Test Report: 2-1055
Frequency Stability

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° ~+50° degrees ©.

For this test, the transmitter is set in the Temperature Chamber. At this point there is no primary power applied to the Radar System. The Chamber Temperature is set to -30°C. After the temperature in the Chamber is stabilized, primary power was applied to the unit for Five (5) minutes for system warm-up. The unit was placed into a radiate mode and the frequency was recorded immediately. The frequency is then recorded in time increments shown on the attached data files. A block diagram showing test setup is attached.

For the Voltage Variation Test, a 220VAC Variac was inserted into primary supply line and set to 220VAC output. After the Radar System warm up period, the radar was placed into a radiate mode and frequency measured. Primary power was raised to 30% (247VAC) above Radar System operating voltage and the frequency was measured. Primary power was then lowered to 30% (154VAC) below Radar System operating voltage and the frequency was measured. Changes in the Radars output Frequency are noted.

Primary Power	Radiated Frequency
220VAC	9350 MHz
247VAC	9350 MHz
154VAC	9338 MHz

AMBIENT TEMPERATURE -30 ^{0} C / -22°F

BUVDWSR-2001X FREQUENCY STABILITY VS TEMPERATURE

9:17 AM Power up 4-23-08
9:23 AM Radiate
SAR

Time in Minutes from Radiate On	Freq (Ghz)
0	9,353 GHz
1	9.353 GHz
2	9.354 GHz
3	9.354 GHz
4	9,354 GHz
5	9.354 GHz
6	9,354 GHz
7	9.354 GHz
8	9.354 GHz
9	9.354 GHz
10	9.355 GHz
15	9,355 GHz
20	9.355 Ghz
25	9,355 GHz
30	9.355 GHz
35	9.355 GHz
40	
45	
50	
55	
60	
65	
70	
75	
80	
90	
95	
100	
105	
110	
115	
120	
125	
130	

AMBIENT TEMPERATURE -20 ° C / -4°F

BUVDWSR-2001X FREQUENCY STABILITY VS TEMPERATURE

Power up 1031AM 4-23-08
Radiate 1035AM JAR

Time in Minutes from Radiate On	Freq (Ghz)
0	9.354 GHz
1	9.354 GHz
2	9.354 GHz
3	9.354 GHz
4	9.354 GHz
5	9.354 GHz
6	9.354 GHz
7	9.354 GHz
8	9.354 GHz
9	9.354 GHz
10	9.354 GHz
15	9.354 GHz
20	9.354 GHz
25	9.354 GHz
30	9.354 GHz
35	9.354 GHz
40	
45	
50	
55	
60	
65	
70	
75	
80	
90	
95	
100	
105	
110	
115	
120	
125	
130	

AMBIENT TEMPERATURE -10 °C / 14°F

BUVDWSR-2001X FREQUENCY STABILITY VS TEMPERATURE

1119 AM Power on
1123 AM Radiate on

4-23-08
JAR

Time in Minutes from Radiate On	Freq (Ghz)
0	9.353 GHz
1	9.353 GHz
2	9.353 GHz
3	9.353 GHz
4	9.352 GHz
5	9.352 GHz
6	9.352 GHz
7	9.352 GHz
8	9.352 GHz
9	9.352 GHz
10	9.352 GHz
15	9.352 GHz
20	9.352 GHz
25	9.352 GHz
30	9.352 GHz
35	9.352 GHz
40	
45	
50	
55	
60	
65	
70	
75	
80	
90	
95	
100	
105	
110	
115	
120	
125	
130	

AMBIENT TEMPERATURE 0 ^{0} C / 32°F

BUVDWSR-2001X FREQUENCY STABILITY VS TEMPERATURE

1210pm Power ON
1213pm Radiate ON

4-23-08
JAR

Time in Minutes from Radiate On	Freq (Ghz)
0	9.352 GHz
1	9.352 GHz
2	9.352 GHz
3	9.352 GHz
4	9.352 GHz
5	9.352 GHz
6	9.352 GHz
7	9.352 GHz
8	9.352 GHz
9	9.352 GHz
10	9.352 GHz
15	9.352 GHz
20	9.352 GHz
25	9.352 GHz
30	9.352 GHz
35	9.352 GHz
40	
45	
50	
55	
60	
65	
70	
75	
80	
90	
95	
100	
105	
110	
115	
120	
125	
130	

