



*commit to user*

## Lampiran 1 Nilai S-parameter hasil pengukuran

Frekuensi	s11-magnitude (db)	Frekuensi	s11-magnitude (db)
0,1	0,388000808	0,68	-5,353163691
0,1145	0,965604889	0,6945	-5,197169416
0,129	0,697415122	0,709	-5,617793073
0,1435	0,555667902	0,7235	-6,576513179
0,158	0,290744855	0,738	-7,094433413
0,1725	0,043188052	0,7525	-8,154383071
0,187	-0,194848791	0,767	-8,810782922
0,2015	-0,546983571	0,7815	-10,26772263
0,216	-0,401444048	0,796	-11,59351054
0,2305	-0,423893448	0,8105	-12,09998256
0,245	-0,442654594	0,825	-12,5251246
0,2595	-0,496431893	0,8395	-12,94230776
0,274	-0,247367346	0,854	-13,93991265
0,2885	-0,145419106	0,8685	-14,77444279
0,303	-0,05773216	0,883	-14,42748795
0,3175	0,250448087	0,8975	-13,71830647
0,332	0,356549058	0,912	-13,45642554
0,3465	0,464517531	0,9265	-13,77735163
0,361	0,677541405	0,941	-14,00833213
0,3755	0,676475763	0,9555	-14,22185473
0,39	0,55973794	0,97	-14,8409645
0,4045	0,390457218	0,9845	-15,00562233
0,419	0,040765059	0,999	-14,64383526
0,4335	-0,314573301	1,0135	-15,0261022
0,448	-0,671320658	1,028	-14,19179083
0,4625	-1,084521109	1,0425	-13,43471751
0,477	-1,634381056	1,057	-12,66997892
0,4915	-2,03488526	1,0715	-12,89989886
0,506	-2,156918016	1,086	-13,04431693
0,5205	-2,42729577	1,1005	-15,09811243
0,535	-2,670198799	1,115	-16,14942378
0,5495	-2,780514699	1,1295	-16,95841947
0,564	-3,120727483	1,144	-16,82928171
0,5785	-4,156904625	1,1585	-19,20823273
0,593	-5,949933829	1,173	-21,66677225
0,6075	-8,035209766	1,1875	-25,67131619
0,622	-8,530374111	1,202	-29,5833458
0,6365	-8,168718044	1,2165	-40,21365592
0,651	-6,350292369	1,231	-33,22180522
0,6655	-5,435084111	1,2455	-37,99079126

1,26	-39,45059617
1,2745	-46,63428456
1,289	-32,71141908
1,3035	-28,58895591
1,318	-23,98039058
1,3325	-22,57984573
1,347	-20,47075147
1,3615	-17,75443916
1,376	-15,89219847
1,3905	-15,90271657
1,405	-15,18184475
1,4195	-13,337548
1,434	-12,88871723
1,4485	-12,75851656
1,463	-13,37117306
1,4775	-12,67565531
1,492	-12,66358574
1,5065	-12,90373692
1,521	-13,32900923
1,5355	-13,42270645
1,55	-13,30316631
1,5645	-13,98267541
1,579	-16,10146184
1,5935	-14,4327407
1,608	-14,77956942
1,6225	-15,97086513
1,637	-15,1416306
1,6515	-14,18691685
1,666	-14,07612891
1,6805	-14,79869826
1,695	-13,53228746
1,7095	-13,29134057
1,724	-13,62395973
1,7385	-13,50799567
1,753	-13,27758417
1,7675	-12,88543574
1,782	-12,55190556
1,7965	-11,92275403
1,811	-12,40112376
1,8255	-12,37577619
1,84	-12,43534524
1,8545	-13,04125189
1,869	-12,23727666

