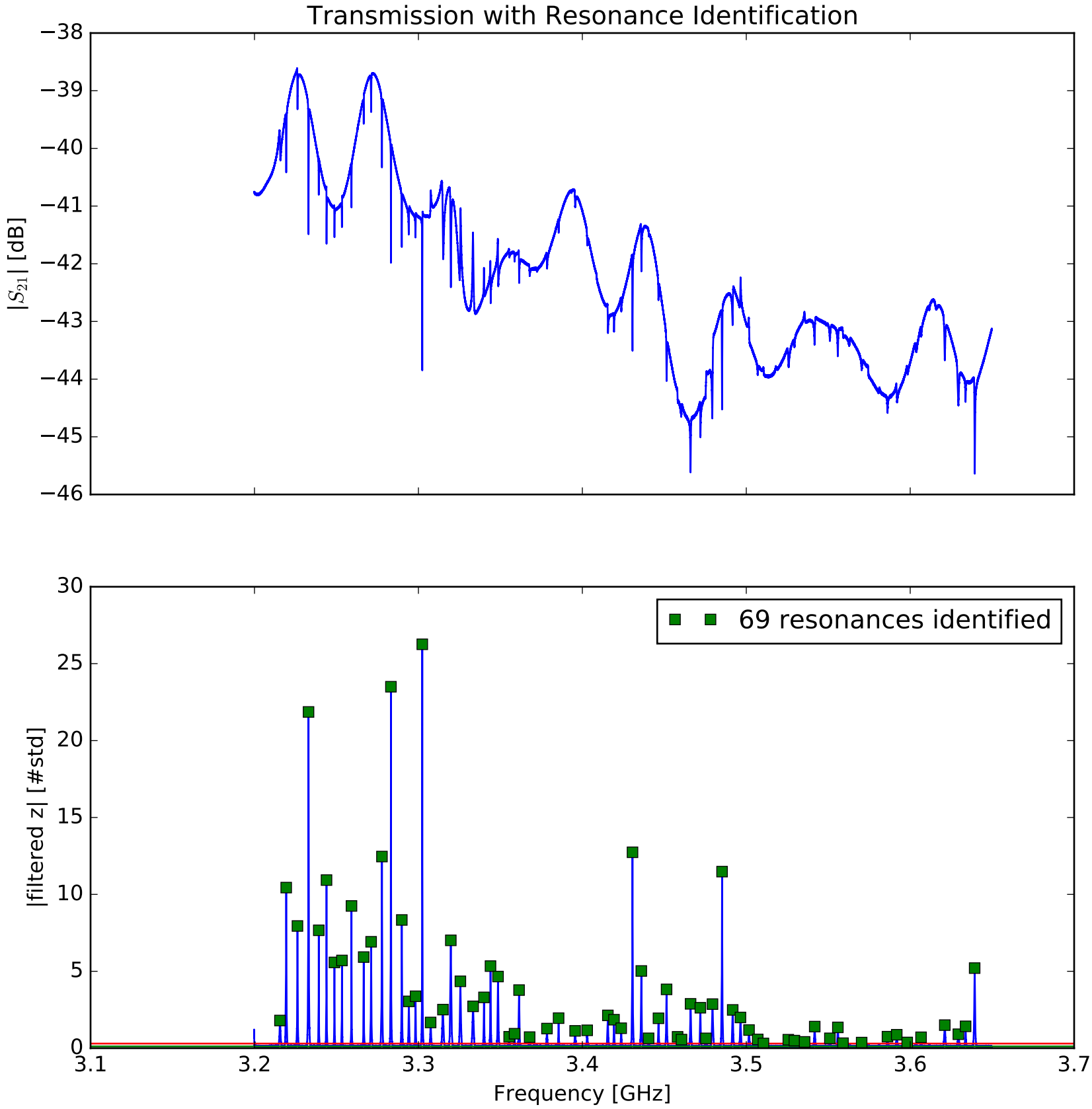
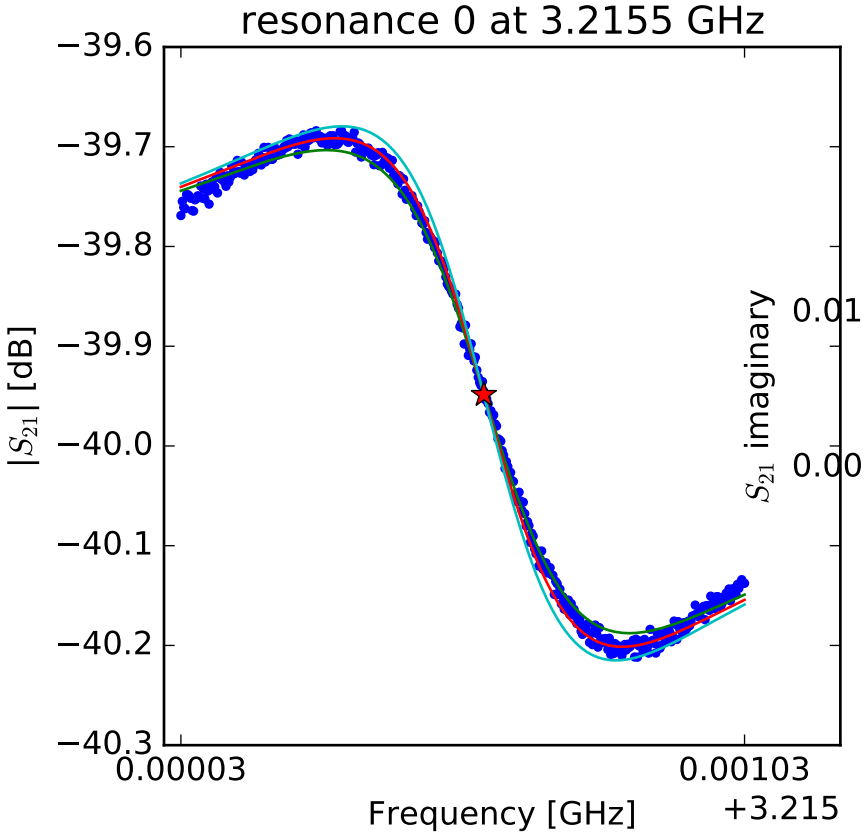
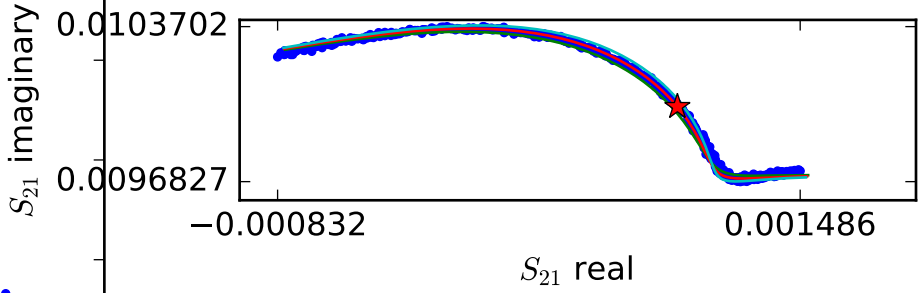
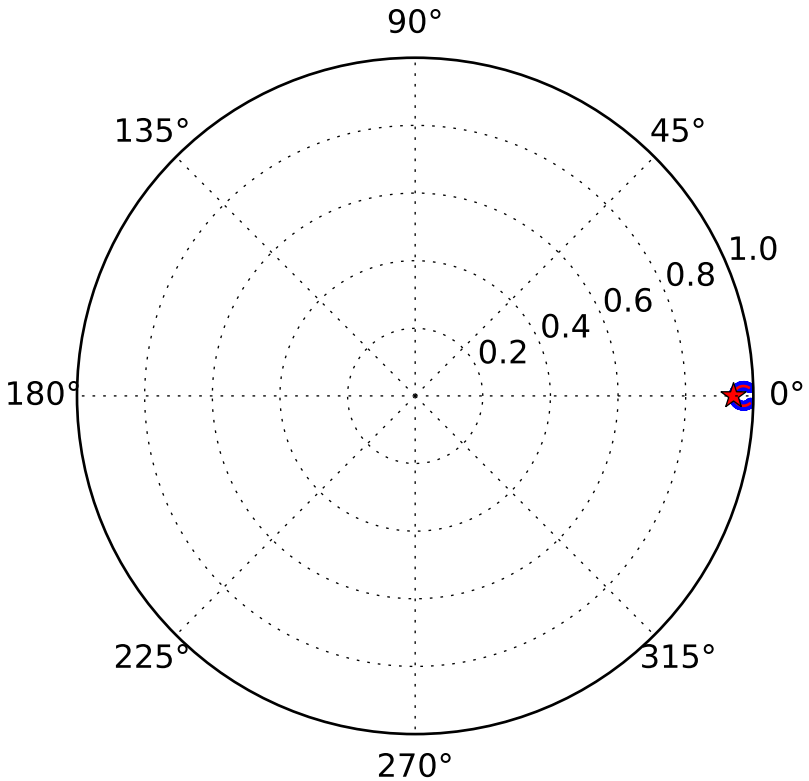
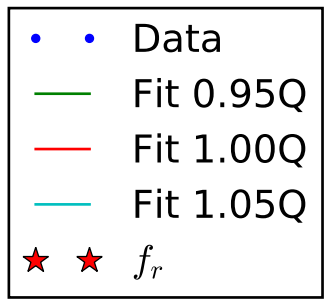

Transmission with Resonance Identification
$|S_{21}|$ [dB]
−38
−39
−40
−41
−42
−43
−44
−45
−46
|filtered z| [#std]
69 resonances identified
0
5
10
15
20
25
30
3.1
3.2
3.3
3.4
3.5
3.6
3.7
Frequency [GHz]



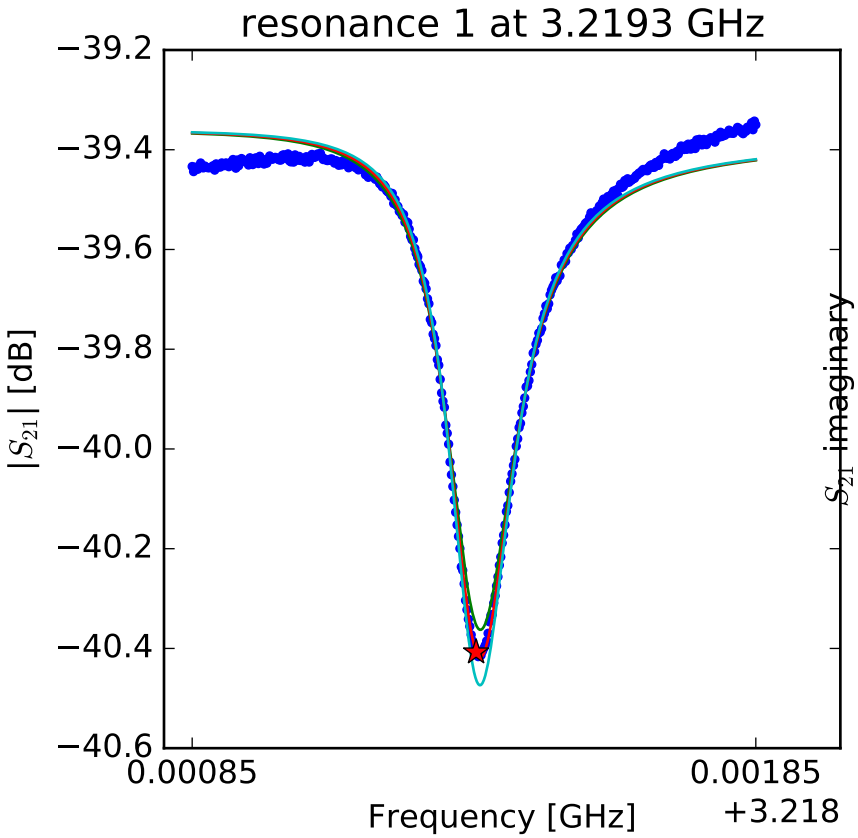



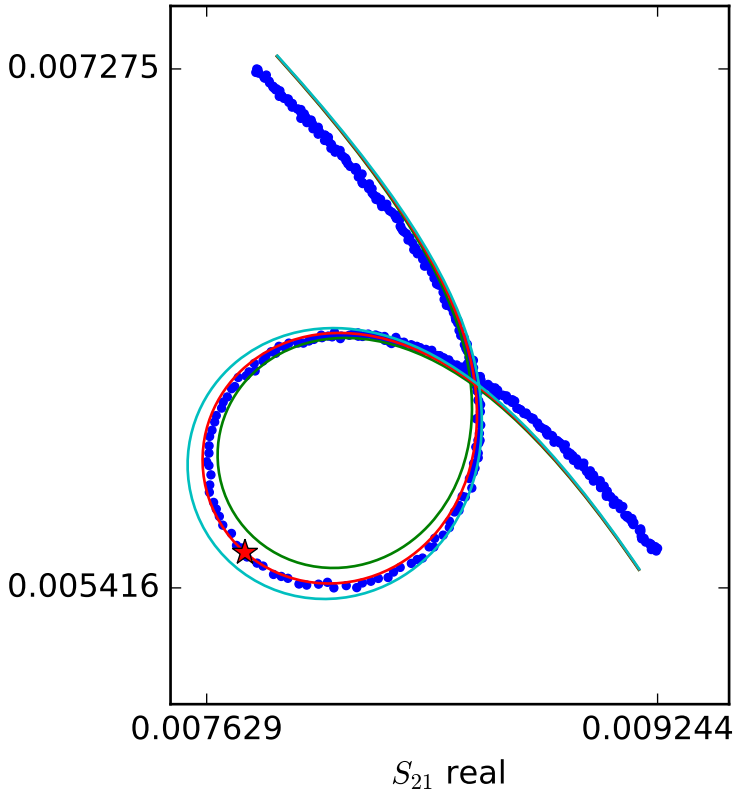



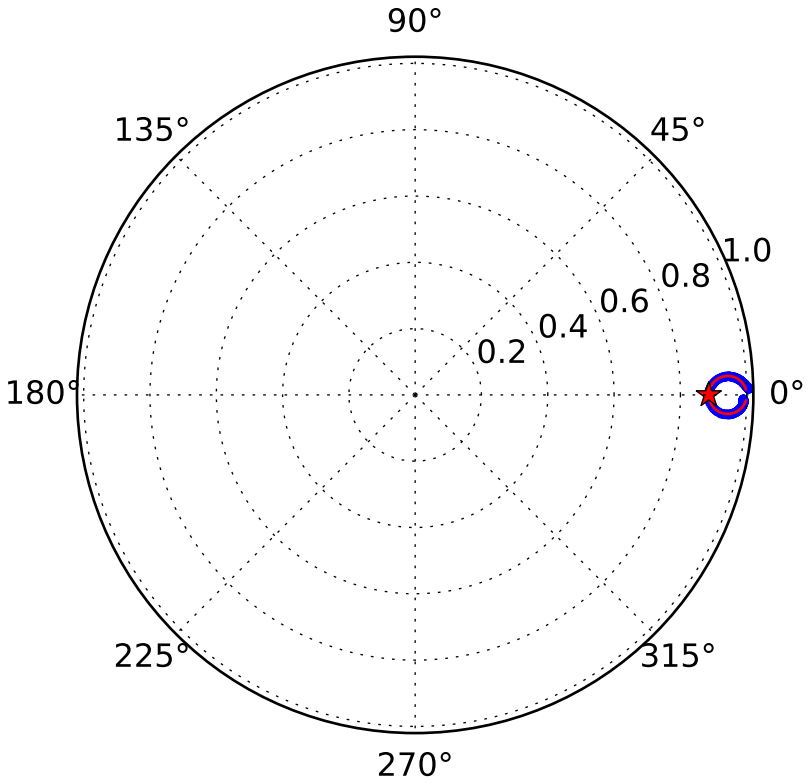



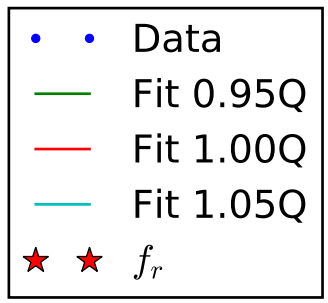

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.21556749979
$Q_r$ = 6300.83213719
$Q_c$ = 107523.49934
$a$ = (-0.00330517346393+0.00952459377239j)
$\phi_0$ = 1.50354841256
$\tau$ = 37.0257346376



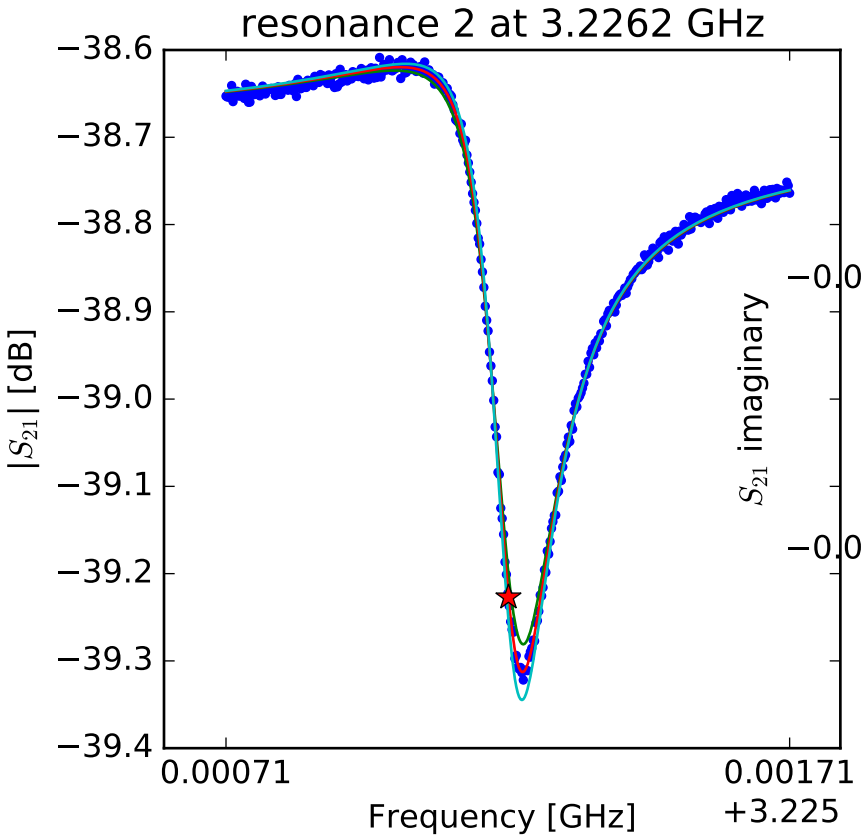



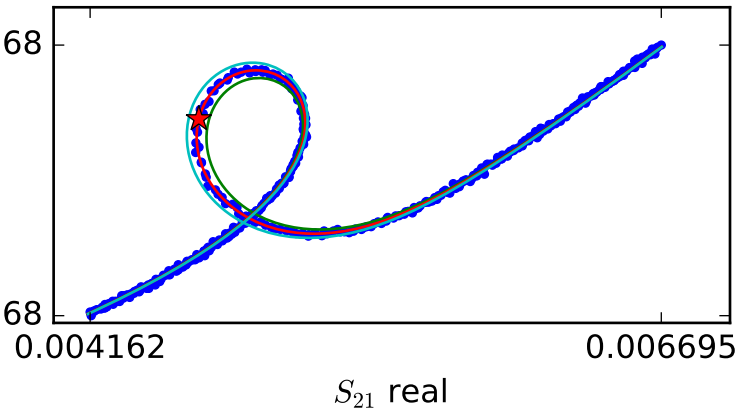



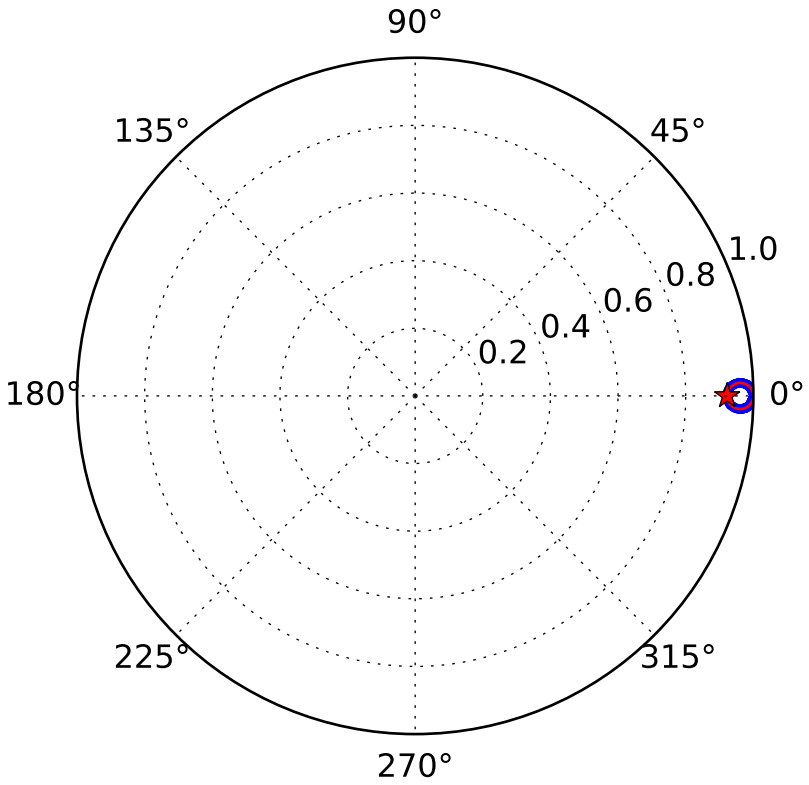



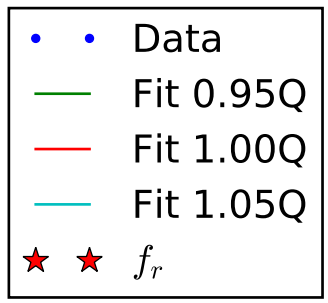

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.21935370144
$Q_r$ = 21018.9900168
$Q_c$ = 183602.509838
$a$ = (0.0106563955749+0.00141680619112j)
$\phi_0$ = 0.179409830955
$\tau$ = 38.8024208432



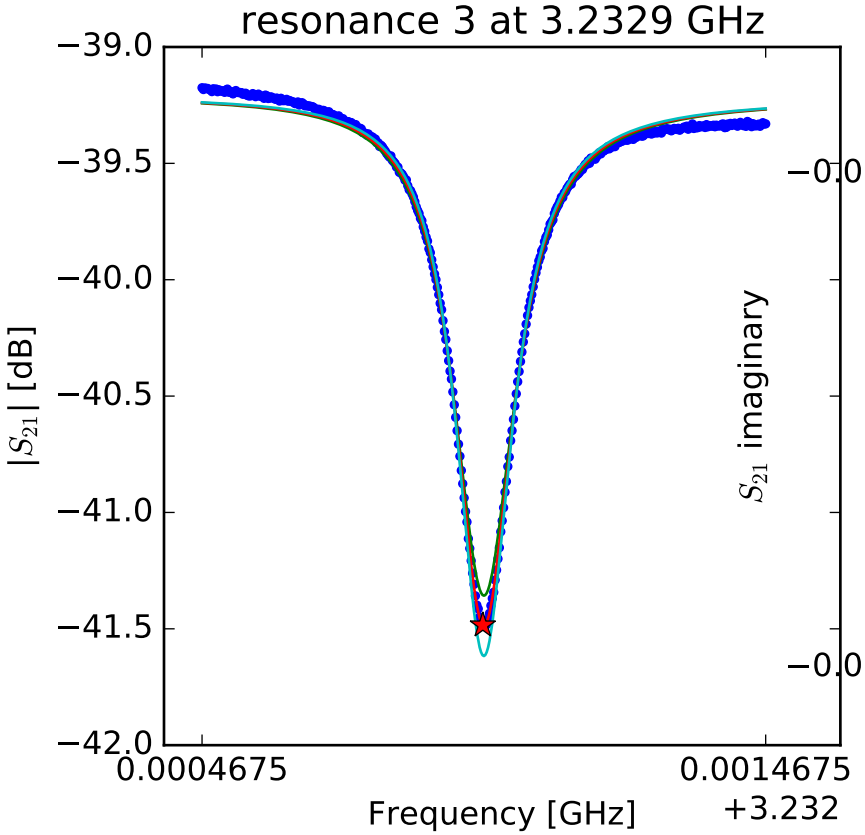



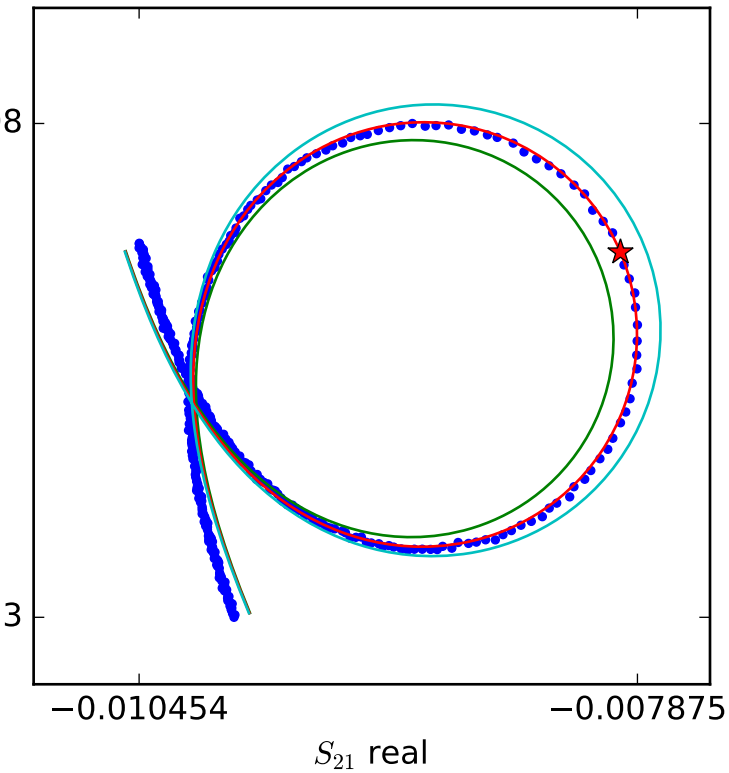



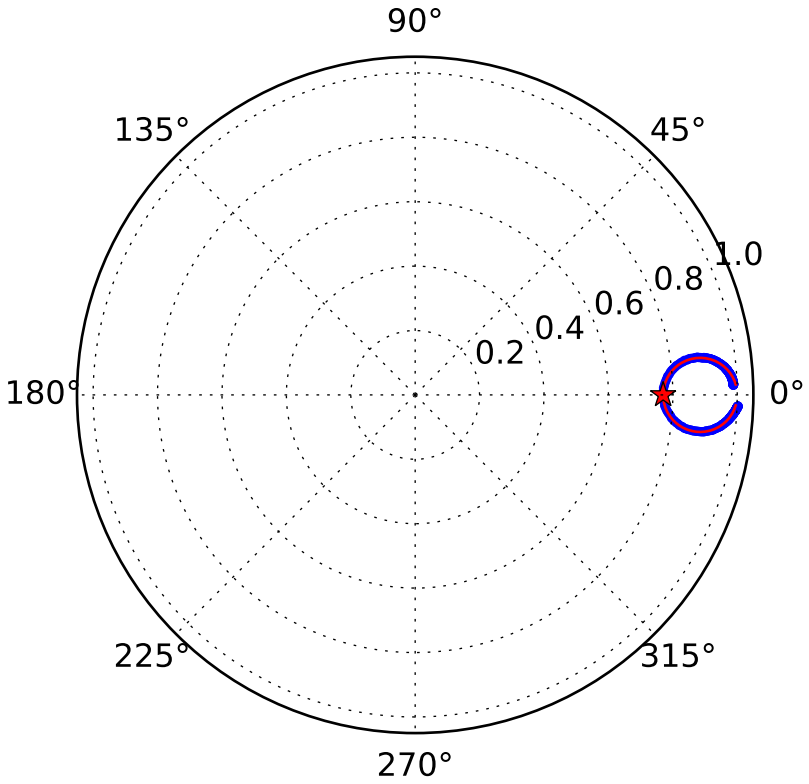



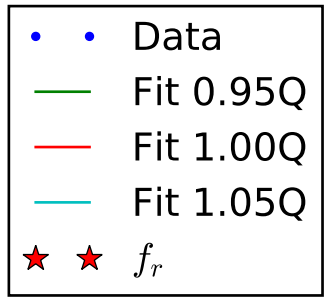

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.22621112644
$Q_r$ = 23287.4981714
$Q_c$ = 300983.679746
$a$ = (-0.00976996594504-0.00629466809381j)
$\phi_0$ = 0.668532784308
$\tau$ = 41.1514094457



