

Frequency Stability vs. Temperature / Primary Power Variation

The data attached with this file shows the frequency stability vs. temperature variation from start up to unit stabilization at ambient temperatures from -30° to $+50^{\circ}$ degrees C.

For this test, the transmitter is set up in the temperature chamber ready to run. At this point there is no primary power applied to the Radar. The chamber temperature is set to -30° C. After the temperature in the chamber and magnetron stabilized, primary power was applied to the unit and to the magnetron filaments for 3 minute warm up. The unit was placed into the radiate mode remotely and the frequency is then recorded immediately. The frequency is then recorded in increments shown on the attached data files. A block diagram showing the equipment setup is attached.

For the voltage variation test, a 220VAC variac was inserted into the primary supply line and set to 220VAC output. After the magnetron filament warm up period, the unit is placed into the radiate mode and frequency measured. Primary power was then raised to 253VAC and frequency measured. Primary power was then lowered to 187VAC and frequency measured. No change in the units output frequency was noted, as all power supplies are regulated.

AMBIENT TEMPERATURE -30 C

BUVDTWR-10000C FREQUENCY STABILITY VS TEMPERATURE

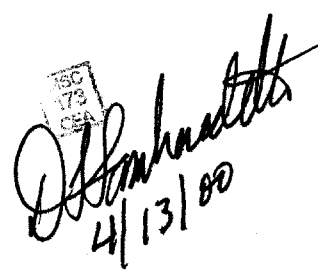
Time in minutes from Radiate On	Freq (Mhz)
0	5692.698
1	.722
2	.777
3	.699
4	.656
5	.621
6	.610
7	.596
8	.609
9	.587
10	.605
15	.658
25	.659 → 5692.758
30	.771
35	.832
40	.895
45	.922
50	.936
55	.982
60	5693.002
65	.003
70	.004
75	.054
80	.057
85	.108
90	.075
95	.058
100	
105	
110	
115	
120	
125	
130	

MSC
173
CEP
Orlando
4/13/00

AMBIENT TEMPERATURE -20 C

BUVDTWR-10000C FREQUENCY STABILITY VS TEMPERATURE

Time in minutes from Radiate On	Freq (Mhz)
0	5692.889
1	.744
2	.733
3	.704
4	.702
5	.656
6	.632
7	.603
8	.612
9	.601
10	.595
15	.597
20	.585
30	.583
35	.599
40	.597
45	.623
50	.608
55	.583
60	.584
65	.600
70	.555
75	.582
80	.502
85	.540
90	.566
95	
100	
105	
110	
115	
120	
125	
130	



 4/13/00

AMBIENT TEMPERATURE -10 C

BUVDTWR-10000C FREQUENCY STABILITY VS TEMPERATURE

Time in minutes
from Radiate On

Freq (Mhz)

0	5692.419	
1	.586	
2	.437	
3	.342	
4	.270	
5	.191	
6	.179	
7	.133	
8	.127	
9	.119	
10	.110	
15	.097	
25 > 20	.050	→ 5692.015
30	.035	
35	.008	
40	5691.973	
45	.953	
50	.940	
55	.930	
60	.929	
65	.915	
70		
75		
80		
85		
90		
95		
100		
105		
110		
115		
120		
125		
130		

4/13/00

AMBIENT TEMPERATURE 0 C

BUVDTWR-10000C FREQUENCY STABILITY VS TEMPERATURE

Time in minutes
from Radiate On

Freq (Mhz)

0	5692.063
1	5691.981
2	.947
3	.914
4	.800
5	.767
6	.734
7	.702
8	.673
9	.644
10	.600
15	.567
20	.535
25	.439
30	.407
35	.389
40	.335
45	.318
50	.308
55	.285
60	
65	
70	
75	
80	
85	
90	
95	
100	
105	
110	
115	
120	
125	
130	

→ 5691.475

Offhand
4/13/00

AMBIENT TEMPERATURE +10 C

BUVDTWR-10000C FREQUENCY STABILITY VS TEMPERATURE

Time in minutes
from Radiate On

Freq (Mhz)

0	5691.496
1	.345
2	.265
3	.220
4	.110
5	.090
6	.039
7	.001
8	5690.962
9	.938
10	.920
15	.879
20	.869
30	.780
35	.730
40	.704
45	.684
50	.646
55	.625
60	.608
65	.572
70	.561
75	.549
80	
85	
90	
95	
100	
105	
110	
115	
120	
125	
130	

25 > → 5690.842

MSC
172
CER
Off Jankins
4/13/00

AMBIENT TEMPERATURE +20 C

BUVDTWR-10000C FREQUENCY STABILITY VS TEMPERATURE

Time in minutes
from Radiate On

Freq (Mhz)

0	5690.801
1	.780
2	.611
3	.521
4	.456
5	.430
6	.361
7	.328
8	.274
9	.267
10	.222
15	.156
25 → 20	.138 → 5690.113
30	.058
35	.035
40	.009
45	5689.965
50	.950
55	.950
60	.921
65	.915
70	.909
75	.875
80	
85	
90	
95	
100	
105	
110	
115	
120	
125	
130	

MSO
473
C2
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4/13/00

AMBIENT TEMPERATURE +30 C

BUVDTWR-10000C FREQUENCY STABILITY VS TEMPERATURE

Time in minutes
from Radiate On

Freq (Mhz)

