developing common standards for tactical and long haul communications published in the MIL-STD-188-1OO series.

4. Military communications handbooks are published in the MIL-HDBK-400 series, as a rule. An exception, however, is this handbook (MIL-HDBK-188).

5. An Under Secretary of Defense for Research and Engineering (USDRE) memorandum of 16 August 1983 (Reference 2.1; see Appendix A) directed that relevant 188 series of military standards will continue to be mandatory for use by the Department of Defense (DOD). Further, they are to be of uniformly high quality, clear and concise as to application and, wherever possible, compatible with existing or proposed national, international and Federal telecommunication standards.

6. This handbook is intended to assist the achievement of the goals in the 16 August 1983 USDRE memorandum by providing: a) basic and fundamental information on the objectives, procedures, programs, and activities that impact the development and use of the MIL-STD-188 series, and b) valuable information and guidance to personnel concerned with the development of, or use of, MIL-STD-188 series standardization documents. The handbook is not intended to be referenced in purchase specifications, except for informational purposes, nor shall the handbook supersede any specification requirements.

7. MIL-HDBK-188 consists of three volumes: Volume I - Standard Development and Use/Organizational Relationships, Volume 11 - Details concerning Standardization Organizations, and Volume III - Selection Guide for Published Telecommunications-Related Standards, Specifications, and Handbooks.

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1. SCOPE

1.1 PURPOSE

This Handbook has been developed as a Guide in selecting standards, specifications, and handbooks related to various aspects of telecommunications. The Guide is to serve only as a convenient index and does not preclude the user's responsibility to read the actual documents selected in order to determine applicability. The Guide is intended primarily for use by acquisition managers and personnel involved in procurement of telecommunications systems and equipment. General information about documents referenced in the Handbook is specified below.

a. The Guide indexes only those standardization documents which have been adopted by the DOD and included in the Department of Defense Index of Specifications and Standards (DODISS). Such documents include North Atlantic Treaty Organization (NATO) Standardization Agreements (STANAGs), Quadripartite Standardization Agreements (QSTAGs), American National Standards Institute (ANSI) documents, Electronic Industries Association (EIA) documents, Federal Standards (FED-STDs), Federal Information Processing Standards (FIPS), Military Standards, Military Specifications, and Military Handbooks.

b. Other telecommunications-related documents, though not indexed, are included in the synopses portion of the Guide for information purposes. These additional documents include International Telegraph and Telephone Consultative Committee (CCITT) and International Radio Consultative Committee (CCIR) recommendations, and selected industry standards.

c. Additionally, Appendix B provides a listing of instructions, directives and other service/agency unique design guidance documents related to telecommunications.

d. All publication dates appearing in this Handbook were valid only at the time of writing. The reader is urged to verify publication dates and current editions and amendments of documents. To facilitate this, Federal Supply Classifications (FSCs) and DOD standardization area assignment codes have been included in the synopses of DOD adopted documents. The reader can then refer by FSC/Area to Part 111 of the DODISS to determine current publication dates and latest validation dates.

e. MIL-HDBK-188, Volume I, Appendix D provides some helpful information regarding obtaining standardization documents. The reader is reminded to first ascertain if the desired documentation is available through established individual command channels.

f. Due to security considerations, synopses of NATO documents are not contained in this Guide.

g. All terms employed in this Guide are used according to the definitions provided by FED-STD-1037.

h. Appendices C and D are provided for information purposes only.

1.2 STRUCTURE OF THE GUIDE AND USER'S INSTRUCTIONS

a. This Guide has been assembled to provide a convenient method for obtaining an overview of standardization documents related to various telecommunications disciplines. The disciplines identified for use in this Guide are shown in TABLE I with examples illustrating each discipline.

TABLE I

TELECOMMUNICATIONS DISCIPLINES

Discipline	Examples
Transmission media	Propagated radio frequency, metallic lines, fiber optics
Transmission media adaptation	Transmitters, receivers, modems, analog-to-digital converters, multiplexer, antennas
Secure telecommunications and teleprocessing	Cryptographic equipment, computer security
Switching	Switches, patching systems
Teleprocessing	Data buses, computer information exchange
Terminal equipment and end instruments	Teletypewriter equipment, telephones, magnetic tape equipment, video screens
Electrical Power	Power supplies, generators, power distribution
Techniques	Grounding, bonding and shielding; timing and synchronization; operational procedures; reliability and survivability; safety

b. Section 4 lists, by telecommunications discipline (see TABLE II), the standardization documents related to subheadings under each discipline. Those subheadings are user-oriented to facilitate locating appropriate standards, specifications, and handbooks. Section 5 contains synopses of each document listed in Section 4. The documents are listed numerically and grouped by type and origin (that is, Military Standard (MIL-STD), Institute of Electrical and Electronics Engineers (IEEE), STANAG, and so forth).

c. FIGURE 1 shows how to use this Guide. After determining the appropriate discipline and subheading listed in the Table of Contents, turn to the pages indicated to find a listing of the documents related to the selected subheading. A synopsis of each document is provided in Section 5 to assist the User in selecting the document(s) most appropriate to his concerns.

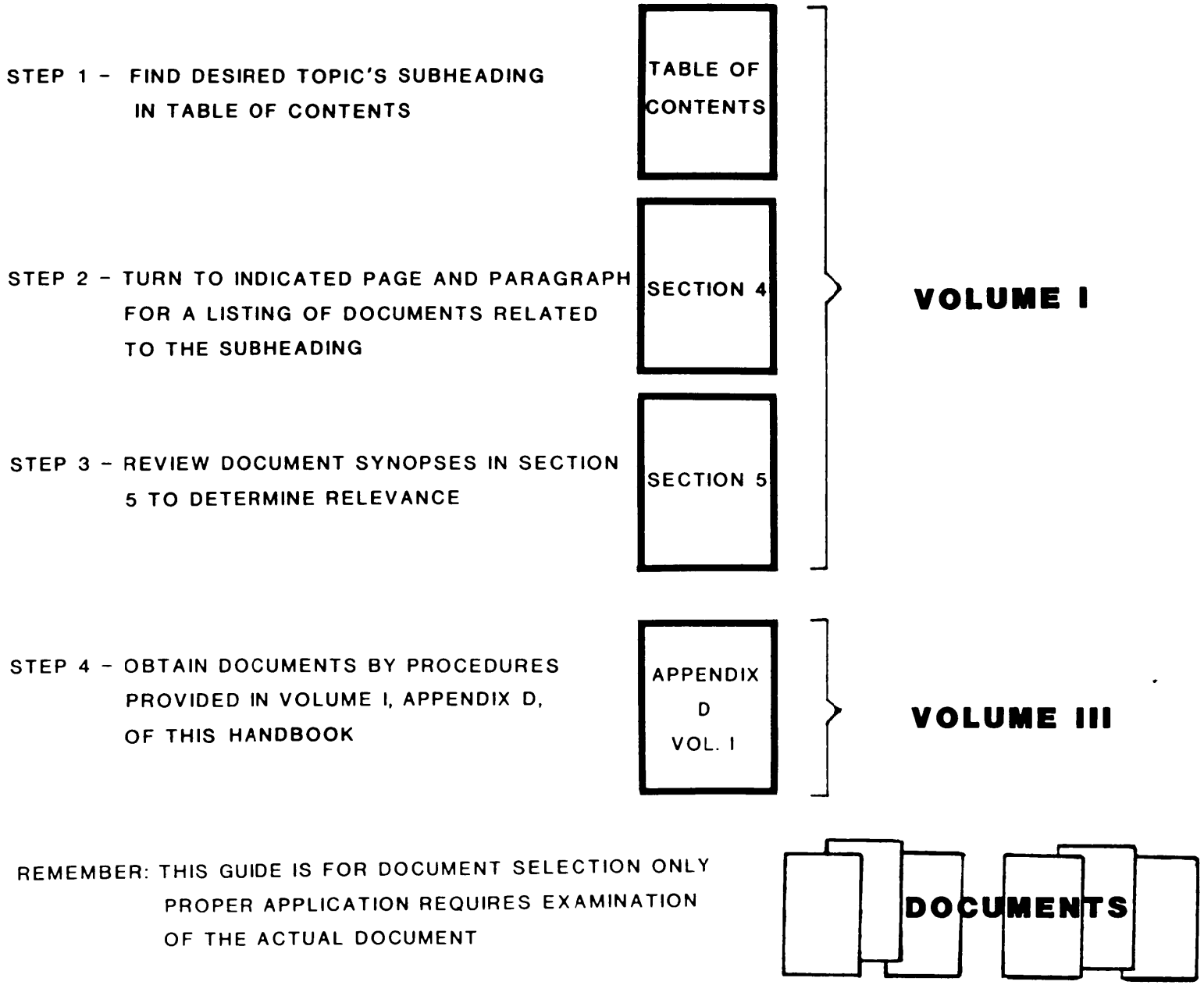

FIGURE 1. Use of the guide

2. REFERENCED DOCUMENTS

2.1 USDRE Memo: Mandatory Use of Military Telecommunications Standards in the MIL-STD-188 Series, 16 August 1983 (see Appendix A).

2.2 Defense Standardization Manual, DoD 4120.3-M, August 1978

2.3 MIL-STD-143, Order of Precedence for the Selection of Specifications and Standards, 12 November 1969.

2.4 DOD Directive 4120.21, Application of Specifications, Standards, and related documents in the acquisition process, 3 November 1980.

2.5 DA Pamphlet 310-35, Index of International Standardization Agreements.

2.6 NATO Military Standardization Agreements and Allied Publications (W) AAP-4 ( ), Published once a year by the NATO Military Agency for Standardization (MAS).

2.7 DOD-HDBK-248A, Guide for Application and Tailoring of Requirements for Defense Materiel Acquisitions, 15 October 1979.

2.8 Defense Science Board, Report of the Task Force on Specifications and Standards, April 1977.

2.9 FED-STD-1037, Glossary of Telecommunication Terms.

3. DEFINITIONS, ACRONYMS, AND ABBREVIATIONS

3.1 Definitions. Definitions of terms are published in Section 3 of MIL-HDBK-188, Volume 1, and FED-STD-1037.

3.2 Acronyms and abbreviations. The acronyms and abbreviations used in this handbook are explained in Appendix E of Volume I.

4. DOCUMENT SELECTION INDEX

In this section, telecommunications-related documents adopted for DOD use have been organized according to their appropriate telecommunications sub-discipline. See Section 1 for user's instructions.

4.1 TRANSMISSION MEDIA

4.1.1 Propagated radio wave

MIL-STD-188-148	Interoperability Standard For AJ Communications In The High Frequency (2-30 MHz) Band	20 AUG 84
MIL-STD-449D	Radio Frequency Spectrum Characteristics, Measurement Of	18 MAY 76

4.1.2 Metallic lines

4.1.2.1 Wire systems

MIL-STD-188-112	Subsystem Design And Engineering Standards For Common Long Haul And Tactical Cable And Wire Communications	31 AUG 83
QSTAG 228	Connectors For Multi-Pair Field Telephone Cables	20 JAN 71
QSTAG 513	System For Field Wire Labeling	23 FEB 79
EIA RS-215	Basic Requirements For Broadcast Microphone Cables	09 OCT 81
EIA RS-297-A	Cable Connectors For Audio Facilities For Radio Broadcasting	JUN 70

SPECIFICATIONS

MIL-I-983E(1)	Interior Communication Equipment, Naval Shipboard, Basic Design And Requirements For	22 DEC 67
MIL-I-16421B	Intercommunication Set, Divers	07 APR 54
MIL-C-22442A	Cable Assemblies, Aircraft Audio, General Specification For	31 DEC 80
MIL-C-23553B	Cable, Audio Signal, Shore Use	12 MAY 70

4.1.2.2 Coaxial cable systems

MIL-STD-1329B	Switch, RF Coaxial, Selection Of	30 JUN 76
MIL-STD-1636	Adapters, Coaxial To Waveguide, Selection Of	22 APR 77
MIL-STD-2113	Radio Frequency Circulators And Isolators, Selection Of	23 JUL 80

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QSTAG 203	Cables, Coaxial And Twin Conductor, For Radio Frequency	12 JAN 68

SPECIFICATIONS

MIL-C-17F	Cable, Radio Frequency, Flexible And Semirigid, General Specification For	18 JAN 83
MIL-S-3928C(1)	Switch, (Coaxial) Radio Frequency Transmission Line, General Specification For	22 JAN 80
MIL-C-15370C(2)	Coupler Directional (Coaxial Line Or Waveguide), General Specification For	14 JUN 76
MIL-C-22931B(1)	Cable, Radio Frequency, Semirigid, Coaxial Semi-air-dielectric, General Specification For	16 DEC 76
MIL-C-23020B	Cable, Coaxial (For Submarine Use)	12 APR 65
MIL-C-23806A(1)	Cable, Radio Frequency, Coaxial, Semirigid, Foam Dielectric General Specification	17 SEP 70
MIL-S-24067(2)	Switch, Coaxial, Radio Frequency Transmission Line (For Use With Electronic Countermeasures Equipment), General Specification	19 NOV 65
MIL-C-28790	Circulator Radio Frequency, General Specification For	10 JUN 73
MIL-I-28791	Isolator, Radio Frequency, General Specification For	10 JAN 73
MIL-L-28796	Line Assemblies, Radio Frequency Transmission, General Specification For	10 AUG 73
MIL-C-28830B	Cable, Radio Frequency, Coaxial, Semirigid, Corrugated Outer Conductor, General Specification For	09 MAR 82
MIL-C-39012B	Connectors, Coaxial, Radio Frequency, General Specification For	09 APR 70
MIL-C-49142	Connector, Triaxial, Radio Frequency, General Specification For	17 APR 78
MIL-A-55339A	Adapters, Connectors, Coaxial, Radio Frequency, General Specification For	28 FEB 79

MIL-C-55427A	Cable Assembly, Radio Frequency, General Specification For	14 APR 78

4.1.2.3 Waveguide

MIL-STD-1358B	Waveguides, Rectangular, Ridge And Circular, Selection Of	06 MAR 78
MIL-STD-1636	Adapters, Coaxial To Waveguide, Selection of	22 APR 77
MIL-STD-1638A	Waveguide Assemblies, Rigid And Flexible, Selection Of	21 AUG 80
MIL-STD-2113	Radio Frequency Circulators And Isolators, Selection Of	23 JUL 80
MIL-HDBK-660A	Fabrication Of Rigid Waveguide Assemblies (Sweep Bends And Twists)	23 JUL 80

SPECIFICATIONS

MIL-W-85G	Waveguide, Rigid, Rectangular, General Specification For	20 APR 76
MIL-W-287E	Waveguide Assembly, Flexible, Twistable And Nontwistable, General Specification For	21 AUG 80
MIL-F-3922B(3)	Flange, Waveguide General Purpose, General Specification For	04 MAY 76
MIL-E-3954C(2)	Electrical, Waveguide, General Specification For	29 MAR 79
MIL-W-3970C	Waveguide Assemblies, Rigid, General Specification For	01 APR 83
MIL-C-15370C(2)	Coupler, Directional (Coaxial Line Or Waveguide), General Specification For	14 JUN 70
MIL-A-22641C(3)	Adapter, Coaxial to Waveguide, General Specification For	21 SEP 78
MIL-W-23351A	Waveguide, Single Ridge And Double Ridge, General Specification For	20 OCT 77
MIL-G-24211	Gasket , Waveguide Flange, General Specification For	28 MAR 66
MIL-C-28790	Circulators, Radio Frequency, General Specification For	10 JUN 73

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MIL-I-28791	Isolator, Radio Frequency, General Specification For	10 JAN 73
MIL-L-28796	Line Assemblies, Radio Frequency Transmission, General Specification For	10 AUG 73
MIL-W-28839	Waveguides, Elliptical, General Specification For	13 MAR 78
MIL-F-39000A	Flanges, Waveguide Ridge, General Specification For	21 OCT 77
MIL-S-55041B	Switch, Waveguide, General Specification For	30 MAR 76

4.1.2.4 General

MIL-STD-188C	Military Communications System Technical Standards	24 NOV 69
MIL-STD-188-100	Common Long Haul And Tactical Communication System Technical Standard	15 NOV 72
MIL-STD-188-200	System Design And Engineering Standards For Tactical Communications	28 JUN 83
MIL-STD-1352E	Attenuator, Fixed And Variable, Selection Of	30 JUN 81

SPECIFICATIONS

MIL-A-3933D(1)	Attenuators, Fixed, General Specification For	18 DEC 81
MIL-T-81490	Transmission Lines, Transverse Electromagnetic Mode	21 SEP 72

4.1.3 Fiber optics

MIL-STD-188-111	Subsystem Design And Engineering Standards For Common Long Haul And Tactical Fiber Optics Communications	24 JAN 84
MIL-STD-1863	Interface Designs And Dimensions For Fiber Optic Interconnection Devices	02 DEC 82

SPECIFICATIONS

DoD-C-85045	Cable, Fiber Optics, General Specification For (Metric)	16 FEB 78

4.2 TRANSMISSION MEDIA ADAPTATION

4.2.1 Transmitters/Receivers

4.2.1.1 ELF/VLF/LF

MIL-STD-188-140	Equipment Technical Design Standards For Common Long Haul And Tactical Radio Communications In The Low Frequency Band And Lower Frequency Bands	03 APR 81
STANAG 5030	Single Channel VLF RATT On-Line Broadcast Systems	22 NOV 78
STANAG 5031	Introduction Of Modern Radio Equipment For Naval HF, MF And LF Shore To Ship Broadcasts	09 OCT 79
STANAG 5035	Introduction Of An Improved System For Maritime Air Communications On HF, LF And UHF	09 JAN 76

4.2.1.2 MF/ HF

MIL-STD-188-148	Interoperability Standard For AJ Communications In The High Frequency (2-30 MHz) Band	20 AUG 84
MIL-STD-188-317	Subsystem Design And Engineering Standards And Equipment Technical Design Standards For High Frequency Radio	30 MAR 72
STANAG 4203	Technical Standard For Single Channel HF Radio Equipment	05 MAY 83
STANAG 5031	Introduction Of Modern Radio Equipment For Naval HF, MF And LF Shore To Ship Broadcast	09 OCT 79
STANAG 5035	Introduction Of An Improved System For Maritime Air Communications On HF, LF And UHF	09 JAN 76
QSTAG 263A	Standards To Achieve Interoperability Of ABCA Armies High Frequency Combat Net Radio Equipment	14 JUN 76
FED-STD-1035	Telecommunications, Coding, Modulation And Transmission Requirements For Single Channel Medium And High Frequency Radiotelegraph Systems Used In Government Maritime Mobile Telecommunications	29 MAR 77

4.2.1.3 VHF

QSTAG 263B	Standards To Achieve Interoperability Of ABCA Armies Very High Frequency Combat Net Radio Equipment	03 MAR 77
STANAG 4204	Technical Standards For Single Channel VHF Radio Equipment	21 JAN 83
SPECIFICATIONS		
MIL-T-28849(2)	Transceiver, VHF/UHF	13 JUL 79

4.2.1.4 UHF

STANAG 4205	Technical Standards For Single Channel UHF Radio Equipment	20 JUN 83
STANAG 5020	Interoperability Of Aircraft UHF Multi Frequency Transceiver Installation And Compatible Ground Transmitters And Receivers	25 APR 80
STANAG 5021	Military Characteristics For Ground And Surface UHF Direction Finding Equipment	29 AUG 80
STANAG 5035	Introduction Of An Improved System For Maritime Air Communications On HF, LF And UHF	09 JAN 76
STANAG 5038	Interoperability Of Ship UHF Transmitting And Receiving Systems	06 OCT 76
QSTAG 263C	Standards To Achieve Interoperability Of ABCA Armies Ultra High Frequency Combat Net Radio Equipment	14 JUN 76
SPECIFICATIONS		
MIL-T-28849(2)	Transceiver, VHF/UHF	13 JUL 79
MIL-A-28949(3)	Amplifier, Linear Power, Ultra High Frequency	17 DEC 71

4.2.1.5 Microwave/Tropospheric

MIL-STD-188-313	Subsystem Design And Engineering Standards And Equipment Technical Design Standards For Long Haul Communications Traversing Microwave LOS Radio And Tropospheric Scatter Radio	19 MAR 73

MIL-STD-188-322	Subsystem Design/Engineering And Equipment Technical Design Standards For Long Haul Line Of Sight (LOS) Digital Microwave Radio Transmission	02 FEB 84
MIL-HDBK-416	Design Handbook For Line Of Sight Microwave Communication Systems	15 NOV 77
MIL-HDBK-417	Facility Design for Tropospheric Scatter (Transhorizon Microwave System Design)	25 NOV 77

4.2.1.6 Satellite communications

MIL-HDBK-412	Site Survey And Facility Design Handbook For Satellite Earth Stations	20 MAY 81

4.2.1.7 Special applications

- Data Links -

MIL-STD-188-203-1	Subsystem Design And Engineering Standards For Tactical Digital Information Link (TADIL) A	10 SEP 82
MIL-STD-188-203-2	Subsystem Design And Engineering Standards For Tactical Digital Information Link (TADIL) B	23 MAR 84
MIL-STD-188-203-3	Subsystem Design And Engineering Standards For Tactical Digital Information Link (TADIL) C	05 OCT 83
STANAG 4202	Transmission Envelope Characteristics For High Reliability Data Exchange Between Land Tactical Data Processing Equipment Over Single Channel Radio Links	24 JUN 83
STANAG 5040	Recommendation For NATO Automatic And Semi-Automatic Interfaces Between The National Telecommunications Systems Of The Combat Zone And Between These And The NATO Integrated Communications System (1975-1990)	21 FEB 77
STANAG 5501	Point-to-Point Digital Data Link - Link 1	25 SEP 73
STANAG 5504	Tactical Data Link For The Control Of Aircraft - Link 4	10 SEP 75

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STANAG 5510	Maritime Tactical Data Exchange - Link 10	01 AUG 79
STANAG 5511	Tactical Data Exchange - Link 11	26 APR 79
- Fiber Optics -		
MIL-STD-188-111	Subsystem Design And Engineering Standards for Common Long Haul And Tactical Fiber Optics Communications	24 JAN 84
MIL-STD-1863	Interface Designs And Dimensions For Fiber Optics Interconnection Devices	02 DEC 82
SPECIFICATIONS		
DOD-C-85045	Cable, Fiber Optics, General Specification For	16 FEB 78
- Other Special Applications -		
STANAG 5009	Military Characteristics Of Radio Equipment For Naval Gunfire Support Of Shore Forces	09 SEP 77
STANAG 5013	Data Transmission For Radar Doppler Navigation Systems	22 OCT 81
STANAG 5034	TACAN Policy	03 APR 81
QSTAG 209	Definition Of Weight Of A Standard Manpack Radio Station	06 OCT 81

4.2.1.8 Related standards

MIL-STD-188C	Military Communication System Technical Standards	24 NOV 69
MIL-STD-188-100	Common Long Haul And Tactical Communication System Technical Standards	15 NOV 72
MIL-STD-188-342	Standards For Long Haul Communications, Equipment Technical Design Standards For Voice Frequency Carrier Telegraph (FSK)	29 FEB 72
MIL-STD-187-320	Transmission Planning Standards For The Defense Communications System	29 MAR 80
FED-STD-1002	Time And Frequency Reference Information In Telecommunication Systems	22 APR 75

SPECIFICATIONS

MIL-T-19835(2)	Transmitting Set, Radio	04 FEB 60

4.2.2 Modems/A-D converters

4.2.2.1 Modems, general

MIL-STD-188-110	Equipment Technical Design Standards For Common Long Haul And Tactical Data Modems	15 NOV 83
MIL-STD-188-114	Electrical Characteristics Of Digital Interface Circuits	24 MAR 76 -
MIL-STD-1397A	Input And Output Interfaces, Standard Digital Data, Navy Systems	07 JAN 83
MIL-STD-2117	Communications , Digital Control And Status Information Interchange Standard	27 FEB 81
STANAG 4146	Interim Specifications For Input And Output Interface For NATO Naval Data Handling Equipment	14 NOV 77
STANAG 5036	Parameters And Practices For Use Of The NATO 7-Bit Code	09 APR 76
QSTAG 432	Data Transmission Codes	30 NOV 82
QSTAG 594	Electrical Characteristics Of Digital Interface Circuits	25 MAR 81
QSTAG 675	Principles For The Automated Transfer Of Data/Information Between Tactical Command And Control Systems	10 FEB 82
QSTAG 676	Rules For Achieving Subsystems Interoperability Between The Automated Tactical Command And Control Systems Of ABCA Armies	14 APR 82
EIA IEB-9	Application Notes On EIA Standard RS-232C	MAY 71
EIA IEB-12	Application Notes On Interconnection Between Interface Circuits Using RS-449 And RS-232C	NOV 77
EIA RS-232-C	Data Equipment, Terminal Equipment And Data Communications Interface Between Employing Serial Binary Data Interchange	JUN 81

4.2.1.7
4.2.2
4.2.2.1

EIA RS-422-A	Electrical Characteristics Of Balanced Voltage Digital Interface Circuits	DEC 78
EIA RS-423-A	Electrical Characteristics Of Unbalanced Voltage Digital Interface Circuits	DEC 78
EIA RS-449	General Purpose 37-Position And 9-Position Interface For Data Terminal Equipment And Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange	NOV 77
FED-STD-1001	Telecommunications, Synchronous High-Speed Signaling Rates Between Data Terminal Equipment And Data Communication Equipment	15 JUN 75
FED-STD-1002	Time And Frequency Reference Information In Telecommunication Systems	22 APR 74
FED-STD-1003A	Synchronous Bit Oriented Data Link Control Procedures (Advanced Data Communication Control Procedures)	19 AUG 81
FED-STD-1005	Telecommunications, Coding And Modulation Requirements For Non-Diversity 2400 Bit Per Second Modems	20 JAN 77
FED-STD-1006	Telecommunications, Coding And Modulation Requirements For 4800 Bit Per Second Modems	22 DEC 77
FED-STD-1007	Telecommunications, Coding And Modulation Requirements For Duplex 9600 Bit Per Second Modems	24 MAR 81
FED-STD-1008	Telecommunications, Coding And Modulation Requirements For Duplex 600 and 1200 Bit Per Second Modems	16 JUN 80
FED-STD-101O	Telecommunications, Bit Sequencing Of The American National Standard Code For Information Interchange By Serial-By-Bit Data Transmission	11 AUG 77
FED-STD-1011	Telecommunications, Character Structure And Character Parity Sense For Serial-By-Bit Data Communication In The American National Standard Code For Information Interchange	11 AUG 77
FED-STD-1012	Telecommunications, Character Structure And Character Parity Sensor For Parallel-By-Bit Data Communication In The American National Standard Code For Information Interchange	11 AUG 77

4.2.2.1

FED-STD-1013	Telecommunications, Synchronous Signaling Rates Between Data Terminal Equipment And Data Circuit Terminating Equipment Utilizing 4 kHz Circuits	11 AUG 77
FED-STD-1020A	Electrical Characteristics Of Balanced Voltage Digital Interface Circuits	01 JAN 80
FED-STD-1030A	Telecommunications, Electrical Characteristics Of Unbalanced Voltage Digital Interface Circuits	31 JAN 80
FED-STD-001033 (Interim)	Digital Communication Performance Parameters	29 AUG 79
FED-STD-1041	Interface Between Data Terminal Equipment And Data Circuit-Terminating Equipment For Operation With Packet-Switched Data Telecommunications	24 MAR 81
FIPS-16-1	Bit Sequencing Of The Code For Information Interchange In Serial-By-Bit Data Transmission	01 SEP 77
FIPS-17-1	Character Structure And Character Parity Sense For Serial-By-Bit Data Communication In Code For Information Interchange	01 SEP 77
FIPS-18-1	Character Structure And Character Parity Sense For Parallel-By–Bit Data Communication In Code For Information Interchange	01 SEP 77
FIPS-22-1	Synchronous Signaling Rates Between Data Terminal And Data Communication Equipment	01 SEP 77
FIPS-37	Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment And Data Communications Equipment	15 JUN 75
FIPS-100	Interface Between Data Terminal Equipment (DTE) And Data Circuit-Terminating Equipment (DCE) For Operation With Packet-Switched Data Communications Networks	06 JUL 83

4.2.2.1

4.2.2.2 Record and data application

MIL-STD-188-342	Standards For Long Haul Communications Equipment Technical Design Standards For Voice Frequency Carrier Telegraph (FSK)	29 FEB 72
QSTAG 300	Telegraph And Data Transmission Rates	15 JAN 79

4.2.2.3 Voice application

MIL-STD-188-340	Equipment Technical Design Standards For Voice Orderwire Multiplex	21 MAY 71

4.2.2.4 Special application

- Data Links -

MIL-STD-188-203-1	Subsystem Design And Engineering Standards For Tactical Digital Information Link (TADIL) A	10 SEP 82
MIL-STD-188-203-2	Subsystem Design And Engineering Standards For Tactical Digital Information Link (TADIL) B	23 MAR 84
MIL-STD-188-203-3	Subsystem Design And Engineering Standards For Tactical Digital Information Link (TADIL) C	05 OCT 83
STANAG 5501	Point-To-Point Digital Data Link - Link 1	23 SEP 73
STANAG 5504	Tactical Data Link For The Control Of Aircraft - Link 4	10 SEP 75
STANAG 5510	Maritime Tactical Data Exchange - Link 10	01 AUG 79
STANAG 5511	Tactical Data Exchange - Link 11	26 APR 79

- Other Special Applications -

STANAG 5013	Data Transmission For Radar Doppler	23 NOV 73

4.2.3 Multiplexing

MIL-STD-188-100	Common Long Haul And Tactical Communications System Technical Standards	15 NOV 72
MIL-STD-188-200	System Design And Engineering Standards For Tactical Communications	28 JUN 83
MIL-STD-188-311	Technical Design Standards For Frequency Division Multiplexer	10 DEC 71

MIL-STD-188-340	Equipment Technical Design Standards For Voice Orderwire Multiplex	21 MAY 71
MIL-STD-188-342	Standards For Long Haul Communications Equipment Technical Design Standards For Voice Frequency Carrier Telegraph (FSK)	29 FEB 72
FED-STD-1002	Time And Frequency Reference Information In Telecommunication Systems	22 APR 74

SPECIFICATIONS

MIL-T-28709	Terminal, Telegraph, Transistorized Voice Frequency Carrier	15 NOV 68
MIL-M-85139	Multiplexer, Pulse Code Modulation	19 SEP 79

4.2.4 Antennas

4.2.4.1 HF

MIL-HDBK-332	Evaluation Of High Frequency Antennas In An Operational Environment	14 DEC 70

SPECIFICATIONS

MIL-A-28768A(1)	Antenna, Fixed High Frequency, General Specification For	01 OCT 73
MIL-A-28768/2A	Antenna, Fixed High Frequency, High Take-Off Angle	15 DEC 72
MIL-A-28768/3	Antenna, Fixed High Frequency, Vertical Log Periodic (Dipole)	26 OCT 73
MIL-A-28772B(1)	Antenna, High Frequency (HF) Fixed Rotatable Log Periodic	06 NOV 81

4.2.4.2 VHF/UHF

SPECIFICATIONS

MIL-A-6224E	Antenna Systems For UHF Airborne Communication Equipment, General Specification For Design Of	07 JUN 76
MIL-A-6271C	Antenna, VHF Airborne Communication Equipment, General Specification For Design Of	07 JUN 76
MIL-A-25708C	Antenna, Blaue L-Band, General Specification For	17 OCT 75

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4.2.4.1
4.2.4.2

4.2.4.3 General application

MIL-STD-877	Antenna Subsystem, Airborne, Criteria For Design And Location Of	09 JUL 68

SPECIFICATIONS

MIL-A-7965C	Antenna Components, Antiprecipitation Static	22 MAY 64
MIL-S-83739A	Switch, Antenna, Radio Frequency, Solid State, General Specification For	09 NOV 75
MIL-A-87136	Antenna, Airborne, General Specification For	09 JAN 79

4.2.4.4 Special applications

- Submarine antenna systems -

SPECIFICATIONS

MIL-A-23836	Antenna Systems, Submarine, Design, Location, And Installation, General Specification For	03 SEP 63

- Dummy loads -

MIL-STD-1637A	Dummy Load, Electrical, Waveguide, Coaxial And Stripline Selection Of	24 DEC 80

SPECIFICATIONS

MIL-D-39030B	Dummy Load, Electrical, Coaxial, General Specification For	26 JUN 81

4.3 SECURE TELECOMMUNICATIONS AND TELEPROCESSING

MIL-STD-1680A	Installation Criteria For Shipboard Secure Electrical Information Processing Systems	06 DEC 79
MIL-HDBK-232	Red And Black Engineering Installation Guidelines	14 NOV 72
NACSIM 4009	Protected Distribution Systems	30 DEC 81
NACSIM 5000	Tempest Fundamentals	01 FEB 82
NACSIM 5100A	Compromising Emanations Laboratory Test Requirements, Electromagnetic	01 JUL 81

NACSEM 5201	Tempest Guidelines For Equipment And System Design	SEP 78
NACSIM 5203	Guidelines For Facility Design And Red And Black Installation	30 JUN 82
NACSEM 5204	Shielded Enclosures	MAY 78
FIPS-31	Guidelines For Automated Data Processing Physical Security And Risk Management	01 JUN 74
FIPS-39	Glossary For Computer Systems Security	15 FEB 76
FIPS-41	Computer Security Guidelines For Implementing The Privacy Act Of 1974	30 MAY 75
FIPS-73	Guidelines For Security Of Computer Applications	01 DEC 81
FIPS-83	Guideline On User Authentication Techniques For Computer Network Access Control	01 APR 81

SPECIFICATIONS

MIL-C-28863(1)	Control Group, Communication Security, Integration And Housing Group Components	03 NOV 81

4.4 SWITCHING

4.4.1 Technical control

MIL-STD-188-310A	Subsystem Design And Engineering Standards For Technical Control Facilities	14 JAN 80
MIL-STD-187-310	Standards For Long Haul Communications Switching Planning Standards For The Defense Communication System	14 OCT 76
MIL-HDBK-414	Technical Control Facilities And Equipment For Long Haul Communications (Volume I)	23 MAR 81
STANAG 5018	NATO Manual Interface Between The Manual Switched Telecommunications Systems Of The Combat Zone	01 AUG 78
STANAG 5040	NATO Automatic And Semi-Automatic Interfaces Between The National Switched Systems Of The Combat Zone And Between These Systems And The NICS	21 FEB 77

QSTAG 676	Rules For Achieving Subsystems Interoperability Between The Automated Tactical Command And Control Systems Of ABCA Armies	14 APR 82

4.4.2 Switching devices

MIL-STD-1329B	Switch RF Coaxial, Selection Of	30 JUN 76
SPECIFICATIONS		
MIL-S-3928C(1)	Switch (Coaxial) Radio Frequency Transmission Line, General Specification For	22 JUN 80
MIL-S-24067(2)	Switch, Coaxial, Radio Frequency Transmission Line (For Use With Electronic Countermeasures Equipment), General Specification For	19 NOV 65
MIL-S-55041C	Switch, Waveguide, General Specification For	10 JAN 84
MIL-S-83739A	Switch, Antenna, Radio Frequency, Solid State, General Specification For	09 NOV 75

4.5 TELEPROCESSING

MIL-STD-188-114	Electrical Characteristics Of Digital Interface Circuits	24 MAR 76
MIL-STD-188-203-1	Subsystem Design And Engineering Standards For Tactical Digital Information Link (TADIL) A	10 SEP 82
MIL-STD-188-203-2	Subsystem Design And Engineering Standards For Tactical Digital Information Link (TADIL) B	23 MAR 84
MIL-STD-188-203-3	Subsystem Design And Engineering Standards For Tactical Digital Information Link (TADIL) C	05 OCT 83
MIL-STD-1397A	Input And Output Interfaces, Standard Digital Data, Navy Systems	07 JAN 83
DOD-STD-1399, Section 441	Interface Standard For Shipboard Systems, Section 441 Precise Time And Time Interval	01 JUN 82
MIL-STD-1553B	Aircraft Internal Time Division Command And Response Multiplex Data Bus	12 FEB 80

MIL-STD-2117	Communication, Digital Control And Status Information Interchange Standard	27 FEB 81
STANAG 4146	Interim Specifications For Input And Output Interfaces in NATO Data Handling Equipment	14 NOV 77
STANAG 5036	Parameters And Practices For The Use Of The NATO 7–Bit Code	09 APR 76
STANAG 5501	Point-To-Point Digital Data Link - Link 1	25 SEP 73
STANAG 5504	Tactical Data Link For The Control Of Aircraft - Link 4	10 SEP 75
STANAG 5510	Maritime Tactical Data Exchange - Link 10	01 AUG 79
STANAG 5511	Tactical Data Exchange - Link 11	26 APR 79
QSTAG 432	Data Transmission Codes	30 NOV 82
QSTAG 594	Electrical Characteristics Of Digital Interface Circuits	25 MAR 81
QSTAG 675	Principles For The Automated Transfer Of Data/Information Between Tactical Command And Control Systems	10 FEB 82
QSTAG 676	Rules For Achieving Sub-Systems Interoperability Between The Automated Tactical Command And Control Systems Of ABCA Armies	14 APR 82
EIA IEB-9	Application Notes On EIA Standard RS-232-C	MAY 71
EIA IEB-12	Application Notes On Interconnection Between Interface Circuits Using RS-449 And RS-232-C	NOV 77
EIA RS-232-C	Interface Between Data Terminal Equipment Communications Equipment Employing Serial Binary Data Interchange	JUN 81
EIA RS-422-A	Electrical Characteristics Of Balanced Voltage Digital Interface Circuits	DEC 78
EIA RS-423-A	Electrical Characteristics Of Unbalanced Voltage Digital Interface Circuits	DEC 78
EIA RS-449	General Purpose 37–Position And 9-Position Interface For Data Terminal Equipment And Data Circuit Terminating Equipment Employing Serial Binary Data Interchange	NOV 77

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FED-STD-1001	Telecommunications, Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment And Data Communication Equipment	15 JUN 75
FED-STD-1003A	Telecommunications, Synchronous Bit Oriented Data Link Control Procedures (Advanced Data Communication Control Procedures)	19 AUG 81
FED-STD-1010	Telecommunicate ions, Bit Sequencing Of The American National Standard Code For Information Interchange By Serial-By-Bit Data Transmission	11 AUG 77
FED-STD-1011	Telecommunications, Character Structure And Character Parity Sense For Serial-By-Bit Data Communication In The American National Standard Code For Information Interchange	11 AUG 77
FED-STD-1012	Telecommunications, Character Structure And Character Parity Sense For Parallel-By-Bit Data Communication In The American National Standard Code For Information Interchange	11 AUG 77
FED-STD-1013	Telecommunications , Synchronous Signaling Rates Between Data Terminal Equipment And Data Circuit-Terminating Equipment Utilizing 4kHz Circuits	11 AUG 77
FED-STD-1020A	Telecommunications, Electrical Characteristics Of Balanced Voltage Digital Interface Circuits	01 JAN 80
FED-STD-1030A	Telecommunications, Electrical Characteristics Of Unbalanced Voltage Digital Interface Circuits	31 JAN 80
FED-STD-001033 (Interim)	Telecommunications, Digital Communication Performance Parameters	29 AUG 79
FIPS-01-2	Code For Information Interchange	07 NOV 84
FIPS-07	Implementation Of The Code For Information Interchange And Related Media Standards	07 MAR 69
FIPS-15	Subsets Of The Standard Code For Information Interchange	01 OCT 71
FIPS-16-1	Bit Sequencing Of The Code For Information Interchange In Serial-By-Bit Data Transmission	01 DEC 76

FIPS-17-1	Character Structure And Character Parity Sense For Serial-By-Bit Data Communication In The Code For Information Interchange	01 SEP 77
FIPS-18-1	Character Structure And Character Parity Sense For Parallel-By-Bit Data Communication In The Code For Information Interchange	01 OCT 71
FIPS-22-1	Synchronous Signaling Rates Between Data Terminal And Data Communication Equipment	01 SEP 77
FIPS-37	Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment And Data Communications Equipment	15 JUN 75

4.6 TERMINAL EQUIPMENT AND END INSTRUMENTS

4.6.1 Teletypewriter equipment

MIL-STD-188-347	Equipment Technical Design Standards For Digital End Instruments And Ancillary Devices	29 MAR 73
STANAG 5045	Interoperability Characteristics For Teleprinters Using The NATO 7-Bit Code	23 JAN 78
QSTAG 300	Telegraph and Data Transmission Rates	15 JAN 79
QSTAG 432	Data Transmission Codes	30 NOV 82
ANSI-X3.11	Cards For Information Processing Specification For General Purpose	01 OCT 69
ANSI-X3.19-74	American National Standard, Eleven-Sixteenths Inch Perforated Paper Tape For Information Interchange	27 MAR 74
ANSI-X3.34	Interchange Rolls Of Perforated Tape For Information Interchange	1972
FED-STD-1035	Coding, Modulation And Transmission Requirements For Single Channel Medium And High Frequency Radiotelegraph Systems Used In Government Maritime Mobile Telecommunications	29 MAR 77
FIPS-02	Perforated Tape Code For Information Interchange	01 NOV 68
FIPS-07	Implementation Of The Code For Information Interchange And Related Media Standards	07 MAR 69

FIPS-13	Rectangular Holes In 12-Row Punched Cards	01 OCT 71
FIPS-14-1	Hollerith Punched Card Code	24 DEC 80
FIPS-26	One-Inch Perforated Paper Tape For Information Exchange	30 JUN 73
FIPS-27	Take-Up Reels For One-Inch Perforated Tape For Information Interchange	30 JUN 73
SPECIFICATIONS		
W-T-1604A	Tape, Perforator Type, Polyester Base	12 SEP 73
MIL-T-28789A	Teletypewriter Terminal Equipment, Radio	18 MAY 73

4.6.2 Magnetic information storage equipment

4.6.2.1 Data

MIL-STD-188-347	Standards For Long Haul Communications Equipment Technical Design Standards For Digital End Instruments And Ancillary Devices	29 MAR 73
STANAG 4146	Interim Specifications For Input And Output Interfaces In NATO Naval Data Handling Equipment	14 NOV 77
ANSI X3.52-77	Disk Cartridge, Unrecorded Single, (Front Loading 2200BP1) General Physical And Magnetic Requirements	27 OCT 77
ANSI X3.55-82	Tape Cartridge, Unrecorded Magnetic, For Information Interchange, (.250 in.)	1982
ANSI X3.58-77	American National Standard The Unrecorded Eleven-Disk Pack General, Physical, And Magnetic Requirements	09 JUN 77
FIPS-03-1	Recorded Magnetic Tape For Information Interchange (800 CPI, NRZI)	30 JUN 73
FIPS-07	Implementation Of The Code For Information Interchange And Related Media Standards	07 MAR 69
FIPS-25	Recorded Magnetic Tape For Information Interchange (1600 CPI, Phase Encoded)	30 JUN 73
FIPS-50	Recorded Magnetic Tape For Information Interchange 6250 CPI (246 cpmm) Group Coded Recording	31 AUG 77

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FIPS-51	Magnetic Tape Cassettes For Information Interchange (3.810 mm [0.150 Inch] Tape At 32 bpmm, [800 bpi] PE)	01 FEB 78
FIPS-52	Recorded Magnetic Tape Cartridge For Information Interchange, 4-Track, 6.30 mm (1/4 In.), 63 bpmm (1600 bpi), Phase Encoded	22 FEB 78
FIPS-62	Magnetic Operational Specifications For Tape Subsystems	16 FEB 79
FIPS-63-1	Operational Specifications For Variable Block Rotating Mass Storage Subsystems	14 APR 83
FIPS-79	Magnetic Tape Labels And File Structures For Information Interchange	01 FEB 81

4.6.2.2 Video

MIL-STD-1856A	Tape, Video Magnetic, Recording Formats For	27 APR 83
ANSI-C98.18M	Tape Recording, Video, Basic System And Transport Geometry Parameters For One Inch Type C Helical Scan	22 JUL 81
ANSI-C98.19M	Dimensions And Location Of Records For One Inch Type C Helical–Scan, Video Tape Recording	22 JUL 81
ANSI-C98.20M	Tape Recording Video Frequency Response And Reference Level Of Recorders And Reproducers For Audio Records For One Inch Type C Helical Scan	22 JUL 81
FED-STD-359	Tape, Video, Magnetic Recording, Formats For	21 JAN 77
FED-STD-360	Cartridge, Coplanar, Magnetic, Type CPII (Compact Cassette), Audio Visual Use Of	08 MAR 76

4.6.2.3 Audio

SPECIFICATIONS

MIL-R-22717(3)	Recorder-Reproducer, Sound, Portable, Magnetically Coated Tape	01 MAR 67