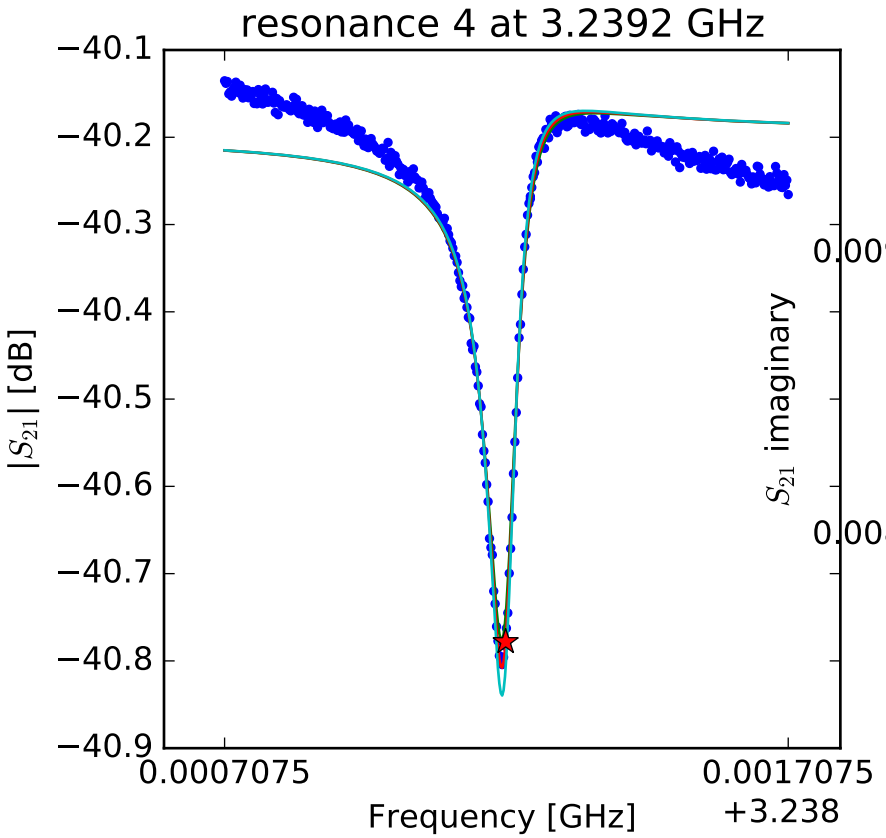



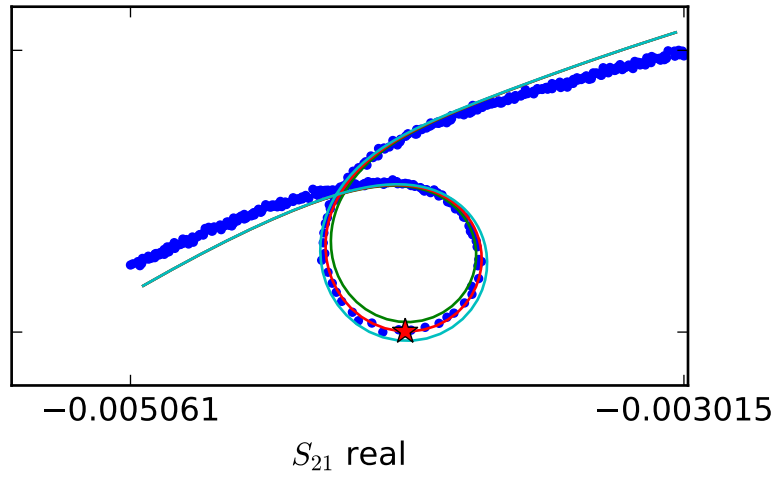



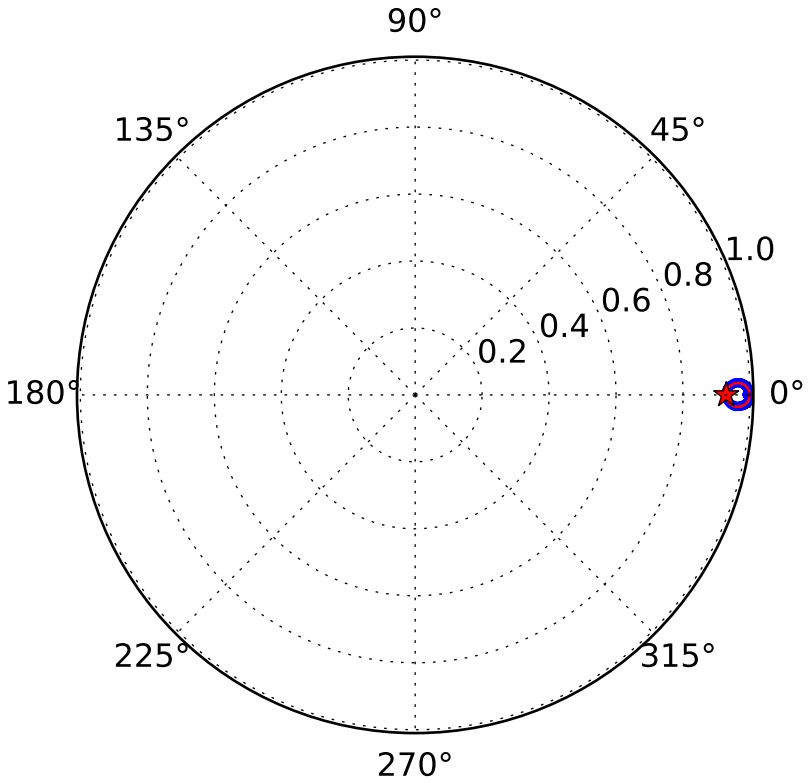



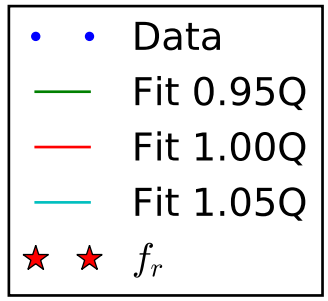

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.23296566105
$Q_r$ = 22327.6501526
$Q_c$ = 97030.2419788
$a$ = (0.000758515094248-0.0109175988994j)
$\phi_0$ = 0.0470001014663
$\tau$ = 39.34642413



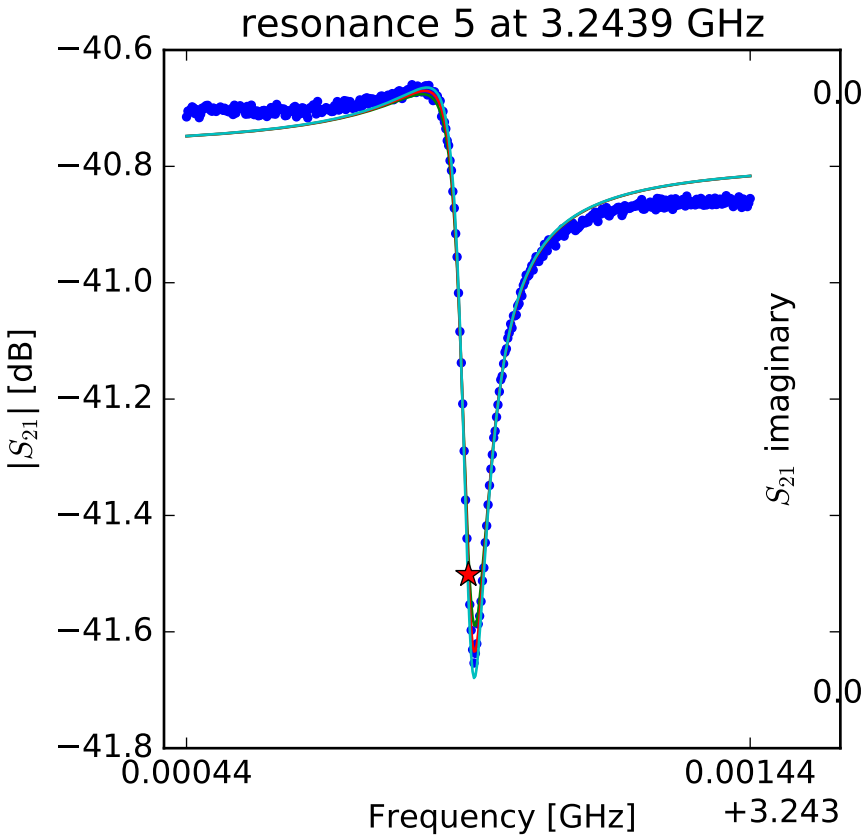



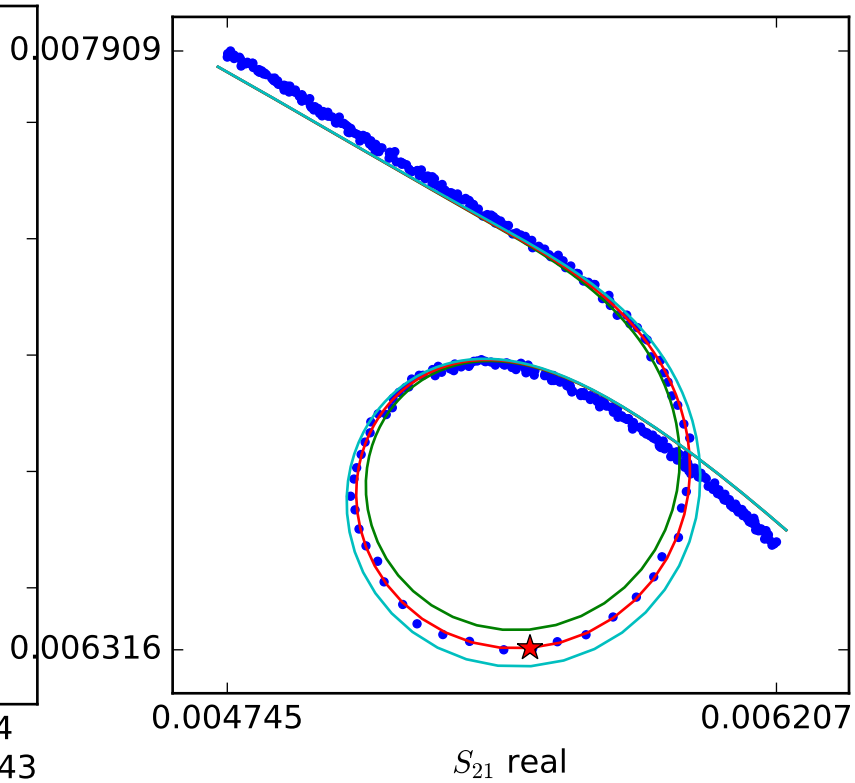



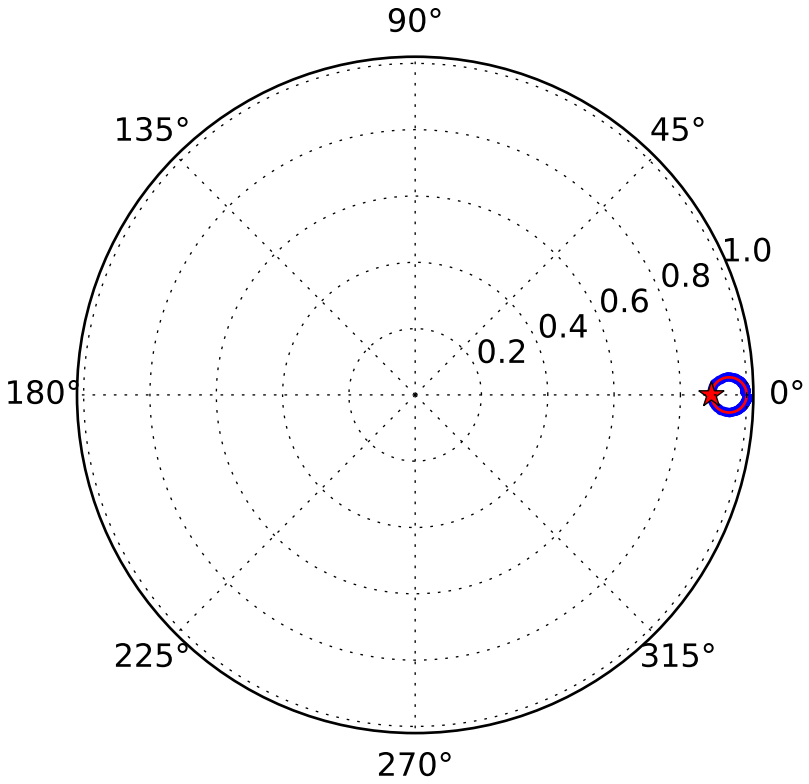



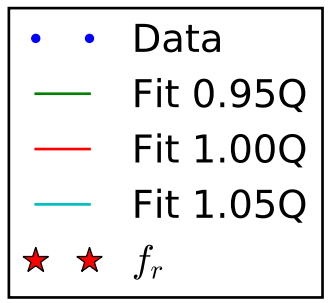

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.2392061439
$Q_r$ = 50596.7012565
$Q_c$ = 713318.078513
$a$ = (0.00266249744549-0.00940601924988j)
$\phi_0$ = -0.407531983604
$\tau$ = 36.8842672778



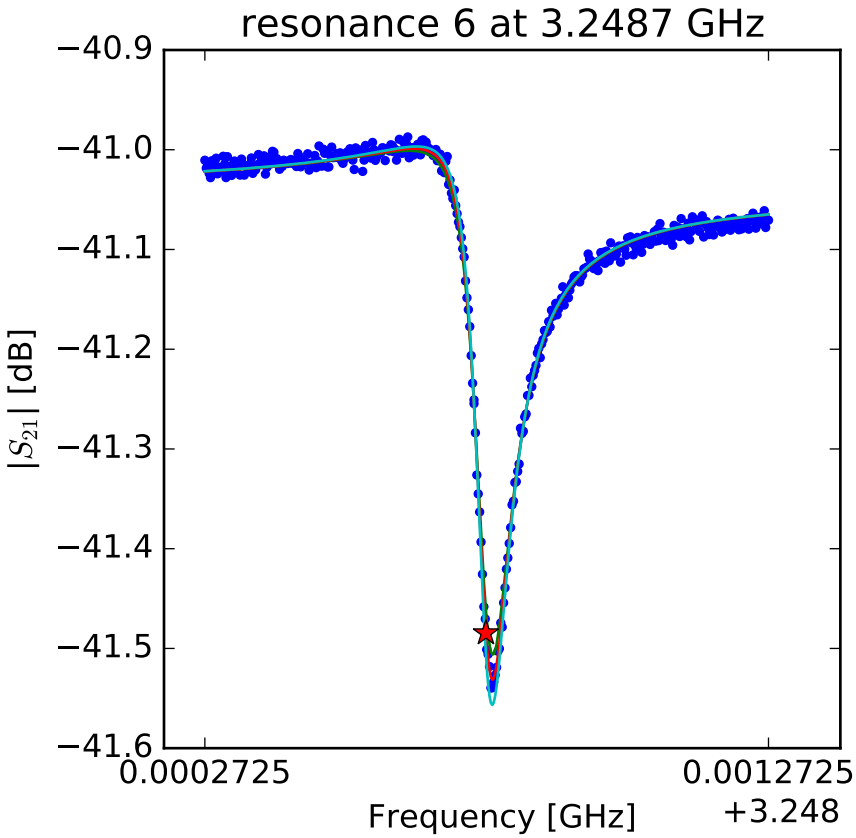



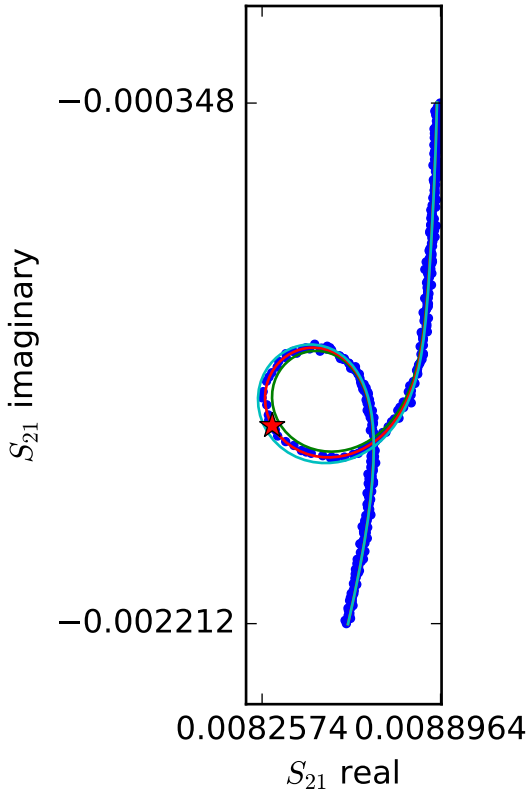



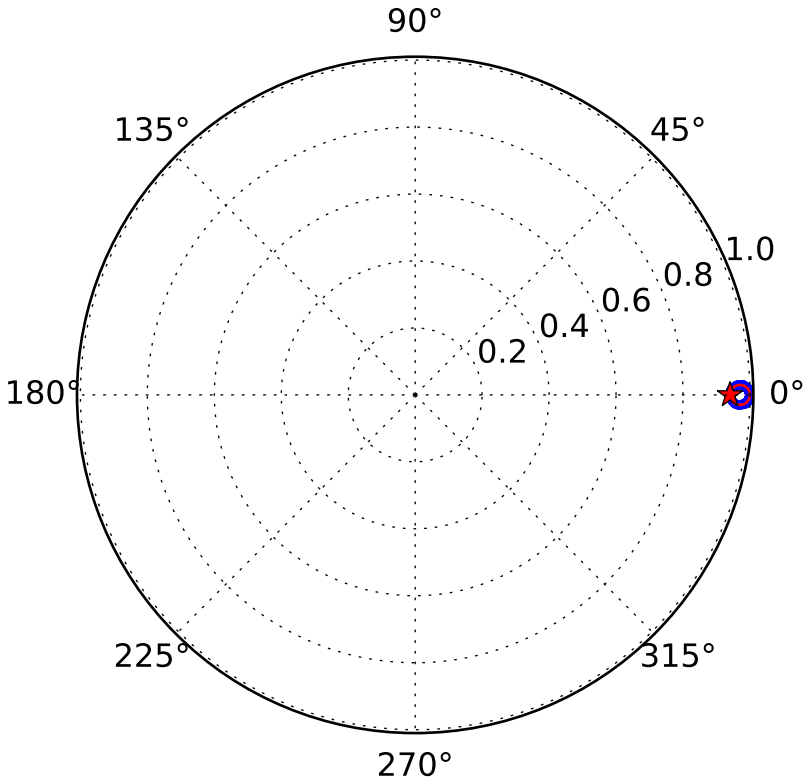



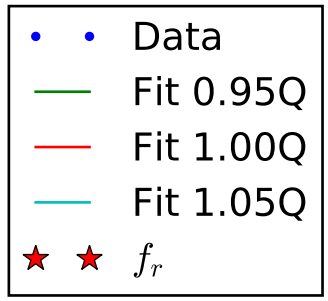

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.24394001474
$Q_r$ = 55434.3362558
$Q_c$ = 520678.024582
$a$ = (-0.00910505210175+0.000812969594402
$\phi_0$ = 0.688017797682
$\tau$ = 35.5551643768



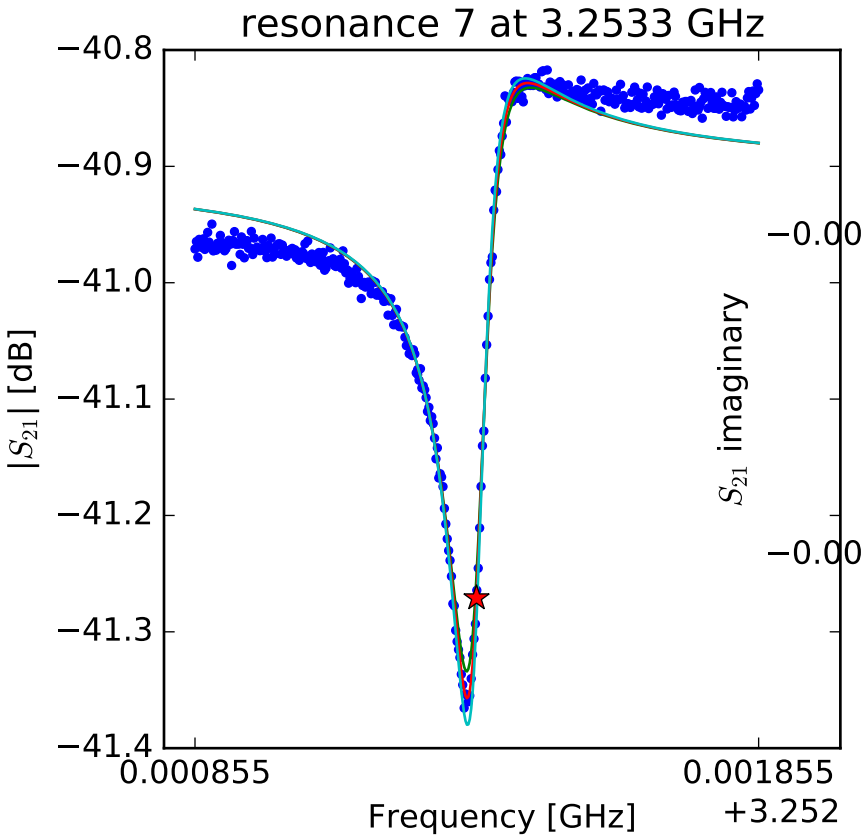



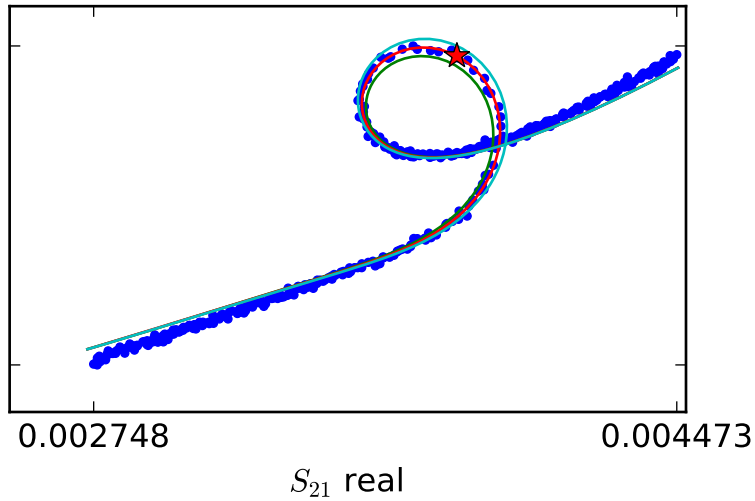



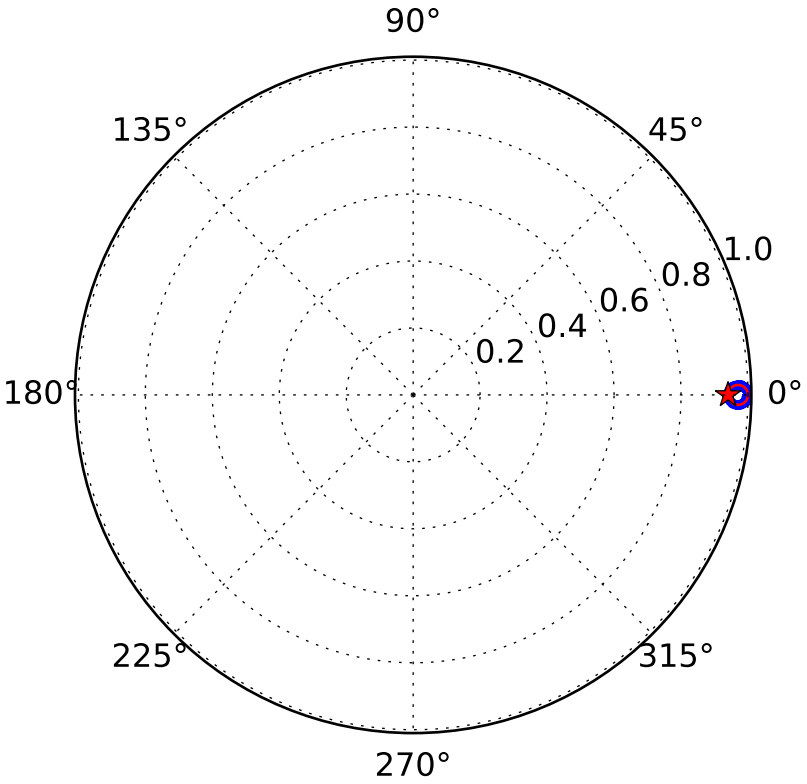



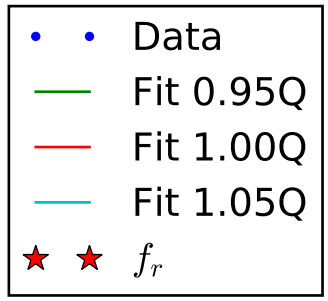

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.248771153
$Q_r$ = 41743.6163861
$Q_c$ = 698440.010895
$a$ = (-0.0043481876074-0.00773200823104j)
$\phi_0$ = 0.568773105965
$\tau$ = 35.3030733627



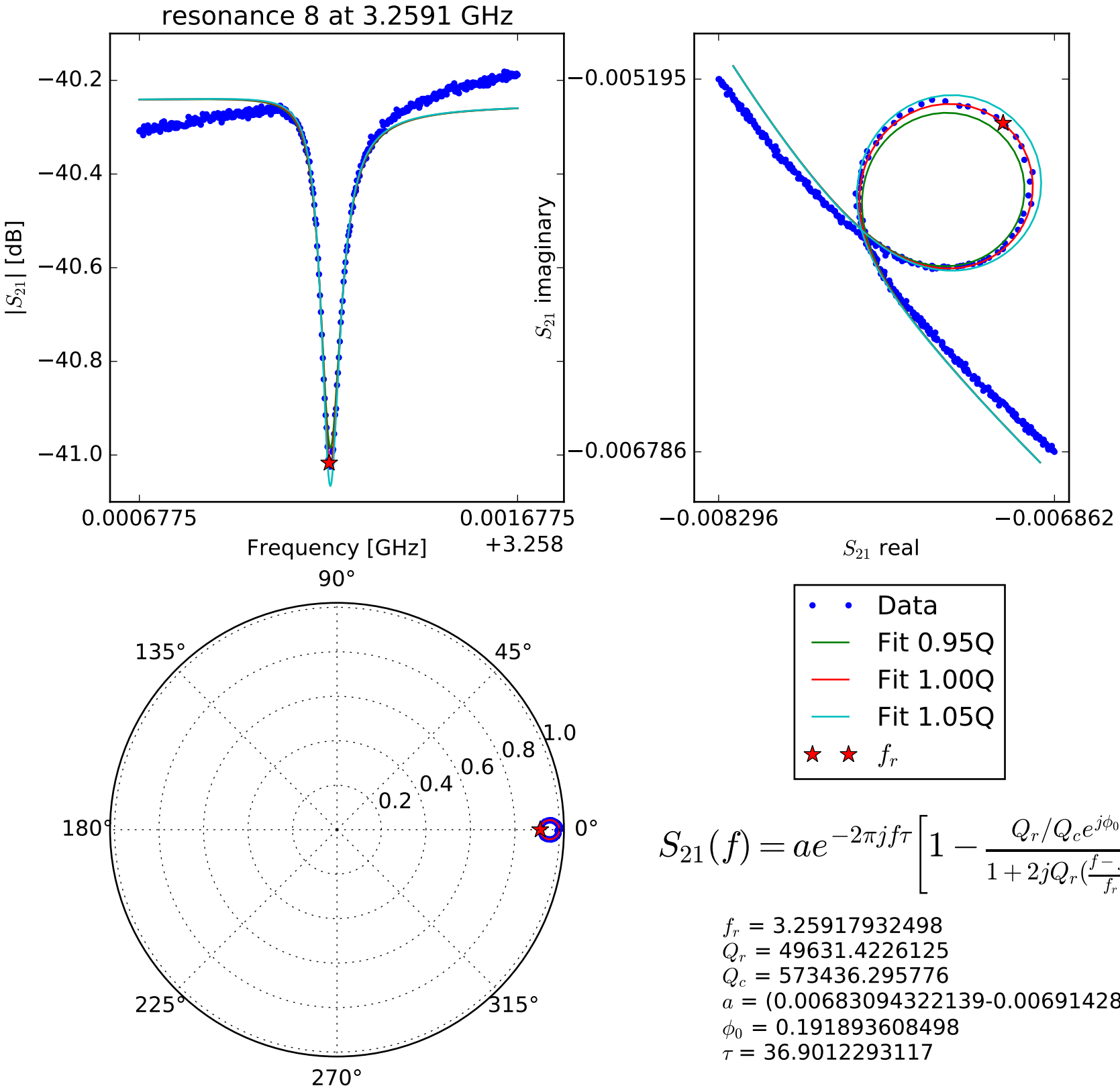



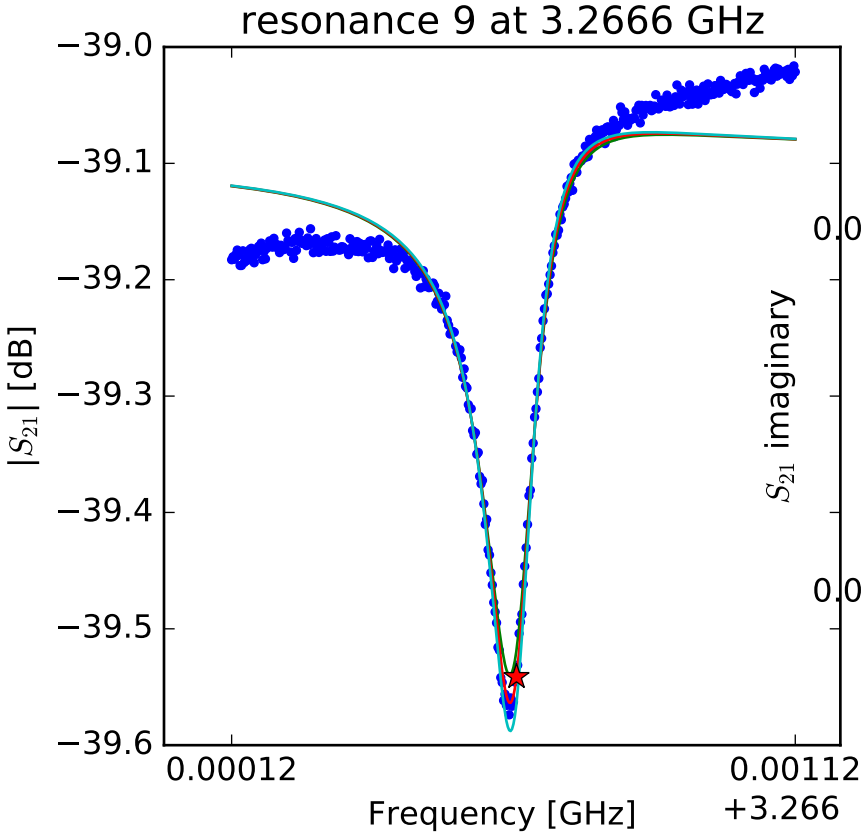

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

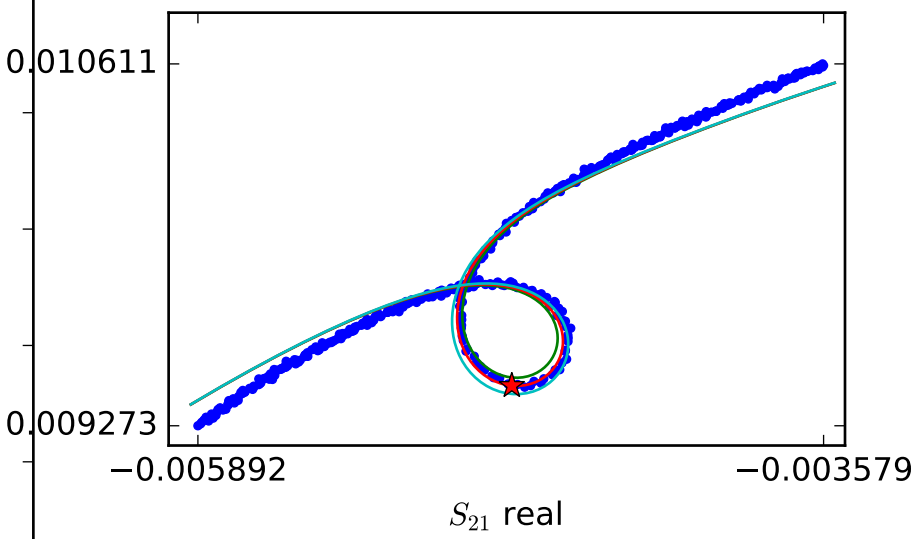
$f_r$ = 3.25335445705
$Q_r$ = 41791.3741394
$Q_c$ = 701273.418054
$a$ = (-0.00847139591794-0.00306665366936j)
$\phi_0$ = -0.787124965759
$\tau$ = 35.268009523