AMBIENT TEMPERATURE +10 ° C / 50f°

BUVDWSR-2001X FREQUENCY STABILITY VS TEMPERATURE

1009m Power ON
1039m Radiate ON

4-23-08
JAR

Time in Minutes from Radiate On	Freq (Ghz)
0	9,352 GHz
1	9,352 GHz
2	9.351 GHz
3	9.351 GHz
4	9.351 GHz
5	9.351 GHz
6	9.351 GHz
7	9.351 GHz
8	9.351 GHz
9	9.351 GHz
10	9.351 GHz
15	9.351 GHz
20	9.351 GHz
25	9.351 GHz
30	9.351 GHz
35	9.351 GHz
40	
45	
50	
55	
60	
65	
70	
75	
80	
90	
95	
100	
105	
110	
115	
120	
125	
130	

AMBIENT TEMPERATURE +20 ° C +68°F

BUVDWSR-2001X FREQUENCY STABILITY VS TEMPERATURE

4-23-08

1528pm Power ON
1555pm Radiate ON

Time in Minutes from Radiate On	Freq (Ghz)
0	9.350 GHz
1	9.350 GHz
2	9.349 GHz
3	9.349 GHz
4	9.349 GHz
5	9.349 GHz
6	9.349 GHz
7	9.349 GHz
8	9.349 GHz
9	9.349 GHz
10	9.349 GHz
15	9.349 GHz
20	9.350 GHz
25	9.350 GHz
30	9.350 GHz
35	9.350 GHz
40	
45	
50	
55	
60	
65	
70	
75	
80	
90	
95	
100	
105	
110	
115	
120	
125	
130	

AMBIENT TEMPERATURE +30 ^{0} C / +86°f

BUVDWSR-2001X FREQUENCY STABILITY VS TEMPERATURE

4-24-08
5 AR

0733AM Power ON
0736AM Radiate ON

Time in Minutes from Radiate On	Freq (Ghz)
0	9.347 GHz
1	9.348 GHz
2	9.348 GHz
3	9.348 GHz
4	9.347 GHz
5	9.347 GHz
6	9.347 GHz
7	9.347 GHz
8	9.347 GHz
9	9.347 GHz
10	9.348 GHz
15	9.348 GHz
20	9.348 GHz
25	9.348 GHz
30	9.348 GHz
35	9.348 GHz
40	
45	
50	
55	
60	
65	
70	
75	
80	
90	
95	
100	
105	
110	
115	
120	
125	
130	

AMBIENT TEMPERATURE +40° C \ +104°F

BUVDWSR-2001X FREQUENCY STABILITY VS TEMPERATURE

0823 Power ON
0826 Radiate ON

4-24-08
JAR

Time in Minutes from Radiate On	Freq (Ghz)
0	9.348 GHz
1	9.348 GHz
2	9.348 GHz
3	9.348 GHz
4	9.348 GHz
5	9.347 GHz
6	9.347 GHz
7	9.347 GHz
8	9.347 GHz
9	9.347 GHz
10	9.347 GHz
15	9.347 GHz
20	9.348 GHz
25	9.348 GHz
30	9.348 GHz
35	9.348 GHz
40	
45	
50	
55	
60	
65	
70	
75	
80	
90	
95	
100	
105	
110	
115	
120	
125	
130	

