

## BAB V

### KESIMPULAN

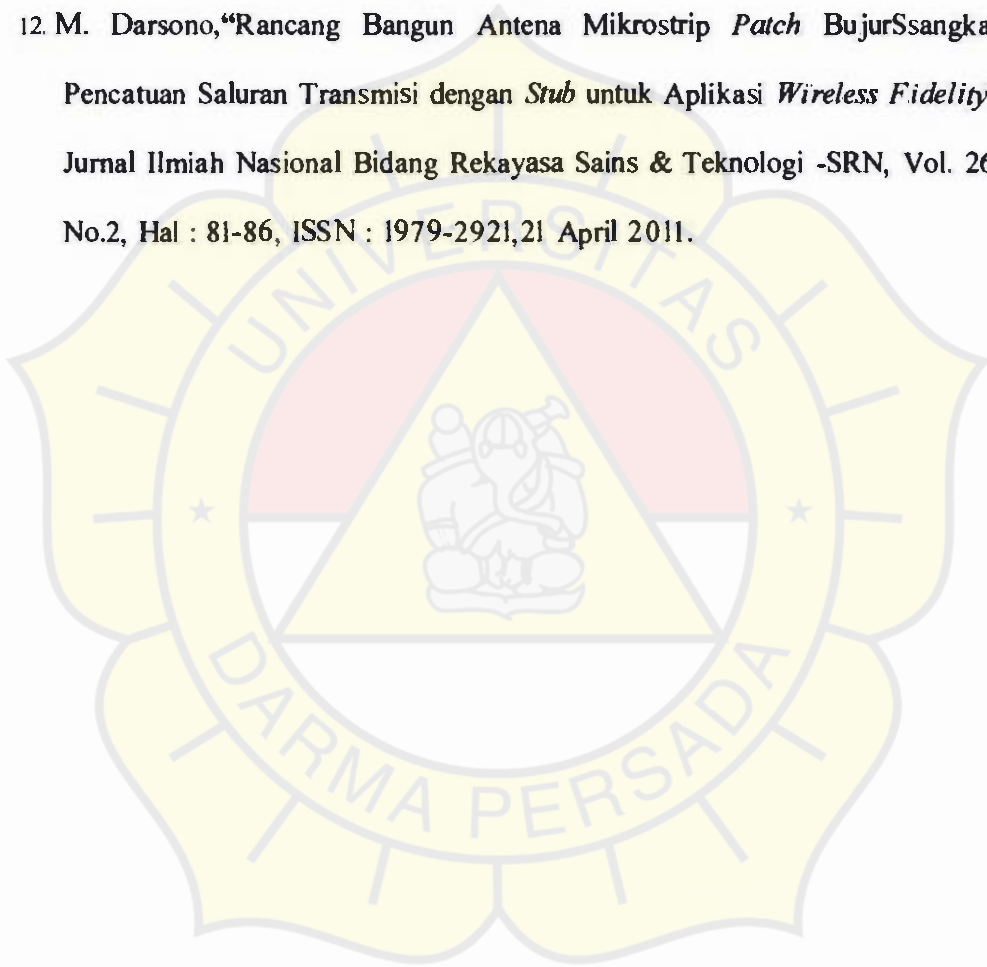
1. Rancangan dibuat berdasarkan antenna mikrostrip satu elemen *patch* bujur sangkar. Perancangan dimulai dengan menetapkan jarak resonansi antar elemen dengan jarak optimal antar *patch* didapat  $\frac{3}{4} \lambda_g$  atau 72 mm. Selanjutnya di desain saluran *transformer*  $\frac{1}{4} \lambda_g$ , dengan beberapa persamaan di dapat lebar saluran sebesar 4,8 mm dan panjang saluran didapat 24,175 mm.
2. Untuk target antenna yang beroperasi pada frekuensi 2,25 GHz terlihat dari hasil simulasi dan pengukuran terhadap parameter. Untuk target resonansi di daerah frekuensi *center* 2,25 GHz dari hasil pengukuran terjadi pergeseran ke 2,32 GHz dan untuk target resonansi daerah frekuensi *center* dari hasil simulasi dan pengukuran diperoleh penyimpangan atau pergeseran frekuensi resonansi.
3. Untuk pergeseran *Bandwidth* pada *Return Loss* hasil simulasi terhadap pengukuran terjadi pergeseran sebesar 54,8 MHz. *Return Loss* hasil simulasi batas minimum -10,94 dB dan maksimum -13,34 dB sedangkan hasil pengukuran batas minimum -10,593 dB dan maksimum -10,547 dB. Dan untuk VSWR 1 sampai 2 diperoleh dari hasil simulasi terendah adalah 1,072 untuk pergeseran VSWR dari hasil simulasi 1,793 – 1,55 sedangkan dengan metode pengukuran didapat 2,065 – 2,007. Axial Ratio terendah adalah 1,0905 pada saat 0,7522dB sampai 1,4125 pada saat 3 dB Impedansi masukan dari hasil proses simulasi 52,4  $\Omega$ . Intensitas radiasi yang dihasilkan sebanding dengan Gain antenna yang diperoleh hasil simulasi sebesar 6,8 dB

