

**MIL-STD-188-172**  
**(FORMERLY MIL-STD-188-116-2)**  
**7 DECEMBER 1989**

**MILITARY STANDARD**  
**INTEROPERABILITY STANDARDS**  
**FOR**  
**INFORMATION AND RECORD**  
**TRAFFIC EXCHANGE**  
**MODE II**



**A. JC N/A**

**AREA TCTS/SLHC**

**DISTRIBUTION STATEMENT A. Approved for public release, distribution is unlimited.**

connection to other first level multiplexers or lower-level multiplexers. A connection to the

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**FOREWORD**

1. This military standard is approved and mandatory for use by all Departments and Agencies of the Department of Defense in accordance with Department of Defense Directive Number 4640.11, December 21, 1987 (appendix A).

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be of use in improving this document should be addressed to:

Joint Tactical Command, Control and Communications Agency  
ATTN: C3A-ADW-S  
11440 Isaac Newton Square North  
Reston, Virginia 22090-5006

by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

3. 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).

4. 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). The Joint Tactical Communications Office (JTCO) published TRI-TAC specifications promulgating standards applicable to the joint tactical communication system known as the TRI-TAC system.

5. 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-188-100 series.

6. This document is the result of JCS action requiring that the technical characteristics of channel coordination procedures, previously contained in various specifications and DCACs, be updated and published in the MIL-STD-188 series of standards. This document contains the technical requirements for Mode II. The current MIL-STD-188-116 series is as follows:

- |    |                  |          |
|----|------------------|----------|
| a. | MIL-STD-188-171: | Mode I   |
| b. | MIL-STD-188-172: | Mode II  |
| c. | MIL-STD-188-173: | Mode V   |
| d. | MIL-STD-188-174: | Mode VI  |
| e. | MIL-STD-TBD      | Mode VII |

NOTE: The Joint Steering Committee will be issuing Mode VII at a later date.

7. Mode II was previously described in DCAC 370-D175-1 and in MIL-STD-188-116-2.

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**1. SCOPE**

**1.1 Purpose.** The purpose of this document is to ensure interoperability and to promote commonality of communications equipment and subsystems using the Mode II channel coordination procedure. An additional objective is to prevent proliferation of equipment performing the same or similar functions. The variety of equipment shall be the minimum necessary to support the missions of the armed forces in accordance with Department of Defense Directive 4630.5, Compatibility and Interoperability of Tactical Command, Control, Communications, and Intelligence Systems.

**1.2 Scope.** This document specifies the minimum requirements necessary to implement information and record traffic exchange among data communications systems employed in long haul and tactical communications networks. It is not the intent of this document to specify any particular hardware or software design or implementation. Message formats are not specified in this document.

**1.3 Application.** This document is applicable to the design and development of new equipment, assemblages, and systems. Existing systems that are undergoing major modification or rehabilitation shall comply with the standards contained in this document subject to the applicable requirements of current procurement regulations. This document shall not be used solely to justify retrofit of existing systems. This document, in whole or in part, is applicable only to the extent specified in the procurement documents of an equipment item or system.

**1.4 System standards and design objectives.** The parameters and other requirements specified in this document are mandatory system standards if the word "shall" is used in connection with the parameter or requirement under consideration. Nonmandatory system standards and design objectives are identified as optional by the word "should" in connection with the parameter or requirement under consideration. For a definition of the terms "system standards" and "design objectives," see FED-STD-1037A. Information paragraphs, shown as notes, have been included to better define certain methods currently in use.

**1.5 Tailoring.** As a minimum, only those features or functions specified herein are necessary to ensure interoperability among systems shall be implemented in an equipment item. While every effort has been made to include all the features necessary for implementation, certain aspects depend on system application and must be tailored by the specification writer. These aspects include alarm functions, data rates, codes, message formats, message size, message numbering, indicators, controls, etc.

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**2. APPLICABLE DOCUMENTS**

**2.1 Government documents**

**2.1.1 Standards.** The following standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the current issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplements thereto.

**FEDERAL**

FED-STD-1037A	Glossary of Telecommunication Terms
FIPS PUB 17-1	Character Structure and Character Parity Sense for Serial-By-Bit Data Communications in the Code for Information Interchange

**MILITARY**

MIL-STD-188-100	Common Long Haul and Tactical Communication Systems Technical Standards
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**2.2 Order of precedence.** In the event of a conflict between this document and the references cited herein, the text of this document takes precedence. Nothing in this standard, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

**2.3 Source of documents.** Copies of the referenced federal and military standards are available from:

Department of Defense  
 Single Stock Point  
 Commanding Officer  
 Naval Publications and Forms Center  
 5801 Tabor Avenue  
 Philadelphia, PA 19120-5099

For specific acquisition functions, these documents should be obtained from the contracting activity or as directed by the contracting activity.

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**3. DEFINITIONS**

**3.1 Definitions of terms.** Definitions of terms used in this document are as specified in FED-STD-1037A. Additional terms, unique to information and record traffic exchange, are defined below.