4.6.2.1
4.6.2.2
4.6.2.3

4.6.3 Voice equipment

4.6.3.1 General

MIL-STD-188-346	Standards For Long Haul Communications Equipment Technical Design Standards For Analog End Instruments And Control Office Ancillary Devices	30 NOV 73
MIL-STD-2115	Audio Devices And Components, Selection And Use Of	25 MAR 82
MIL-HDBK-173A	Audio Equipment	11 SEP 73

4.6.3.2 Telephone

STANAG 1074	Minimum Standard Characteristics Of Underwater Telephones For Use In Submarines And Surface Ships At NATO Nations	24 JUL 57
STANAG 5004	Military Characteristics For Field Telephone Sets (Minimum Standards)	09 JAN 78
QSTAG 238	Minimum Criteria For Lower Echelon (Unit) Level, 2-Wire, Magneto Field Telephone Sets	08 APR 71
ANSI/IEEE-STD-455	IEEE Standard Test Procedures For Measuring Longitudinal Balance Of Operating Telephone Equipment In The Voice Band	09 MAY 79
EIA RS-470-81	Telephone Instruments With Loop Signaling For Voiceband Applications	1981
EIA RS-478-81	Multiline Key Telephone Systems (KTS) For Voiceband Application	1981

SPECIFICATIONS

MIL-T-1943C(2)	Telephone Equipment, Dial (Shipboard Use)	28 FEB 69

4.6.3.3 Loudspeakers

EIA SE-101-A	Amplifiers For Sound Equipment	18 SEP 81
EIA SE-103	Speakers For Sound Equipment	24 SEP 81
EIA RS-278-B	Mounting Dimensions For Loudspeakers	01 MAR 77

4.6.3.4 Handsets. headsets. and microphones

EIA/RMA-SE-105-49	Microphones For Sound Equipment	09 OCT 81
EIA RS-215	Basic Requirements For Broadcast Microphone Cables	09 OCT 81
SPECIFICATIONS		
MIL-M-2714A(1)	Microphone, Carbon, Hand Held	06 FEB 69
MIL-H-13253D	Handset, General Specification For	26 JUN 74
MIL-E-17884B	Earphone (Low Impedance),	27 SEP 66
MIL-M-26542B(1)	Microphones, General Specification For	15 MAR 79
MIL-H-28845	Handset, Lightweight, General Specification For	10 AUG 78
MIL-H-83511	Headset Microphone And Headset Electrical (Medium Noise Attenuation, Hearing Protective), General Specifications For	04 APR 78

4.6.4 Optical character readers

MIL-STD-188-347	Standards For Long Haul Communications Equipment Technical Design Standards For Digital End Instruments And Ancillary Devices	29 MAR 73
STANAG 3764	Exchange Of Imagery	28 APR 82
FIPS-32-1	Character Sets For Optical Character Recognition	06 JUN 82
FIPS-40	Guidelines For Optical Character Recognition Forms	01 MAY 76
FIPS-89	Optical Character Recognition (OCR) Character Positioning	04 SEP 81

4.6.5 Video equipment

MIL-STD-188-346	Standards For Long Haul Communications Equipment Technical Design Standards For Analog End Instruments And Control Office Ancillary Devices	30 NOV 73
STANAG 3350	Video Standard For Aircraft Systems Application	17 APR 78

STANAG 3764	Exchange Of Imagery	28 APR 82
SPECIFICATIONS		
MIL-T-22309A	Television System (High Definition For CIC Data Pickup, Distribution And Display)	03 APR 63

4.6.6 Data terminal equipment

MIL-STD-188-114	Electrical Characteristics Of Digital Interface Circuits	24 MAR 76
MIL-STD-188-347	Equipment Technical Design Standards For Digital End Instruments And Ancillary Devices	29 MAR 73
MIL-STD-1397A	Input And Output Interfaces, Standard Digital Data, Navy Systems	07 JAN 83
MIL-STD-1553B	Aircraft Internal Time Division Command And Response Multiplex Data Bus	21 SEP 78
MIL-STD-2117	Communications, Digital Control And Status Information Interchange Standard	27 FEB 81
STANAG 3838	Digital Time Division Command And Response Multiplex Data Bus	03 DEC 81
STANAG 4146	Interim Specification For Input And Output Interfaces In NATO Naval Data Handling Equipment	14 NOV 77
STANAG 5036	Parameters And Practices For Use Of The NATO 7-Bit Code	09 SEP 77
QSTAG 300	Telegraph And Data Transmission Rates	15 JUN 79
QSTAG 432	Data Transmission Codes	30 NOV 82
QSTAG 594	Electrical Characteristics Of Digital Interface Circuits	25 MAR 81
EIA IEB-9	Application Notes On EIA Standard RS-232C	MAY 71
EIA IEB-12	Application Notes On Interconnection Between Interface Circuits Using RS-232C	NOV 77
EIA RS-232-C	Interface Employing Serial Binary Data Interchange	JUN 81

EIA RS-366-A	Interface Between Data Terminal Equipment And Automatic Calling Equipment For Data Communication	MAR 79
EIA RS-422-A	Electrical Characteristics Of Balanced Voltage Digital Interface Circuits	DEC 78
EIA RS-423-A	Electrical Characteristics Of Unbalanced Voltage Digital Interface Circuits	DEC 78
EIA RS-449	General Purpose 37-Position And 9-Position Interface For Data Terminal Equipment And Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange	NOV 77
FED-STD-1001	Telecommunications, Synchronous High Speed Signaling Rates Between Data Terminal Equipment And Data Communications Equipment	15 JUN 75 -
FED-STD-1003A	Telecommunications, Synchronous Bit Oriented Data Link Control Procedures (Advanced Data Communication Control Procedures)	19 AUG 81
FED-STD-1010	Telecommunications, Bit Sequencing Of The American National Standard Code For Information Interchange By Serial-By-Bit Data Transmission	11 AUG 77
FED-STD-1011	Telecommunications, Character Structure And Character Parity Sense For Serial-By-Bit Data Communication In The American National Standard Code For Information Interchange	11 AUG 77
FED-STD-1012	Telecommunications, Character Structure And Character Parity Sense For Parallel-By-Bit Data Communication In The American National Standard Code For Information Interchange	11 AUG 77
FED-STD-1013	Telecommunications, Synchronous Signaling Rates Between Data Terminal Equipment And Data Circuit-Terminating Equipment Utilizing 4 kHz Circuits	11 AUG 77
FED-STD-1020A	Telecommunications, Electrical Characteristics Of Balanced Voltage Digital Interface Circuits	01 JAN 80

FED-STD-1030A	Telecommunications, Electrical Characteristics Of Unbalanced Voltage Digital Interface Circuits	31 JAN 80
FED-STD-001033 (Interim)	Telecommunications, Digital Communication Performance Parameters	29 AUG 79
FED-STD-1041	Interface Between Data Terminal Equipment And Data Circuit-Terminating Equipment For Operation with Packet-Switched Data Telecommunications	24 MAR 81
FIPS-01-2	Code For Information Interchange	07 NOV 84
FIPS-07	Implementation Of The Code For Information Interchange And Related Media Standards	07 MAR 69
FIPS-15	Subsets Of The Standard Code For Information Interchange	01 OCT 71
FIPS-16-1	Bit Sequencing Of Code For Information Interchange In Serial-By-Bit Data Transmission	01 SEP 77
FIPS-17-1	Character Structure And Character Parity Sense For Serial-By-Bit Data Communication In The Code For Information Interchange	01 SEP 77
FIPS-18-1	Character Structure And Character Parity Sense For Parallel-By-Bit Data Communication In The Code For Information Interchange	01 SEP 77
FIPS-22-1	Synchronous Signaling Rates Between Data Terminal And Data Communication Equipment	01 SEP 77
FIPS-37	Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment And Data Communications Equipment	15 JUN 75
FIPS-67	Guideline For Selection Of Data Entry Equipment	30 SEP 79
FIPS-100	Interface Between Data Terminal Equipment (DTE) And Data Circuit-Terminating Equipment (DCE) For Operation With Packet-Switched Data Communications Networks	06 JUL 83

4.6.7 Facsimile equipment

MIL-STD-188-161	Design Standards For Common Long Haul And Tactical Facsimile Equipment	30 JAN 81
MIL-STD-188-346	Standards For Long Haul Communications Equipment Technical Design Standards For Analog End Instruments And Control Office Ancillary Devices	30 NOV 73
MIL-STD-188-347	Standards For Long Haul Communications Equipment Technical Design Standards For Digital End Instruments And Ancillary Devices	29 MAR 73
STANAG 3764	Exchange Of Imagery	28 APR 82
STANAG 5000	Interoperability Of Tactical Digital Facsimile Equipment	17 JAN 83
STANAG 5026	Military Characteristics For Analog Facsimile Equipment To Meet Meteorological Requirements	18 JAN 78
QSTAG 480	Tactical Digital Facsimile Equipment Interoperability	22 APR 85
FED-STD-1061	Group 2 Facsimile Apparatus For Document Transmission	01 MAR 81
FED-STD-1062	Group 3 Facsimile Apparatus For Document Transmission	19 AUG 81
FED-STD-1063	Procedures For Document Facsimile Transmission	04 APR 82
EIA RS-465	Group 3 Facsimile Apparatus For Document Transmission	1981
EIA RS-466	Procedures For Document Facsimile Transmission	1981

4.7 ELECTRICAL POWER[1]

4.7.1 Power supplies

MIL-STD-188-124A	Grounding, Bonding and Shielding For Common Long Haul And Tactical Communication Systems	02 FEB 84

In some instances service/agency unique requirements may exist. Each MIL-DEPT produces its own design guidance documents which can be obtained through the appropriate Military Department. The titles of these documents may be found in Appendix B of this handbook.

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MIL-STD-686A	Cable And Cord, Electrical Identification Marking And Color Coding Of	14 SEP 65
MIL-HDBK-419	Grounding, Bonding And Shielding For Electronic Equipments and Facilities	21 JAN 82
MIL-HDBK-241A	Design Guide For Electromagnetic Interference (EMI) Reduction In Power Supplies	01 APR 81
SPECIFICATIONS		
J-C-30A(1)	Cable And Wire, Electrical (Power, Fixed Installation)	09 DEC 74
MIL-C-915E(2)	Cable And Cord Electrical For Shipboard Use, General Specifications For	30 MAY 80
MIL-P-28785(2)	Power Supply, Variable Output (O To 50 volts, O To 5 Amperes)	29 AUG 73
MIL-P-28846A	Power Supplies, Electronic Modular, General Specification For	23 JAN 81

4.7.2 Site power

MIL-STD-188-124A	Grounding, Bonding, And Shielding For Common Long Haul And Tactical Communication Systems	02 FEB 84
MIL-STD-686A	Cable And Cord, Electrical, Identification Marking And Color Coding Of	14 SEP 75
DoD-STD-2133	Cable Arrangement For Minimum Stray Magnetic Field (Metric)	03 AUG 81
MIL-HDBK-411A	Long Haul Communications (DCS) Power And Environmental Control For Physical Plant	08 JUL 82
MIL-HDBK-419	Grounding, Bonding, And Shielding For Electronic Equipments And Facilities	21 JAN 82
SPECIFICATIONS		
J-C-30A(1)	Cable And Wire Electrical (Power, Fixed Installation)	09 DEC 74
W-P-115A(3)	Panel, Power Distribution	31 MAR 76
MIL-C-915E(2)	Cable And Cord Electrical, For Shipboard Use; General Specifications For	30 MAY 80

MIL-C-8678	Cooling Requirements Of Power Plant Installations	19 JAN 54

4.8 TECHNIQUES

4.8.1 Grounding, bonding, and shielding

MIL-STD-188-124A	Grounding, Bonding, And Shielding For Common Long Haul And Tactical Communications Systems	02 FEB 84
MIL-STD-1310D	Shipboard Bonding, Grounding And Other Techniques For Electromagnetic Compatibility And Safety	08 FEB 79
MIL-STD-1857	Grounding, Bonding And Shielding Design Practices	30 JUN 76
MIL-HDBK-419	Grounding, Bonding, And Shielding For Electronic Equipments And Facilities	21 JAN 82

4.8.2 Operational and test procedures

MIL-STD-188-310A	Subsystem Design And Engineering Standards For Technical Control Facilities	14 JAN 80
MIL-STD-195	Marking Of Connections For Electrical Assemblies	07 FEB 58
MIL-HDBK-332	Evaluation Of High Frequency Antennas In An Operational Environment	14 DEC 70
MIL-HDBK-414	Technical Control Facilities And Equipment For Long Haul Communication	23 MAR 81
STANAG 1063	Allied Naval Communications Exercises	04 AUG 78
STANAG 3347	Aircraft Electrical Circuit Identification	13 MAY 81
STANAG 3374	Flight Inspection Of NATO Radio And Radar Navigation And Approach Aids	11 MAY 82
STANAG 3794	Identification Of Aircraft Electrical Cables	22 APR 81
STANAG 5028	Significant Telegraph Signaling Conditions In Automatic Telegraphy (Morse And International Alphabet (IA) No. 2)	30 NOV 78
STANAG 5037	Future Requirements For Number Of Morse Operators In NATO Naval Ships	13 SEP 77

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STANAG 5042	Military Telecommunications Diagram Symbols	08 NOV 78
STANAG 5048	Principles And procedures For Establishing The Minimum Scale Of Communications For The Use Of NATO Land Forces	20 MAR 78
STANAG 5500	NATO Message Text Formatting System (FORMETS)	20 FEB 80
QSTAG 246	Radio Telephone Procedures For The Conduct Of Artillery Fire	15 OCT 79
QSTAG 267	Standard Character By Character Meteorological Message Format	10 FEB 82
QSTAG 304	Operational Meteorological Messages And Forecasts	25 FEB 80
QSTAG 386	Standard Format Of Request For Meteorological Messages	18 JAN 80
QSTAG 595	Military Communications Systems, Standards, Terms And Definitions	14 FEB 83
QSTAG 642	Codification Of Equipment-Uniform System Of Item Identification	08 JUN 81
ANSI/IEEE-STD-455	IEEE Standard Test Procedure For Measuring Longitudinal Balance Of Telephone Equipment Operating In The Voice Band	1976
EIA RS-466	Procedures For Document Facsimile Transmission	1981
IEEE-STD-200-75	Reference Designations Of Electrical And Electronics Parts And Equipments	1975
IEEE-STD-315-75	Graphic Symbols For Electrical And Electronics Diagrams (Including Reference Designation Class Designation Letters) (CSA Z 99-75)	1975
FED-STD-1037	Glossary Of Telecommunications Terms	01 JUL 80
FIPS-01-2	Code For Information Exchange	07 NOV 84
FIPS-07	Implementation Of The Code For Information Interchange And Related Media Standards	07 MAR 69
FIPS-11-2	Guideline, American National Dictionary For Information Processing Systems	05 SEP 83

FIPS-12-2	Federal Information Processing Standards Index	01 DEC 74
FIPS-14-1	Hollerith Punched Card File	24 DEC 80
FIPS-15	Subsets Of Standard Code For Information Interchange	01 OCT 71
FIPS-20	Guidelines For Describing Information Interchange Formats	01 MAR 72

4.8.3 Timing and synchronization

DOD-STD-1399, Section 441	Interface Standard For Shipboard Systems, Precise Time And Time Interval	01 JUN 82
QSTAG 300	Telegraph And Data Transmission Rates	15 JAN 79
FED-STD-1002	Time And Frequency Reference Information In Telecommunication Systems	22 APR 74

4.8.4 Maintainability

MIL-STD-470	Maintainability Program Requirements (For Systems And Equipments)	03 JAN 83
MIL-STD-471A	Maintainability Verification/ Demonstration/Evaluation	08 DEC 78
MIL-STD-2084	General Requirements For Maintainability Of Avionic And Electronic Systems And Equipment	14 JUN 83
MIL-HDBK-472	Maintainability Prediction	24 MAY 66

4.8.5 Reliability/Survivability

MIL-STD-210B	Climatic Extremes For Military Equipment	13 DEC 73
MIL-STD-785B	Reliability Program For Systems And Equipment Development And Production	15 SEP 80
MIL-STD-810D	Environmental Test Methods And Engineering Guidelines	19 JUL 83
STANAG 3518	Environmental Test Methods For Aircraft Equipment And Associated Ground Equipment	22 NOV 77
STANAG 4138	Vibration Resistant Equipment Testing Requirements	18 FEB 76
STANAG 4141	Shock Testing Of Equipment For Surface Ships	15 DEC 76

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STANAG 4142	Shock Resistance Analysis Of Equipment For Surface Ships	08 MAR 77
STANAG 4145	Nuclear Survivability Criteria For Armed Forces Material And Installations	31 OCT 79
QSTAG 244	Nuclear Survivability Criteria For Military Equipment	06 JUN 83
QSTAG 360	Climatic Environmental Conditions Affecting The Design Of Military Material	16 OCT 79
QSTAG 361	Fungal Contaminants Affecting The Design Of Military Material	15 JAN 81
SPECIFICATIONS		
MIL-T-5422F	Testing, Environmental, Airborne Electronic And Associated Equipment	30 NOV 71
MIL-E-16400G(1)	Electronic, Interior Communication, And Navigation Equipment, Naval Ship And Shore: General Specification For	01 DEC 76

4.8.6 EMP/EMC[1]

MIL-STD-188-124A	Grounding, Bonding, And Shielding For Common Long Haul/Tactical Communications Systems	02 FEB 84
MIL-STD-461B	Electromagnetic Emission And Susceptibility Requirements For The Control Of Electromagnetic Interference	01 APR 80
MIL-STD-462	Electromagnetic Interference Characteristics, Measurement Of	31 JUL 67
MIL-STD-826A	Electromagnetic Interference Test Requirements And Test Methods	30 JUN 66
MIL-STD-1310D	Shipboard Bonding, Grounding And Other Techniques For Electromagnetic Compatibility And Safety	08 FEB 79
MIL-STD-1541	Electromagnetic Compatibility Requirements For Space Systems	15 OCT 73

[1] For an extensive listing of EMC related documents, see Department of Defense, Electromagnetic Compatiblity Standardization Document - Proposed Program plan dated 10MAR 80. Telecommunication related published Program plans will be included in Appendix B.

MIL-STD-1605	Procedures For Conducting A Shipboard Electromagnetic Interference (EMI) Survey (Surface Ships)	20 APR 73
MIL-STD-1857	Grounding, Bonding, And Shielding Design Practices	30 JUN 76
DoD-STD-2133	Cable Arrangement For Minimum Stray Magnetic Field (Metric)	03 AUG 81
MIL-HDBK-235, PART 1A	Electromagnetic (Radiated) Environment Considerations For Design And Procurement Of Electrical And Electronic Equipment, Subsystems And Systems, Part 1A	05 FEB 79
MIL-HDBK-237A	Electromagnetic Compatibility Management Guide For Platforms, Systems And Equipment	02 FEB 81
MIL-HDBK-238	Electromagnetic Radiation Hazards	10 AUG 73
MIL-HDBK-241A	Design Guide For Electromagnetic Interference (EMI) Reduction In Power Supplies	01 APR 81
MIL-HDBK-253	Guidance For The Design And Test Of Systems Protected Against The Effects Of Electromagnetic Energy	28 JUL 78
MIL-HDBK-419	Grounding, Bonding, And Shielding For Electronic Equipment And Facilities	21 JAN 82
STANAG 3516	Electromagnetic Compatibility For Aircraft Electrical And Electronic Equipment	16 DEC 80
STANAG 4145	Nuclear Survivability Criteria For Armed Forces Material And Installations	31 OCT 79
ANSI-C-95.3	Techniques And Instrumentation For The Measurement of Potentially Hazardous Electromagnetic Radiation of Microwave Frequencies	01 SEP 72
ASTM-E-268-81	Definition Of Terms Relating To Electromagnetic Testing	15 APR 82
SPECIFICATIONS		
MIL-E-6051D(1)	Electromagnetic Compatibility Requirements, Systems	05 JUL 68

4.8.7 Safety

MIL-STD-454H	Standard General Requirements For Electronic Equipment	10 JAN 83
MIL-STD-882B	System Safety Program Requirements	30 MAR 84

5. DOCUMENT SYNOPSES

5.0 General.

This section contains a brief synopsis of each document listed in Section 4. The synopses include document nomenclature, title, publication date, FSC code, related documents, and a brief description of the purpose of each document. Several documents which do not appear in Section 4, and are not adopted for DoD use, have been included for information only. Before applying any of the documents contained herein, the actual document must be obtained and read to accurately determine suitability.

5.1 INTERNATIONAL MILITARY DOCUMENTS

5.1.1 STANAGS

		GUIDE LOCATIONS
STANAG 1063	Allied Naval Communications Exercises	4.8.2
STANAG 1074	Minimum Standard Characteristics Of Underwater Telephones For Use In Submarines And Surface Ships At NATO Nations	4.6.3.2
STANAG 3347	Aircraft Electrical Circuit Identification	4.8.2
STANAG 3350	Monochrome Video Standard For Aircraft Systems Application	4.6.5
STANAG 3374	Flight Inspection Of NATO Radio/Radar Navigation And Approach Aids	4.8.2
STANAG 3516	Electromagnetic Compatibility For Aircraft Electrical And Electronic Equipment	4.8.6
STANAG 3518	Environmental Test Methods For Aircraft Equipment And Associated Ground Equipment Electrical And Electronic Equipment	4.8.5
STANAG 3764	Exchange Of Imagery	4.6.4, 4.6.5, 4.6.7
STANAG 3794	Identification Of Aircraft Electrical Cables	4.8.2
STANAG 3838	Digital Time Division Command/Response Multiplex Data Bus	4.6.6
STANAG 4138	Vibration Resistant Equipment Testing Requirements	4.8.5
STANAG 4141	Shock Testing Of Equipment For Surface Ships	4.8.5
STANAG 4142	Shock Resistance Analysis Of Equipment For Surface Ships	4.8.5
STANAG 4145	Nuclear Survivability Criteria For Armed Forces Material And Installations	4.8.5, 4.8.6
STANAG 4146	Interim Specifications For Input/Output Interfaces In NATO Naval Data Handling Equipment	4.2.2.1, 4.5, 4.6.2.1, 4.6.6

		GUIDE LOCATIONS
STANAG 4202	Transmission Envelope Characteristics For High Reliability Data Exchange Between Land Tactical Data Processing Equipment Over Single Channel Radio Links	4.2.1.7
STANAG 4203	Technical Standard For Single Channel HF Radio Equipment	4.2.1.2
STANAG 4204	Technical Standards For Single Channel VHF Radio Equipment	4.2.1.3
STANAG 4205	Technical Standards For Single Channel UHF Radio Equipment	4.2.1.4
STANAG 5000	Interoperability Of Tactical Digital Facsimile Equipment	4.6.7
STANAG 5004	Military Characteristics For Field Telephone Sets (Minimum Standards)	4.6.3.2
STANAG 5009	Military Characteristics Of Radio Equipment For Naval Gunfire Support Of Shore Forces	4.2.1.7
STANAG 5013	Data Transmission For Radar Doppler Navigation Systems	4.2.1.7, 4.2.2.4
STANAG 5018	NATO Manual Interface Between The Manual Switched Telecommunications Systems Of The Combat Zone	4.4.1
STANAG 5020	Interoperability Of Aircraft UHF Multi-Frequency Transceiver Installation And Compatible Ground Transmitters And Receivers	4.2.1.4
STANAG 5021	Military Characteristics For Ground And Surface UHF Direction Finding Equipment	4.2.1.4
STANAG 5026	Military Characteristics For Analog Facsimile Equipment To Meet Meteorological Requirements	4.6.7
STANAG 5028	Significant Telegraph Signaling Conditions In Automatic Telegraphy (Morse And International Alphabet (IA) No. 2)	4.8.2
STANAG 5030	Single Channel VLF RATT On-Line Broadcast Systems	4.2.1.1

		GUIDE LOCATIONS
STANAG 5031	Introduction Of Modern Radio Equipment For Naval HF, MF And LF Shore To Ship Broadcasts	4.2.1.1, 4.2.1.2
STANAG 5034	TACAN Policy	4.2.1.7
STANAG 5035	Introduction Of An Improved System For Maritime Air Communications On HF, LF And UHF	4.2.1.1, 4.2.l.2, 4.2.1.4
STANAG 5036	Parameters And Practices For The Use Of The NATO 7-Bit Code	4.2.2.1, 4.5, 4.6.6
STANAG 5037	Future Requirements For Number Of Morse Operators In NATO Naval Ships	4.8.2
STANAG 5038	Interoperability Of Ship UHF Transmitting And Receiving Systems	4.2.1.4
STANAG 5040	NATO Automatic And Semi-Automatic Interfaces Between The National Switched Systems Of The Combat Zone And Between These Systems And The NICS	4.2.1.7, 4.4.1
STANAG 5042	Military Telecommunications Diagram Symbols	4.8.2
STANAG 5045	Interoperability Characteristics For Teleprinters Using The NATO 7-Bit Code	4.6.1
STANAG 5048	Principles And Procedures For Establishing The Minimum Scale Of Communications For The Use Of NATO Land Forces	4.8.2
STANAG 5500	NATO Message Text Formatting System (FORMETS)	4.8.2
STANAG 5501	Point-To-Point Digital Data Link - Link 1	4.2.1.7, 4.2.2.4, 4.5
STANAG 5504	Tactical Data Link For The Control Of Aircraft - Link 4	4.2.1.7, 4.2.2.4, 4.5
STANAG 5510	Maritime Tactical Data Exchange - Link 10	4.2.1.7, 4.2.2.4, 4.5
STANAG 5511	Tactical Data Exchange - Link 11	4.2.1.7, 4.2.2.4, 4.5

5.1.2 QSTAGS

DOCUMENT NUMBER: QSTAG 203 FSC/AREA: ISDA

TITLE: Cables, Coaxial And Twin Conductor, For Radio Frequency

PUBLICATION DATE: 12 January 1968

RELATED EFFORTS:

PURPOSE: This agreement identifies that the NATO recommended types of RF cables will be used by the four Armies to meet the bulk of requirements for these items.

GUIDE LOCATION: 4.1.2.2

DOCUMENT NUMBER: QSTAG 209 FSC/AREA: ISDA

TITLE : Definition Of Weight Of A Standard Manpack Radio Station

PUBLICATION DATE: 06 October 1981

RELATED EFFORTS:

PURPOSE: This agreement identifies the current designs, specifications and other relevant information on the definition of weight of a standard manpack radio station.

GUIDE LOCATION: 4.2.1.7

DOCUMENT NUMBER: QSTAG 228 FSC/AREA: ISDA

TITLE: Connectors For Multi-Pair Field Telephone Cables

PUBLICATION DATE: 20 January 1971

RELATED EFFORTS:

PURPOSE: This agreement identifies connectors which are used in field telephone cable systems and to be functionally interchangeable with the connectors listed in the agreement.

GUIDE LOCATION: 4.1.2.1

DOCUMENT NUMBER: QSTAG 238 FSC/AREA: ISDA

TITLE : Minimum Criteria For Lower Echelon (Unit) Level 2 - Wire Magneto Field Telephone Sets

PUBLICATION DATE: 08 April 1971

RELATED EFFORTS: STANAG 5004

PURPOSE: This agreement identifies the minimum criteria specified in the details of agreement for field telephone sets at the lower echelon (unit) Level 2, which may be connected to an inter-army telephone system.

GUIDE LOCATION: 4.6.3.2

DOCUMENT NUMBER: QSTAG 244 FSC/AREA: ISDA

TITLE : Nuclear Survivability Criteria For Military Equipment (U)

PUBLICATION DATE: 27 October 1980

RELATED EFFORTS:

PURPOSE: This is a classified document

GUIDE LOCATION: 4.8.5

DOCUMENT NUMBER: QSTAG 246 (Ed. 2) FSC/AREA: ISDA

TITLE : Radio Telephone Procedures For The Conduct Of Artillery Fire

PUBLICATION DATE: 15 October 1979

RELATED EFFORTS: STANAG 2867

PURPOSE: This agreement sets forth radio telephone procedures to be employed between Artillery Observers and Artillery Fire Direction Centers/Command Posts. This document adopts the phonetic alphabet published in ACP 125. It covers pronunciation, precedence, challenge, and authentication, as well as application of the procedures .

GUIDE LOCATION: 4.8.2

DOCUMENT NUMBER: QSTAG 263A FSC/AREA: ISDA

TITLE: Standards To Achieve Interoperability Of ABCA Armies High Frequency Combat Net Radio Equipment

PUBLICATION DATE: 14 June 1976

RELATED EFFORTS:

PURPOSE: The aim of this agreement is to ensure that Army combat net radios operating in the HF band and designed to provide communication in the same mode shall be able to communicate satisfactorily with each other.

GUIDE LOCATION: 4.2.1.2

DOCUMENT NUMBER: QSTAG 263B FSC/AREA: ISDA

TITLE : Standards To Achieve Interoperability Of ABCA Armies Very High Frequency Combat Net Radio Equipment

PUBLICATION DATE: 03 March 1977

RELATED EFFORTS:

PURPOSE: The aim of this agreement is to ensure that Army combat net radios operating in the VHF band and designed to provide communication in the same mode shall be able to communicate satisfactorily with each other.

GUIDE LOCATION: 4.2.1.3

DOCUMENT NUMBER: QSTAG 263C FSC/AREA: ISDA

TITLE: Standards To Achieve Interoperability Of ABCA Armies Ultra High Frequency Combat Net Radio Equipment

PUBLICATION DATE: 14 June 1976

RELATED EFFORTS:

PURPOSE: The aim of this agreement is to ensure that Army combat net radios operating in the UHF band and designed to provide communications in the same mode shall be able to communicate satisfactorily with each other.

GUIDE LOCATION: 4.2.1.4

DOCUMENT NUMBER: QSTAG 267 FSC/AREA: ISDA

TITLE: Standard Character By Character Meteorological Message Format

PUBLICATION DATE: 10 February 1982

RELATED EFFORTS: STANAG 4131

PURPOSE: This agreement is the ABCA version of STANAG 4131. It establishes a standard format for meteorological messages between ABCA Armies by teleprinter. This document covers both hard copy and punched tape formats.

GUIDE LOCATION: 4.8.2

DOCUMENT NUMBER: QSTAG 300 FSC/AREA: ISDA

TITLE: Telegraph And Data Transmission Rates

PUBLICATION DATE: 15 January 1979

RELATED EFFORTS:

PURPOSE: This agreement identifies standard interface locations in a data telecommunications system (between DTEs and DCES) and establishes standard modulation and data signaling rates to be employed.

GUIDE LOCATION: 4.2.2.2, 4.6.1, 4.6.6, 4.8.3

DOCUMENT NUMBER: QSTAG 304 FSC/AREA: ISDA

TITLE : Operational Meteorological Messages And Forecasts

PUBLICATION DATE: 25 February 1980

RELATED EFFORTS: QSTAG 252, QSTAG 332, QSTAG 386, QSTAG 466

PURPOSE: The object of this agreement is to standardize, for the use of the ABCA Armies, the meteorological code forms to be used for the exchange of operational meteorological information which is required to support ABCA military forces.

GUIDE LOCATION: 4.8.2

DOCUMENT NUMBER: QSTAG 360 FSC/AREA: ISDA

TITLE: Climatic Environmental Conditions Affecting The Design Of Military Material

PUBLICATION DATE: 16 October 1979

RELATED EFFORTS:

PURPOSE: This agreement is to describe the principal climatic factors which constitute the distinctive climatic environments found throughout the world, excluding Antarctica, and to establish for each climatic factor, levels of intensity to which the ABCA Armies require their material to remain safe and be capable of acceptable performance.

GUIDE LOCATION: 4.8.5

DOCUMENT NUMBER: QSTAG 361 FSC/AREA: ISDA

TITLE: Fungal Contaminants Affecting The Design Of Military Material

PUBLICATION DATE: 15 January 1981

RELATED EFFORTS: QSTAG 360, QSTAG 362, QSTAG 364, QSTAG 365

PURPOSE: This agreement describes the principal fungal contaminants to which material of the ABCA Armies could be exposed during operation, storage and transit. Methods of prevention, or at least limiting fungal growth, are given together with test methods to determine the susceptibility of material to such contamination.

GUIDE LOCATION: 4.8.5

DOCUMENT NUMBER: QSTAG 386 FSC/AREA: ISDA

TITLE: Standard Format Of Request For Meteorological Messages

PUBLICATION DATE: 18 January 1980

RELATED EFFORTS: QSTAG 186, QSTAG 252, QSTAG 332, QSTAG 389, STANAG 4103

PURPOSE: The object of this agreement is to standardize for the use of the ABCA Armies the format of request for meteorological messages, and to standardize the number of its information digits and their meanings, as detailed in three annexes as follows:

Annex A - Message Structure and Message Standards
Annex B - Message Codes and Tables
Annex C - Specimen of Request Message

GUIDE LOCATION: 4.8.2

DOCUMENT NUMBER: QSTAG 432 FSC/AREA: ISDA

TITLE: Data Transmission Codes

PUBLICATION DATE: 30 November 1982

RELATED EFFORTS: STANAG 5036

PURPOSE: The object of this agreement is to establish those parameters and practices for data transmission codes within ABCA Armies and for national systems requiring an interface with military systems. This is to ensure the interoperability of telegraphic and data transmitters with telegraphic and data receivers over telecommunications media.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.1

DOCUMENT NUMBER: QSTAG 513 FSC/AREA: ISDA

TITLE: System For Field Wire Labelling

PUBLICATION DATE: 23 February 1979

RELATED EFFORTS:

PURPOSE: This agreement establishes a method of labelling field wires for easy identification. The document details where tags are to be attached and how the tags should be cut, notched, or marked.

GUIDE LOCATION: 4.1.2.1

DOCUMENT NUMBER: QSTAG 594 FSC/AREA: ISDA

TITLE: Electrical Characteristics Of Digital Interface Circuits

PUBLICATION DATE: 25 March 1981

RELATED EFFORTS: MIL-STD-188-114

PURPOSE: This agreement adopts MIL-STD-188-114 (except referenced documents and terms and definitions) for use by ABCA Armies.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: QSTAG 595 FSC/AREA: ISDA

TITLE: Military Communications Systems Standards, Terms and Definitions

PUBLICATION DATE: 14 February 1983

RELATED EFFORTS: FED-STD-1037

PURPOSE: This agreement standardizes the terms and definitions to be used in military communication system standards to ensure interoperability and for clarity and unity of thought.

GUIDE LOCATION: 4.8.2

DOCUMENT NUMBER: QSTAG 642 FSC/AREA: ISDA

TITLE : Codification Of Equipment-Uniform System Of Item Identification

PUBLICATION DATE: 08 June 1981

RELATED EFFORTS: STANAG 3151

PURPOSE: This agreement adopts STANAG 3151 for use by ABCA Armies. STANAG 3151 references STANAG 3150 and adopts the U.S. Federal System of Item Identification (as in DoD 4130.2-M).

GUIDE LOCATION: 4.8.2

DOCUMENT NUMBER: QSTAG 675 FSC/AREA: ISDA

TITLE : Principles For The Automated Transfer Of Data/Information Between Tactical Command And Control Systems

PUBLICATION DATE: 10 February 1982

RELATED EFFORTS: QSTAG 676

PURPOSE: This agreement outlines four principles regarding information flow between the command and control systems of the participating nations. This document identifies five subsystems of a command and control system as: (a) operations; (b) intelligence; (c) fire support; (d) air defense and air support; and (e) administration.

GUIDE LOCATION: 4.2.2.1, 4.5

DOCUMENT NUMBER: QSTAG 676 FSC/AREA: ISDA

TITLE: Rules For Achieving Subsystems Interoperability Between The Automated Tactical Command And Control Systems Of ABCA Armies

PUBLICATION DATE: 14 April 1982

RELATED EFFORTS: QSTAG 675

PURPOSE: This agreement establishes national responsibility for the implementation of a common standard to achieve information transfer generally without human involvement but with some operationally driven restrictions. The agreement outlines three methods for accomplishment of this goal and establishes some rules for the control and access of information transfer via a virtual data base concept.

GUIDE LOCATION: 4.2.2.1, 4.4.1, 4.5

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5.2 INTERNATIONAL NON-MILITARY DOCUMENTS

5.2.1 CCITT

DOCUMENT NUMBER: CCITT-V.10 FSC/AREA: NOT DoD ADOPTED

TITLE : Electrical Characteristics For Unbalanced Double-Current Interchange Circuits For General Use With Integrated Circuit Equipment In The Field Of Data Communications

PUBLICATION DATE: 1980

RELATED EFFORTS: FED-STD-1030A, MIL-STD-188-114, EIA RS-423-A, and CCITT X.26

PURPOSE: This recommendation deals with the electrical characteristics of the generator, receiver and interconnecting leads of an unbalanced interchange circuit employing a differential receiver.

In the context of this recommendation an unbalanced interchange circuit is defined as consisting of an unbalanced generator connected to a receiver by an interconnecting lead and a common return lead.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-V.11 FSC/AREA: NOT DoD ADOPTED

TITLE: Electrical Characteristics For Balanced Double-Current Interchange Circuits For General Use With Integrated Circuit Equipment In The Field Of Data Communications

PUBLICATION DATE: 1980

RELATED EFFORTS: FED-STD-1020A, MIL-STD-188-114, EIA RS-422-A, and CCITT x.27

PURPOSE: This recommendation deals with the electrical characteristics of the generator, receiver and interconnecting leads of a differential signaling (balanced) interchange circuit with an optional DC offset voltage.

In the context of this recommendation, a balanced interchange circuit is defined as consisting of a balanced generator connected by a balanced interconnecting pair to a balanced receiver. For a balanced generator the algebraic sum of both the outlet potentials, with respect to earth, shall be constant for all signals transmitted; the impedances of the outlets with respect to earth shall be equal.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-V.24 FSC/AREA: NOT DoD ADOPTED

TITLE: List Of Definitions For Interchange Circuits Between Data Terminal Equipment And Data Circuit-Terminating Equipment

PUBLICATION DATE: 1980

RELATED EFFORTS:

PURPOSE: This recommendation applies to the interconnecting circuits being called interchange circuits at the interface between Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for the transfer of binary data, control and timing signals and analog signals as appropriate.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-V.28 FSC/AREA: NOT DoD ADOPTED

TITLE: Electrical Characteristics For Unbalanced Double-Current Interchange Circuits

PUBLICATION DATE: 1980

RELATED EFFORTS: EIA RS-232-C

PURPOSE: The electrical characteristics specified in this recommendation apply generally to interchange circuits operating with data signaling rates below the limit of 20,000 bits per second.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-V.31 FSC/AREA: NOT DoD ADOPTED

TITLE: Electrical Characteristics For Single-Current Interchange Circuits Controlled By Contact Closure

PUBLICATION DATE: 1972

RELATED EFFORTS: EIA RS-410

PURPOSE: The electrical characteristics specified in this recommendation apply to interchange circuits operating at data signaling rates up to 75 bits per second.

Each interchange circuit consists of two conductors (go and return leads) which are electrically insulated from each other and from all other interchange circuits. A common return lead can be assigned to several interchange circuits of a group.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.20 BIS FSC/AREA: NOT DoD ADOPTED

TITLE: Use On Public Data Networks Of Data Terminal Equipment (DTE) Which Is Designed For Interfacing To Asynchronous Duplex V–Series Modems

PUBLICATION DATE: 1980

RELATED EFFORTS:

PURPOSE: This recommendation applies to the interface between a DTE designed for interfacing to duplex X-Series modems for start-stop transmission and a DCE on public data networks. This document has applications comprising of circuit switched service and leased circuit service (point-to-point and centralized multipoint).

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.21 FSC/AREA: NOT DoD ADOPTED

TITLE : Interface Between Data Terminal Equipment (DTE) And Data Circuit-Terminating Equipment (DCE) For Synchronous Operation On Public Data Networks

PUBLICATION DATE: 1980

RELATED EFFORTS: CCITT X.21 (his)

PURPOSE: This recommendation defines the physical characteristics and call control procedures for a general purpose interface between DTE and DCE for user classes of service, employing synchronous transmission. The formats and procedures for selection, call progress and DCE provided information are included in this recommendation. The provision for duplex operation and the operation of the interface for half-duplex operation when the data circuit interconnects with recommendation X.21BIS DTEs is described in Annex E of this recommendation.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.21 BIS FSC/AREA: NOT DoD ADOPTED

TITLE: Use On Public Data Networks Of Data Terminal Equipment (DTE) Which Is Designed For Interfacing To Synchronous V-Series Modems

PUBLICATION DATE: 1980

RELATED EFFORTS:

PURPOSE: This recommendation specifies the operational modes and the optional features which apply when the data circuit interconnects V-Series DTEs. Interworking between V-Series DTEs and X.21 DTEs is described in Annex A of this recommendation.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.22 FSC/AREA: NOT DoD ADOPTED

TITLE: Multiplex DTE/DCE Interface For User Classes 3-6

PUBLICATION DATE: 1980

RELATED EFFORTS:

PURPOSE: This recommendation defines the interface between a DTE and a multiplex DCE, operating at 48,000 bits per second and multiplexing a number of X.21 subscriber channels employing synchronous transmission.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.24 FSC/AREA: NOT DoD ADOPTED

TITLE : List Of Definitions For Interchange Circuits Between Data Terminal Equipment (DTE) And Data Circuit Terminating Equipment (DCE) On Public Data Networks

PUBLICATION DATE: 1980

RELATED EFFORTS:

PURPOSE: This recommendation applies to the functions of the interchange circuits provided at the interface between DTE and DCE of data networks for the transfer of binary data, call control signals, and timing signals.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.25 FSC/AREA: NOT DoD ADOPTED

TITLE: Interface Between Data Terminal Equipment (DTE) And Data Circuit-Terminating Equipment (DCE) For Terminals Operating In The Packet Mode On Public Data Networks

PUBLICATION DATE: 1980

RELATED EFFORTS: FED-STD-1041

PURPOSE: This recommendation defines the mechanical, electrical, functional and procedural characteristics to activate, maintain, and deactivate the physical link between the DTE and the DCE. It also contains the link access procedure for data interchange across the link between the DTE and the DCE.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.26 PSC/AREA: NOT DoD ADOPTED

TITLE: Electrical Characteristics For Unbalanced Double-Current Interchange Circuits For General Use With Integrated Circuit Equipment In The Field Of Data Communications

PUBLICATION DATE: 1980

RELATED EFFORTS: FED-STD-1030A, MIL-STD-188-114, EIA RS-423-A, and CCITT-V.10

PURPOSE: This recommendation deals with the electrical characteristics of the generator, receiver and interconnecting leads of an unbalanced interchange circuit employing a differential receiver.

In the context of this recommendation an unbalanced interchange circuit is defined as consisting of an unbalanced generator connected to a receiver by an interconnecting lead and a common return lead.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.27 FSC/AREA: NOT DoD ADOPTED

TITLE : Electrical Characteristics For Balanced Double-Current Interchange Circuits For General Use With Integrated Circuit Equipment In The Field Of Data Communications

PUBLICATION DATE: 1980

RELATED EFFORTS: FED-STD-1020, MIL-STD-188-114, EIA RS-422-A, and CCITT-V.11

PURPOSE: This recommendation covers the electrical characteristics of the generator, receiver and interconnecting leads of a differential signaling (balanced) interchange circuit with an optional Direct Current offset voltage.