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# LAMPIRAN



Koef\_Ref.TXT

37347A

MODEL: 1 DATE: 02/15/2011 07:21 Page  
 DEVICE ID: 1 OPERATOR:  
 START: 1.000000000 GHZ GATE START: - ERROR  
 CORR: 1P 2P FWD  
 STOP: 3.000000000 GHZ GATE STOP: - AVERAGING:  
 STEP: 1 PT 0.005000000 GHZ GATE IF BNDWDTH:  
 WINDOW: 1 KHZ -

PARAMETER: ---CH1---  
 NORMALIZATION: -S11-  
 REFERENCE PLANE: OFF  
 SMOOTHING: 0.0000mm  
 DELAY APERTURE: 0.0 PERCENT

MARKERS:

MKR #	FREQ GHZ	MAGNITUDE dB
1	1.000000000	-0.084
2	1.000000000	-0.084
3	1.000000000	-0.084

FREQUENCY PNT #	FREQ GHZ	MAGNITUDE dB
1	1.000000000	-0.084
2	1.005000000	-0.086
3	1.010000000	-0.083
4	1.015000000	-0.080
5	1.020000000	-0.082
6	1.025000000	-0.088
7	1.030000000	-0.101
8	1.035000000	-0.103
9	1.040000000	-0.109
10	1.045000000	-0.108
11	1.050000000	-0.105
12	1.055000000	-0.110
13	1.060000000	-0.115
14	1.065000000	-0.114
15	1.070000000	-0.114
16	1.075000000	-0.113
17	1.080000000	-0.117
18	1.085000000	-0.127
19	1.090000000	-0.134
20	1.095000000	-0.143
21	1.100000000	-0.146
22	1.105000000	-0.150
23	1.110000000	-0.151
24	1.115000000	-0.150
25	1.120000000	-0.159
26	1.125000000	-0.162
27	1.130000000	-0.166
28	1.135000000	-0.169

Koef\_ref.TXT

29	1.140000000	-0.173
30	1.145000000	-0.179
31	1.150000000	-0.185
32	1.155000000	-0.182
33	1.160000000	-0.192
34	1.165000000	-0.189
35	1.170000000	-0.193
36	1.175000000	-0.189
37	1.180000000	-0.198
38	1.185000000	-0.198
39	1.190000000	-0.204
40	1.195000000	-0.209
41	1.200000000	-0.219
42	1.205000000	-0.217
43	1.210000000	-0.222
44	1.215000000	-0.230
45	1.220000000	-0.232
46	1.225000000	-0.236
47	1.230000000	-0.239
48	1.235000000	-0.245
49	1.240000000	-0.249
50	1.245000000	-0.252
51	1.250000000	-0.258
52	1.255000000	-0.261
53	1.260000000	-0.266
54	1.265000000	-0.268
55	1.270000000	-0.264
56	1.275000000	-0.258
57	1.280000000	-0.258
58	1.285000000	-0.255
59	1.290000000	-0.254
60	1.295000000	-0.256
61	1.300000000	-0.255
62	1.305000000	-0.253
63	1.310000000	-0.252
64	1.315000000	-0.251
65	1.320000000	-0.260
66	1.325000000	-0.264
67	1.330000000	-0.271
68	1.335000000	-0.281
69	1.340000000	-0.278
70	1.345000000	-0.278
71	1.350000000	-0.270
72	1.355000000	-0.272
73	1.360000000	-0.272
74	1.365000000	-0.268
75	1.370000000	-0.273
76	1.375000000	-0.263
77	1.380000000	-0.266
78	1.385000000	-0.260
79	1.390000000	-0.260
80	1.395000000	-0.264
81	1.400000000	-0.263
82	1.405000000	-0.266
83	1.410000000	-0.268
84	1.415000000	-0.271
85	1.420000000	-0.271
86	1.425000000	-0.270
87	1.430000000	-0.271
88	1.435000000	-0.268
89	1.440000000	-0.263
90	1.445000000	-0.256
91	1.450000000	-0.256