**3.1.1 Character set.** The eight-bit character set used in Mode II consists of 256 octets and is in compliance with the eight-bit environment of FIPS PUB 17-1. The octets are divided into two 128-character codes, one set containing an odd number of logical 1 bits per octet and the other set containing an even number of logical 1 bits per octet. The character code containing the odd number of logical 1 bits per octet is used in the continental United States (CONUS). The character code containing the even number of logical 1 bits per octet is used outside the continental United States (OCONUS).

**3.1.2 Data rate.** The data rate, in bits per second (bps), at which Mode II octets are transferred between terminals (transmitter and receiver).

**3.1.3 Intercharacter interval.** The intercharacter interval is the time between the end of a stop bit of a character and the beginning of the start bit of the following character. It may be any length and is in the marking state (logical 1).

**3.1.4 Mode I.** Mode I is an automatic repeat-request (ARQ) channel coordination procedure that provides for synchronous, simultaneous, duplex data transfer. It is designed to be used over terrestrial links. Messages are structured into blocks. Blocks are transmitted to the receiver. The receiver positively acknowledges error-free blocks and negatively acknowledges blocks with errors. All blocks that are negatively acknowledged are retransmitted. A block of data cannot be transmitted until the previous block has been positively acknowledged. (In block-by-block operation, no portion of the next block shall be transmitted until the block has been acknowledged. In continuous operation, the next block may be transmitted up to, but not including, the ETX/ETB characters.)

**3.1.5 Mode II.** Mode II is a non-ARQ channel coordination procedure that provides for asynchronous, simultaneous, independent, duplex data transfer. No acknowledgment procedure is implemented.

**3.1.6 Mode V.** Mode V is an ARQ channel coordination procedure that provides for asynchronous, simultaneous, duplex data transfer. It is designed to be used over terrestrial links. Error-free messages are positively acknowledged. Messages with errors are rejected by the receiver, and retransmission is requested.

**3.1.7 Mode VI.** Mode VI is an ARQ channel coordination procedure that provides for synchronous, simultaneous, independent, duplex data transfer. It is designed to be used over terrestrial and satellite links. Messages are structured into blocks. Each block has a unique number associated with it. Error-free blocks are positively acknowledged. Blocks containing errors are negatively acknowledged. All acknowledgments, positive and negative, have the unique block number associated with them. The blocks of a message are organized into block groups. All blocks in a block group are transmitted whether or not the preceding blocks have been positively acknowledged. Any blocks not positively acknowledged are retransmitted. All blocks in a block group must be positively acknowledged before transmission of the next block group is initiated.

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3.1.8 Mode VII. Mode VII is an ARQ channel coordination procedure that provides for synchronous, simultaneous, independent, duplex data transfer. It is designed to be used over terrestrial and satellite links. Messages are structured into frames. Frames without errors are acknowledged. All frames received with errors are retransmitted.

3.2 Definitions of abbreviations and acronyms. Abbreviations and acronyms used in this document are defined in FED-STD-1037A and are provided in appendix B.

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**4. GENERAL REQUIREMENTS**

**4.1 Mode II channel coordination procedure.** The Mode II channel coordination procedure provides for asynchronous, simultaneous, independent, duplex data transfer. Mode II is designed to be used over low-noise transmission links. No message acknowledgment procedure from receiver to transmitter is required. Coordination shall be achieved by structuring messages in an envelope that consists of start of message (SOM) and end of message (EOM) sequences. No message acknowledgment procedure, from receiver to transmitter, shall be implemented.

**4.2 Duplex operation.** Duplex operation shall be achieved by providing both transmitter and receiver functions at each end of a transmission link. These transmitters and receivers shall be capable of simultaneously sending and receiving messages.

**4.3 Character codes.** Three character codes are used in Mode II: Consultative Committee on International Telephone and Telegraph (CCITT) International Alphabet No. 2 (IA No. 2), and two eight-bit codes derived from a 256-character set. The eight-bit character set is in compliance with FIPS PUB 17-1.

**4.3.1 CONUS eight-bit character code.** The CONUS eight-bit character code contains an odd number of logical 1 bits per octet (see table I). Characters that are not recognized as one of the assigned characters shall be treated as errors. This eight-bit code, when viewed as a seven-bit code (a<sub>8</sub> not used), maps directly onto the seven-bit American Standard Code for Information Interchange (ASCII) code as defined in MIL-STD-188-100, appendix B, figure 1. This code is also known as odd parity ASCII.

**4.3.2 OCONUS eight-bit character code.** The OCONUS eight-bit character code contains an even number of logical 1 bits per octet (see table II). Characters which are not recognized as one of the assigned characters shall be treated as errors. This eight-bit code, when viewed as a seven-bit code (a<sub>8</sub> not used), maps directly onto the seven-bit ASCII code as defined in MIL-STD-188-100, appendix B, figure 1. This code is also known as even parity ASCII.