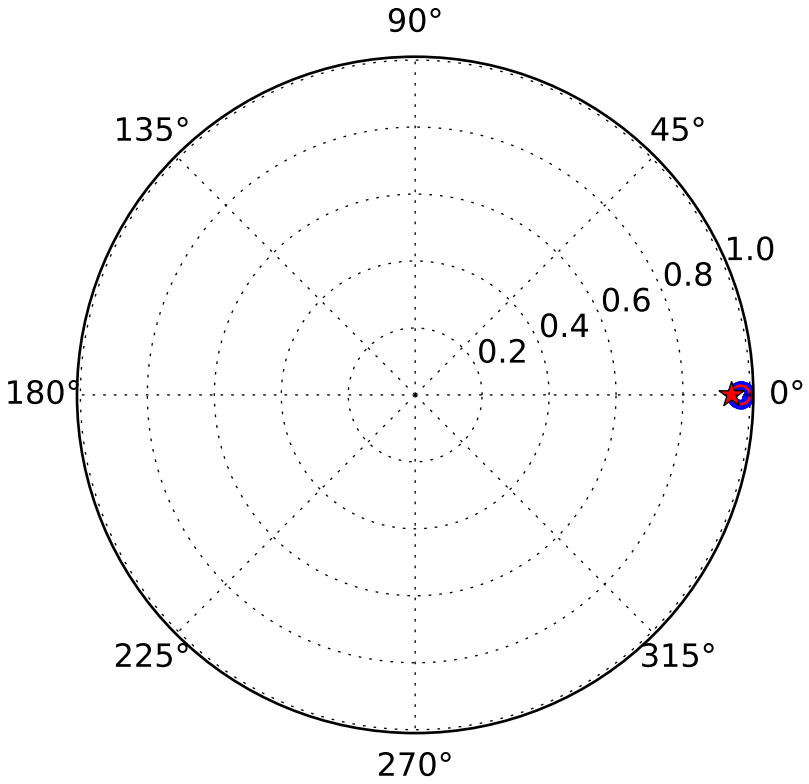


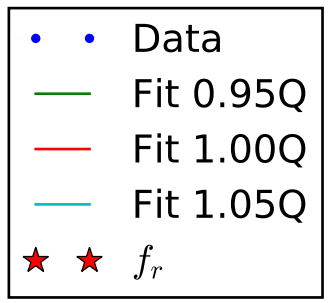

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.25917932498
$Q_r$ = 49631.4226125
$Q_c$ = 573436.295776
$a$ = (0.00683094322139-0.00691428293986j)
$\phi_0$ = 0.191893608498
$\tau$ = 36.9012293117



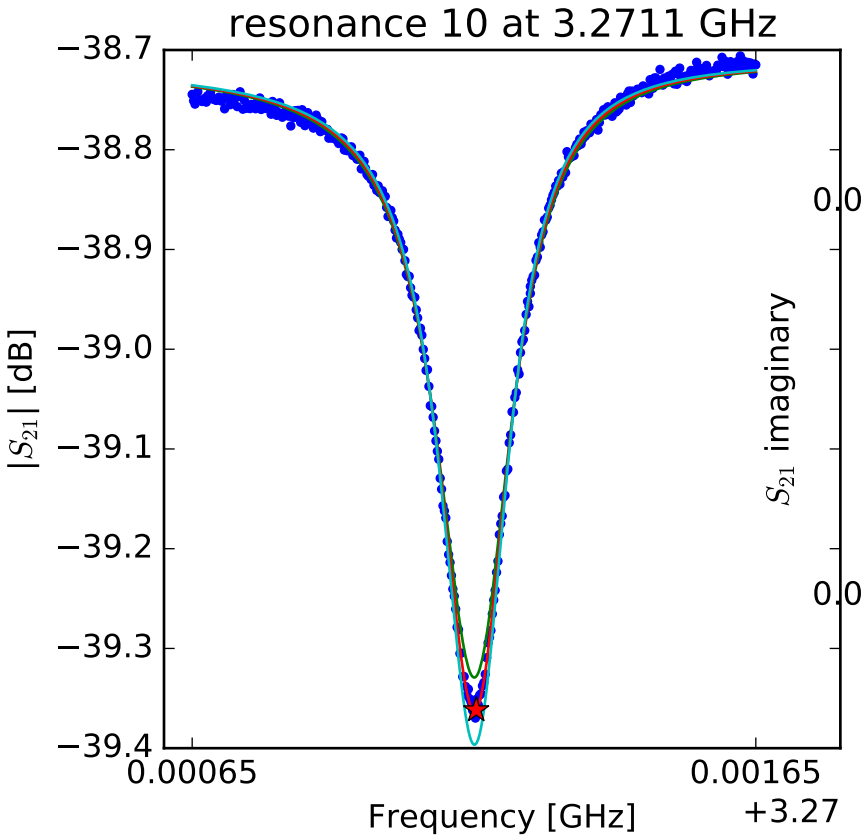



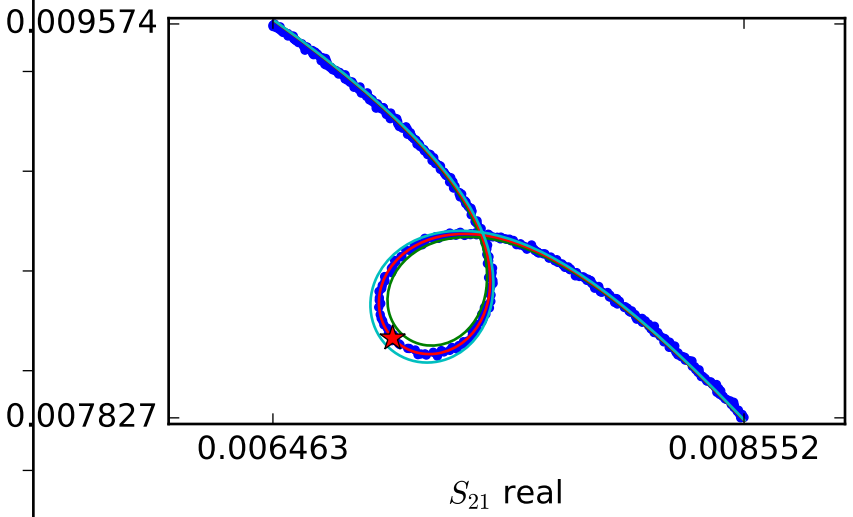



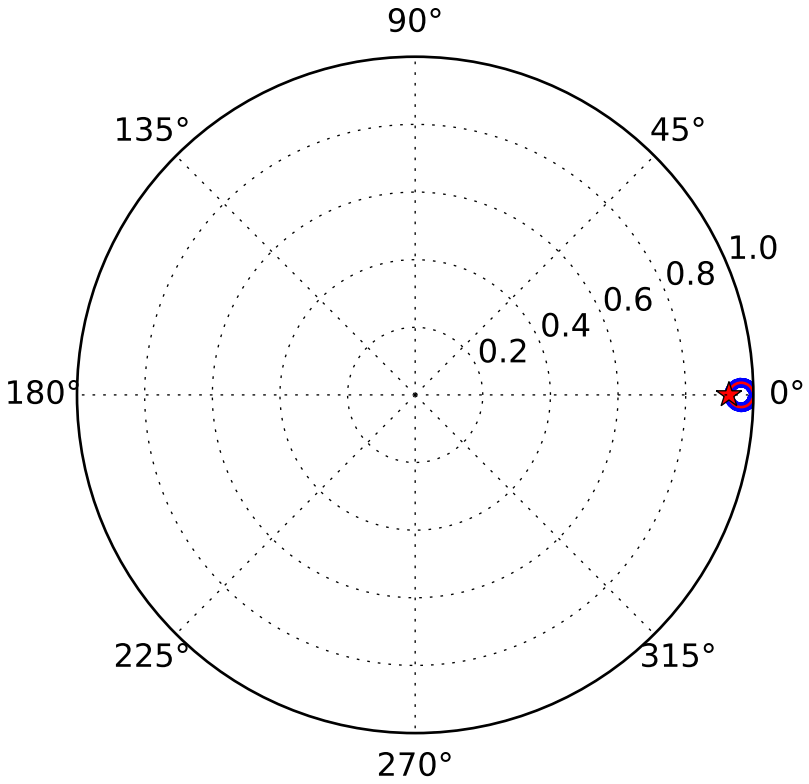



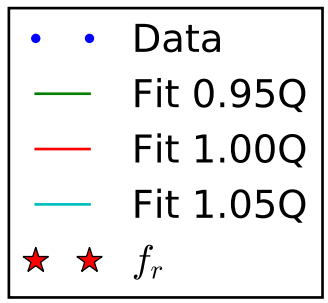

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.26662540295
$Q_r$ = 30446.4097213
$Q_c$ = 554358.612811
$a$ = (0.00564106131887-0.00955815368832j)
$\phi_0$ = -0.410144791692
$\tau$ = 39.9539077258



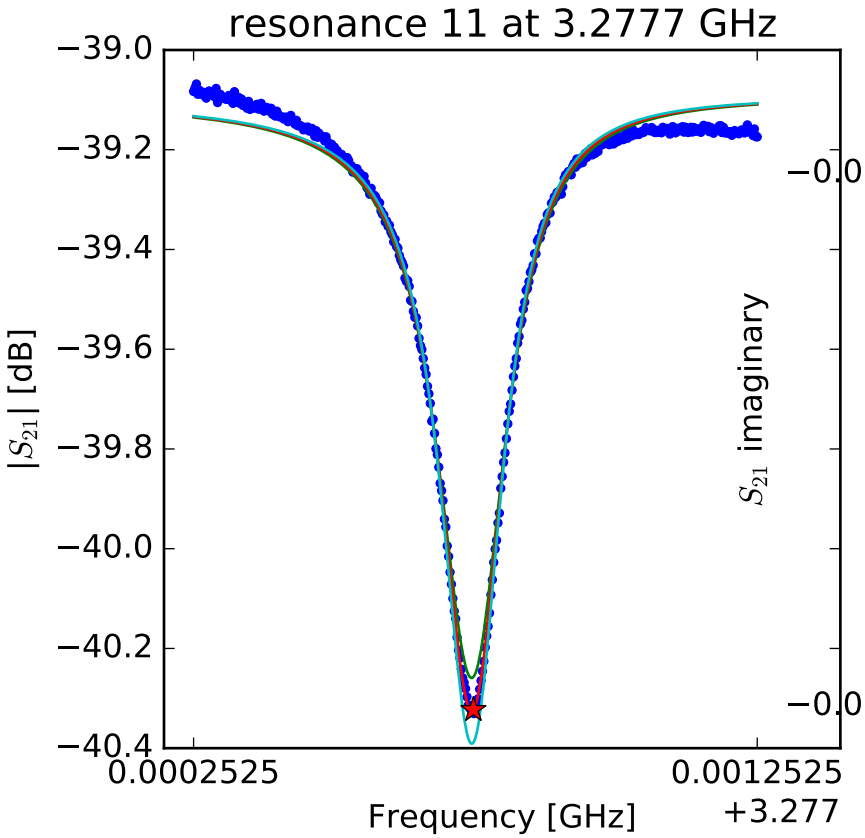



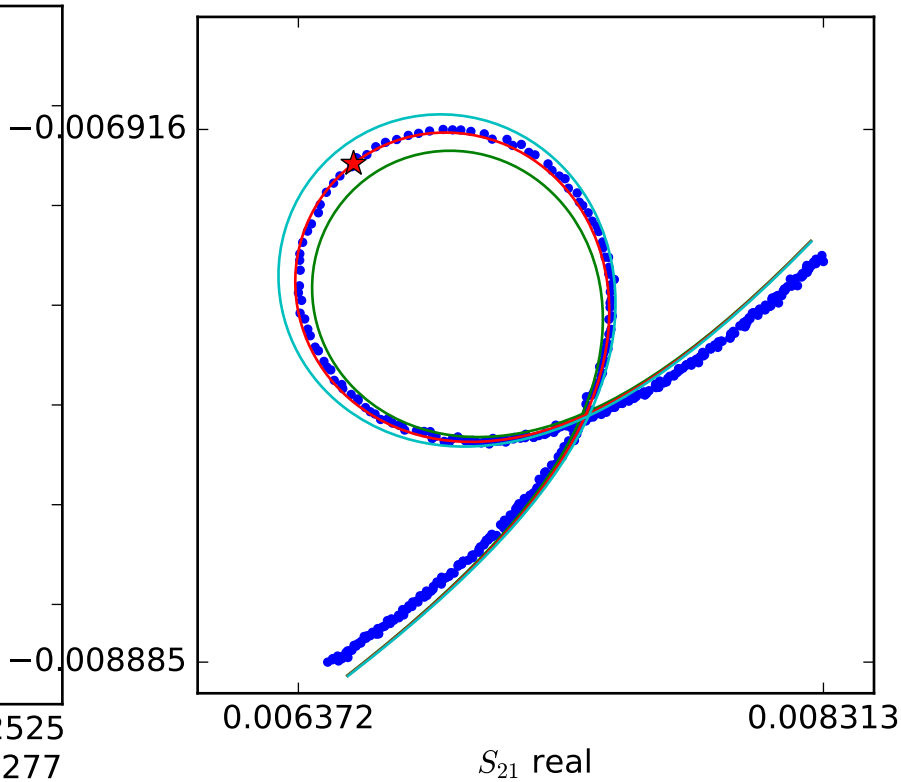



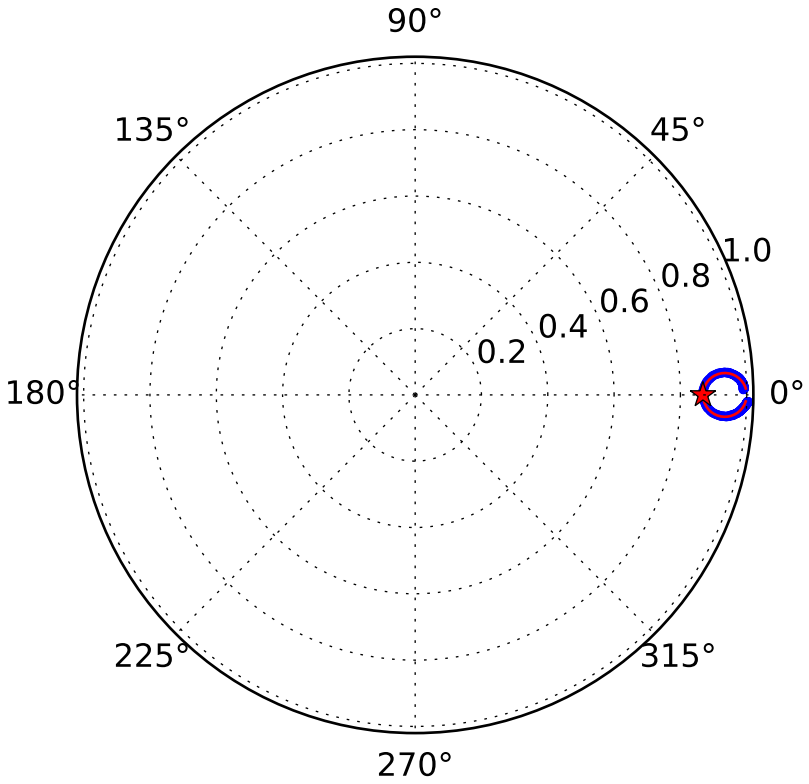



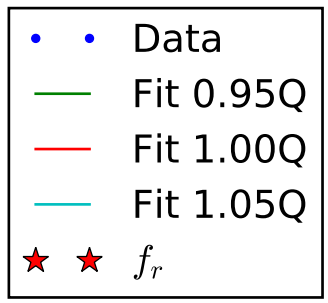

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.27115394639
$Q_r$ = 20421.3519125
$Q_c$ = 283025.865901
$a$ = (0.0113632210641+0.00231405575924j)
$\phi_0$ = -0.0788022848959
$\tau$ = 41.237900121



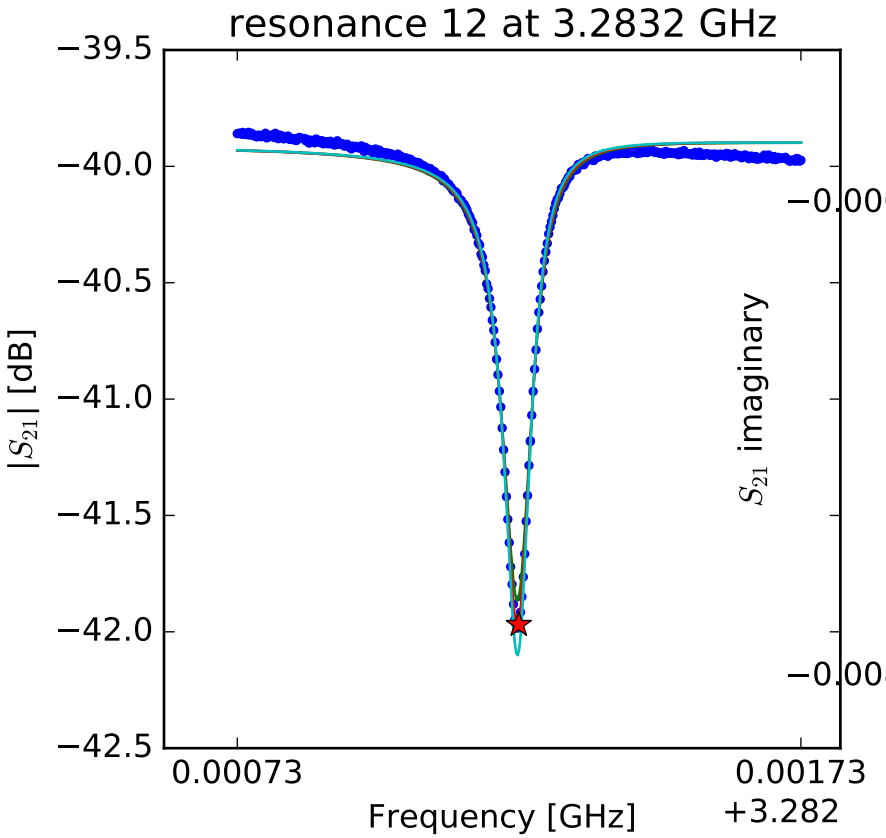



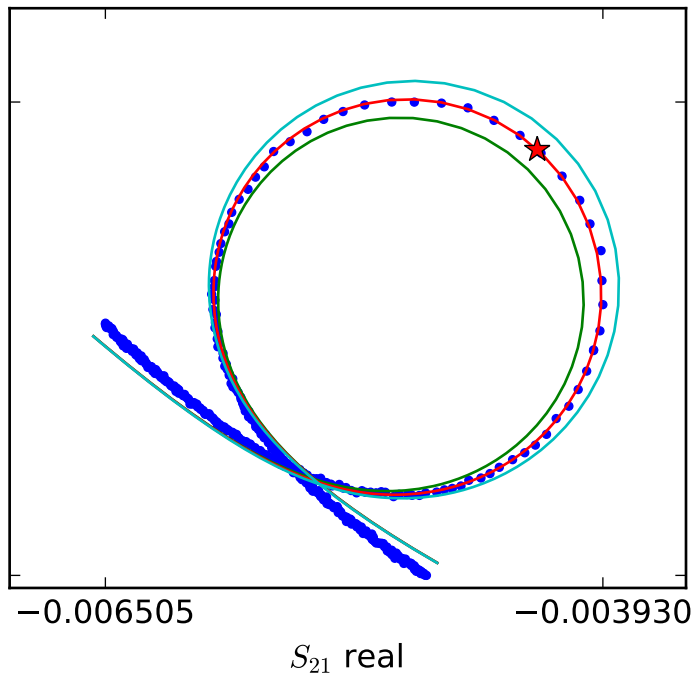



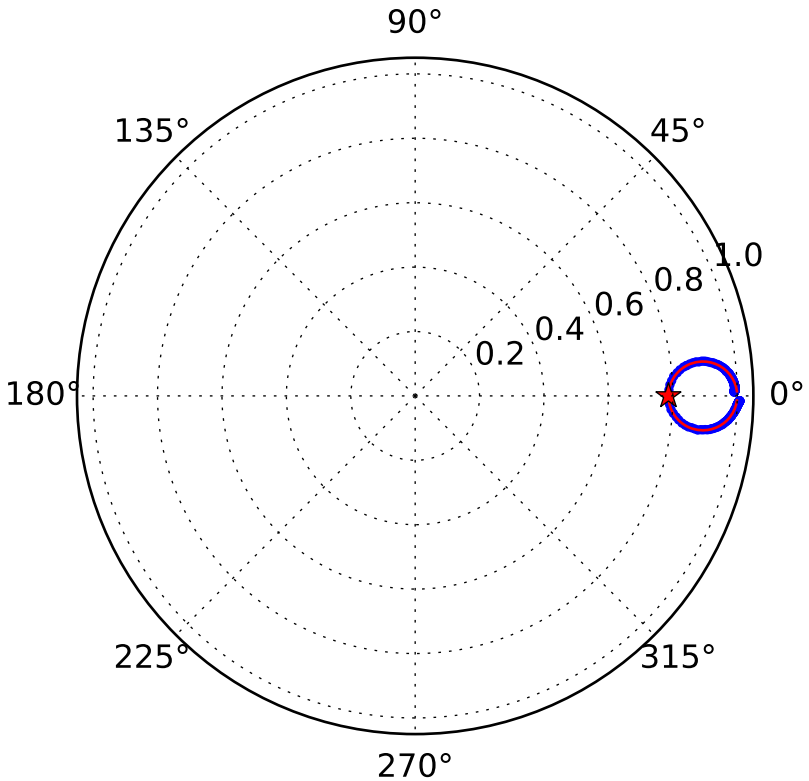



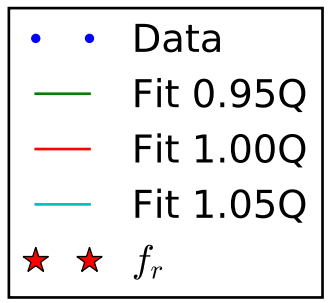

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.27774893418
$Q_r$ = 21676.3918417
$Q_c$ = 164144.970844
$a$ = (0.00708395659574+0.00854008956241j)
$\phi_0$ = -0.0738987644619
$\tau$ = 40.0494420658



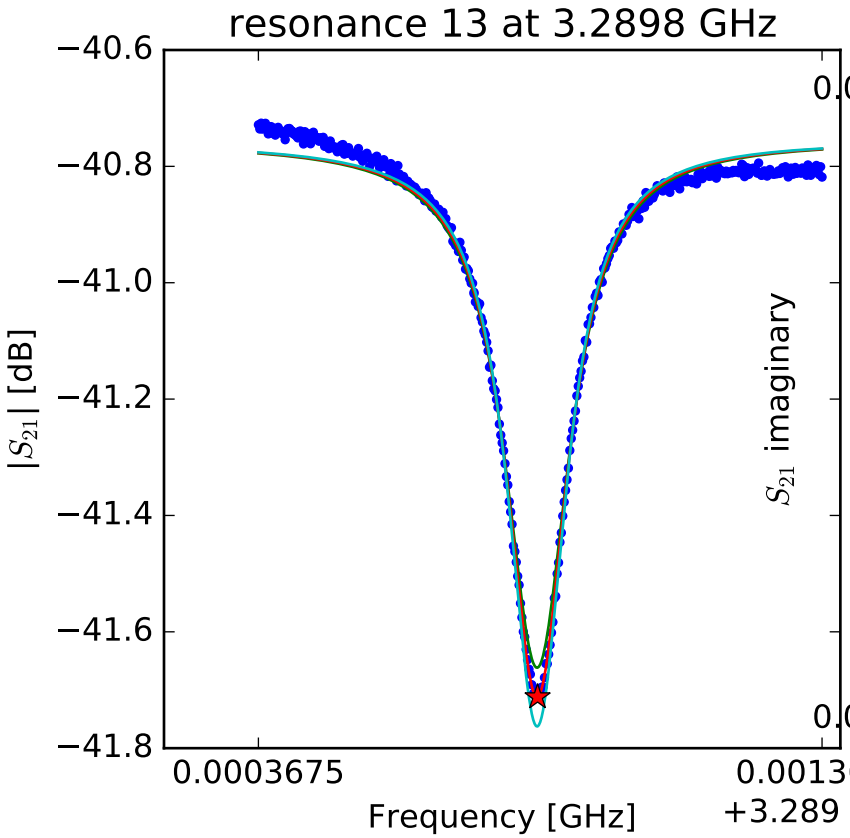



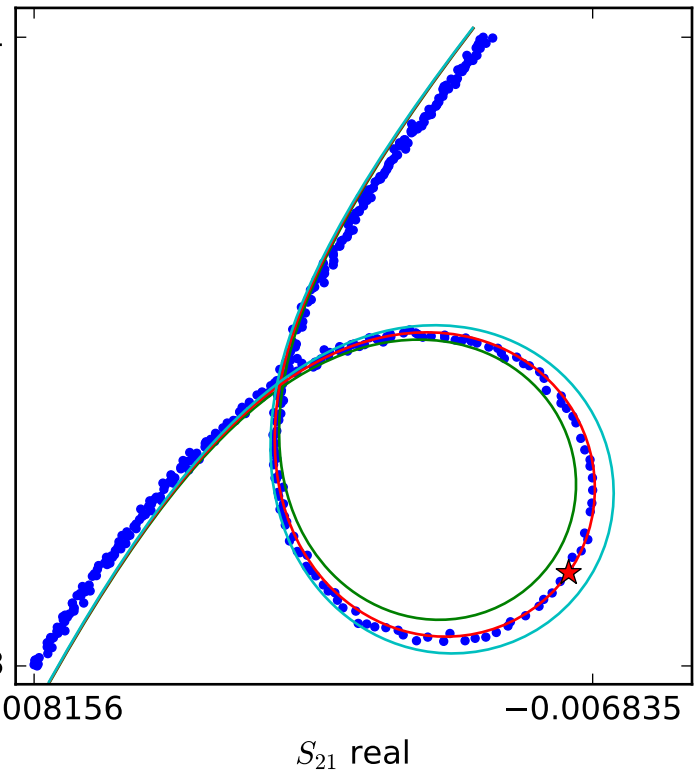



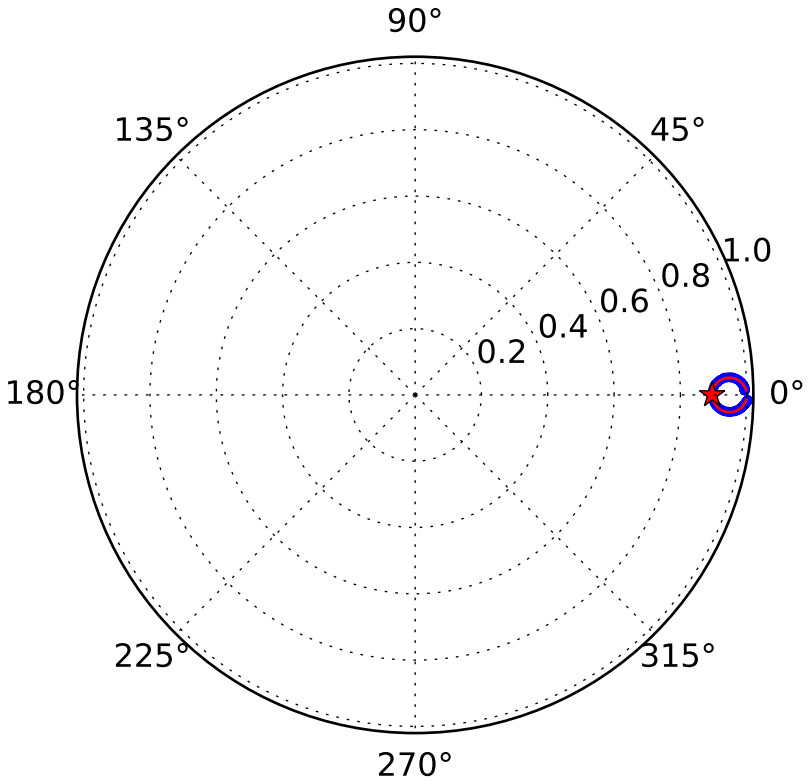



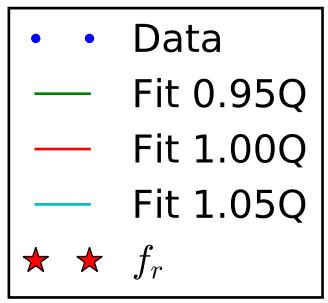

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.28322942024
$Q_r$ = 47915.2083177
$Q_c$ = 224272.587378
$a$ = (0.00258162544422+0.00977254868764j)
$\phi_0$ = -0.13059981619
$\tau$ = 38.2411511025



