

INCH-POUND

MIL-PRF-3098H  
AMENDMENT 2  
8 August 2002  
SUPERSEDING  
AMENDMENT 1  
13 January 1998

PERFORMANCE SPECIFICATION SHEET

CRYSTAL UNITS, QUARTZ  
GENERAL SPECIFICATION FOR

This amendment forms a part of MIL-PRF-3098H, dated 27 August 1997, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 1

1.2.2, delete the second sentence and substitute: "The number comprises one or more digits."

PAGE 2

2.1, third sentence, after specified requirements, add "in the".

PAGE 4

3.4.2, add two spaces between 3.4.2 and Pin alignment.

3.10.1, add a return after the paragraph.

PAGE 5

3.12, delete the second sentence and substitute:

"Measurements of frequency and equivalent resistance shall be made immediately before the test, and a minimum of 30 minutes after the test to allow units to return to thermal equilibrium (see 4.7.1.2)."

PAGE 10

\* 4.6.1.1, at end of paragraph, add:

"However, if a separate set of sample units have been subjected to subgroup II testing only, then they may be delivered on contracts."

PAGE 11

TABLE IV, after Bond strength (when specified), add "2".

PAGE 12

\* 4.7.1.2, last sentence, delete "included" and substitute "including".

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\* 4.7.4, delete and substitute:

"4.7.4 Shock (specified pulse) (see 3.6). Crystal units shall be tested in accordance with method 213 of MIL-STD-202. The following details shall apply:

- a. Test condition: C (100G).
- b. Measurements of frequency and equivalent resistance before and after the test shall be made in accordance with 4.7.1.2."

\* 4.7.5, delete and substitute:

"4.7.5 Vibration (see 3.7). Crystal units shall be tested in accordance with MIL-STD-202 using the method specified (see 3.1). The following details and exceptions shall apply:

- a. Test method as specified (see 3.1):
  - (1) Method 201: 2 hours, or
  - (2) Method 204: Test condition A, 3 hours.
- b. Direction of motion: Specimens shall be rigidly mounted on the horizontal platform of a vibration machine so that the applied vibration shall be as follows:
  - (1) One-third of the units (to the nearest integral number) shall have the direction of vibration parallel to the pin length.
  - (2) The second third of units shall have the direction of vibration perpendicular to the largest surface.
  - (3) The remaining third of the sample units shall have the direction of vibration perpendicular to the pin length and parallel to the largest surface.
- c. Time of traverse of frequency range: 1 minute to 2 minutes (method 201).
- d. Measurements of frequency and equivalent resistance before and after the test shall be made in accordance with 4.7.1.2."

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4.7.8.1, eighth sentence, delete

"For example, if the specified frequency tolerance is  $\pm 0.005$  percent (overall 100 ppm) then the end point tolerance is 5 ppm." Also, ninth sentence, delete, "using T/C analyzer, Winslow Teletronics, Inc., Model TCA-1070, or equal."

\* 4.7.9, delete and substitute:

"4.7.9 Unwanted modes (fundamental mode or overtone units) (see 3.11). The resistance of any unwanted mode in the frequency range of  $\pm 20$  percent around the main mode shall exceed two times the main mode resistance when measured at the test drive level."

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\* 4.7.10 and 4.7.10.1, delete and substitute:

"4.7.10 Thermal Shock (see 3.12). Crystal units shall be tested in accordance with method 107 of MIL-STD-202. The following details shall apply:

- a. Test condition: B (with one-half hour for step 1 and step 3).
- b. Wire mounted low frequency crystal units (under 800 kHz) shall have a high ambient temperature of 100°C, +3°C, -0°C for each temperature cycle. Measurements are not required in group A inspection.
- c. Measurements of frequency and equivalent resistance before and after the test shall be made in accordance with 4.7.1.2."

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\* 4.7.12, delete and substitute:

"4.7.12 Salt spray (corrosion) (see 3.14). Crystal units shall be tested in accordance with method 101 of MIL-STD-202. The following details shall apply:

- a. Test condition: B.
- b. Measurements of frequency and equivalent resistance after the test shall be measured as specified in 4.7.1.3."

\* 4.7.13 e, delete and substitute:

"e. Final measurement: After drying period, frequency and equivalent resistance shall be measured as specified in 4.7.1.3. Insulation resistance shall be measured in accordance with method 302 of MIL-STD-202, using a test potential of 50 volts to 55 volts. This measurement shall be made from pin to pin and from each pin to the holder case."

4.7.14, third paragraph, first sentence, delete "(0.0005 percent)".

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6.8, delete last sentence.

PAGE 21

40.1, paragraph a, first sentence, add a space between the words to and other.

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TABLE VII, delete and substitute:

"TABLE VII. Grouping for qualification. <sup>1/</sup>

Group number <sup>2/ 3/</sup>	Crystal unit types <sup>2/ 4/</sup>
2	CR37/U†
2A	CR42/U
3	CR45/U†
5	CR63/U†, CR46/U, CR25/U
5A	CR104/U, CR47/U, CR26/U
7	CR69/U†, CR78/U, CR64/U, CR79/U, CR97/U
7A	CR60/U, CR106/U, CR139/U
8	CR85/U†, CR130/U, CR125/U, CR119/U, CR18/U, CR58/U, CR19/U, CR157/U, CR89/U, CR6/U, CR5/U, CR8/U, CR62/U, CR36/U, CR27/U, CR35/U, CR28/U, CR131/U
8A	CR1/U†, CR91/U, CR96/U, CR95/U
9	CR114/U†, CR124/U
10	CR112/U†, CR134/U, CR136/U, CR129/U, CR137/U
11	CR135/U, CR109/U
11A	CR148/U†, CR52/U
12	CR65/U
12A	CR152/U†, CR76/U, CR77/U, CR67/U, CR117/U, CR55/U, CR72/U, CR81/U
13	CR84/U, CR61/U
13A	CR111/U†, CR128/U
14	CR113/U
14A	CR54/U†
15	CR75/U
15A	CR80/U†, CR83/U, CR141/U, CR56/U, CR82/U
16	CR59/U
16A	CR116/U†, CR105/U, CR110/U, CR149/U, CR98/U, CR151/U, CR107/U
17	CR123/U, CR122/U
17A	CR74/U, CR108/U
18A	CR159/U, CR165/U
19	CR33/U, CR71/U, CR73/U, CR101/U, CR102/U, CR103/U, CR127/U, CR142/U, CR150/U
These crystal units must be individually qualified (unless an alternative plan is approved by the qualifying activity)	

<sup>1/</sup> See 40.1.

<sup>2/</sup> The pair of groups (e.g., 2 and 2A) may be qualified by a single set of samples for each pair, provided: (1) The samples are for the type indicated by the symbol "†", and (2) The samples are tested for and successfully pass the temperature-run test over the operating range for the controlled types. As an alternative procedure, when one group of noncontrolled crystal unit have been qualified, a separate set of samples may be submitted for the leading item of the bracketed controlled group in the event only the temperature-run test need be performed.

<sup>3/</sup> Some group numbers have been omitted due to the cancellation of some crystal unit types.

<sup>4/</sup> Qualification of one crystal unit type constitutes qualification of all others of the same group that follow it in the group listing."

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The margins of this amendment are marked with an asterisk to indicate where changes from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

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Preparing activity:

Army - CR

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