In the context of this recommendation, a balanced interchange circuit is defined as consisting of a balanced generator connected by a balanced interconnecting pair to a balanced receiver. For a balanced generator the algebraic sum of both the outlet potentials, with respect to earth, shall be constant for all signals transmitted; the impedances of the outlets with respect to earth shall be equal.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.28 FSC/AREA: NOT DoD ADOPTED

TITLE : DTE/DCE Interface For A Start-Stop Mode Data Terminal Equipment Accessing The Packet Assembly/Disassembly Facility (PAD) In A Public Data Network Situated In The Same Country

PUBLICATION DATE: 1980

RELATED EFFORTS: CCITT-X.25

PURPOSE: This recommendation has the procedures for the establishment of a national access information path between a start-stop mode DTE and a PAD . Other procedures in X.28 are character interchange and service initialization between a start-stop mode DTE and a PAD, exchange of control information between a start-stop mode DTE and a PAD, and procedures for the exchange of user data between a start-stop mode DTE and a PAD.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.29 FSC/AREA: NOT DoD ADOPTED

TITLE: Procedures For The Exchange Of Control Information And User Data Between A Packet Assembly/Disassembly Facility (PAD) And A Packet Mode DTE Or Another PAD

PUBLICATION DATE: 1980

RELATED EFFORTS: CCITT-X.25

PURPOSE: This recommendation refers to specific packet types and procedures of X.25. When PAD to PAD interworking is considered within a national network, these packet types or procedures may be represented in a different form from that used in recommendation X.25 but will have the same operational meaning.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.75 FSC/AREA: NOT DoD ADOPTED

TITLE: Terminal And Transit Call Control Procedures And Data Transfer System On International Circuits Between Packet-Switched Data Networks

PUBLICATION DATE: 1980

RELATED EFFORTS:

PURPOSE: This recommendation defines the characteristics and operation of an interexchange signaling system for international packet-switched data transmission services. The signaling system defined in this recommendation is intended to be used for the transfer of information between two signaling terminals each within a packet-mode data network and directly connected by an international link. Each signaling terminal (STE) will be located at a network node and be associated with, or part of, an exchange or exchange function at that node. The nodes may be part of separate packet-mode data networks. The information transferred will consist of call control and network control information and user traffic. The link connecting the two signaling terminals will comprise one or a number of circuits.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.87 FSC/AREA: NOT DoD ADOPTED

TITLE: Principles And Procedures For Realization Of International User Facilities And Network Utilities In Public Data Networks

PUBLICATION DATE: 1980

RELATED EFFORTS:

PURPOSE: X.87 defines the principles for realization of international user facilities and network utilities for data transmission services, and to specify, in a general network context, the necessary interaction between elements of customer interfaces, interexchange signaling systems and other network functions that are specifically related to the provision and use of international user facilities and network utilities.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: CCITT-X.92 FSC/AREA: NOT DoD ADOPTED

TITLE: Hypothetical Reference Connections For Public Synchronous Data Networks

PUBLICATION DATE: 1980

RELATED EFFORTS:

PURPOSE: The five hypothetical reference connections set down in X.92 are intended for assessing the overall customer-to-customer performance objectives, for determining some data characteristics requirements of the various items in the connections and for setting limits to the impairments these items may introduce.

GUIDE LOCATION: Information only

5.2.2 ISO

DOCUMENT NUMBER: ISO-2110 FSC/AREA: NOT DoD ADOPTED

TITLE: Data Communication - 25 Pin DTE/DCE Interface Connector And Pin Assignments

PUBLICATION DATE: 1980

RELATED EFORTS: EIA RS-232-C

PURPOSE: This standard specifies the 25-Pin connector and the assignment of connector Pin numbers at the interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) or automatic calling equipment (ACE). It is applicable to voice band modems, public data network (PDN) facilities, telegraph signal converters, and automatic calling equipment where CCITT recommendations V.24 and V.28 are applicable.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: ISO-2593 FSC/AREA: NOT DoD ADOPTED

TITLE: Connector Pin Allocations For Use With High-Speed Data Terminal Equipment

PUBLICATION DATE: 1973

RELATED EFFORTS:

PURPOSE: This standard provides a correspondence between the interface circuit numbers used in CCITT recommendation V.35, and the Pin numbers of the connector used on the data communication equipment and the data terminal equipment.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: ISO-4902 FSC/AREA: NOT DoD ADOPTED

TITLE: Data Communication - 37-Pin And 9-Pin DTE/DCE Interface Connectors And Pin Assignments

PUBLICATION DATE: 1980

RELATED EFFORTS: EIA RS-449

PURPOSE: This standard specifies the 37-Pin and 9-Pin connectors and the assignment of connector Pin numbers at the interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) where CCITT recommendation V.24 together with recommendations V.10 and V.11 are applicable. Use of the 9-Pin connector only applies when a backward channel capability is implemented in an interface.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: ISO-4903 FSC/AREA: NOT DoD ADOPTED

TITLE: Data Communication - 15-Pin DTE/DCE Interface Connector And Pin Assignments

PUBLICATION DATE: 1980

RELATED EFFORTS:

PURPOSE: This standard specifies the 15-Pin connector and the assignment of connector Pin numbers at the interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) where CCITT recommendations X.24, X.26, and X.27 are applicable.

GUIDE LOCATION: Information only

5.3 U.S. NON-GOVERNMENT DOCUMENTS

5.3.1 ANSI

DOCUMENT NUMBER: ANSI-C95.3 FSC AREA: EMCS

TITLE: Techniques And Instrumentation For The Measurement Of Potentially Hazardous Electromagnetic Radiation Of Microwave Frequencies

PUBLICATION DATE: 01 September 1972

RELATED EFFORTS: ANSI C95.1-66, ANSI C95.2-66

PURPOSE: This standard sets forth evaluation techniques and instrumentation to determine the existence of a potentially hazardous situation due to electromagnetic radiation.

GUIDE LOCATION: 4.8.6

DOCUMENT NUMBER: ANSI-C98.18M FSC AREA: 5820

TITLE: Basic System And Transport Geometry Parameters For l-in., Type C, Helical-Scan Video Tape Recording

PUBLICATION DATE: 22 July 1981

RELATED EFFORTS:

PURPOSE: This standard specifies the general video record system, video pole tip locations, scanner parameters, scanner-guide locations, tape tension, and test conditions for l-in., Type C, Helical-scan video tape recorders operating on the 525/60 monochrome or NTSC color systems.

GUIDE LOCATION: 4.6.2.2

DOCUMENT NUMBER: ANSI-C98.19M FSC AREA: 5820

TITLE: Dimensions And Locations Of Records For l-In., Type C, Helical-Scan Video Tape Recording

PUBLICATION DATE: 22 July 1981

RELATED EFFORTS:

PURPOSE: This standard specifies the dimensions and locations of recorded video, audio and tracking control records for l-in., Type C, helical-scan video tape recorders operating on the 525/60 monochrome or NTSC color systems.

GUIDE LOCATION: 4.6.2.2

DOCUMENT NUMBER: ANSI-C98.20M FSC AREA: 5820

TITLE : Frequency Response And Reference Level Of Recorders And Reproducers For Audio Records For l-In., Type C, Helical-Scan Video Tape Recording

PUBLICATION DATE: 22 July 1981

RELATED EFFORTS:

PURPOSE: This standard specifies the frequency response and reference level of recorders and reproducers for audio records for l-in., Type C helical-scan video tape recording.

GUIDE LOCATION: 4.6.2.2

DOCUMENT NUMBER: ANSI/IEEE 455 FSC AREA: SLHC

TITLE: IEEE Standard Test Procedures For Measuring Longitudinal Balance Of Telephone Equipment Operating In The Voice Band

PUBLICATION DATE: 09 May 1979

RELATED EFFORTS:

PURPOSE: The purpose of this standard is threefold:

1. Define the basic requirements of a test circuit which can be used to measure longitudinal balance and be capable of yielding consistent and repeatable test results.

2. Define test conditions to be established while using the test circuit.

3. Describe standard test procedures to be followed when the test circuit is operated.

This standard specifies the elements of the test circuit only in general terms to allow considerable freedom when a test set is being designed.

GUIDE LOCATION: 4.6.3.2, 4.8.2

DOCUMENT NUMBER: ANSI X3.11-69 FSC AREA: IPSC

TITLE: American National Standard Specification For General Purpose Paper Cards For Information Processing

PUBLICATION DATE: 1 October 1969

RELATED EFFORTS: G-C-116

PURPOSE: This standard specifies the quality of paper, dimensions and quality of general purpose cards, and test methods for general purpose cards of 7 3/8-in. length.

This standard is intended to apply to general purpose cards in which the primary method of recording information is by punched holes. This standard is not intended to exclude the use of such cards in other applications.

GUIDE LOCATION: 4.6.1

DOCUMENT NUMBER: ANSI X3.19-74 FSC AREA: IPSC

TITLE: American National Standard Eleven-Sixteenths-Inch Perforated Paper Tape For Information Interchange

PUBLICATION DATE: 27 March 1974

RELATED EFFORTS:

PURPOSE: This standard covers the physical dimensions and perforations of the paper tape.

GUIDE LOCATION: 4.6.1

DOCUMENT NUMBER: ANSI X3.24-81 FSC AREA: NOT DoD ADOPTED

TITLE: Signal Quality At Interface Between Data Terminal Equipment And Synchronous Data Communication Equipment For Serial Data Transmission (Adopts EIA RS-334-A)

PUBLICATION DATE: 1981

RELATED EFFORTS: EIA RS-334-A

PURPOSE: This standard is applicable to the exchange of serial binary data signals and timing signals across the interface between data terminal equipment (DTE) and synchronous data circuit-terminating equipment (DCE) as defined in RS-232-C. The DCE is considered to be synchronous if the timing signal circuits are required at the transmitting terminal or the receiving terminal, or both.

This standard is of particular importance when the equipments in a system are furnished by different organizations. It does not attempt to indicate what action, if any, is to be taken if the limits are not met, but it is intended to provide a basis for agreement between the parties involved.

This standard does not describe any requirements for error performance either for a complete system or any system components. It should not be assumed that compliance with these standards will produce error rates that are acceptable in any particular application.

Equipment which is represented as complying with this standard shall meet the applicable specifications within the range of those factors which are described as appropriate for the normal operation of the equipment, such as primary power voltage and frequency, ambient temperature, or humidity.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: ANSI X3.34-72 FSC AREA: IPSC

TITLE: Disk Cartridge, Unrecorded Single, (Front Loading 2200 BPI) General, Physical And Magnetic Requirements

PUBLICATION DATE: 9 December 1972

RELATED EFFORTS:

PURPOSE: This standard describes conventions for rolled-up, perforated tapes which are used for the interchange of information. While this standard defines and applies to interchange rolls of tape not contained on reels, it does not preclude the interchange of tapes wound on take-up reels.

GUIDE LOCATION: 4.6.1

DOCUMENT NUMBER: ANSI X3.52-77 FSC AREA: IPSC

TITLE: Disk Cartridge, Unrecorded Single, (Front Loading 2200 BPI) General, Physical and Magnetic

PUBLICATION DATE: 27 October 1977

RELATED EFFORTS:

PURPOSE: This standard specifies the general, physical, and magnetic requirements for interchangeability of the single-disk cartridge (front loading) as required to achieve unrecorded cartridge interchange between disk storage drives and associated information processing systems. The single-disk cartridge (front loading), with two recording surfaces, is of the type intended specifically for use with digital recording and reproducing equipments employing access mechanisms capable of positioning to 200 usable data tracks on each surface. The requirements for three additional track areas on each recording surface are identified for use as alternates in case of difficulty in reading or recording on any usable data tracks.

The general, physical, and magnetic requirements for the single-disk cartridge specified in this standard include:

1. Operating, storage, and test environments for the cartridge
2. Physical dimensions of the cartridge and its components
3. Materials and testing specifications where necessary
4. Magnetic recording and reproducing geometry, including track locations

DOCUMENT NUMBER: ANSI X3.52 (Continued)

5. Magnetic surface and track quality test specifications and requirements

6. Supporting diagrams, measurement methods, and an appendix to provide clarity and completeness of the standard

GUIDE LOCATION: 4.6.2.1

DOCUMENT NUMBER: ANSI X3.55-82 FSC AREA: IPSC

TITLE: Tape Cartridge, For Unrecorded Magnetic Information Interchange, 0.250 Inch

PUBLICATION DATE: 1982

RELATED EFFORTS: FIPS-52, FIPS-93, FIPS-91, FIPS-51, ANSI X3.56

PURPOSE: This standard for an unrecorded cartridge containing 0.250-inch (6.30 mm) magnetic tape presents the minimum requirements for the mechanical and magnetic interchange ability of the cartridge between information processing systems, communications systems, and associated equipment using the American National Standard Code for Information Interchange X3.4-1977 (ASCII). This standard refers solely to the magnetic tape and cartridges for digital recording and compliments American National Standard Recorded Magnetic Tape Cartridge for Information Interchange, Four Track, 0.250 inch (6.30 mm), 1600 bpi (63 bpmm), Phase Encoded, ANSI X3.56-1977.

GUIDE LOCATION: 4.6.2.1

DOCUMENT NUMBER: ANSI X3.58-77 FSC AREA: IPSC

TITLE: American National Standard The Unrecorded Eleven-Disk Pack-General, Physical, And Magnetic Requirements

PUBLICATION DATE: 9 June 1977

RELATED EFFORTS:

PURPOSE: This standard specifies the general, physical, and magnetic requirements for the physical interchange of magnetic eleven-disk packs for use in electronic data processing systems.

GUIDE LOCATION: 4.6.2.1

5.3.2 EIA

DOCUMENT NUMBER: EIA SE-101-A FSC AREA: 5895

TITLE : Amplifiers For Sound Equipment

PUBLICATION DATE: 18 September 1981

RELATED EFFORTS:

PURPOSE: This standard provides definition of terms and minimum standards of performance for the following types of amplifiers: preliminary amps, line amps, power amps, package goods amps, and subsystem amps. Also provided are definitions and methods of measurement for the following amplifier characteristics: noise level, gain, frequency response, distortion, and power output.

GUIDE LOCATION: 4.6.3.3

DOCUMENT NUMBER: EIA SE-103 FSC AREA: 5820

TITLE: Speakers For Sound Equipment

PUBLICATION DATE: 18 September 1981

RELATED EFFORTS:

PURPOSE: This standard provides definitions and methods of measurement for various electrical characteristics of speakers for sound equipment, such as impedance, efficiency, pressure-frequency response, directivity index, and speaker efficiency.

GUIDE LOCATION: 4.6.3.3

DOCUMENT NUMBER: EIA/RMASE-l05-49 FSC AREA: 5965

TITLE: Microphones For Sound Equipment

PUBLICATION DATE: 09 October 1981

RELATED EFFORTS:

PURPOSE: This standard provides definitions and methods of measurement for various electrical characteristics of microphone for sound equipment, to include field response, impedance, directional properties, sensitivity rating methods, and standard mounting threads.

GUIDE LOCATION: 4.6.3.4

DOCUMENT NUMBER: EIA RS-215 FSC AREA: 5995

TITLE: Basic Requirements For Broadcast Microphone Cables

PUBLICATION DATE: 09 October 1981

RELATED EFFORTS:

PURPOSE: The cable described by this standard consists of either two or three conductors of stranded, annealed, and tinned copper wire, insulated cotton wrap and a shield, and protected with an outer sheath of neoprene.

GUIDE LOCATION: 4.1.2.1, 4.6.3.4

DOCUMENT NUMBER: EIA RS-232-C FSC AREA: 34GP

TITLE: Interface Between Data Terminal Equipment And Data Communication Equipment Employing Serial Binary Data Interchange

PUBLICATION DATE: June 1981

RELATED EFFORTS: CCITT-V.24, CCITT-V.28, ISO-2110

PURPOSE: This standard addresses the interconnection of DTEs and DCEs employing serial binary data interchange. It defines electrical, mechanical, and functional characteristics. This standard is for use at data rates up to 20,000 bps, and applies to both synchronous and non-synchronous systems, and employs a 25-Pin connector.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: EIA RS-278-B FSC AREA: 5965

TITLE: Mounting Dimensions For Loudspeakers

PUBLICATION DATE: 01 March 1977

RELATED EFFORTS: ANSI C83.117-76

PURPOSE: This standard provides standard mounting dimensions for round, pin cushion, square, and oval styles of loudspeakers in both U.S. and metric dimensions.

GUIDE LOCATION: 4.6.3.3

DOCUMENT NUMBER: EIA RS-297-A FSC AREA: 5995

TITLE: Cable Connectors For Audio Facilities For Radio Broadcasting

PUBLICATION DATE: June 1970

RELATED EFFORTS:

PURPOSE: This standard applies to 3-contact mating and locking connectors for use in audio circuits. Essentially four types of connectors are covered: male and female portable connectors for use on cables, and male and female connectors for wall or panel mounting.

GUIDE LOCATION: 4.1.2.1

DOCUMENT NUMBER: EIA RS-334-A FSC AREA: NOT DoD ADOPTED

TITLE: Signal Quality At Interface Between Data Terminal Equipment And Synchronous Data Communication Equipment For Serial Data Transmission

PUBLICATION DATE: August 1981

RELATED EFFORTS:

PURPOSE: This standard is applicable to the exchange of serial binary data signals and timing signals across the interface between data terminal equipment (DTE) and synchronous data circuit-terminating equipment (DCE) as defined in RS-232-C. The DCE is considered to be synchronous if the timing signal circuits are required at the transmitting terminal or the receiving terminal, or both.

This standard is of particular importance when the equipments in a system are furnished by different organizations. It does not attempt to indicate what action, if any, is to be taken if the limits are not met, but it is intended to provide a basis for agreement between the parties involved.

The standard does not describe any requirements for error performance either for a complete system or any system components. It should not be assumed that compliance with these standards will produce error rates that are acceptable in any particular application.

Any equipment which is represented as complying with this standard shall meet the applicable specifications within the range of those factors which are described as appropriate for the normal operation of the equipment, such as primary power voltage and frequency, ambient temperature, or humidity.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: EIA RS-363 FSC AREA: NOT DoD ADOPTED

TITLE: Standard For Specifying Signal Quality For Transmitting And Receiving Data Processing Terminal Equipments Using Serial Data Transmission At The Interface With Non-Synchronous Data Communication Equipment

PUBLICATION DATE: May 1969

RELATED EFFORTS:

DOCUMENT NUMBER: EIA RS-363 (Continued)

PURPOSE: This standard is applicable for specifying the quality of serial binary signals exchanged across the interface between synchronous or start-stop data communications equipment as defined in EIA RS-232C. The data communications equipment is considered to be non-synchronous if the timing signal circuits across the interface are not required at either the transmitting terminal or the receiving terminal. It does not specify actual values for these characteristics, but provides standard statements into which agreed upon limits may be inserted.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: EIA RS-366-A FSC AREA: NOT DoD ADOPTED

TITLE: Interface Between Data Terminal Equipment And Automatic Calling Equipment For Data Communication

PUBLICATION DATE: March 1979

RELATED EFFORTS: EIA RS-423-A, EIA RS-232-C, EIA RS-449, IEB-12, FED-STD-1030A, CCITT V.25

PURPOSE: This standard addresses electrical, mechanical and functional characteristics of the interconnection of DTEs and automatic calling equipment (ACE) for data communications. The original RS-366 document was developed for operation with RS-232-C DTEs and DCEs. RS-366-A applies RS-423-A electrical characteristics to achieve electrical commonality with RS-449 DTE/DCE interfaces.

GUIDE LOCATION: 4.6.6

DOCUMENT NUMBER: EIA RS-404 FSC AREA: NOT DoD ADOPTED

TITLE: Standard For Start-Stop Signal Quality Between Data Terminal Equipment And Non-Synchronous Data Communication Equipment

PUBLICATION DATE: March 1973

RELATED EFFORTS:

PURPOSE: This standard specifies the quality of serial binary signals exchanged across the interface between start-stop (i.e., asynchronous), DTE (i.e., processor or teleprinter), and non-synchronous DCE (i.e., data set or signal converter) as defined in EIA RS-232-C. The data communications equipment is considered to be non-synchronous if the timing signal circuits across the interface are not required at either the transmitting terminal or the receiving terminal.

The scope of this standard is limited to start-stop signals at the interface with non-synchronous data communication equipment, therefore signal quality standards pertaining to synchronous data terminal equipments are not included. For a signal standard at the interface with synchronous data communications equipment, see EIA RS-334.

Any equipment which is represented as complying with limits established by this standard shall meet the applicable specifications within the ranges of those factors which are described as appropriate for the operation of the equipment, such as primary power voltage and frequency, ambient temperature and humidity.

This standard does not describe signal quality performance characteristics of the data communication equipment nor the communications channel associated with it. Neither does it describe any requirement for error performance of the system nor any of its components. Compliance of the terminals with the requirements of a particular standard signal quality performance category should not be construed as establishing an acceptable error rate for the terminals or the system.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: EIA RS-410 FSC AREA: NOT DoD ADOPTED

TITLE: Standard For The Electrical Characteristics Of Class A Closure Interchange Circuits

PUBLICATION DATE: April 1974

RELATED EFFORTS:

PURPOSE: This standard is applicable, but not limited to interconnection of equipment in voice or data communication services where:

1. The driver includes a closure or switch (metal contacts or solid-state device) and,

2. The terminator includes an electromechanical relay winding or a solid-state device and,

3. Power is always furnished from the terminator side of the interface and,

4. Information is passed across the interconnection as discrete direct current states.

Circuits meeting the requirements of this standard are designated Class A closure interchange circuits. Future standards may define closure interchange circuits having different electrical characteristics. These circuits will be designated by other class symbols.

This standard is applicable for use in circuits where the nominal duration of either circuit state is not less than 10 milliseconds.

Three types of circuit configurations are defined: N(negative common), P(positive common), and F(floating circuit). Users of this standard shall specify which type of circuit configuration (N, P, or F) is to be used. For example, “RS-410 Type N“.

It is intended that within a given type of interchange circuit N, P, or F, mechanical closures or the appropriate solid-state device may be used interchangeably, Interconnection of dissimilar types of interchange circuit (N, P, F) is not intended.

The basic difference between an interchange circuit of the closure type described in this standard and the circuit of RS-232-C is the latter drivers (signal sources) furnish power to the terminator while the closure driver modulates power furnished by the terminator.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: EIA RS-422-A FSC AREA: NOT DoD ADOPTED *(See Note)

TITLE : Electrical Characteristics Of Balanced Voltage Digital Interface Circuits

PUBLICATION DATE: December 1978

RELATED EFFORTS: FED-STD-1020A, MIL-STD-188-114, CCITT V.11, CCITT X.27

PURPOSE : This standard, adopted as FED-STD-1020A, specifies the electrical characteristics of the balanced voltage digital interface circuit, normally implemented in integrated circuit technology, that may be employed when specified for the interchange of serial binary signals between DTE or in any point-to-point interconnection of serial binary signals between digital equipment.

This standard was developed in liaison with the International Organization for Standardization (ISO) and the International Telegraph and Telephone Consultative Committee (CCITT). It is fully compatible with CCITT Recommendations V.11 and X.27.

The interface circuit includes a generator connected by a balanced interconnecting cable to a load consisting of a receiver or receivers and an optional termination resistor. The electrical characteristics of the circuit are specified in terms of required voltage, current, and resistance values obtained from direct measurement of the generator and receiver components. The receiver specification for the balanced interface is electrically identical to that specified for the unbalanced interface circuit in RS-423-A. Minimum performance requirements for the interconnecting cable are furnished. Guidance is given in Appendix A.1 with respect to limitations on data signaling rate imposed by the parameters of cable length, balance, and termination, for individual installations.

The parameter values specified for the balanced generator and load components of the interface are designed such that balanced interface circuits may be used within the same interconnection as unbalanced interface circuits specified by RS–423-A. For example, the balanced circuits may be used for data and timing while the unbalanced circuits may be used for low speed control functions.

It is intended that this standard will be referenced by other standards that specify the complete DTE/DCE interface (i.e., protocol, timing, pin assignments, etc.) for applications where the electrical characteristics of a balanced voltage digital circuit are required. Applications are also foreseen in other areas using binary signal interchange. This standard does not specify other characteristics of the DTE/DCE interface (such as signal quality and timing, etc.) essential for proper operation across the interface.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6
*Note: See FED-STD-1020A

DOCUMENT NUMBER: EIA US-423-A FSC AREA: NOT DoD ADOPTED *(See Note)

TITLE: Electrical Characteristics Of Unbalanced Voltage Digital Interface Circuits

PUBLICATION DATE: DECEMBER 1978

RELATED EFFORTS: FED-STD-1030A, MIL-STD-188-114, CCITT-V.10, CCITT-X.26

PURPOSE: This standard, adopted as FED-STD-1030A, specifies the electrical characteristics of the unbalanced voltage digital interface circuit, normally implemented in integrated circuit technology, that may be employed when specified for the interchange of serial binary signals between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) or in any point-to-point interconnection of serial binary signals between digital equipment.

This standard was developed in liaison with the International Organization for Standardization (ISO) and the International Telegraph and Telephone Consultative Committee (CCITT). It is compatible with CCITT Recommendations V.10 and X.26.

The interface circuit includes a generator connected by an interconnecting cable to a load consisting of a receiver or receivers. The electrical characteristics of the circuit are specified in terms of required voltage, current, and resistance values obtained from direct measurement of the generator and receiver components. The requirements for signal wave shaping, generally necessary to reduce unbalanced circuit near-end crosstalk to adjacent circuits, are also described. The receiver specification for the unbalanced interface is electrically identical to that specified for the balanced interface circuit in RS-422-A. Minimum performance requirements for the interconnecting cable are furnished. Guidance is given in Appendix A.1 of the standards with respect to limitations on data signaling rate imposed by the parameters of cable length and generation of near-end crosstalk.

The parameter values specified for the unbalanced generator and load components of the interface are designed such that unbalanced interface circuits may be used within the same interconnection as balanced interface circuits specified by RS-422-A. For example, the balanced circuits may be used for data and timing while the unbalanced circuits may be used for low speed control functions. In addition, interoperation may be possible under certain conditions with generators and receivers of other digital interface standards such as EIA Standard RS-232-C.

DOCUMENT NUMBER: EIA RS-423-A (Continued)

It is intended that this standard will be referenced by other standards that specify the complete DTE/DCE interface (i.e., protocol, timing, and pin assignments) for applications where the electrical characteristics of an unbalanced voltage digital interface circuit are required. Applications are also foreseen in other areas using binary signal interchange. This standard does not specify other characteristics of the DTE/DCE interface (such as signal quality and timing) essential for the interconnected equipment operation. When this standard is referenced by other standards or specifications, it should be noted that certain options are available. The preparer of those referencing standards and specifications must determine and specify those optional features which are required for that application.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

*Note: See FED-STD-1030A

DOCUMENT NUMBER: EIA RS-449 FSC AREA: NOT DoD ADOPTED

TITLE: General Purpose 37-Position And 9-Position Interface For Data Terminal Equipment And Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange

PUBLICATION DATE: November 1977

RELATED EFFORTS: MIL-STD-188-114, CCITT-V.24, CCITT-V.54, CCITT-X.21 bis

PURPOSE: This standard is applicable to the interconnection of DTEs and DCES employing serial binary data interchange with control information exchanged at separate control circuits. This standard is intended primarily for data applications using data telecommunication networks. It defines signal characteristics, mechanical characteristics, and functional characteristics.

This standard, together with EIA Standards RS-422-A and RS-423-A, is intended to gradually replace EIA Standard RS-232-A as the specification for the interface between DTE and DCE employing serial binary data interchange. With a few additional provisions for interoperability, equipment conforming to this standard can interoperate with equipment designed to RS-232-C.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: EIA RS-465 FSC AREA: SLHC

TITLE: Group 3 Facsimile Apparatus For Document Transmission

PUBLICATION DATE: 3 April 1981

RELATED EFFORTS: FED-STD-1061, FED-STD-1062, FED-STD-1063, MIL-STD-188-161, IEEE 167, IEEE 167A, IEEE 168, EIA RS-466-81

PURPOSE: This standard is concerned with the characteristics of interoperability affecting group 3 facsimile equipment operating on voice band analog circuits. This equipment incorporates means for reducing the redundancy in its message information prior to the modulation process and thus achieves a nominal transmission time of one minute for a typical full-typescript document. Where options are indicated, the identification and choice of these options is to be made in the premessage portion of the control procedures as standardized in EIA Standard, EIA RS-466. This document has been adopted as FED-STD-1062.

GUIDE LOCATION: 4.6.7

DOCUMENT' NUMBER: EIA RS-466 FSC AREA: SLHC

TITLE : Procedures For Document Facsimile Transmission

PUBLICATION DATE: 3 April 1981

RELATED EFFORTS: FED-STD-1061, FED-STD-1062, FED-STD-1063, IEEE 167, IEEE 167A, IEEE 168, EIA RS-465

PURPOSE: This standard is concerned with the procedures which are necessary for document transmission between two facsimile stations operating on voice band analog circuits. These procedures essentially comprise the following:

Call establishment and call release,
Compatibility checking, status, and control command,
Checking and supervision of line conditions,
Control functions and facsimile operator recall,
Both recognized optional functions as well as other (nonstandard) options.

This document has been adopted as FED-STD-1063.

GUIDE LOCATION: 4.6.7, 4.8.2

DOCUMENT NUMBER: EIA RS-470 FSC AREA: SLHC

TITLE: Technical Standards On Voice Telephone Terminal Equipment Prepared By EIA Engineering Committee TR-41

PUBLICATION DATE: 12 January 1981

RELATED EFFORTS:

PURPOSE : The standard establishes performance and technical criteria for interfacing and connecting with the various elements of the public telephone network. Compliance with these requirements should assure quality service. In some cases, quality performance requires the inclusion of the telephone of location-oriented equipment options. This flexibility is needed to accommodate differences between network switching systems. Therefore, to assure satisfactory performance, two items are needed: equipment design compliance and a process for configuring the telephone to the requirements of its telephone serving area.

GUIDE LOCATION: 4.6.3.2

DOCUMENT NUMBER: EIA RS-478 FSC AREA: SLHC

TITLE: Multiline Key Telephone Systems (KTS) For Voice Band Applications

PUBLICATION DATE: 9 March 1981

RELATED EFFORTS:

PURPOSE: The standard establishes performance and technical criteria for interfacing and connecting with the various elements of the public telephone network. Compliance with these requirements should assure quality service. Quality performance requires, in some cases, the inclusion in the key telephone system (KTS) of location-oriented options or equipment changes. This flexibility is needed to accommodate differences between network switching systems or PBS's. Therefore, in order to assure satisfactory performance, two items are needed: equipment design compliance and a process for configuring the KTS to the requirements of its telephone servicing area.

GUIDE LOCATION: 4.6.3.2

DOCUMENT NUMBER: EIA IEB-9 FSC AREA: NOT DoD ADOPTED

TITLE: Application Notes On EIA Standard RS-232-C

PUBLICATION DATE: May 1971

RELATED EFFORTS: EIA RS-232C

PURPOSE: This paper relates only to EIA RS-232-C and reviews methods of operation of DTE (Data Terminal Equipment) and DCE (Data Circuit-Terminating Equipment) which interface according to RS-232-C. It is anticipated that both designers and operators of such equipments will benefit from the summary of service characteristics and transmission facility characteristics provided herein. Also, with particular regard to Sections 4 and 5 of RS-232-C, a coding format is introduced which allows concise graphical description of control circuits sequential states.

The procedures outlines are not the only possible methods of operation, but they illustrate typical procedures which conform to the provisions of RS-232-C. While all of the thirteen interface types specified in RS-232-C are not covered, examples of the most commonly used configurations are given. Extrapolation of these procedures to other configurations is straight-forward.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: EIA IEB-12 FSC AREA: NOT DOD ADOPTED

TITLE: Application Notes On Interconnection Between Interface Circuits Using RS-449 And RS-232-C

PUBLICATION DATE: November 1977

RELATED EFFORTS: EIA RS-232-C, EIA RS-449

PURPOSE: This industrial electronics bulletin provides application notes for the interconnection of equipment designed to RS-449 with older equipment designed to RS-232-C. Such interconnection can be accomplished with a few additional provisions associated only with the new RS-449 equipment. This bulletin facilitates continued use of RS-232-C equipment and graceful transition to new equipment using RS-449.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

5.3.3 OTHER INDUSTRY DOCUMENTS

DOCUMENT NUMBER: ASTM-E-268-81 FSC AREA: NDTI

TITLE: Definition Of Terms Relating To Electromagnetic Testing

PUBLICATION DATE: 15 April 1982

RELATED EFFORTS:

PURPOSE: This document contains definition of terms that are used in electromagnetic testing.

GUIDE LOCATION: 4.8.6

DOCUMENT NUMBER: IEEE-STD-200-75 FSC AREA: DRPR

TITLE : Reference Designations Of Electrical And Electronics Parts And Equipments

PUBLICATION DATE: 31 October 1975

RELATED EFFORTS:

PURPOSE: This standard covers the formation and application of reference designations for electrical and electronics parts and equipment.

The reference designations of this standard are intended for uniquely identifying and locating discrete items on diagrams and in a set, and for correlating items in a set, graphic symbols on diagrams, and items in parts lists, circuit descriptions, and instructions.

This standard includes three methods for forming and applying reference designations: the unit number method, the location numbering method, and the location coding method. A complete reference designation may incorporate reference designations formed by the use of any of these methods at any level from basic parts to complete units.

The unit numbering method has a long history of satisfactory use in all types of electrical and electronics equipment. The location numbering method and location coding method have been developed to permit rapid physical location of items in large, complicated equipments featuring multiple use of many identical, or closely similar, items. These methods should be applied in such a way that duplicate complete reference designations do not occur in an equipment or system.

DOCUMENT NUMBER: IEEE-STD-200-75 (Continued)

Device function designations for power switchgear and industrial control use are not covered by this standard.

GUIDE LOCATION: 4.8.2

DOCUMENT NUMBER: IEEE-STD-315-75 FSC AREA: DRPR

TITLE: Graphic Symbols For Electrical And Electronics Diagrams

PUBLICATION DATE: 04 September 1975

RELATED EFFORTS:

PURPOSE: This standard provides a list of graphic symbols and class designation letters for use on electrical and electronics diagrams.

GUIDE LOCATION: 4.8.2

BLANK

5.4 FEDERAL DOCUMENTS

5.4.1 FED-STDs

DOCUMENT NUMBER: FED-STD-359 FSC/AREA: 5820

TITLE: Tape, Video, Magnetic, Recording Formats For

PUBLICATION DATE: 21 January 1977

RELATED EFFORTS:

PURPOSE: This standard provides detail recording formats for magnetic video tape recordings that are necessary to provide for inter-changeability among tapes recorded by using the same format. Adherence to this standard will also minimize the number and types of formats that are to be used.

Applications of this standard to both magnetic video tape recording and magnetic video tape recording/reproducing equipment is mandatory on all federal agencies.

GUIDE LOCATIONS: 4.6.2.2

DOCUMENT NUMBER: FED-STD-360 FSC/AREA: 5835

TITLE: Cartridge, Coplanar, Magnetic, Type CPII (Compact Cassette), Audio Visual Use Of

PUBLICATION DATE: 8 March 1976

RELATED EFFORTS: EIA RS-399A, IEC PUB 94, IEC PUB 94

PURPOSE: This standard specifies the application of compact cassettes for audio visual and educational applications to control audio, slide and filmstrip media and specifies the technical characteristics of the recorded information.

GUIDE LOCATION: 4.6.2.2

DOCUMENT NUMBER: FED-STD-1001 FSC/AREA: TELE

TITLE: Telecommunications, Synchronous High-Speed Data Signaling Rates Between Data Terminal Equipment And Data Communication Equipment

PUBLICATION DATE: 15 June 1975

RELATED EFFORTS: ANSI X3.36-1975, FIPS-37

PURPOSE: The purpose of this standard is to facilitate interoperability between telecommunication facilities and systems of the Federal Government and compatibility of these facilities and systems at the computer-communications interface with data processing equipment (systems) of the Federal Government.

This standard shall be used by all agencies of the Federal Government. It shall be used in the planning, design, and procurement, including lease and purchase, of all new data communications systems.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FED-STD-1002 FSC/AREA: TELE

TITLE: Time And Frequency Reference Information In Telecommunication Systems

PUBLICATION DATE: 22 April 1974

RELATED EFFORTS: 41 CFR 101, NBS Tech Note No. 649

PURPOSE: The purpose of this standard is to facilitate interoperability between telecommunications facilities and systems of the Federal Government.

This standard shall be used by all federal agencies where interoperability between federal government telecommunications facilities and systems is dependent on time or frequency reference information.

GUIDE LOCATION: 4.2.1.8, 4.2.2.1, 4.2.3, 4.8.3

DOCUMENT NUMBER: FED-STD-1003A FSC/AREA: TELE

TITLE: Synchronous Bit Oriented Data Link Control Procedures (Advanced Data Communications Control Procedures)

PUBLICATION DATE: 19 August 1981

RELATED EFFORTS: ANSI X3.66-1979, FIPS-71

PURPOSE: This standard is to facilitate interoperability between telecommunication facilities and systems of the Federal Government and compatibility of these systems at the computer communications interface with data processing equipment.

Federal agencies shall use this standard in the design and procurement of data communications systems and equipment using bit oriented link control procedures.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FED-STD-1005 FSC/AREA: TELE

TITLE: Telecommunications, Coding And Modulation Requirements For Nondiversity 2400 Bits Per Second Modems

PUBLICATION DATE: 20 January 1977

RELATED EFFORTS:

PURPOSE: This standard is to facilitate interoperability between telecommunications facilities and systems of the Federal Government.

This standard shall be used by all federal agencies in the design and procurement of nondiversity 2400 bits per second modems for use with nominal 4 kHz channels derived from either switched networks or dedicated lines. Typically, such channels are derived from frequency division multiplex equipment associated with microwave, cable, and satellite transmission systems.

GUIDE LOCATION: 4.2.2.1

DOCUMENT NUMBER: FED-STD-1006 FSC/AREA: TELE

TITLE: Telecommunications, Coding And Modulation Requirements For 4800 Bits Per Second Modems

PUBLICATION DATE: 22 December 1977

RELATED EFFORTS: FED-STD-1020A, FED-STD-1030A, MIL-STD-188-114, EIA RS-422-A, EIA RS-423-A

PURPOSE: This standard is to facilitate interoperability between telecommunications facilities and systems of the federal government.

This standard shall be used by all federal agencies in the design and procurement of nondiversity 4800 bits per second modems for use with nominal 4 kHz channels derived from either switched networks or dedicated lines. Typically, such channels are derived from frequency division multiplex equipment associated with microwave, cable, and satellite transmission systems.

GUIDE LOCATION: 4.2.2.1

DOCUMENT NUMBER: FED-STD-1007 FSC/AREA: TELE

TITLE: Telecommunications, Coding And Modulation Requirements For Duplex 9600 Bits Per Second Modems

PUBLICATION DATE: 01 March 1981

RELATED EFFORTS: FED-STD-1020A, FED-STD-1030A, MIL-STD-188-114, EIA RS-422-A EIA RS-423-A

PURPOSE: This standard is to facilitate interoperability between telecommunication facilities and systems of the Federal Government.

All federal departments and agencies will comply with this standard in the design and procurement of duplex 9600 bits per second modems (and equipment containing such modems) for use over four-wire, nominal 4 kHz analog channels. Typically, nominal 4 kHz analog channels are derived from frequency division multiple equipment associated with microwave, coaxial cable, and satellite transmission systems. For application of this standard within the Department of Defense, users should refer to the supplemental requirements contained in MIL-STD-188-110. Modems described by this standard may also be used on nonrnultiplexed transmission systems, such as metallic cable facilities, but are not required for use with such systems.

GUIDE LOCATION: 4.2.2.1

DOCUMENT NUMBER: FED-STD-1008 FSC/AREA: TELE

TITLE: Telecommunications, Coding And Modulation Requirements For Duplex 600 And 1200 Bits Per Second Modems

PUBLICATION DATE: 16 June 1980

RELATED EFFORTS: FED-STD-1020A, FED-STD-1030A, CCITT V.22

PURPOSE: This standard is to facilitate interoperability between telecommunication facilities and systems of the Federal Government.

A. All federal departments and agencies shall comply with this standard in the design and procurement of duplex 600 bits per second modems and/or 1200 bits per second modems (and equipment containing such modems) for use over nominal 4 kHz analog channels terminated by two-wire (in contrast to four-wire) circuits, except when such modems are acoustically coupled to telephone instruments. Typically, nominal 4 kHz analog channels are derived from frequency division multiplex equipment associated with microwave, coaxial cable, and satellite transmission systems.

B. Modems described by this standard may also be used on entirely nonmultiplexed transmission systems such as those using metallic cable.

c. Modems described by this standard may also have additional characteristics.

GUIDE LOCATION: 4.2.2.1

DOCUMENT NUMBER: FED-STD-1010 FSC/AREA: TELE

TITLE: Telecommunications, Bit Sequencing Of The American National Standard Code For Information Interchange In Serial-by-Bit Date Transmission

PUBLICATION DATE: 11 August 1977

RELATED EFFORTS: ANSI X3.15-76, FIPS 16-1

PURPOSE: This standard facilitates interoperability between telecommunication facilities and systems and compatibility of these systems at the computer-communications interface with data processing equipment.

This standard shall be used by federal agencies with other federal standards or design specifications describing functional, mechanical and procedural characteristics as necessary to achieve interoperability.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FED-STD-1011 FSC/AREA: TELE

TITLE: Telecommunications, Character Structure And Character Parity Sense For Serial-by-Bit Data Communication In The American National Standard Code For Information Interchange

PUBLICATION DATE: 11 August 1977

RELATED EFFORTS: ANSI X3.16-76, FIPS-17-1

PURPOSE: Federal telecommunication standards are to facilitate inter-operability between telecommunication facilities and systems and compatibility of these systems at the computer-communications interface with data processing equipment.

This standard shall be used by federal agencies with other federal standards or design specifications describing functions, mechanical, and procedural characteristics as necessary to achieve interoperability. Systems in existence on the data of this standard which are designed to a different character parity sense specification are not required to comply with the parity sense requirement in this standard.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FED-STD-1012 FSC/AREA: TELE

TITLE: Telecommunications, Character Structure And Character Parity Sense For Parallel-By-Bit Data Communication In The American National Standard Code For Information Interchange

PUBLICATION DATE: 11 August 1977

RELATED EFFORTS: ANSI X3.25-76, FIPS-18-1

PURPOSE: Federal telecommunication standards are to facilitate inter-operability between telecommunication facilities and compatibility of these systems at the computer-communications interface with data processing equipment.

This standard is to be used by federal agencies with other federal standards or design specifications describing functional, mechanical, and procedural characteristics as necessary to achieve interoperability. The parity sense required for 8-level perforated paper tape is not a part of this standard.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FED-STD-1013 FSC/AREA: TELE

TITLE: Telecommunications, Synchronous Signaling Rates Between Data Terminal Equipment And Data Circuit-Terminating Equipment Utilizing 4 kHz Circuits

PUBLICATION DATE: 11 August 1977

RELATED EFFORTS: ANSI X3.01-76, FIPS-22-1

PURPOSE: Federal telecommunication standards are to facilitate inter–operability between telecommunication facilities and systems and compatibility of these systems at the computer-communications interface with data processing equipment.

This standard is to be used by Federal agencies with other federal standards or design specifications describing functions, mechanical, and procedural characteristics as necessary to achieve interoperability. For data rates above 9600 bits per second, whether or not 4 kHz are utilized, FED-STD-1001 applies. Nothing in this standard precludes DTE-DTE application.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FED-STD-1020A FSC/AREA: TELE

TITLE: Telecommunications, Electrical Characteristics Of Balanced Voltage Digital Interface Circuits

PUBLICATION DATE: 1 January 1980

RELATED EFFORTS: EIA RS-422-A, FED–STD-1030A, EIA RS-423-A, MIL-STD-188-114

PURPOSE: The purpose of this standard is to facilitate interoperability between telecommunication facilities and systems of the Federal Government and compatibility of these facilities and systems at the computer-communications interface with data processing equipment (systems) of the Federal Government.

This standard shall be used by all federal departments and agencies in the design and procurement of telecommunication equipment employing balanced voltage digital interface circuits. It is to be used with other application federal standards or design specifications describing functional, mechanical, and procedural characteristics as necessary to achieve compatible interfaces.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FED-STD-1026 FSC/AREA: TELE

TITLE: Telecommunications, Interoperability And Security Requirements For Use Of The Data Encryption Standard In The Physical Layer Of Data Communications

PUBLICATION DATE: 03 August 1983

RELATED EFFORTS: FIPS-46, FIPS-74, FIPS-81, FED-STD-1027

PURPOSE: This standard specifies interoperability and security related requirements for using encryption at the physical layer of the ISO Open Systems Interconnection (OSI) reference model in telecommunication systems conveying Automatic Data Processing (ADP) and/or narrative text information. Requirements contained in this standard relate to the interoperation of physical layer data encryption equipment, or their interoperation with associated DTE or DCE. Additional security requirements, not directly relating to interoperability, are contained in FED-STD-1027.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FED-STD-1027 FSC/AREA: TELE

TITLE: Telecommunications, General Security Requirements For Use Of The Data Encryption Standard

PUBLICATION DATE: 14 April 1982

RELATED EFFORTS: FIPS-46, FIPS-74, FIPS-81, FED-STD-1026

PURPOSE: This standard is to prescribe the physical, electrical, and operational security standards for the DES in its implementation in telecommunications equipment and systems used by the departments and agencies of the U.S. Government.

This standard applies to all telecommunications equipment and systems procured by U.S. Government departments and agencies which employ the DES.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FED-STD-1030A FSC/AREA: TELE

TITLE: Telecommunications, Electrical Characteristics Of Unbalanced Voltage Digital Interface Circuits

PUBLICATION DATE: 31 January 1980

RELATED EFFORTS: EIA RS-423-A, EIA RS-422-A, FED-STD-1020A, MIL-STD-188-114

PURPOSE: The purpose of this standard is to facilitate interoperability between telecommunication facilities and systems of the Federal Government and compatibility of these facilities and systems at the computer-communications interface with data processing equipment (systems) of the Federal Government.