**4.3.3 IA No. 2.** A character in the U.S.-implemented version of the CCITT IA No. 2 code consists of one start bit (logical 0), five data bits (logical 1 and 0 bits), and one or two stop bits (logical 1 bits). The character set consists of 58 alphanumeric characters for record and traffic communications and 59 for weather communications (see table III).

**4.4 Character transmission.** Mode II characters are transmitted serial-by-bit, serial-by-character, and least significant bit (LSB) first in compliance with FIPS PUB 17-1.

**4.5 Message format.** The message format to be used shall be agreed upon by the system managers.

**TABLE I. Mode II CONUS eight-bit character set - odd number of logical 1 bits per character.**

**NOTES:**

= ERRORS (Not used by CONUS Mode V).

**TABLE II. Mode II OCONUS eight-bit character set - even number of logical 1 bits per character.**

Bits								Column																
a8	a7	a6	a5	a4	a3	a2	a1	Row	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
↓	↓	↓	↓	↓	↓	↓	↓	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	NUL	DC1	!		ø	A	p	\			DLE	SP		@			p
0	0	0	0	0	0	0	0		DC2	"			B			q	SOH			1		Q	a	
0	0	0	0	0	0	0	0									r	STX			2		R	b	
0	0	0	0	0	0	0	0					3		s	c			DC3	#		C			s
0	0	0	0	0	0	0	0		DC4	\$			D			t	EOT			4		T	d	
0	0	0	0	0	0	0	0					5		u	e			NAK	%		E			u
0	0	0	0	0	0	0	0					6		v	f			SYN	&		F			v
0	0	0	0	0	0	0	0		ETB	'			G			w	BEL			7		W	g	
1	0	0	0	0	0	0	0		CAN	(			H			x	BS			8		X	h	
1	0	0	0	0	0	0	0					9		y	i			EM	)		I			y
1	0	0	0	0	0	0	0					:		z	j			SUB	*		J			z
1	0	0	0	0	0	0	0		ESC	+			K			{	VT				:			
1	0	0	0	0	0	0	0					<		\	l			FS	,		L			l
1	0	0	0	0	0	0	0		GS	-			M			}	CR							m
1	0	0	0	0	0	0	0		RS	.			N			~	SO							n
1	0	0	0	0	0	0	0					?			°			US	/		0			DEL

= ERRORS (Not used by OCONUS Mode V).

**NOTES:**

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Table III. International Alphabet No. 2 (IA No. 2), American version

CHARACTERS			DATA BITS				
LOWER-CASE	UPPERCASE		a1	a2	a3	a4	a5
	COMM	WEATHER					
A	-	↑					
B	?	⊕					
C	:	O					
D	\$	↗					
E	3	3					
F	!	→					
G	&	↘					
H	STOP	↓					
I	8	8					
J	'	↙					
K	(	←					
L	)	↖					
M	.	.					
N	,	⊖					
O	9	9					
P	0	0					
Q	1	1					
R	4	4					
S	BELL	BELL					
T	5	5					
U	7	7					
V	;	⊙					
W	2	2					
X	/	/					
Y	6	6					
Z	"	+					
BLANK		-					
SPACE							
CAR. RET.							
LINE FEED							
FIGURES							
LETTERS							

NOTE: UPPERCASE H (COMM) MAY BE STOP OR #



MARKING PULSE (LOGICAL 1 BIT)



SPACING PULSE (LOGICAL 0 BIT)



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## 5. DETAILED REQUIREMENTS

**5.1 Mode II channel coordination procedure.** This section describes an information exchange channel coordination procedure for an asynchronous, simultaneous, independent, duplex data system. Mode II is designed to be used over low-noise transmission links. No acknowledgment procedure is implemented.

**5.2 Character codes.** All the bits (start, stop, and data) shall be of equal duration. Mode II shall support the following character codes:

- a. CONUS eight-bit coded environment - odd number of logical 1 bits (see table I).
- b. OCONUS eight-bit coded environment - even number of logical 1 bits (see table II).
- c. CCITT International Alphabet No. 2, American version (see table III).

**5.2.1 Eight-bit coded environment.** Both Mode II eight-bit coded environments shall be in accordance with figure 1 and the following:

- a. A single start bit: spacing (logical 0),
- b. An eight-bit code as defined in tables I and II, and
- c. One or two stop bits: marking (logical 1).

**5.2.2 IA No. 2 code.** The IA No. 2 code shall be in accordance with figure 2 and the following:

- a. A single start bit: spacing (logical 0),
- b. A five-bit code as defined in table III, and
- c. One or two stop bits: marking (logical 1).

**5.3 Character structure.** Mode II shall provide four character structures, two for the eight-bit environment and two for the IA No. 2 code.

**5.3.1 Eight-bit coded environment.** A ten-bit and an eleven-bit structure shall be provided.

**5.3.1.1 Ten-bit structure.** The ten-bit character structure for Mode II shall consist of ten bits of equal duration: one logical 0 (spacing) start bit, eight data bits, and one logical 1 (marking) stop bit (see figure 1a).