1,8835	-11,47114941
1,898	-11,46964288
1,9125	-11,06876727
1,927	-9,839061084
1,9415	-10,06645969
1,956	-9,783163909
1,9705	-9,298453471
1,985	-8,910545911
1,9995	-8,49762132
2,014	-8,962240138
2,0285	-9,381021921
2,043	-9,77208321
2,0575	-9,825524921
2,072	-10,19052162
2,0865	-9,827963976
2,101	-10,58229803
2,1155	-10,18303866
2,13	-10,05986549
2,1445	-9,466869824
2,159	-8,861553636
2,1735	-7,88254375
2,188	-6,417692098
2,2025	-6,466814521
2,217	-6,16951389
2,2315	-6,326304424
2,246	-6,681751428
2,2605	-6,925289697
2,275	-7,580339859
2,2895	-9,117140164
2,304	-11,4165967
2,3185	-12,38305384
2,333	-13,39737817
2,3475	-16,77235912
2,362	-17,53589988
2,3765	-14,85828153
2,391	-13,16205483
2,4055	-10,68327154
2,42	-8,647677583
2,4345	-8,667645968
2,449	-8,244231422
2,4635	-7,385874219
2,478	-6,219482037
2,4925	-6,000545012

2,507	-6,258383661
2,5215	-6,075345492
2,536	-7,090532014
2,5505	-8,481866787
2,565	-12,94638629
2,5795	-15,70200019
2,594	-25,24559413
2,6085	-30,16648622
2,623	-11,7604655
2,6375	-8,791331098
2,652	-4,892322717
2,6665	-4,403444746
2,681	-3,365957109
2,6955	-2,840468304
2,71	-7,276709951
2,7245	-12,64003355
2,739	-14,15382688
2,7535	-19,70965927
2,768	-26,88390553
2,7825	-16,88279825
2,797	-10,93595585
2,8115	-8,662066163
2,826	-5,788291046
2,8405	-3,81904826
2,855	-1,943846561
2,8695	-0,50745244
2,884	0,351542248
2,8985	0,329770284
2,913	0,47731688
2,9275	-0,252914524
2,942	-0,412945304
2,9565	-1,061839488
2,971	-2,492299227
2,9855	-4,566340963
3	-6,847062811

## Lampiran 2 Nilai VSWR hasil pengukuran

Frekuensi	s11-vswr	Frekuensi	s11-vswr
0,1	-44,7799785	0,68	3,347215742
0,1145	-18,0090912	0,6945	3,441680624
0,129	-24,9221886	0,709	3,199329496
0,1435	-31,2735422	0,7235	2,76648982
0,158	-59,7548021	0,738	2,583288812
0,1725	-402,236597	0,7525	2,284577739
0,187	89,15892016	0,767	2,137882964
0,2015	31,76972905	0,7815	1,884460567
0,216	43,28092938	0,796	1,714526988
0,2305	40,98960965	0,8105	1,660684771
0,245	39,25304097	0,825	1,619352169
0,2595	35,00280323	0,8395	1,581857922
0,274	70,23139355	0,854	1,502851066
0,2885	119,4628786	0,8685	1,446502034
0,303	300,9040954	0,883	1,468965139
0,3175	-69,3676003	0,8975	1,519219035
0,332	-48,7288304	0,912	1,53939826
0,3465	-37,4063803	0,9265	1,514796023
0,361	-25,6524352	0,941	1,497923362
0,3755	-25,6928042	0,9555	1,482912819
0,39	-31,0462976	0,97	1,442342094
0,4045	-44,4983567	0,9845	1,432240431
0,419	-426,144634	0,999	1,454805007
0,4335	55,22934715	1,0135	1,431003111
0,448	25,88990191	1,028	1,484993219
0,4625	16,03873099	1,0425	1,541113213
0,477	10,6603075	1,057	1,606005166
0,4915	8,575992349	1,0715	1,585539563
0,506	8,095327106	1,086	1,573117673
0,5205	7,20335982	1,1005	1,426685487
0,535	6,556955786	1,115	1,369067946
0,5495	6,300946943	1,1295	1,330816454
0,564	5,626332762	1,144	1,336605591
0,5785	4,258478727	1,1585	1,246040084
0,593	3,032944798	1,173	1,179930161
0,6075	2,313983208	1,1875	1,109819508
0,622	2,197571971	1,202	1,06863025
0,6365	2,281102581	1,2165	1,019706315
0,651	2,856366175	1,231	1,044619241
0,6655	3,299845314	1,2455	1,025526922