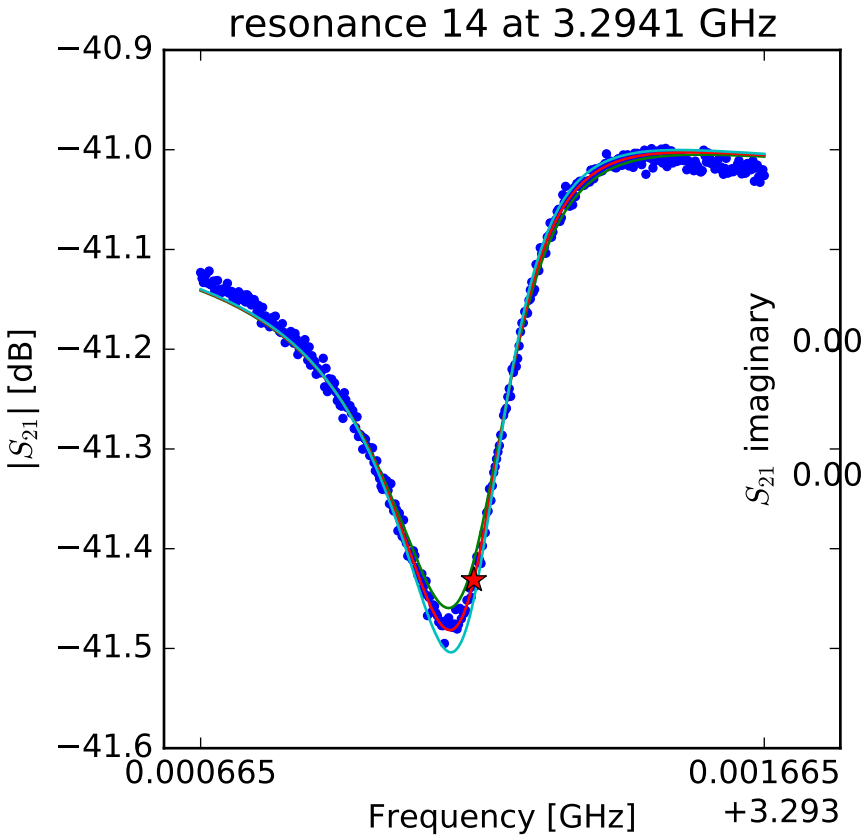



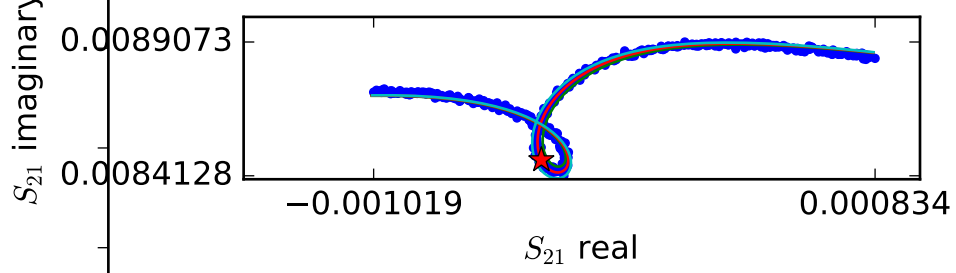



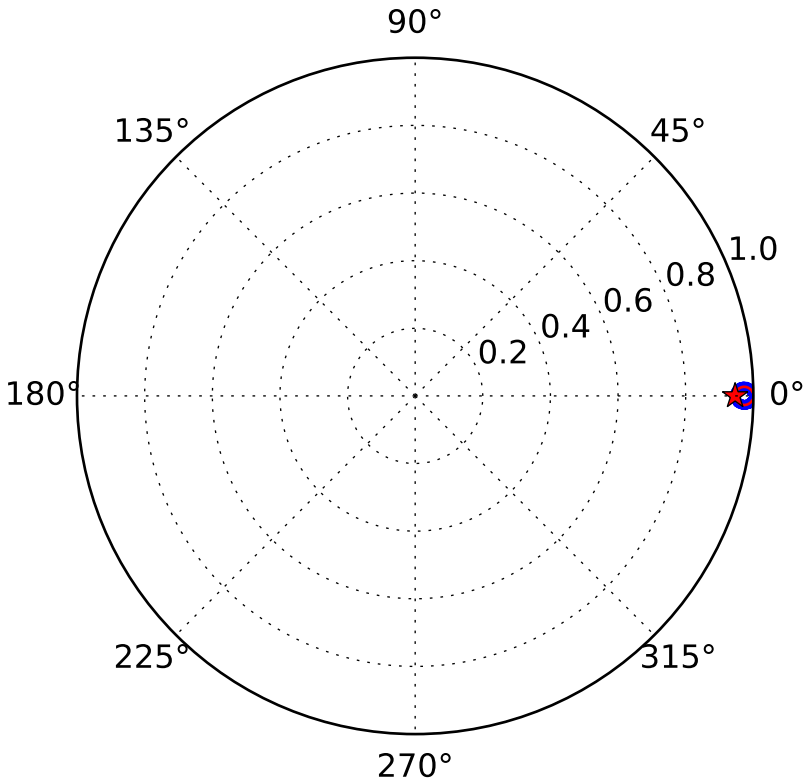



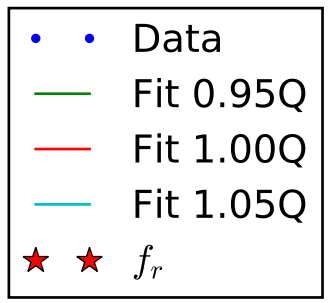

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.28986279099
$Q_r$ = 23410.6760284
$Q_c$ = 224710.174975
$a$ = (0.0050583729187+0.00764343123571j)
$\phi_0$ = -0.0241868695224
$\tau$ = 36.7033170334



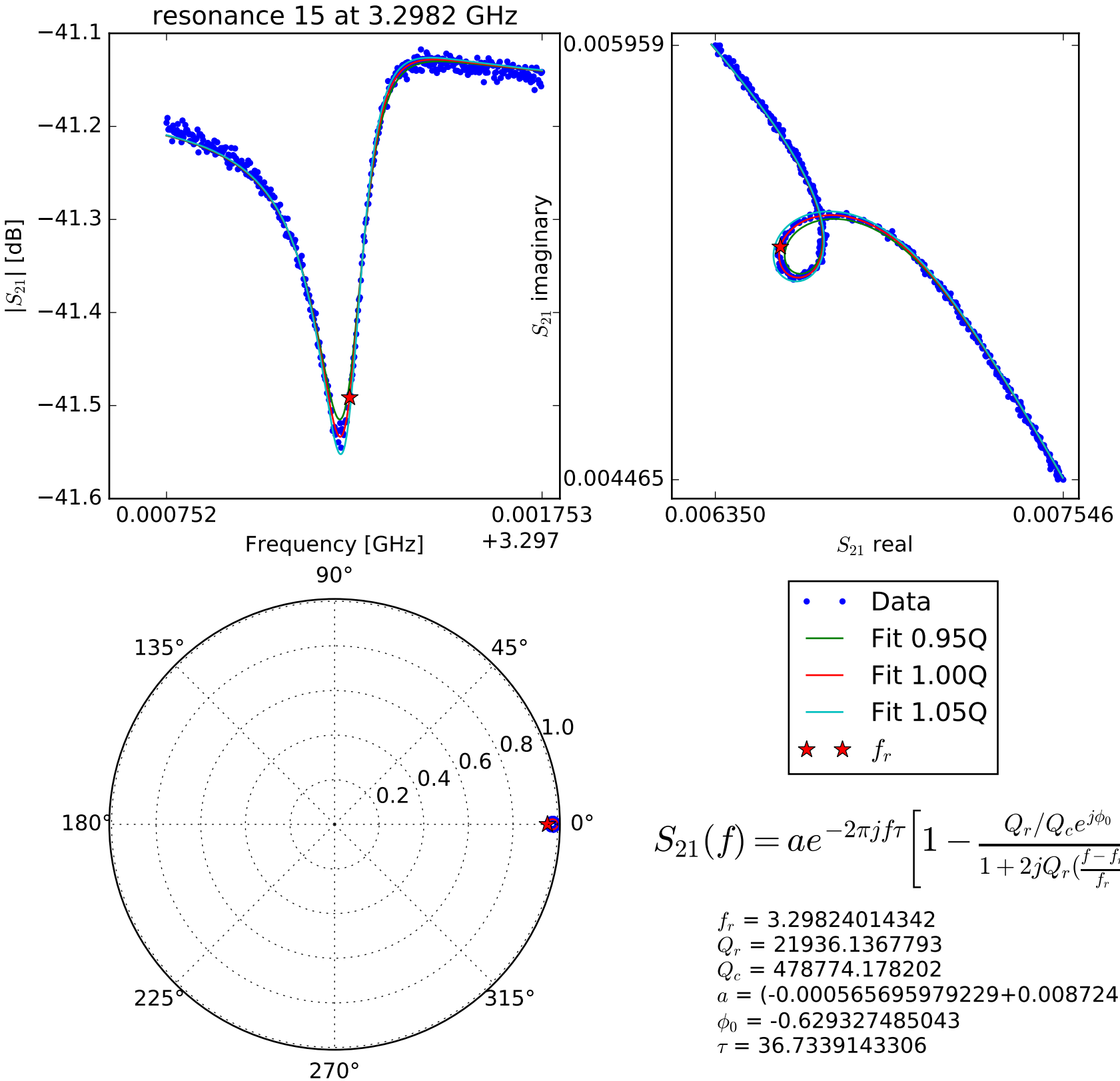



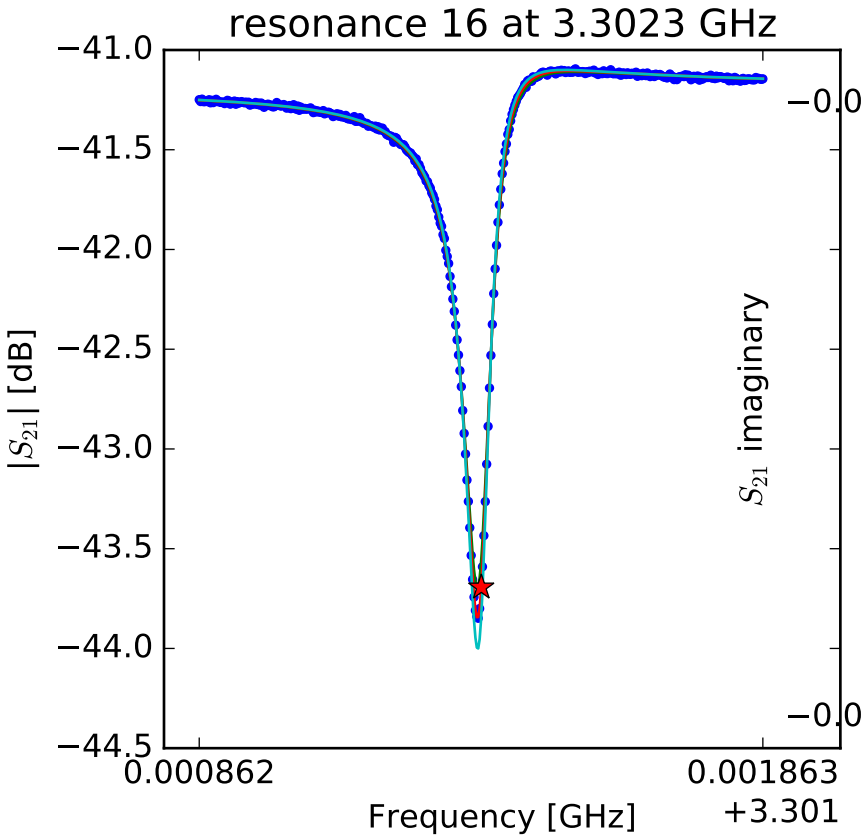

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

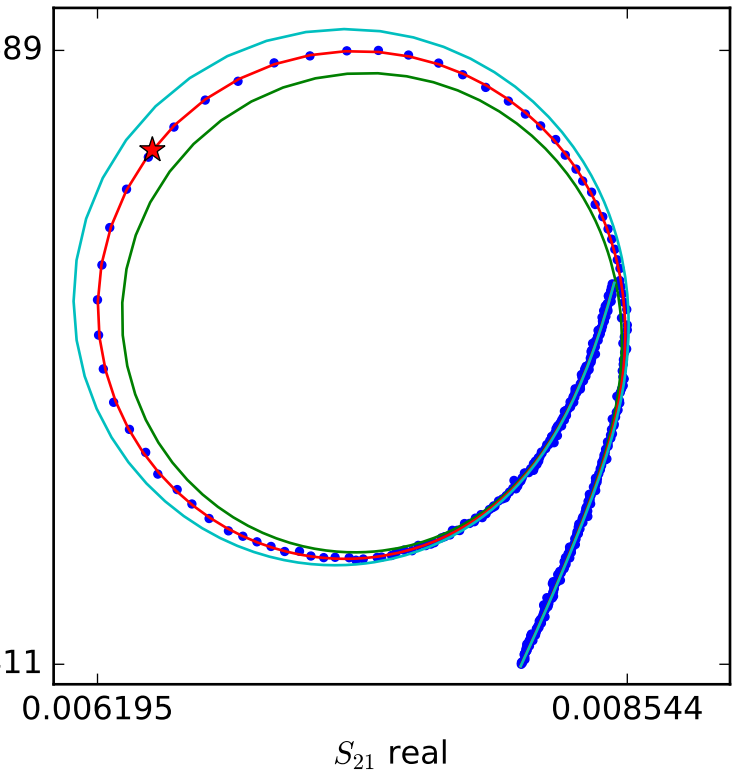
$f_r$ = 3.29414969273
$Q_r$ = 12923.221148
$Q_c$ = 239529.40829
$a$ = (-0.00598441691169+0.00653780338131j)
$\phi_0$ = -0.627452897486
$\tau$ = 36.7669206292

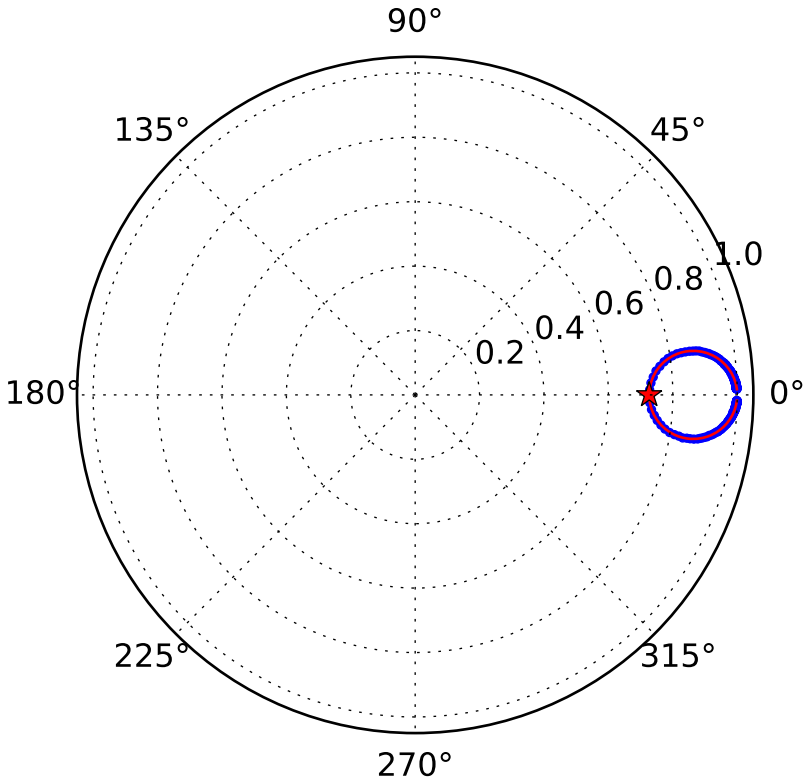


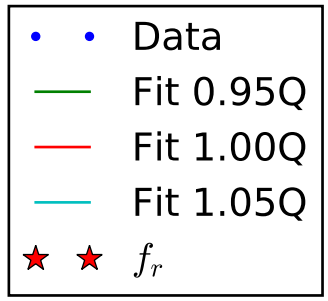

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.29824014342
$Q_r$ = 21936.1367793
$Q_c$ = 478774.178202
$a$ = (-0.000565695979229+0.00872452223166
$\phi_0$ = -0.629327485043
$\tau$ = 36.7339143306



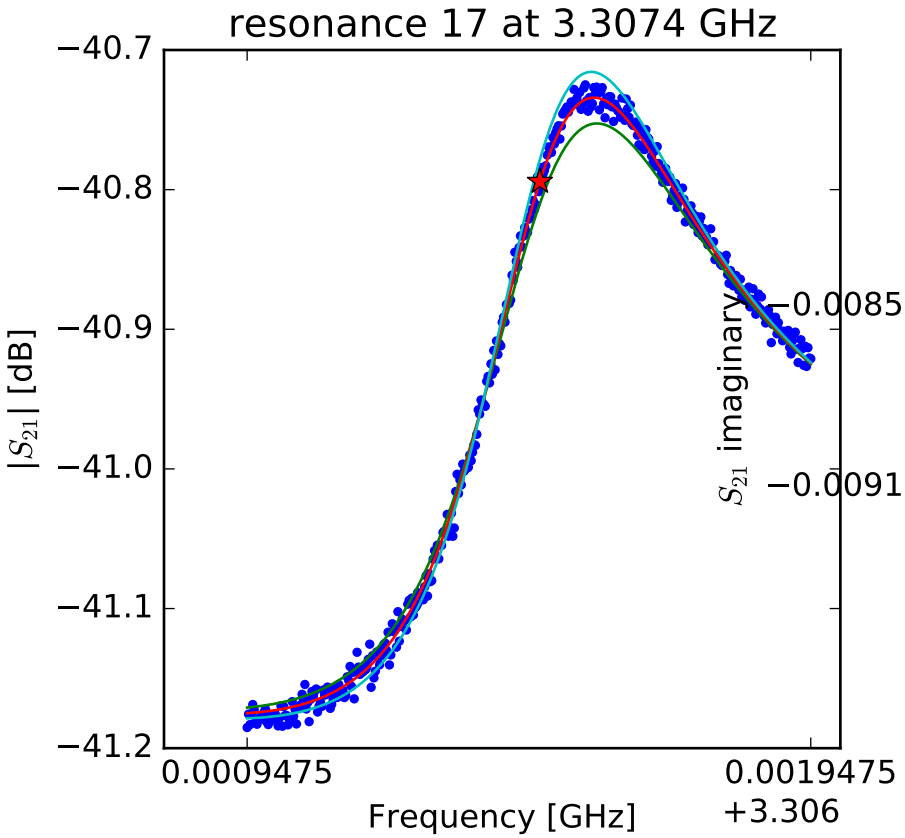



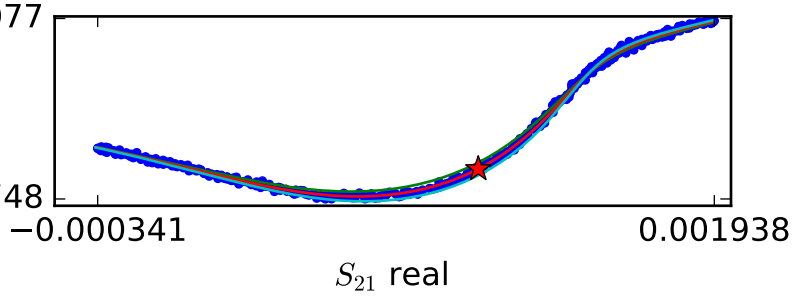



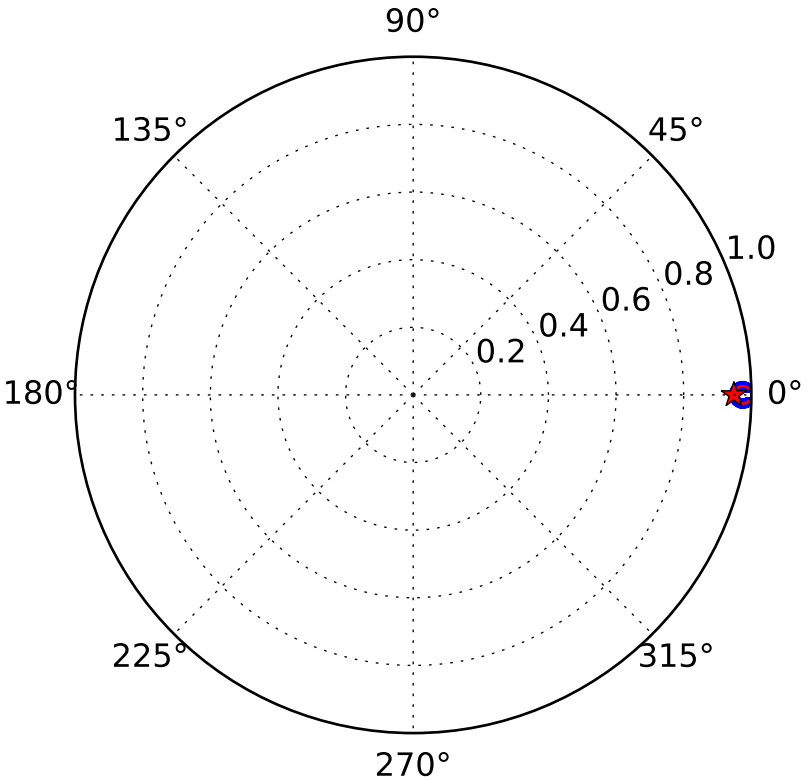



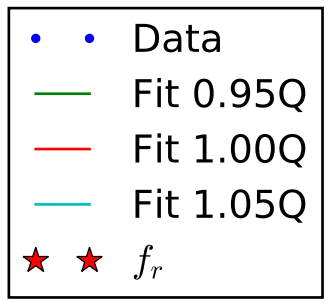

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.30236295278
$Q_r$ = 50821.5993059
$Q_c$ = 185828.094133
$a$ = (0.00871166007011-0.000390033673371j)
$\phi_0$ = -0.354415050534
$\tau$ = 37.2583950402



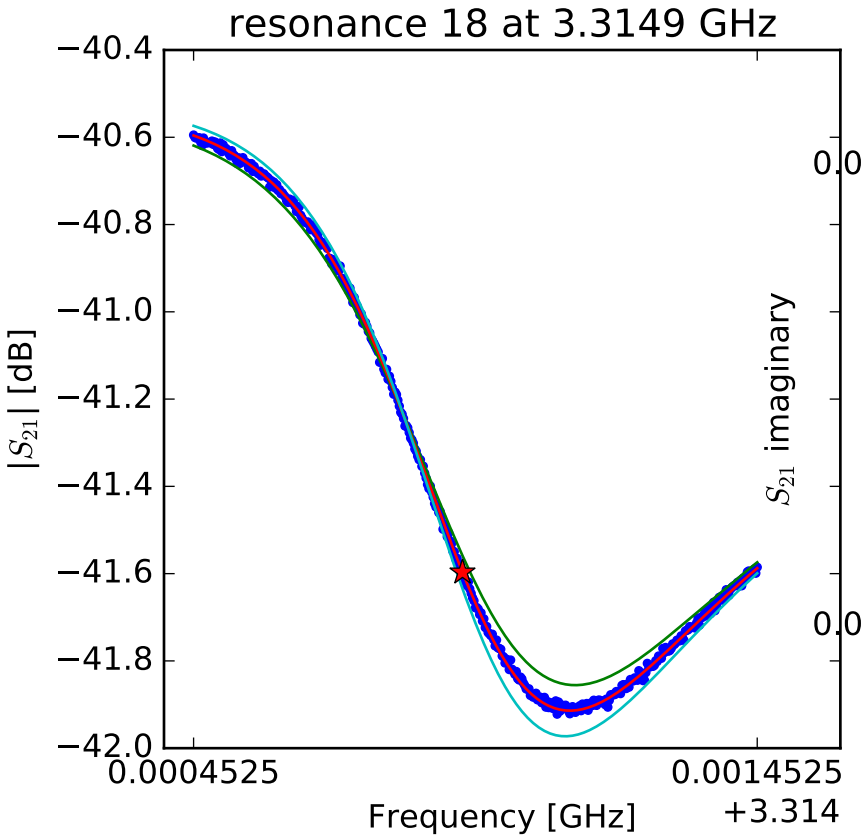



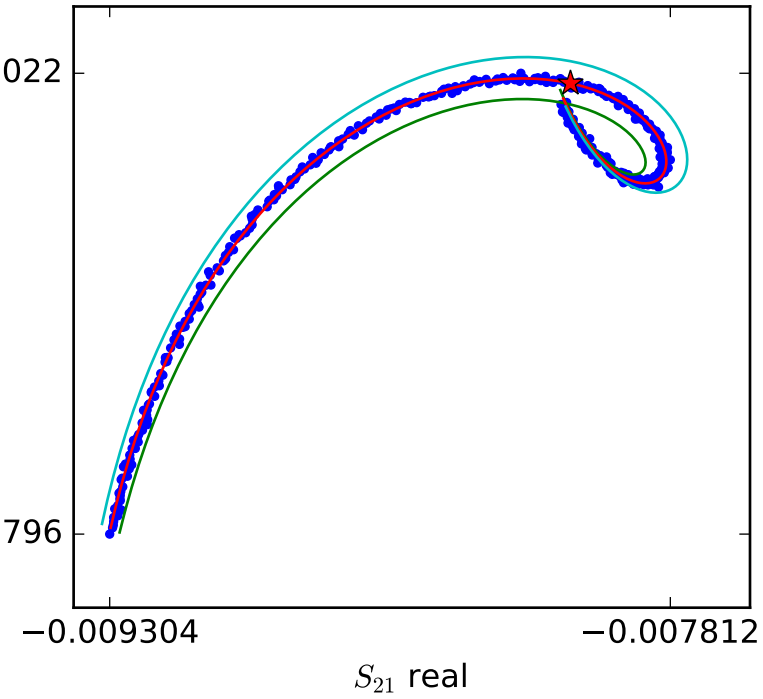



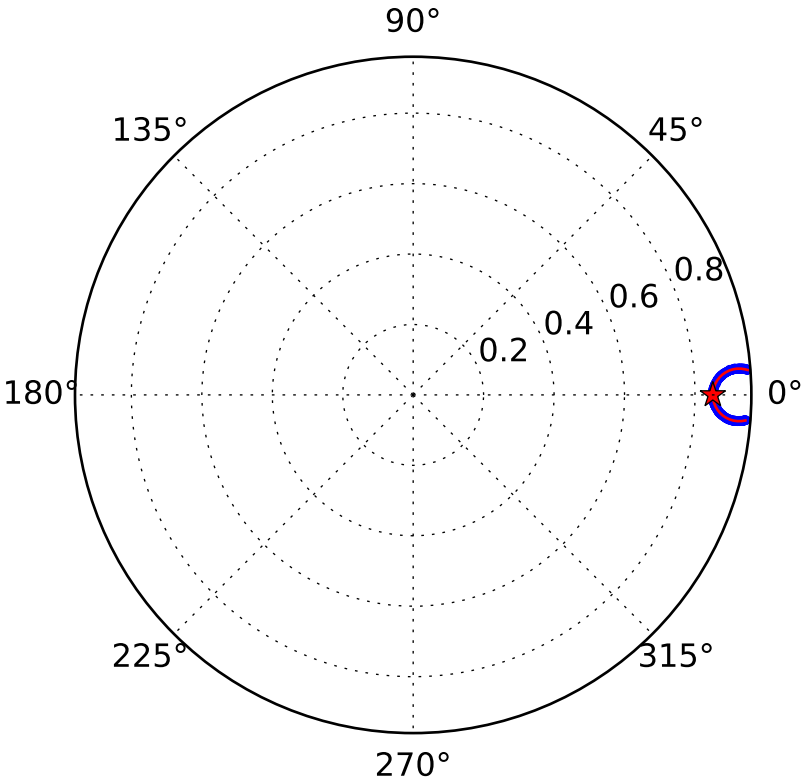



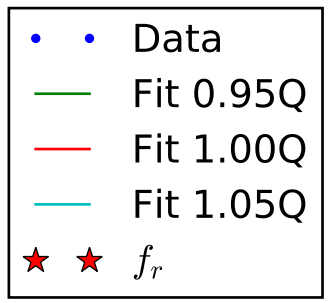

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.30746683332
$Q_r$ = 7017.73660198
$Q_c$ = 135590.107253
$a$ = (-0.00439591498294+0.00762367807852j)
$\phi_0$ = -2.35036795405
$\tau$ = 37.3609994039



