GENERAL REQUIREMENTS

Material, Design and Construction: MIL-PRF-55310
Parts and Materials List: Supplied
Crystal: Premium Q, Z-swept, synthetic quartz, 1/10 output frequency
Outgassing: TML<1% and CVCM <0.1% per SP-R-002A
Traceability: Semiconductor and passive lot and date code tracking
De-rating: per EEE-INST-002, (JPL-D-8545, alternative)
Soldering: J-STD-001 class 3
Case: Nickel-plated aluminum housing
Finish: Electroless nickel per MIL-C-26074

Tolerances: (except as noted) Dimensions are in inches
0.XX Dec: ±0.030"
0.XXX Dec: ±0.010"

REV DATE REVISION RECORD DWN AUTH
- 04-02-14 Initial Release Liz

MODEL DEFINITIONS

PF (Proto-Flight Model) Design and Construction similar in appearance and identical in form, fit, and function to FM. Developed using best commercial practice, including some commercial parts and materials. EM shall be subjected only to electrical tests, with some environmental testing performed.

FM (Flight Model) Fabricated to meet all design, construction, and test requirements reference MIL-PRF-55310, Class 1, Product level S. FM shall be subjected to the entire compliment of electrical and environmental acceptance tests listed.

Flight Model Space Level, Parts EEE-INST-002, Level 1,2,3 MIL-PRF-3098 Level 2 Crystals, Tested to Table 2, Qual Table 3 by similarity MIL-PRF-19500 / MIL-STD-750 Semiconductors, JANTXV with PIN D, JANTX with PIN D and DPA (5 ea)

Qualification Model EM unit, when specified, using EEE-INST-002, Level 1,2,3 parts where available. Testing for (1) unit.

500-27991-01 Proto-Flight Model
500-27991-02 Qualification Model
500-27991-03 FM Flight Model

Wenzel Associates, Inc.
Austin, Texas
QUALIFICATION TESTS (Non-flight model, only)

Group I (1 samples)  Visual, Electrical Tests*
Burn-In (operational)  240 hours minimum at +75°C
Group II (1 samples)  Aging  30 Days

Group III Subgroup 1 (1 sample)  Random Vibration  11.95 Grms, MIL-STD-202, method 214 I-D, 50 to 2000 Hz, 5 min per axis

Group III Subgroup 2 (1 sample)  Thermal Shock  MIL-STD-202, Method 107, Condition A-1, 25 cycles, -55°C to +85°C
Ambient Pressure  MIL-STD-202, Method 105, at <5 x 10⁻⁵ torr

Group III Subgroup 3 (1 sample)  Resistance to Soldering Heat  MIL-STD-202, Method 210, Condition A

Resistance to Solvents  MIL-STD-202, Method 215  Not applicable when marking is electro-etched
Electrical Tests*  MIL-STD-202, method 209
Radiographics

ACCEPTANCE TESTS (Flight Model)

Electrical Tests*  MIL-STD-202, Method 214 Test Cond I-B, 50 to 2000 Hz, 5 min per axis
Thermal Shock  MIL-STD-202, Method 107, Condition A, 5 Cycles, -55°C to +85°C

Electrical Tests*  MIL-STD-202, Method 210, Condition A
Burn-In (operational)  240 hours minimum at +75°C
Aging Rate  Projected to 30 days operating

Electrical Tests*  MIL-STD-202, method 209

*ELECTRICAL TESTS

Tested at ambient pressure ≤5 x 10⁻⁵ torr and at -20, +25, and 60°C unless otherwise noted

Warm-Up Power (-20°C only)
Warm-Up Time (-20°C only)
Input Power
Cold Start (-20°C)
Hot Start (+60°C)
RF Output Power
RF Output Harmonics
RF Output Spurious
Frequency Accuracy (+25°C only)
Frequency Stability
Phase Noise - Static (+25°C only, 760 torr)

*ANALYSES

Thermal Analysis, Component Stress Analysis