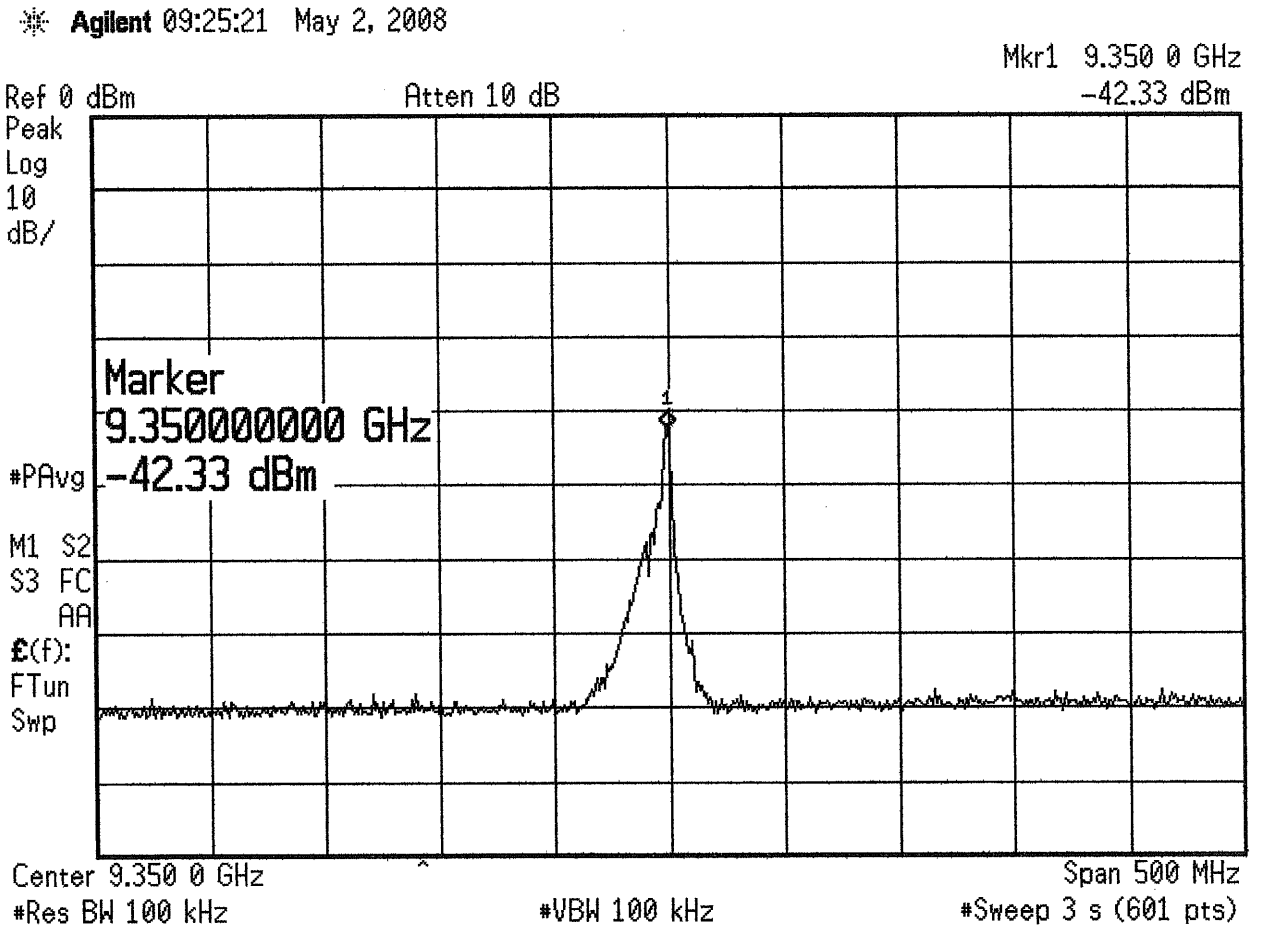
AMBIENT TEMPERATURE +50 ° C /+122°f

BUVDWSR-2001X FREQUENCY STABILITY VS TEMPERATURE

0913AM Power on
0916AM Radiate ON

4-24-08
JAA

Time in Minutes from Radiate On	Freq (Ghz)
0	9.347 GHz
1	9.347 GHz
2	9.347 GHz
3	9.347 GHz
4	9.346 GHz
5	9.346 GHz
6	9.346 GHz