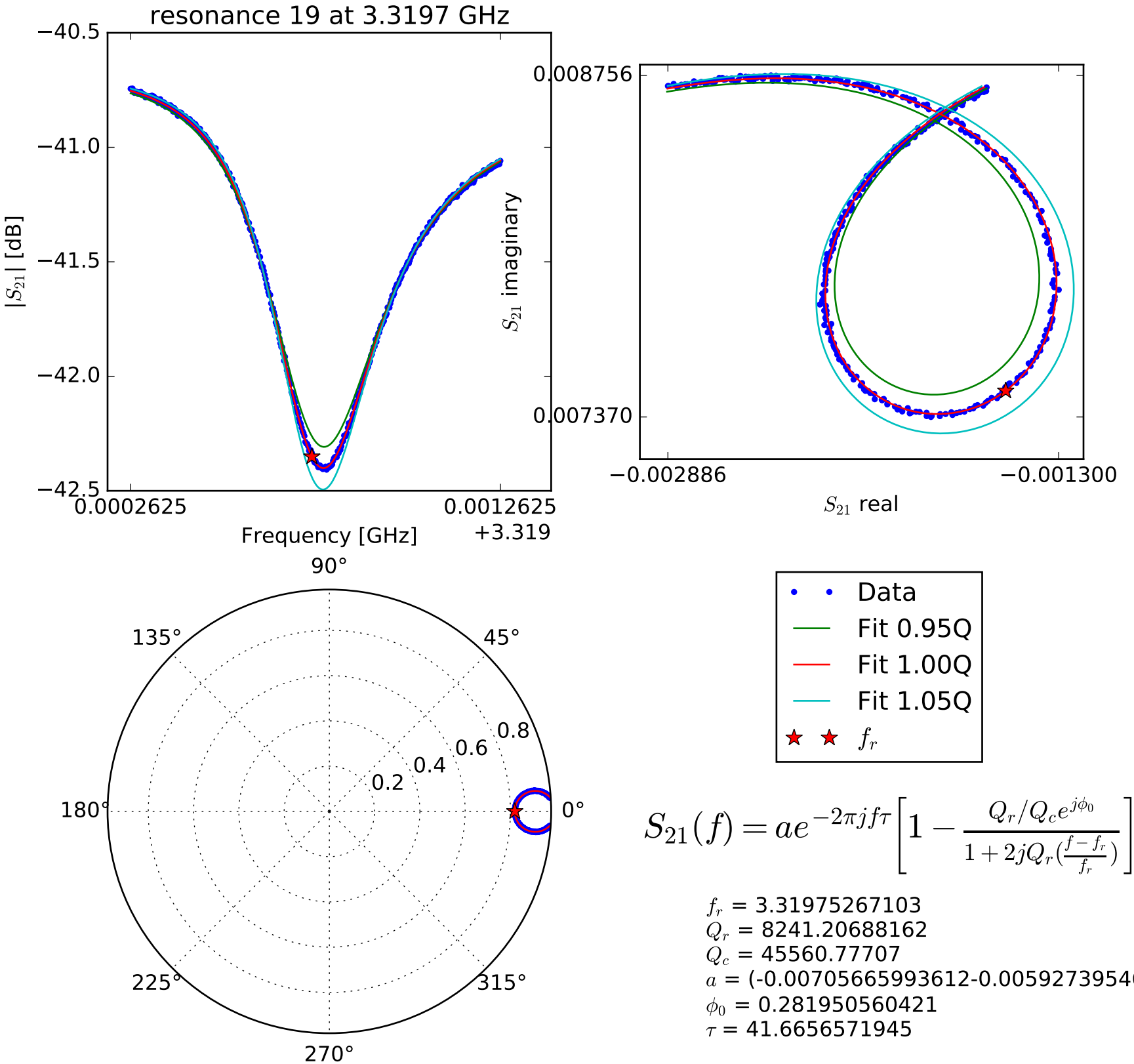



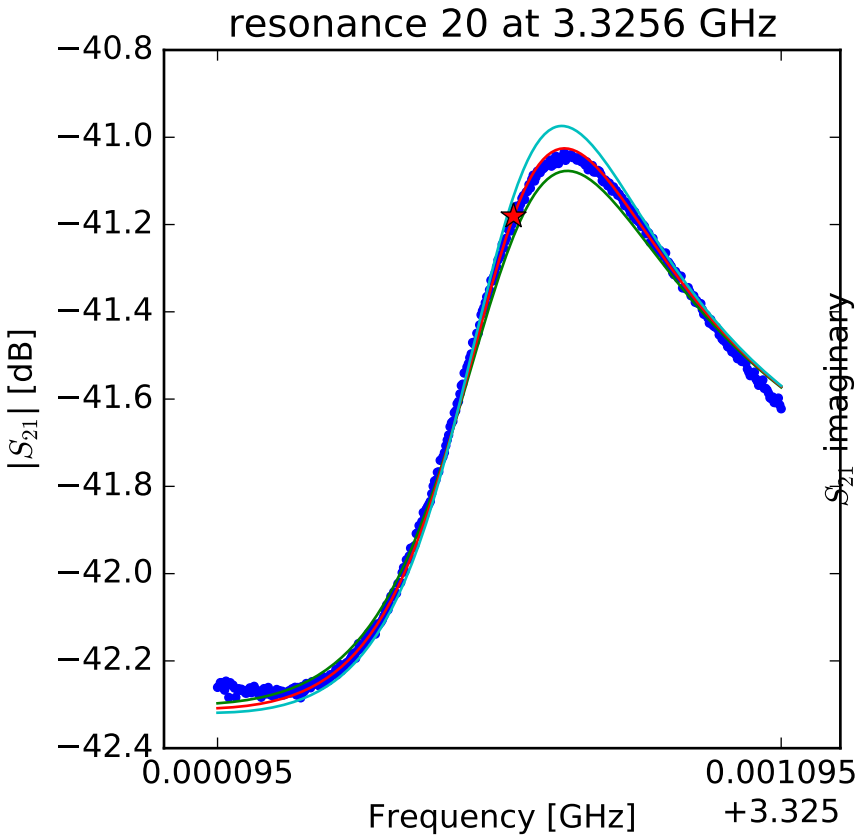

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

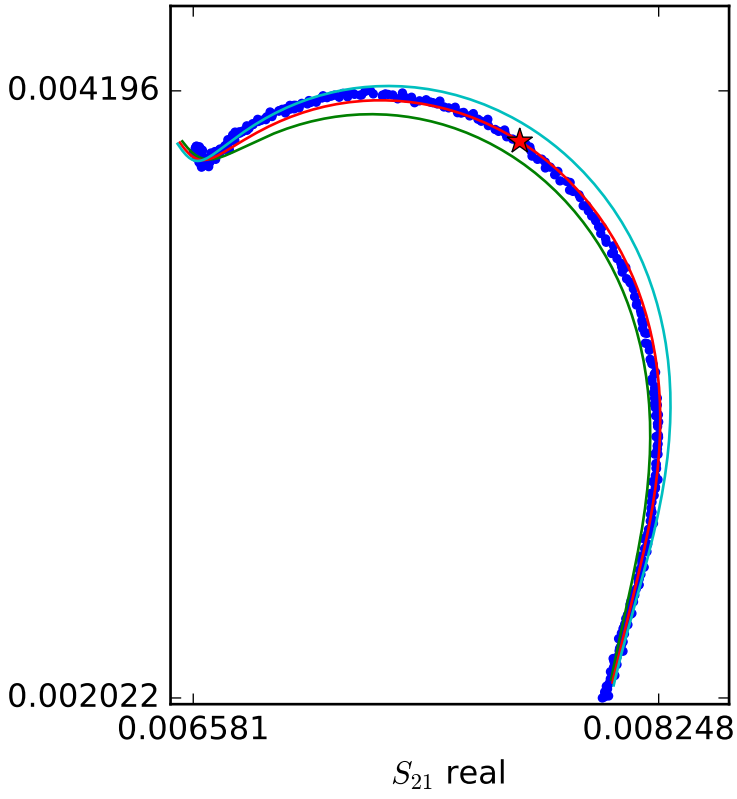
$f_r$ = 3.31492957816
$Q_r$ = 4422.6410225
$Q_c$ = 29610.8112046
$a$ = (-0.00854431628525+0.00319221677768j)
$\phi_0$ = 0.880820306559
$\tau$ = 38.9032367457

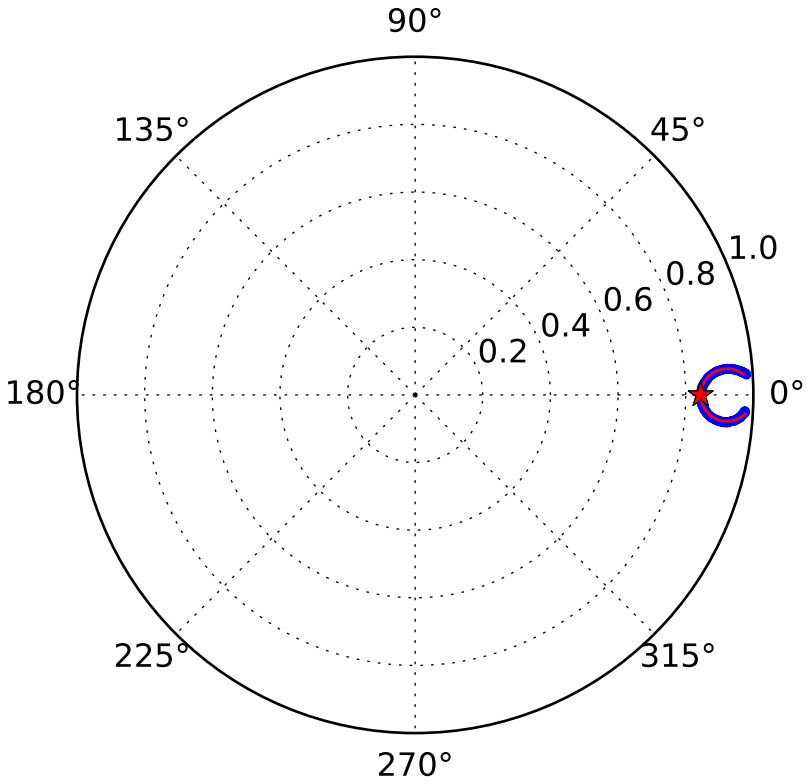


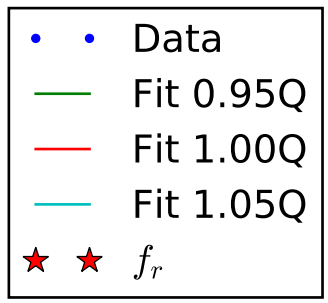

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.31975267103
$Q_r$ = 8241.20688162
$Q_c$ = 45560.77707
$a$ = (-0.00705665993612-0.00592739546385j)
$\phi_0$ = 0.281950560421
$\tau$ = 41.6656571945



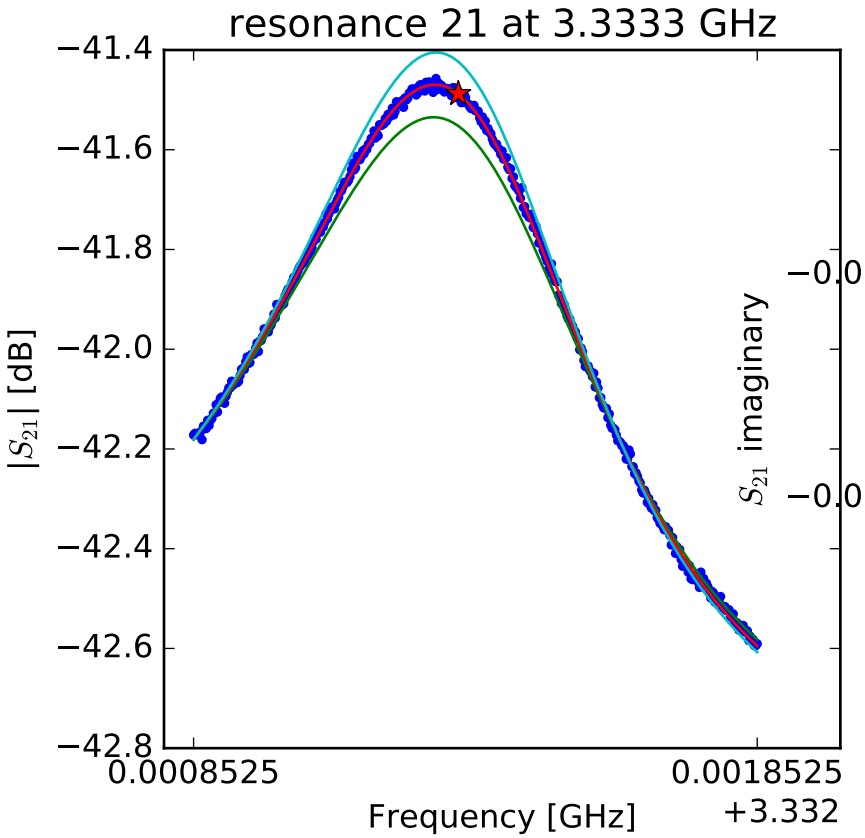



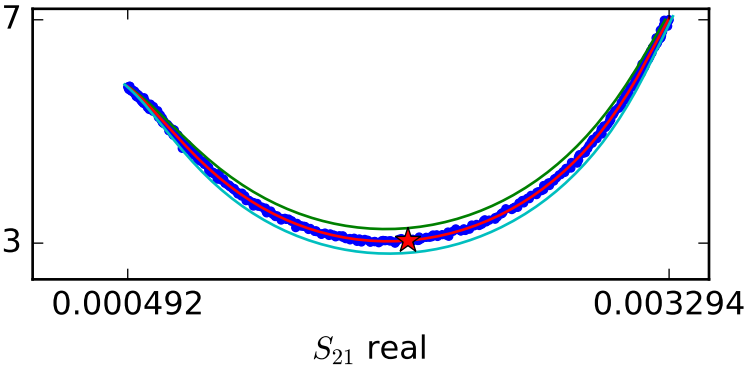



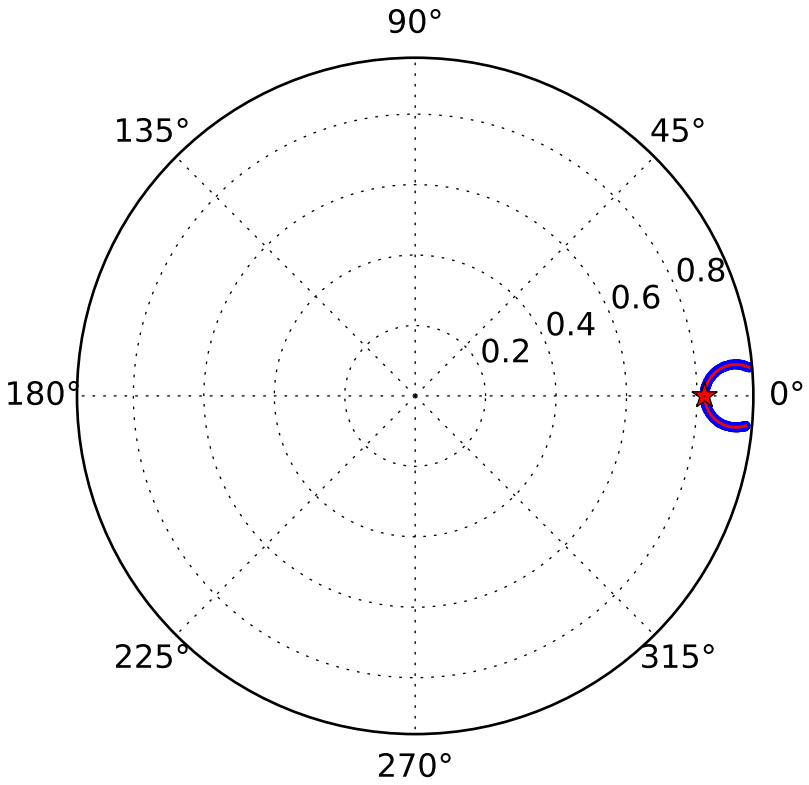



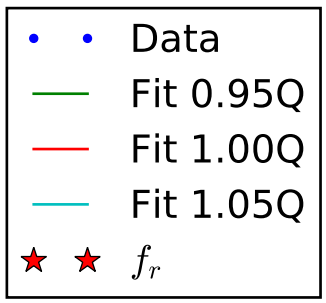

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.32562020326
$Q_r$ = 7352.00830377
$Q_c$ = 47223.0127956
$a$ = (-0.00646324268079+0.00444501484076j)
$\phi_0$ = -2.32874183056
$\tau$ = 35.2849178919



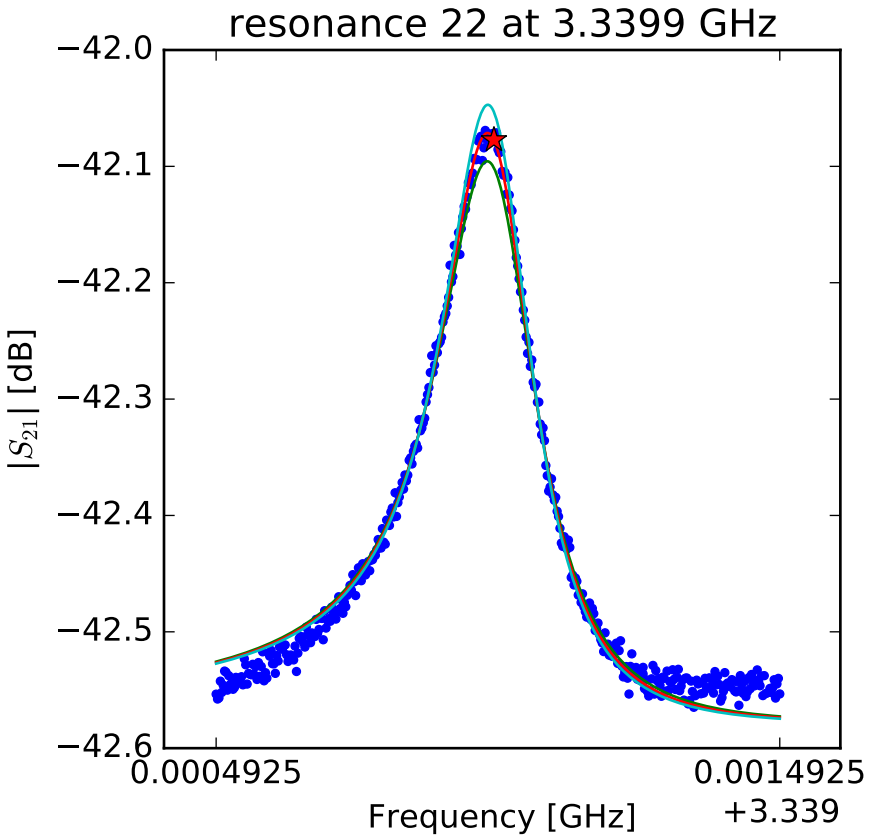



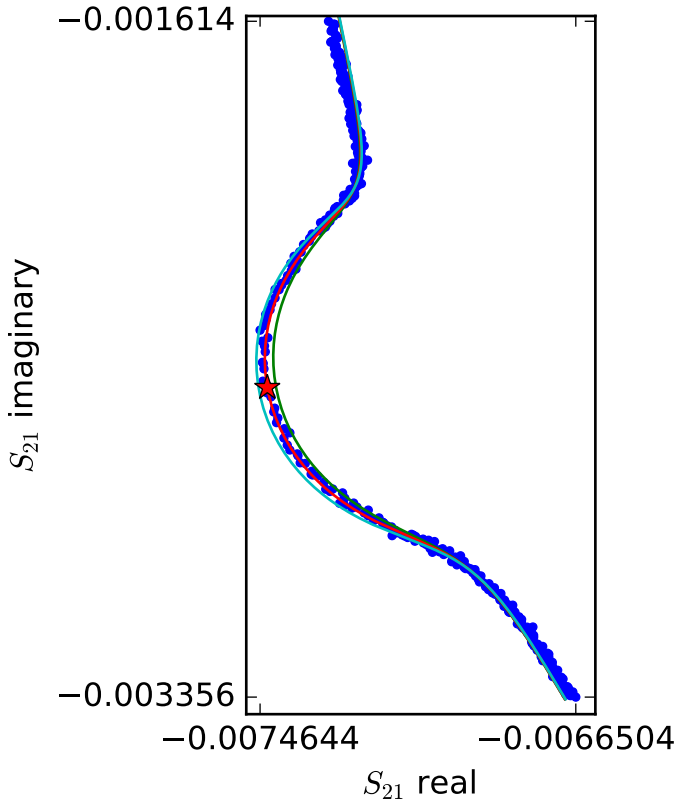



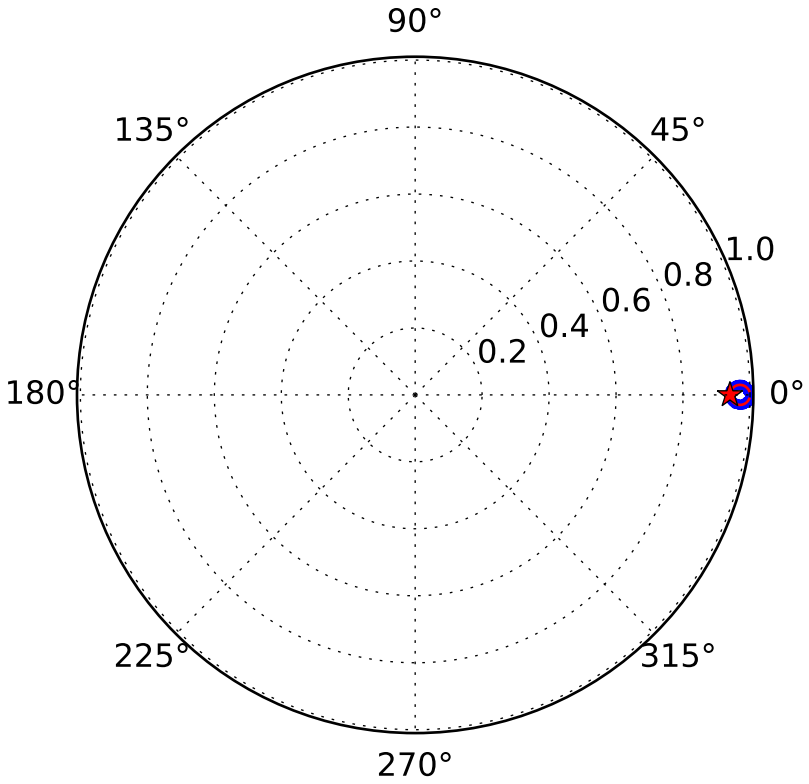



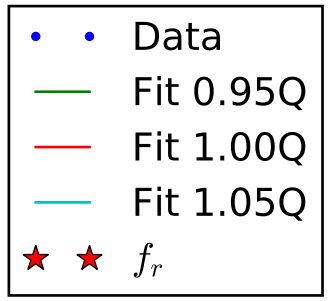

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.3333221176
$Q_r$ = 4919.81650435
$Q_c$ = 27570.9674594
$a$ = (-0.000870099851759+0.00712961830567
$\phi_0$ = 2.87568775983
$\tau$ = 35.2429020977



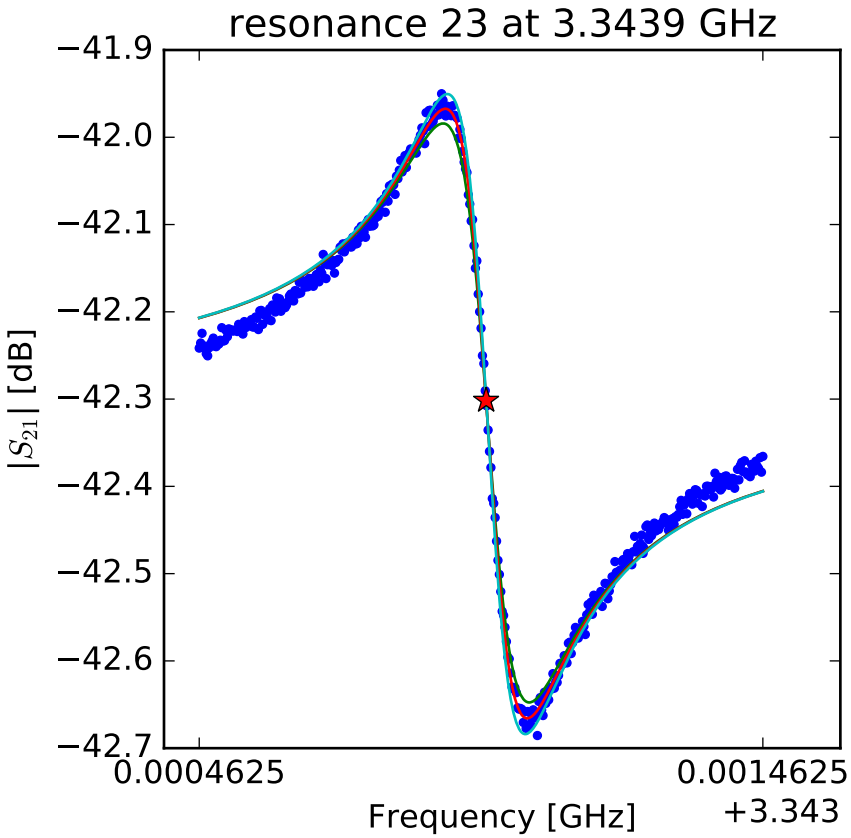



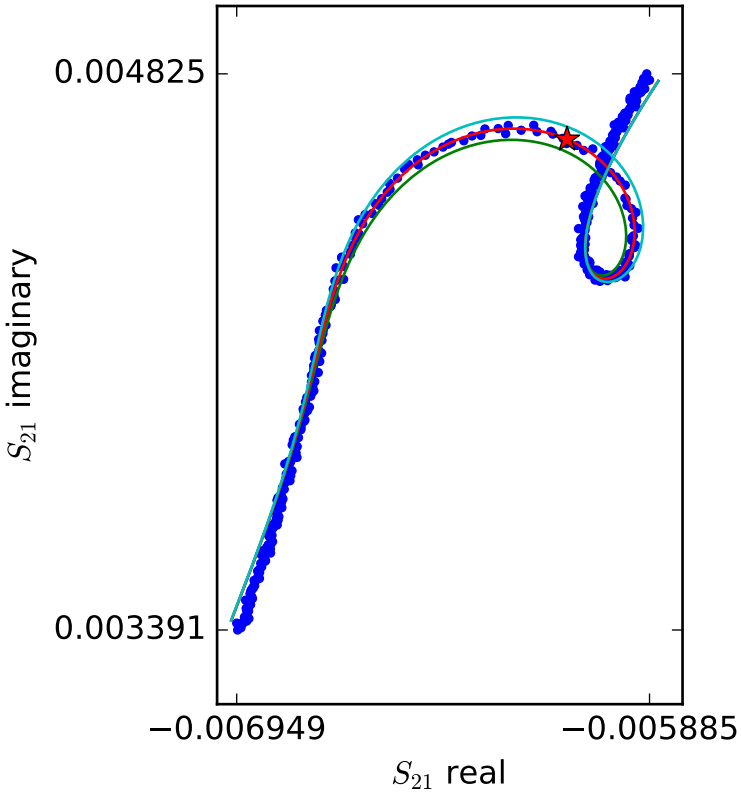



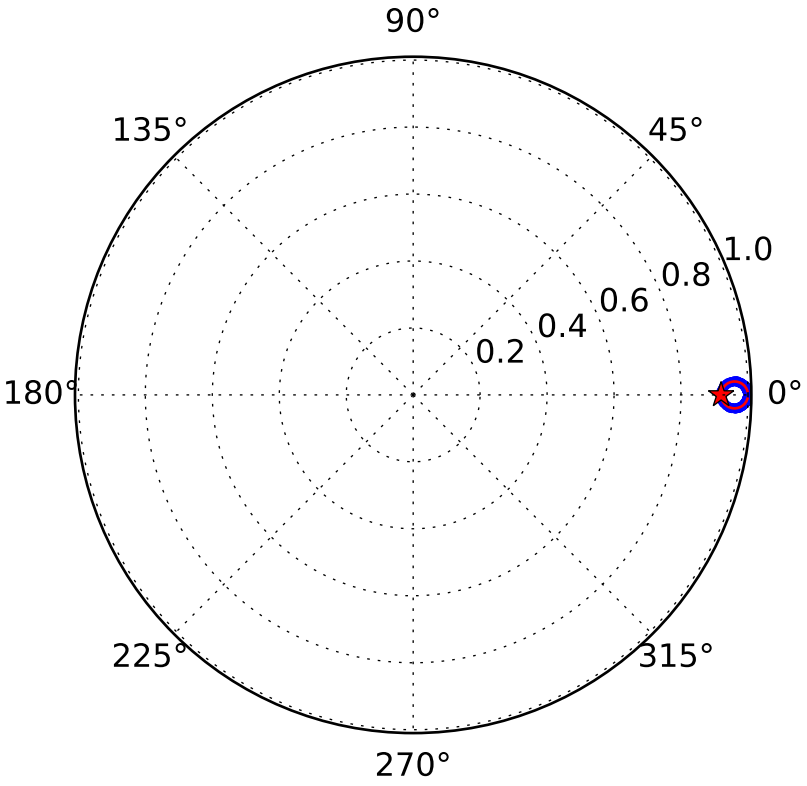



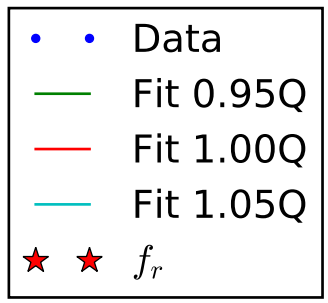

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.33998539586
$Q_r$ = 16543.0440091
$Q_c$ = 275869.061992
$a$ = (0.00592051559494-0.00450249553863j)
$\phi_0$ = 2.91044090669
$\tau$ = 36.0306327442