This standard shall be used by all federal departments and agencies in the design and procurement of telecommunication equipment employing unbalanced voltage digital interface circuits. It is to be used with other applicable federal standards or design specifications describing functions, mechanical, and procedural characteristics as necessary to achieve compatible interfaces.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FED-STD-001033 (Interim) FSC/AREA: TELE

TITLE: Telecommunications, Digital Communication Performance Parameters

PUBLICATION DATE: 29 August 1979

RELATED EFFORTS: National Telecommunications Information Administration (NTIA) REPORT - VOLUME 1 AND VOLUME 2

PURPOSE: The purpose of this standard is to improve Federal Government procurement of digital telecommunication systems and services by providing user-oriented, system-independent means of specifying communication performance.

All federal agencies are encouraged to use this standard in specifying the performance of digital telecommunication systems and services, particularly new installations and major changes. The standard can be used in specifying the performance of digital telecommunication systems developed by federal agencies, and in specifying the performance of digital telecommunication services procured by federal agencies from regulated telecommunication carriers and other suppliers. The standard can also be used to assess performance of existing systems. To provide a basis for evaluating the potential benefit of proposed upgrades, augmentations, and replacement systems. Use of the standard is not restricted to applications in which the end-to-end service supports automated data processing. The performance parameters defined in

DOCUMENT NUMBER: FED-STD-001033 (Continued)

this standard were purposely selected to enable specification of performance at the interface between the end user and the data terminal or equivalent function. Nevertheless, the parameters may also be used to specify the performance of facilities or services terminated within the end user interfaces, as long as the interactions between these entities find other system components that can be described in digital terms. Use of the parameters in this context facilitates allocation of end-to-end performance requirements to purchasable subsystems. This interim standard in no way restricts the use of additional parameters in specifying communication performance; as an example, in some applications it may be important to specify the variance of a delay or rate parameter in addition to its average value. However, for maximum completeness, such additional parameters should not be used in lieu of those defined herein.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FED-STD-1035 FSC/AREA: TELE

TITLE: Telecommunications, Coding, Modulation, And Transmission Requirements For Single Channel Medium and High Frequency Radio Telegraph Systems Used In Government Maritime Mobile Telecommunications

PUBLICATION DATE: 29 March 1977

RELATED EFFORTS:

PURPOSE: This standard is to facilitate the interoperability of maritime mobile telecommunication facilities of the Federal Government.

This standard shall be used, to the extent specified herein, by all federal departments and agencies in the design and procurement of maritime mobile radio telegraph systems for medium and high frequency operation.

GUIDE LOCATION: 4.2.1.2, 4.6.1

DOCUMENT NUMBER: FED-STD-1037 FSC/AREA: SLHC

TITLE: Glossary Of Telecommunication Terms

PUBLICATION DATE: July 1980

RELATED EFFORTS: JCS PUB 1, NBS REPT 803, MIL-I-HDBK-411, NBS REPT 10-714, FIPS 11-2, ANSI X3/TR-2, IEEE 100-77, EIA JEDEC 100

DOCUMENT NUMBER: FED-STD-1037 (Continued)

PURPOSE: The purpose of this standard is to improve the federal acquisition process by providing federal departments and agencies a comprehensive, authoritative source of definitions of terms used in telecommunications and directly related disciplines by national, international, and U.S. Government telecommunication specialists.

This standard incorporates and supersedes MIL-STD-188-120. Accordingly, Department of Defense agencies shall use it as the authoritative source of definitions for terms used in preparation of standards, specifications, and other documents pertinent to the acquisition of telecommunication services, equipment, and systems. Other federal departments and agencies shall also use this standard for the same purposes.

GUIDE LOCATION: 4.8.2

DOCUMENT NUMBER: FED-STD-1041 FSC/AREA: TELE

TITLE: Interface Between Data Terminal Equipment And Data Circuit-Terminating Equipment For Operation With Packed-Switched Data Telecommunication

PUBLICATION DATE: 24 March 1981

RELATED EFFORTS: FED-STD-1001, FED-STD-1003, FED-STD-1013, FED-STD-1031, FED-STD-1037, ANSI X3.01-76, ANSI X3.36-75, FIPS-100, ANSI X3.66-79, EIA RS-449, CCITT X.25. CCITT X.21

PURPOSE: This document is identical to FIPS-100.

GUIDE LOCATION: 4.2.2.1, 4.6.6

DOCUMENT NUMBER: FED-STD-1061 FSC/AREA: TELE

TITLE : Group 2 Facsimile Apparatus For Document Transmission

PUBLICATION DATE: 24 March 1981

RELATED EFFORTS: FED-STD-1037, EIA RS-466, CCITT REC T.0, CCITT REC T.3, CCITT REC T.30, FED-STD-1063

PURPOSE: This standard is to facilitate interoperability between and among facsimile terminals within telecommunication facilities and systems of the Federal Government.

All federal departments and agencies shall comply with this standard in the design, development, and procurement of facsimile equipment/ systems.

GUIDE LOCATION: 4.6.7

DOCUMENT NUMBER: FED-STD-1062 FSC/AREA: TELE

TITLE: Group 3 Facsimile Apparatus For Document Transmission

PUBLICATION DATE: 19 August 1981

RELATED EFFORTS: FED-STD-1061, FED-STD-1063, MIL-STD-188-161, IEEE 167, IEEE 167A, IEEE 168, EIA RS-466, EIA RS-465

PURPOSE: This standard adopts EIA RS-465 and is concerned with the characteristics of interoperability affecting group 3 facsimile equipment of operating on voice band analog circuits. This equipment incorporates means for reducing the redundancy in its message information prior to the modulation process and thus achieves a nominal transmission time of one minute for a typical full-typescript document. Where options are indicated, the identification and choice of these options is to be made in the premessage portion of the control procedures as standardized in FED-STD-1063 which adopts EIA RS-466.

GUIDE LOCATION: 4.6.7

DOCUMENT NUMBER: FED-STD–1063 FSC/AREA: TELE

TITLE: Procedures For Document Facsimile Transmission

PUBLICATION DATE: 4 April 1982

RELATED EFFORTS: FED-STD-1061, FED-STD-1062, IEEE 167, IEEE 167A, IEEE 168, EIA RS-465, EIA RS-466

PURPOSE: This standard adopts EIA RS-466 and is concerned with the procedures which are necessary for document transmission between two facsimile stations operating on voice band analog circuits. These procedures essentially comprise the following:

- call establishment and call release;
- compatibility checking, status and control command;
- checking and supervision of line conditions;
- control functions and facsimile operator recall;
- both recognized optional functions as well as other (nonstandard) options.

GUIDE LOCATION: 4.6.7, 4.8.2

5.4.2 FIPS

DOCUMENT NUMBER: FIPS-01-2 FSC/AREA: IPSC

TITLE: Code For Information Interchange

PUBLICATION DATE: 07 November 1984

RELATED EFFORTS: ANSI STD X3.4-77, ANSI STD X3.32-73, ANSI STD X3.41-74, ISO R646, STANAG 5036

PURPOSE: This standard is a combination of three older documents: FIPS 01-1, FIPS-35 and FIPS-36. The standard specifies a code and character set for use in Federal Information Processing Systems, communications systems, and associated equipments. It includes methods of extending the 7-bit code of ASCII (American Standard Code for Information Interchange), remaining in a 7-bit environment or increasing to an 8-bit environment, building upon the structure of ASCII to describe various means of extending the control and graphic sets of the code. It also describes technqiues for constructing codes related to ASCII so as to allow application dependent usage without preventing the interchangeability of their data. It also describes 8-bit codes for general information interchange in which ASCII is a subset.

Additionally, this standard specifies graphical representation for the 34 characters of ASCII. Graphical representations are given for the 32 control functions of columns 0 and 1 as well as the characters "space" and "delete." Two forms of graphical representation for each of the 34 characters are provided: a pictorial symbol, and a 2-letter alphanumeric code.

This standard is generally applicable to the representation of character-coded information in information interchange and files used in data processing, communications, and related equipments. It is to be used in conjunction with FIPS-02-1 and FIPS 03-1. It can be used with FIPS-25, FIPS-50 or other applicable FIPS.

GUIDE LOCATION: 4.5, 4.6.6., 4.8.2

DOCUMENT NUMBER: FIPS–02-1 FSC/AREA: IPSC

TITLE: Perforated Tape Code For Information Interchange

PUBLICATION DATE: 07 November 1984

RELATED EFFORTS: ANSI STD X3.6-65

DOCUMENT NUMBER: FIPS-02-1 (Continued)

PURPOSE: This standard specifies the representation of the Federal Standard Code for Information Interchange (FIPS 1) on perforated tape used in Federal Information Processing Systems, communications systems, and associated equipments.

This standard is generally applicable to the representation of character-coded information on perforated paper tape used with data processing, communications, and related equipments.

GUIDE LOCATION: 4.6.1

DOCUMENT NUMBER: FIPS-03-1 FSC/AREA: IPSC

TITLE : Recorded Magnetic Tape For Information Interchange (800 CPI, NRZI)

PUBLICATION DATE: 30 June 1973

RELATED EFFORTS: FIPS-01, FIPS-25, ANSI X3.22-73

PURPOSE: This standard specifies the recorded characteristics of 9-track, one-half inch wide magnetic computer tape, including the data format for implementing the Federal Standard Code for Information Interchange at the recording density of 800 characters per inch (CPI). It is one of a series of federal standards implementing the Federal Standard Code for Information Interchange (FIPS 1) on magnetic tape media. This revision to FIPS PUB 3 reflects a change in scope from the earlier version of x3.22-1967, and encompasses the recorded tape requirements only. The unrecorded tape standard will include the requirements for the physical properties of the tape reels that were previously included in FIPS 3.

This standard is applicable to all 9-track magnetic tape recording and reproducing equipments employing one-half inch wide tape at recording densities of 800 character per inch (CPI). Federal Information Processing Systems employing such equipment, including associated programs, shall provide the capability to accept and generate recorded tapes in compliance with the requirements set forth in the standard.

GUIDE LOCATION: 4.6.2.1

DOCUMENT NUMBER: FIPS-7 FSC/AREA: IPSC

TITLE: Implementation Of The Code For Information Interchange And Related Media Standards

PUBLICATION DATE: 7 March 1969

RELATED EFFORTS: FIPS-01, FIPS-02, FIPS-3-1

PURPOSE: This standard explains the scope of application of the Standard Code for Information Interchange, instructions for implementing it, and its use in computer and telecommunications applications.

This document is a supplement to FIPS 01, FIPS 02, and FIPS 3-1.

GUIDE LOCATION: 4.5, 4.6.1, 4.6.2.1, 4.6.6, 4.8.2

DOCUMENT NUMBER.: FIPS-11-2 FSC/AREA: IPSC

TITLE: Guideline, American National Dictionary For Information Processing Systems

PUBLICATION DATE: 5 September 1983

RELATED EFFORTS: FED-STD-1037, EIA JEDEC 100, IEEE 100-77, ANSI X3/TR-2

PURPOSE: This FIPS PUB provides for a common reference within the Government for terms and definitions used in such information processing activities as the representation, communication, interpretation, and processing of data by human or automatic means.

GUIDE LOCATION: 4.8.2

DOCUMENT NUMBER: FIPS-12-2 FSC/AREA: IPSC

TITLE : Federal Information Processing Standards Index

PUBLICATION DATE: 1 December 1974

RELATED EFFORTS:

PURPOSE: This publication identifies responsibilities and provides policies and guidelines for the management of activities in the executive branch relating to the development, implementation, and maintenance of standards for data elements and representations used in automated federal data systems. Its provisions complement the standards and recommendations that have been or may be issued under the statistical procedures prescribed by Office of Management and Budget Circular A-46.

GUIDE LOCATION: 4.8.2

DOCUMENT NUMBER: FIPS-13 FSC/AREA: IPSC

TITLE: Rectangular Holes In Twelve-Row Punched Cards

PUBLICATION DATE: 1 October 1971

RELATED EFFORTS: FIPS-01, FIPS-7, FIPS-14, ANSI x3.11-69, ANSI X3.21-67, ANSI x3.26-70

PURPOSE: This standard specifies the size and location of rectangular holes in 12-row, and one-fourth inch wide punched cards.

This standard applies to all devices which punch or read rectangular holes in three and one-fourth inch wide 12-row punched cards used in data processing, communications, and similar operations. This standard does not apply to other types of equipment such as those which punch round holes or cards of other width dimension.

GUIDE LOCATION: 4.6.1

DOCUMENT NUMBER: FIPS-14-1 FSC/AREA: IPSC

TITLE: Hollerith Punched Card Code

PUBLICATION DATE: 19 December 1980

RELATED EFFORTS: FIPS-01, FIPS-7, FIPS-13, FIPS-15, ANSI x3.11-69, ANSI x3.21-67, ANSI X3.26-70

PURPOSE: This standard specifies the representation of the Federal Standard Code for Information Interchange (FIPS 1), in three and one-fourth inch wide, 12-row, rectangular hole, “Hollerith” punched cards used in Federal Information Processing Systems, communications systems, and associated equipments.

Generally applicable to the representation of character coded information in three and one-fourth inch wide, 12-row, rectangular hole, “Hollerith” punched cards used with data processing, communications, and related equipments. This standard coding does not apply to other types of punched cards, such as those with round holes . It is not applicable to “edge-punched” cards, whose code holes resemble those used in perforated tape. It is applicable when subsets of the standard code are used as specified in FIPS PUB 15, subsets of the standard code for information interchange.

GUIDE LOCATION: 4.6.1, 4.8.2

DOCUMENT NUMBER: FIPS-15 FSC/AREA: IPSC

TITLE: Subsets Of The Standard Code For Information Interchange

PUBLICATION DATE: 1 October 1971

RELATED EFFORTS: FIPS-01, FIPS-02, FIPS-3, FIPS-7, FIPS-14

PURPOSE: Subsets of 95, 64 and 16 graphic characters are provided in this standard. These are derived from the Federal Standard Code for Information Interchange (FIPS 1) which, in turn, was adopted from the American National Standard Code for Information Interchange (ASCII, American National Standard X3.4-1968). The memorandum of the Secretary of Commerce on "Application of Federal ADP Code and Media Standards", dated March 7, 1979, contained in FIPS PUB 7, states in paragraph 5C: "If the full character set of ASCII cannot be applied, the largest possible character subset should be used, and the ASCII collating sequence observed." That memorandum also states in paragraph 8B: "Use of one or more of these ASCII subsets is a powerful tool in bridging the conversion gap prior to the procurement or utilization of hardware with full ASCII capability." This FIPS PUB amends FIPS PUB 7 by requiring one of the three specific subsets described herein when a subset is used. It is emphasized that the coded representation of the 95-character subset, the 64-character subset and the 16-character subset in the input/output media and data communications will conform to the specifications cited in other applicable Federal Information Processing Standards.

These character subsets are intended to be used for all printers, display devices, punched card equipment, and other data processing or communication equipment in those systems or applications that do not require the full 128-character set contained in FIPS 1. The use of the 64- of 16-character graphic subsets in lieu of the full set of 95 graphics, where appropriate, can result in advantageous combinations of increased speed of printing or display, decreased costs, decreased complexity, and efficient manipulation.

GUIDE LOCATION: 4.5, 4.6.6, 4.8.2

DOCUMENT NUMBER: FIPS-16-I FSC/AREA: IPSC

TITLE: Bit Sequencing Of The Code For Information Interchange In Serial-by-Bit Data Transmission

PUBLICATION DATE: 1 December 1976

DOCUMENT NUMBER: FIPS-16-1 (Continued)

RELATED EFFORTS: FIPS-01, FIPS-07, FIPS-17, FIPS-PUB 18, ANSI X3.15-66

PURPOSE: This standard specifies the method of transmitting the Federal Standard Code For Information Interchange (FIPS 1) in serial-by-bit, serial-by-character data transmission. Included in the standard is the position of the character parity bit, if transmitted with the information bits.

This standard is applicable to the transmission of the standard code in a serial bit stream form at the interface between data terminal equipment and data circuit-terminating equipment. Data terminal equipments transmitting an approved federal subset or superset of FIPS 1 are not precluded.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FIPS-17-1 FSC/AREA: IPSC

TITLE: Character Structure And Character Parity Sense For Serial-By-Bit Data Communication In The Code For Information Interchange

PUBLICATION DATE: 1 September 1977

RELATED EFFORTS: FIPS-01, FIPS-16-1, FIPS-18-1, ANSI X3.16-76

PURPOSE: This standard specifies the method of transmitting the Federal Standard Code For Information Interchange (FIPS 1) in the serial-by-bit, serialby-character data transmission. This revision supersedes FIPS PUB 17 and reflects changes necessary to accommodate revisions prescribed by FIPS 1 when operating in either 7- or 8-bit coded environments.

Federal Information Processing Standard 17-1 (FIPS 17-1), Character Structure and Character Parity Sense for Serial-by-Bit Data Communication in the Code for Information Interchange, is identified also as FED-STD-1011 (affixed). This joint federal information processing standard and federal standard adopts American National Standard X3.16-1976, Character Structure and Character Parity Sense for Serial-by-Bit Data Communication in the Code for Information Interchange.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FIPS-18-1 FSC/AREA: IPSC

TITLE: Character Structure And Character Parity Sense For Parallel-By-Bit Data Communication In The Code For Information Interchange

PUBLICATION DATE: 1 September 1977

RELATED EFFORTS: FIPS-01, FIPS-16-1, FIPS-17-1, ANSI X3.25-76

PURPOSE: This standard specifies the channel assignment for information interchange (FIPS 1) in parallel-by-bit serial-by-character data transmission. This revision supersedes FIPS PUB 18 and reflects changes necessary to accommodate revisions prescribed by FIPS 1 when operated in eight 7- or 8-bit coded environments.

FIPS 18-1, Character Structure and Character Parity Sense for Parallel-by-Bit Data Communication in the Code for Information Interchange, is identified also as Federal Standard Number 1012 (affixed). This joint federal information processing standard and federal standard adopts American National Standard, X3.25-1976, Character Structure and Character Parity Sense for Parallel-by-Bit Data Communication in the Code for Information Interchange.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FIPS-19 FSC/AREA: IPSC

TITLE: Guidelines For Registering Data Codes

PUBLICATION DATE: 1 February 1972

RELATED EFFORTS:

PURPOSE: This publication provides guidelines for registering with the National Bureau of Standards existing codes and those under development . It is the intent of these guidelines to make the registry process as simple as possible and yet provide sufficient information to make the code registers useful tools for those seeking to use them as a source of information.

Upon receipt of a completed data codes registration form, NBS will enter the information in the appropriate register(s). The accompanying code list and related document will be filed for reference purposes. It is planned to publish the contents of the data code registers on an annual basis. These will be published in the NBS Federal Information Processing Standards Publications (FIPS PUB) series and will be entitled Data Codes Register.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-20 FSC/AREA: IPSC

TITLE: Guidelines For Describing Information Interchange Formats

PUBLICATION DATE: 1 March 1972

RELATED EFFORTS:

PURPOSE: These guidelines identify and describe the various characteristics of formatted information that should be considered whenever formatted information is interchanged. The objective is to clarify and improve the documentation necessary to effectively provide, process, or use the information involved.

As new systems are being developed or current systems revised, the use of these guidelines should be considered. Also whenever new information interchange requirements are developed, this FIPS PUB may be useful in the development of format specifications and forms design. It is not the intent to change existing format descriptions. However, the use of this FIPS PUB as a basis for assessing the adequacy of present documentation methods is encouraged.

GUIDE LOCATION: 4.8.2

DOCUMENT NUMBER: FIPS-22-1 FSC/AREA: IPSC

TITLE: Synchronous Signaling Rates Between Data Terminal And Data Communication Equipment

PUBLICATION DATE: 1 September 1977

RELATED EFFORTS: FIPS-16-1, FIPS-17-1, FIPS-18-1, ANSI X3.01-76

PURPOSE: This standard specifies the rates of transferring binary encoded information in synchronous serial or parallel form between data processing terminal and data communications equipments that employ voice band communication facilities. This revision supersedes FIPS PUB 22 and reflects changes made to the corresponding American National Standard X3.1-1976.

Applicable to data terminal and data processing equipment employed with synchronous data communication equipment which are designed to operate on binary encoded information in either serial or parallel fashion over voice grade communication channels of nominal 4 kHz bandwidth. For data rates above 9600 bits per second, whether or not 4 kHz circuits are utilized, FED-STD-1001 applies. Nothing in this standard precludes DTE-DTE application.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FIPS-24 FSC/AREA: IPSC

TITLE : Flowchart Symbols And Their Usage In Information Processing

PUBLICATION DATE: 30 June 1973

RELATED EFFORTS: ANSI X3.05-70

PURPOSE: The purpose of this FIPS PUB is to establish standard flowchart symbols and to specify their use in the preparation of flowcharts in documenting information processing systems.

This standard applies to any federal information processing operation where symbolic representation is desirable to document the sequence of operations and the flow of data and paperwork.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-25 FSC/AREA: IPSC

TITLE: Recorded Magnetic Tape For Information Interchange (1600 CPI, Phase Encoded)

PUBLICATION DATE: 30 June 1973

RELATED EFFORTS: ANSI X3.39-73

PURPOSE: This standard provides specifications for format and recording of the Standard Code for Information Interchange on one-half inch, 9-track magnetic tape. It covers recording method, density, allowable skew, signal amplitude, representation of codes on tracks, block, lengths, interrecord gaps, and check characters.

GUIDE LOCATION: 4.6.2.1

DOCUMENT NUMBER: FIPS-26 FSC/AREA: IPSC

TITLE: One-Inch Perforated paper Tape For Information Interchange

PUBLICATION DATE: 30 June 1973

RELATED EFFORTS: ANSI X3.18-67

PURPOSE: This standard specifies the width and thickness of one-inch perforated paper tape as well as the locations and size of feed holes and information holes.

GUIDE LOCATION: 4.6.1

DOCUMENT NUMBER: FIPS-27 FSC/AREA: IPSC

TITLE: Take-Up Reels For One-Inch Perforated Tape For Information Interchange

PUBLICATION DATE: 30 June 1973

RELATED EFFORTS: ANSI X3.20-67

PURPOSE: This standard specifies the physical characteristics and dimensions for both small diameter and large diameter drive take-up (or storage) reels, with either fixed or separable flanges.

GUIDE LOCATION: 4.6.1

DOCUMENT NUMBER: FIPS-31 FSC/AREA: IPSC

TITLE: Guidelines For Automatic Data Processing Physical Security And Risk Management

PUBLICATION DATE: 1 June 1974

RELATED EFFORTS:

PURPOSE: These guidelines provide a handbook for use by federal organizations in structuring physical security and risk management programs for their ADP facilities. This issue discusses security analysis, natural disasters, supporting utilities, system, reliability, procedural measures and controls, offsite facilities, contingency plans, security awareness, and security audit. It contains statistics and information relevant to physical security of computer data and facilities and references many applicable publications for a more exhaustive treatment of specific subjects.

These guidelines are intended as basic reference documents and a checklist for general use throughout the Federal Government to evaluate computer security and plan physical security programs in ADP systems.

GUIDE LOCATION: 403

DOCUMENT NUMBER: FIPS-32-1 FSC/AREA: IPSC

TITLE: Character Sets For Optical Character Recognition

PUBLICATION DATE: 06 June 1982

RELATED EFFORTS: ANSI X3.2-70, X3.17-81, X3.49-75, FIPS- 40, FIPS-85, FIPS-89

PURPOSE: This standard defines the optical and dimensional properties of the shape patterns forming optical character recognition (OCR) characters and the basic requirements for the position of OCR characters on the paper substrate. It establishes two character sets.

This standard applies to all ADP systems using OCR systems integral input/output media processing of printed data.

GUIDE LOCATION: 4.6.4

DOCUMENT NUMBER: FIPS-33 FSC/AREA: IPSC

TITLE: Character Set For Hand Printing

PUBLICATION DATE: 1 October 1974

RELATED EFFORTS: ANSI X3.45-74

PURPOSE: The FIPS PUB announces the adoption of the American National Standard X3.45-1974, character set for hand printing as a federal standard. This standard provides the description, scope, and application rules for a character set for hand printing. A major purpose of this standard is to reduce the cost of data input into ADP systems which use optical character recognition (OCR) equipment.

The standard is applicable to all ADP systems using OCR systems as integral input/output media processing of hand printed data.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-34 FSC/AREA: IPSC

TITLE: Guide For The Use Of International System Of Units (SI) In Federal Information Processing Standards Publications

PUBLICATION DATE: 1 January 1975

RELATED EFFORTS:

PURPOSE: The use of SI (International System of Units) within the United States is increasing. The Secretary of Commerce has established the policy that publications of the department will provide dual-dimensions to the extent practicable. The Federal Information Processing Standards (FIPS) program in response to Public Law 89-306 (The Brooks Act) strives to improve the utilization of ADP equipment , goods and services within the federal government through the establishment of uniform federal automatic data processing standards. These standards and guidelines which are published by the National Bureau of Standards as FIPS contain specifications which should be expressed as dual-dimensions. Accordingly, this guideline will be used in the preparation of all new FIPS PUBS and existing FIPS PUBS when revised.

All applicable FIPS PUBS that specify measurements will represent these as SI unit designations as prescribed in the current version of American National Standard Metric Practice Guide (Z210.1). The SI unit designations will be followed by the equivalent "English" notation in parenthesis. Also values which are converted or rounded will be in accordance with the rules specified in the guide. The use of the dual-dimensions notation; i.e., metric (English) shall be the practice in future FIPS PUBS.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-37 FSC/AREA: IPSC

TITLE: Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment And Data Communications Equipment

PUBLICATION DATE: 15 June 1975

RELATED EFFORTS: FIPS-22, ANSI X3.1-69, ANSI X3.36-75

PURPOSE: This standard specifies the rates for transferring synchronous binary encoded information between data processing terminal and data communication equipment on wide band communication channels. It complements FIPS 22 which specifies the signaling rates for equipment that employ voice-band communication facilities.

This standard is applicable to data terminal and data processing equipment employed with synchronous data communication equipment which are designed to operate on wideband communication channels. This standard is not intended to hasten the obsolescence of equipment currently in the federal inventory; it is applicable to the planning, design, and procurement of all new data communication facilities.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: FIPS-38 FSC/AREA: IPSC

TITLE: Guidelines For Documentation Of Computer Programs And Automated Data Systems

PUBLICATION DATE: 15 February 1976

RELATED EFFORTS: FIPS-30, DoD MANUAL 4120.17-M, NASA NHB-2411.1

PURPOSE: These guidelines provide a basis for determining the content and extent of documentation for computer programs and automated data systems.

These guidelines are intended to be a basic reference and a checklist for general use throughout the Federal Government to plan and evaluate documentation practices.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-39 FSC/AREA: IPSC

TITLE: Glossary For Computer Systems Security

PUBLICATION DATE: 15 February 1976

RELATED EFFORTS: FIPS-31, FIPS-41, NBS TECH NOTE 780, NBS TECH NOTE 827,

PURPOSE: This glossary has been prepared in response to the need of Government agencies for a vocabulary of terminology related to the concepts of privacy and computer systems security. The terms have been extracted from many sources and the definitions have been refined through the efforts of the Federal Information Processing Standards (FIPS) task group 15-computer systems security. This task group was established by the Department of Commerce within the National Bureau of Standards to develop standards and guidelines relative to computer systems security.

This glossary is intended as a reference document to be used throughout the Federal Government to promote common understanding of concepts and procedures relating to computer systems security. It is to be recognized that many terms and definitions in this glossary are highly specialized, and that some terms do have different meanings in other contexts. Other appropriate dictionaries, vocabularies, and glossaries should therefore be consulted in conjunction with use of this glossary.

GUIDE LOCATION: 4.3

DOCUMENT NUMBER: FIPS-40 FSC/AREA: IPSC

TITLE: Guidelines For Optical Character Recognition Forms

PUBLICATION DATE: 1 May 1976

RELATED EFFORTS:

PURPOSE: This standard provides information on the design, preparation, acquisition, and application of OCR forms in data entry systems.

GUIDE LOCATION: 4.6.4

DOCUMENT NUMBER: FIPS- 41 FSC/AREA: IPSC

TITLE: Computer Security Guidelines For Implementing The Privacy Act Of 1974

PUBLICATION DATE: 30 May 1975

RELATED EFFORTS: FIPS-31, NBS TECH NOTE 80, NBS TECH NOTE 827, NBS SPECIAL PUB

PURPOSE: The Privacy Act of 1974 imposes numerous requirements upon federal agencies to prevent the misuse or compromise of data concerning individuals. Federal ADP organizations which process personal data must provide a reasonable degree of protection against unauthorized disclosure, destruction or modification of personal data, whether intentionally caused or resulting from accident or carelessness. These guidelines provide a handbook for use by federal organizations in implementing any computer security safeguards which they must adopt in order to implement the act. They describe risks and risk assessment, physical security measures, appropriate information management practices, and computer system and network security controls.

GUIDE LOCATION: 403

DOCUMENT NUMBER: FIPS-46 FSC/AREA: IPSC

TITLE: Data Encryption Standard

PUBLICATION DATE: 15 February 1977

RELATED EFFORTS: FIFS-31, FIPS-39, FIPS-41

PURPOSE: The data encryption standard (DES) specifies an algorithm to be implemented in electronic hardware devices and used for the cryptographic protection of computer data. This publication provides a complete description of a mathematical algorithm for encrypting (enciphering) and decrypting (deciphering) binary coded information. The algorithm described in this standard specifies both enciphering and deciphering operations which are based on a binary number called a key. The key consists of 64 binary digits ("0"s or "1"s) of which 56 bits are used directly by the algorithm and 8 bits are used for error detection.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-48 FSC/AREA: IPSC

TITLE: Guidelines On Evaluation Of Techniques For Automated Personal Identification

PUBLICATION DATE: 1 April 1977

RELATED EFFORTS: FIPS-31, FIPS-41

PURPOSE: This guideline describes methods for verifying the identity of users seeking to gain access to computer systems or networks via terminals. Criteria are given for evaluating the effectiveness of personal identification techniques. System considerations for inclusion as further safeguards to data confidentiality are indicated, as a supplement to personal identification.

This guideline is intended as a basic reference document for general use by federal departments and agencies in the evaluation and selection of techniques for personal identification applicable for use with terminals.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-49 FSC/AREA: IPSC

TITLE: Guideline On Computer Performance Management: An Introduction

PUBLICATION DATE: 1 May 1977

RELATED EFFORTS:

PURPOSE: This guideline provides general assistance to federal ADP managers in planning and organizing a computer performance management (CPM) program. The use of performance measures in four major areas of management responsibility is discussed. The role of the ADP manager and the expected resources required in instituting a CPM program are also presented.

This guideline is intended as a reference document of recommended practices for general use throughout the Federal Government in planning and organizing computer performance management programs.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-50 FSC/AREA: IPSC

TITLE: Recorded Magnetic Tape For Information Interchange, 6250 CPI (246 CPMM), Group Coded Recording

PUBLICATION DATE: 31 August 1977

RELATED EFFORTS: ANSI X3.54-76

PURPOSE: This standard specifies format and recording requirements for representing the Standard Code for Information Interchange on nine channel one-half inch magnetic tape.

This standard applies to recording and reproducing equipment operating at densities of 6250 characters per inch.

GUIDE LOCATION: 4.6.2.1

DOCUMENT NUMBER: FIPS-51 FSC/AREA: IPSC

TITLE: Magnetic Tape Cassettes For Information Interchange (3.810 mm [0.150 inch] Tape At 32 BPMM [800 BPI], PE)

PUBLICATION DATE: 1 February 1978

RELATED EFFORTS: ANSI X3.48-77, ANSI X3.56-77, ANSI X3.59-81, ANSI X3.72-81, FIPS-52, FIPS-91, FIPS-93

PURPOSE: This standard specifies the physical, magnetic, and recorded characteristics of a 3.810 mm [0.150 inch] magnetic tape cassette at a recording density of 32 bits per millimeter [800 BPI] using phase encoding techniques.

GUIDE LOCATION: 4.6.2.1

DOCUMENT NUMBER: FIPS-52 FSC/AREA: IPSC

TITLE: Recorded Magnetic Tape Cartridge For Information Interchange, 4-Track, 6.30 mm (one-fourth inch), 63 BPMM (1600 BPI), Phase Encoded

PUBLICATION DATE: 22 February 1978

RELATED EFFORTS: ANSI X3.48-77, ANSI X3.56-77, ANSI X3.59-81, ANSI X3.72-81, FIPS-51, FIPS-91, FIPS-93

PURPOSE: This standard specifies format and recording requirements for representing the Standard Code for Information Interchange on 6.30 mm wide magnetic tape cartridges with either one, two or four serial data tracks.

This standard applies to recording and reproducing equipment operating at densities of 63 bits per millimeter.

GUIDE LOCATION: 4.6.2.1

DOCUMENT NUMBER: FIPS-57 FSC/AREA: IPSC

TITLE : Guidelines For The Measurement Of Interactive Computer Service Response Time And Turnaround Time

PUBLICATION DATE: 1 August 1978

RELATED EFFORTS:

PURPOSE: These guidelines define measures and describe methodologies for measuring interactive computer network service.

These guidelines are a basic reference document to inform federal agencies of current approaches to evaluation techniques related to interactive computer service. These guidelines are oriented toward the person who will be writing specifications for or conducting evaluation and selection of interactive computer network services. Some aspects are also applicable to the evaluation, selection, and operation of computer systems which offer such services.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-60-2 (See Note) FSC/AREA: IPSC

TITLE: 1/0 Channel Interface

PUBLICATION DATE: 22 February 1984

RELATED EFFORTS: ANSI X3T9/600 REV.2, ANSI X3T9/666 REV. 2, FIPS PUB 61

PURPOSE: This standard defines the functional, electrical, and mechanical interface specifications for connecting computer peripheral equipment as a part of ADP systems. This standard, together with a companion standard for power control, defines the hardware characteristics for the 1/0 channel level interface. In order to achieve full plug-to-plug interchangeability of peripheral components, device class specific operational specifications and standards are also required for each class of peripheral device. These operational specifications and standards will be proposed as federal information processing standards to accompany this standard as they are developed. Use of FIPS-60-1 will reduce the cost of satisfying data processing requirements by increasing the available alternative sources of supply for computer system components at the time of initial system acquisition, as well as in system replacement and augmentation and in system component replacement. This standard is also expected to lead to improved reutilization of system components. When acquiring ADP systems and system components, federal agencies shall cite this standard in specifying the interface for connecting computer peripheral equipment as a part of ADP systems.

GUIDE LOCATION: Information only

NOTE: FIPS-60-1 is not a Telecommunications Interface Standard. It address ADP equipment and is included here only for information purposes.

DOCUMENT NUMBER: FIPS-61-1 (See Note) FSC/AREA: IPSC

TITLE: Channel Level Power Control Interface

PUBLICATION DATE: 13 July 1982

RELATED EFFORTS: ANSI x3T9/600 REV.2, ANSI X3T9/666 REV. 2, FIPS-60-1

PURPOSE: This standard defines the functional, electrical, and mechanical interface specifications for a power control interface for use in connecting computer peripheral equipment as a part of automatic data processing (ADP) systems. This standard, together with a companion standard for 1/0 channel interface, defines the hardware characteristics for the 1/0 channel level interface. The Government's intent in employing this channel level power control interface standard is to reduce the cost of satisfying the

DOCUMENT NUMBER: FIPS-61 (Continued)

Government's data processing requirements through increasing its available alternative sources of supply for computer system components at the time of initial system acquisition, as well as in system replacement and augmentation and in system component replacement . This standard is also expected to lead to improved reutilization of system components when agencies shall cite this standard in specifying the power control interfaces for connecting computer peripheral equipment as a part of ADP systems.

This standard is applicable whenever use of federal information processing standard 1/0 channel interface (NBS-FIPS-60) is required. Verification of the correct operation of all interfaces that are required to conform to this standard shall, through demonstration of other means acceptable to the Government, be provided prior to the acceptance of all applicable ADP equipment.

GUIDE LOCATION: Information only

NOTE: FIPS-61 is not a Telecommunications Interface Standard. It address ADP equipment and is included here only for information purposes.

DOCUMENT NUMBER: FIPS-62 FSC/AREA: IPSC

TITLE: Operational Specifications For Magnetic Tape Subsystems

PUBLICATION DATE: 16 February 1979

RELATED EFFORTS: ANSI x3T9/780 REV. 3

PURPOSE: This standard defines the peripheral device dependent operational interface specifications for connecting magnetic tape equipment as a part of automatic data processing (ADP) systems. It is to be used together with FIPS-60, 1/0 channel interface and FIPS-61, channel level power control interface. This standard, together with these two referenced standards, provides for full plug-to-plug interchangeability of magnetic tape equipment as part of ADP systems. The Government's intent in employing this standard for operational specifications for magnetic tape subsystems is to reduce the cost of satisfying the Government's data processing requirements through increasing its available alternative sources of supply for computer system components at the time of initial system acquisition, as well as in system replacement augmentation and in system component replacement. This standard is also expected to lead to improved reutilization of system components.

DOCUMENT NUMBER: FIPS-62 (Continued)

This standard is applicable to the acquisition of all magnetic tape equipment whenever the use of federal information processing standard 1/0 channel interface (FIPS-60) is required. Verification of the correct operation of all interfaces that are required to conform to this standard shall, through demonstration or other means acceptable to the Government, be provided prior to the acceptance of all applicable ADP equipment.

GUIDE LOCATION: 4.6.2.1

DOCUMENT NUMBER: FIPS-63-1 FSC/AREA: IPSC

TITLE: Operational Specifications For Variable Block Rotating Mass Storage Subsystems

PUBLICATION DATE: 14 April 1983

RELATED EFFORTS: ANSI X3T9/848 REV.2, ANSI X3T9/095 REV. 1, ANSI X3T9/904 REV.1, ANSI x3T9/906 REV. 1, FIPS-97

PURPOSE: This standard defines the peripheral device dependent operational interface specifications for connecting rotating mass storage equipment as a part of automatic data processing (ADP) systems. It is to be used together with FIPS-60, 1/0 channel interface and FIPS-61, channel level power control interface. This standard, together with these two referenced standards provides for full plug-to-plug interchangeability of rotating mass storage equipment as a part of ADP systems. The Government's intent in employing this standard for operational specifications for rotating mass storage subsystems is to reduce the cost of satisfying its data processing requirements through increasing its available alternative sources of supply for computer systems components at the time of initial system acquisition, as well as in system replacement augmentation and in system component replacement. This standard is also expected to lead to improved reutilization of system components. When acquiring ADP systems and system components, federal agencies shall cite this standard in specifying the interface for connecting rotating mass storage peripheral equipment as a part of ADP systems.

This standard is applicable to the acquisition of all rotating mass storage equipment whenever the use of federal information processing standard 1/0 channel interface (FIPS-60) is required. Verification of the correct operation of all interfaces that are required to correct operation of all interfaces that are required to conform to this standard shall, through demonstration or other means acceptable to the Government, be provided prior to the acceptance of all applicable ADP equipment.

GUIDE LOCATION: 4.6.2.1

DOCUMENT NUMBER: FIPS-67 FSC/AREA: IPSC

TITLE : Guideline for Selection of Data Entry Equipment

PUBLICATION DATE: 30 September 1979

RELATED EFFORTS:

PURPOSE: This publication provides a guideline to be used by federal agencies in the selection of data entry equipment. The objective is to make available information that will assist in the selection of more efficient and economical data entry systems. The guideline provides information about economic and general operational considerations, steps to be followed in acquisition and training, and other factors pertinent to data entry equipment selection.

This guideline is intended as a basic reference document for general use by federal departments and agencies in the selection of data entry equipment. Its use is encouraged, but is not mandatory.

GUIDE LOCATION: 4.6.6

DOCUMENT NUMBER: FIPS-71-1 FSC/AREA: IPSC

TITLE: Advanced Data Communication Control Procedures (ADCCP)

PUBLICATION DATE: 11 June 1982

RELATED EFFORTS: ANSI X3.66-79

PURPOSE: This standard defines the data link control procedures to be used by ADP equipment and services employing bit oriented synchronous data communications links.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-73 FSC/AREA: IPSC

TITLE: Guidelines For Security Of Computer Applications

PUBLICATION DATE: 01 December 1981

RELATED EFFORTS:

PURPOSE: This standard describes the different security objectives for a computer application, explains the control measures that can be used, and identifies the decisions that should be made at each stage in the life cycle of a sensitive computer application.

This standard is for use in planning developing and operating computer systems which require protection.

GUIDE LOCATION: 403

DOCUMENT NUMBER: FIPS-74 FSC/AREA: IPSC

TITLE: Guidelines For Implementing And Using The NBS Data Encryption Standard

PUBLICATION DATE: 02 December 1980

RELATED EFFORTS: FIPS-46, FIPS-81

PURPOSE: This standard provides guidance for the use of cryptographic techniques as required to protect sensitive or valuable computer data.

This standard is for use in conjunction with FIPS PUB 46 and FIPS PUB 81.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-78 FSC/AREA: IPSC

TITLE : Guideline For Implementing Advanced Data Communication Control Procedures (ADCCP)

PUBLICATION DATE: 26 September 1980

RELATED EFFORTS: ANSI X3.66-1979

PURPOSE: This standard provides guidance to the system designer in selecting ADCCP options and other parameters.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-79 FSC/AREA: IPSC

TITLE: Magnetic Tape Labels And File Structure For Information Interchange

PUBLICATION DATE: 1 February 1981

RELATED EFFORTS: ANSI X3.27-78

PURPOSE: This standard specifies four levels of labeling, label formats, blocking structure, and tape mark relationships on magnetically recorded tapes used for information interchange.

GUIDE LOCATION: 4.6.2.1

DOCUMENT NUMBER: FIPS-81 FSC/AREA: IPSC

TITLE : DES Modes Of Operation

PUBLICATION DATE: 1 June 1981

RELATED EFFORTS: FIPS-46, FED-STD-1026, FED-STD-1027

PURPOSE: This FIPS defines four modes of operation for the data encryption standard (DES; FIPS 46) which may be used in a wide variety of applications. The modes specify how data will be encrypted (cryptographically protected) and decrypted (returned to original form). The modes in this standard are the electronic code book (ECB) mode, the cipher block chaining (CBC) mode, the cipher feedback (CFB) mode, and the output feedback (OFB) mode.

The body of this standard provides specifications of the recommended modes of operation but does not specify the necessary and sufficient conditions for their secure implementation in a particular application. This standard specifies the numbering of data bits, how the bits are encrypted and decrypted, and the data paths and the data processing necessary for encrypting and decrypting data or messages. Cryptographic system designers or security application engineers must select one or more of the possible modes of operation for implementing and using the DES. The appendices of FIPS-81 provide tutorial information on the modes of operation and examples for validating their correct implementation.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-83 FSC/AREA: IPSC

TITLE: Guideline On User Authentication Techniques For Computer Network Access Control

PUBLICATION DATE: 1 April 1981

RELATED EFFORTS:

PURPOSE: This standard provides guidance in the selection and implementation of techniques for authenticating the users of remote terminals in order to safeguard against unauthorized access to computers and computer networks.

GUIDE LOCATION: 4.3

DOCUMENT NUMBER: FIPS-85 FSC/AREA: IPSC

TITLE: Optical Character Recognition (OCR) Inks

PUBLICATION DATE: 1 February 1981

RELATED EFFORTS: FIPS-32, FIPS-40, FIPS-89, ANSI X3.2-70, ANSI X3.17-81, ANSI X3.49-75, ANSI X3.86-80, X3.93M-81

PURPOSE: This standard defines the spectral band for read inks and provides spectrophotometric curves for red and blue nonread inks.

This standard is applicable to the acquisition and use of inks and preprinted forms by federal agencies that will be read by optical character recognition techniques where the interchange of machine readable information between different machines may be required.

Users of existing materials are encouraged to employ this standard. Materials not in accordance with this standard should be evaluated periodically by federal agencies because information to be read by optical character recognition techniques which has inadequate image quality causes misreading errors.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-86-2 FSC/AREA: IPSC

TITLE: Additional Controls For Use With American National Standard Code For Information Interchange

PUBLICATION DATE: 24 June 1981

RELATED EFFORTS: FIPS-1-1, FIPS-35, ISO 646-73, ISO 2022-73, ANSI X3.04-77, ANSI X3.64-79, DIS ISO 6429

PURPOSE: This standard specifies a set of encoded control functions to facilitate data interchange between data processing equipment, data communication equipment and two-dimensional character-imaging input-output devices, such as interactive ADP terminals of the display or printing type, line printers, microfilm printers, typesetting composers, word processors, and related devices. These control functions augment the basic set of control functions prescribed by ASCII (FIPS-1-1). They may be used in 7- or 8-bit environments in accordance with the standard for code extension technique X3.41-1974, code extension techniques for use with the 7-bit coded character set of ASCII.

