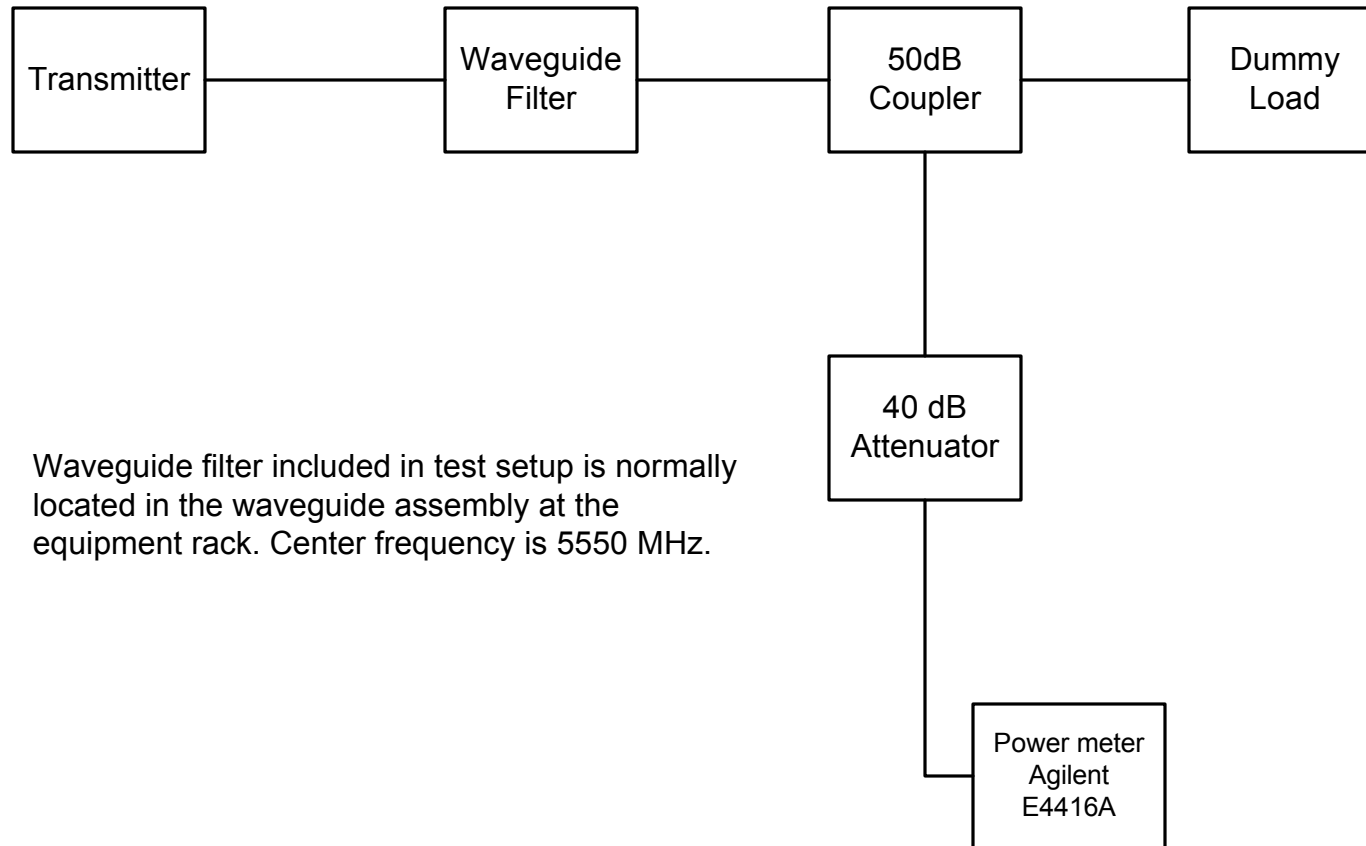
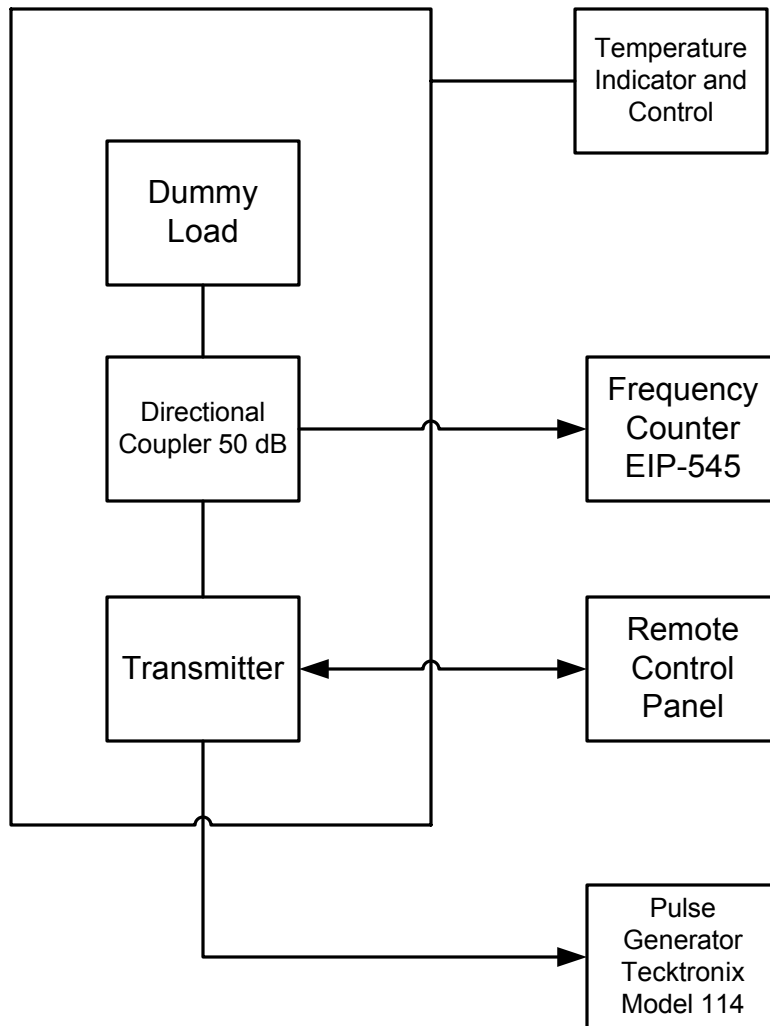