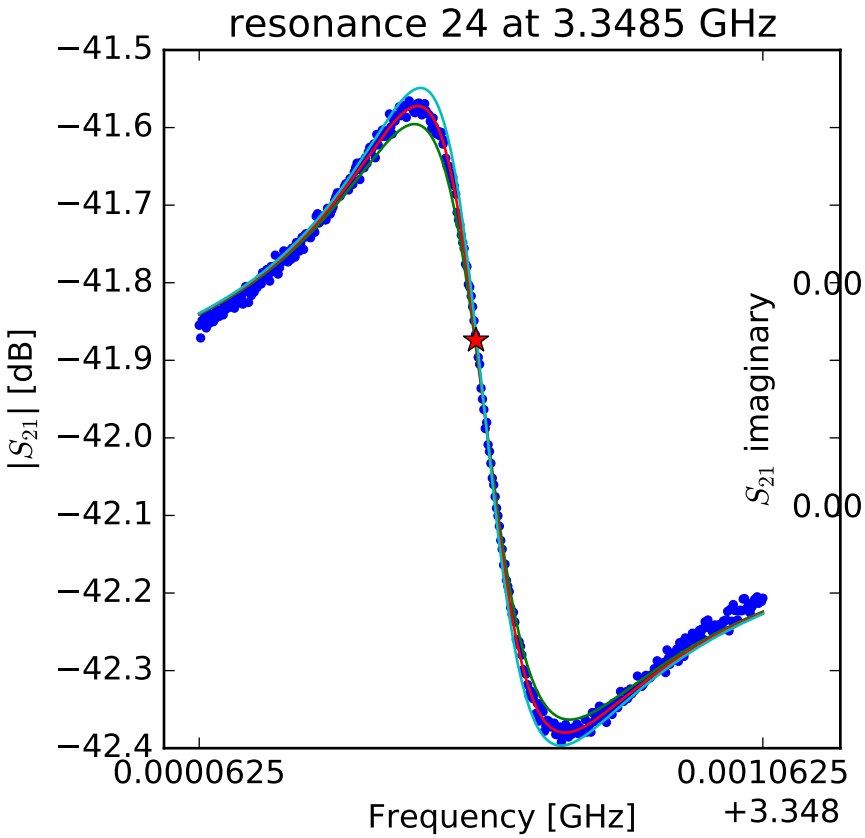



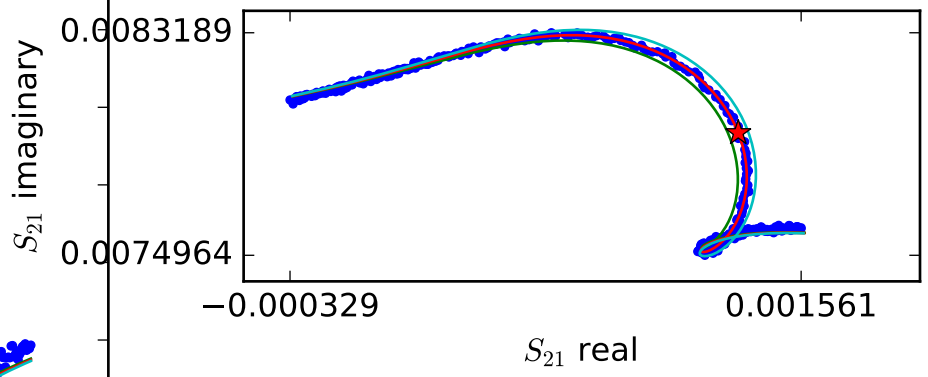



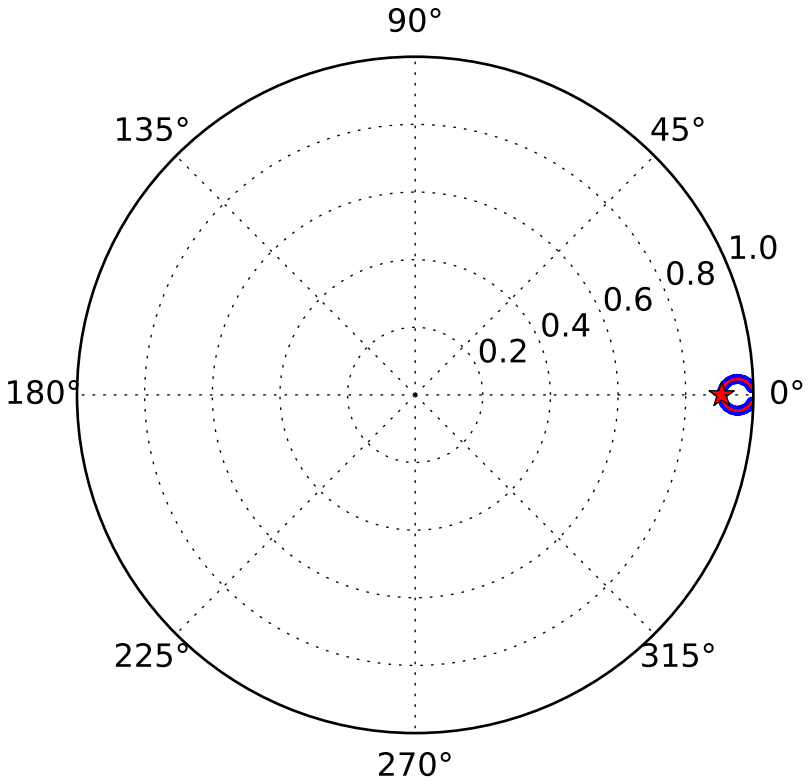



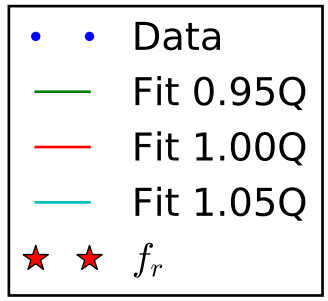

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.34397156225
$Q_r$ = 23007.9256524
$Q_c$ = 286470.663444
$a$ = (-0.00756897503552-0.00124439617268j)
$\phi_0$ = 1.53327315529
$\tau$ = 36.8175810502



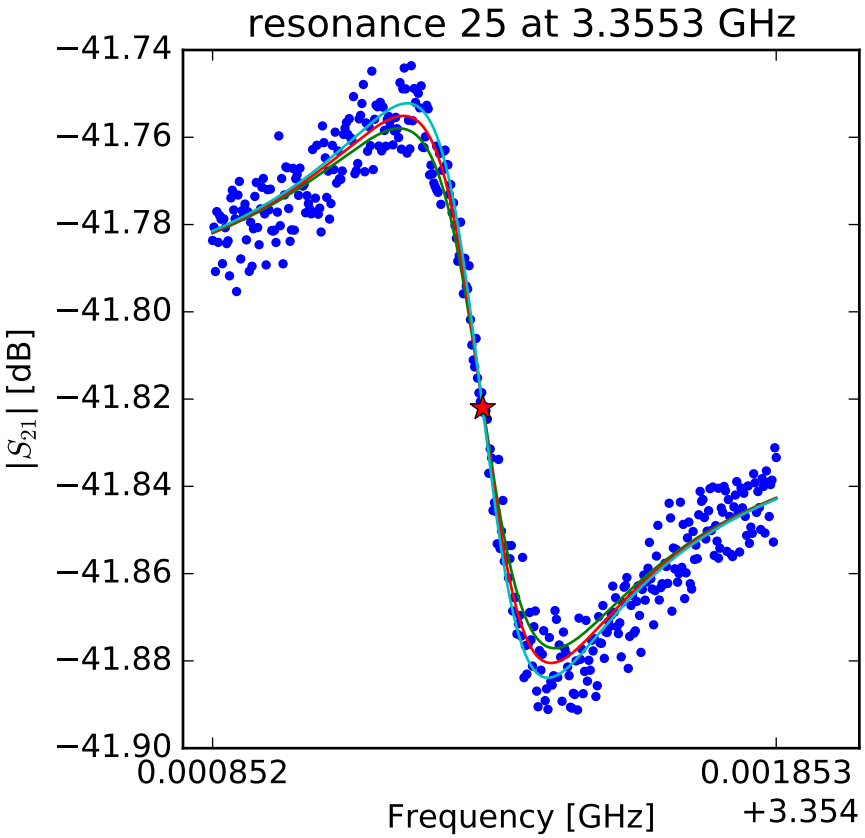



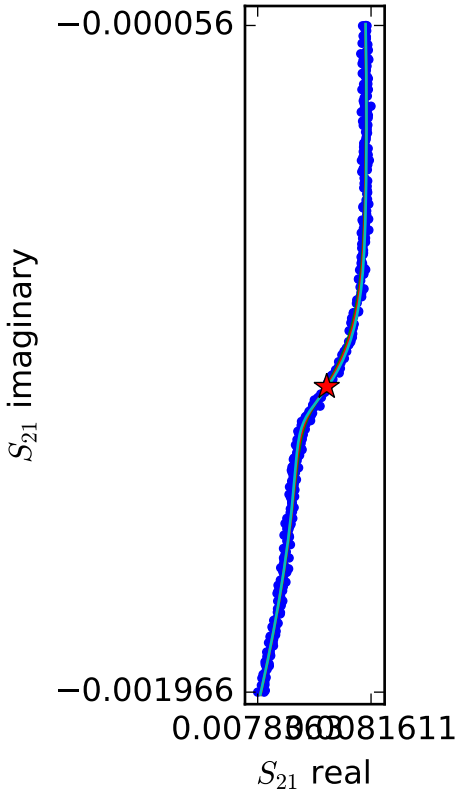



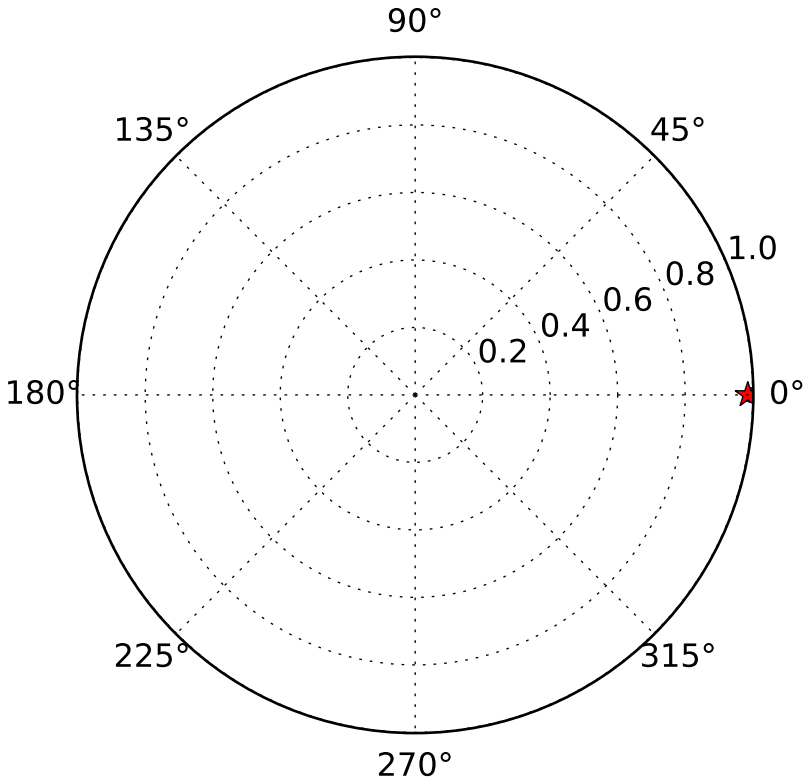



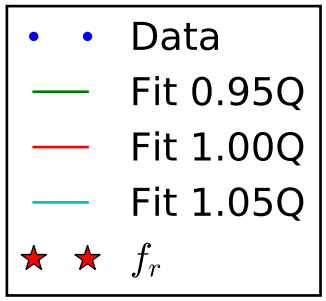

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.34855353762
$Q_r$ = 13093.4210152
$Q_c$ = 139659.964675
$a$ = (-0.004945256241+0.00616700545821j)
$\phi_0$ = 1.73486604161
$\tau$ = 37.6638635222



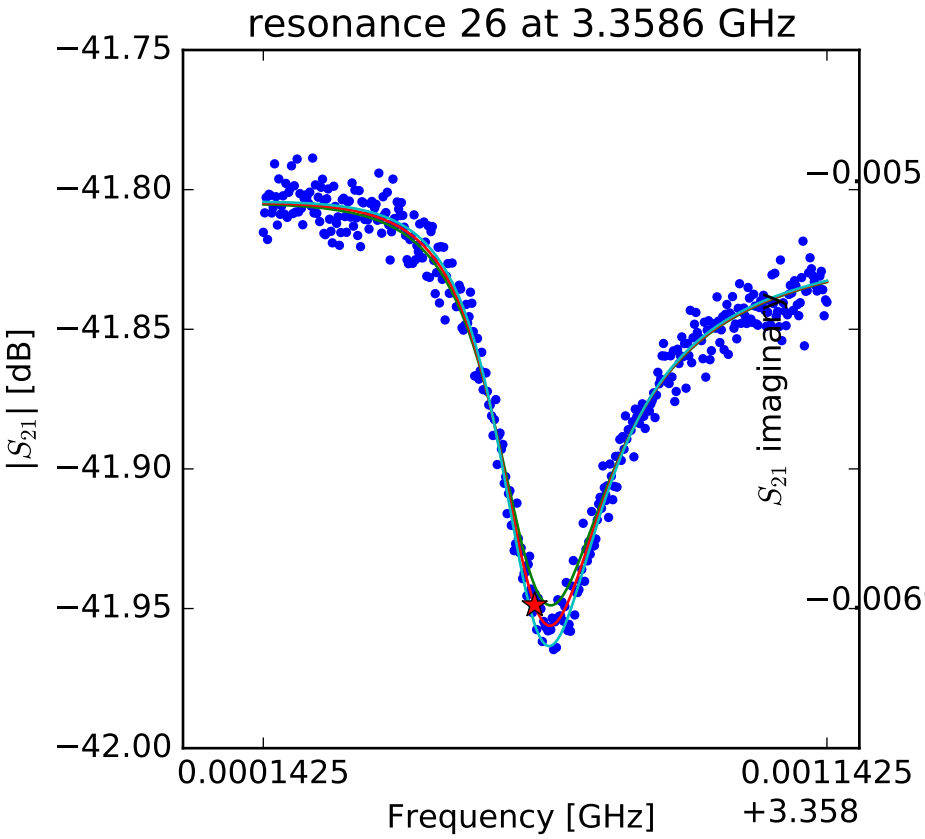



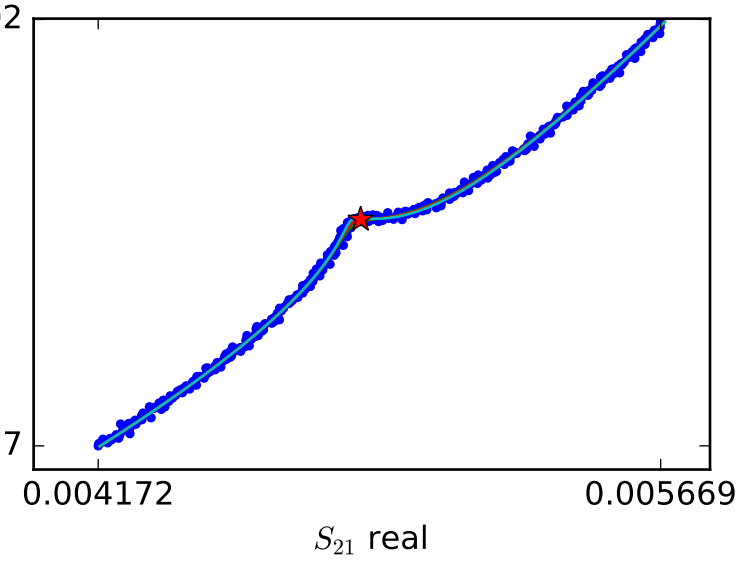



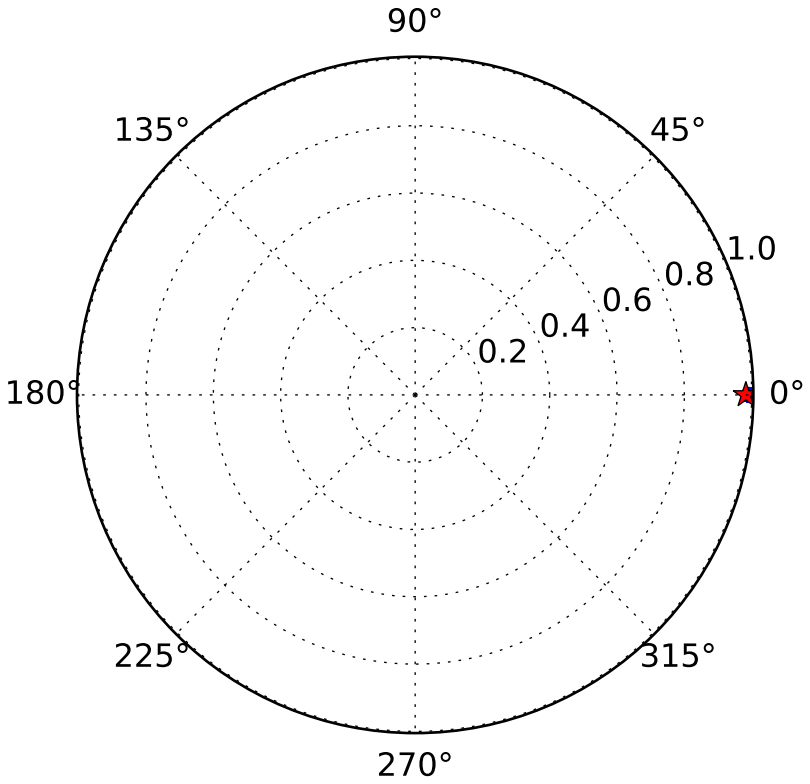



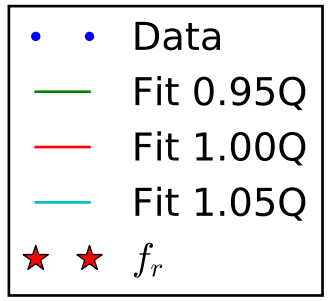

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.35533180934
$Q_r$ = 12841.1802504
$Q_c$ = 889993.082801
$a$ = (-0.00810468131294-0.000437491825652j)
$\phi_0$ = 1.48871316262
$\tau$ = 38.3055287688



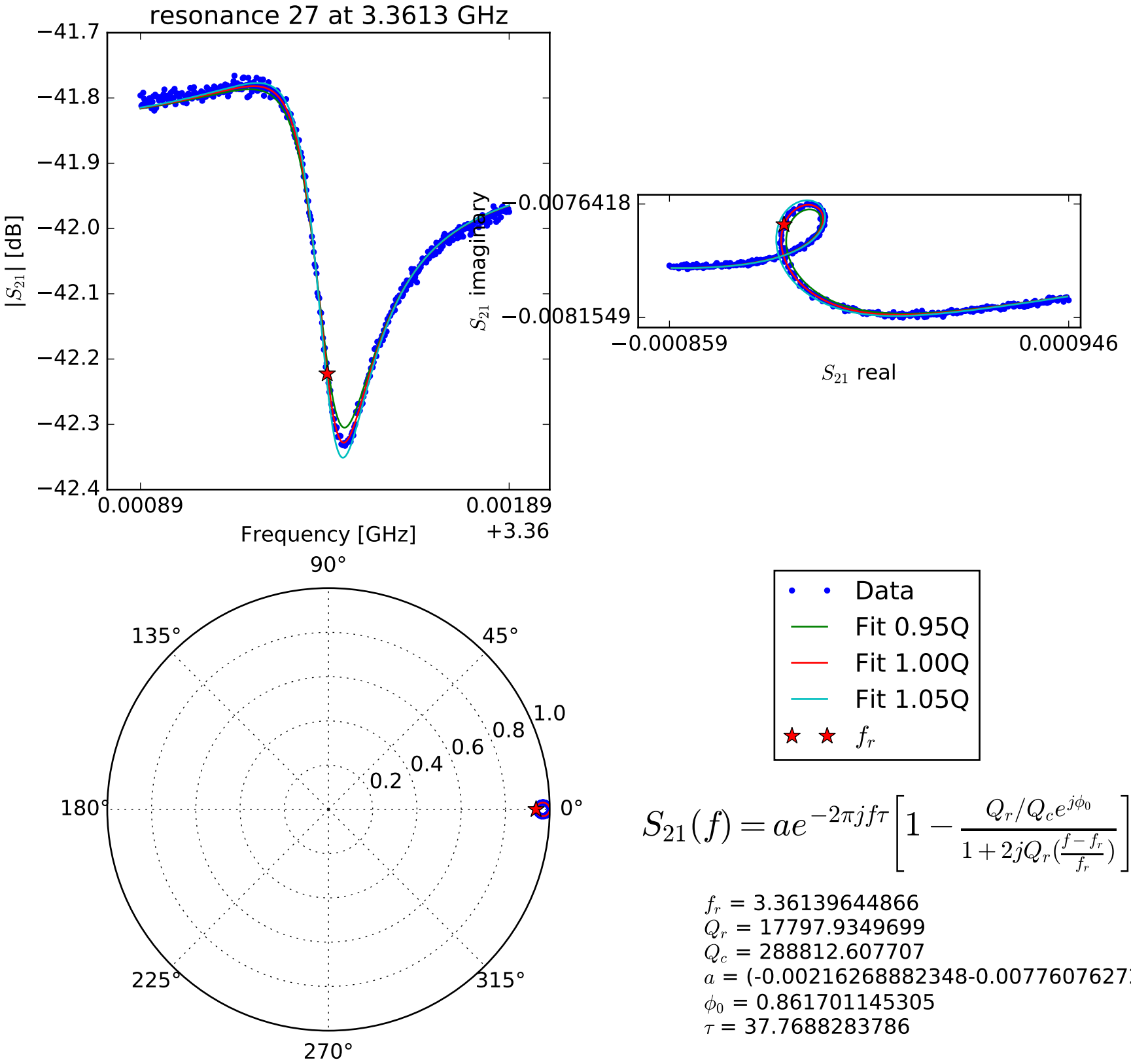



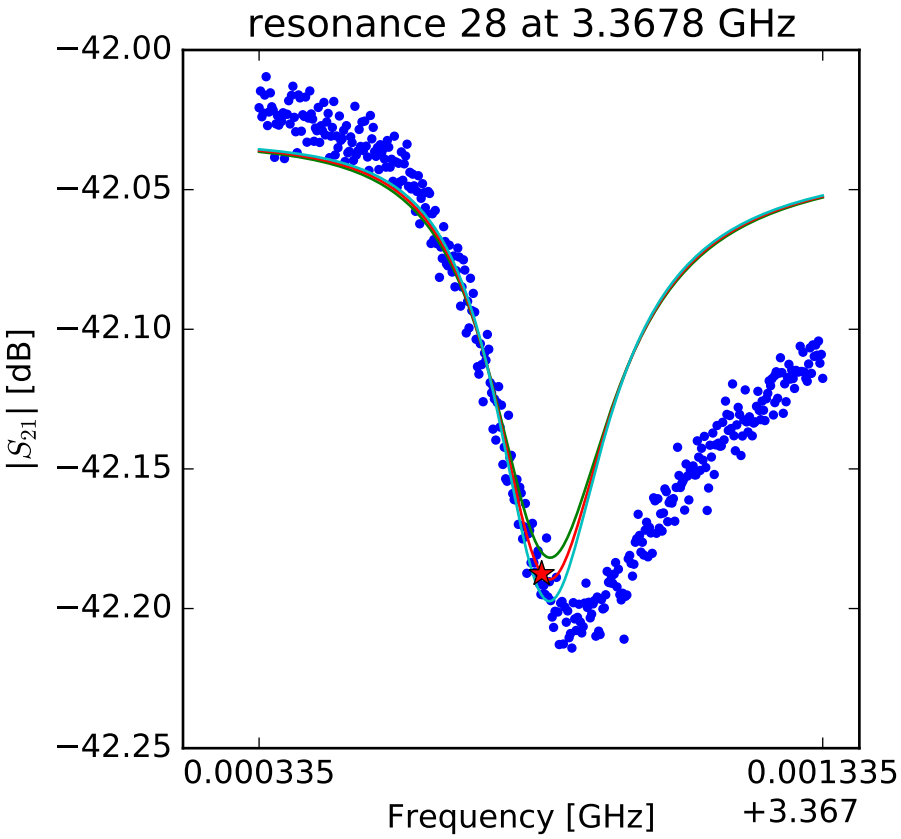

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

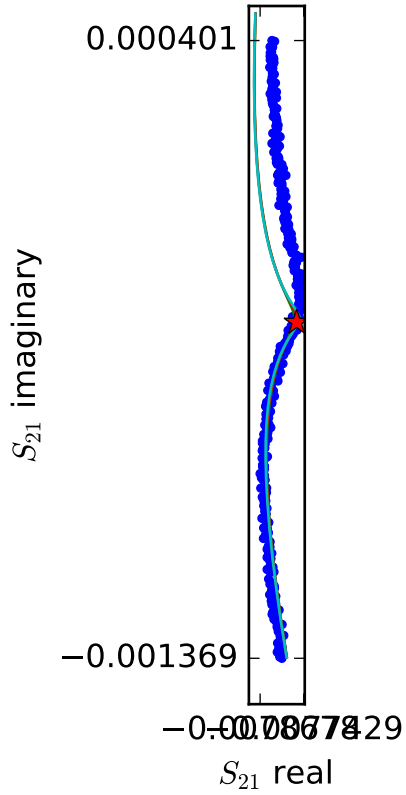
$f_r$ = 3.35862391255
$Q_r$ = 13971.7548689
$Q_c$ = 807775.693399
$a$ = (0.00675262211415-0.00450451472996j)
$\phi_0$ = 0.438470800096
$\tau$ = 38.1259908031

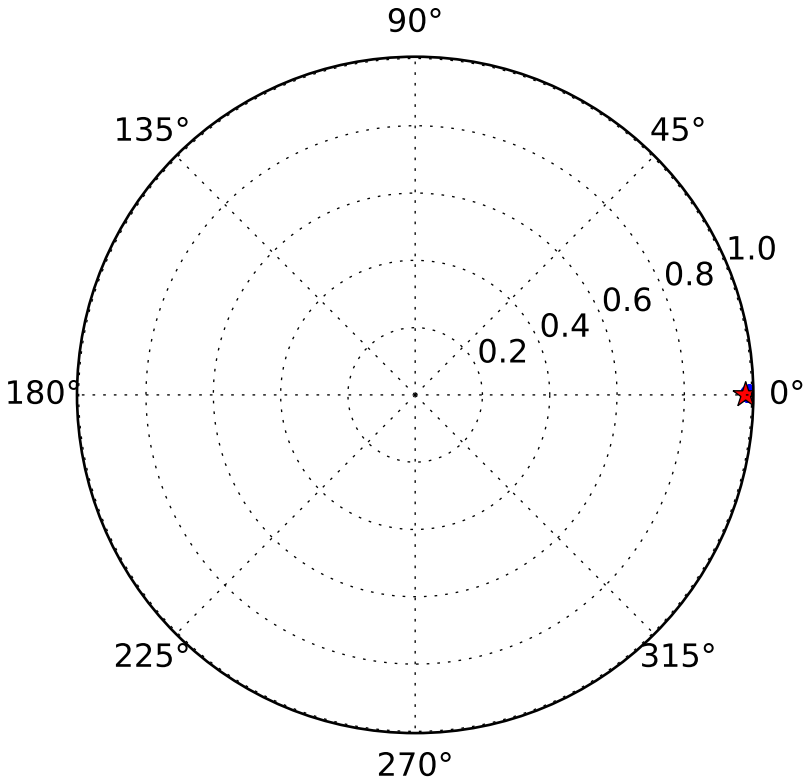


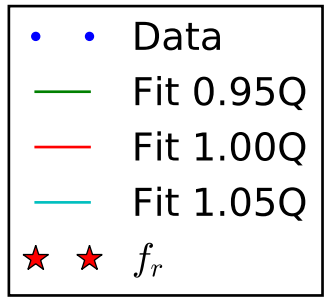

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.36139644866
$Q_r$ = 17797.9349699
$Q_c$ = 288812.607707
$a$ = (-0.00216268882348-0.00776076272379j)
$\phi_0$ = 0.861701145305
$\tau$ = 37.7688283786