DOCUMENT NUMBER: FIPS-86-2 (Continued)

This standard is applicable to the acquisition and use of all ADP equipment and services that involve character imaging and which employ the character set and encoding conventions prescribed by FIPS-1-1 and FIPS-35.

This standard adopts in whole American National Standard x3.64-79 (same title).

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-89 FSC/AREA: IPSC

TITLE: Optical Character Recognition (OCR) Character Positioning

PUBLICATION DATE: 4 September 1981

RELATED EFFORTS: ANSI X3.2-70, ANSI X3.17-81, ANSI X3.49-75, ANSI X3.86-80, ANSI 3.93M-81, FIPS-32, FIPS-40, FIPS-85

PURPOSE: This standard specifies the nominal position with allowable tolerances of OCR characters in relation to their location to other machine readable characters or sensed marks and to the document edges.

GUIDE LOCATION: 4.6.4

DOCUMENT NUMBER: FIPS-91 FSC/AREA: IPSC

TITLE : Magnetic Tape Cassettes For Information Interchange, Dual Track Complementary Return-to-Bias (CRB) Four States Recording On 3.81mm (0.150 inch) Tape

PUBLICATION DATE: 12 March 1982

RELATED EFFORTS: FIPS-51, FIPS-52, FIPS-93, ANSI X3.48-77, ANSI X3.56-77, ANSI X3.59-81, ANSI X3.72-81

PURPOSE: This standard specifies the recorded characteristics for a magnetic tape cassette with data recorded on two tracks using complementary recordings and a return-to-bias method of encoding in order to provide for digital data interchange between information processing systems.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-97 FSC/AREA: ISC

TITLE: Operational Specifications For Fixed Block Rotating Mass Storage Subsystems

PUBLICATION DATE: 04 February 1983

RELATED EFFORTS: FIPS-60, FIPS-61

PURPOSE: This standard defines the peripheral device dependent operational interface specifications for connecting fixed block rotating mass storage equipment as a part of ADP systems. It is to be used together with the latest versions of FIPS PUB 60, 1/0 channel interface and FIPS PUB 61, channel level power control interface. This standard, together with these two referenced standards, provides for plug-to-plug interchangeability of fixed block rotating mass storage equipment as a part of ADP systems.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: FIPS-100 FSC/AREA: IPSC

TITLE: Interface Between Data Terminal Equipment (DTE) And Data Circuit-Terminating Equipment (DCE) For Operation With Packet-Switched Data Communications Networks.

PUBLICATION DATE: 6 July 1983

RELATED EFFORTS: FED-STD-1041, CCITT X.25

PURPOSE: This standard specifies the interface and protocols to be used in the public packet-switched data communications networks (PSDCN) based on the family of CCITT recommendations.

GUIDE LOCATION: 4.2.2.1, 4.6.6

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5.5 U.S. MILITARY DOCUMENTS

5.5.1 MIL-STD-188 SERIES

DOCUMENT NUMBER: MIL-STD-188C FSC/AREA: TCTS

TITLE: Military Communication System Technical Standards

PUBLICATION DATE: 24 November 1969
1 June 1976, Notice 1
17 November 1976, Notice 2

RELATED EFFORTS: MIL-STD-188-100, MIL-STD-188-200

PURPOSE: The purpose of this standard is to provide technical design standards for military communications systems. These provide the basic technical parameters of communications equipments and systems. The parameters have been chosen for future state-of-the-art values wherever they can be determined with reasonable accuracy, as well as to define the minimum acceptable performance values for interim use.

This standard has been superseded in many areas by numerous other documents. Sections 6.2 (Telephone Instruments) and 6.3 (Facsimile Equipment) and subparagraphs 4.5.6 through 4.5.11 (MF through EHF bands) are still valid for new tactical communications equipment and production model procurement.

GUIDE LOCATION: 4.1.2.4, 4.2.l.8

DOCUMENT NUMBER: MIL-STD-188-100 FSC/AREA: SLHC

TITLE: Common Long Haul And Tactical Communication System Technical Standards

PUBLICATION DATE: 15 November 1972
16 July 1975; Notice 1
1 June 1976; Notice 2
17 November 1976; Notice 3

RELATED EFFORTS: FIPS-1-1, FIPS-2, FIPS-3-1, FIPS-7, FIPS-14, FIPS-16-1, FIPS-17-1, FIPS-18-1, FIPS-22-1, MIL-STD-188C, MIL-STD-188-200, MIL-STD-1280, MIL-HDBK-232, MIL-HDBK-411, DCAC 330-175-1, DCAC 370-V165-1, DCAC 370-D175-1, DCAC 370-V175-6, DCAC 370-V185-7, DCAC 370-S185-9

PURPOSE: This document provides common standards (except where stated otherwise) for long haul and tactical communication systems. It specifies electrical channel and loop characteristics necessary for the establishment of interconnecting circuits between long haul and tactical users for voice and data service. Parameters are provided for nominal 3-kHz and for nominal 4-kHz voice bandwidth circuits between two-wire and four-wire users. Parameters for a nominal 48-kHz FDM group bandwidth channel are provided for data service between long haul and tactical less maneuverable users.

This standard is to be used in the design and installation of new communication facilities for both the long haul and tactical systems . In addition, for tactical systems, this standard is to be used for the the operation of new communication facilities. These standards are not applicable to commercially leased communications facilities. In a few cases, reference is made to other documents which provide standards for specific applications. In cases of conflict between this military standard and other long haul or tactical standards documents, the standards herein will prevail. It is not intended that existing systems be immediately converted to comply with the requirements of this standard. New systems and those undergoing major modification or rehabilitation must conform to this standard if economically feasible. Deviations should only be permitted when there is an overriding necessity and only after the adverse effects of the deviation on such factors as interoperation, cost, training and logistics have been considered. The standards shall be adhered to in development of new equipment and facilities, but care should be exercised that the standards do not inhibit advances in communication technology. Revisions of this document and new standards for the future will be generated by such advances in technology.

GUIDE LOCATION: 4.1.2.4, 4.2.l.8, 4.2.3

DOCUMENT NUMBER: MIL-STD-188-110 FSC: SLHC

TITLE: Equipment Technical Design Standards For Common Long Haul And Tactical Data Modems

PUBLICATION DATE: 15 November 1983

RELATED EFFORTS: QSTAG-263A, QSTAG-263B, STANAG 5031, STANAG 5035, FED-STD-1005, FED-STD-1007, FED-STD-1008, FED-STD-1013, FED-STD-1031, FED-STD-1035, FED-STD-1037, MIL-STD-188-100, MIL-STD-188-114, MIL-STD-188-124, MIL-STD-210, MIL-STD-461, MIL-STD-462, MIL-STD-810, DCAC 300-175-9, DODD 4120.21

PURPOSE: The purpose of this document is to establish technical standards and design objectives that are necessary to ensure interoperability and to promote compatibility among data modems used in long haul and tactical communications systems. Another purpose of this document is to provide guidance to the designers of new data modems that incorporate characteristics not yet standardized by specifying the technical characteristics of data modems currently in the inventory. The purpose of this guidance is to ensure attainment of minimum acceptable performance and maximum interoperability between existing and future data modems with specified transmission channel conditions.

These standards shall be used in the design and engineering of new communications facilities for both the long haul and tactical systems. In some cases, reference is made to other documents which provide standards for specific applications. It is not intended that existing systems be immediately converted to comply with the requirements of these standards. New systems, and those undergoing major modification or rehabilitation, shall conform to these standards, subject to current procurement regulations. This document is applicable to the design and development of new data modems with standard data signaling rates up to and including 9600 bits per second (b/s) used in long haul and tactical communications systems. This document is not applicable to high frequency (HF) data modems used in the tactical digital information link (TADIL) A. HF data modem for TADIL A shall comply with the applicable requirements of the current edition of MIL-STD-188-203-1.

GUIDE LOCATION: 4.2.2.1

DOCUMENT NUMBER: MIL-STD-188-111 FSC/AREA: SLHC/TCTS

TITLE: Subsystem Design And Engineering Standards For Common Long Haul And Tactical Fiber Optics Communications

PUBLICATION DATE: 24 January 84

RELATED EFFORTS:

PURPOSE: This document provides mandatory system standards and optional design objectives that are considered necessary to ensure interoperability and to promote compatibility and commonality among long haul and tactical fiber optic transmission subsystems. An additional purpose is to ensure interoperability between fiber optic links and other transmission links, such as radio or metallic cable links standardized in other documents of the MIL-STD-188 series. This document also establishes a level of performance of long haul and tactical fiber optic links considered necessary to satisfy the requirements of a majority of users.

GUIDE LOCATION: 4.1.3, 4.2.1.7,

DOCUMENT NUMBER: MIL-STD-188-112 FSC/AREA: SLHC/TCTS

TITLE : Subsystem Design And Engineering Standards For Common Long Haul And Tactical Cable And Wire Communications

PUBLICATION DATE: 31 August 1983

RELATED EFFORTS:

PURPOSE: This document provides mandatory system standards and suggests optional design objectives to ensure interoperability and to promote compatibility and commonality among long haul and tactical symmetrical pair and coaxial cable transmission subsystems. This standard also establishes a level of performance considered necessary to satisfy a majority of users. This standard is intended to facilitate advances in technology rather than inhibit development.

GUIDE LOCATION: 4.1.2.1

DOCUMENT NUMBER: MIL-STD-188-114 FSC/AREA: SLHC

TITLE: Electrical Characteristics Of Digital Interface Circuits

PUBLICATION DATE: 24 March 1976

RELATED EFFORTS: FED-STD-1020A, FED-STD-1030A, MIL-STD-188-100, MIL-STD-188C, EIA RS-422A, EIA RS-423A, EIA RS-449, CCITT REC V.10, CCITT REC V.11, CCITT REC X.26, CCITT REC X.27

PURPOSE: This standard specifies the electrical characteristics of the balanced voltage and the unbalanced voltage digital interface circuits, normally implemented in integrated circuit technology, that shall be employed for the interchange of serial binary signals between and among data terminal equipments (DTE) and data communications equipments (DCE) or in any interconnection of binary signals between voice or data equipments. This standard does not specify signal quality and clock data phase relationship (see MIL-STD-188-100).

This standard shall be used in the design, installation, and operation of new communications facilities for both the long haul and tactical systems. This standard shall be applicable to data, clock, and timing control circuits employed at the interface between equipments where the information being conveyed is in the form of binary signals at the DC baseband level. This standard shall also be applicable to alarm and control circuits that are not directly related to data or timing.

This standard shall apply to teletypewriters, data terminals, the DC side of signal conversion (modem) equipment, terminal and line side of cryptographic or cryptographic control equipment, digitized voice equipment, and remotely operated equipment where the interface is at the DC baseband. This standard shall be applicable at all modulation rates up to 10 megabauds, regardless of the type of transmission medium used, e.g., a nominal 48 kHz FDM derived channel, TDM derived channel, or a metallic wire circuit.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: MIL-STD-188-124A FSC/AREA: SLHC

TITLE: Grounding, Bonding, And Shielding For Common Long Haul/Tactical Communication Systems

PUBLICATION DATE: 2 February 1984

RELATED EFFORTS: ANSI C1 (NFPA 70), MIL-STD-286, MIL-STD-454, MIL-STD-461, MIL-STD-462, MIL-STD-463, MIL-STD-1857, MIL-HDBK-232, MIL-HDBK-419, AN 735, AN 742, ASTM B32, AWS A5.8, FED-STD-T-TP1757, P-D-680 (FED SPEC), MS 25083, NAVELEX 0101,113, WW-C440 (FED SPEC), DODI 1000.3

PURPOSE: This standard establishes the minimum basic requirements and goals for grounding, bonding, and shielding of ground-based telecommunications Communications Electronic (C-E) equipment installations, subsystems and facilities, including buildings and structures supporting tactical and long haul military communications systems.

This standard shall be used in the design and engineering of new ground–based military communication systems, subsystems, and equipment installations. This includes radio satellite grounding terminals, telephone central offices, microwave and data communications systems, as well as C-E transportables. It is not to be used solely as a basis for retrofit of existing facilities. It does not apply to general construction such as barracks, administration buildings, dining facilities, warehouses, and noncommunications facilities, nor does it apply to mobile units, such as tanks, trucks, jeeps, etc.

GUIDE LOCATION: 4.7.1, 4.7.2, 4.8.1, 4.8.6

DOCUMENT NUMBER: MIL-STD-188-140 FSC/AREA: TCTS

TITLE: Equipment Technical Design Standards For Common Long Haul And Tactical Radio Communications In The Low Frequency Band And Lower Frequency Bands

PUBLICATION DATE: 3 April 1981

RELATED EFFORTS: STANAG 5030, STANAG 5031, STANAG 5035, ITU RADIO REGS, FED-STD-1037, MIL-STD-188-100, MIL-STD-188-114, MIL-STD-188-124, MIL-STD-461, MIL-HDBK-419

PURPOSE: This standard establishes minimum performance requirements in the form of standards and design objectives (DOS) to ensure interoperability of future communications equipment in the extremely low frequency (ELF), infra low frequency (ILF), very low frequency (VLF) and low frequency (LF) bands. The frequency ranges of

DOCUMENT NUMBER: MIL-STD-188-140 (Continued)

military communications equipment have been established as a result of band characteristics which do not necessarily depend upon administrative or scientific frequency band definitions. For example, in the area above ELF and ILF, the military band of communications interest lies between 14 kilohertz (kHz) and 200 kHz, which extends into both VLF and ELF bands. Also, efficient use of the limited bandwidth available at these lower frequencies precludes most analog modulation techniques; thus, this standard applies only to radio communication systems involving transmission of digital information.

These standards shall be used in the design and engineering of new communications facilities for both the long haul and tactical systems. In some cases, reference is made to other documents which provide standards for specific applications. It is not intended that existing systems be immediately converted to comply with the requirements of these standards. New systems, and those undergoing major modification or rehabilitation, shall conform to these standards, subject to current procurement regulations.

GUIDE LOCATION: 4.2.1.1

DOCUMENT NUMBER: MIL-STD-188-148 FSC/AREA: SLHC/TCTS

TITLE: Interoperability Standard For AJ Communications In The High Frequency (2-30 MHz) Band

PUBLICATION DATE: 20 August 1984

RELATED EFFORTS:

PURPOSE: This is a classified document. No synopsis can be provided.

GUIDE LOCATION: 4.1.1, 4.2.1.2

DOCUMENT NUMBER: MIL-STD-188-161 FSC/AREA: SLHC

TITLE: Design Standards For Common Long Haul And Tactical Facsimile Equipment

PUBLICATION DATE: 30 January 1981

RELATED EFFORTS: MIL-STD-188-100, MIL-STD-188-114, CCITT ORN.BK.VOL.VII, CCITT ORN.BK.VOL.VIII, STANAG 5000

DOCUMENT NUMBER: MIL-STD-188-161 (Continued)

PURPOSE: The purpose of this standard is to establish technical design standards for digital facsimile (FAX) equipment to be used over both long haul (nontactical) and tactical communications networks. For operation over circuit switched networks, the analog media matching parameters necessary for nontactical application, and associated protocols are addressed.

This standard applies to digital facsimile equipment for use within the Defense Communications System (DCS), the National Military Command System (NMCS), and the tactical communications networks. The standard is to be used in the design and installation of new subsystems and equipment. Certain differences between tactical and nontactical facsimile parameters delineated herein prevent direct interoperability. The nontactical user who has a requirement to communicate with tactical users shall use either a facsimile device incorporating both the tactical and the nontactical modes of operation or a separate tactical facsimile machine. The major alteration necessary to a nontactical facsimile device to achieve interoperability with a tactical device involves incorporation of the tactical protocols and signaling procedures.

GUIDE LOCATION: 4.6.7

DOCUMENT NUMBER: MIL-STD-188-200 FSC/AREA: TCTS

TITLE : System Design And Engineering Standards For Tactical Communications

PUBLICATION DATE: 28 June 1983

RELATED EFFORTS:

PURPOSE: The purpose of this document is to promulgate technical parameters in the form of mandatory system standards and optional design objectives that are considered necessary to ensure interoperability and to promote compatibility and commonality among tactical communications equipment, subsystems, and systems. It is also the purpose of this document to establish a level of performance of tactical communications equipment, subsystems, and systems considered necessary to satisfy the requirements of a majority of users. The technical parameters promulgated by this document represent, in general, minimum interoperability and performance characteristics which may be exceeded in order to satisfy specific requirements.

GUIDE LOCATION: 4.1.2.4, 4.2.3

DOCUMENT NUMBER: MIL-STD-188-203-1 FSC/AREA: TCTS

TITLE: Subsystem Design And Engineering Standards For Tactical Digital Information Link (TADIL) A

PUBLICATION DATE: 10 September 1982

RELATED EFFORTS: MIL-STD-188-100

PURPOSE: The purpose of this document is to establish technical standards and design objectives (DO) that are necessary to ensure interoperability and to promote commonality for communications equipment and subsystems used in TADIL A. Another purpose of this document is to establish acceptable overall system performance and maximum flexibility of system layout in order to satisfy diverse user requirements without the restrictions caused by interface and incompatibility problem. Standard message formats are not included in this document. The TADIL A message formats are contained in JCS-PUB-10, Tactical Command and Control and Communications Systems Standards.

This document is applicable to the design and development of *new* equipment, assemblages, and subsystems used in TADIL A. This document is applicable also to the engineering and operation of existing TADIL A facilities. It is not intended that existing TADIL A facilities be immediately converted to comply with the standards contained in this document. New TADIL A facilities and those undergoing major modifications or rehabilitation shall comply with the standards contained in this document subject to the applicable requirements of current procurement regulations. TADIL A can be used over common long haul and tactical communication circuits. In this case, both this standard and MIL-STD-188-100 shall apply.

GUIDE LOCATION: 4.2.1.7, 4.2.2.4, 4.5

DOCUMENT NUMBER: MIL-STD-188-203-2 FSC/AREA: TCTS

TITLE: Subsystem Design And Engineering Standards For Tactical Digital Information Link (TADIL) B

PUBLICATION DATE: 23 March 1984

RELATED EFFORTS: MIL-STD-188-100

PURPOSE: The purpose of this document is to establish technical standards and design objectives that are necessary to ensure interoperability and to promote commonality for communications equipment and subsystems used in TADIL B. Also, this document establishes acceptable overall subsystem performance and maximum flexibility of subsystem layout in order to satisfy diverse user requirements without the restrictions caused by interface and incompatibility problems.

This document is applicable to the design and development of new equipment, assemblages, and subsystems used in TADIL B. This document is applicable also to the engineering and installation of existing TADIL B facilities. It is not intended that existing TADIL B facilities be immediately converted to comply with the standards contained in this document. New TADIL B facilities and those undergoing major modification or rehabilitation shall comply with the standards contained in this document subject to the applicable requirements of current procurement regulations.

GUIDE LOCATION: 4.2. 1.7, 4.2.2.4, 4.5

DOCUMENT NUMBER: MIL-STD-188-203-3 FSC/AREA: TCTS

TITLE: Subsystem Design And Engineering Standards For Tactical Digital Information Link (TADIL) C

PUBLICATION DATE: 5 October 1983

RELATED EFFORTS: MXL-STD-188-100

PURPOSE: The purpose of this document is to establish technical standards and design objectives that are necessary to ensure interoperability and to promote commonality for communications equipment and subsystems used in TADIL C. Another purpose of this document is to establish acceptable overall system performance and maximum flexibility of system layout in order to satisfy diverse user requirements without the restrictions caused by interface and incompatibility problems. Standard message formats are not included in this document. The TADIL C message formats are contained in JCS PUB 10, tactical command and control and communication systems standards.

This document is applicable to the design and development of new equipment, assemblages, and subsystems used in TADIL C. This document is applicable also to the engineering and operation of existing TADIL C facilities. It is not intended that existing TADIL C facilities be immediately converted to comply with the standards contained herein. New TADIL C facilities and those undergoing major modification or rehabilitation shall comply with the standards contained herein subject to the applicable requirements of current procurement regulations. TADIL C can be used over common long haul and tactical communication circuits. In this case, both this standard and MIL-STD-188-100 shall apply.

GUIDE LOCATION: 4.2.1.7, 4.2.2.4, 4.5

DOCUMENT NUMBER: MIL-STD-188-310A FSC/AREA: SLHC

TITLE : Subsystem Design And Engineering Standards For Technical Control Facilities

PUBLICATION DATE: 14 January 1980

RELATED EFFORTS: MIL-STD-188-100, MIL-STD-188-114, MIL-STD-188-120, MIL-STD-188-124, MIL-STD-188-311, MIL-STD-461, MIL-E-6051, MIL-HDBK-232, MIL-HDBK-414, MIL-HDBK-419, DCAC 300-175-9, DCAC 310-70-1, ANSI/IEEE STD 488-1978, DODD 3222.3

PURPOSE: This standard establishes criteria for engineering fixed technical control facilities and associated patch and test facilities in the Department of Defense.

The criteria established by this standard apply during the design and engineering of technical control facilities. Existing systems need not be immediately converted to comply with the requirements of this standard. New systems and those undergoing major modifications or rehabilitation shall conform to these standards.

GUIDE LOCATION: 4.4.1, 4.8.2

DOCUMENT NUMBER: MIL-STD-188-311 FSC/AREA: SLHC

TITLE : Technical Design Standards For Frequency Division Multiplexer

PUBLICATION DATE: 10 December 1971

RELATED EFFORTS:

PURPOSE: This standard sets forth the electrical performance requirements for frequency division multiplexer (FDM) equipment accepted by the Government for use in the Defense Communication System (DCS) and semifixed tactical service. It is intended to define the interface levels at interconnection points to and from local telephone facilities and to and from long distance communication trunks.

The multiplexer may be configured to combine from 12 to 612 lower sideband voice frequency (VF) channels for transmission over microwave radio relay, tropospheric scatter, and equipped wire line systems. The VF channels (0.3 kHz to 4 kHz nominal) shall be capable of handling voice, digital data, telegraph, facsimile, or other graphic information. Multiplex high frequency (HF) line outputs (HFDF) can be placed in the frequency spectrum between 12 and 2,540 kHz and channel capacities can be configured by selecting the appropriate variable multiplexer groups within the q ultiplex equipment family. The multiplexer equipment is suitable for fixed plant, mobile, and shipborne usage. Input power can be either 48 VDC or 115 V, 50-60 Hz AC.

GUIDE LOCATION: 4.2.3

DOCUMENT NUMBER: MIL-STD-188-313 FSC/AREA: SLHC

TITLE: Subsystem Design And Engineering/Equipment Technical Design Standards For Long Haul Communications Traversing Microwave LOS Radio And For Tropospheric Scatter Radio

PUBLICATION DATE: 19 March 1973

RELATED EFFORTS: ITU RADIO REGS-1959, MIL-STD-188-100, MIL-STD-188-322, MIL-HDBK-416, MIL-HDBK-417

PURPOSE: The purpose of this document is to provide technical design standards for subsystem and equipment performance for line-of-sight (LOS) radio transmission and tropospheric scatter radio transmission for use in long haul communications.

This standard applies to the design and performance of new line-of-sight (LOS) and tropospheric scatter radio relay communications subsystems and equipment. The LOS subsystem will normally operate in the 4 to 13 GHz frequency range while the tropospheric scatter subsystems will normally operate in the 0.4 GHz to 5 GHz range.

GUIDE LOCATION: 4.2.1.5

DOCUMENT NUMBER: MIL-STD-188-317 FSC/AREA: SLHC

TITLE : Subsystem Design And Engineering Standards And Equipment Technical Design Standards For High Frequency Radio

PUBLICATION DATE: 30 March 1972

RELATED EFFORTS: MIL-STD-188-100, MIL-STD-188C, MIL-STD-188-300, MIL-STD-188-310, MIL-STD-454, MIL-STD-461

PURPOSE: The purpose of this standard is to provide technical design standards (subsystem and equipment) for high frequency (HF) radio for use in the long haul communications. The standards are intended to be used in the design and installation of new HF radio communication subsystems and equipment and also in the upgrading of existing subsystems and equipment.

This standard applies to HF radio communication subsystems and equipment.

GUIDE LOCATION: 4.2.1.2

DOCUMENT NUMBER: MIL-STD-188-322 FSC/AREA: SLHC

TITLE: Subsystem Design/Engineering And Equipment Technical Design Standards For Long Haul Line-of-Sight (LOS) Digital Microwave Radio Transmission

PUBLICATION DATA: 02 November 1984

RELATED EFFORTS: ITU RADIO REGS - 1971, CCIR REC 338-1, OT FREQ MGT REGS, MIL-STD-188-100, MIL-STD-188-114, MIL-STD-188-120, MIL-STD-210, MIL-STD-454, MIL-STD-461, MIL-STD-462, MIL-STD-463, MIL-STD-470, MIL-STD-471, MIL-STD-781, MIL-STD-785, MIL-STD-810, MIL-STD-1472, MIL-HDBK-237, MIL-HDBK-416

PURPOSE: The purpose of this document is to describe standards of performance and design for digital microwave radio links and radio equipment for long haul line-of-sight (LOS) digital microwave transmission.

This standard is to be used for the design and engineering of new digital microwave radio subsystems, links, and equipment for digital LOS microwave transmission. To the maximum extent possible, this standard shall also be used for digital LOS microwave communications implementations involving the conversion of existing analog LOS microwave techniques or equipment to digital service. When these are converted, they shall meet the subsystem, link, and interface parameters defined in this standard.

GUIDE LOCATION: 4.2.1.5

DOCUMENT NUMBER: MIL-STD-188-340 FSC/AREA: SLHC

TITLE: Equipment Technical Design Standards For FDM/FM Voice Orderwire Multiplex

PUBLICATION DATE: 21 May 1971
28 July 1977; Notice 1

RELATED EFFORTS: MIL-STD-188-311, MIL-STD-205, MIL-STD-255, MIL-STD-446, MIL-STD-454, MIL-E-4158E

PURPOSE: The purpose of this standard is to provide the characteristics of orderwire multiplexer to be utilized in FDM/FM subsystems of the Defense Communications System (DCS) for use below the message baseband. The standards are to be incorporated in specifications for procurement of orderwire multiplexer for subsystems of the DCS.

DOCUMENT NUMBER: MIL-STD-188-340 (Continued)

This standard applies to all frequency division orderwire multiplexer procured for the DCS for use primarily on wideband radio transmission systems, to provide up to three fourwire voice orderwire channels. These channels will be confined to the frequency spectrum below 12 kHz at the interface with the wideband radio equipment.

GUIDE LOCATION: 4.2.2.3, 4.2.3

DOCUMENT NUMBER: MIL-STD-188-342 FSC/AREA: SLHC

TITLE: Standards For Long Haul Communications, Equipment Technical Design Standards For Voice Frequency Carrier Telegraph (FSK)

PUBLICATION DATE: 29 February 1972

RELATED EFFORTS: MIL-STD-188-100, MIL-STD-188-300, MIL-STD-188-311, MIL-STD-188-317, MIL-STD-461, MIL-HDBK-411

PURPOSE: The purpose of this standard is to provide technical design standards for voice frequency carrier telegraph (VFCT) terminals for use in long haul communications. The standards are intended to be used in the design and installation of new VFCT equipment and also in the upgrading of existing equipment.

This standard applies to multichannel, frequency shift keyed, VFCT terminals operating at rates not exceeding 75 bits per second.

GUIDE LOCATION: 4.2.1.8, 4.2.2.2, 4.2.3

DOCUMENT NUMBER: MIL-STD-188-346 FSC/AREA: SLHC

TITLE: Standards For Long Haul Communications, Equipment Technical Design Standards For Analog End Instruments And Central Office Ancillary Devices

PUBLICATION DATE: 30 November 1973

RELATED EFFORTS: MIL-STD-188-100, MIL-STD-188-310

PURPOSE: The purpose of this standard is to establish technical design standards for analog end instruments and central office ancillary devices used in long haul communications.

This standard applies to terminal area communications subsystems within the Defense Communications System (DCS) and the National Military Command System (NMCS) requiring the use of telephone and related ancillary equipment. The standards are to be used on the design and installation of new subsystems and equipment and also in authorized upgrading of existing subsystems and equipment, where permissible, within the parameters of existing criteria.

GUIDE LOCATION: 4.6.3.1, 4.6.5, 4.6.7

DOCUMENT NUMBER: MIL-STD-188-347 FSC/AREA: SLHC

TITLE: Standards For Long Haul Communications, Equipment Technical Design Standards For Digital End Instruments And Ancillary Devices

PUBLICATION DATE: 29 March 1973

RELATED EFFORTS: FIPS-01, FIPS-02, FIPS-3-1, FIPS-PUB 7, FIPS-13, FIPS-14-1, FIPS-15, FIPS-16-1, FIPS-17-1, FIPS-18-1, MIL-STD-188-100, MIL-STD-188-120, MIL-STD-188-300, MIL-STD-1280, ANSI X3.4-68, ANSI X3.6-73, ANSI X3.16-76, ANSI X3.17-81, ANSI X3.21-80, ANSI X3.22-67, ANSI X3.25-76, ANSI X3.26-70, FED-SPEC UU-T-120, FED-SPEC G-C-00116, NACSIM 5100, NACSIM 5200, MIL-HDBK-232, MIL-HDBK-411, DCAC 370-D195-1, DCAC 370-D195-2, DCAC 370-D195-3

PURPOSE: The purpose of this standard is to provide technical design standards and test criteria for digital end instruments and ancillary devices for use in the terminal area of a long haul communications system. This standard is approved for use in designing, installing, and operating new communications facilities, and in upgrading existing subsystems and equipment.

This standard applies to terminal area communications subsystems and to terminal area subsystems requiring the use of digital end instruments and ancillary devices.

GUIDE LOCATION: 4.6.1, 4.6.2.1, 4.6.4, 4.6.6, 4.6.7

DOCUMENT NUMBER: MIL-STD-187-310 FSC/AREA: SLHC

TITLE: Standards For Long Haul Communications, Switching Planning Standards For The Defense Communications System

PUBLICATION DATE: 14 October 1976

RELATED EFFORTS:

PURPOSE: This planning standard establishes a reference source of unified system design guidance applicable to the evolving and future Defense Communications System (DCS). This guidance is intended to help assure the compatibility of future DCS subsystems, as well as the interoperability of the DCS with other DoD and non-DoD communications systems. Specifically, this planning standard is intended to:

a. Avoid unilateral design decisions by one engineering group
b. Pinpoint areas where design decisions are needed
c* Facilitate the comparison and evaluation of design criteria in regard to tradeoffs, impact on other subsystems, and overall system performance
d. Assure utilization of appropriate advances in technology
e. Provide wider exposure of design decisions to all interested DoD activities.

GUIDE LOCATION: 4.4.1

DOCUMENT NUMBER: MIL-STD-187-320 FSC/AREA: SLHC

TITLE: Standards For Long Haul Communications Transmission Planning Standards For The Defense Communications System

PUBLICATION DATE: 29 March 1980

RELATED EFFORTS:

PURPOSE: This planning standard establishes a reference source of unified system design guidance applicable to the evolving the future DCS transmission subsystem. This guidance is intended to help assure the compatibility of future DCS subsystems, as well as the interoperability of the DCS with other DoD and non-DoD communications systems. Specifically, this planning is intended to:

a. Avoid unilateral design by one engineering group.
b. Pinpoint areas where design decisions are needed.
c. Facilitate the comparison and evaluation of design criteria in regard to tradeoffs, impact on other subsystems, and overall system performance.
d. Assure utilization of appropriate advances in technology.
e. Provide wider exposure of design decisions to all interested DoD activities.

GUIDE LOCATION: 4.2.1.8

5.5.2 MIL-STDs

DOCUMENT NUMBER: MIL-STD-195 FSC/AREA: 61GP

TITLE: Marking Of Connections For Electrical Assemblies

PUBLICATION DATE: 07 February 1958

RELATED EFFORTS:

PURPOSE: The purpose of this standard is to establish uniform connection markings for electric power assemblies. The standard, when used, will aid in making connections between the assemblies and other parts of the electric power system, and will prevent improper connections which may result in unsatisfactory operation or damage.

GUIDE LOCATION: 4.8.2

DOCUMENT NUMBER: MIL-STD-210B FSC/AREA: ENVR

TITLE: Climatic Extremes For Military Equipment

PUBLICATION DATE: 15 December 1973

RELATED EFFORTS:

PURPOSE: This standard establishes uniform climatic design criteria for that Military material which is intended for worldwide usage (excluding the air, land and ice shelf areas south of 60 degrees). It does not apply in design of material to be used only in specific areas or environments. Designation of areas of intended use of material is the responsibility of the department for whom the material is developed. These climatic conditions are also to be used in the engineering developments of environmental tests of material planned for use in the environments described in this standard.

This standard provides sets of climatic design conditions for land, sea and air in which Military material (including equipment) may be required to operate. It also provides separate sets (land and sea) of climate design conditions which material exposed to nature may be required to withstand without damage when in place or stored without shelter. These conditions are those of nature impinging on the material and its containers and are not induced conditions.

GUIDE LOCATION: 4.8.5

DOCUMENT NUMBER: MIL-STD-449D FSC/AREA: EMCS

TITLE: Radio Frequency Spectrum Characteristics, Measurement Of

PUBLICATION DATE: 18 May 1976

RELATED EFFORTS:

PURPOSE: This standard establishes uniform measurement techniques that are applicable to the determination of the spectral characteristics of transmitters, receivers, and antennas.

The data obtained from the measurements described in this standard will comprise one of the principle aids for, (a) predicting the EMC performance of equipment, subsystem, and systems in an operational electromagnetic environment, and (b) predicting the effect of a particular equipment, subsystems, or systems on the electromagnetic environment of other equipments or systems. These data will also be used as aids for establishing the characteristics required of new equipment for compatible operation in present and future electromagnetic environment.

GUIDE LOCATION: 4.1.1

DOCUMENT NUMBER: MIL-STD-454H FSC/AREA: GDRQ

TITLE : Electronic Equipment, General Requirements For

PUBLICATION DATE: 30 July 1982

RELATED EFFORTS: MIL-I-983, MIL-E-4158, MIL-E-5400, MIL-E-8189, MIL-E-8983 MIL-P-11268, MIL-E-11991, MIL-E-16400, MIL-F-18870, MIL-T-21200, MIL-T-28800, FAA-G-2100

PURPOSE: This standard is the technical baseline for the design and construction of electronic equipment for the Department of Defense. It captures in one document, under suitable subject headings, fundamental design requirements for twelve General Electric specifications. The opportunity to focus on a single document, afforded to contractors, results in substantial savings to the Government.

GUIDE LOCATION: 4.8.7

DOCUMENT NUMBER: MIL-STD-461B FSC/AREA: EMCS

TITLE: Electromagnetic Emission And Susceptibility Requirements For The Control Of Electromagnetic Interference

PUBLICATION DATE: 1 April 1980

RELATED EFFORTS: MIL-STD-462, MIL-STD-463, MIL-HDBK-235

PURPOSE: This standard establishes the documentation and design requirements for the control of the electromagnetic emission and susceptibility characteristics of electronic, electrical, and electromechanical equipments and subsystems designed or procured for use by activities and agencies of the Department of Defense.

GUIDE LOCATION: 4.8.6

DOCUMENT NUMBER: MIL-STD-462 FSC/AREA: EMCS

TITLE: Electromagnetic Interference Characteristics, Measurement Of

PUBLICATION DATE: 9 February 1971

RELATED EFFORTS: MIL-STD-461, MIL-STD-463

PURPOSE: This standard establishes techniques to be used for the measurement and determination of the electromagnetic interference characteristics (emission and susceptibility) of electrical, electronic, and electromechanical equipment, as required by MIL-STD-461.

GUIDE LOCATION: 4.8.6

DOCUMENT NUMBER: MIL-STD-470 FSC/AREA: MISC

TITLE: Maintainability Program Requirements

PUBLICATION DATE: 21 March 1966

RELATED EFFORTS:

PURPOSE: This standard provides requirements for establishing a maintainability program and guidelines for the preparation of a maintainability program plan.

GUIDE LOCATION: 4.8.4

DOCUMENT NUMBER: MIL-STD-471A FSC/AREA: MNTY

TITLE: Maintainability Verification/Demonstration/Evaluation

PUBLICATION DATE: 8 December 1978

RELATED EFFORTS:

PURPOSE: This standard provides procedures and test methods for verification, demonstration, and evaluation of qualitative and quantitative maintainability requirements. It also provides for qualitative assessment of various integrated logistic support factors related to and impacting the achievement of maintainability parameters and item down time, e.g., technical manual, personnel, tools and test equipment, maintenance concepts, and provisioning.

GUIDE LOCATION: 4.8.4

DOCUMENT NUMBER: MIL-STD-471A (INTERIM NOTICE 2) FSC/AREA: MNTY

TITLE: Maintainability Verification/Demonstration/Evaluation

PUBLICATION DATE: 8 December 1978

RELATED EFFORTS:

PURPOSE: This addendum to MIL-STD-471A provides procedures for the evaluation and demonstration of equipment/system built-in-test (BIT) and external test subsystem Fault Isolation and Test-Ability attributes which relate to maintainability and various logistic support factors which are impacted by maintainability. Its purpose is to supplement the more conventional maintainability test requirements (which deal with accessibility, time, and human factors) with tests appropriate to BIT, external test, and fault isolation capabilities of the system or subsystem in question.

GUIDE LOCATION: 4.8.4

DOCUMENT NUMBER: MIL-STD-686B FSC/AREA: 6145

TITLE: Identification Of All Electrical Cables And Cords Used By The Department Of The Army, Navy And Air Force

PUBLICATION DATE: 23 January 1984

RELATED EFFORTS:

PURPOSE: This standard establishes a uniform identification code for all electrical cables and cords used by the Department of the Army, Navy, and Air Force, except for the following:

A. High tension and low tension cables for vehicular use covered by MIL-C-3702 and MIL-C-13486;

B. Cables used for construction;

C. Cables for transmission of telephone, telegraph, and teletype signals covered by MIL-STD-685, and;

D. Flexible coaxial cables.

GUIDE LOCATION: 4.7.1, 4.7.2

DOCUMENT NUMBER: MIL-STD-785B FSC/AREA: RELI

TITLE: Reliability Program For Systems And Equipment Development And Production

PUBLICATION DATE: 15 September 1980

RELATED EFFORTS:

PURPOSE: This standard provides general requirements and specific tasks for reliability programs during the development, production, and initial deployment of systems and equipment.

GUIDE LOCATION: 4.8.5

DOCUMENT NUMBER: MIL-STD-810D FSC/AREA: ENVR

TITLE: Environmental Test Methods

PUBLICATION DATE: 19 July 1983

RELATED EFFORTS:

PURPOSE: This standard provides guidelines for conducting environmental engineering tasks to tailor environmental tests to end-item equipment applications and test methods for determining the effects of natural and induced environments on equipment used in military applications.

GUIDE LOCATION: 4.8.5

DOCUMENT NUMBER: MIL-STD-826A FSC/AREA: EMCS

TITLE: Electromagnetic Interference Test Regulations

PUBLICATION DATE: 1 May 1970

RELATED EFFORTS:

PURPOSE: This standard covers explanation of terms, report format, limits and uniform test methods for testing equipment, systems, and subsystems to determine their electromagnetic interference and susceptibility characteristics. This document has been prepared for several purposes:

To ensure that interference control design is incorporated into equipment, systems, and subsystems, and that applicable limits are not exceeded by performing tests under simulated situations

DOCUMENT NUMBER: MIL-STD-826A (Continued) FSC/AREA: EMCS

obtainable in the laboratory similar to those existing in the operational environment. The tests described are not to be interpreted as an exact or conclusive representation of actual service conditions.

To specify general levels of electromagnetic interference emanation and interference susceptibility for equipment and subsystems that will enable compatible operation in a complex electromagnetic environment. The limits and tests specified herein are established to increse the probability that operational systems will meet the requirements of MIL-E-6051 or other similar system requirements.

To describe, in one document, standardized tests methods so that these methods can be kept uniform and thus results in conservation of equipment, manhours, and test facilities. The test methods emphasize use of instrumentation and techniques to minimize test time.

GUIDE LOCATION: 4.8.6

DOCUMENT NUMBER: MIL-STD-877 FSC/AREA: 5985

TITLE: Antenna Subsystem, Airborne, Criteria For Design And Location Of

PUBLICATION DATE: 8 November 1968

RELATED EFFORTS:

PURPOSE: This standard covers the general criteria for the design and location of all antenna subsystems used on flight vehicles. It is not intended to preclude techniques, processes, materials, and methods of design and location which will lead to improvement of Military airborne antenna subsystems. This standard is primarily for use by the aircraft manufacturer.

GUIDE LOCATION: 4.2.4.3

DOCUMENT NUMBER: MIL-STD-882B FSC/AREA: SAFT

TITLE: System Safety Program Requirements

PUBLICATIONS DATE: 30 March 1984

RELATED EFFORTS:

PURPOSE: This standard provides uniform requirements for developing and implementing a system safety program of sufficient comprehensiveness to identify the hazards of a system and to ensure that adequate measures are taken to eliminate or control the hazards.

GUIDE LOCATION: 4.8.7

DOCUMENT NUMBER: MIL-STD-1310D FSC/AREA: EMCS

TITLE: Shipboard Bonding, Grounding, And Other Techniques For Electromagnetic Compatibility And Safety

PUBLICATION DATE: 8 February 1979

RELATED EFFORTS: MIL-STD-188-124A, MIL-HDBK-419

PURPOSE: This standard covers those elements of ship design requirements essential to the attainment of shipboard electromagnetic compatibility (EMC) by affecting suppression of potential sources of electromagnetic interference (EMI) and including intermodulation interference (IMI) and reduction of susceptibility to electromagnetic pulse (EMP). Requirements cover design of ground systems, use of nonmetallic topside items, and installation, bonding, grounding, and shielding methods for equipment, cables, and conduit with associated safety features.

GUIDE LOCATION: 4.8.1, 4.8.6

DOCUMENT NUMBER: MIL-STD-1329B FSC/AREA: 5985

TITLE : Switch, RF Coaxial, Selection Of

PUBLICATION DATE: 30 June 1976

RELATED EFFORTS:

PURPOSE: This standard provides a list of standard coaxial switches for use in Military applications.

GUIDE LOCATION: 4.1.2.2, 4.4.2

DOCUMENT NUMBER: MIL-STD-1352E FSC/AREA: 5985

TITLE: Attenuator, Fixed And Variable, Selection Of

PUBLICATION DATE: 30 June 1981

RELATED EFFORTS:

PURPOSE: This standard provides a list of standard fixed and variable attenuators for use in Military applications. The purpose of this standard is to:

Provide the equipment designer with a list of fixed and variable attenuators considered standard for use in Military applications.

Restrict the number of fixed and variable attenuators for use in Military applications in order to provide effective logistic support of equipment.

Establish criteria pertinent to choice and application of fixed and variable attenuators for use in Military equipment.

GUIDE LOCATION: 4.1.2.4

DOCUMENT NUMBER: MIL-STD-1358B FSC/AREA: 5985

TITLE : Waveguides, Rectangular, Ridge And Circular, Selection Of

PUBLICATION DATE: 6 March 1978

RELATED EFFORTS:

PURPOSE: This standard provides standard sizes of rigid rectangular, rigid circular, single ridge, and double ridge waveguides considered by the Department of Defense as standard for use in Military equipment and applications.

GUIDE LOCATION: 4.1.2.3

DOCUMENT NUMBER: MIL-STD-1397A FSC/AREA: ECRS

TITLE: Input And Output Interfaces, Standard Digital Data, Navy Systems

PUBLICATION DATE: 7 January 1983

RELATED EFFORTS:

PURPOSE: This standard establishes the requirements for the physical, functional, and electrical characteristics of a standard Input/Output (1/0) interface for transfer of digital data. The Appendix provides information regarding the requirements for the 1/0 interconnecting cables, interface circuits and cable connectors that meet the requirements of this standard and also describes the general philosophy of the 1/0 interface of NTDS computers to provide an understanding of the functional operations of the computer's 1/0 section.

GUIDE LOCATION: 4.2.2.1, 4.5, 4.6.6

DOCUMENT NUMBER: DOD-STD-1399-441 FSC/AREA: 1990

TITLE: Interface Standard For Shipboard Systems, Section 441 Precise Time And Time Interval

PUBLICATION DATE: 1 June 1982

RELATED EFFORTS:

PURPOSE: This section defines the standard interface requirements for, and the constraints on, the design of shipboard equipment which will utilize the precise time and time interval (PTTI) platform distribution system (PDS).

