

MIL-STD-449D
NOTICE-1
18 May 1976

MILITARY STANDARD
RADIO FREQUENCY SPECTRUM CHARACTERISTICS
MEASUREMENT OF

TO ALL HOLDERS OF MIL-STD-449D

1. MAKE THE FOLLOWING PEN AND INK CHANGES:

a. Page 2: Add new paragraph:

"1.5.1 Phased array system. The CE104, CE108, CE110, RE102, CS107, CS109, CS115, and RS102 test methods and Paragraph 5.6 are not applicable for multiple transmitter/receiver phased array radars and phased array antennas."

b. Page 5, Paragraph 3.17, line 3: Delete "CS10L" and substitute "CS10I".

c. Page 5, Paragraph 3.22, line 4: Delete " $f_0 = c/2a$ " and substitute " $f_c = c/2a$ ".

d. Page 15, Paragraph 5.6.2.4.2, line 2: Delete "bare-" and substitute "bore-".

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MIL-STD-449D
NOTICE-1

a. Page 65, METHOD CS108, Paragraph 3.1, relationships: Delete and substitute:

"For a single conversion receiver:

$$f_{sp} = \left| \frac{p f_{LO} \pm f_{IF}}{q} \right|$$

For a dual-conversion receiver:

$$f_{sp} = \left| \frac{p_1 f_{LO_1} \pm \frac{p_2 f_{LO_2} \pm f_{IF_2}}{q_1 q_2}}{q_1} \right|$$

For a triple conversion receiver:

$$f_{sp} = \left| \frac{p_1 f_{LO_1} \pm \frac{p_2 f_{LO_2} \pm \frac{p_3 f_{LO_3} \pm f_{IF_3}}{q_1 q_2 q_3}}{q_1 q_2}}{q_1} \right|$$

f. Page 66, Paragraph 4(b), line 8: Delete "add just" and substitute "adjust".

MIL-STD-449D
NOTICE-1

g. Page 69, METHOD CS109, Paragraph 3.1, relationships: Delete and substitute:

"For a single conversion receiver:

$$f_{sp} = \left| \frac{p f_{LO} \pm f_{IF}}{q} \right|$$

For a dual-conversion receiver:

$$f_{sp} = \left| \frac{p_1 f_{LO_1} \pm f_{IF_1}}{q_1} \pm \frac{p_2 f_{LO_2} \pm f_{IF_2}}{q_1 q_2} \right|$$

For a triple conversion receiver:

$$f_{sp} = \left| \frac{p_1 f_{LO_1} \pm f_{IF_1}}{q_1} \pm \frac{p_2 f_{LO_2} \pm f_{IF_2}}{q_1 q_2} \pm \frac{p_3 f_{LO_3} \pm f_{IF_3}}{q_1 q_2 q_3} \right|$$

MIL-STD-449D
NOTICE-1

h. Page 77, Paragraph 1: Delete and substitute:

"1. Purpose. This method is used to determine the intermodulation characteristics of receivers that result from the mixing of two or more undesired frequencies in the non-linear elements of the receiver. This mixing may result in the generation of a third signal at the receiver tuned frequency which is of sufficient amplitude to be detected as a potential interfering signal. Paragraph 4 (a) of this method is used to determine the intermodulation characteristics of phased array antennas resulting from element interactions within the antenna."

i. Page 78, Paragraph 4: After title, add: "These tests will be performed at the three standard test frequencies of each band for each intermodulation case specified in 3.1."

j. Page 79, Paragraph 4, last sentence: Delete and substitute:

"(o) The following test may be made on phased array antennas to determine the existence of antenna element interaction within the antenna. A test transmitter will be placed 22.5 degrees off bore-sight of the array under test. The test transmitter will be prepared to transmit a phase modulated signal with a maximum phase deviation equivalent to the smallest increment of phase which an array element can be shifted. The rate of phase modulation will be made to vary between a low frequency called f_{low} to one-half of the operating frequency of the array. The frequency f_{low} will be the inverse of the time period defined by the velocity of light divided into the largest diameter of the array antenna under test. The rate of variation of the modulating frequency will not exceed the decay time constant of the first evanescent mode below the lowest propagating mode of a representative array element. The power density at the array under test will be the maximum power expected. The array under test will be electronically steered to point the main lobe toward the test transmitter. During the transmission of the phase modulated waveform to the array, the receiver amplifier power output will be monitored with a spectrum analyzer before the point of the first conversion."

k. Page 99, METHOD CS118, title: Delete "(Pulsed)".

1. Page 101/102, METHOD CS119, title: Delete "(Pulsed)".

2. The following pages of MIL-STD-449D have been revised and supersede the pages listed:

**MIL-STD-449D
NOTICE-1**

| <u>New Page</u> | <u>Date</u> | <u>Superseded Page</u> | <u>Date</u> |
|-----------------|-------------|------------------------|------------------|
| 235 | 18 May 1976 | 235 | 22 February 1973 |
| 236 | 18 May 1976 | 236 | 22 February 1973 |

3. Retain this notice and insert before the table of contents.

4. Holders of MIL-STD-449D will verify that page changes and additions indicated have been entered. The notice will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the Military Standard is completely revised or canceled.

Preparing activity:
Navy-EC
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Army-PA
Navy-MC, OS