**5.3.1.2 Eleven-bit structure.** The eleven-bit character structure for Mode II shall consist of eleven bits of equal duration: one logical 0 (spacing) start bit, eight data bits, and two logical 1 (marking) stop bits (see figure 1b).

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5.3.2 IA No. 2. A seven-bit and an eight-bit structure shall be provided.

5.3.2.1 Seven-bit structure. The seven-bit character structure for Mode II, IA No. 2, shall consist of seven bits of equal duration: one logical 0 (spacing) start bit, five data bits, and one logical 1 (marking) stop bit (see figure 2a).

5.3.2.2 Eight-bit structure. The eight-bit IA No. 2 character structure shall consist of eight bits of equal duration: one logical 0 (spacing) start bit, five data bits, and two logical 1 (marking) stop bits (see figure 2b).

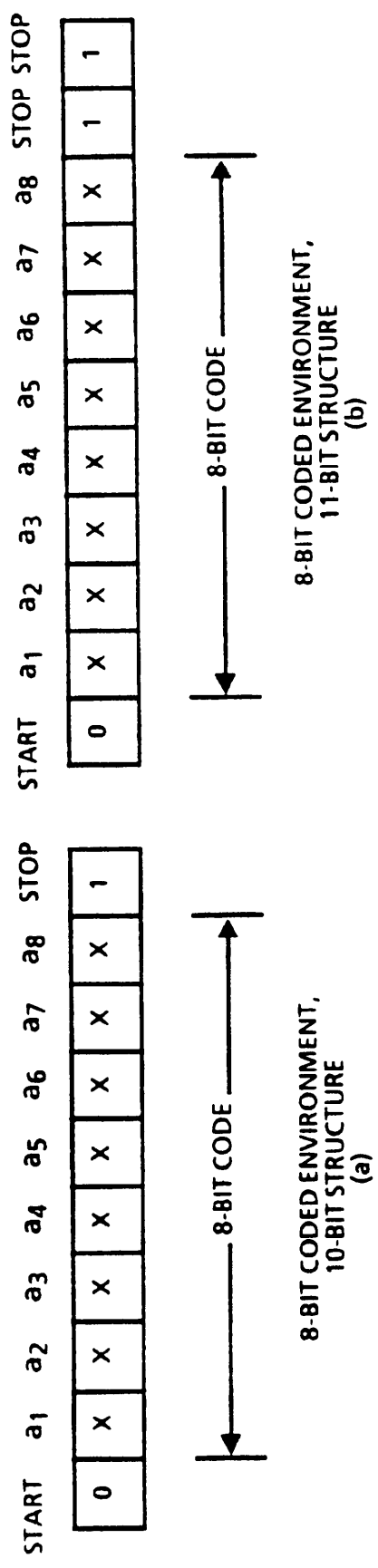
5.4 Message framing and control. Mode II messages shall be framed by two sequences: an SOM sequence, and an EOM sequence. Mode II messages that require cancellation while being transmitted shall be canceled by the cessation of message transmission, followed by the transmission of a cancel transmission (CANTRANS) sequence.

5.4.1 SOM sequence. The Mode II SOM sequence shall consist of five contiguous characters: VZCZC (see figure 3). All Mode II messages shall start with this SOM sequence.

5.4.1.1 IA No. 2. In Mode II, IA No. 2, the SOM sequence shall be preceded by no fewer than 12 contiguous "LETTERS" characters.

5.4.2 EOM sequence. The Mode II EOM sequence shall consist of 14 contiguous characters. These are: two carriage returns (CR), eight line-feeds (LF), and character N repeated four times (see figure 4).

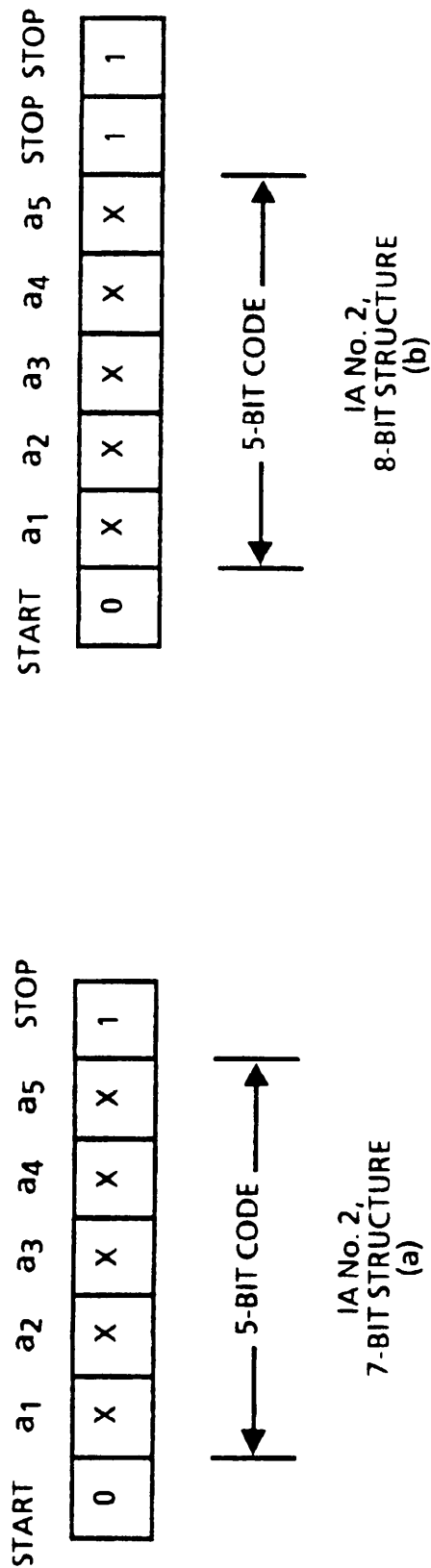
5.4.3 CANTRANS sequence. Mode II messages shall be cancelled by the transmission of a CANTRANS sequence. The CANTRANS sequence shall consist of 18 contiguous characters. These are: character E alternated with a space (SP) eight times, character A, and character R (see figure 5). A CANTRANS sequence received between messages shall be disregarded.