7	9.346 GHz
8	9.346 GHz
9	9.346 GHz
10	9.346 GHz
15	9.346 GHz
20	9.347 GHz
25	9.347 GHz
30	9.347 GHz
35	9.347 GHz
40	
45	
50	
55	
60	
65	
70	
75	
80	
90	
95	
100	
105	
110	
115	
120	
125	
130	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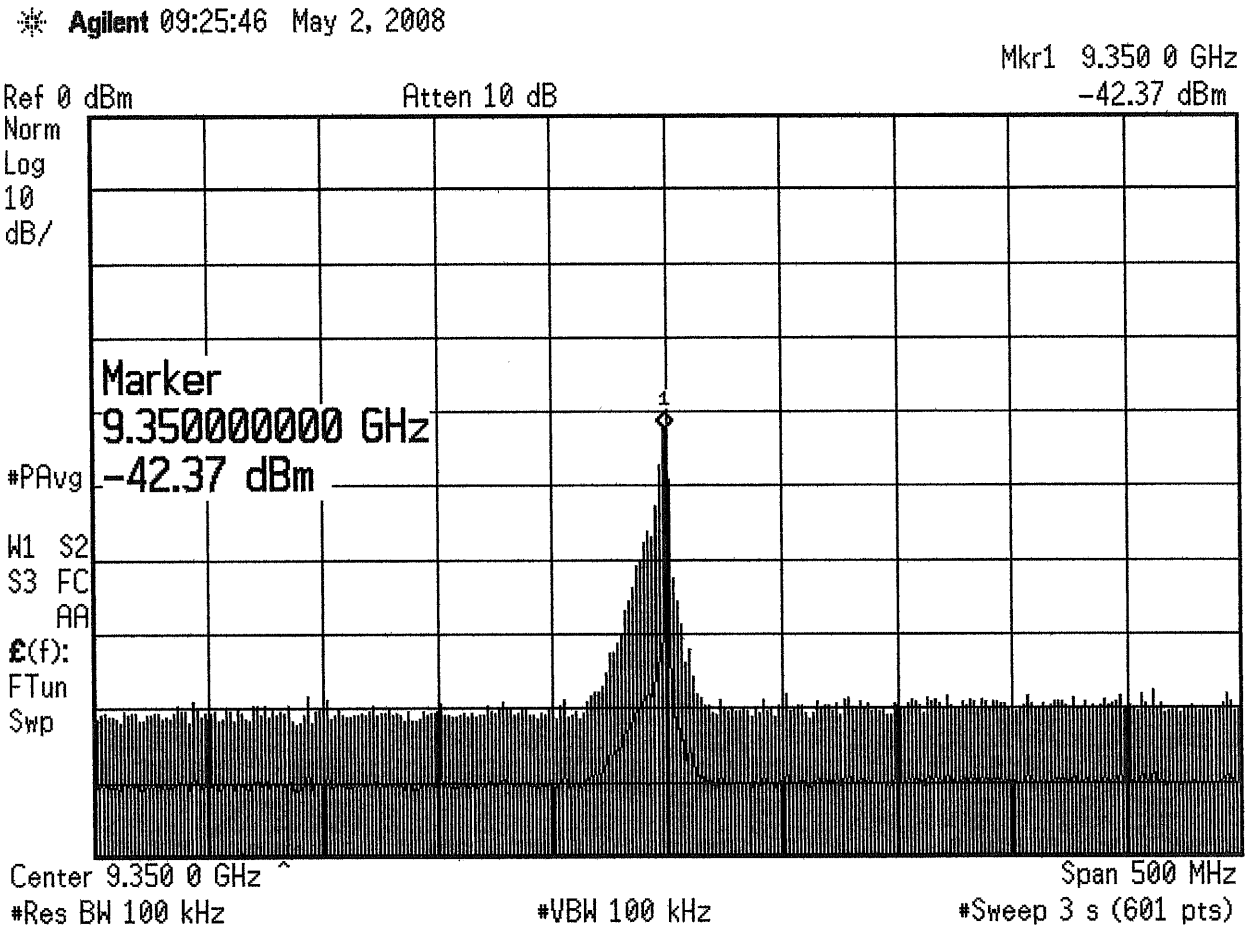
