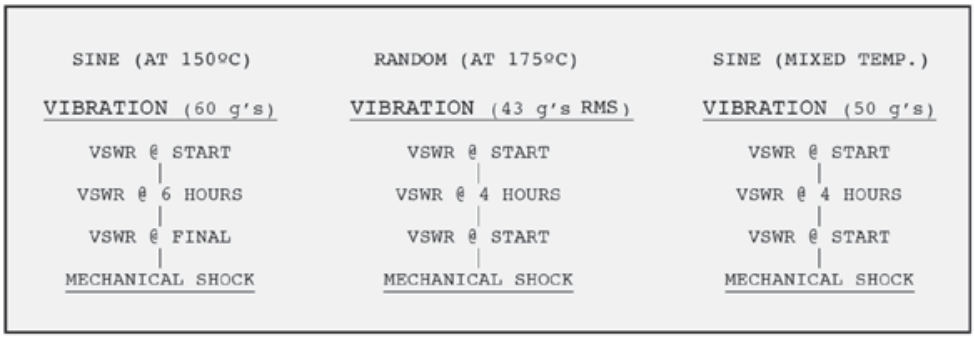
SSBP Testing *Vibration and Shock (SSBP-20 and SSBP-16)*

SSBP-20 and SSBP-16 coaxes were mounted in appropriate mated MIL-DTL-38999 Series III connectors and subjected to the following test:

Figure 1: Test Plan Flow Diagram



VSWR was Measured

IAW Specifications EIA-364, Test Procedure 108, with each mated circuit represented as follow:

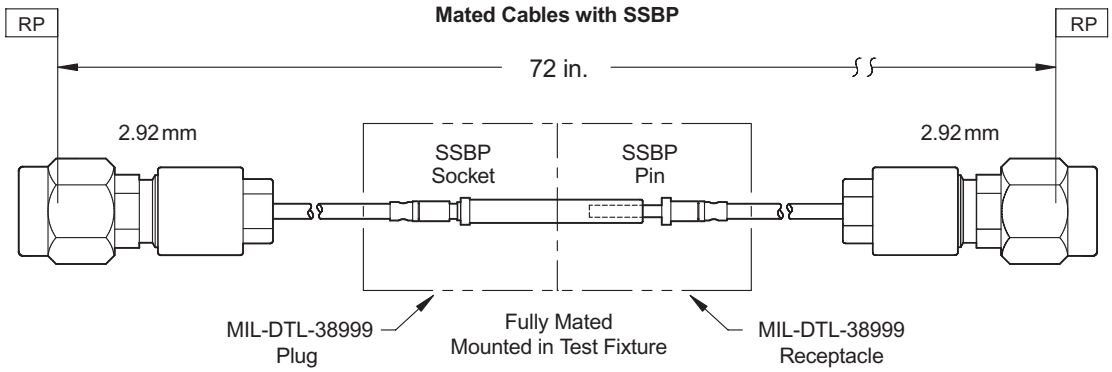


Figure 2: Assembly consisting of two (2) 36 inch cables with 2.92 mm-plug terminated to SSBP-coax. The SSBP pin and socket coaxes are installed in MIL-DTL-38999 Series III connectors.

Cables use 2.92 mm plugs as Southwest Microwave pre-test measured to 40 GHz.
(Note: 2.92 mm mate with SMA and 3.5 mm connectors.)

SSBP Testing *Vibration and Shock (SSBP-20 and SSBP-16)*

Test Procedures – Vibration

1. Vibration, Sinusoidal (At -55°C and 175°C)

VIBRATION, SINUSOIDAL (AT TEMPERATURE)

PROCEDURE:

1. The test was performed in accordance with Paragraph 4.5.22.2.1 of Specification MIL-DTL-38999L with the following conditions.

2. Test Conditions:

a) Amplitude	:	60.0 G's
b) Frequency	:	10Hz to 2000Hz
c) Duration per axis	:	12 hours / axis (3 axis)
d) Duration at +175ºC ±5ºC	:	4 hours
e) Duration at -55ºC ±5ºC	:	4 hours
f) Duration at Ambient Temp	:	4 hours
g) Duration (total)	:	36 hours
h) Test Current	:	100 milliamps (for continuity)

2. Vibration, Random

VIBRATION, RANDOM

PROCEDURE:

1. The test was performed in accordance with Paragraph 4.5.22.2.4 of Specification MIL-DTL-38999L and EIA 364, Test Procedure 28D, Test Condition V (ZONE 2) Figure 25.

2. Test Conditions:

a) Power Spectral Density	:	1.0 g^2/Hz
b) G 'RMS'	:	50.0
c) Frequency	:	50 Hz to 2000 Hz
d) Temperature	:	Ambient
e) Duration, total	:	16 hours
f) Duration	:	8 hours/longitudinal
	:	8 hours/perpendicular
g) Test Current	:	100 milliamps (for continuity)

3. Vibration, Random (At +175°C)

VIBRATION, RANDOM (AT TEMPERATURE)

PROCEDURE:

1. The test was performed in accordance with Paragraph 4.5.22.2.3 of Specification MIL-DTL-38999K and MIL-STD-1344, Test Condition VI, Table 3, Letter J, with the following conditions:

2. Test Conditions:

a) Power Spectral Density	:	1.0 g^2/Hz.
b) G 'RMS'	:	43
c) Frequency	:	50 Hz to 2000 Hz
d) Temperature	:	175ºC ±5ºC
e) Duration at high temp	:	16 hours
f) Duration	:	8 hours/longitudinal
	:	8 hours/perpendicular
g) Test Current	:	100 milliamps (for continuity)

Results

Physical:

All SSBP assemblies and host connectors exhibited no physical damage. There was no circuit disruption (measured for ≥ 1 µs). There was no evidence of movement of test samples relative to each other (as mated).