Test Setup for Power Measurements

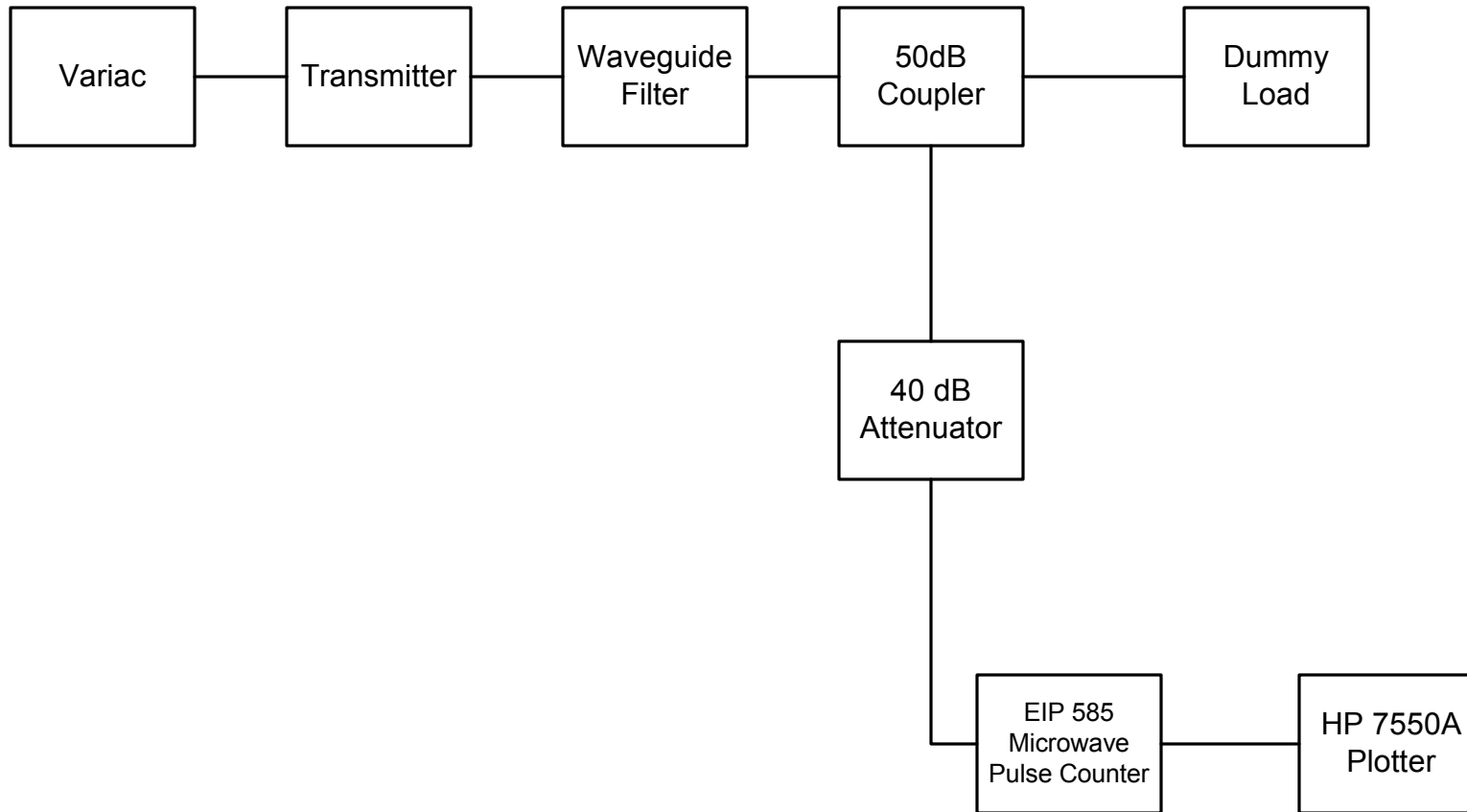


Test Setup for Frequency Stability vs. Temperature Test



Environmental Chamber
Thermontron Model 310EC10WM

Test Setup for Frequency vs. Voltage Variation Test



Temperature Vs Frequency Stability Test and Voltage Variation

The attached data sheets show the frequency drift vs. temperature from start up to stabilization at ambient temperature from -40° to +50°C.

For this test, the transmitter is set up in the temperature chamber ready to run. At that time the power is totally removed and chamber temperature is set at -40°C. After the temperature stabilizes, and the magnetron is down to temperature (a temperature probe was attached to the magnetron body to determine when temperature stabilized) primary power is applied and the magnetron filaments warmed for 5 minutes. The system is then placed into radiate remotely from outside the chamber) and the frequency recorded immediately. The frequency is then recorded in increments shown in the attached data. A block diagram showing the test setup is attached.

For the voltage variation test, a 220 VAC variac was inserted into the primary supply line and set to 220 VAC output. After the magnetron filament warmed 5 minutes, system was put in radiate mode and frequency measured. Primary power was then raised to 253 VAC and frequency measured. Primary was then lowered to 187 VAC and frequency measured. No change in frequency was noted as the power supplies are regulated.