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92	1.455000000	-0.251
93	1.460000000	-0.250
94	1.465000000	-0.247
95	1.470000000	-0.247
96	1.475000000	-0.244
97	1.480000000	-0.246
98	1.485000000	-0.236
99	1.490000000	-0.233
100	1.495000000	-0.234
101	1.500000000	-0.231
102	1.505000000	-0.232
103	1.510000000	-0.229
104	1.515000000	-0.233
105	1.520000000	-0.232
106	1.525000000	-0.230
107	1.530000000	-0.225
108	1.535000000	-0.225
109	1.540000000	-0.219
110	1.545000000	-0.217
111	1.550000000	-0.214
112	1.555000000	-0.209
113	1.560000000	-0.207
114	1.565000000	-0.212
115	1.570000000	-0.208
116	1.575000000	-0.215
117	1.580000000	-0.213
118	1.585000000	-0.213
119	1.590000000	-0.215
120	1.595000000	-0.208
121	1.600000000	-0.206
122	1.605000000	-0.205
123	1.610000000	-0.200
124	1.615000000	-0.197
125	1.620000000	-0.200
126	1.625000000	-0.203
127	1.630000000	-0.204
128	1.635000000	-0.206
129	1.640000000	-0.208
130	1.645000000	-0.205
131	1.650000000	-0.214
132	1.655000000	-0.211
133	1.660000000	-0.222
134	1.665000000	-0.227
135	1.670000000	-0.229
136	1.675000000	-0.226
137	1.680000000	-0.238
138	1.685000000	-0.244
139	1.690000000	-0.251
140	1.695000000	-0.266
141	1.700000000	-0.283
142	1.705000000	-0.297
143	1.710000000	-0.312
144	1.715000000	-0.338
145	1.720000000	-0.375
146	1.725000000	-0.421
147	1.730000000	-0.481
148	1.735000000	-0.576
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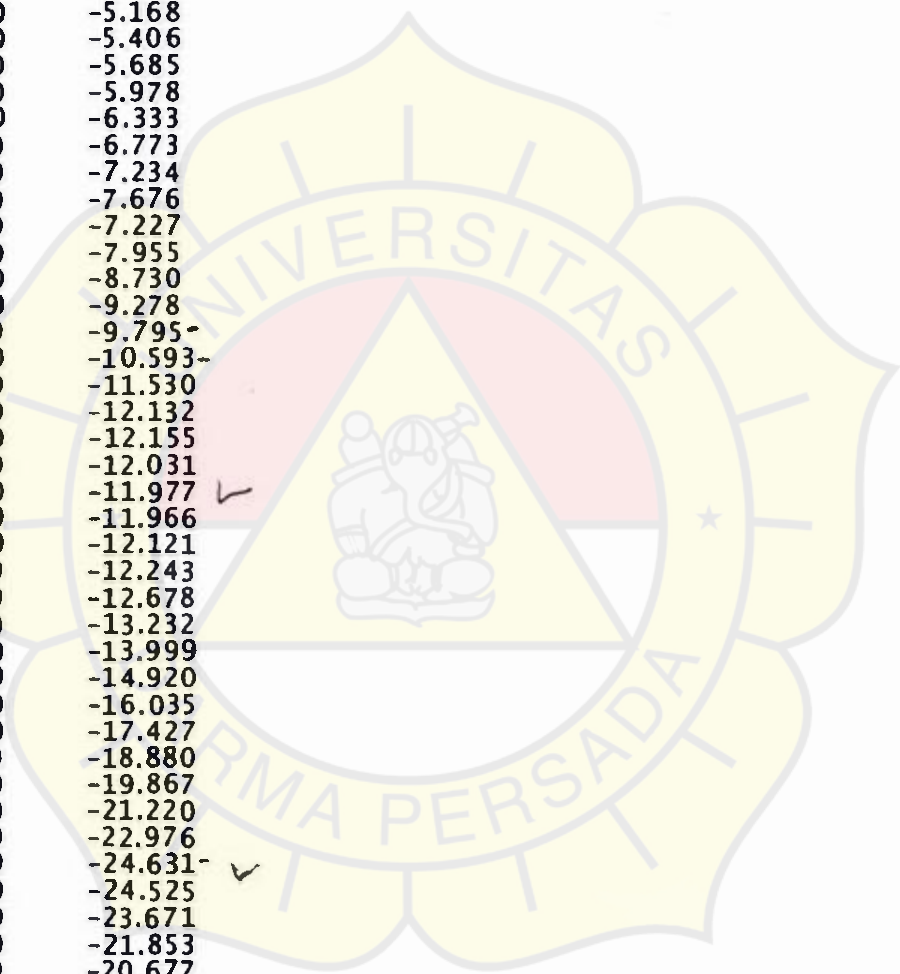
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160	1.795000000	-0.580
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162	1.805000000	-0.525
163	1.810000000	-0.525
164	1.815000000	-0.539
165	1.820000000	-0.567
166	1.825000000	-0.596
167	1.830000000	-0.623
168	1.835000000	-0.660
169	1.840000000	-0.685
170	1.845000000	-0.715
171	1.850000000	-0.753
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175	1.870000000	-0.964
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192	1.955000000	-2.410
193	1.960000000	-2.500
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196	1.975000000	-2.739
197	1.980000000	-2.835
198	1.985000000	-2.949
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201	2.000000000	-3.181
202	2.005000000	-3.286
203	2.010000000	-3.415
204	2.015000000	-3.524
205	2.020000000	-3.550
206	2.025000000	-3.551
207	2.030000000	-3.552
208	2.035000000	-3.571
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210	2.045000000	-3.591
211	2.050000000	-3.607
212	2.055000000	-3.613
213	2.060000000	-3.627
214	2.065000000	-3.642
215	2.070000000	-3.680
216	2.075000000	-3.735
217	2.080000000	-3.754



