

Some Proposed Revisions to MIL-STD-188-141B, Sec. 4 & 5

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Topics

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The Case for Changes

- Clarifications
 - Provide sound basis for JITC testing
- Eliminate inconsistencies & conflicts

4.2.1.2 Multichannel

- Issue:
 - lists 6kHz wide SSB or 2ISB channels but no selectivity specifications elsewhere in the spec
 - Many other specs reference only the nominal 3 kHz channel bandwidth
- Recommendation:
 - Add appropriate specifications to accommodate implementation of 6 kHz channels
 - Consider also adding single 12 kHz channel specifications
- Justification:
 - Future HF data modems can provide higher data rates through wider channels than multiple 3 kHz channels

5.1.1 Introduction/5.2.2 Frequency Coverage

- Issue: Operation down to 1.5 MHz
 - 5.1.1 Introduction states shall apply over the appropriate frequency range from 2.0 MHz to 29.9999 MHz (DO: 1.5 MHz to 29.9999 MHz).
 - However, para. 5.2.2 Frequency Coverage, specifies 2.0 to 29.9999 MHz and does not mention a DO of 1.5 to 29.9999 MHz
- Recommendation:
 - Delete the DO: 1.5 to 29.9999 MHz in para. 5.1.1
- Justification:
 - Para. 4.1 General - implies there are known military requirements down to 1.5 MHz. Is this true today?
 - Unnecessary equipment cost burden for such low frequencies
 - Tactical antennas & couplers very inefficient at low frequencies
 - Very little spectrum if any available for comm below 2.0 MHz

5.2.7 Overall channel response

- Issue:
 - Selectivity specs are for one end only (Tx or Rx) but Group Delay is total (Tx + Rx)
 - test specified as end-to-end with Tx and Rx connected “back-to-back”
- Recommendation:
 - Remove “end-to-end” measurement
 - State specs are for one end
 - Change group delay to 500 μ sec
- Justification:
 - End-to-end specifications may be met within one vender’s family of equipment but not across other vendors or equipment families

5.2.8 Absolute delay

- Issue:
 - Test specified as end-to-end with Tx and Rx connected “back-to-back”
 - Total delay spec allows any portion between Tx and Rx but interoperability between different equipments may exceed specification
- Recommendation:
 - Remove “end-to-end” measurement
 - change absolute delay to 5.0 msec
- Justification:
 - End-to-end specifications may be met within one vender’s family of equipment but not across other vendors or equipment families

5.3.7 Transmitter output load impedance

- Issue:
 - Requires full rated forward power into a 1.3:1 VSWR load
 - However, maximum VSWR between transmitter and antenna coupler is to be less than 1.5:1.
 - Per Figure 10, this allows 86.7% or -0.6 dB of rated forward power.
- Recommendation:
 - Change maximum coupler VSWR to 1.3:1
- Justification: Eliminates confusion and simplifies testing

5.3.7 Transmitter output load impedance

- Issue:
 - Figure 2 is not explicit as to which side of “Point B” an automatic antenna coupler is located.
 - 5.3.7 implies the coupler is to the right of point B since the load impedance at point B is 50-ohms nominal
- Recommendation:
 - Clarify that the antenna coupler (if used) is part of the antenna - on the right side of point B

5.4.1.9 Third-order intercept point

- Issue:
 - Requires two test signals within the first IF passband
 - If interpreted to mean the test signals are within the first IF passband at the first IF frequency range – the test results are meaningless
- Recommend clarification:
 - “two test signals near the receiver tuned frequency but outside the received bandwidth yet inside the first IF passband”

Definitions/Guidance

- Insert definitions/guidance for: Tactical, Fixed Station, & Co-Site
- Propose:
 - Tactical
 - Manpack
 - Transportable transit case
 - Land Mobile Vehicles
 - Aircraft
 - Fixed Station
 - In Buildings
 - Transportable Shelters
 - Shipboard
 - Co-Site: Ensures operation for 2 or more radio sets under following conditions:
 - Frequency Separation NLT TBD%
 - Antenna-to-Antenna coupling N>T –TBD dB
 - Other criteria as required