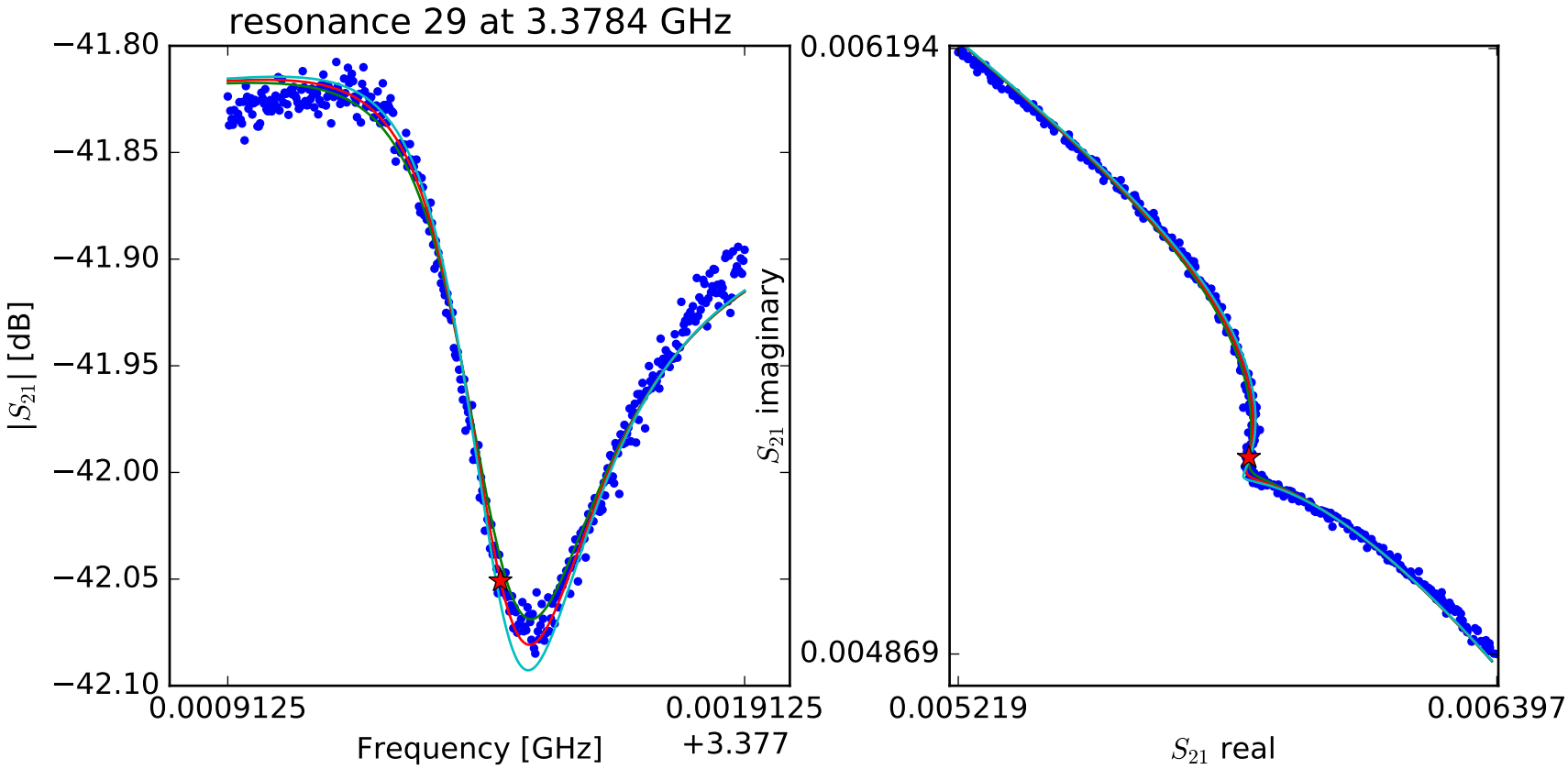



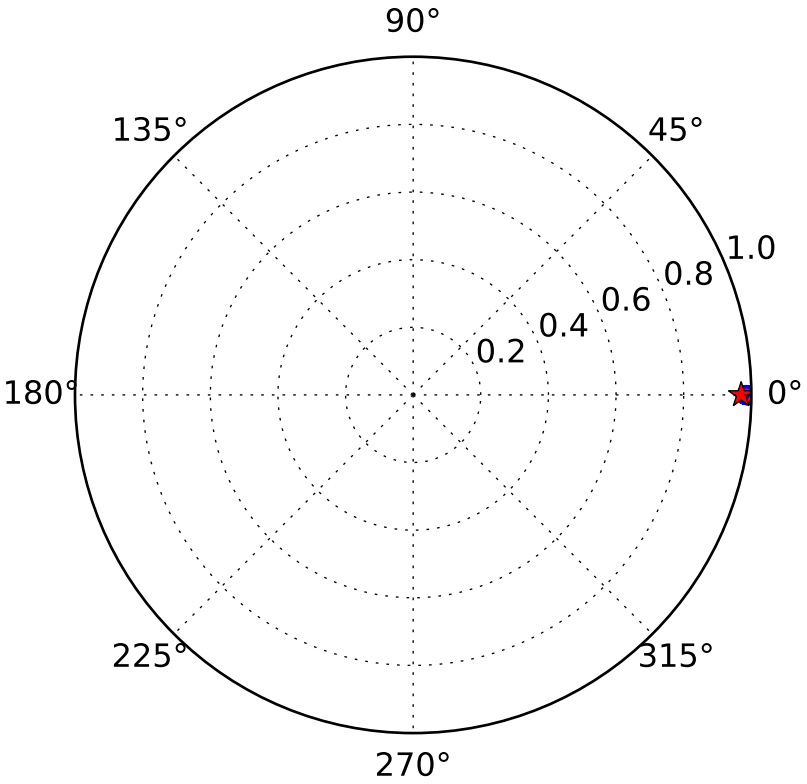



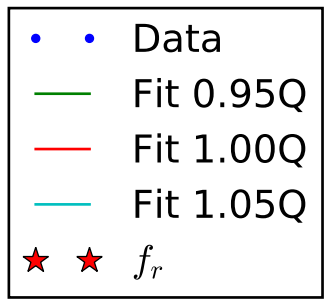




$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.36783633996
$Q_r$ = 13416.8664461
$Q_c$ = 752386.511616
$a$ = (-0.00423935956921+0.00667926963133j)
$\phi_0$ = 0.224956160414
$\tau$ = 38.5502832157

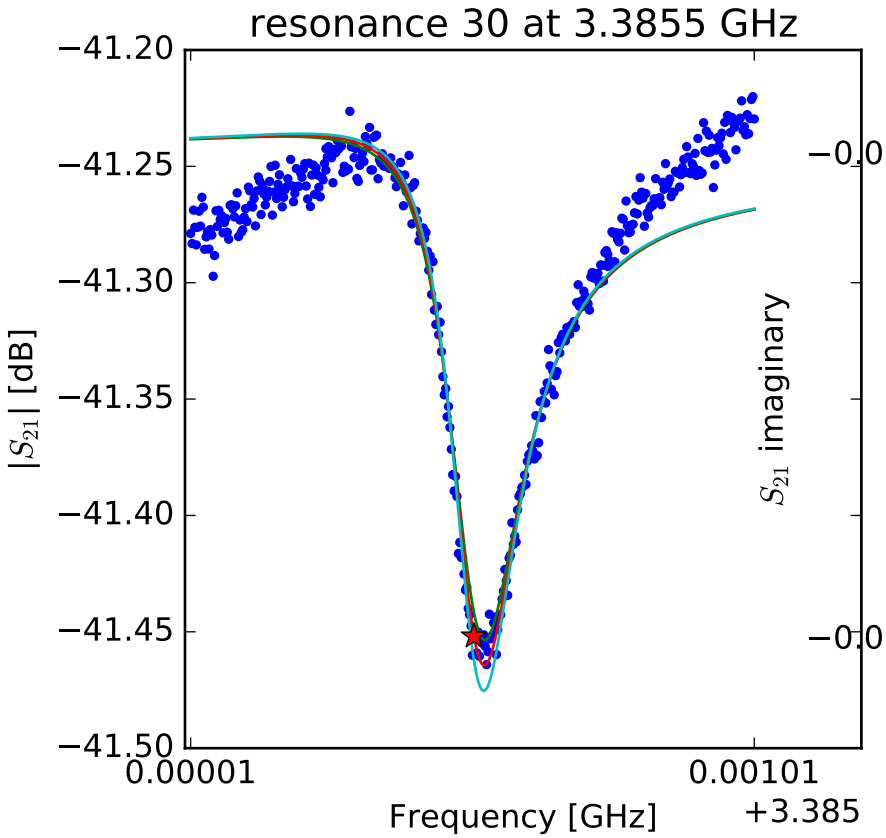


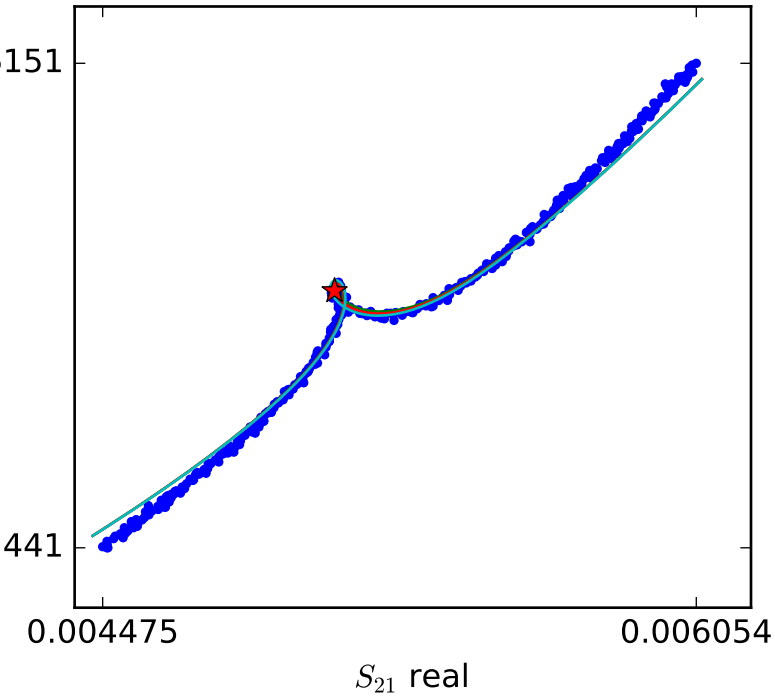



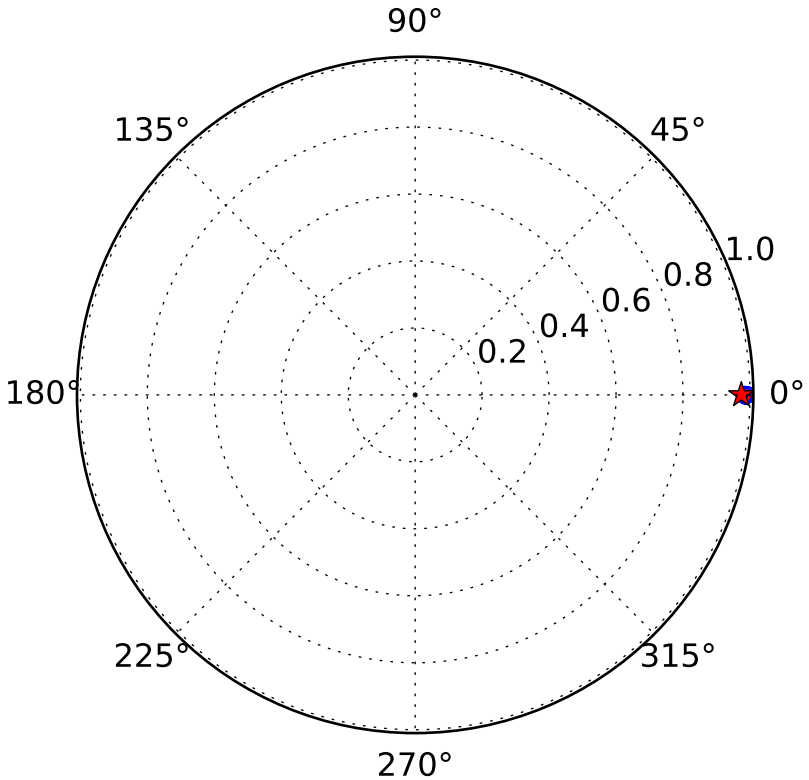



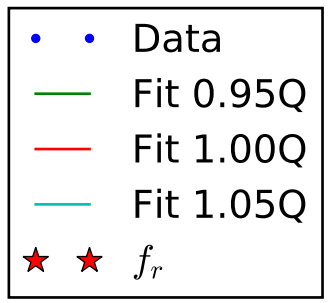

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.37844001095
$Q_r$ = 10538.9617739
$Q_c$ = 349727.578222
$a$ = (-0.00587605219905+0.00555609838752j)
$\phi_0$ = 0.667462935683
$\tau$ = 37.0760826287



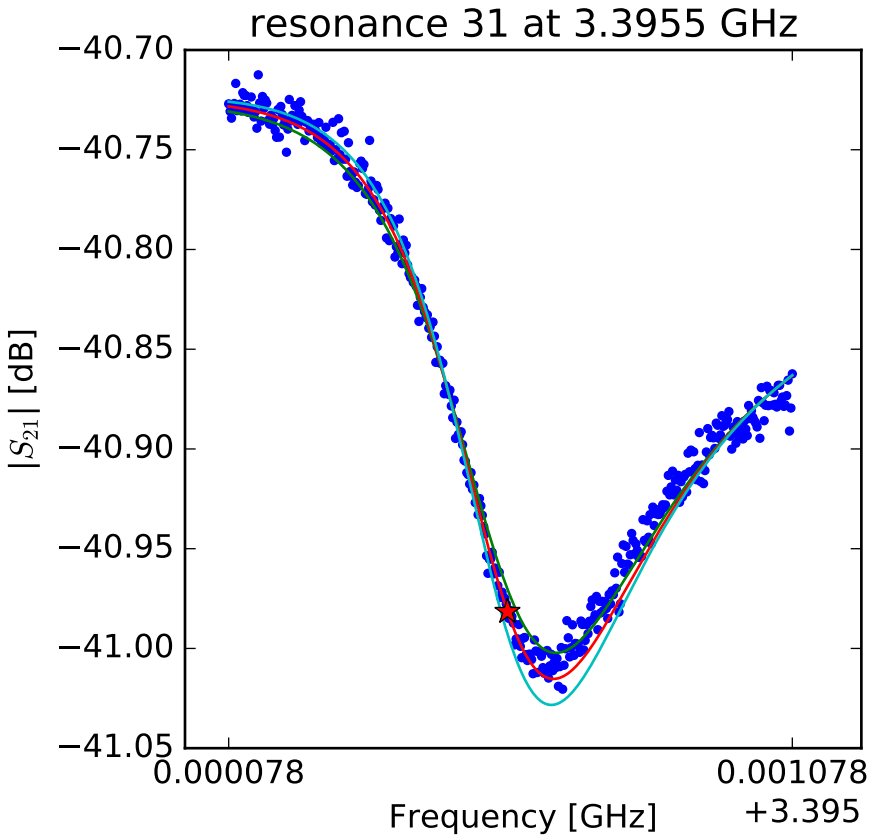



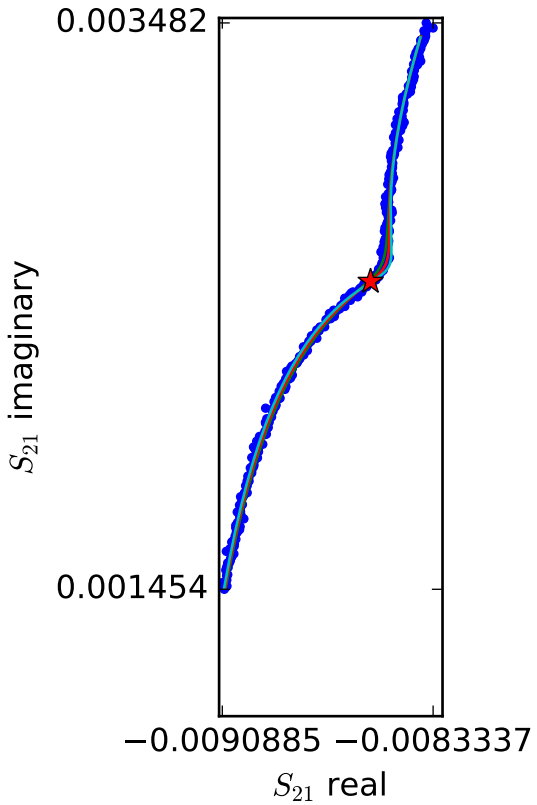



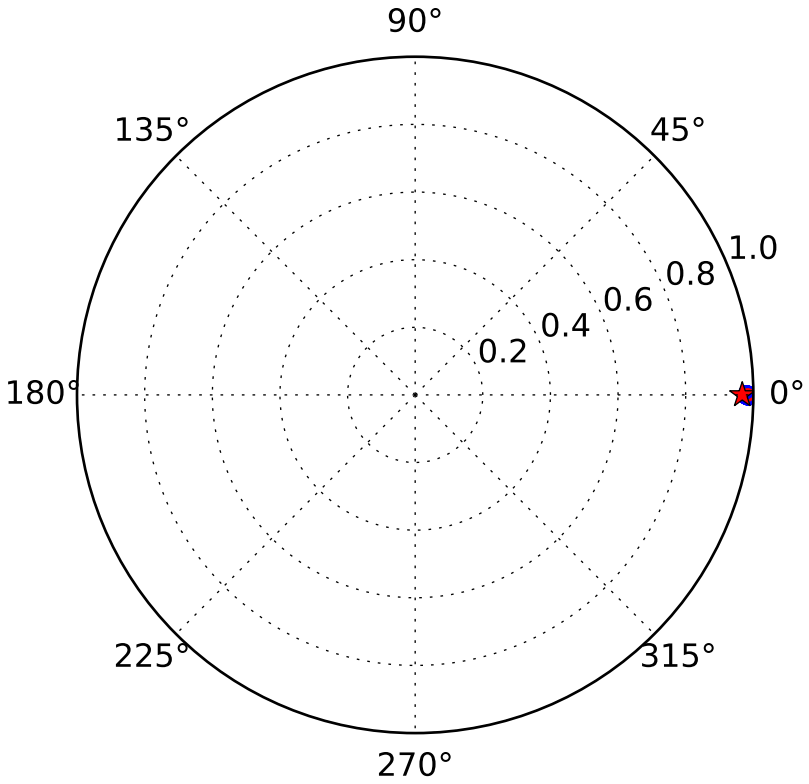



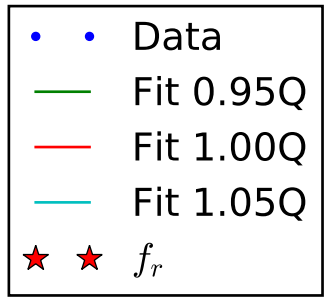

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.38551258451
$Q_r$ = 22042.7106118
$Q_c$ = 850077.579897
$a$ = (0.00863674736819-0.000649034020926j)
$\phi_0$ = 0.462194983731
$\tau$ = 38.4383155778



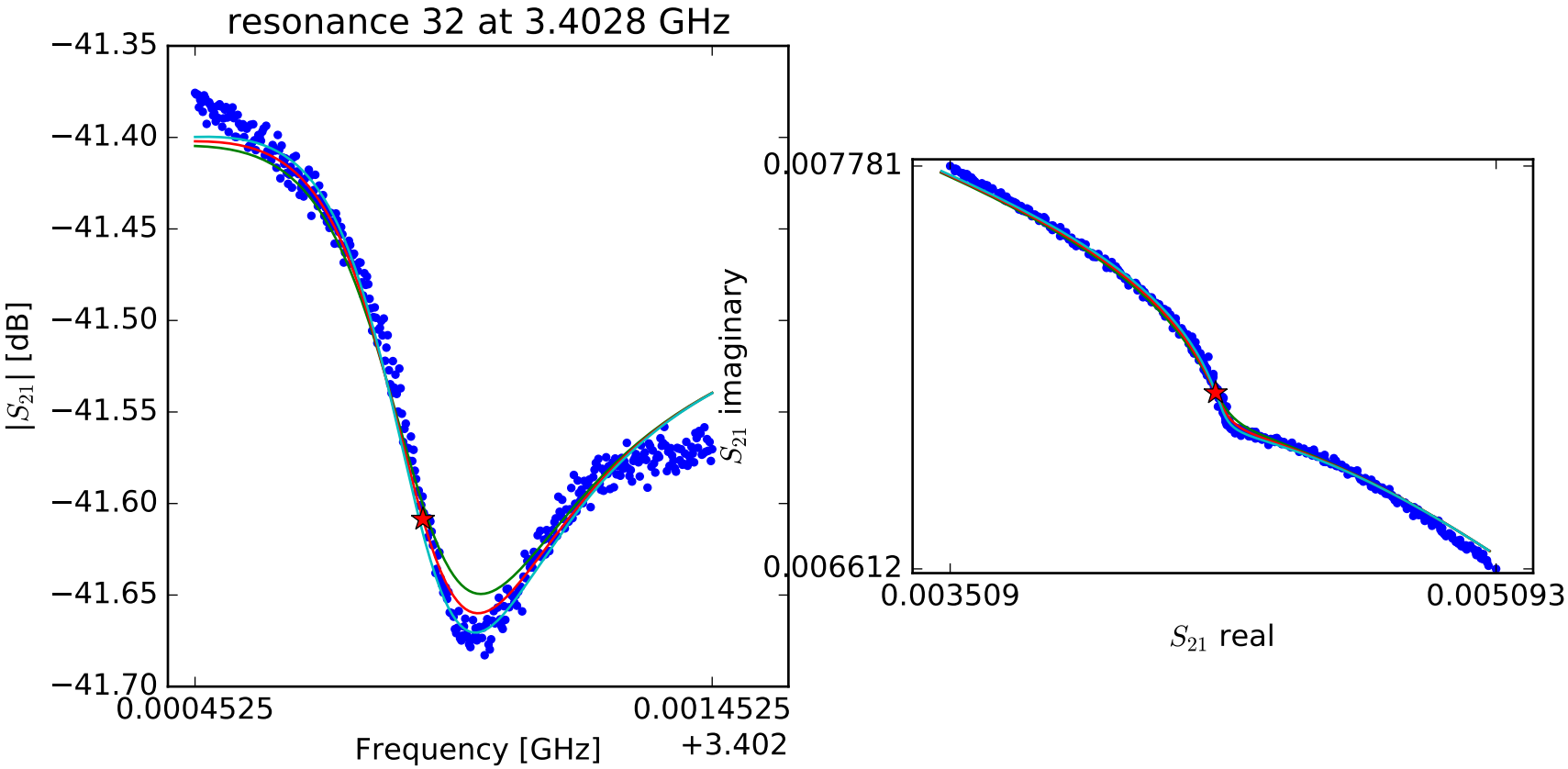



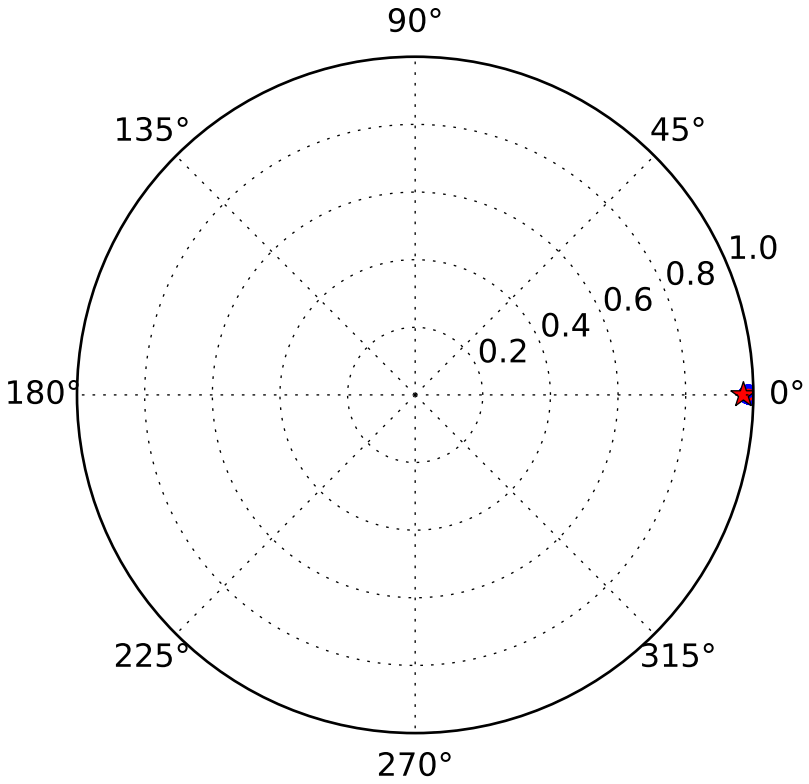



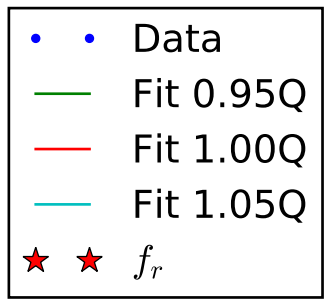




$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.39557212155
$Q_r$ = 7429.57444341
$Q_c$ = 226010.31724
$a$ = (0.00908721368855+0.00118756695588j)
$\phi_0$ = 0.676025793472
$\tau$ = 39.6291170599

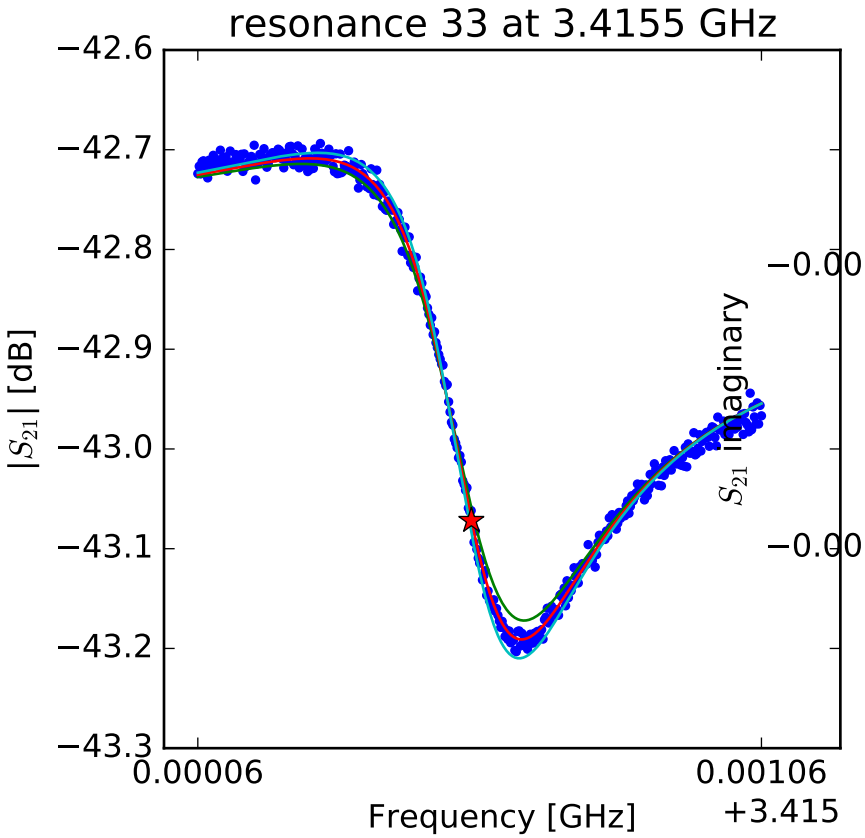


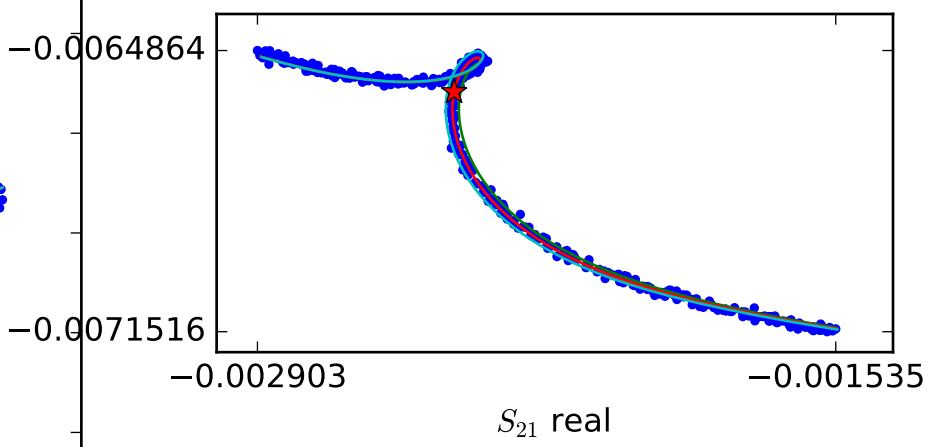



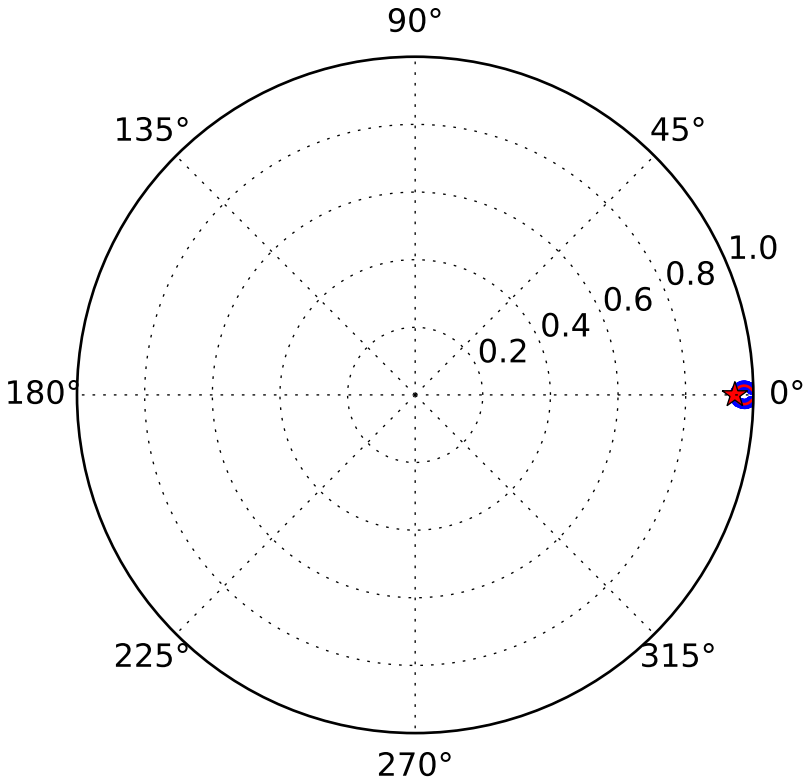



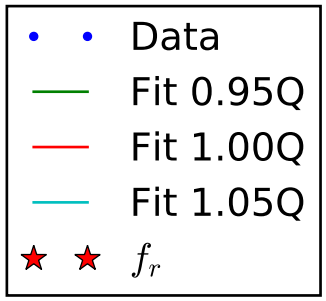

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.4028931368
$Q_r$ = 7858.62921333
$Q_c$ = 267184.053956
$a$ = (0.00585414654486+0.00610941214486j)
$\phi_0$ = 0.902112011984
$\tau$ = 38.7789872776