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221	2.100000000	-3.925
222	2.105000000	-3.986
223	2.110000000	-4.005
224	2.115000000	-4.047
225	2.120000000	-4.120
226	2.125000000	-4.203
227	2.130000000	-4.291
228	2.135000000	-4.402
229	2.140000000	-4.524
230	2.145000000	-4.660
231	2.150000000	-4.774
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233	2.160000000	-5.168
234	2.165000000	-5.406
235	2.170000000	-5.685
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237	2.180000000	-6.333
238	2.185000000	-6.773
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244	2.215000000	-9.278
245	2.220000000	-9.795
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250	2.245000000	-12.031
251	2.250000000	-11.977
252	2.255000000	-11.966
253	2.260000000	-12.121
254	2.265000000	-12.243
255	2.270000000	-12.678
256	2.275000000	-13.232
257	2.280000000	-13.999
258	2.285000000	-14.920
259	2.290000000	-16.035
260	2.295000000	-17.427
261	2.300000000	-18.880
262	2.305000000	-19.867
263	2.310000000	-21.220
264	2.315000000	-22.976
265	2.320000000	-24.631
266	2.325000000	-24.525
267	2.330000000	-23.671
268	2.335000000	-21.853
269	2.340000000	-20.677
270	2.345000000	-20.181
271	2.350000000	-19.313
272	2.355000000	-18.571
273	2.360000000	-18.037
274	2.365000000	-16.797
275	2.370000000	-15.396
276	2.375000000	-14.021
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280	2.395000000	-9.518