The Navy's PTTI program is an effort to disseminate highly accurate PTTI references worldwide from the U.S. Naval Observatory (NAVOBSY) to Navy ships and other platforms and installations having a need for such references. These references are distributed within the ship via the PDS. It is essential that the interface between the PTTI PDS outputs and the various user equipments be engineered so that the stability and accuracy of the outputs are not degraded and that the user equipments may accept and process the reference outputs effectively.

The technical content of this section first delineates the interface characteristics in terms of available frequency and time parameters, impedance, voltage, capacities, and so forth. The constraints on equipment design and installation necessary to achieve shipboard compatibility with these characteristics are then established.

GUIDE LOCATION: 4.5, 4.8.3

DOCUMENT NUMBER: MIL-STD-1541 FSC/AREA: EMCS

TITLE: Electromagnetic Compatibility Requirements For Space Systems

PUBLICATION DATE: 15 October 1973

RELATED EFFORTS: MIL-B-5087, MIL-E-6051, DoD-W-83575

PURPOSE: This standard establishes the electromagnetic compatibility (EMC) requirements for space systems, including launch vehicles, space vehicles , ground systems, and associated aerospace ground equipment (AGE). It does not apply to facilities which house such items.

GUIDE LOCATION: 4.8.6

DOCUMENT NUMBER: MIL-STD-1553B FSC/AREA: MISC

TITLE : Aircraft Internal Time Division Command And Response Multiplex Data Bus

PUBLICATION DATE: 12 February 1980

RELATED EFFORTS:

PURPOSE: This standard defines requirements for digital, command/response, time division multiplexing (data bus) techniques on aircraft. It encompasses the data bus line and its interface electronics and also defines the concept of operation and information flow on the multiplex data bus and the electrical and functional formats to be employed.

The purpose of this document is to establish uniform requirements for multiplex data system techniques which will be utilized in systems integration of aircraft subsystems and to promote standard digital interfaces for associated subsystems. The system designer retains the flexibility to assemble a custom multiplex system from the functionally standard parts and to program the standard electronic functions in order to provide a control mechanism, traffic patterns, redundancy, and a viable degradation concept.

GUIDE LOCATION: 4.5, 4.6.6

DOCUMENT NUMBER: MIL-STD-1605 FSC/AREA: EMCS

TITLE: Procedures For Conducting A Shipboard Electromagnetic Interference (EMI) Survey (Surface Ships)

PUBLICATION DATE: 20 April 1973

RELATED EFFORTS:

PURPOSE: This standard provides detailed procedures for conducting an electromagnetic interference (EMI) survey aboard surface ships. An EMI survey is required for new construction ships and ships receiving overhauls or other major repair work that changes the electromagnetic configuration.

GUIDE LOCATION: 4.8.6

DOCUMENT NUMBER: MIL-STD-1636 FSC/AREA: 5985

TITLE : Adapters, Coaxial To Waveguide, Selection Of

PUBLICATION DATE: 22 April 1977

RELATED EFFORTS:

PURPOSE: This standard provides standard coaxial to waveguide adapters considered by the Department of Defense as standard for use in Military equipment and applications.

The purpose of this standard is to: provide the equipment designer with a list of adapters considered standard for use in Military applications; restrict and minimize the variety of adapters for use in Military applications in order to provide effective logistic support of equipment. Establish criteria pertinent to choice and application of adapters for use in Military equipment.

GUIDE LOCATION: 4.1.2.2, 4.1.2.3

DOCUMENT NUMBER: MIL-STD-1637A FSC/AREA: 5985

TITLE: Dummy Loads, Electrical, Waveguide, Coaxial, And Stripline, Section Of

PUBLICATION DATE: 24 December 1980

RELATED EFFORTS:

PURPOSE: This standard is to:

Provide the equipment designer with a list of dummy loads considered standard for use in Military application.

Restrict and minimize the variety of dummy loads for use in Military applications in order to provide effective logistic support of equipment.

Establish criteria pertinent to choice and application of dummy loads for use in Military equipment.

GUIDE LOCATION: 4.2.4.4

DOCUMENT NUMBER: MIL-STD-1638A FSC/AREA: 5985

TITLE: Waveguide Assemblies, Rigid And Flexible, Selection Of

PUBLICATION DATE: 21 August 1980

RELATED EFFORTS:

PURPOSE: This standard defines waveguide assemblies considered by the Department of Defense as a standard for use in Military equipment and applications.

GUIDE LOCATION: 4.1.2.3

DOCUMENT NUMBER: MIL-STD-1856A FSC/AREA: 5820

TITLE: Tape Video, Magnetic, Recording Formats For

PUBLICATION DATE: 27 April 1983

RELATED EFFORTS: ANSI C98.1, ANSI C98.4, ANSI C98.5, ANSI C98.6

PURPOSE: This standard establishes recording formats for magnetic video recording to achieve the highest practical degree of compatibility among equipments of the same type.

GUIDE LOCATION: 4.6.2.2

DOCUMENT NUMBER: MIL-STD-1857 FSC/AREA: EMCS

TITLE: Grounding, Bonding And Shielding Design Practices

PUBLICATION DATE: 30 June 1976

RELATED EFFORTS: MIL-STD-188-124, MIL-HDBK-419

PURPOSE: This standard covers the characteristics of grounding, bonding, and shielding design practices to be applied in the construction and installation of marine, fixed stations, transportable and ground mobile electronic equipment, subsystem, and system.

GUIDE LOCATION: 4.8.1, 4.8.6

DOCUMENT NUMBER: MIL-STD-1863 FSC/AREA: 6060

TITLE: Interface Designs And Dimensions For Fiber Optic Interconnection Devices

PUBLICATION DATE: 2 December 1982

RELATED EFFORTS:

PURPOSE: This standard gives the standard interface designs and dimensions and termination types for use in fiber optic connectors and couplers for general Military applications. This document was prepared in order to standardize and minimize variations in design to enhance interchangeability and intermateability of items in new systems. This design standard is intended to be used in the design, drawing, specification development, and component selection of fiber optic interconnecting devices.

GUIDE LOCATION: 4.1.3, 4.2.1.7

DOCUMENT NUMBER: MIL-STD-2084 FSC/AREA: MNTY

TITLE: General Requirements For Maintainability Of Avionic And Electronic Systems And Equipment

PUBLICATION DATE: 14 June 1983

RELATEE EFFORTS:

PURPOSE: This Appendix provides notes for the guidance of the procuring activity in generating the contractual requirements for the maintainability features designed and built into avionic and electronic systems and equipment.

GUIDE LOCATION: 4.8.4

DOCUMENT NUMBER: MIL-STD-2113 FSC/AREA: 5985

TITLE : Radio Frequency Circulators And Isolators, Selection of

PUBLICATION DATE: 23 July 1980

RELATED EFFORTS:

PURPOSE: This standard provides a list of standard circulators and isolators for use in Military applications.

GUIDE LOCATION: 4.1.2.2, 4.1.2.3

DOCMENT NUMBER: MIL-STD-2115 FSC/AREA: 5965

TITLE : Audio Devices And Components, Selection And Use Of

PUBLICATION DATE: 25 March 1982

RELATED EFFORTS:

PURPOSE: This standard is intended to:

Provide the equipment designer with a selection of audio components that are considered most flexible for Military application.

Control and minimize the variety of audio components used in Military equipment to facilitate logistic support.

Establish criteria pertinent to the choice, application and use of audio components in Military equipment.

GUIDE LOCATION: 4.6.3.1

DOCUMENT NUMBER: MIL-STD-2117 FSC/AREA: TCTS

TITLE : Communications, Digital Control And Status Information Interchange Standard

PUBLICATION DATE: 27 February 1981

RELATED EFFORTS: MIL-STD-1397, MIL-STD-1553B

PURPOSE: This document defines the bus interface standards for the automatic interchange of control and status digital information in the shipboard node of the NTS. The standard is intended to provide guidelines for the design and acquisition of equipments, systems, software, and firmware related to the U.S. Navy's automated communications systems. Mechanical, functional and electrical characteristics are addressed.

GUIDE LOCATION: 4.2.2.1, 405, 4.6.6

DOCUMENT NUMBER: DoD-STD-2133 FSC/AREA: 6145

TITLE : Cable Arrangement For Minimum Stray Magnetic Field (Metric)

PUBLICATION DATE: 3 August 1981

RELATED EFFORTS:

PURPOSE: This standard covers the arrangement of power cables in a manner that will reduce to a minimum the stray magnetic field produced by the current in these cables.

GUIDE LOCATION: 4.7.2, 4.8.6

5.503 MIL-HDBK

DOCUMENT NUMBER: MIL-HDBK-173A FSC/AREA: 5965

TITLE: Audio Equipment

PUBLICATION DATE: 11 September 1973

RELATED EFFORTS:

PURPOSE: This handbook consists of audio equipment used by the Army, Navy, and Air Force. The handbook is a guide to assist designers in the selection of parts and outlines criteria pertaining to the use, choice, and application of audio equipment for Military functions.

GUIDE LOCATION: 4.6.3.1

DOCUMENT NUMBER: MIL-HDBK-232 FSC/AREA: SLHC

TITLE: Red/Black Engineering-Installation Guidelines (U)

PUBLICATION DATE: 14 November 1972
25 April 80 Notice 1

RELATED EFFORTS: NACSIM 5000, NACSIM 5100A, NACSIM 5100A, NACSEM 5201, NACSEM 5203, NACSEM 5204

PURPOSE: This handbook is intended to provide minimum security and nonsecurity related engineering guidelines for establishing adequate installation of systems processing classified information and is one of the countermeasures that is necessary to prevent unauthorized interception of such classified information through compromising emanations. The guidelines of the handbook are considered the minimum applicable guidelines. Except for DCAC 300-175-1, the recommendations herein are not intended to automatically supersede any existing criteria, instructions, or other directives so related to any environment, or specific processing techniques herein. The application standards, criteria, or guidance in excess of the minimum standards in this document are considered under the purview of the agency(s) charged with the direct physical and security engineering for that agency's activities or facilities.

NOTE : Change Notice 1 identifies paragraphs which remain classified.

GUIDE LOCATION: 403

DOCUMENT NUMBER: MIL-HDBK-235-lA FSC/AREA: EMCS

TITLE: Electromagnetic (Radiated) Environment Considerations For Design And Procurement Of Electrical And Electronic Equipment, Subsystems And Systems, Part 1A

PUBLICATION DATE: 5 February 1979

RELATED EFFORTS:

PURPOSE: The intent of this handbook is to provide guidance and establish a uniform approach for the protection of Military electronics from the adverse effects of the electromagnetic environment. The handbook is applicable to any electrical and electronic equipment, subsystem, or system which may be exposed to an electromagnetic environment during its life cycle, including the following:

a. Aerospace and weapons systems and associated subsystems and equipment

b. Ordinance

c. Support and checkout equipments and instruments for (a) and (b) above

GUIDE LOCATION: 4.8.6

DOCUMENT NUMBER: MIL-HDBK-237A FSC/AREA: EMCS

TITLE: Electromagnetic Compatibility Management Guide For Platforms, Systems And Equipment

PUBLICATION DATE: 2 February 1981

RELATED EFFORTS:

PURPOSE: This handbook provides criteria for establishing, managing and evaluating an EMC program on electronic, electrical, and electromechanical equipments, subsystems, and systems. It provides EMC guidance to the project officer. The use of these guidelines should increase the probability for all subsystems and equipments within a system to be compatible (intrasystem compatibility) and for electromagnetic compatibility to exist between systems (intersystem compatibility). For brevity and clarity not all of the details have been included. The user shall consult with the proper departmental staff support organizations for these and other departmental policies.

DOCUMENT NUMBER: MIL-HDBK-237A (Continued)

This handbook provides guidance for establishing an effective EMC program throughout the life cycle of platforms, systems, and equipments. In addition, it is assumed that the manager has a background which is primarily managerial. Compliance with these guidelines dictates the size of the document.

GUIDE LOCATION: 4.8.6

DOCUMENT NUMBER: MIL-HDBK-238 FSC/AREA: EMCS

TITLE: Electromagnetic Radiation Hazards

PUBLICATION DATE: 10 August 1973

RELATED EFFORTS:

PURPOSE: This handbook addresses hazards due to electromagnetic radiation of the non-ionizing type except for the ionizing radiation of x-rays produced incident to operating electronic equipment. Electromagnetic radiation hazards (RADHAZ) affect personnel, sensitive electronic devices, explosives, and fuels. The present state-of-the-art in evaluation of existing hazards limits the determination of absolute safe levels at all frequencies.

GUIDE LOCATION: 4.8.6

DOCUMENT NUMBER: MIL-HDBK-241A FSC/AREA: EMCS

TITLE: Effective Reduction Of Conducted And Radiated Interference Generated By Power Supplies

PUBLICATION DATE: 1 April 1981

RELATED EFFORTS:

PURPOSE: This handbook offers guidance to power supply designers in techniques which have been found effective in reducing conducted and radiated interference generated by power supplies. It is a compilation of information from widely dispersed library sources pertaining to power supplies and practical fixes derived from the experience of EMI engineers. Because of the wide variation in power supply types, success in meeting EMC requirements cannot be guaranteeed by following the guidance supplied here, but the probabilities of success at lower cost, reduced weight, size, and power consumption should be increased.

GUIDE LOCATION: 4.7.1, 4.8.6

DOCUMENT NUMBER: MIL-HDBK-248A FSC/AREA: MISC

TITLE: Methodology To Be Used In The Application And Tailoring Of The Requirements Of Specifications And Standards Contractually Imposed During The Various Phases Of Defense Material Acquisition

PUBLICATION DATE: 15 October 1979

RELATED EFFORTS:

PURPOSE: The purpose of this handbook is to provide acquisition management and engineering personnel with general guidelines and the underlying rationale and philosophy for application and tailoring of the requirements used in the defense material acquisition process, and to facilitate implementation of directives requiring that all levels of management take constructive actions to assure more cost-effective utilization of specifications and standards in Military material acquisitions through the process of application and tailoring.

GUIDE LOCATION: Information only

DOCUMENT NUMBER: MIL-HDBK-253 FSC/AREA: EMCS

TITLE: Guidance For The Design And Test Of Systems Protected Against The Effects Of Electromagnetic Energy

PUBLICATION DATE: 28 July 1978

RELATED EFFORTS:

PURPOSE: The purpose of this document is to provide program managers with guidance for the design and test of electronic systems which are to be immune to the detrimental effects of electromagnetic energy.

GUIDE LOCATION: 4.8.6

DOCUMENT NUMBER: MIL-HDBK-332 FSC/AREA: 5985

TITLE: Maintenance Evaluation Procedures Of The Antenna-Transmission Line Systems of High Frequency Antennas

PUBLICATION DATE: 14 December 1970

RELATED EFFORTS:

PURPOSE: This document provides valuable information concerning maintenance evaluation procedures of the antenna-transmission line systems of high frequency antennas. The handbook presents the results of evaluation-analysis of various test methods, procedures, and test equipment used in several operational environments in the form of detailed test methods, procedures, and test equipment. To enhance the use of these tests, applicable antenna and transmission line concepts, and the Smith Chart are discussed detail. The application of these tests and procedures should be very beneficial in maintaining the required systems performance particularly in cases where the antenna transmission line or other parts of the antenna system have been damaged.

GUIDE LOCATION: 4.2.4.1, 4.8.2

DOCUMENT NUMBER: MIL-HDBK-411A FSC/AREA: SLHC

TITLE: Long Haul Communications (DCS) Power And Environmental Control For Physical Plant

PUBLICATION DATE: 8 July 1982

RELATED EFFORTS: MIL-STD-633E, MIL-STD-705B, MIL-HDBK-705B

PURPOSE: The purpose of this handbook is to provide technical guidance for Government owned long haul communications (DCS) power and air-conditioning facilities. This handbook is intended for use in the engineering design and installation of new power and air-conditioning subsystems and equipment and also in the upgrading of existing subsystems and equipment. It provides guidelines for delineating electrical power, environmental control parameters, and test procedures.

GUIDE LOCATION: 4.7.2

DOCUMENT NUMBER: MIL-HDBK-412 FSC/AREA: SLHC

TITLE: Site Survey And Facility Design Handbook For Satellite Earth Stations

PUBLICATION DATE: 20 May 81

RELATED EFFORTS: FED-STD-1037, MIL-STD-188-124A, MIL-F-29046(TD), MIL-STD-633, MIL-STD-1472, MIL-HDBK-411, MIL-HDBK-238 (NAVY), OSHA 2206 (29 CFR 1910), DoDD 3222.3, DoDD 4270.1-M, ASHRAE SYS. HDBK, ASHRAE FUNDMNTLS HDBK, ASHRAE GRP 158, NATIONAL ELECTRICAL CODE, TM 5-809-1, DARCOM-P-706-410, NAVFAC DM-2, NAVFAC DM-4, AFM 86-2, AFM 88-15, AFM 127-100, AFOSH 161-9, T.O. 31Z10-4, T.O. 31Z10-4

PURPOSE: The purpose of this handbook is to provide general technical information pertaining to facility engineering of satellite earth stations both fixed and vanized, and to serve as a guide to more detailed information contained in referenced engineering and planning publications. This handbook presents selected topics in earth station facility engineering to telecommunications engineers, managers, and senior operations and maintenance (O&M) personnel. These topics cover the site selection process and the design of site facilities (including physical structures and the electrical power and ground systems). Although this handbook applies mainly to medium and heavy earth stations, portions may be used for siting tactical or special-use terminals. The term “vanized equipment,” (van-installed) as used here, applies both to Defense Communications System (DCS) equipment that is mounted in vans and to tactical equipment that is mounted in vans or shelters. The discussion of site selection information is augmented by the inclusion of sample worksheets as information collection aids.

GUIDE LOCATION: 4.2.1.6

DOCUMENT NUMBER: MIL-HDBK-414 FSC/AREA: SLHC

TITLE: Technical Control Facilities And Equipment For Long Haul Communications - Volume 1 Of 2 Volumes

PUBLICATION DATE: 23 March 1981

RELATED EFFORTS: FED-STD-1037, MIL-STD-188-100, MIL-STD-188-114, MIL-STD-188-310, MIL-HDBK-232, DCAC 310-50-6, DCAC 370-V165-1, DCAC 370-V175-6

PURPOSE: This handbook provides pertinent information regarding the application and electrical characteristics of equipment employed in technical control or patch and test facilities in the Defense Communication System. Electrical requirements which are common to more than one equipment category are discussed in Section 2. The remainder of the handbook is divided into seven sections, each of which includes specific application information and electrical

DOCUMENT NUMBER: MIL-HDBK-414 (Continued) FSC/AREA: SLHC

characteristics for a single category of equipment items. This handbook is intended for use as a technical information guide to technical control or patch and test facility equipments. As such, this handbook provides an informational description of functions and characteristics of equipment referenced in MIL-STD-188-310, Subsystem Design and Engineering Standards for Technical Control Facilities.

GUIDE LOCATION: 4.401.1, 4.8.2

DOCUMENT NUMBER: MIL-HDBK-416 FSC/AREA: SLHC

TITLE: Design Handbook For Line-Of-Sight Microwave Communication Systems

PUBLICATION DATE: 15 November 1977

RELATED EFFORTS: MIL-STD-188-313, MIL-HDBK-411

PURPOSE: This handbook is intended to assist suitably qualified personnel in designing microwave systems to current state-of-the-art standards, but cannot be considered a substitute for experience and education in the engineering of such systems. The handbook applies to microwave line-of-sight (LOS) radio systems which are used to provide multichannel communication between fixed locations. Such point-to-point systems generally use a carrier frequency in the range of 1 to 40 GHz over paths typically from 10 km to 100 km long. Antenna heights above ground are usually adequate to provide line-of-sight paths under most circumstances, but seldom exceed 100 M. In some cases, passive reflectors are employed to obtain line-of-sight conditions.

GUIDE LOCATION: 4.2.1.5

DOCUMENT NUMBER: MIL-HDBK-417 FSC/AREA: SLHC

TITLE: Facility Design For Tropospheric Scatter (Transhorizon Microwave System Design)

PUBLICATION DATE: 25 November 1977

RELATED EFFORTS: MIL-HDBK-411

PURPOSE: This handbook is intended to assist suitably qualified personnel in designing transhorizon systems to current state-of-the-art standards. It is not intended as a substitute for engineering

DOCUMENT NUMBER: MIL-HDBK-417 (Continued) FSC/AREA: SLHC

education or experience. Various aspects for problems are considered and several alternatives to their solution are presented wherever possible. The handbook draws information and ideas from many sources, but it is not meant to be an all-inclusive source of design information. The handbook applies to transhorizon radio systems which are used to provide point-to-point, multichannel communications, and usually transmit voice, teletype, facsimile, digital data, and visual displays. Such systems generally use a carrier frequency in the range of 0.2 to 5 GHz over individual paths which are typically 100 km to 300 km in length, but range upward to 900 km to 1000 km. Transmitter outputs of 1 kw are commonly used, but 10 kw to 50 kw may be used on particularly difficult paths. High-gain directional parabolic antennas 9 M to 18 M in diameter are used on many paths, as well as “billboard” antennas up to a nominal 36 M.

GUIDE LOCATION: 4.2.1.5

DOCUMENT NUMBER: MIL-HDBK-419 FSC/AREA: SLHC

TITLE : Grounding, Bonding, And Shielding For Electronic Equipments And Facilities (Volumes 1 and 2)

PUBLICATION DATE: 21 January 1982

RELATED EFFORTS: MIL-STD-188-124, MIL-STD-285

PURPOSE: This handbook provides information concerning grounding, bonding, and shielding of fixed plant telecommunications electronics facilities. It also provides basic guidance in the grounding of deployed transportable communications/electronics equipment. The subject is approached from a total system concept, which comprises the following four basic subsystems: a. An earth electrode subsystem, b. A lighting protection subsystem, c. A fault protection subsystem, d. A signal reference subsystem.

GUIDE LOCATION: 4.7.1, 4.7.2, 4.8.1, 4.8.6,

DOCUMENT NUMBER: MIL-HDBK-472 FSC/AREA: MNTY

TITLE: Maintainability Prediction

PUBLICATION DATE: 24 May 1966

RELATEI) EFFORTS:

PURPOSE: The prediction of the expected number of hours that a system or device will be in an inoperative or "down state" while it is undergoing maintenance is of vital importance to the user because of the adverse effect that excessive down time has on mission success. Therefore, once the operational requirements of a system are fixed, it is imperative that a technique be utilized to predict its maintainability in quantitative terms as early as possible during the design phase. This prediction should be updated continuously as the design progresses to assure a high probability of compliance with specified requirements.

GUIDE LOCATION: 4.8.4

DOCUMENT NUMBER: MIL-HDBK-660A FSC/AREA: 5985

TITLE: Guide For Fabricating Rectangular Waveguide Bends And Twists Used In The Microwave Region Of The Electronic Spectrum

PUBLICATION DATE: 7 July 1972

RELATED EFFORTS:

PURPOSE: This handbook is intended for the electronic installations technician to be used as a guide for fabricating rectangular waveguide bends and twists used in the microwave region of the electronic spectrum.

Where bends and twists are required in equipment, it may not always be possible to obtain bends and twists of the exact lengths or radii required because they are not standard, and therefore are not carried in supply, or manufactured by industry as a stock item. By using the techniques described in this handbook such bends and twists can be fabricated in the field, and the equipment for which they are intended can be placed in service in a shorter time than purchased parts could be supplied.

This handbook describes the assembly and finishing of components fabricated from the two most commonly used materials, brass and aluminum. The processes and methods used in the fabrication of waveguide assemblies from other materials are similar to the procedures described herein. Careful attention should be paid, however, to brazing only the components made from similar metals to prevent the possibility of galvanic action between parts.

GUIDE LOCATION: 4.1.2.3

5.5.4 MIL-SPEC

DOCUMENT NUMBER: MIL-C-17F FSC/AREA: 6145

TITLE: Cables, Radio Frequency, Flexible And Semirigid, General Specification

PUBLICATION DATE: 18 January 1983

RELATED EFFORTS:

PURPOSE: This specification covers flexible and semirigid cables with solid and semisolid dielectric cores, with single, dual, and twin inner conductors. Cables covered by this specification are primarily intended for use as transmission lines to conduct energy in a simple power transfer continuously or intermittently. In general, these cables are designed for low-loss, stable operation from the relatively low frequencies through the higher frequencies encountered in the microwave and radar regions of the frequency spectrum. Cables may also be used as a circuit elements, delay lines, or impedance matching devices.

GUIDE LOCATION: 4.1.2.2

DOCUMENT NUMBER: J-C-30A (Federal Specification) FSC/AREA: 6145

TITLE: Cable And Wire, Electrical (Power, Fixed Installation)

PUBLICATION DATE: 9 December 1974

RELATED EFFORTS:

PURPOSE: This specification covers single and multiple conductor cables and wires employing soft-annealed copper or aluminum conductors insulated with rubber, thermoplastic, cross-linked-polyethylene, chlorosulphonated polyethylene, varnished cloth, asbestos, or asbestos-varnished-cloth. They are intended to be used for transmission of power in fixed type installations; also for special purpose applications (e.g., control) when appropriate.

GUIDE LOCATION: 4.7.1, 4.7.2

DOCUMENT NUMBER: MIL-W-85G FSC/AREA: 5985

TITLE: Waveguide, Rigid, Rectangular, General Specification For

PUBLICATION DATE: 20 April 1976

RELATED EFFORTS:

PURPOSE: This specification covers the requirements for seamless or fabricated rigid waveguides with rectangular inside configurations.

GUIDE LOCATION: 4.1.2.3

DOCUMENT NUMBER: W-P-115A (Federal Specification) FSC/AREA: 6110

TITLE: Panel, Power Distribution

PUBLICATION DATE: 31 March 1976

RELATED EFFORTS:

PURPOSE: This specification covers panel boards for the control and protection of power circuits, including feeder distribution panel boards; electric lighting and/or appliance branch circuits; and other units specifically designed for panel board assembly.

GUIDE LOCATION: 4.7.2

DOCUMENT NUMBER: MIL-W-287E FSC/AREA: 5985

TITLE: Waveguide Assemblies, Flexible, Twistable And Nontwistable, General Specification For

PUBLICATION DATE: 21 August 1980

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for twistable and nontwistable, flexible waveguide assemblies.

GUIDE LOCATION: 4.1.2.3

DOCUMENT NUMBER: MIL-C-915E FSC/AREA: 6145

TITLE: Cable And Cord Electrical, For Shipboard Use; General Specification For

PUBLICATION DATE: 30 May 1980

RELATED EFFORTS:

PURPOSE: This specification covers electrical cable, and cord for shipboard applications. The classifications of cables include both water tight and nonwater tight construction, both flexing and nonflexing, providing service for power, lighting, control, communications, instrumentation, and electronic applications.

GUIDE LOCATION: 4.7.1, 4.7.2

DOCUMENT NUMBER: MIL-I-983E FSC/AREA: 5830

TITLE : Interior Communication Equipment, Naval Shipboard, Basic Design Requirements For

PUBLICATION DATE: 22 December 1967

RELATED EFFORTS:

PURPOSE: This specification covers the basic design requirements, test and operating conditions for interior communication equipment to be used in Naval ships. The purpose of this document is to secure uniformity of practice, quality of materials, and workmanship necessary to meet the special requirements for equipments to be installed in ships of the U.S. Navy.

GUIDE LOCATION: 4.1.2.1

DOCUMENT NUMBER: W-T-1604A (Federal Specification) FSC/AREA: 7045

TITLE : Tape, Perforator Type, Polyester Base

PUBLICATION DATE: 12 September 1973

RELATED EFFORTS:

PURPOSE: This specification covers the requirements for unpunched polyester base perforator type tape, of three different compositions, in roll form, for punched program automatic data processing.

GUIDE LOCATION: 4.6.1

DOCUMENT NUMBER: MIL-T-1943C FSC/AREA: 5805

TITLE: Telephone Equipment, Dial (Shipboard Use)

PUBLICATION DATE: 28 February 1969

RELATED EFFORTS:

PURPOSE: This specification covers equipment for automatic dial telephone systems of various capacities, suitable for operation in Naval ships as independent systems and for switching into shore exchanges. It includes telephone instruments, automatic exchange switchboards, small manual switchboards for connection to shore exchange trunks, power conversion equipment, and miscellaneous units.

GUIDE LOCATION: 4.6.3.2

DOCUMENT NUMBER: MIL-M-2714A FSC/AREA: 5965

TITLE: Microphone, Carbon, Hand Held

PUBLICATION DATE: 6 February 1969

RELATED EFFORTS:

PURPOSE: This specification covers hand held carbon microphones for use in Military equipment.

GUIDE LOCATION: 4.6.3.4

DOCUMENT NUMBER: MIL-F-3922B FSC/AREA: 5985

TITLE: Flanges, Waveguides, General Purpose, General Specification for

PUBLICATION DATE: 4 May 1976

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for general purpose waveguide flanges which are used to couple mechanically and electrically two sections of waveguides or waveguide parts.

GUIDE LOCATION: 4.1.2.3

DOCMENT NUMBER: MIL-S-3928C FSC/AREA: 5985

TITLE: Switch, (Coaxial), Radio Frequency Transmission Line, General Specification For

PUBLICATION DATE: 22 August 1973

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for coaxial switches, either manually or remotely controlled, for use with coaxial cable at radio frequencies.

GUIDE LOCATION: 4.1.2.2, 4.4.2

DOCUMENT NUMBER: MIL-A-3933D FSC/AREA: 5985

TITLE: Attenuators, Fixed, General Specification For

PUBLICATION DATE: 18 December 1981

RELATED EFFORTS:

PURPOSE: This specification covers fixed attenuators for use as attenuating elements in coaxial lines and waveguides. These attenuators are used for armed services application in the transmission lines of radar, radio, and associated equipment.

GUIDE LOCATION: 4.1.2.4

DOCUMENT NUMBER: MIL-E-3954C FSC/AREA: 5985

TITLE: Electrical, Waveguide, General Specification For

PUBLICATION DATE: 29 March 1979

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for waveguide used in radio frequency transmission lines.

GUIDE LOCATION: 4.1.2.3

DOCUMENT NUMBER: MIL-W-3970C FSC/AREA: 5985

TITLE: Waveguide Assemblies, Rigid General Specification For

PUBLICATION DATE: 4 April 1977

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for rigid waveguide assemblies.

GUIDE LOCATION: 4.1.2.3

DOCUMENT NUMBER: MIL-T-5422F FSC/AREA: ENVR

TITLE: Testing, Environmental, Airborne Electronic And Associated Equipment

PUBLICATION DATE: 30 November 1971

RELATED EFFORTS:

PURPOSE: This specification contains the procedures for testing airborne electronic and associated equipments under environmental conditions to demonstrate compliance with MIL-E-5400, MIL-T-21200, other general design specifications, and applicable detailed equipment specifications.

These procedures specify, modify as necessary, and provide the required detail data for the applicable test method of MIL-STD-810 for Navy airborne electronic and associated equipment.

GUIDE LOCATION: 4.8.5

DOCUMENT NUMBER: MIL-E-6051D FSC/AREA: EMCS

TITLE: Electromagnetic Compatibility Requirements, Systems

PUBLICATION DATE: 5 July 1968

RELATED EFFORTS: MIL-STD-461, MIL-STD-462, MIL-P-24014

PURPOSE: This specification outlines the overall requirements for systems electromagnetic compatibility, including control of the system electromagnetic environment, lightning protection, static electricity, bonding, and grounding. It is applicable to complete systems, including all associated subsystems/equipments.

GUIDE LOCATION: 4.8.6

DOCUMENT NUMBER: MIL-A-6224E FSC/AREA: 5985

TITLE: Antenna Subsystem For UHF Airborne Communications Equipment, General Specification For

PUBLICATION DATE: 7 June 1976

RELATED EFFORTS:

PURPOSE: This specification covers the general design, performance, and flight test requirements for an antenna subsystem used with UHF communications equipment in the frequency range of 225 to 400 MHz.

GUIDE LOCATION: 4.2.4.2

DOCUMENT NUMBER: MIL-A-6271C FSC/AREA: 5985

TITLE: Antenna, VHF Airborne Communications Equipment, General Specification For Design Of

PUBLICATION DATE: 7 June 1976

RELATED EFFORTS:

PURPOSE: This specification covers the general design, performance, and flight test requirements for an antenna subsystem used with VHF communications equipment in the frequency range of 118 to 156 MHz.

GUIDE LOCATION: 4.2.4.2

DOCUMENT NUMBER: MIL-A-7965C FSC/AREA: 5985

TITLE: Antenna Components: Antiprecipitation Static

PUBLICATION DATE: 22 May 1964

RELATED EFFORTS:

PURPOSE: This specification covers antiprecipitation static antenna components.

GUIDE LOCATION: 4.2.4.3

DOCUMENT NUMBER: MIL-C-8678 FSC/AREA: 6115

TITLE: Cooling Requirements Of Power Plant Installations

PUBLICATION DATE: 19 January 1954

RELATED EFFORTS:

PURPOSE: This specification covers the allowable engine installation temperatures and other applicable values (pressure drop, heat exchanger effectiveness, etc.), that determine satisfactory cooling of an aircraft or airship power plant installation.

GUIDE LOCATION: 4.7.2

DOCUMENT NUMBER: MIL-H-13253D FSC/AREA: 5965

TITLE: Handsets, General Specification For

PUBLICATION DATE: 26 June 1974

RELATED EFFORTS:

PURPOSE: This specification *covers* the requirements for handsets, which are intended to be used with wire and radio communication equipment.

GUIDE LOCATION: 4.6.3.4

DOCUMENT NUMBER: MIL-C-15370C(2) FSC/AREA: 5985

TITLE : Couplers Directional (COAXIAL LINE OR WAVEGUIDE), General Specification For

PUBLICATION DATE: 14 June 1976

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for directional couplers for use with coaxial lines of waveguides. The couplers specified are used for Armed-Services application in the transmission lines of radar and radio equipment to inject or sample, at attenuated levels, the radio frequency energy transmitted therein, and are suitable for operation over a temperature range -65° to +95°C.

GUIDE LOCATION: 4.1.2.2, 4.1.2.3

DOCUMENT NUMBER: MIL-E-16400G FSC/AREA: MISC

TITLE: Electronic, Interior Communication, And Navigation Equipment, Naval Ship And Shore: General Specification For

PUBLICATION DATE: 1 December 1976

RELATED EFFORTS:

PURPOPSE: This specification covers the general requirements applicable to the design and construction of electronic, interior communication and navigation equipment intended for Naval ship or shore applications. This specification defines the environmental conditions within which equipment must operate satisfactorily and reliably. The process for selection and application of general material and parts; and the means by which equipment as a whole will be tested to determine whether it is acceptable to the Navy. Requirements for individual equipments shall be as specified in the individual equipment specification. Unless otherwise specifically stated in the individual equipment specification, the requirements of this specification and any and all specifications cited therein shall apply when this specification is invoked.

GUIDE LGCATION: 4.8.5

DOCUMENT NUMBER: MIL-I-16421B FSC/AREA: 5830

TITLE: Intercommunication Set, Divers

PUBLICATION DATE: 7 April 1954

RELATED EFFORTS:

PURPOSE: This specification covers intercommunication equipment for a system to permit two way communication between deep sea divers and their associated tenders.

GUIDE LOCATION: 4.1.2.1

DOCUMENT NUMBER: MIL-E-17884B FSC/AREA: 5965

TITLE: Earphone (Low Impedance), General Specification For

PUBLICATION DATE: 27 September 1966

RELATED EFFORTS:

PURPOSE: This specification covers low impedance (300 ohms) magnetic diaphram earphones for use in conjunction with communications equipment.

GUIDE LOCATION: 4.6.3.4

DOCUMENT NUMBER: MIL-T-19835(2) FSC/AREA: 5820

TITLE: Transmitting Set, Radio

PUBLICATION DATE: 4 February 1960

RELATED EFFORTS:

PURPOSE: This specification covers radio transmitting sets for general purpose installation to effect communications at the VHF frequencies.

GUIDE LOCATION: 4.2.1.8

DOCUMENT NUMBER: MIL-T-22309A FSC/AREA: 5820

TITLE: Television System (High Definition For CIC Data Pick Up, Distribution And Display)

PUBLICATION DATE: 3 April 1963

RELATED EFFORTS: EIA RS-170

PURPOSE: This specification covers all services necessary to produce a high resolution television pick up camera distribution and display system for the purpose of providing multiple remote displays of normal plotted data as provided by the Mark IV, Mod 2, type plotting boards.

This specification has been approved by the Department of Defense and is mandatory for use by the Departments of the Army, the Navy, and the Air Force.

GUIDE LOCATION: 4.6.5

DOCUMENT NUMBER: MIL-C-22442A FSC/AREA: 5995

TITLE: Cable Assemblies, Aircraft Audio, General Specification

PUBLICATION DATE: 31 December 1980

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for complete cable assemblies, with molded or attached plugs including any required built-in electronics, used in aircraft intracommunications and intercommunications systems. It covers cord sets for personal gear such as microphones, headsets, earphones, handsets and similar equipment, and cable assemblies for contact with ground crew personnel.

GUIDE LOCATION: 4.1.2.1

DOCUMENT NUMBER: MIL-A-22641C(3) FSC/AREA: 5985

TITLE: Adapters, Coaxial To Waveguide, General Specification For

PUBLICATION DATE: 21 September 1978

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for adapters which connect coaxial connectors to waveguides. The connectors covered include:

1. Series N;
2. 5/8 in. coax;
3. 7/8 in. coax;
4. Series TNC;
5. Series SMA.

GUIDE LOCATION: 4.1.2.3

DOCUMENT NUMBER: MIL-R-22717(3) FSC/AREA: 5830

TITLE : Recorder-Reproducer, Sound, Portable, Magnetically Coated Tape

PUBLICATION DATE: 1 March 1967

RELATED EFFORTS:

PURPOSE: This specification covers a portable dual track, two speed, magnetic tape sound recorder-reproducer for use primarily in personnel training and entertainment.

GUIDE LOCATION: 4.6.2.3

DOCUMENT NUMBER: MIL-C-22931B(1) FSC/AREA: 6145

TITLE: Cables, Radio Frequency, Semirigid, Coaxial, Semiair-Dielectric, General Specification For

PUBLICATION DATE: 16 December 1976

RELATED EFFORTS:

PURPOSE: This specification covers semiair-dielectric, coaxial, semirigid radio frequency cables with smooth, corrugated, or braided outer conductors with outside diameters ranging from .500 to 3.125 inches, with an impedance of 50 or 75 ohms. The operating temperature ranges are -55°C to +80°C or -55°C to +200°C, as specified and the storage temperature capability is -65°C.

GUIDE LOCATION: 4.1.2.2

DOCUMENT NUMBER: MIL-C-23020B FSC/AREA: 6145

TITLE: Cable, Coaxial (For Submarine Use)

PUBLICATION DATE: 12 April 1965

RELATED EFFORTS:

PURPOSE: This specification covers the specific requirements for coaxial cables intended for submarine applications.

GUIDE LOCATION: 4.1.2.2

DOCUMENT NUMBER: MIL-W-23351A FSC/AREA: 5985

TITLE: Waveguide, Single Ridge And Double Ridge, General Specification For

PUBLICATION DATE: 20 October 1977

RELATED EFFORTS:

PURPOSE: This specification covers the requirements for rigid waveguides with single rigid or double ridge inside configurations.

GUIDE LOCATION: 4.1.2.3

DOCUMENT NUMBER: MIL-C-23553B FSC/AREA: 6145

TITLE: Cables, Audio Signal, Shore Use

PUBLICATION DATE: 12 May 1976

RELATED EFFORTS:

PURPOSE: This specification covers polyester-backed aluminum shielded pairs of No. 22 American Wire Gage (AWG) wire as audio signal cables for use within buildings and shelters.

GUIDE LOCATION: 4.1.2.1

DOCUMENT NUMBER: MIL-C-23806A(1) FSC/AREA: 6145

TITLE: Cable, Radio Frequency, Coaxial, Semirigid, Foam Dielectric, General Specification

PUBLICATION DATE: 17 September 1970

RELATED EFFORTS:

PURPOSE: This specification covers foam dielectric, coaxial semirigid, radio frequency cables with smooth outer conductors.

GUIDE LOCATION: 4.1.2.2

DOCUMENT NUMBER: MIL-A-23836 FSC/AREA: 5985

TITLE: Antenna Systems, Submarine; Design Location, And Installation; General Specification

PUBLICATION DATE: 3 September 1963

RELATED EFFORTS:

PURPOSE: This specification covers the general mechanical and electrical requirements for design, and for location and installation on submarines of antennas for electronic equipment, and is primarily for the use of antenna system manufacturers.

Electronic equipment covered by this specification is primarily external to the pressure hull. In addition to the radiating elements (both active and passive), antenna systems within the scope of this specification consist of the radio frequency transmission line from the connector at the inboard detecting or transmitting equipment to the outboard receiving or radiating element, and all components which serve to tone, erect, protect, or interconnect the antenna. The hydraulic system from the erecting mechanism back to the first distribution manifold is part of the system. Electrical control cables from the actuating equipments out to and including the outboard antenna components are part of the system. Functional parts of the submarine such as the snorkel tube and periscope which also serve as antenna masts shall conform to the requirements of their primary purpose, suitably modified for subject multipurpose use. The term system as employed within this specification refers to Military operational function as a subsystem of a submarine rather than to electrical, electronic, mechanical, and hydraulic equipment divisions.

GUIDE LOCATION: 4.2.4.4

DOCUMENT NUMBER: MIL-S-24067(2) FSC/AREA: 5985

TITLE: Switches, Coaxial, Radio Frequency Transmission Line (For Use With Electronic Countermeasures Equipment), General Specification

PUBLICATION DATE: 19 November 1965

RELATED EFFORTS:

PURPOSE: This specification covers the detail requirements and test procedures for 50 ohm, radio frequency (RF) coaxial switches for use in Navy electronic countermeasures equipment.

GUIDE LOCATION: 4.1.2.2, 4.4.2

DOCUMENT NUMBER: MIL-G-24211 FSC/AREA: 5985

TITLE: Gasket, Waveguide Flange General Specification

PUBLICATION DATE: 28 March 1966

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for pressure sealing gaskets used with general purpose cover flanges and flat face flanges covered by MIL-F-3922.

GUIDE LOCATION: 4.1.2.3

DOCUMENT NUMBER: MIL-A-25708C FSC/AREA: 5985

TITLE: Antenna, Blade, L-Band, General Specification For

PUBLICATION DATE: 17 October 1975

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements (for externally mounted) blade type L-Band antennas.

GUIDE LOCATION: 4.2.4.2

DOCUMENT NUMBER: MIL-M-26542B(1) FSC/AREA: 5965

TITLE: Microphones, General Specification For

PUBLICATION DATE: 15 March 1979

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for dynamic, moving coil, noise canceling microphones which are used in headset-microphones. Both microphone elements and microphone assemblies are covered.

GUIDE LOCATION: 4.6.3.4

DOCUMENT NUMBER: MIL-T-28709 FSC/AREA: 5805

TITLE: Terminal, Telegraph, Transistorized Voice Frequency Carrier

PUBLICATION DATE: 15 November 1968

RELATED EFFORTS:

PURPOSE: This specification covers objectives and technical requirements for multichannel frequency shift telegraph terminals capable of operating within normal radio and wire communication channels employed in Naval Communications Systems and Facilities.

GUIDE LOCATION: 4.2.3

DOCUMENT NUMBER: MIL-A-28768A FSC/AREA: 5985

TITLE: Antenna, Fixed High Frequency, General Specification For

PUBLICATION DATE: 1 June 1973

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for fixed, shore based, high frequency (HF) antenna systems for use at the Naval shore communication stations. It does not cover rotatable log periodic antennas (RLPA's) or other antennas requiring mechanical movement. More specific details are set forth in the applicable detail specification.

GUIDE LOCATION: 4.2.4.1

DOCUMENT NUMBER: MIL-A-28768/2A FSC/AREA: 5985

TITLE: Antenna, Fixed High Frequency, High Take Off Angle

PUBLICATION DATE: 15 December 1972

RELATED EFFORTS:

PURPOSE: This specification covers specific requirements for an antenna capable of producing high angle radiation to be used at shore stations for short range skywave communications in the high frequency region of the radio spectrum.

GUIDE LOCATION: 4.2.4.1

DOCUMENT NUMBER: MIL-A-28768/3 FSC/AREA: 5985

TITLE: Antenna, Fixed High Frequency, Vertical Log Periodic (DIPOLE)

PUBLICATION DATE: 26 October 1973

RELATED EFFORTS:

PURPOSE: This specification covers requirements for vertically polarized, log periodic (dipole) antennas capable of producing directive, low elevation angle electromagnetic radiation in the high frequency region of the radio spectrum.