- NOTES:
- 1. The order of transmission is from left to right.
  - 2. 0 = space.
  - 3. 1 = mark.
  - 4. X = mark or space.

Figure 1. Mode II data codes - eight-bit coded environment.

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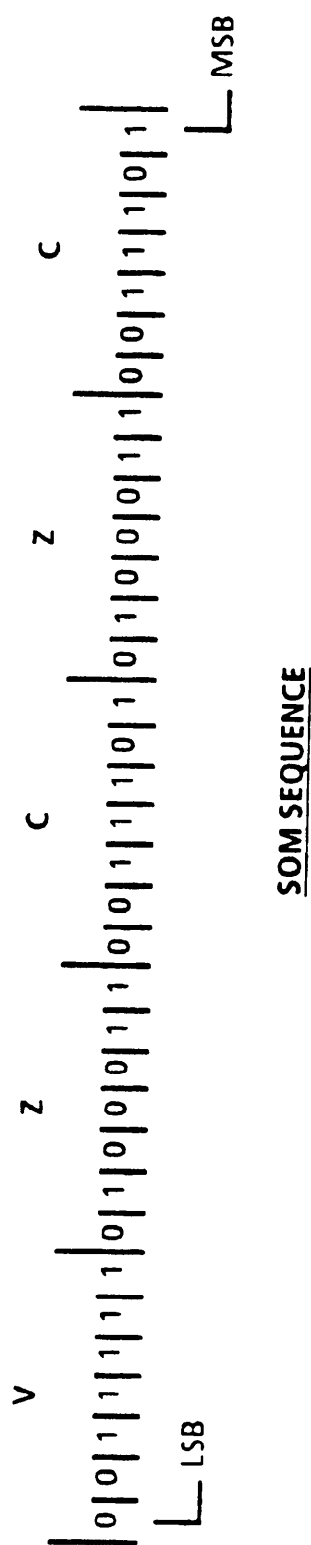


NOTES:

1. The order of transmission is from left to right.
2. 0 = space.
3. 1 = mark.
4. X = mark or space.

Figure 2. Mode II data codes - IA No. 2.

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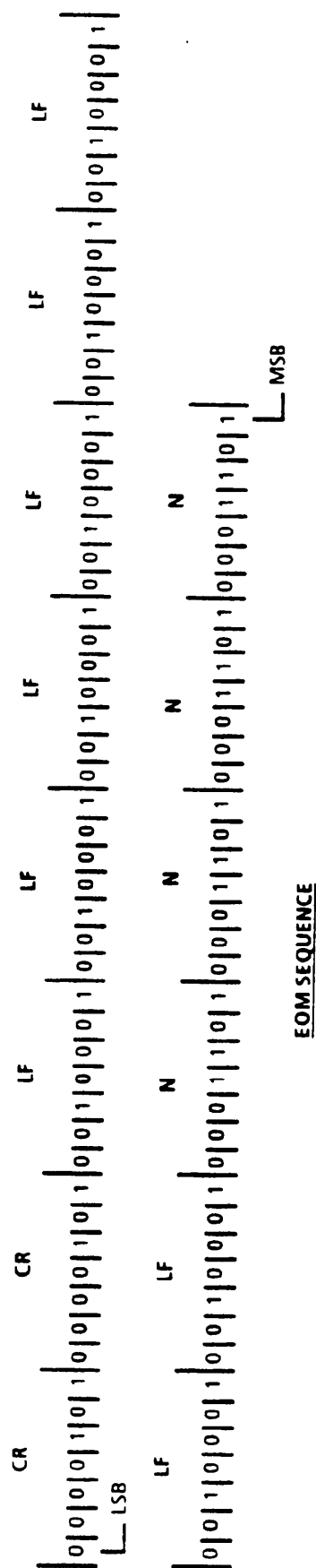


LEGEND:

MSB - most significant bit  
LSB - least significant bit

Figure 3. Mode II seven-bit IA No. 2 code - transmission sequence for SOM.