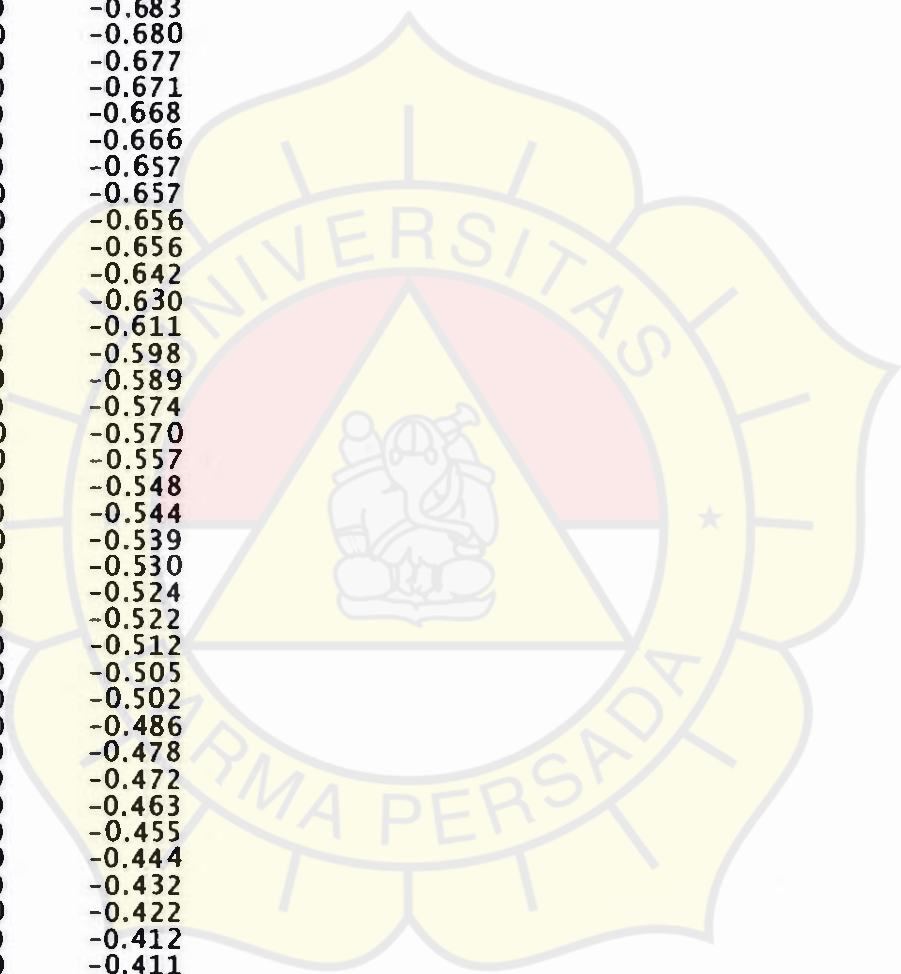


Koef\_Ref.TXT

281	2.400000000	-8.482
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283	2.410000000	-6.860
284	2.415000000	-6.164
285	2.420000000	-5.586
286	2.425000000	-5.111
287	2.430000000	-4.712
288	2.435000000	-4.317
289	2.440000000	-3.908
290	2.445000000	-3.555
291	2.450000000	-3.276
292	2.455000000	-3.034
293	2.460000000	-2.820
294	2.465000000	-2.607
295	2.470000000	-2.391
296	2.475000000	-2.191
297	2.480000000	-2.019
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299	2.490000000	-1.760
300	2.495000000	-1.678
301	2.500000000	-1.601
302	2.505000000	-1.528
303	2.510000000	-1.439
304	2.515000000	-1.347
305	2.520000000	-1.268
306	2.525000000	-1.207
307	2.530000000	-1.150
308	2.535000000	-1.103
309	2.540000000	-1.058
310	2.545000000	-1.024
311	2.550000000	-0.997
312	2.555000000	-0.970
313	2.560000000	-0.944
314	2.565000000	-0.918
315	2.570000000	-0.896
316	2.575000000	-0.869
317	2.580000000	-0.847
318	2.585000000	-0.839
319	2.590000000	-0.828
320	2.595000000	-0.816
321	2.600000000	-0.804
322	2.605000000	-0.787
323	2.610000000	-0.778
324	2.615000000	-0.779
325	2.620000000	-0.773
326	2.625000000	-0.780
327	2.630000000	-0.777
328	2.635000000	-0.771
329	2.640000000	-0.761
330	2.645000000	-0.766
331	2.650000000	-0.757
332	2.655000000	-0.754
333	2.660000000	-0.748
334	2.665000000	-0.744
335	2.670000000	-0.744
336	2.675000000	-0.740
337	2.680000000	-0.741
338	2.685000000	-0.744
339	2.690000000	-0.749
340	2.695000000	-0.773
341	2.700000000	-0.795
342	2.705000000	-0.850
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Koef\_Ref.TXT