SSBP Testing *Vibration and Shock (SSBP-20 and SSBP-16)*

Test Procedures – Vibration Results

1. VSWR (After Sine 60 G's)

VSWR (Sine 60 g's):	FREQUENCY 6GHz			
References (ID#)	Avg.	Max.	Min.	Std. Dev.
D38999/26FA-98SN and 120FA-98PN (SSBP-20)				
1P2R (initial)	1.061	1.074	1.054	0.011
1P2R (Z-axis1)	1.031	1.041	1.024	0.009
1P2R (Z-axis2)	1.034	1.037	1.031	0.003
1P2R (X-axis1)	1.029	1.035	1.026	0.005
1P2R (X-axis2)	1.030	1.036	1.024	0.006
1P2R (Y-axis1)	1.031	1.036	1.025	0.005
1P2R (Y-axis2)	1.072	1.147	1.024	0.066
D38999/26FD-5SN and 120FD-5PN (SSBP-16)				
9P10R (initial)	1.078	1.103	1.035	0.038
9P10R (Z-axis1)	1.045	1.054	1.038	0.008
9P10R (Z-axis2)	1.090	1.175	1.040	0.074
9P10R (X-axis1)	1.101	1.178	1.156	0.067
9P10R (X-axis2)	1.094	1.176	1.042	0.072
9P10R (Y-axis1)	1.063	1.071	1.056	0.011
9P10R (Y-axis2)	1.069	1.075	1.064	0.006

Results (VSWR)

VSWR was measured individually on all mated lines as illustrated by Figure 2 (page 7). Results are as shown.

2. VSWR (After Random 50 G's)

VSWR (Random 50 g's):	FREQUENCY 6GHz			
References (ID#)	Avg.	Max.	Min.	Std. Dev.
D38999/26FA-98SN and 120FA-98PN (SSBP-20)				
5P6R (initial)	1.043	1.054	1.028	0.013
5P6R (longitudnal1)	1.058	1.066	1.044	0.012
5P6R (longitudnal2)	1.038	1.063	1.006	0.029
5P6R (perpendicular1)	1.037	1.064	1.001	0.027
5P6R (perpendicular2)	1.037	1.063	1.011	0.026
D38999/26FD-5SN and 120FD-5PN (SSBP-16)				
13P14R (initial)	1.145	1.203	1.044	0.088
13P14R (longitudnal1)	1.047	1.057	1.028	0.017
13P14R (longitudnal2)	1.048	1.060	1.029	0.016
13P14R (perpendicular1)	1.047	1.056	1.030	0.014
13P14R (perpendicular2)	1.047	1.059	1.028	0.017

3. VSWR (After Random 43 G's)

VSWR (Random 43 g's):	FREQUENCY 6GHz			
References (ID#)	Avg.	Max.	Min.	Std. Dev.
D38999/26FA-98SN and 120FA-98PN (SSBP-20)				
3P4R (initial)	1.111	1.217	1.054	0.092
3P4R (longitudinal1)	1.048	1.052	1.042	0.005
3P4R (longitudinal2)	1.057	1.066	1.044	0.012
3P4R (perpendicular1)	1.053	1.056	1.048	0.004
3P4R (perpendicular2)	1.064	1.074	1.057	0.009
D38999/26FD-5SN and 120FD-5PN (SSBP-16)				
11P12R (initial)	1.064	1.071	1.057	0.007
11P12R (longitudinal1)	1.047	1.054	1.034	0.011
11P12R (longitudinal2)	1.043	1.504	1.035	0.010
11P12R (perpendicular1)	1.206	1.546	1.032	0.295
11P12R (perpendicular2)	1.115	1.150	1.065	0.045

4. Shock (100 G, Half Sine, 3X Each Axis)

MECHANICAL SHOCK (SPECIFIED PULSES)

PROCEDURE:

1. The test was performed in accordance with paragraph 4.5.23.1 of specification MIL-DTL-38999K and EIA 364, Test Procedure 27B with the following test conditions.

2. Test Conditions:

a) Peak Value	:	100 G
b) Duration	:	6 Milliseconds
c) Wave Form	:	Half Sine
d) Velocity	:	9.7 feet Per Second
e) No. of Shocks	:	3 Shocks/Direction, 3 Axis (18 Total)

5. Post Shock Final Results

MECHANICAL SHOCK (SPECIFIED PULSES)

RESULTS:

In Accordance with test criteria, all samples passed the following:

1) No evidence of axial movement of SSBP relative to each other.

2) No evidence of physical damage to the SSBP samples as tested.

3) No contact (signal) interruption greater than 1.0 microsecond.