Frequency Stability vs. Temperature

Temperature -40°C

Time in Minutes
From Radiate On

Frequency (MHz)

0	5553.457
1	5553.277
2	5553.053
3	5552.939
4	5552.725
5	5552.514
6	5552.499
7	5552.359
8	5552.255
9	5552.191
10	5552.159
15	5551.941
20	5551.919
25	5551.904
30	5551.977
35	5551.997
40	5552.013
45	5552.044
50	5552.022
55	5552.000
60	5552.005
65	5552.039
70	5552.073
75	5552.134
80	5552.357
85	5552.411
90	5552.395
95	5552.401
100	5552.438
105	5552.490
110	5552.555
115	5552.570
120	5552.575

Frequency Stability vs. Temperature Temperature -30°C
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Time in Minutes
From Radiate On

Frequency (MHz)

0	5553.382
1	5553.293
2	5552.915
3	5552.799
4	5552.549
5	5552.457
6	5552.359
7	5552.232
8	5552.203
9	5552.093
10	5552.033
15	5551.724
20	5551.590
25	5551.553
30	5551.535
35	5551.540
40	5551.559
45	5551.571
50	5551.575
55	5551.597
60	5551.581
65	5551.587
70	5551.592
75	5551.599
80	5551.611
85	5551.620
90	5551.623
95	5551.637
100	5551.620
105	5551.631
110	5551.627
115	5551.627
120	5551.629

Frequency Stability vs. Temperature

Temperature -20°C

Time in Minutes
From Radiate On

Frequency (MHz)

0	5552.594
1	5552.515
2	5552.253
3	5552.033
4	5551.953
5	5551.705
6	5551.553
7	5551.449
8	5551.353
9	5551.205
10	5551.145
15	5550.949
20	5550.733
25	5550.551
30	5550.542
35	5550.590
40	5550.722
45	5550.791
50	5550.905
55	5550.967
60	5550.999
65	5550.993
70	5550.999
75	5550.995
80	5550.997
85	5550.999
90	5550.999
95	5551.002
100	5551.010
105	5551.001
110	5550.998
115	5551.001
120	5551.004