344	2.715000000	-1.192
345	2.720000000	-1.367
346	2.725000000	-1.061
347	2.730000000	-0.851
348	2.735000000	-0.766
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356	2.775000000	-0.673
357	2.780000000	-0.676
358	2.785000000	-0.683
359	2.790000000	-0.683
360	2.795000000	-0.680
361	2.800000000	-0.677
362	2.805000000	-0.671
363	2.810000000	-0.668
364	2.815000000	-0.666
365	2.820000000	-0.657
366	2.825000000	-0.657
367	2.830000000	-0.656
368	2.835000000	-0.656
369	2.840000000	-0.642
370	2.845000000	-0.630
371	2.850000000	-0.611
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374	2.865000000	-0.574
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376	2.875000000	-0.557
377	2.880000000	-0.548
378	2.885000000	-0.544
379	2.890000000	-0.539
380	2.895000000	-0.530
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382	2.905000000	-0.522
383	2.910000000	-0.512
384	2.915000000	-0.505
385	2.920000000	-0.502
386	2.925000000	-0.486
387	2.930000000	-0.478
388	2.935000000	-0.472
389	2.940000000	-0.463
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392	2.955000000	-0.432
393	2.960000000	-0.422
394	2.965000000	-0.412
395	2.970000000	-0.411
396	2.975000000	-0.401
397	2.980000000	-0.390
398	2.985000000	-0.385
399	2.990000000	-0.376
400	2.995000000	-0.363
401	3.000000000	-0.360



SWR.TXT

37347A

MODEL: 1 DATE: 02/15/2011 07:23 Page  
 DEVICE ID: 1 OPERATOR:  
 START: 1.000000000 GHZ GATE START: - ERROR  
 CORR: 1P 2P FWD  
 STOP: 3.000000000 GHZ GATE STOP: - AVERAGING:  
 STEP: 1 PT  
 0.005000000 GHZ GATE IF BNDWDTH:  
 WINDOW: 1 KHZ -

---CH1---

PARAMETER: -S11-  
 NORMALIZATION: OFF  
 REFERENCE PLANE: 0.0000mm  
 SMOOTHING: 0.0 PERCENT  
 DELAY APERTURE: -

MARKERS:

MKR #	FREQ GHZ	SWR UNITS
1	1.000000000	208.925E+00
2	1.000000000	208.925E+00
3	1.000000000	208.925E+00

FREQUENCY POINTS:

PNT #	FREQ GHZ	SWR UNITS
1	1.000000000	208.925E+00
2	1.005000000	222.249E+00
3	1.010000000	217.411E+00
4	1.015000000	207.934E+00
5	1.020000000	207.740E+00
6	1.025000000	198.633E+00
7	1.030000000	173.718E+00
8	1.035000000	171.277E+00
9	1.040000000	176.184E+00
10	1.045000000	169.727E+00
11	1.050000000	166.521E+00
12	1.055000000	159.796E+00
13	1.060000000	159.033E+00
14	1.065000000	156.487E+00
15	1.070000000	152.408E+00
16	1.075000000	152.190E+00
17	1.080000000	149.320E+00
18	1.085000000	136.146E+00
19	1.090000000	130.779E+00
20	1.095000000	121.539E+00
21	1.100000000	121.842E+00
22	1.105000000	115.654E+00
23	1.110000000	115.161E+00
24	1.115000000	116.054E+00
25	1.120000000	111.644E+00
26	1.125000000	110.051E+00
27	1.130000000	104.027E+00
28	1.135000000	100.535E+00