GUIDE LOCATION: 4.2.4.1

DOCUMENT NUMBER: MIL-A-28772B FSC/AREA: 5985

TITLE: Antenna, High Frequency (HF) Fixed Rotatable Log Periodic

PUBLICATION DATE: 6 November 1981

RELATED EFFORTS:

PURPOSE: This specification covers the high frequency (HF) rotatable planar log periodic (RLPA) horizontally polarized antenna for transmitter receive, or both, communications for use at Naval shore communication stations.

GUIDE LOCATION: 4.2.4.1

DOCUMENT NUMBER: MIL-P-28785(2) FSC/AREA: 5820

TITLE: Power Supply, Variable Output (O To 50 Volts, O To 5 Amperes)

PUBLICATION DATE: 29 August 1973

RELATED EFFORTS:

PURPOSE: This specification covers one type of power supply used in Naval electronic equipments. The power supply specified shall have an output of O to 50 VDC at O to 5 amps with an input of 105 to 125 VAC at 60 hertz (± 5%).

GUIDE LOCATION: 4.7.1

DOCUMENT NUMBER: MIL-T-28789A FSC/AREA: 5815

TITLE: Teletypewriter Terminal Equipment, Radio

PUBLICATION DATE: 18 May 1973

RELATED EFFORTS:

PURPOSE: This specification covers a solid state teletypewriter terminal equipment to provide teletypewriter operation on either half-duplex or full-duplex application. The equipment shall also be capable of dual channel converter-comparator receive operation to provide diversity reception from the audio outputs of two radio receiving sets.

GUIDE LOCATION: 4.6.1

DOCUMENT NUMBER: MIL-C-28790 FSC/AREA: 5985

TITLE : Circulators, Radio Frequency, General Specifications For

PUBLICATION DATE: 23 July 1980

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for circulators, coaxial, waveguide, and strip-line radio frequency for use in armed service radar and radio applications.

GUIDE LOCATION: 4.1.2.2, 4.1.2.3

DOCUMENT NUMBER: MIL-I-28791 FSC/AREA: 5985

TITLE : Isolators, Radio Frequency, General Specification For

PUBLICATION DATE: 10 January 1973

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for isolators, coaxial, waveguide, and strip-line radio frequency for use in armed service radar and radio application.

GUIDE LOCATION: 4.1.2.2, 4.1.2.3

DOCUMENT NUMBER: MIL-L-28796 FSC/AREA: 5985

TITLE: Line Assemblies, Radio Frequency Transmission, General Specification For

PUBLICATION DATE: 10 August 1973

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for assemblies used with standard size, radio frequency transmission lines, for general applications by the armed services. The lines are designed to have a normal impedance of 50 ohms or 75 ohms.

GUIDE LOCATION: 4.1.2.2, 4.1.2.3

DOCUMENT NUMBER: MIL-C-28830B FSC/AREA: 6145

TITLE: Cable, Radio Frequency, Coaxial, Semirigid, Corrugated Outer Conductor, General Specification For

PUBLICATION DATE: 9 March 1982

RELATED EFFORTS:

PURPOSE: This specification covers coaxial, semirigid, radio frequency cable with corrugated outer copper conductors.

GUIDE LOCATION: 4.1.2.2

DOCUMENT NUMBER: MIL-W-28839 FSC/AREA: 5985

TITLE: Military Specification Waveguides, Elliptical, General Specification For

PUBLICATION DATE: 13 March 1978

RELATED EFFORTS:

PURPOSE: This specification covers the requirements for flexible and semirigid waveguides with elliptical inside configuration.

GUIDE LOCATION: 4.1.2.3

DOCUMENT NUMBER: MIL-H-28845 FSC/AREA: 5965

TITLE: Handsets, Lightweight, General Specification For

PUBLICATION DATE: 10 August 1978

RELATED EFFORTS:

PURPOSE: This specification covers handsets intended for use in interior and exterior communication equipments.

GUIDE LOCATION: 4.6.3.4

DOCUMENT NUMBER: MIL-P-28846A FSC/AREA: 6130

TITLE: Power Supplies, Electronic, Modular, General Specification For

PUBLICATION DATE: 23 January 1981

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for electrical power supplies both repairable and nonrepairable.

GUIDE LOCATION: 4.7.1

DOCUMENT NUMBER: MIL-T-28849(2) FSC/AREA: 5820

TITLE: Transceiver, VHF/UHF

PUBLICATION DATE: 13 July 1979

RELATED EFFORTS:

PURPOSE: This specification covers a simplex portable/mobile transceiver designed to operate within the following frequency ranges and associated modulations:

A. 116 to 137 MHZ - Amplitude Modulation
B. 138 to 150.8 MHz - Frequency Modulation
C. 225 to 440 MHZ - Amplitude Modulation

GUIDE LOCATION: 4.2.1.3, 4.2.1.4

DOCUMENT NUMBER: MIL-C-28863(1) FSC/AREA: 5810

TITLE: Control Group, Communication Security, Integration And Housing Group Components

PUBLICATION DATE: 3 November 1981

RELATED EFFORTS:

PURPOSE: This specification covers the requirements and tests for production of the integration and housing group (IHG) components of the Communication Security Control Group (CSCG). The IHG consists of the basic shelf assemblies that provide interconnection and support of the CSCG equipment and is for both ship and shore use.

GUIDE LOCATION: 4.3

DOCUMENT NUMBER: MIL-A-28949(3) FSC/AREA: 5820

TITLE: Amplifier, Linear Power: Ultra High Frequency

PUBLICATION DATE: 17 December 1971

RELATED EFFORTS:

PURPOSE: This specification establishes the production requirements for one type of ultra high frequency (UHF), solid state, liner power amplifier intended for manpack, fixed site, or vehicular application.

GUIDE LOCATION: 4.2.1.4

DOCUMENT NUMBER: MIL-F-39000A FSC/AREA: 5985

TITLE: Flanges, Waveguide, Ridge, General Specification For

PUBLICATION DATE: 21 October 1977

RELATED EFFORTS:

PURPOSE: This specification covers the general requirement for ridge-waveguide flanges that are used to couple mechanically and electrically two sections of ridge-waveguides or ridge-waveguide units.

GUIDE LOCATION: 4.1.2.3

DOCUMENT NUMBER: MIL-C-39012C FSC/AREA: 5935

TITLE: Connectors, Coaxial, Radio Frequency; General Specification For

PUBLICATION DATE: 11 August 1982

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements and test for radio frequency connectors used with flexible RF cables and certain other types of coaxial transmission lines.

GUIDE LOCATION: 4.1.2.2

DOCUMENT NUMBER: MIL-D-39030B FSC/AREA: 5985

TITLE: Dummy Load, Electrical, Coaxial General Specification

PUBLICATION DATE: 26 June 1981

RELATED EFFORTS:

PURPOSE: This specification covers the qualification and general requirements for coaxial and stripline electrical dummy loads.

GUIDE LOCATION: 4.2.4.4

DOCUMENT NUMBER: MIL-C-49142 FSC/AREA: 5935

TITLE: Connector, Triaxial, Radio Frequency, General Specification For

PUBLICATION DATE: 10 January 1982

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements and tests for radio frequency (RF), Triaxial, Connectors.

GUIDE LOCATION: 4.1.2.2

DOCUMENT NUMBER: MIL-S-55041B FSC/AREA: 5985

TITLE: Switches, Waveguide General Specification

PUBLICATION DATE: 30 March 1976

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for waveguide switches, either manually or electromechanically operated, designed to connect and disconnect one or more waveguide sections to other waveguide sections.

GUIDE LOCATION: 4.1.2.3, 4.4.2

DOCUMENT NUMBER: MIL-A-55339A FSC/AREA: 5935

TITLE: Adapters, Connectors, Coaxial, Radio Frequency, General Specifications For

PUBLICATION DATE: 20 July 1982

RELATED EFFORTS:

PURPOSE: This specification covers between series and within series, radio frequency (RF), coaxial connector adapters.

GUIDE LOCATION: 4.1.2.2

DOCUMENT NUMBER: MIL-C-55427A FSC/AREA: 5995

TITLE: Cable Assembly, Radio Frequency, General Specification For

PUBLICATION DATE: 14 April 1978

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements and tests for the flexible and semirigid radio frequency cable assemblies. This specification is intended to cover assemblies manufactured with connectors qualified to MIL-C-39012 and cable qualified to MIL-C-17. These assemblies are primarily intended for use in general purpose electronic equipment.

GUIDE LOCATION: 4.1.2.2

DOCUMENT NUMBER: MIL-T-81490 FSC/AREA: 5985

TITLE: Transmission Lines, Transverse Electromagnetic Mode

PUBLICATION DATE: 21 September 1972

RELATED EFFORTS:

PURPOSE: This document covers the general requirements for transverse electromagnetic mode (TEM) transmission lines intended for use in airborne systems.

GUIDE LOCATION: 4.1.2.4

DOCUMENT NUMBER: MIL-H-83511 FSC/AREA: 5965

TITLE: Headset-Microphone And Headset-Electrical (Medium Noise Attenuation, Hearing Protective), General Specification For

PUBLICATION DATE: 4 April 1978

RELATED EFFORTS:

PURPOSE: This specification covers headsets and headset-microphone assemblies intended for use in medium ambient noise level environments of 85 to 105 dBA Sound Power Level (SPL).

GUIDE LOCATION: 4.6.3.4

DOCUMENT NUMBER: MIL-S-83739A FSC/AREA: 5985

TITLE: Switch, Antenna, Radio Frequency, Solid State, General Specification For

PUBLICATION DATE: 9 November 1975

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for solid state antenna switches for use at radio frequencies.

GUIDE LOCATION: 4.2.4.3, 4.4.2

DOCUMENT NUMBER: DoD-C-85045 FSC/AREA: 6015

TITLE: Cables, Fiber Optics, General Specification for (METRIC)

PUBLICATION DATE: 16 February 1978

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements and characteristics for cable(s) utilizing optical fibers for data transmission.

GUIDE LOCATION: 4.1.3, 4.2.1.7

DOCUMENT NUMBER: MIL-M-85139 FSC/AREA: 5821

TITLE : Multiplexer, Pulse-Code Modulation

PUBLICATION DATE: 19 September 1979

RELATED EFFORTS:

PURPOSE: This specification defines the performance and test requirements for a pulse-code modulation (PCM) multiplexer.

GUIDE LOCATION: 4.2.3

DOCUMENT NUMBER: MIL-A-87136 FSC/AREA: 5985

TITLE: Antenna, Airborne, General Specification For

PUBLICATION DATE: 9 January 1979

RELATED EFFORTS:

PURPOSE: This specification covers the general requirements for airborne antennas.

GUIDE LOCATION: 4.2.4.3

Review Activities:

Army - CR
Navy - AS, YD, OM
Marine Corps - MC

Custodians:

Army - SC
Navy - EC
Air Force - 90

Preparing Activity:

Navy - EC
(Project SLHC 2881)

APPENDIX A

MEMORANDUM FROM THE UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING, 16 AUGUST 1983

SUBJECT: MANDATORY USE OF MILITARY STANDARDS IN THE 188 SERIES

THE UNDER SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

RESEARCH AND
ENGINEERING

16 AUG 1983

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (INSTALLATIONS, LOGISTICS & FINANCIAL MANAGEMENT)
ASSISTANT SECRETARY OF THE NAVY (SHIPBUILDING & LOGISTICS)
ASSISTANT SECRETARY OF THE AIR FORCE (RESEARCH DEVELOPMENT & LOGISTICS)
COMMANDANT OF THE MARINE CORPS
DIRECTOR, DEFENSE COMMUNICATIONS AGENCY
DIRECTOR, NATIONAL SECURITY AGENCY

SUBJECT: Mandatory Use of Military Telecommunications Standards in the MIL-STD-188 Series

On May 10, 1977, Dr. Gerald Dinneen, then Assistant secretary of Defense($C^3$1), issued the following policy statement regarding the mandatory nature of the MIL-STD-188 series telecommunications standards:

“. ..standards as a general rule are now cited as 'approved for use’ rather than ‘mandatory for use' In the Department of Defense.

This deference to the judgment of the designing and procuring agencies is clearly appropriate to standards dealing with process, component ruggedness and reliability, paint finishes, and the like. It is clearly not appropriate to standards such as those in the MIL-STD-188 series which address telecommunication design parameters. These influence the functional integrity of telecommunication systems and their ability to efficiently interoperate with other functionally similar Government and commercial systems. Therefore, relevant military standards in the 188 series will continue to be mandatory for use within the Department o! Defense.

To minimize the probability of misapplication of these standards, It is incumbent upon the developers of the MIL-STD-188 series to insure that each standard is not only essential but of’ uniformly high quality, clear and concise as to application, and wherever possible compatible with existing or proposed national, international and Federal telecommunication standards. It is also incumbent upon the users of these standards to cite in their procurement specifications only those standards which are clearly necessary to the proper functioning of the device or systems over its projected lifetime."

This statement has been reviewed by this office and continues to be the policy of the Department of Defense.

APPENDIX B

MAJOR SERVICE-UNIQUE DOCUMENTS RELATED TO TELECOMMUNICATIONS STANDARDIZATION

APPENDIX B
LIST OF MAJOR DOCUMENTS RELATING TO STANDARDIZATION

DOCUMENT/DATE	DoD SUBJECT
DoD DIRECTIVE 4630.5 29 MAY 1967	Compatibility And Commonality OF Equipment For Tactical Command And Control, And Communications
DoD DIRECTIVE 4120.3 10 FEB 1979	Defense Standardization And Specification Program
DoD DIRECTIVE 2010.7 6 JUL 1981	Policy On Rationalization Of NATO And NATO Member Telecommunication Facilities
DoD DIRECTIVE 3222.3	DoD Electromagnetic Compatibility Program
DoD DIRECTIVE 4650.1	Management And Use Of Radio Frequency Spectrum
	AIR FORCE
TO 31W3-10-22 AUG 82	Telecommunications Engineering - Outside Plant Telephone
TO 31Z-10-22 MAR 80	Electrical Power Systems For Telecommunications Facilities
TO 31Z-10-21 FEB 80	Technical Control
TO 31W3-10-20 OCT 79	Digital Communications
TO 31Z-10-27	Engineering - Installation Fiber Optic Communications System
TO 312-10-28 APR 82	Cryptographic Systems (U)
TO 31Z-10-24 FEB 81	Timing And Synchronization Of Communications Systems
TO 31Z-10-19 OCT 79	C-E Facilities And Systems Air Traffic Control
TO 31Z-10-25 MAY 80	Digital Data Transmissions Error Projection
TO 31Z-10-26 MAY 81	Microwave Transmission From 10 To 40 Gigahertz

TO 31Z-10-2 JUL 81	Prevention And Elimination Of Interference To C-E Equipments
TO 31Z-10-30 15 NOV 82	Interconnecting Of SATCOMM Terminals To Terrestrial Systems
TO 31-10-14 DEC 79	Standard Installation Practice RF Connectors And Cables
TO 31W2-10-16 31 JAN 79	Inside Plant Telephone Installation Fundamentals
TO 31-10-24 29 SEP 78	Installation Practices: Communications Systems Grounding, Bonding, And Shielding
TO 31-10-32 JAN 81	Circular Metallic Waveguide
TO 3121-1-121 FEB 80	Digital System Operations Manual (DSOM) VOL I And II

ARMY

FM 11-486-1 JUN 78	Planning Considerations
FM 11-486-2 JAN 78	Telecommunications Engineering - Traffic
FM 11-486-3 FEB 78	Transmission And Circuit Layout
FM 11-486-5(J) AUG 82	Telecommunications Engineering - Outside Plant Telephone
FM 11-486-7(J) MAR 80	Electrical Power Systems For Telecommunications Facilities
FM 11-486-9 JUN 80	Army Telecommunications Automation Program (ATCAP)
FM 11-486-12(J) FEB 80	Technical Control
FM 11-486-13(J) OCT 79	Digital Communications
FM 11-486-16(J) APR 82	Cryptographic Systems (U)

FM 11-486-19 AUG 77	System Engineering And Project Implementation
FM 11-486-22(J) FEB 81	Timing And Synchronization Of Communications Systems
FM 11-486-23(J) OCT 79	C-E Facilities And Systems Air Traffic Control
FM 11-486-24(J) MAY 80	Digital Data Transmissions Error Protection
FM 11-486-25(J) MAY 81	Microwave Transmission From 10 To 40 Gigahertz
FM 11-486-31(J) JUL 81	Prevention And Elimination Of Interference To C-E Equipments
FM 11-486-33(J) 15 NOV 82	Interconnecting Of SATCOMM Terminals To Terrestrial Systems
FM 11-487-2/14(J) DEC 79	Standard Installation Practice RF Connectors And Cables
FM 11-487-3(J) 31 JAN 79	Inside Plant Telephone Installation Fundamentals
FM 11-487-4(J) 29 SEP 78	Installation Practices: Communications Systems Grounding, Bonding, And Shielding
FM 11-487-7(J) JAN 81	Circular Metallic Waveguide
FM 11-490-4(J) FEB 80	Digital System Operations Manual (DSOM) VOL I And II
FM 11-490-9 DEC 77	Grounding, Bonding, And Shielding
FM 11-490-11 1982	Digital Systems Operations Manual (DSOM) VOL I And II
TM 11-486-4 MAY 71	Elec. Communications Systems Engineering Inside Plant
TM 11-486-6 AUG 56	Elec. Communications System Engineering Radio

NAVY

SECNAVINST 4120.3D MAR 1980	Department Of Defense Standardization And Specification Program
SECNAVINST 5711.9A 23 DEC 1981	Policy On Rationalization Of NATO And NATO Members Telecommunications Facilities
NDWINST 5430.lA 29 OCT 1974	Material Support Of Shore Electronics; Guidance For
NAVMATINST 5711.70B 10 MAY 1977	NMC Partipation In Interfactional Standardization Conducted Within The North Atlantic Treaty Organization, Air Standardization Coordinating Committee (ASCC) And Through American-British-Canadian-Australian (ABCA) Quadripartite Standardization
NAVMATINST 2300.4B 29 MAR 1982	Communication Systems Standards Within The Naval Material Command
NAVELEXINST 5430.11 18 AUG 1970	Responsibility For EMR (Electro-magnetic Radiation) Hazard Problem; Assignment Of
NAVELEXINST 4120.12 18 SEP 1978	Specifications And Standards Application And Tailoring In Acquisition Documentation
NAVELEXINST 11000.1B 25 SEP 1978	The Base Electronic Systems Engineering Plan (BESEP); Policy And Procedures Concerning
NAVELEXINST 4120.3C 2 MAR 1981	Specifications, Standards, Handbooks And Commercial Item Description; Policy And Procedure For Preparation, Coordination And Implementation Of
OPNAVINST 2410.11G	Procedures And Requirements For Obtaining Frequency Allocations For The Development And Procurement Of Telecommunications Equipment
NAVMATINST 4720.lA	Approval For Service Use Of Systems Equipments And Conventional Weapons And Expendable Ordnance
NAVAIRINST 2410.1B	E^3 Control Within The Naval Air Systems Command, Policies, Responsibilities, Procedures And Requirements For

NAVAIRINST 4720.3A	Policy And Procedures For Approval For Service Use Of Systems, Equipment, Conventional Weapons And Expendable Ordnance
NAVELEXINST 5711.1A 11 JUN 1981	NAVELEX Participation In International Standardization Programs
NAVELEXINST 5420.10B 5 AUG 1981	NAVELEX Specification Control Board; Establishment Of And Procedures For
NAVELEXINST (Proposed)	Mandatory Use Of Communications System Technical Standards (MIL-STD-188 Series In Naval Electronic Systems Command
NAVELEXINST (Proposed)	NATO/Allied Standardization And Inter Operability In Command, Control And Communications System And Equipment In NAVELEXSYSCOM
NAVSEAINST 4120.3A 16 MAR 82	Defense Standardization And Specification Plan (DSSP) Within The Naval Sea Systems Command; Implementation Of Policy, Responsibility And Procedures For
NAVAIRINST 4120.lA 19 JAN 1976	Defense Standardization Program (DSP)
NAVAIRINST 4120.lB (proposed)	Policies, Procedures And Responsibilities For The Preparation Of Specifications And Standards For The Naval Air Systems Command
NAVFACINST 4120.6A 19 JAN 1976	Defense Standardization Program (DSP)
SECNAVINST 2410.1B	EMC Program Within The DON, Policy Direction
SECNAVINST 2400.2D	Management And Use Of Radio Frequency Spectrum With The DON
NAVELEX 0101, 102	Naval Communication Station Design
NAVELEX 0101, 103	HF Radio Propagation And Facility Site Selection
NAVELEX 0101, 104	HF Radio Antenna Systems
NAVELEX 0101, 105	Satellite Communication Systems

NAVELEX 0101, 106	Electromagnetic Compatibility And Electromagnetic Radiation Hazards
NAVELEX 0101, 108	Naval Shore Electronics Criteria, Naval Security Group Element
NAVFAC DM-3	Mechanical Engineering
NAVFAC DM-4.1	Preliminary Design Considerations
NAVFAC DM-4.2	Electric Power Distribution Systems
NAVFAC DM-4.4	Electric Utilization Systems
NAVFAC DM-4.5	400 Hz Generation And Distribution Systems, 30, 4160V
NAVFAC DM-4.6	Lightning And Cathodic Protection
NAVFAC DM-12.1	Electronic Facilities Engineering
NAVELEX 0969-LP-189-6010 MAR 80	Electrical Power Systems For Telecommunications Facilities
NAVELEX 0967-LP-626-6010 FEB 80	Technical Control
NAVELEX 0967-LP-625-4010 OCT 79	Digital Communications
NAVELEX 0969-LP-174-4010 MAY 80	Digital Data Transmissions Error Protection
NAVELEX 0969-LP-174-7010 MAY 81	Microwave Transmission From 10 To 40 Gigahertz
NAVELEX 0969-LP-174-5010 DEC 79	Standard Installation Practice RF Connectors And Cables
NAVELEX 0969-LP-189-5010 31 JAN 79	Inside Plant Telephone Installation Fundamentals
NAVELEX 0969-LP-189-7010 JAN 81	Circular Metallic Waveguide
NAVELEX 0967-LP-614-1010 FEB 80	Digital System Operations Manual (DSOM)

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APPENDIX C

STANDARD METHOD OF DESIGNATING RADIO EMISSIONS

(PREPARED By NAVAL EMS CENTER)

This self-study training aid for the standard method of designating radio emissions has been prepared by extracting information from various sections of the Radio Regulations, Geneva, 1979.

The first enclosure sets forth in step-by-step procedure how to convert to a new emission designator when the bandwidth, the type of modulation of the main carrier, nature of signal(s) modulating the main carrier and the type of information to be transmitted is known. It contains examples, in chart format (Tables IIa-V) of the new basic characteristic symbols and a chart (Table VI) which correlates those new emission symbols which have been agreed by the NTIA and FCC to the corresponding old designators.

The second enclosure contains the formulas for arriving at the necessary bandwidth (Tables VIIa-VIIl).

The third enclosure contains some examples of the old designators and their conversion to the new designators.

STANDARD METHOD OF DESIGNATING RADIO EMISSIONS

1. General. The International Telecommunication Union (ITU) at Its World Administrative Radio Conference, Geneva, 1979 adopted an international standard method of forming radio emission designators. This method is contained in the ITU Radio Regulations and was brought into use 01 January 1982. It supersedes the method contained in Section 07 NTP-4(B) and Annex A NTP-6. The instructions contained in the following paragraphs will be incorporated in a future revision of subject procedures.

2. Designation of Emissions. Emissions shall be designated according to their necessary bandwidth and their classification symbol as prescribed by the International Telecommunication Union.

3. Necessary Bandwidth. For a given class of emission, the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions.

a. The necessary bandwidth shall be added just before the classification symbols and shall be expressed by three numerals and one letter. The letter occupies the position of the decimal point and represents the unit of bandwidth. The first character shall be neither zero nor K, M, or G.

b. Necessary bandwidths are expressed as follows:

(1) between .001 and 999 Hz shall be expressed in Hz (letter H)
(2) between 1.00 and 999 kHz shall be expressed in kHz (letter K)
(3) between 1.00 and 999 MHz shall be expressed in MHz (letter M)
(4) between 1.00 and 999 GHz shall be expressed in GHz (letter G)

Examples:

0.002 Hz = H002	6.0 kHz = 6K00	1.25 MHZ = 1M25
0.1 Hz = H100	12.5 kHz = 12KS	2.0 MHz = 2M00
25.3 Hz = 25H3	180.4 kHz = 180K	10.0 MHz = 10M0
400.0 Hz = 400H	180.5 kHz = 181K	202.0 MHz = 202M
2.4 kHz = 2K40	180.7 kHz = 181K	5.65 GHz = 5G65

4. Classification. Emissions shall be classified and symbolized according to their basic characteristics. Optional characteristics may be used. Normally, only the basic characteristics are required.

5. Basic Characteristics. The basic characteristics are:

First symbol - type of modulation of the main carrier
Second symbol - nature of signal(s) modulating the main carrier
Third symbol - type of information to be transmitted

Modulation used only for short periods and for incidental purposes (such as, in many cases, for identification of calling) may be ignored, provided that the necessary bandwidth as indicated is not thereby increased.

a. First Symbol - Type of Modulation of the Main Carrier

(1)	Emission of an unmodulated carrier	N
(2)	Emission in which the main carrier is amplitude-modulated (including cases where sub-carriers are angle-modulated)	
	(a) Double-sideband	A
	(b) Single-sideband, full carrier	H
	(c) Single-sideband, reduced or variable level carrier	R
	(d) Single-sideband, suppressed carrier	J
	(e) Independent sidebands	B
	(f) Vestigial sideband	C
(3)	Emission in which the main carrier is angle-modulated	
	(a) Frequency modulation	F
	(b) Phase modulation	G
(4)	Emission in which the main carrier is amplitude and angle-modulated either simultaneously or in a pre-established sequence	D
(5)	Emission of pulses (emissions, where the main carrier is directly modulated by a signal which has been coded into quantized form (e.g., pulse code modulation), should be designated under a(2) or a(3) above.	
	(a) Sequence of unmodulated pulses	P
	(b) A sequence of pulses:	
	(1) Modulated in amplitude	K
	(2) Modulated in width/duration	L
	(3) Modulated in position/phase	M
	(4) In which the carrier is angle-modulated during the period of the phase	Q
	(5) Which is a combination of the foregoing or is produced by other means	V

(6) Cases not covered above, in which an emission consists of the main carrier modulated, either simultaneously or in a pre-established sequence, in a combination of two or more of the following modes: amplitude, angle, pulse	W
(7) Cases not otherwise covered	X

b. Second Symbol - Nature of Signal(s) Modulating the Main Carrier

(1) No modulating signal	0
(2) A single channel containing quantized or digital information without the use of a modulating sub-carrier (This excludes time-division multiplex)	1
(3) A single channel containing quantized or digital information with the use of a modulating sub-carrier (This excludes time-division multiplex)	2
(4) A single channel containing analog information	3
(S) Two or more channels containing quantized or digital information	7
(6) Two or more channels containing analog information	8
(7) Composite system with one or more channels containing quantized or digital information together with one or more channels containing analog information	9
(8) Cases not otherwise covered	X

c. Third Symbol - Type of Information to be Transmitted

(In this context the word "information" does not include information of a constant unvarying nature such as provided by standard frequency emissions, continuous wave and pulse radars, etc.)

(1) No information transmitted	N
(2) Telegraphy - for aural reception	A
(3) Telegraphy - for automatic reception	B
(4) Facsimile	C
(5) Data transmission, telemetry, telecommand	D
(6) Telephony (including sound broadcasting)	E
(7) Television (video)	F

(8) Combination of the above W

(9) Cases not otherwise covered X

6. Optional Characteristics. The optional additional characteristics, not normally required, are:

Fourth symbol - details of signal(s)
Fifth symbol - nature of multiplexing

a. Fourth Symbol - Details of Signal(s)

(1) Two-condition code with elements of differing numbers and/or durations A

(2) Two-condition code with elements of the same number and duration without error-correction B

(3) Two-condition code with elements of the same number and duration with error-correction C

(4) Four-condition code in which each condition represents a signal element (of one or more bits) D

(5) Multi-condition code in which each condition represents a signal element (of one or more bits) E

(6) Multi-condition code in which each condition or combination of conditions represents a character F

(7) Sound of broadcasting quality (monophonic) G

(8) Sound of broadcasting quality (stereophonic or or quadraphonic) H

(9) Sound of commercial quality (excluding categories given in (10) and (11) below) J

(l0) Sound of commercial quality with the use of frequency inversion or band-splitting K

(11) Sound of commercial quality with separate frequency-modulated signals to control the level of demodulated signal L

(12) Monochrome M

(13) Color N

(14) Combination of the above W

(15) Cases not otherwise covered X

b. Fifth Symbol - Nature of Multiplexing

(1) None	N
(2) Code-division multiplex (this includes bandwidth expansion techniques)	c
(3) Frequency-division multiplex	F
(4) Time-division multiplex	T
(5) Combination of frequency-division multiplex and time-division multiplex	w
(6) Other types of multiplexing	x

7. Classification Symbol Chart. Attached are charts which list the new classification symbols, and their definitions. These new symbols are effective 1 January 1982. Charts have been prepared for the conversion of the basic characteristics for amplitude modulation emissions (Tables IIa-d), frequency or phase modulation emissions (Tables IIIa and b), and pulse modulation emissions (Tables IVa and b). There is also a chart for "*Other Cases'* (Table V) for those transmissions which cannot be accommodated under amplitude modulation, frequency or phase modulation, or, pulse modulation. The old symbol is listed in the symbol column in parenthesis below the new symbol . New classification symbols which have been agreed to nationally are listed in Table VI. (Symbols for the conversion of the old A9(_), F9(_), and P9( ) emissions are not listed as they are to be converted on a case-by-case basis).

8. Necessary Bandwidth. For the full designation of an emission, the necessary bandwidth shall be added just before the classification symbols. When used, the necessary bandwidth shall be determined by one of the following methods:

Use of the formulas included in the following figures which also gives examples of necessary bandwidths and designation of corresponding emissions,

Computation in accordance with Recommendations of the International Radio Consultative Committee (CCIR),

Measurement, in cases not covered by the methods above.

However, the necessary bandwidth so determined is not the only characteristic of an emission to be considered in evaluating the interference that may be caused by that emission.

EMISSION DESIGNATORS - EFFECTIVE 1 JANUARY 1982

Symbol	First Symbol - Type of Modulation of the Main Carrier		Second Symbol - Nature of the Signal(s) Modulating the Main Carrier		Third Symbol - Type of Information to be Transmitted[1]	
NØN (A0)	Emission of an unmodulated carrier	N	No modulating signal	0	No information transmitted	N
	Emission in which the main carrier is amplitude-modulated (including cases where sub-carriers are angle-modulated)					
A1A (A1)	Double-sideband	A	A single channel containing quantized or digital information without the use of a modulating sub-carrier[2]	1	Telegraphy - for aural reception	A
A2A[3] (A2)	Double-sideband	A	A single channel containing quantized or digital information with the use of a modulating sub-carrier[2]	2	Telegraphy - for aural reception	A
A2D[4] (A2)	Double-sideband	A	A single channel containing quantized or digital information with the use of a modulating sub-carrier[2]	2	Data transmission, telemetry telecommand	D
R2B (A2A)	Single-sideband, reduced or variable level carrier	R	A single channel containing quantized or digital information with the use of a modulating sub-carrier[2]	2	Telegraphy - for automatic reception	B
B2B (A2B)	Independent sidebands	B	A single channel containing quantized or digital information with the use of a modulating sub-carrier[2]	2	Telegraphy - for automatic reception	B

Enclosure 1

Table IIa - Amplitude Modulation

EMISSION DESIGNATORS - EFFECTIVE 1 JANUARY 1982

Symbol	First Symbol - Type of Modulation of the Main Carrier		Second Symbol - Nature of the Signal(s) Modulating the Main Carrier		Third Symbol - Type of Information to be Transmitted[1]	
H2B (A2H)	Single-sideband, full carrier	H	A single channel containing quantized or digital information with the use of a modulating sub-carrier[2]	2	Telegraphy - for automatic reception	B
J2B (A2J)	Single-sideband, suppressed carrier	J	A single channel containing quantized or digital information with the use of a modulating sub-carrier[2]	2	Telegraphy - for automatic reception	B
A3E (A3)	Double-sideband	A	A single channel containing analog information	3	Telephony (including sound broadcasting)	E
R3E (A3A)	Single-sideband, reduced or level carrier	R	A single channel containing analog information	3	Telephony (including sound broadcasting)	E
B8E (A3B)	Independent sidebands	B	Two or more channels containing analog information	8	Telephony (including sound broadcasting)	E
H3E (A3H)	Single-sideband, full carrier	H	A single channel containing analog information	3	Telephony (including sound broadcasting)	E
J3E (A3J)	Single-sideband, suppressed carrier	J	A single channel containing analog information	3	Telephony (including sound broadcasting)	E
A3C (A4)	Double-sideband	A	A single channel containing analog information	3	Facsimile	C
R3C (A4A)	Single-sideband, reduced or variable level carrier	R	A single channel containing analog information	3	Facsimile	C

Enclosure 1

Table IIb - Amplitude Modulation

Symbol	First Symbol - Type of Modulation of the Main Carrier		Second Symbol - Nature of the Signal(s) Modulating the Main Carrier		Third Symbol - Type of Information to be Transmitted[1]	
J3C (A4J)	Single-sideband, suppressed carrier	J	A single channel containing analog information	3	Facsimile	C
A3F (A5)	Double-sideband	A	A single channel containing analog information	3	Television (video)	F
C3F (A5C)	Vestigial sideband	C	A single channel containing analog information	3	Television (video)	F
A7B (A6)	Double-sideband	A	A single channel containing quantized or digital information	7	Telegraphy - for automatic reception	B
A2B (A7)	Double-sideband	A	A single channel containing quantized or digital information with the use of a modulating sub-carrier[2]	2	Telegraphy - for automatic	B
B7B (A7B)	Independent sidebands	B	Two or more channels containing quantized or digital information	7	Telegraphy - for automatic reception	B
J7B[5] (A7J)	Single-sideband, suppressed carrier	J	Two or more channels containing quantized or digital information	7	Telegraphy - for automatic reception	B
J2B[6] (A7J)	Single-sideband, suppressed carrier	J	A single channel containing quantized or digital information with the use of a modulating sub carrier[2]	2	Telegraphy - for automatic reception	B
B7D[7] (A9B)	Independent sidebands	B	Two or more channels containing quantized or digital information	7	Data transmission, telemetry telecommand	D

Enclosure 1

Table IIc - Amplitude Modulation

EMISSION DESIGNATORS - EFFECTIVE 1 JANUARY 1982

Symbol	First Symbol - Type of Modulation of the Main Carrier		Second Symbol - Nature of the Signal(s) Modulating the Main Carrier		Third Symbol - Type of Information to be Transmitted[1]	
B9W[8] (A9B)	Independent sidebands	B	Composite system with one or more channels containing quantized or digital information, together with one or more channels containing analog information	9	Combination of telephony and data transmission	W
J7B[9] (A9B)	Single-sideband, suppressed carrier	J	Two or more channels containing quantized or digital information	7	Telegraphy - for automatic reception	B
AXX (A9)	Double-sideband	A	Cases not otherwise covered	X	Cases not otherwise covered	X

FOOTNOTES:

1. In this context, the word "information" does not include information of a constant, unvarying nature such as provided by standard frequency emissions, continuous wave, and pulse radars, etc.

2. This includes time-division multiplex

3. With STC = RLB or RLM

4. With STC ≠ RLB or RLM

5. With BDW greater than 1 kHz

6. With BDW 1 kHz or less

7. With 6 kHz BDW operation in the bands below 30 MHz allocated exclusively for Maritime Mobile Service (FC, MO).

8. With 6 kHz or greater BDW operation in the bands below 30 MHz allocated for the Fixed and Mobile Services and other than the bands allocated exclusively for the Maritime Mobile Services.

9. With less than 6 kHz BDW

Enclosure 1

Table IId - Amplitude Modulation

EMISSION DESIGNATORS - EFFECTIVE 1 JANUARY 1982

Symbol	First Symbol - Type of Modulation of the Main Carrier		Second Symbol - Nature of the Signal(s) Modulating the Main Carrier		Third Symbol - Type of Information to be Transmitted[1]	
	Emission in which the main carrier is angle-modulated					
F0N (F0)	Frequency modulation	F	No modulating signal	0	No information transmitted	N
F7B[3] (F1)	Frequency modulation	F	Two or more channels containing quantized or digital information	7	Telegraphy - for automatic reception	B
F1B[4] (F1)	Frequency modulation	F	A single channel containing quantized or digital information without the use of a modulating sub-carrier[2]	1	Telegraphy - for automatic reception	B
F2A[5] (F2)	Frequency modulation	F	A single channel containing quantized or digital information with the use of a modulating sub-carrier[2]	2	Telegraphy - for aural reception	A
F2D[6] (F2)	Frequency modulation	F	A single channel containing quantized or digital information with the use of a modulating sub-carrier[2]	2	Data transmission, telemetry telecommand	D
F1E[7] (F3)	Frequency modulation	F	A single channel containing quantized or digital information without the use of modulating sub-carrier[2]	1	Telephony (including sound broadcasting)	E
F3E[8] (F3)	Frequency modulation	F	A single channel containing analog information	3	Telephony (including sound broadcasting)	E
F3C (F4)	Frequency modulation	F	A single channel containing analog information	3	Facsimile	C

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Table IIIa - Frequency Modulation

EMISSION DESIGNATORS - EFFECTIVE 1 JANUARY 1982

Symbol	First Symbol - Type of Modulation of the Main Carrier		Second Symbol - Nature of the Signal(s) Modulating the Main Carrier		Third Symbol - Type of Information to be Transmitted[1]	
F3F (F5)	Frequency modulation	F	A single channel containing analog information	3	Television (video)	F
FXX (F9)	Frequency modulation	F	Case not otherwise covered	X	Cases not otherwise covered	X
G7W[9]	Phase modulation	G	Two or more channels containing quantized or digital information	7	Combination of the above	W

FOOTNOTES:

1. In this context the word "information" does not include information of a constant, unvarying nature such as provided by standard frequency emissions, continuous wave, and pulse radars, etc.

2. This excludes time-division multiplex

3. With BDW = 1.70 and/or 2.85 kHz

4. With BDW ≠ 1.70 and/or 2.85 kHz

5. With STC = RLB or RLM

6. With STC ≠ RLB or RLM

7. With assignments which include operations utilizing digitized voice techniques.

8. Other than assignments which includes operations utilizing digitized voice techniques.

9. Assignments for space projects DSCS II Stage IB, DCSC II Stage IBa, DSCS II Stage IC, DSCS II Stage ICa, and support of NATO Phase III-B satellites.

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Table IIIb - Frequency Modulation

EMISSION DESIGNATORS - EFFECTIVE 1 JANUARY 1982

Symbol	First Symbol - Type of Modulation of the Main Carrier		Second Symbol - Nature of the Signal(s) Modulating the Main Carrier		Third Symbol - Type of Information to be Transmitted[1]	
PON (PO)	Emissions of pulses[3] A sequence of unmodulated pulses	P	No modulating signal	0	No information transmitted	N
P1B (P1)	A sequence of unmodulated pulses	P	A single channel containing quantized or digital information without the use of a modulating sub-carrier[2]	1	Telegraphy - for automatic reception	B
K1A (P1D)	A sequence of pulses modulated in amplitude	K	A single channel containing quantized or digital information without the use of a modulating sub-carrier[2]	1	Telegraphy - for aural reception	A
P2D (P2)	A sequence of unmodulated pulses	P	A single channel containing quantized or digital information with the use of a modulating sub-carrier[2]	2	Data transmission, telemetry telecommand	D
L2A (P2E)	A sequence of pulses modulated in width/ duration	L	A single channel containing quantized or digital information with the use of a modulating sub-carrier[2]	2	Telegraphy - for aural reception	A
M2A (P2F)	A sequence of pulses modulated in position/ phase	M	A single channel containing quantized or digital information with the use of a modulating sub-carrier[2]	2	Telegraphy - for aural reception	A
K3E (P3)	A sequence of pulses modulated in amplitude	K	A single channel containing analog information	3	Telegraphy (including sound broadcasting)	E
M3E (P3F)	A sequence of pulses modulated in position/ phase	M	A single channel containing analog information	3	Telegraphy (including sound broadcasting)	E

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Table IVa - Pulse Modulation

Symbol	First Symbol - Type of Modulation of the Main Carrier		Second Symbol - Nature of the Signal(s) Modulating the Main Carrier		Third Symbol - Type of Information to be Transmitted[1]	
P7B (P6)	A sequence of unmodulated pulses	P	Two or more channels containing quantized or digital information	7	Telegraphy - for automatic reception	B
KXX (P9)	A sequence of pulses modulated in amplitude	K	Cases not otherwise covered	X	Cases not otherwise covered	X
MXX (P9)	A sequence of pulses modulated in position/ phase	M	Cases not otherwise covered	X	Cases not otherwise covered	X
PXX (P9)	A sequence of unmodulated pulses	P	Cases not otherwise covered	X	Cases not otherwise covered	X

FOOTNOTES:

1. In this context the word "information" does not include information of a constant, unvarying nature such as provided by standard frequency emissions, continuous wave, and pulse radars, etc.

2. This excludes time-division multiplex.

3. Emissions, where the main carrier is directly modulated by a signal which has been coded into quantized form (e.g., pulse code modulation), should be designated under amplitude or angle-modulated emission.

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Table IVb - Pulse Modulation

EMISSION DESIGNATORS - EFFECTIVE 1 JANUARY 1982

Symbol	First Symbol - Type of Modulation of the Main Carrier	Second Symbol - Nature of the Signal(s) Modulating the Main Carrier	Third Symbol - Type of Information to be Transmitted[1]
WXX	Cases not covered under amplitude-modulated, angle-modulated, or pulse modulated emissions in which an emission consists of the main carrier modulated, either simultaneously or in a pre-established sequence, in a combination of two or more of the following modes: amplitude, angle, pulse — W	Cases not otherwise covered — X	Cases not otherwise covered — X
XXX	Cases not otherwise covered — X	Cases not otherwise covered — X	Cases not otherwise covered — X

FOOTNOTES:

1. In this context the word "information" does not include information of a constant, unvarying nature such as provided by standard frequency emissions, continuous wave, and pulse radar, etc.

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Table V - Other Cases

RADIO EMISSION DESIGNATORS - CLASSIFICATION SYMBOLS

NTIA-FCC AGREED

Old Symbol	New Symbol*
A0	NON
A1	A1A
A2 with STC = RLB or RLM	A2A
A2 with STC ≠ RLB or RLM	A2D
A2A	R2B
A2B	B2B
A2H	H2B
A2J	J2B
A3	A3E
A3A	R3E
A3B	B8E
A3H	H3E
A3J	J3E
A4	A3C
A4A	R3C
A4J	J3C
A5	A3F
A5C	C3F
A6	A7B
A7	A2B
A7B	B7B
A7J with BDW greater than 1 kHz	J7B
A7J with BDW 1 kHz or less	J2B

Old Symbol	New Symbol*
F0	F0N
F1 with BDW = 1.70 and/or 2.85 kHz	F7B
F1 with BDW ≠ 1.70 and/or 2.85 kHz	F1B
F2 with STC = RLB or RLM	F2A
F2 with STC ≠ RLB or RLM	F2D
F3 with NTS = S363	F1E
F3 with NTS ≠ S363	F3E
F4	F3C
F5	F3F
P0	P0N
P1	P1B
P1D	K1A
P2	P2D
P2D	P2D
P2E	L2A
P2F	M2A
P3	K3E
P3D	K3E
P3F	M3E
P6	P7B

*Effective 1 January 1982; does not include A9(_), F9(_) or P9 (_) emissions.

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Table VI - Classification Symbols

In the formulation of Tables VIIa through VII1, the following terms have been employed:

B_n = Necessary bandwidth in hertz

B = Modulation rate in bauds

N = Maximum possible number of black plus white elements to be transmitted per second, in facsimile

M = Maximum modulation frequency in hertz

c = Sub-carrier frequency in hertz

D = Peak deviation, that is, half the difference between the maximum and minimum values of the instantaneous frequency. The instantaneous frequency in hertz is the time rate of change in phase in radians divided by 2

t = Pulse duration in seconds at half amplitude

t_r = Pulse rise time in seconds between 10 percent and 90 percent amplitude

K = An overall numerical factor which varies according to the emission and which depends upon the allowable signal distortion

N_c = Number of baseband channels in radio systems employing multichannel multiplexing

f_P = Continuity pilot subcarrier frequency (Hz) (continuous signal utilized to verify performance of frequency division multiplex systems).