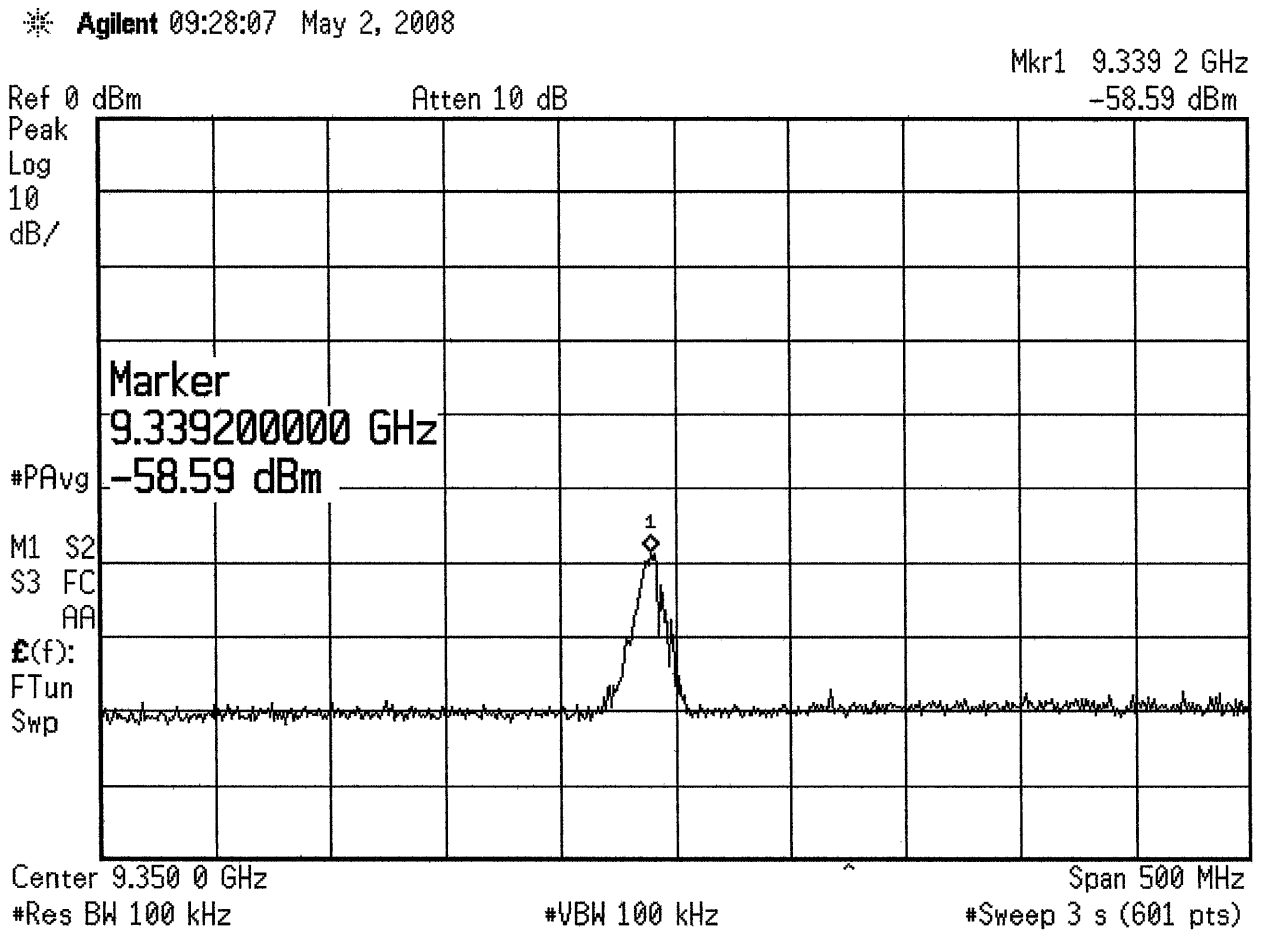
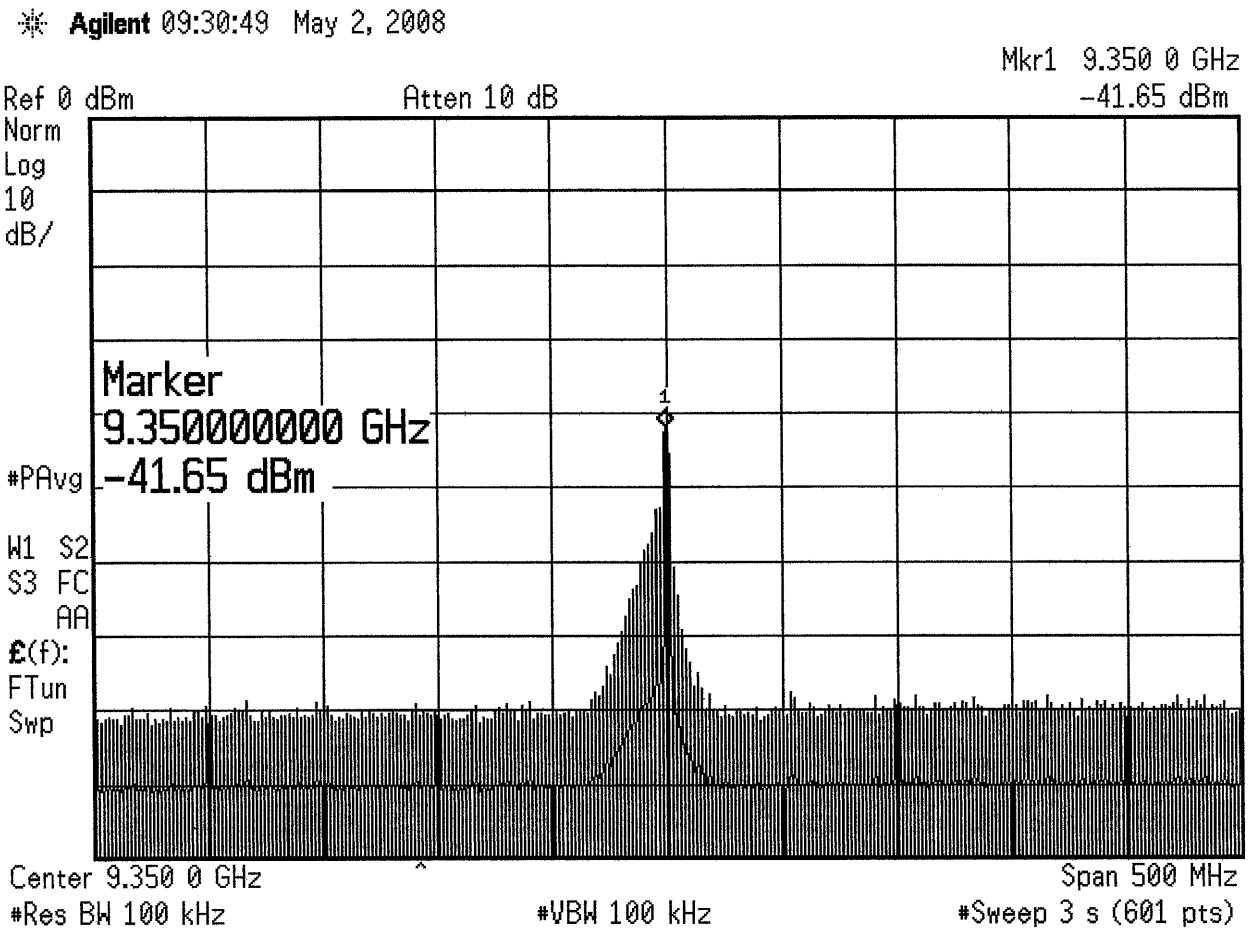
Mkr1 9.350 0 GHz
-42.33 dBm
Ref 0 dBm
Atten 10 dB
Peak
Log
10
dB/
Marker
9.350000000 GHz
-42.33 dBm
#PAvg
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Center 9.350 0 GHz
Span 500 MHz
#Res BW 100 kHz
#VBW 100 kHz
#Sweep 3 s (601 pts)