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**LEGEND:**

**MSB - Most significant bit**

USB - Least significant bit

**Figure 4. Mode II seven-bit IA No. 2 code - transmission sequence for EOM.**

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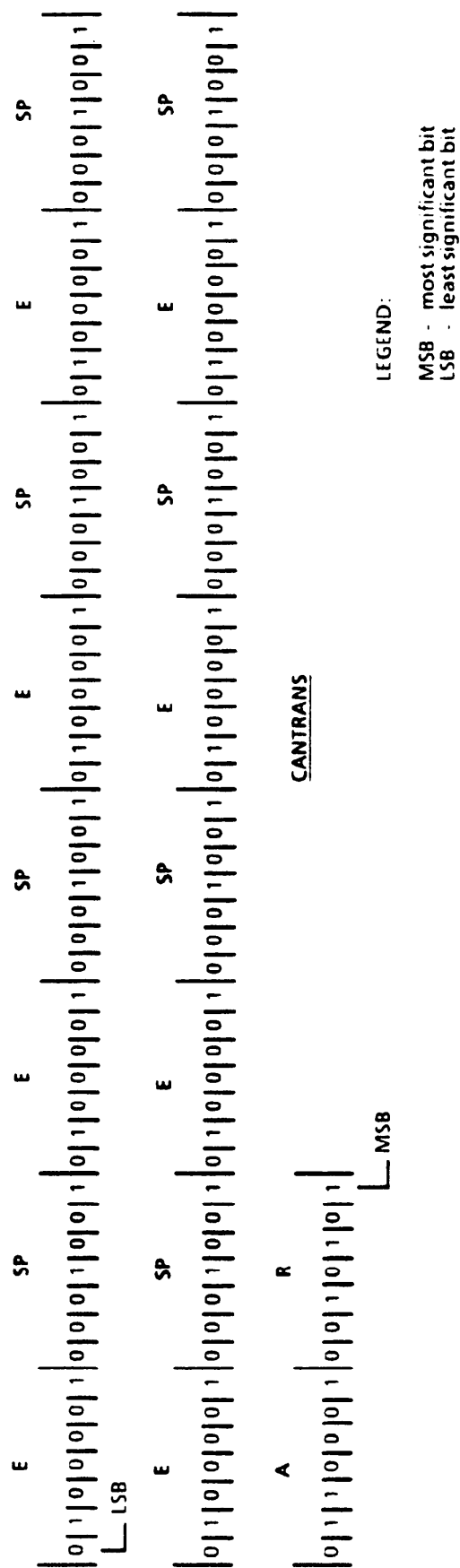


Figure 5. Mode II seven-bit IA No. 2 code - transmission sequence for CANTRANS.

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## 6. NOTES

**6.1 Mode II throughput calculations.** The following is the equation to be used to calculate the best theoretical throughput time to transmit a Mode II message:

$$t = \frac{CU}{R}$$

where:

- t = time to transmit a Mode II message in seconds
- C = number of characters in the message
- U = number of bits per character
- R = data rate in bits per second

The following assumptions were made in deriving this equation:

- a. All characters contain an equal number of bits.
- b. The intercharacter interval is zero.

**6.1.1 Example.** The following example illustrates the calculation of the time needed to transmit a 6900-character message in Mode II. Using the equation from paragraph 6.1, and substituting the following values for an IA No. 2 seven-bit structure:

- C = 6900 characters
- U = 7 bits per character
- R = 2400 bits per second

t is calculated to be:

$$t = \frac{6900 \text{ characters} \times \frac{7 \text{ bits}}{\text{character}}}{2400 \frac{\text{bits}}{\text{second}}}$$

$$t = 20.13 \text{ seconds}$$

**6.1.2 Tabulated transmission times.** Table IV lists the transmission times for a 6900-character message for various data rates for each of the four character structures.

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6.2 Key word listing. The following key words and phrases apply to MIL-STD-188-172:

Asynchronous  
Channel coordination procedure  
Data communications protocol  
Eight-bit code  
Eight-bit coded environment  
Eleven-bit code  
IA No. 2  
Mode II  
Seven-bit code  
Ten-bit code

Table IV. Mode II transmission time in seconds  
for a 6900-character message.

DATA RATE (bps) (R)	MODE II TRANSMISSION TIME IN SECONDS (t)			
	IA No. 2 Bits per character (U)		8-BIT ENVIRONMENT Bits per character (U)	
	7	8	10	11
16000	3.02	3.45	4.32	4.75
9600	5.04	5.75	7.19	7.91
8000	6.04	6.90	8.63	9.49
4800	10.07	11.50	14.38	15.82
4000	12.08	13.80	17.25	18.98
2400	20.13	23.00	28.75	31.63
2000	24.15	27.60	34.50	37.95
1200	40.25	46.00	57.50	63.25
600	80.50	92.00	115.00	126.50
300	161.00	184.00	230.00	253.00
150	322.00	368.00	460.00	506.00
75	644.00	736.00	920.00	1012.00
50	966.00	1104.00	1380.00	1518.00
45.45	1062.71	1214.53	1518.16	1669.97

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**APPENDIX A**

**DEPARTMENT OF DEFENSE DIRECTIVE 4640.11  
21 DECEMBER 1987  
SUBJECT: MANDATORY USE OF MILITARY TELECOMMUNICATIONS  
STANDARDS  
IN THE MIL-STD-188 SERIES**

This appendix contains information related to MIL-STD-188-172. Appendix A is a mandatory part of this standard.