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Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
I. NO MODULATING SIGNAL			
Continuous wave emission	---	---	NONE
II. AMPLITUDE MODULATION			
1. Signal with Quantized or Digital Information			
Continuous wave telegraphy, Morse code	B = BK K = 5 for fading circuits K = 3 for non-fading circuits	25 words per minute: B = 20, K = 5 Bandwidth: 100 Hz	100HA1MN
Telegraphy by on-off keying of a tone modulated carrier, Morse code	B = BK + 2M K = 5 for fading circuits K = 3 for non-fading circuits	25 words per minute: B = 20, M = 1,000 K = 5 Bandwidth: 2,100 Hz = 2.1 kHz	2K1OA2AAN
Selective calling signal using sequential single frequency code, single-sideband full carrier	B_n = M	Maximum code frequency is: 2,110 Hz M = 2,110 Bandwidth: 2,110 Hz = 2.11 kHz	2K11H2BFN
Direct-printing telegraphy using a frequency shifted modulating sub-carrier, with error-correction, single-sideband, suppressed carrier (single channel)	$B_n = \frac{2M + 2DK}{B}$ M = 7	B = 50 D = 35 Hz (70 Hz shift) K = 1.2 Bandwidth: 134 Hz	134HJ2BCN

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Table VIIa - Necessary Bandwidth

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
Telegraphy, mnulti-channel with voice frequency, error-correction, some channels are time division multiplexed, single-sideband, reduced carrier	B = highest contral frequency + M + D K M = B / 2	15 channels; highest central frequency is: 2,805 Hz B = 100 D = 42.5 Hz (85 Hz shift) K = 007 Bandwidth: 2,885 Hz = 2.885 kHz	2K89R7BCW
2. Telephony (Commercial Quality)			
Telephony, double-sideband (single channel)	B_n = 2M	M = 3,000 Bandwidth: 6,000 Hz = 6 kHz	6KOOA3EJN
Telephony, single-sideband, full carrier (single channel)	B_n = M	M = 3,000 Bandwidth: 3,000 Hz = 3 kHz	3K00H3EJN
Telephony, single-sideband, suppressed carrier (single channel) 2K70J3EJN	B = M - lowest modulation frequency	M = 3,000 lowest modulation frequency is 300 Hz Bandwidth: 2,700 Hz = 2.7 kHz	
Telephony with separate frequency modulated signal to control the level of de-modulated speech signal, single-sideband, reduced carrier, (Lincompex) (single channel)	B_n = M	Maximum control frequency is 2,990 Hz M = 2,990 Bandwidth: 2,990 Hz = 2.99 kHz	2K99R3ELN

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Table VIIb - Necessary Bandwidth

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
Telephony with privacy, single-sideband, suppressed carrier (two or more channels)	B = N M - lowest modulation frequency in the lowest channel	N = 2 M[c] = 3,000 lowest modulation frequency is 250 Hz Bandwidth: 5,750 Hz = 5.75 kHz	5K75J8EKF
Telephony Independent sideband (two or more channels)	B = sum of M for each sideband	Two channels M = 3,000 Bandwidth: 6,000 Hz = 6 kHz	6KOOB8EJN
3. Sound Broadcasting			
Sound broadcasting double-sideband	B = 2M M[n] may vary between 4,000 and 10,000 depending on the quality desired	Speech and music, M = 4,000 Bandwidth: 8,000 Hz = 8 kHz	8KOOA3EGN
Sound broadcasting, single-sideband, reduced carrier (single channel)	B = M M[n] may vary between 4,000 and 10,000 depending on the quality desired	Speech and music, M = 4,000 Bandwidth: 4,000 Hz = 4 kHz	4KOOR3EGN
Sound broadcasting, single-sideband, suppressed carrier	B = M - lowest modulation frequency	Speech and music, M = 4,500 lowest modulation frequency = 50 Hz; Bandwidth: 4,450 Hz = 4.45 kHz	4K45J3EGN

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Table VIIc - Necessary Bandwidth

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
4. Television			
Television, vision, and sound	Refer to relevant CCIR documents for the bandwidths of the commonly used television systems	Number of lines = 625; Nominal video bandwidth: 5 MHz Sound carrier relative to videocarrier = 5.5 MHz; Total vision Bandwidth: 6.25 MHz; FM sound bandwidth including guardbands: 750 kHz RF channel bandwidth: 7 MHz	6M25C3F-- 750KF3EGN
5. Facsimile			
Analog facsimile by sub-carrier frequency modulation of a single-sideband emission with reduced carrier, monochrome	B_n = C + N + D K / 2 K= 1.1 (typically)	N = 1,100 corresponding to an index of cooperation of 352 and a cycler rotation speed of 60 rpm. Index of co-operation is the product of the drum diameter and number of lines per unit of length. C = 1,900 D = 400 Hz Bandwidth: 2,890 Hz = 2.89 kHz	2K89R3CMN
Analog facsimile; frequency modulation of an audio frequency sub-carrier which modulates the main carrier, single-sideband suppressed carrier	B_n = 2M + 2DK M = N / 2 K= 1.1 (typically)	N = 1,100 D = 400 Hz Bandwidth: 1,980 Hz = 1.98 kHz	lK98J3C--

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Table VIId - Necessary Bandwidth

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
6. Composite Emissions			
Double-sideband, television relay	$B_n = 2C + 2M + 2D$	Video limited to 5 MHz, audio on 6.5 MHz frequency modulated sub-carrier, sub-carrier deviation = 50 kHz: $C = 6.5 \times 10^6$ $D = 50 \times 10^3$ Hz M = 15,000 Bandwidth: 13.13×10^6 Hz = 13.13 MHz	13MlA8W--
Double-sideband radio-relay system, Frequency division multiplex	$B_n = 2M$	10 voice channels occupying baseband between 1 kHz and 164 kHz; M = 164,000 Bandwidth: 328,000 Hz = 328 kHz	328KA8E
Double-sideband emission of VOR with voice (VOR = VHF omnidirectional radio range)	$B_n = 2C_{max} + 2M + 2DK$ K = l (typically)	The main carrier is modulated by: - a 30 Hz sub-carrier - a carrier resulting from a 9,960 Hz tone frequency modulated by a 30 Hz tone - a telephone channel - a 1,020 Hz keyed tone for continual Morse identification C_{max} = 9,960 M = 30 D = 480 Hz Bandwidth: 20,940 Hz = 20.94 kHz	20K9A9WWF

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Table VIIe - Necessary Bandwidth

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
Independent sidebands; several telegraph channels with error-correction together with several telephone channels with privacy; frequency division multiplex	B_n = sum of M for each sideband	Normally composite systems are operated in accordance with standardized channel arrangements (e.g., CCIR- Rec. 348-2). 3 telephone channels and 15 telegraphy channels require the bandwidth 12,000 Hz = 12 kHz	12KOB9WWF
III-A. FREQUENCY MODULATION			
1. Signal with Quantized or Digital Information			
Telegraphy without error-correction single channel)	B_n = 2M + 2DK M = B/2 K = 1.2 (typically)	B = 100 D = 85 Hz (170 Hz shift) Bandwidth: 304 Hz	304HF1BBN
Telegraphy, narrow-band direct-printing with error-correction ‘single channel)	B_n = 2M + 2DK M = B/2 K = 1.2 (typically)	B = 100 D = 85 Hz (170 Hz shift) Bandwidth: 304 Hz	304HFlBCN
Selective calling signal	B_n = 2M + 2DK M = B/2 K = 1.2 (typically)	B = 100 D = 85 Hz (170 Hz shift) Bandwidth: 304 Hz	304HF1BCP
Four-frequency duplex telegraphy	B_n = 2M + 2DK B = Modulation rate in bauds of the faster channel. If the channels are synchronized: M = B/2 (otherwise M=2B) K = 1.1 (typically)	Spacing between adjacent frequencies = 400 Hz; Synchronized channels B = 100 M = 50 D = 600 Hz Bandwidth: 1,420 Hz = 1.42 kHz	1K42F7BDI

Table VIIf - Necessary Bandwidth

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
20 Telephony (Commercial Quality)			
Commercial telephony	B_n = 2M + 2DK K = l (typically, but under certain conditions a higher value may be necessary)	For an average case of commercial telephony, D = 5,000 Hz M = 3,000 Bandwidth: 16,000 Hz = 16 kHz	16K0F3EJN
3. Sound Broadcasting			
Sound broadcasting	B_n = 2M + 2DK K = l (typically)	Monaural D = 75,000 Hz M = 15,000 Bandwidth: 180,000 Hz = 180 kHz	180KF3EGN
4. Facsimile			
Facsimile by direct frequency modulation of the carrier; black and white	B_n = 2M + 2DK M = N/2 K = 1.1 (typically)	N = 1,100 elements/see; D = 400 Hz Bandwidth: 1,980 Hz = 1.98 kHz	lK98FlC--
Analog facsimile	B_n = 2M + 2DK M = N/2 K= 1.1 (typically)	N = 1,100 elements/see; D = 400 Hz Bandwidth: 1,980 Hz = 1.98 kHz	lK98F3C--

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Table VIIg - Necessary Bandwidth

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
5. Composite Emissions (see Table III-B)			
Radio-relay system, frequency division multiplex	$B_n = 2f_p + 2DK$ K = l (typically)	60 telephone channels occupying baseband between 60 kHz; rms per-channel deviation: 200 kHz; continuity pilot at 331 kHz produces 100 kHz rms deviation of main carrier. $D = 200X10^3 X37.6 \times 2.02 = 1.52 X_6 10^6$ Hz; $f_p = 0.331 \times 10_6$ Hz; Bandwidth: $3.702 \times 10_6$ Hz = 3.702 MHz	3A70F8EJF
Radio-relay system; frequency division multiplex	$B_n = 2M + 2DK$ K = l (typically)	960 telephone channels occupying baseband between 60 kHz and 4,028 kHz; rms per-channel deviation: 200 kHz; continuity pilot at 4,715 kHz produces 140 kHz rms deviaiton of main carrier. $D = 200 \times 10^3 \times 3.76 \times 5.5 = 4.13 X_6 10^6$ Hz; $M = 4.028 \times 10_6$; $f_p = 4.715 \times 10^6$; $(2M + 2DK) > 2f_p$ Bandwidth: $16.32 \times 10_6$ Hz = 16.32 MHz	16M3F8EJF

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Table VIIh - Necessary Bandwidth

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
Radio-relay system; frequency division mulitplex	$B_n = 2f_p$	600 telephone channels occupying baseband between 60 kHz and 2,540 kHz; rms per-channel deviation: 200 kHz continuity pilot at 8,500 kHz produces 140 kHz rms deviation of main carr$_3$er. $D = 200 \times 10^3 \times 3.76$ $\times 4.36 = 3.28_6 \times 10^6$ Hz; $M = 2.54 \times 10^6$ $K = l$ $f_p = 8.5 \times 10^6$ $(2M+ 2DK) < 2f_p$ Bandwid$_6$h: 17×10^6 Hz = 17 MHz	17MOF8EJF
Stereophonic sound broadcasting with multiplexed subsidiary telephony sub-carrier	$B = 2M + 2DK$ $K^n = 1$ (typically)	Pilot tone system; M = 75,000 D = 75,000 Hz Bandwidth: 300,000 Hz = 300 kHz	300KF8EHF

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Table VIIi - Necessary Bandwidth

III B. MULTIPLYING FACTORS FOR USE IN COMPUTING D, PEAK FREQUENCY DEVIATION, IN FM FREQUENCY DIVISION MULTIPLEX (FM/FDM) MULTI-CHANNEL EMISSIONS

For FM/FDM systems the necessary bandwidth is:

$$B_n = 2M + 2DK$$

The value of D, or peak frequency deviation, in these formulae for B_n is calculated by multiplying the rms value of per-channel deviation by the appropriate "*Multiplying factor" shown below.

In the case where a continuity pilot of frequency f exists above the maximum modulation frequency, M, the general formula becomes:

$$B_n = 2f_p + 2DK$$

In the case where the modulation index of the main carrier produced by the pilot is less than 0.25, and rms frequency deviation of the main carrier produced by the pilot is less than or equal to 70% of the rms value of per-channel deviaiton, the general formula becomes either

$$B_n = 2f_p \text{ or } B_n = 2M + 2DK$$

whichever is greater.

Number of telephone channels N_c	Multiplying Factor[1] (peak factor) x antilog	Multiplying Factor[1] value in dB above modulation reference level / 20
$3 < N_c < 12$	4.47 x antilog	a value in dB specified by the equipment manufacturer or station licensee, subject to administration approval / 20
$12 < N_c < 60$	3.76 x antilog	$2.6 + 2 \log N_c$ / 20

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Table VIIj - Necessary Bandwidth

[1] In the above chart the multipliers 3.76 and 4.47 correspond to peak factors of 11.5 dB and 13.0 dB, respectively

Multiplying Factor[1]		
Number of telephone channels N_c	(peak factor) x antilog	value in dB above modulation reference level / 20
$60 \leq N_c < 240$	3.76 x antilog	$\frac{-1 + 4 \log N_c}{20}$
$N_c \geq 240$	3.76 x antilog	$\frac{-15 + 10 \log N_c}{20}$

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Table VIIk - Necessary Bandwidth

[1] In the chart above the multiplier 3.76 corresponds to a peak factor of 11.5dB

Description of Emission	Necessary Bandwidth		Designation of Emission
	Formula	Sample Calculation	
IV. PULSE MODULATION			
1. Radar			
Unmodulated pulse emission	$B_n = \frac{2K}{t}$ K depends upon the ratio of pulse duration to pulse rise time. Its value usually falls between 1 and 10 and in many cases it does not need to exceed 6	Primary Radar Range resolution: 150m K = 1.5 (triangular pulse where t = t_r, only components down to 27 dB from the strongest are considered) Then $t = \frac{2 \text{ (range resolution)}}{\text{velocity of light}} = \frac{2 \times 150}{3 \times 10^8} K = 1 \times 10^{-6}$ seconds Bandwidth: 3×10^6 HZ = 3 MHz	3MOOPONAN
2. Composite Emissions			
Radio-relay system	$B_n = \frac{2K}{t}$ K= 1.6	Pulse position modulated by 36 voice channel baseband; pulse width at half amplitude = 0.4 *s.* Bandwidth: 8 *X* 10^6 Hz = 8 MHz (Bandwidth independent of the number of voice channels)	8MOOM7EJT

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Table VII1 - Necessary Bandwidth

EXAMPLES OF NEW EMISSION DESIGNATORS

A. Below 30 MHz

OLD DESIGNATOR	NEW DESIGNATOR	USE
.00A0	NON	Unmodulated carrier
0.10A1	100HA1A	CW Morse code - for aural reception
2.04A2	2K04A2D	Nondirectional beacons and radiolocation (i.e., Raydist)
6.00A3B	6K00B8E	ISB, voice (1)
2.80A3J	2K80J3E	SSB, suppressed carrier, voice
3.00A3J	3K00J3E	SSB, suppressed carrier, voice
2.80A3H	2K80H3E	SSB, full carrier, voice
1.70A7J	1K70J7B	SSB, suppressed carrier telegraphy (2)
3000A7J	3K00J7B	SSB, suppressed carrier telegraphy (3)
6A9B	6K00B9W	XSB, simultaneous voice and data
	6K00B7D	ISB, data
.28F1	280HF1B	Narrowband direct printing
.30F1	300HF1B	Narrowband direct printing
.60F1	600HF1B	Single channel data
1.08F1	1K08F1B	Single channel data
1.24F1	1K24F1B	Single channel data
4.00F4	4K00F3C	Facsimile

(1) Two independent sidebands 3 kHz voice channels

(2) SSB suppressed carrier, amplitude modulated emission authorized for multichannel operation for channels One through Eight of the Navy Tactical multichannel VFCT System

(3) SSB, suppressed carrier 100WPM 16 channels SSB RATT. (Authorized only for multichannel RATT)

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EXAMPLES OF NEW EMISSION DESIGNATORS

B. Above 30 MHz

OLD DESIGNATOR	NEw DESIGNATOR	USE
00A0	NON	Unmodulated carrier
.10A1	100HA1A	CW Morse code - for aural reception
2.04A2	2K04A2A	Non-directional beacon
6.00A3	6KOOA3E	DSB, voice
3A3J	3KOOJ3E	SSB, suppressed carrier, voice
3A7J	3KOOJ7B	SSB, suppressed carrier, telegraphy (1)
M5.75A5C	5M75C3F	Television (video)
30F3	30KOF3E	Telephony (FM)
36F3	36KOF3E	Telephony (FM)
M6F5	6MOOF3F	Television (video)
70P0	70KOPON	A radiolocation mobile station (MR)
350P0	350KPON	A radiolocation land station (LR)
MIPO	IM00PON	A radiolocation land station (LR)
37.50P2	37K5P2D	Unmodulated pulses, data, telemetry
M8.00P9	8M00PXX	A radiolocation mobile station (MR)
500.00P9D	500KKXX	Experimental system (XT)
M5.00P9F	5M00MXX	A radionavigation land station (RL)

(1) A single-sideband suppressed carrier amplitude modulated emission authorized only for multichannel RATT.

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APPENDIX D

INTERFACE STANDARDS

APPENDIX D
INTERFACE STANDARDS

10.1 SCOPE

The purpose of this section of the guide is to provide a listing of standardization documents which address telecommunications related interfaces. To clarify this purpose, the definition of "Interface" as specified in FED STD-1037 is provided below:

> INTERFACE. 1. A shared boundary; for example, the boundary between two subsystems or two devices. (GSA) 2. A boundary or point common to two or q ore similar or dissimilar command and control systems, subsystems, or other entities against which or at which necessary information flow takes place. (JCS1) 3. A boundary or point common to two or more systems or other entities across which useful information flow takes place. (It is implied that useful information flow requires the definition of the interconnection of the systems which enables them to interoperate.) 4. A concept involving the definition of the interconnection between two equipments or systems. The definition includes the type, quantity, and function of the interconnecting circuits and the type and form of signals to be interchanged via those circuits. Mechanical details of plugs, sockets, and pin numbers, etc., may be included within the context of the definition. 5. The process of interrelating two or more dissimilar circuits or systems. See also: COMMONALITY; HIGH-LEVEL DIGITAL INTERFACE.

The standards listed here-in cover several aspects of interfaces, namely: electrical, mechanical, and functional characteristics. Additionally, several interface standards address the protocols involved with the communications employing the interface. The definition of protocol as specified in FED-STD-1037 is provided below:

> PROTOCOL. A set of unique rules specifing a sequence of actions necessary to perform a function such as establishing a connection between telephones or exchanging messages between data terminals. NOTE: Protocols may govern portions of a network, types of service, or administrative procedures. For example, a data link protocol is the specification of methods whereby data communication over a data link is performed in terms of the particular transmission mode, control procedures, and recovery procedures. (NCS) See also: LINK; NETWORK.

This guide does not include standardization documents which address only protocols that are transparent to the interface employed. Rather, this section is restricted in scope to those documents which primarily address telecommunications interfaces.

NOTE: Data Bus standards have been included in this section. The definition of "Bus" as specified in FED-STD-1037 is as follows:

BUS. One or more conductors that serve as a commom connection for a related group of devices.

This definition is congruent with the definition of Interface provided above.

Often, there is a need to interconnect two equipments whose interface connections have been designed in accordance with different interface standards. This difference does not necessarily preclude interconnection. Many interface standards incorporate characteristics similar to those of other standards. The Interface Standards Compatibility Matrix provided herein illustrates the interoperability potential of several selected interface standards.

The Matrix is not all-inclusive, but rather, is limited to more popular standards with related characteristics. Synopses of the documents in the matrix may be found in Section 5 of the guide.

The documents listed as "Other Military Interface Standards of Interest" at the bottom of the matrix, have no identifiable technical compatibility with the matrix documents; however, they provide interface guidance on their respective specific subjects. These documents too, are synopsized in Section 5.

20. INTERFACE STANDARDS COMPATIBILITY MATRIX

20.1 Matrix instructions

The letters/numbers appearing at the intersections of the horizontal and vertical standards columns direct the reader to amplifying information . which relates to the compatibility of the two documents under examination. Letters in parenthesis () indicate that the information does not directly address either of the documents in question but relates to their interoperability by virtue of derivation. Blank spaces indicate no identifiable compatibility features. The matrix itself is located at the end of this appendix and is preceded by the amplifying information corresponding to each letter/number.

AMPLIFYING INFORMATION FOR MATRIX LETTER CODES

A. MIL-STD-188-114 has superseded MIL-STD-188C and MIL-STD-188-100 for the standardization of digital interface circuits. It covers both balanced and unbalanced operation. For interoperation of MIL-STD-188-114 equipment with equipments designed to the older MIL-STD-188C and MIL-STD-188-100 standards see below.

1. MIL-STD-188-114 UNB. with MIL-STD-188-100 UNB or MIL-STD-188C (See Figure 2)

   a. Change in signal sense is required.
   b. Possible reconfiguration of signal common returns is required.

2. MIL-STD-188-114 BAL with MIL-STD-188-100 UNB or MIL-STD-188C (See Figure 3)

   a. Signal leads must be configured for correct signal sense.
   b. Waveshaping must be added to output of BAL generator.

For interoperation of 188-114 balanced (BAL) equipments with 188-114 unbalanced (UNB) equipments, the following provisions apply (See Figure 4):

   a. Distance between equipments limited to performance of UNB circuits.
   b. Input leads to UNB receivers must be configured to allow connection to BAL generators.
   c. Optional cable termination must be removed from BAL receivers.
   d. Input leads to BAL receivers must be configured to allow connection with common return for operation with UNB generators.

B. This FED-STD adopts the noted EIA Standard. The reader is directed to use the electrical characteristics of MIL-STD-188-114 for DoD applications, when required.

C. This standard pertains to packet-switched telecommunications and addresses three elements (1) physical level, (2) link level and (3) packet level. Electrical, functional and mechanical characteristics are features of the physical level.

D. Although superseded for the electrical characteristics in DoD applications by MIL-STD-188-114, this standard is widely employed for the physical characteristics of unbalanced interfaces requiring 25 (or less) pins of physical connection. Signal quality for synchronous operation is established by RS-334A. Signal quality for non-synchronous start-stop operation is established in RS-404.

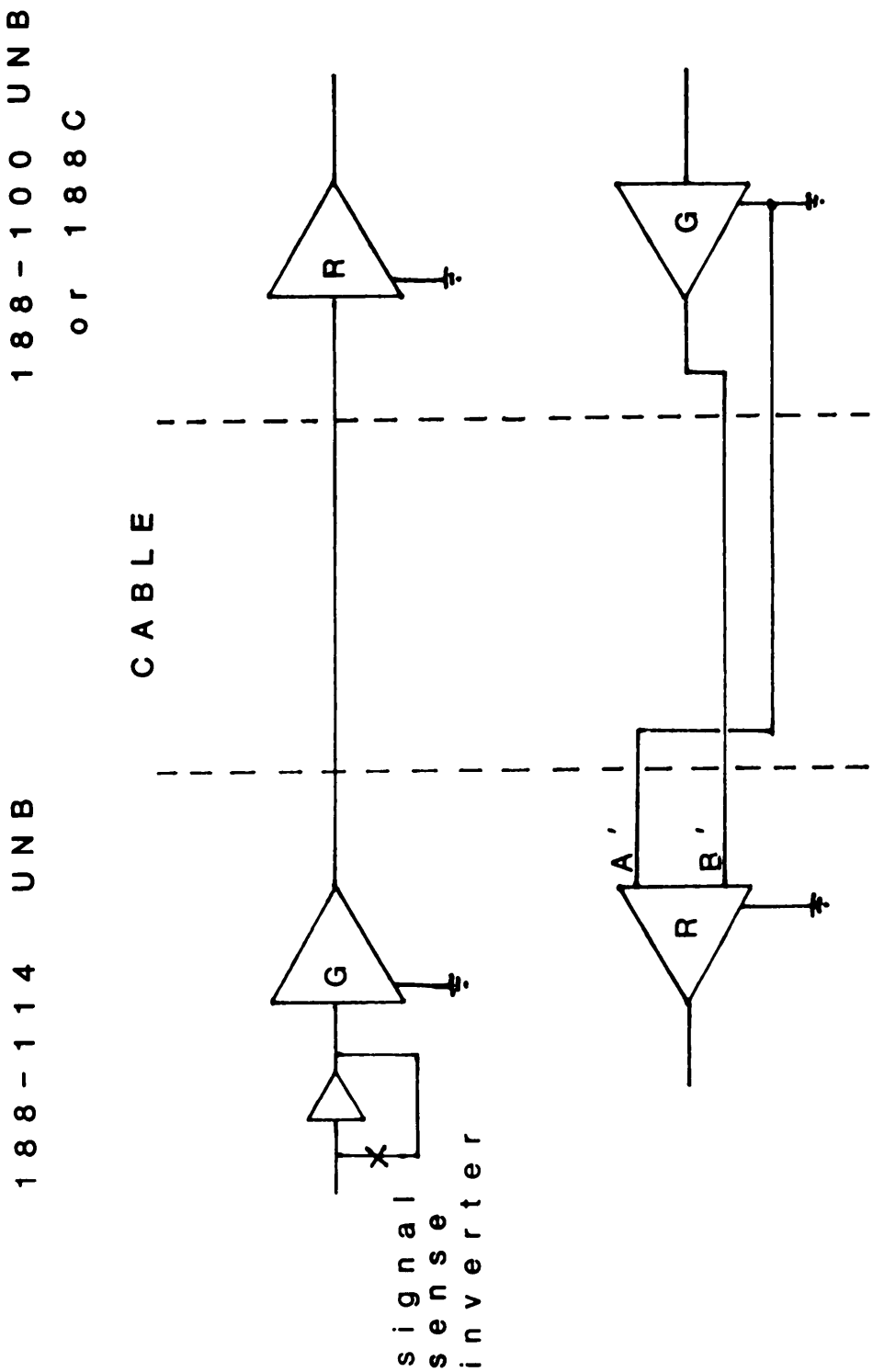

Figure 2. Interconnection of MIL-STD-188-114 UNB Interface With MIL-STD-188-100 UNB or MIL-STD-188C Interfaces

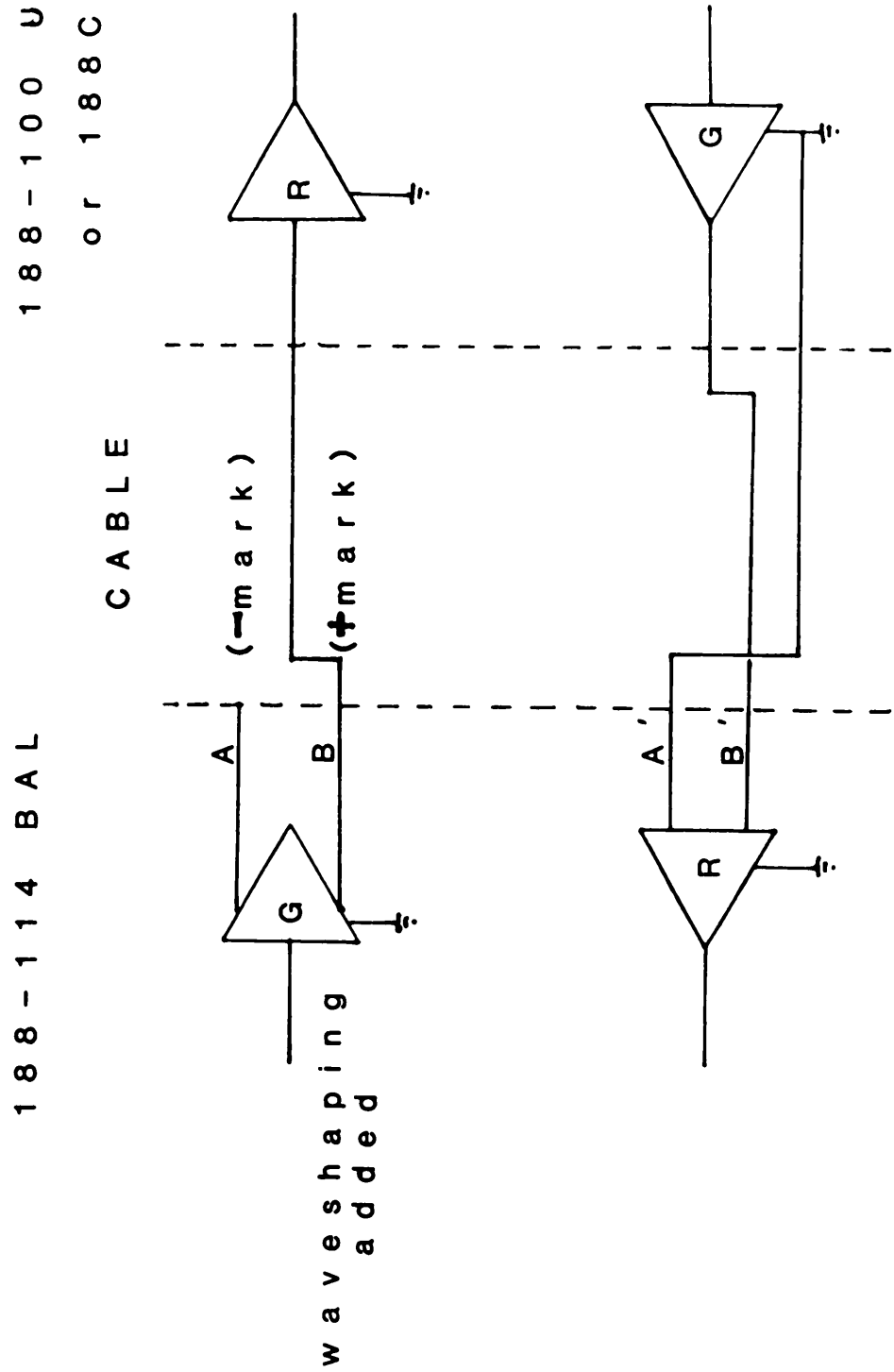

Figure 3. Interconnection of MIL-STD-188-114 BAL Interface With MIL-STD-188-100 UNB or MIL-STD-188C Interfaces

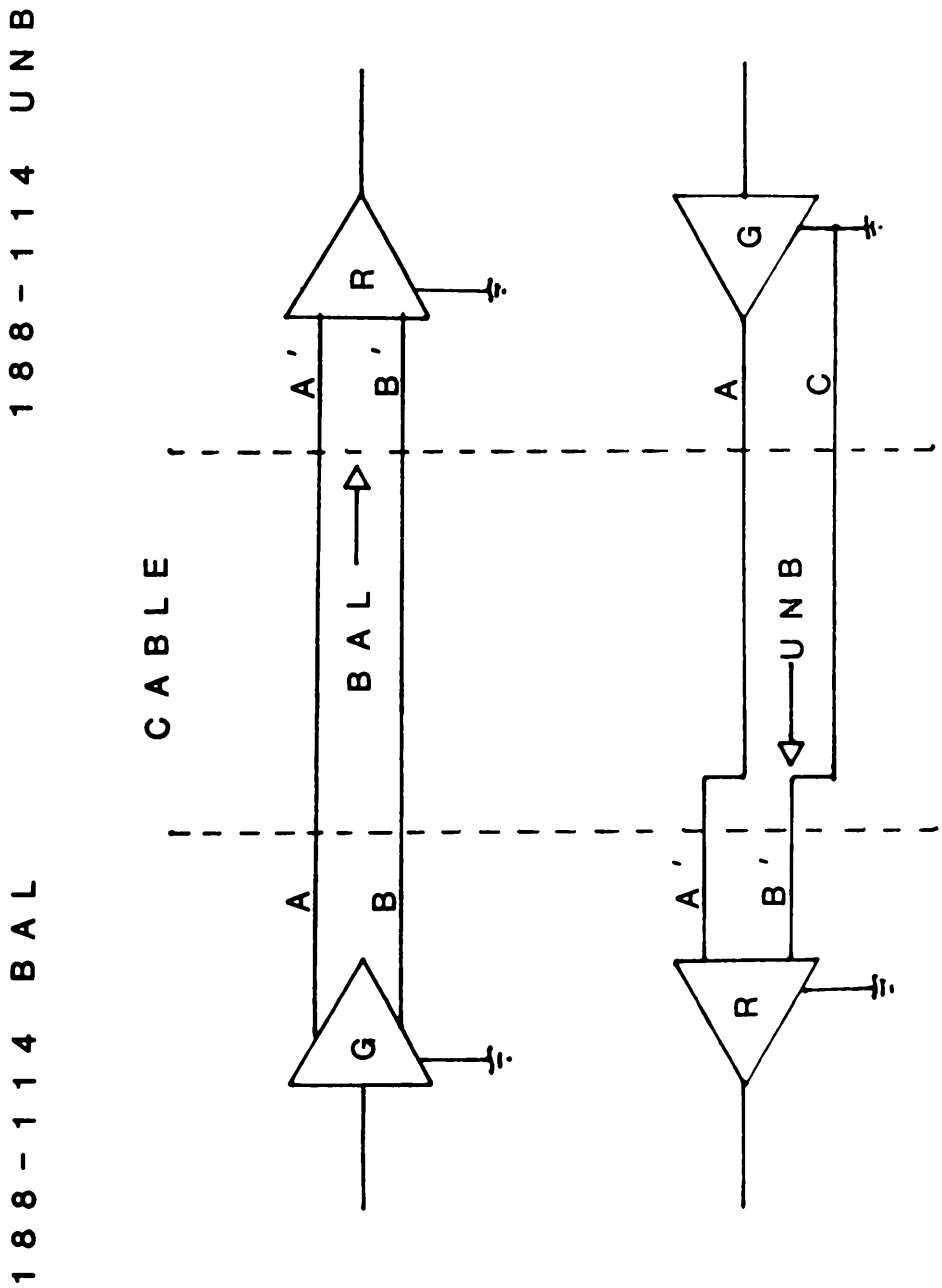

Figure 4. Interconnection of MIL-STD-188-114 BAL Interface With MIL-STD-188-114 UNB Interface

E. RS-366A is an update of RS-366 which was originally developed for operation with RS-232-C DTEs and DCEs. RS-366A adopts RS-423A for operation with RS-449 DTEs and DCEs. Backward compatibility to older RS-366 interfaces is provided in RS-366A. (These provisions are similar to IEB #12)0

F. CCITT-X.29 is an interface protocol standard which establishes rules and formats necessary for the X.25 interface (packet-switched telecommunications).

G. ISO-2110 details a 25 pin connection.

H. ISO-2593 details a 34 pin connection.

I. ISO-4902 details 37 pin and 9 pin connections. Annex B details interconnection with V.28 circuits (ISO-2110).

J. ISO-4903 details a 15 pin connection. Annex B details interconnection with V.28 circuits (ISO-2110).

K. Same electrical characteristics, except different offset voltage for balanced generator. Direct interoperation electrically possible without special provision.

L. Different receiver sensitivity requirements. Direct interoperation electrically possible without special provision.

M. Basic differential receiver characteristics of BAL and UNB circuits are identical. Direct interoperation is electrically possible providing receiver and generator leads are properly configured. Electrical operation is constrained to unbalanced circuit performance.

N. EIA RS-449 adopts electrical characteristics of EIA RS-422A for balanced operation and EIA RS-423A for unbalanced operation.

o. Interoperation is possible employing methods detailed in “EIA Industrial Electronics Bulletin #12”.

P. EIA RS-449 is the preferred physical layer characteristics for FED-STD-1041 and higher level procedures of FED-STD-1041 are consistent with CCITT-X.21 his. However, X.21 may be employed for physical layer if more cost effective.

Q. FED-STD-1041 is based upon, and is fully compatible with, CCITT-X.25.

R. For interoperation of MIL-STD-188-114 with older RS-232C equipments the following provisions must be addressed (See Figure 5):

1. Waveshaping must be reduced or disabled.
2. Receiver inputs must be protected to withstand signal voltages to 25 volts peak.
3. Signal common returns must be reconfigured.
4. Distance between equipments is limited to 50 feet.
5. Additional functional and mechanical adoptions may be required.
6. Data rate limited to 20k bps.

S. ISO-2110-1980 contains revisions to pin assignments that have resulted in some incompatibilities with RS-232C functional characteristics due to the addition of some test features. For test loop, see "EIA Industrial Electronics Bulletin #4'*.

T. These standards contain the same electrical characteristics.

U. These standards contain the same functional characteristics.

V. These standards contain the same mechanical characteristics.

W. CCITT-X.20 DCE uses electrical characteristics of X.26. The DTE may use either X.26 (UNB) or X.27 (BAL) (without cable termination in the load) or V.28 for its electrical characteristics for interworking between a V.28 DTE and a X.26 DCE see Annex B of ISO-4903.

X. For CCITT-X.21 interfaces at data rates above 9600 bps, both the DTE and DCE employ electrical characteristics of X.27. At data rates, at or below 9600 bps, the DTE may employ X.27 (without cable termination in load) or X.26 electrical characteristics. Annex A of ISO-4903 provides interconnection guidance.

Y. X.21 bis calls for the following characteristics for both DTEs and DCEs:

V.28 electrical with ISO-2110 mechanical or
X.26 electrical with ISO-4902 mechanical

And for applications at 48k bps:

V.35 electrical with ISO-2593 mechanical or
X.26/X.27 electrical with ISO-4902 mechanical

Annex A provides interoperation with X.21.

Z. Physical characteristics for X.28 interfaces may vary depending upon application as follows:

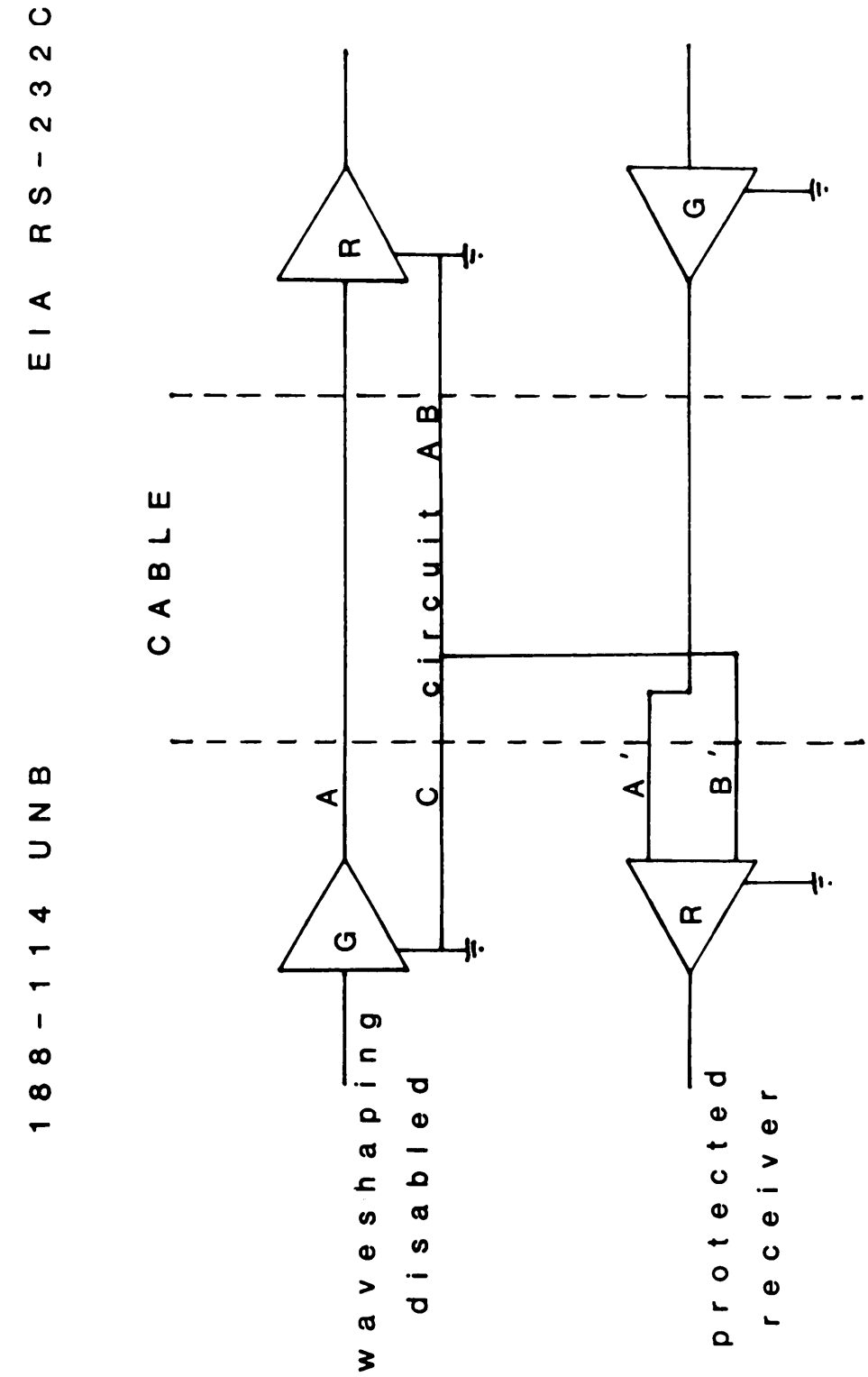

Figure 5. Interconnection of MIL-STD-188-114 UNB Interface With EIA RS-232C Interface

Z. (Continued)

For access with V series interfaces:

V.28 for electrical and ISO-2110 for mechanical (see CCITT-V.21)

For access with X series interfaces:

As detailed in X.20 (for X.20 equipment) or
As detailed in X.20 bis (for X.20 bis equipment)

1. CCITT-X.22 defines the interface(s) between a multiplex DCE and a number of X.21 DTEs employing synchronous transmission. The provision of all services supported by X.21 is possible.

*U.S. GOVERNMENT PRINTING OFFICE 1989 - 604-033/12911

TABLE VIII

INTERFACE STANDARDS COMPATIBILITY MATRIX

	MIL-STD 188-114	FED-STD 1020A (RS-422A)	FED-STD 1030A (RS-423A)	FED-STD 1041	EIA-RS-232C	EIA-RS-366A	EIA-RS-410	EIA-RS 449	CCITT-V.28	CCITT-V.31	CCITT-X.20	CCITT-X.20bis	CCITT-X.21	CCITT-X.21bis	CCITT-X.22	CCITT-X.25	CCITT-X.26 (V.10)	CCITT-X.27 (V.11)	CCITT-X.28	CCITT-X.29	ISO-2110	ISO-2593	ISO-4902	ISO-4903
MIL-STD-188-114	A	K	K		R	K		K									K,L	K,L						
FED-STD-1020A (EIA-RS-422A)	K	B	M					N,M									M,L	L						
FED-STD-1030A (EIA-RS-423A)	K	M	B		O	T,U		N,M	I		(I)						L	M,L						
FED-STD-1041				C				P					P	P		Q								
EIA-RS-232C	R		O		D	E(O)		O	T,U			S)(T)(U)					(O)				S		O	
EIA-RS-366A	K		T,U		(O)E	E		T,U,V	(I)								L	(M)			I		V	
EIA-RS-410																								
EIA-RS-449	K	N,M	N,M	P	O	T,U,V		M	I		(I)						L,M	L,M			I		V	
CCITT-V.28			(I)		(S)T,U	(I)		(I)			W	T		Y			(I)		Z		V		I	J
CCITT-V.31																								
CCITT-X.20									W		W	(W)					W	W	Z		(J)			V
CCITT-X.20bis			(I)		(S)(T)(U)			(I)	T		(W)								Z		V			
CCITT-X.21				P									X	Y	1	T,U,V	X	X			(J)			V
CCITT-X.21bis				P					Y				Y	Y			Y	Y			Y	Y	Y	
CCITT-X.22													1		1			T			J			V
CCITT-X.25				Q									T,U,V	T,U,V (OPTION)		C				F				
CCITT-X.26 (V.10)	K,L	M,L	L		(O)	L		L,M	(I)		(W)		X	Y				M			(I)		V	
CCITT-X.27 (V.11)	K,L	L	M,L			(M)		L,M					X	Y	T		M						V	
CCITT-X.28									Z		Z	Z												
CCITT-X.29																F				F				
ISO-2110					S	(I)		(I)	V			V		Y			I				G		I	J
ISO-2593														Y								H		
ISO-4902					O	V		V	I			(I)		Y			V	V			I		I	
ISO-4903									J		V		V		V						J			J

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OTHER MILITARY INTERFACE STANDARDS OF INTEREST:

MIL-STD-1397A	I/O Interfaces, Standard Digital Data, Navy Systems
DOD-STD-1399	Section 441 Precise Time and Time Interval
MIL-STD-1553A	Aircraft Internal Time Division Command/Response Multiplex Data Bus
MIL-STD-1863	Interface Designs and Dimensions For Fiber Optic Interconnection Devices
MIL-STD-2117	Communications, Digital Control and Status Information Interchange Standard

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