0	5690.155	
1	5689.934	
2	.949	
3	.853	
4	.823	
5	.787	
6	.767	
7	.716	
8	.730	
9	.668	
10	.667	
15	.621	
25 → 20	.626	→ 5689.609
30	.596	
35	.563	
40	.557	
45	.507	
50	.489	
55	.456	
60	.443	
65	.415	
70		
75		
80		
85		
90		
95		
100		
105		
110		
115		
120		
125		
130		



G. Hambrick
4/14/00

AMBIENT TEMPERATURE +40 C

BUVDTWR-10000C FREQUENCY STABILITY VS TEMPERATURE

Time in minutes
from Radiate On

Freq (Mhz)

0	5689.226
1	.120
2	.056
3	5688.962
4	.904
5	.881
6	.840
7	.780
8	.784
9	.759
10	.735
15	.684
25	.654
20	5688.659
30	.667
35	.644
40	.656
45	.626
50	.602
55	.584
60	.575
65	.554
70	.537
75	.545
80	
85	
90	
95	
100	
105	
110	
115	
120	
125	
130	



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4/14/00

AMBIENT TEMPERATURE +50 C

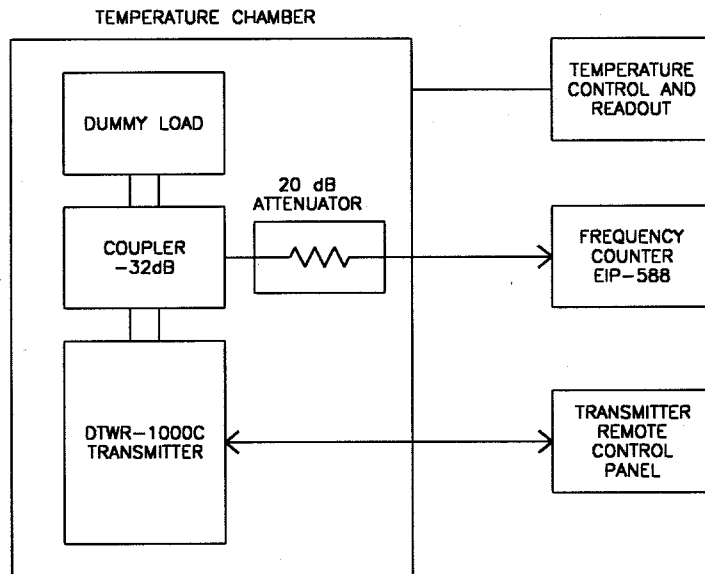
BUVDTWR-10000C FREQUENCY STABILITY VS TEMPERATURE

Time in minutes from Radiate On	Freq (Mhz)
0	5688.261
1	.256
2	.150
3	5687.939
4	.916
5	.869
6	.842
7	.815
8	.790
9	.777
10	.755
15	.748
20	.746
30	.743
35	.755
40	.726
45	.744
50	.745
55	.711
60	.728
65	.715
70	.722
75	
80	
85	
90	
95	
100	
105	
110	
115	
120	
125	
130	

25 → 5687.753

MSC
T73
CEA
Offman
4/14/80

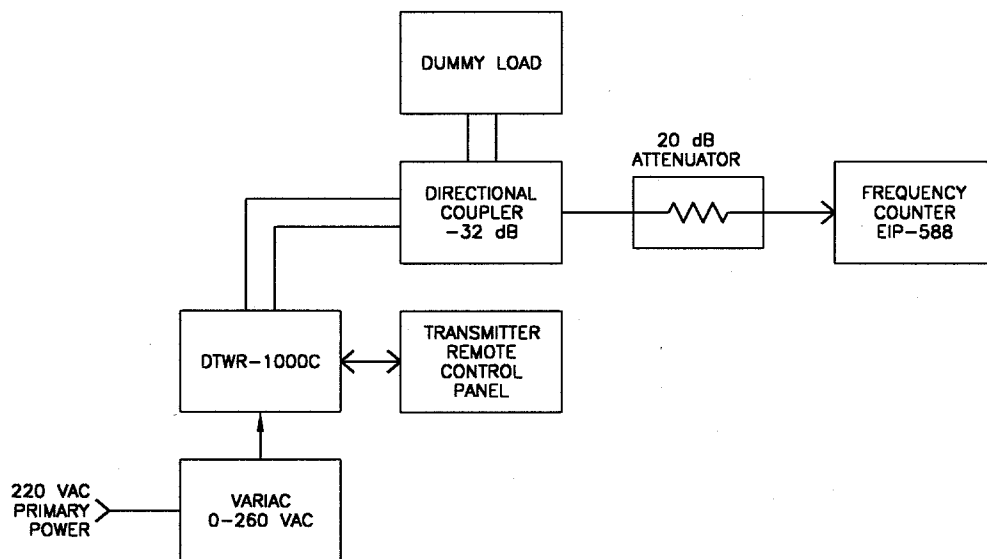
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



TEST SETUP FOR
TEMPERATURE VARIATION

SIZE	CODE IDENT NO.	DRAWING NO.	APPR./DATE	SCALE	SHEET 1 OF 1
A	50187	SK-1763		5718	

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



TEST SETUP FOR
PRIMARY POWER VARIATION

APPR./DATE	SCALE	SIZE	CODE IDENT NO.	DRAWING NO.	SHEET	OF	1
		A	50187	SK-1764	5718	1	1