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Department of Defense  
**DIRECTIVE**

December 21, 1987  
NUMBER 4640.11

USD(A)

**SUBJECT:** Mandatory Use of Military Telecommunications Standards in the MIL-STD-188 Series

- References:**
- (a) DoD Directive 5137.1, "Assistant Secretary of Defense (Command, Control, Communications, and Intelligence)," April 2, 1985
  - (b) DoD Directive 4120.3, "Defense Standardization and Specification Program," February 10, 1979
  - (c) DoD 4120.3-M, "Defense Standardization and Specification Program Policies, Procedures and Instructions," August 1978, authorized by DoD Directive 4120.3, February 10, 1979
  - (d) through (l), see enclosure 1

**A. PURPOSE**

This Directive establishes policy governing the application and use of the MIL-STD-188-100, -200, and -300 series of telecommunications standards; prescribes procedures; and assigns responsibilities.

**B. APPLICABILITY AND SCOPE**

1. This Directive applies to the Office of the Secretary of Defense (OSD), the Military Departments, the Organization of the Joint Chiefs of Staff (OJCS), the Unified and Specified Commands, and the Defense Agencies (hereafter referred to collectively as "DoD Components").

2. Its provisions cover the development and application of military telecommunications standards, specifically, the following:

- a. MIL-STD-188-100 series, containing standards common to long-haul and tactical communications.
- b. MIL-STD-188-200 series, containing standards exclusive to tactical telecommunications.
- c. MIL-STD-188-300 series, containing standards exclusive to long-haul telecommunications.

**C. POLICY**

It is DoD policy that the interoperability and performance standards in the MIL-STD-188 series that are required for interoperability and compatibility of DoD telecommunications equipment and systems are mandatory for use for all inter- and intra-DoD Component systems and equipment.

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**D. RESPONSIBILITIES**

1. The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) (ASD(C<sup>3</sup>I)) shall interact with affected DoD Components under DoD Directive 5137.1 (reference (a)).
2. The Assistant Secretary of Defense for Production and Logistics (ASD(P&L)) is responsible for Defense Standardization and Specification Program (DSSP) policy, administration, and guidance.
3. The Director, Standardization and Data Management (SDM), Office of the Deputy Assistant Secretary of Defense (Production Support) (ODASD(PS)), manages and administers the DSSP and establishes policy, program guidance, and controls under DoD Directive 4120.3 (reference (b)).
4. The Director, Defense Standardization Program Office (DSPO), Defense Product Standards Office (DPSO), Defense Data Management Office (DDMO), ODASD(PS), shall assist the Director, SDM, in managing and administering the DoD communications standardization program for developing and establishing DSSP policies, program guidance, and controls.
5. The Heads of DoD Components shall:
  - a. Comply with this Directive, so that:
    - (1) Developers of the MIL-STD-188 series ensure that each standard is not only essential but of uniformly high quality, clear and concise as to application suitable for use in acquisition packages and, to the maximum extent possible, compatible with existing or proposed national and international (both Government and non-Government) telecommunications standards.
    - (2) Users of these standards cite in their procurement specifications only those standards essential to the proper functioning of the device or system over its projected lifetime.
  - b. Ensure the application of the MIL-STD-188 series in their organic acquisition specifications.
  - c. Be responsible for policing and enforcing the use of the MIL-STD-188 series standards within the DoD Component.
  - d. Support the development, revision, and use of the MIL-STD-188 series documents and, when necessary, provide personnel and funding resources.
  - e. Incorporate in each activity's internal review process a method for ensuring that the telecommunications standards are referenced to the extent necessary in acquisition documents.
  - f. Be the granting authority for waivers and deviations for intra-DoD Component systems and equipment, and shall forward any consideration of and granting of waivers and deviations to the standardization office responsible for the maintenance of the MIL-STD-188 series standard concerned.

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g. Ensure that their standardization offices forward waivers and deviations for intra-DoD Component systems and equipment to the Defense Communications Agency (DCA) and the Joint Tactical Command, Control, and Communications Agency (JTC A).

6. Director, Defense Communications Agency, and Director, Joint Tactical Command, Control, and Communication Agency, as the lead activities for the MIL-STD-188 series of standards, shall be the granting authorities for waivers and deviations for inter-DoD Component systems and equipment and shall review intra-DoD waivers and deviations granted by DoD Components.