Frequency Stability vs. Temperature Temperature -10°C
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Time in Minutes
From Radiate On

Frequency (MHz)

0	5551.947
1	5551.719
2	5551.594
3	5551.354
4	5551.101
5	5551.055
6	5550.950
7	5550.750
8	5550.553
9	5550.522
10	5550.479
15	5550.159
20	5550.003
25	5549.973
30	5549.991
35	5549.993
40	5550.014
45	5550.047
50	5550.090
55	5550.095
60	5550.112
65	5550.141
70	5550.153
75	5550.172
80	5550.229
85	5550.214
90	5550.259
95	5550.305
100	5550.299
105	5550.277
110	5550.295
115	5550.295
120	5550.293

Frequency Stability vs. Temperature

Temperature -0°C

Time in Minutes
From Radiate On

Frequency (MHz)

0	5560.382
1	5560.350
2	5560.103
3	5559.905
4	5559.731
5	5559.534
6	5559.400
7	5559.318
8	5559.156
9	5559.026
10	5558.943
15	5558.836
20	5558.711
25	5558.659
30	5558.755
35	5558.806
40	5558.819
45	5558.885
50	5558.939
55	5558.992
60	5559.103
65	5559.145
70	5559.229
75	5559.317
80	5559.339
85	5559.359
90	5559.437
95	5559.411
100	5559.409
105	5559.436
110	5559.432
115	5559.453
120	5559.460

Frequency Stability vs. Temperature

Temperature 10°C

Time in Minutes
From Radiate On

Frequency (MHz)

0	5560.001
1	5559.686
2	5559.430
3	5559.168
4	5558.901
5	5558.743
6	5558.554
7	5558.400
8	5558.320
9	5558.201
10	5558.095
15	5557.809
20	5557.772
25	5557.759
30	5557.764
35	5557.797
40	5558.027
45	5558.192
50	5558.300
55	5558.327
60	5558.372
65	5558.424
70	5558.443
75	5558.473
80	5558.497
85	5558.517
90	5558.530
95	5558.540
100	5558.546
105	5558.555
110	5558.564
115	5558.579
120	5558.592

Frequency Stability vs. Temperature Temperature 20°C

Time in Minutes
From Radiate On

Frequency (MHz)

0	5560.055
1	5559.840
2	5559.540
3	5559.323
4	5559.079
5	5558.901
6	5558.759
7	5558.610
8	5558.465
9	5558.359
10	5558.288
15	5557.946
20	5557.778
25	5557.752
30	5557.731
35	5557.716
40	5557.773
45	5557.752
50	5557.728
55	5557.771
60	5557.769
65	5557.773
70	5557.791
75	5557.782
80	5557.767
85	5557.779
90	5557.794
95	5557.776
100	5557.784
105	5557.780
110	5557.768
115	5557.780
120	5557.789

Frequency Stability vs. Temperature Temperature 30°C

Time in Minutes
From Radiate On

Frequency (MHz)

0	5559.609
1	5559.430
2	5559.190
3	5558.894
4	5558.609
5	5558.430
6	5558.277
7	5558.072
8	5557.904
9	5557.772
10	5557.541
15	5557.250
20	5557.090
25	5557.012
30	5556.932
35	5556.975
40	5557.005
45	5557.009
50	5557.033
55	5557.068
60	5557.075
65	5557.084
70	5557.112
75	5557.116
80	5557.120
85	5557.129
90	5557.130
95	5557.133
100	5557.132
105	5557.140
110	5557.144
115	5557.150
120	5557.148

Frequency Stability vs. Temperature Temperature 40°C

Time in Minutes
From Radiate On

Frequency (MHz)

0	5558.435
1	5558.229
2	5557.944
3	5557.732
4	5557.491
5	5557.288
6	5557.165
7	5557.043
8	5556.891
9	5556.791
10	5556.655
15	5556.417
20	5556.257
25	5556.192
30	5556.175
35	5556.197
40	5556.336
45	5556.429
50	5556.609
55	5556.653
60	5556.682
65	5556.702
70	5556.779
75	5556.828
80	5556.848
85	5556.874
90	5556.907
95	5556.940
100	5556.961
105	5556.997
110	5557.001
115	5557.032
120	5557.036