1,26	1,02153533
1,2745	1,009361466
1,289	1,047383624
1,3035	1,077276328
1,318	1,135014794
1,3325	1,160534715
1,347	1,209272261
1,3615	1,297536667
1,376	1,382281367
1,3905	1,381730425
1,405	1,42172881
1,4195	1,548871276
1,434	1,586515029
1,4485	1,598021705
1,463	1,546171444
1,4775	1,605489401
1,492	1,606586707
1,5065	1,585205197
1,521	1,549559452
1,5355	1,54206494
1,55	1,551648648
1,5645	1,499764388
1,579	1,371491093
1,5935	1,46861519
1,608	1,4461798
1,6225	1,378183012
1,637	1,424100863
1,6515	1,485331503
1,666	1,493097524
1,6805	1,444979883
1,695	1,533456605
1,7095	1,552607885
1,724	1,526382003
1,7385	1,535350517
1,753	1,553726282
1,7675	1,586801678
1,782	1,6168574
1,7965	1,678927204
1,811	1,631067477
1,8255	1,633495955
1,84	1,627807094
1,8545	1,573377939
1,869	1,646972057

1,8835	1,72835569
1,898	1,728528052
1,9125	1,776296138
1,927	1,950469145
1,9415	1,914676052
1,956	1,959549596
1,9705	2,043347102
1,985	2,117626893
1,9995	2,204821814
2,014	2,107323286
2,0285	2,028400263
2,043	1,961363269
2,0575	1,952657617
2,072	1,895893857
2,0865	1,952262788
2,101	1,839791717
2,1155	1,897012323
2,13	1,915688776
2,1445	2,013162344
2,159	2,127512529
2,1735	2,353044758
2,188	2,82889564
2,2025	2,80925134
2,217	2,933143533
2,2315	2,866290631
2,246	2,726847978
2,2605	2,63995224
2,275	2,435328336
2,2895	2,077209048
2,304	1,734630183
2,3185	1,632797519
2,333	1,544078555
2,3475	1,339194113
2,362	1,306278699
2,3765	1,441266695
2,391	1,563228432
2,4055	1,826076686
2,42	2,172092829
2,4345	2,167829751
2,449	2,263010211
2,4635	2,492070188
2,478	2,911456361
2,4925	3,009267717

2,507	2,89482211
2,5215	2,975024932
2,536	2,584563694
2,5505	2,208330602
2,565	1,58150535
2,5795	1,392405173
2,594	1,115655205
2,6085	1,064031247
2,623	1,696188785
2,6375	2,141890625
2,652	3,64420675
2,6665	4,029177575
2,681	5,225447786
2,6955	6,170221817
2,71	2,525332893
2,7245	1,608735027
2,739	1,487635621
2,7535	1,230647044
2,768	1,094831774
2,7825	1,334192552
2,797	1,792999888
2,8115	2,169018851
2,826	3,111446594
2,8405	4,621765161
2,855	8,974073664
2,8695	34,24305162
2,884	-49,422653
2,8985	-52,6847528
2,913	-36,4038052
2,9275	68,69121778
2,942	42,07591425
2,9565	16,38045001
2,971	7,017939291
2,9855	3,891529523
3	2,667156034



### Lampiran 3 Nilai Impedansi hasil pengukuran

Frekuensi	s11-impedance ( $\omega$ )	Frekuensi	s11-impedance ( $\omega$ )
0,1	261,4539489	0,68	31,63244365
0,1145	209,7055476	0,6945	27,07405856
0,129	186,8317448	0,709	24,96772698
0,1435	173,452018	0,7235	25,94320977
0,158	151,9397858	0,738	25,79445667
0,1725	132,8397486	0,7525	27,7458379
0,187	115,9981665	0,767	28,41345575
0,2015	108,3820074	0,7815	30,78850535
0,216	95,92228269	0,796	33,27529037
0,2305	86,76600993	0,8105	34,00482854
0,245	79,19385578	0,825	33,86305903
0,2595	72,58700879	0,8395	33,1948765
0,274	67,10040858	0,854	34,11512832
0,2885	61,93840238	0,8685	34,76138885
0,303	58,66950682	0,883	34,03986514
0,3175	54,98072206	0,8975	33,39649408
0,332	52,10237596	0,912	33,42507895
0,3465	48,65861655	0,9265	34,60319629
0,361	45,51218439	0,941	35,37898256
0,3755	41,84189146	0,9555	34,85506704
0,39	38,48316881	0,97	35,36880561
0,4045	35,27786015	0,9845	35,16911715
0,419	31,59917206	0,999	34,46729852
0,4335	27,14864465	1,0135	34,94453411
0,448	22,92703034	1,028	34,15186645
0,4625	19,30547102	1,0425	33,50657394
0,477	15,82892381	1,057	32,51240048
0,4915	12,17227292	1,0715	33,36062053
0,506	8,361045001	1,086	33,70971582
0,5205	6,942474503	1,1005	37,15175638
0,535	9,785522748	1,115	38,74663157
0,5495	15,91575818	1,1295	40,54550731
0,564	25,17103084	1,144	39,9663618
0,5785	40,71932817	1,1585	41,68850712
0,593	68,12527586	1,173	43,39402608
0,6075	106,6630504	1,1875	45,86564741
0,622	95,35316833	1,202	46,83591536
0,6365	63,88027522	1,2165	49,71950316
0,651	47,96463107	1,231	51,25899149
0,6655	38,17749123	1,2455	51,15350855