E. PROCEDURES

1. DSSP. Under DoD Directive 4120.3 and DoD 4120.3-M (references (b) and (c)), the objectives of the DSSP are to improve the operational readiness of the DoD Components and ensure the cost-effectiveness of systems and equipment. The SDM is responsible for administering and managing the DSSP, which provides a uniform series of specifications, standards, and related documents. Under the DSSP, DoD Components develop military specifications and standards related to equipment acquisitions, including telecommunications equipment.

2. Tailoring of Military Standards. It is neither cost- nor mission-effective to impose military standards on all systems and equipment specifications blindly without consideration and review of each individual case. The applicability and relevance of the standard to the intended use of the equipment must be considered. DoD Directive 5000.43 (reference (d)) outlines DoD policies for the selection and tailoring of specifications used for acquisition. To prevent the misapplication of standards, the Department of Defense classifies most military standards as "approved for use," rather than "mandatory for use."

3. Application of Standards in System Acquisition. The required telecommunications standards selected from the MIL-STD-188 series shall be included, as appropriate, in defense acquisition documents (e.g., Statements of Work (SOWs), etc.). This direction is in addition to the authority and procedures contained in references (b), (c), (d) and DoD Directive 5000.1 and DoD Instruction 5000.2 (references (e) and (f)). DoD Directive 4630.5 (reference (g)), DoD Directive 5105.19 (reference (h)), and DoD Directive 5154.28 (reference (i)) highlight the development and application of interoperability and compatibility standards in the areas of tactical long-haul telecommunications.

4. Interoperability and Standardization

a. As stated in DoD Directives 2010.6, 2010.7, and 3100.4 (references (j) through (l)), the United States shall maximize the utility and effectiveness of allied telecommunications resources through equipment interoperability and standardization.

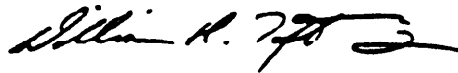
b. The MIL-STD-188 series addresses telecommunications design parameters, influences the functional integrity of telecommunications systems and their ability to interoperate efficiently with other functionally similar Government and commercial systems, and shall be mandatory for use within the Department of Defense.

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F. EFFECTIVE DATE AND IMPLEMENTATION

This Directive is effective immediately. Forward one copy of implementing documents to the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) within 120 days.



William H. Taft, IV  
Deputy Secretary of Defense

Enclosure - 1  
References

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**REFERENCES, continued**

- (d) DoD Directive 5000.43, "Acquisition Streamlining," January 15, 1986
- (e) DoD Directive 5000.1, "Major and Non-Major Defense Acquisition Programs," September 1, 1987
- (f) DoD Instruction 5000.2, "Defense Acquisition Program Procedures," September 1, 1987
- (g) DoD Directive 4630.5, "Compatibility and Interoperability of Tactical Command and Control, Communications, and Intelligence Systems," October 9, 1985
- (h) DoD Directive 5105.19, "Defense Communications Agency (DCA)," August 10, 1978
- (i) DoD Directive 5154.28, "Joint Tactical Command, Control, and Communications Agency (JTC-A)," July 5, 1984
- (j) DoD Directive 2010.6, "Standardization and Interoperability of Weapons Systems and Equipment within the North Atlantic Treaty Organization," March 5, 1980
- (k) DoD Directive 2010.7, "Policy on Rationalization of NATO and NATO Member Telecommunications Facilities," July 6, 1981
- (l) DoD Directive 3100.4, "Harmonization of Qualitative Requirements for Defense Equipment of the United States and Its Allies," September 27, 1963



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**7 DECEMBER 1989****APPENDIX B****LIST OF ABBREVIATIONS AND ACRONYMS USED IN MIL-STD-188-172**

This appendix contains general information in support of MIL-STD-188-172. Appendix B is a nonmandatory part of this document.

ARQ	Automatic repeat-request
ASCII	American Standard Code for Information Interchange
bps	Bits per second
CANTRANS	Cancel transmission
CCITT	Consultative Committee on International Telephone and Telegraph
CONUS	Continental United States
CR	Carriage return
DCA	Defense Communications Agency
DCAC	Defense Communications Agency circulars
DCS	Defense Communications System
DODISS	Department of Defense Index of Specifications and Standards
EOM	End of message
IA No. 2	International Alphabet No. 2
JCS	Joint Chiefs of Staff
JTCO	Joint Tactical Communications Office
LF	Line-feed
NMCS	National Military Command System
OCNUS	Outside Continental United States
SOM	Start of message
SP	Space

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**CONCLUDING MATERIAL**

**Custodians:**

Army - SC  
Navy - EC  
Air Force - 90  
DCA - DC  
NSA - NS

**Preparing Activity:**

JTC3A - JT  
(Projects TCTS - 1160)

**Review Activities:**

Army - CR, AC  
Navy - MC, TD, OM  
Air Force - 02, 17  
NSA  
DCA  
DODECAC

**User Activities:**

Army - CR  
Navy - NC  
Air Force - 13  
DCA  
NSA

**Civilian Agency Coordinating Activities:**

NCS - TS

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