29	1.140000000	99.155E+00
30	1.145000000	98.044E+00
31	1.150000000	95.955E+00
32	1.155000000	92.855E+00
33	1.160000000	91.817E+00
34	1.165000000	90.861E+00
35	1.170000000	89.770E+00
36	1.175000000	90.205E+00
37	1.180000000	87.357E+00
38	1.185000000	87.455E+00
39	1.190000000	85.580E+00
40	1.195000000	82.622E+00
41	1.200000000	80.127E+00
42	1.205000000	80.804E+00
43	1.210000000	80.577E+00
44	1.215000000	78.391E+00
45	1.220000000	77.717E+00
46	1.225000000	76.592E+00
47	1.230000000	75.034E+00
48	1.235000000	74.151E+00
49	1.240000000	74.089E+00
50	1.245000000	72.211E+00
51	1.250000000	70.621E+00
52	1.255000000	69.383E+00
53	1.260000000	69.065E+00
54	1.265000000	67.838E+00
55	1.270000000	65.328E+00
56	1.275000000	67.636E+00
57	1.280000000	66.831E+00
58	1.285000000	67.709E+00
59	1.290000000	67.881E+00
60	1.295000000	68.639E+00
61	1.300000000	68.305E+00
62	1.305000000	67.598E+00
63	1.310000000	68.962E+00
64	1.315000000	69.104E+00
65	1.320000000	66.944E+00
66	1.325000000	65.940E+00
67	1.330000000	64.401E+00
68	1.335000000	62.773E+00
69	1.340000000	62.425E+00
70	1.345000000	62.383E+00
71	1.350000000	64.739E+00
72	1.355000000	63.009E+00
73	1.360000000	63.520E+00
74	1.365000000	63.088E+00
75	1.370000000	63.867E+00
76	1.375000000	65.482E+00
77	1.380000000	64.293E+00
78	1.385000000	65.733E+00
79	1.390000000	65.863E+00
80	1.395000000	66.817E+00
81	1.400000000	66.055E+00
82	1.405000000	66.515E+00
83	1.410000000	67.091E+00
84	1.415000000	66.287E+00
85	1.420000000	66.233E+00
86	1.425000000	66.256E+00
87	1.430000000	67.179E+00
88	1.435000000	67.435E+00
89	1.440000000	69.608E+00
90	1.445000000	72.012E+00
91	1.450000000	72.164E+00

281	2.400000000	2.220E+00
282	2.405000000	2.450E+00
283	2.410000000	2.687E+00
284	2.415000000	2.962E+00
285	2.420000000	3.241E+00
286	2.425000000	3.527E+00
287	2.430000000	3.831E+00
288	2.435000000	4.175E+00
289	2.440000000	4.599E+00
290	2.445000000	5.027E+00
291	2.450000000	5.441E+00
292	2.455000000	5.856E+00
293	2.460000000	6.306E+00
294	2.465000000	6.801E+00
295	2.470000000	7.412E+00
296	2.475000000	8.076E+00
297	2.480000000	8.760E+00
298	2.485000000	9.423E+00
299	2.490000000	10.048E+00
300	2.495000000	10.610E+00
301	2.500000000	11.142E+00
302	2.505000000	11.615E+00
303	2.510000000	12.261E+00
304	2.515000000	13.109E+00
305	2.520000000	13.972E+00
306	2.525000000	14.750E+00
307	2.530000000	15.473E+00
308	2.535000000	16.117E+00
309	2.540000000	16.707E+00
310	2.545000000	17.165E+00
311	2.550000000	17.765E+00
312	2.555000000	18.160E+00
313	2.560000000	18.734E+00
314	2.565000000	19.115E+00
315	2.570000000	19.685E+00
316	2.575000000	20.288E+00
317	2.580000000	20.739E+00
318	2.585000000	20.800E+00
319	2.590000000	20.994E+00
320	2.595000000	21.357E+00
321	2.600000000	21.659E+00
322	2.605000000	22.198E+00
323	2.610000000	22.354E+00
324	2.615000000	22.447E+00
325	2.620000000	22.656E+00
326	2.625000000	22.740E+00
327	2.630000000	22.872E+00
328	2.635000000	22.771E+00
329	2.640000000	23.027E+00
330	2.645000000	22.831E+00
331	2.650000000	23.044E+00
332	2.655000000	23.407E+00
333	2.660000000	23.442E+00
334	2.665000000	23.550E+00
335	2.670000000	23.599E+00
336	2.675000000	23.690E+00
337	2.680000000	23.767E+00
338	2.685000000	23.534E+00
339	2.690000000	23.206E+00
340	2.695000000	22.760E+00
341	2.700000000	22.042E+00
342	2.705000000	20.687E+00
343	2.710000000	18.176E+00