Agilent 09:25:46 May 2, 2008
Mkr1 9.350 0 GHz
-42.37 dBm
Ref 0 dBm
Atten 10 dB
Norm
Log
10
dB/
Marker
9.350000000 GHz
-42.37 dBm
#PAvg
W1 S2
S3 FC
AA
£(f):
FTun
Swp
Center 9.350 0 GHz
Span 500 MHz
#Res BW 100 kHz
#VBW 100 kHz
#Sweep 3 s (601 pts)


Agilent 09:28:07 May 2, 2008
Mkr1 9.339 2 GHz
Ref 0 dBm
Atten 10 dB
-58.59 dBm
Peak
Log
10
dB/
Marker
9.339200000 GHz
#PAvg
-58.59 dBm
M1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Center 9.350 0 GHz
Span 500 MHz
#Res BW 100 kHz
#VBW 100 kHz
#Sweep 3 s (601 pts)


Agilent 09:30:49 May 2, 2008
Mkr1 9.350 0 GHz
Ref 0 dBm
Atten 10 dB
-41.65 dBm
Norm
Log
10
dB/
Marker
9.350000000 GHz
-41.65 dBm
#PAvg
W1 S2
S3 FC
AA
£(f):
FTun
Swp
Center 9.350 0 GHz
Span 500 MHz
#Res BW 100 kHz
#VBW 100 kHz
#Sweep 3 s (601 pts)

+30%