1,2455	51,15350855
1,26	49,18733075
1,2745	50,21357173
1,289	49,76293875
1,3035	47,29839365
1,318	45,73220034
1,3325	44,90474346
1,347	44,119731
1,3615	41,3040731
1,376	38,80498213
1,3905	38,84118189
1,405	38,81210844
1,4195	37,02596107
1,434	37,12647959
1,4485	38,00454079
1,463	38,50391879
1,4775	38,40475862
1,492	37,44890986
1,5065	37,99031068
1,521	39,31462482
1,5355	38,18899311
1,55	37,35184625
1,5645	37,21984598
1,579	40,47579872
1,5935	37,13258632
1,608	36,71969289
1,6225	37,65724246
1,637	36,11892731
1,6515	34,95203261
1,666	34,25429214
1,6805	35,26576736
1,695	32,96875168
1,7095	32,68493086
1,724	33,52610208
1,7385	33,04727871
1,753	32,37331246
1,7675	31,94764901
1,782	31,79617796
1,7965	30,62721579
1,811	31,24739683
1,8255	30,98448598
1,84	31,11556367
1,8545	31,97135909

1,869	30,48100606
1,8835	28,95371044
1,898	28,95756611
1,9125	28,20589023
1,927	25,66084171
1,9415	26,13818128
1,956	25,54333802
1,9705	24,47904347
1,985	23,6856261
1,9995	22,85802114
2,014	23,99153345
2,0285	25,33275221
2,043	26,50990251
2,0575	26,63335725
2,072	29,03815901
2,0865	29,42329494
2,101	32,57178196
2,1155	34,11487283
2,13	38,50828528
2,1445	41,72719513
2,159	46,64142871
2,1735	50,2350914
2,188	51,33322784
2,2025	54,01116424
2,217	55,93211967
2,2315	56,58051199
2,246	57,93165408
2,2605	60,59249777
2,275	62,84784345
2,2895	59,64935674
2,304	61,42464499
2,3185	65,83535922
2,333	63,22745316
2,3475	62,58867883
2,362	64,80524745
2,3765	71,1002746
2,391	73,34133566
2,4055	79,37448818
2,42	88,05817184
2,4345	86,05284221
2,449	82,95005105
2,4635	80,6326146
2,478	87,12723963

2,4925	94,51239072
2,507	89,85723058
2,5215	88,87110518
2,536	91,18334657
2,5505	85,82413063
2,565	72,62565563
2,5795	63,14884685
2,594	55,64194275
2,6085	47,76519676
2,623	31,72705812
2,6375	23,58496161
2,652	14,48504481
2,6665	16,93847541
2,681	18,62101362
2,6955	20,56378923
2,71	50,49166385
2,7245	48,07253692
2,739	47,04913648
2,7535	49,61535156
2,768	45,98387281
2,7825	39,90304468
2,797	31,64737283
2,8115	28,86953168
2,826	22,56831242
2,8405	17,32306132
2,855	12,93988556
2,8695	7,510865173
2,884	3,593451078
2,8985	1,057929428
2,913	1,866811765
2,9275	5,468637576
2,942	8,485218965
2,9565	12,3770196
2,971	16,79189048
2,9855	22,0182479
3	26,28800696