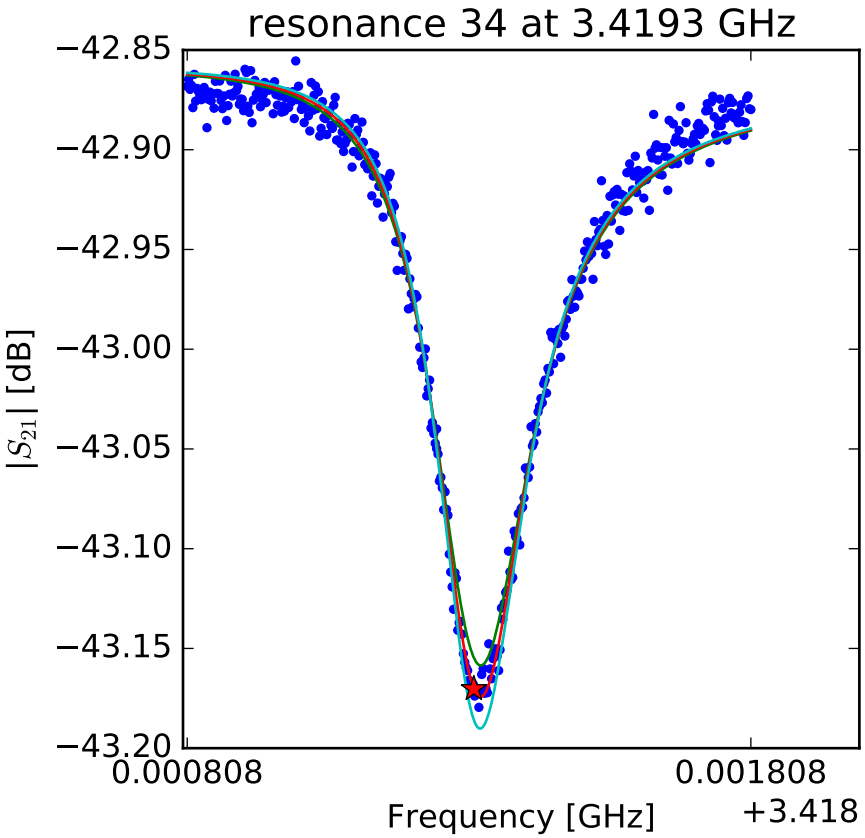



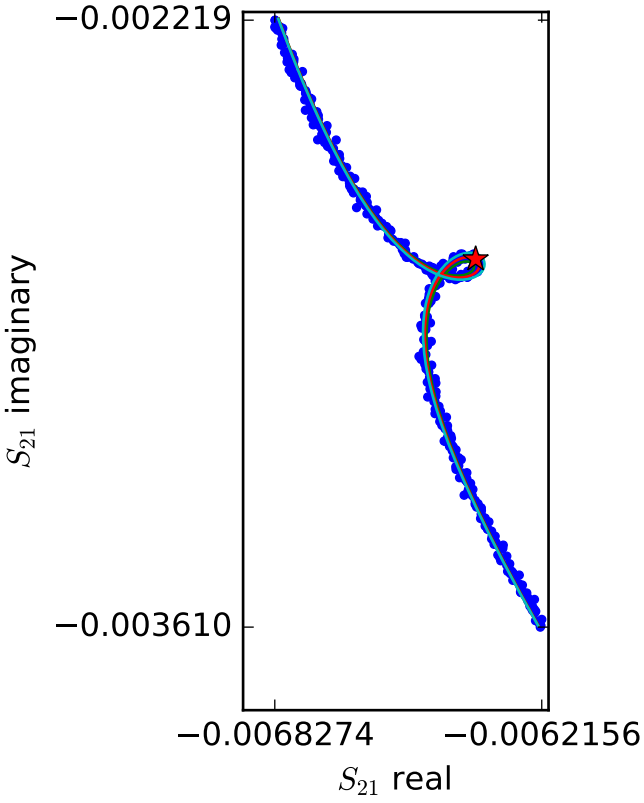



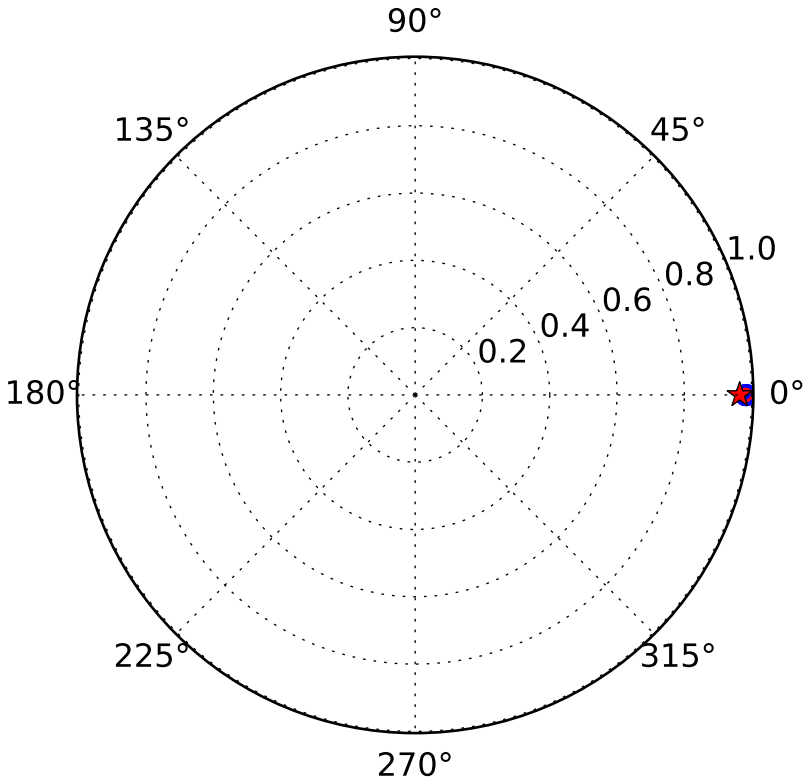



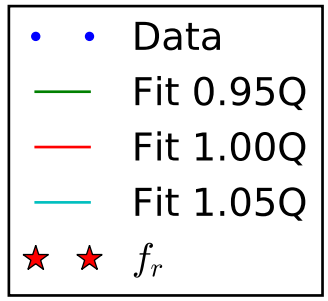

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.41554532735
$Q_r$ = 10703.9010166
$Q_c$ = 195676.589594
$a$ = (0.000949366667158+0.00716666915805j)
$\phi_0$ = 0.993126281775
$\tau$ = 35.873618437



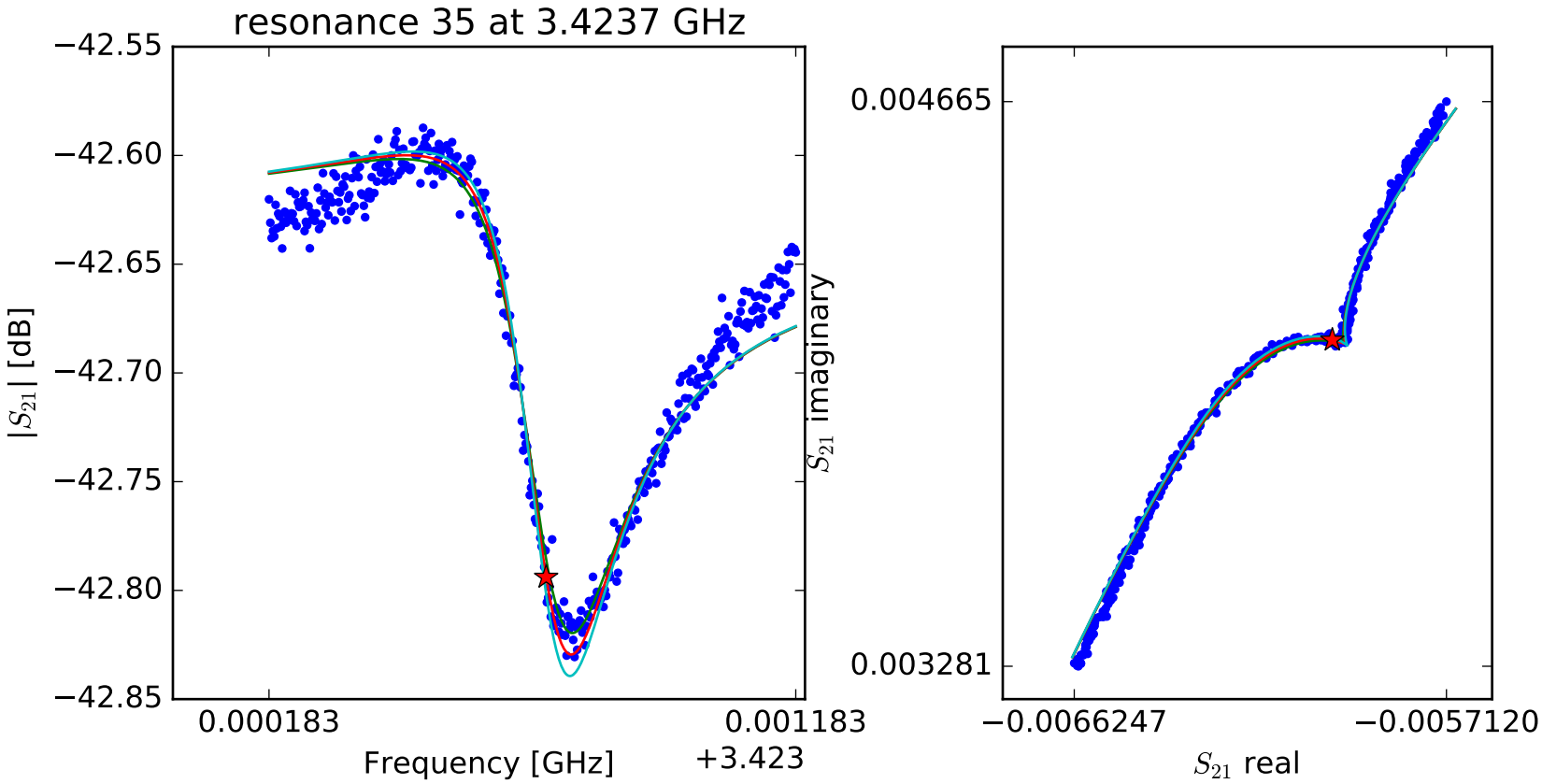



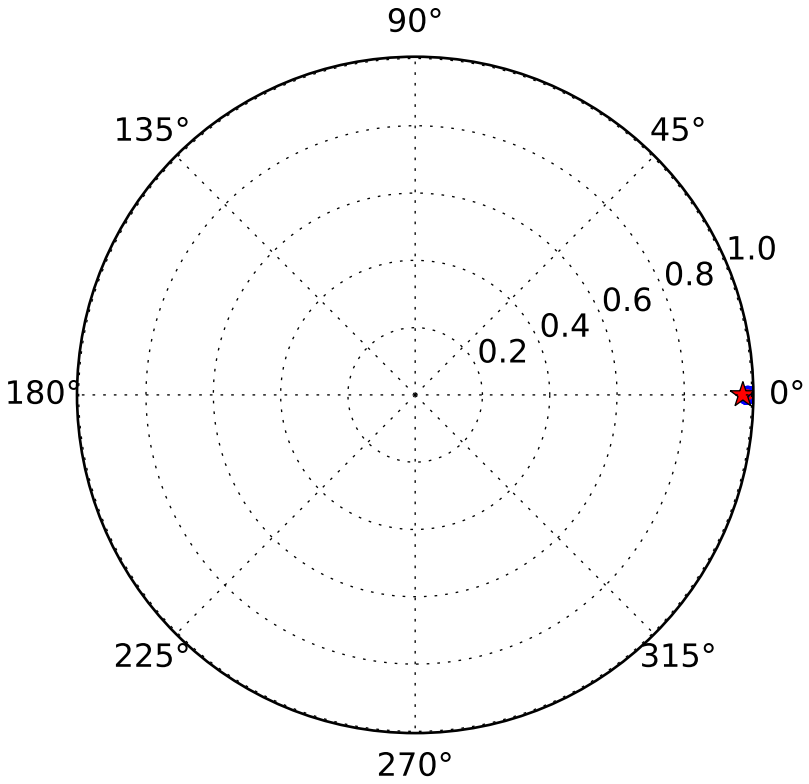



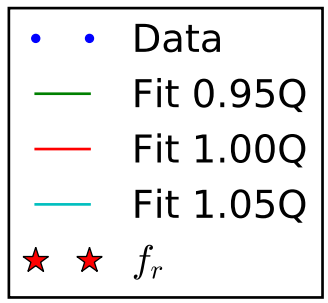




$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.4193159838
$Q_r$ = 16465.9818133
$Q_c$ = 462477.434173
$a$ = (0.00653861614165-0.00299439001616j)
$\phi_0$ = 0.220713840888
$\tau$ = 35.7864365204

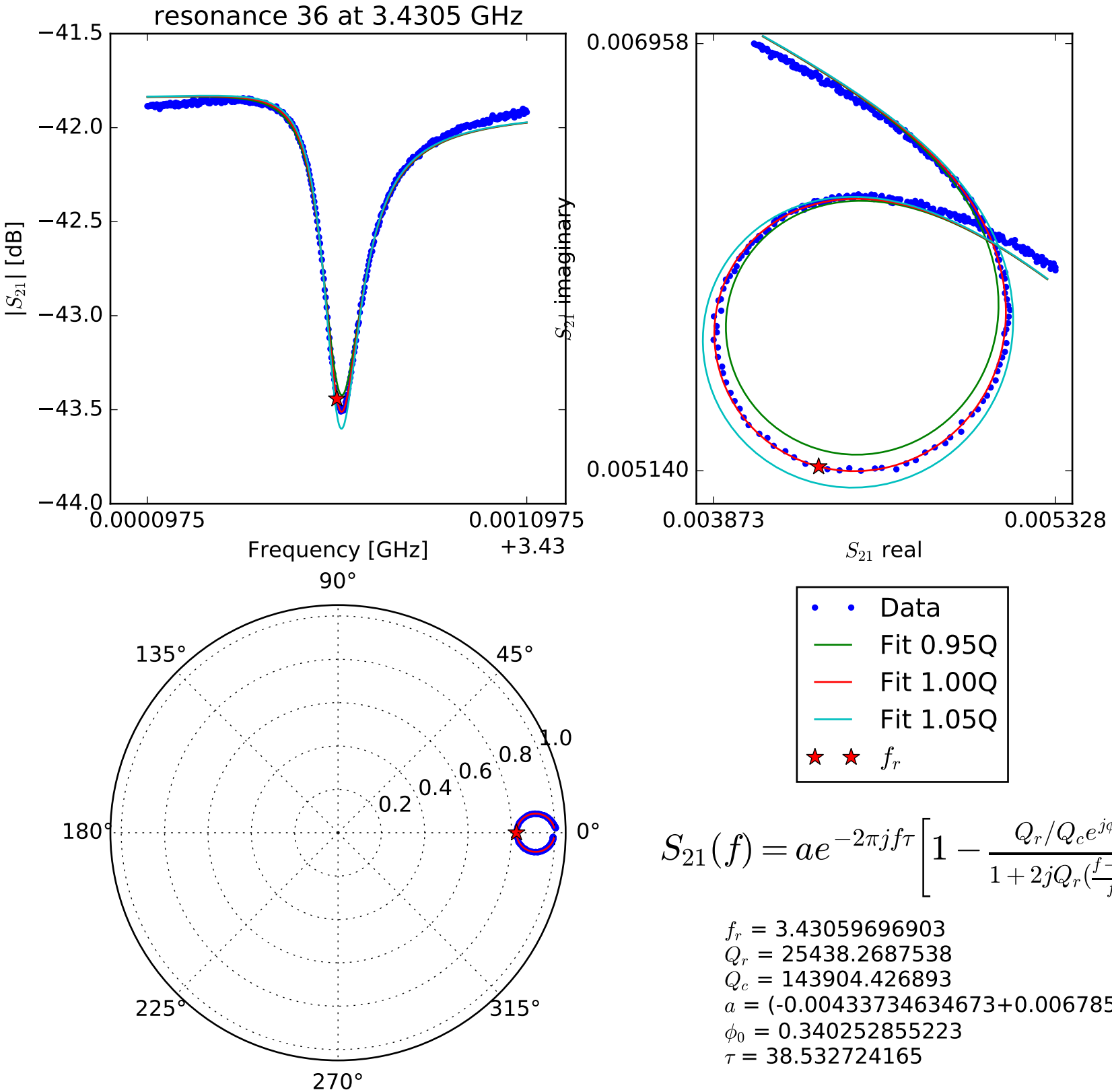


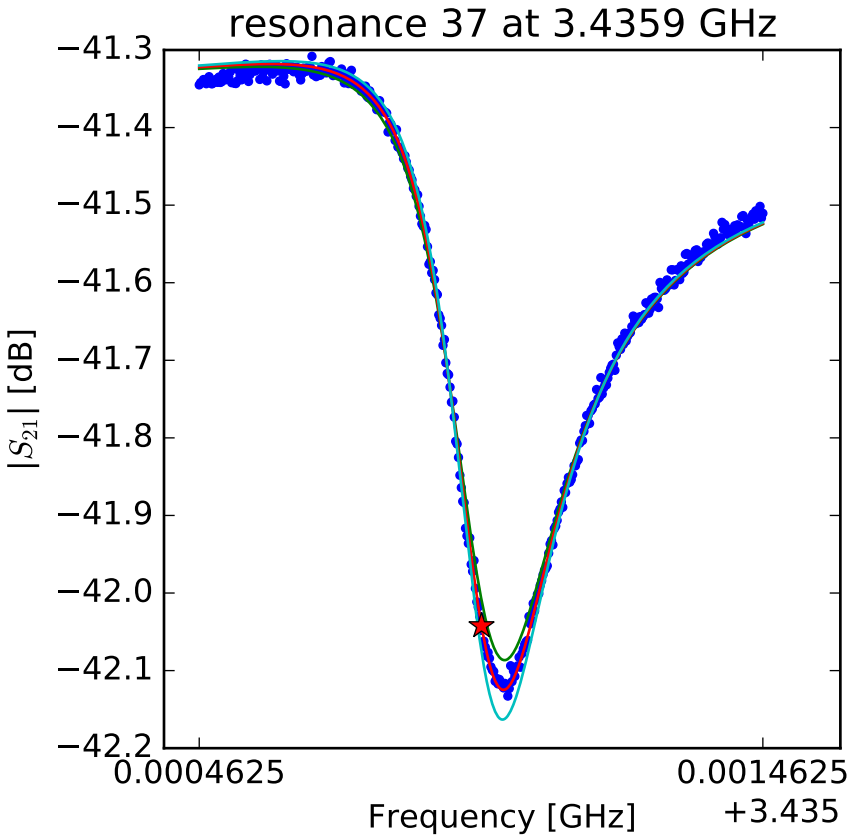

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

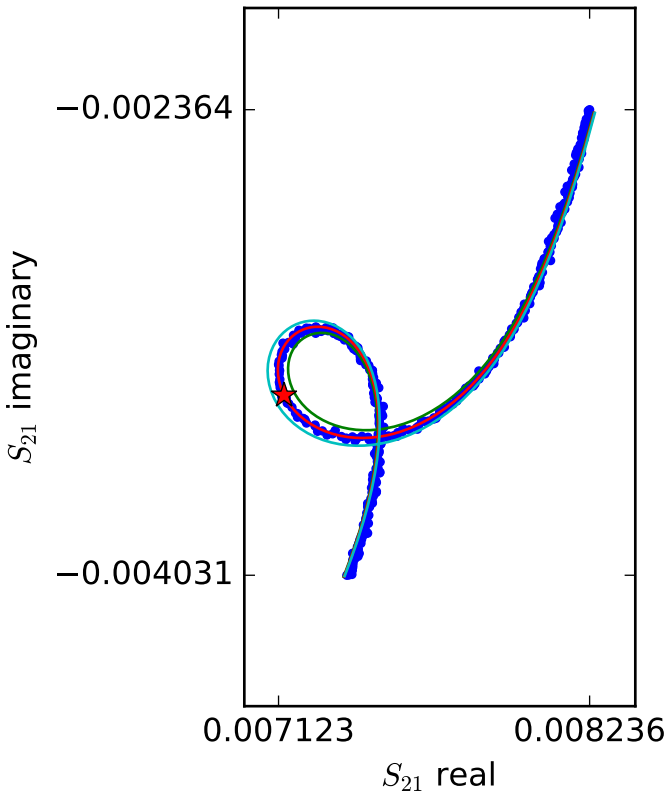
$f_r$ = 3.42370865618
$Q_r$ = 15280.596675
$Q_c$ = 583467.577863
$a$ = (0.00716901267573-0.00176965227089j)
$\phi_0$ = 0.790365834227
$\tau$ = 36.6718187443

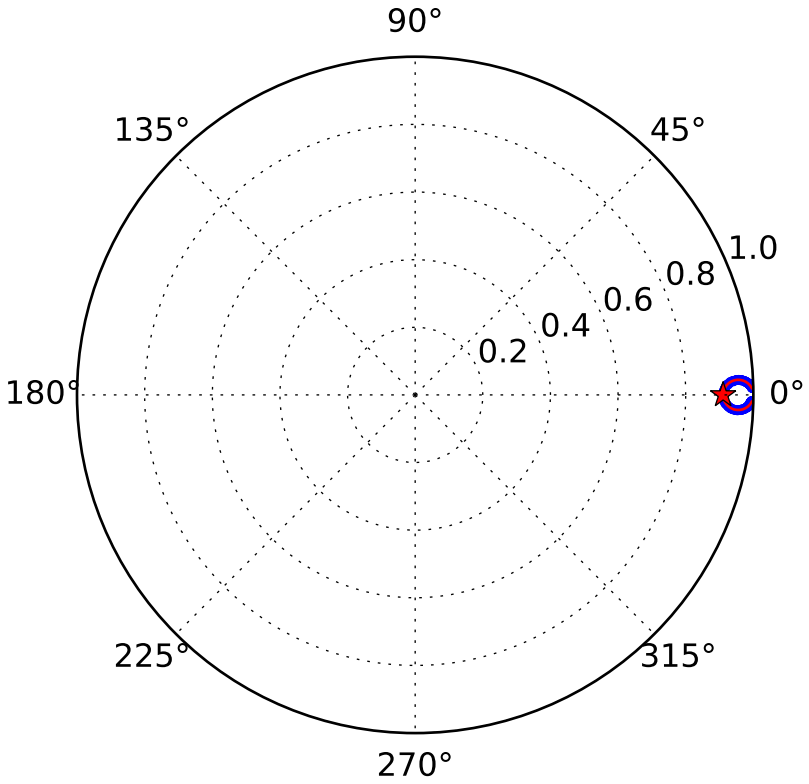


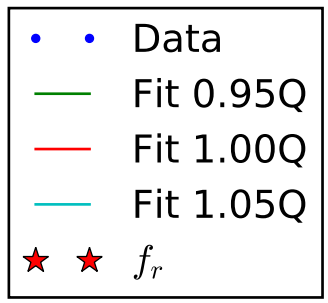

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.43059696903
$Q_r$ = 25438.2687538
$Q_c$ = 143904.426893
$a$ = (-0.00433734634673+0.00678567276293j)
$\phi_0$ = 0.340252855223
$\tau$ = 38.532724165



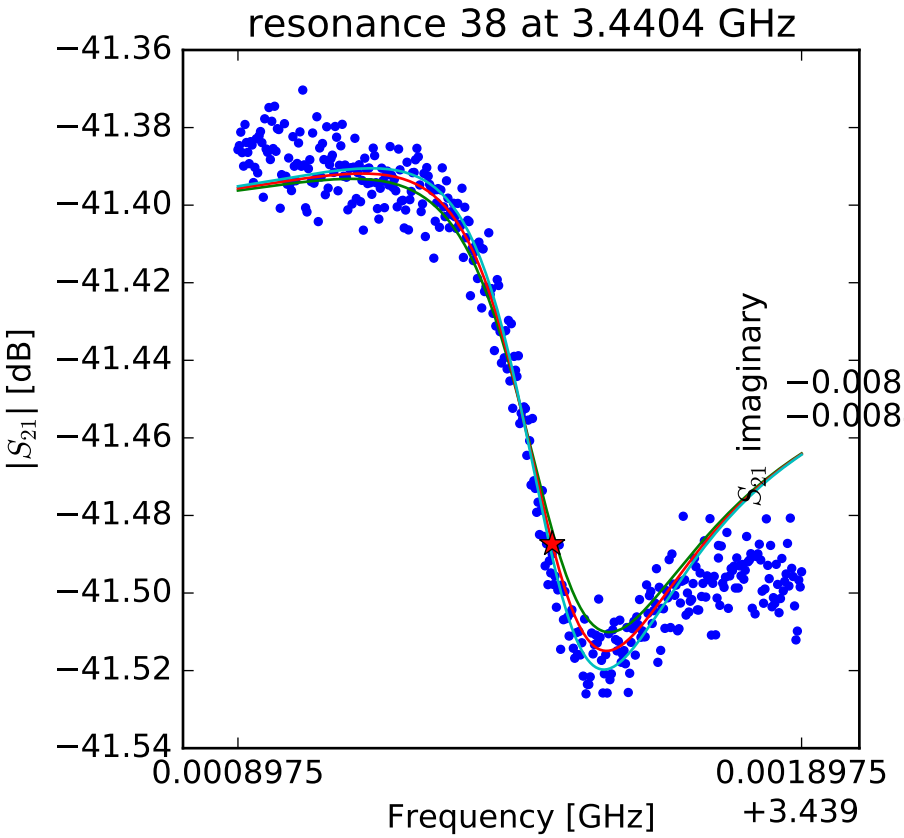



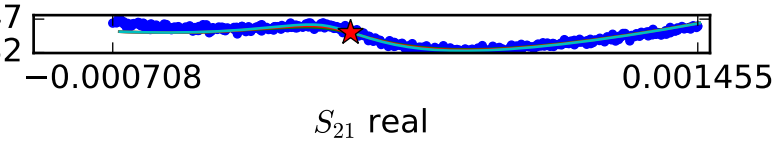



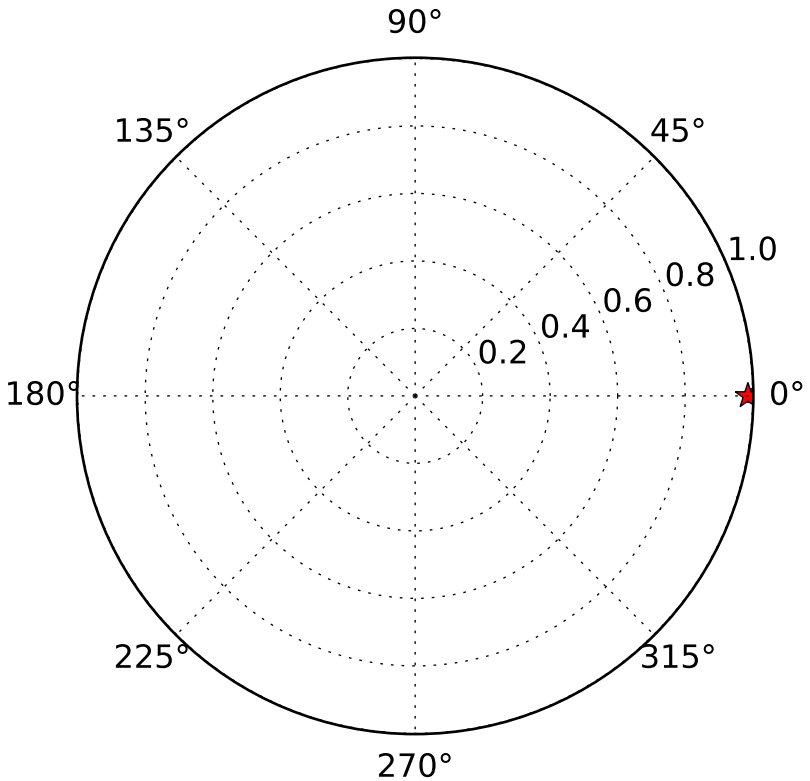



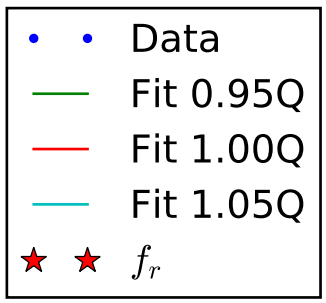

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.4359633473
$Q_r$ = 14195.5801583
$Q_c$ = 158761.264118
$a$ = (-0.00842350561378-0.00130177567337j)
$\phi_0$ = 0.596555759727
$\tau$ = 40.6250689923



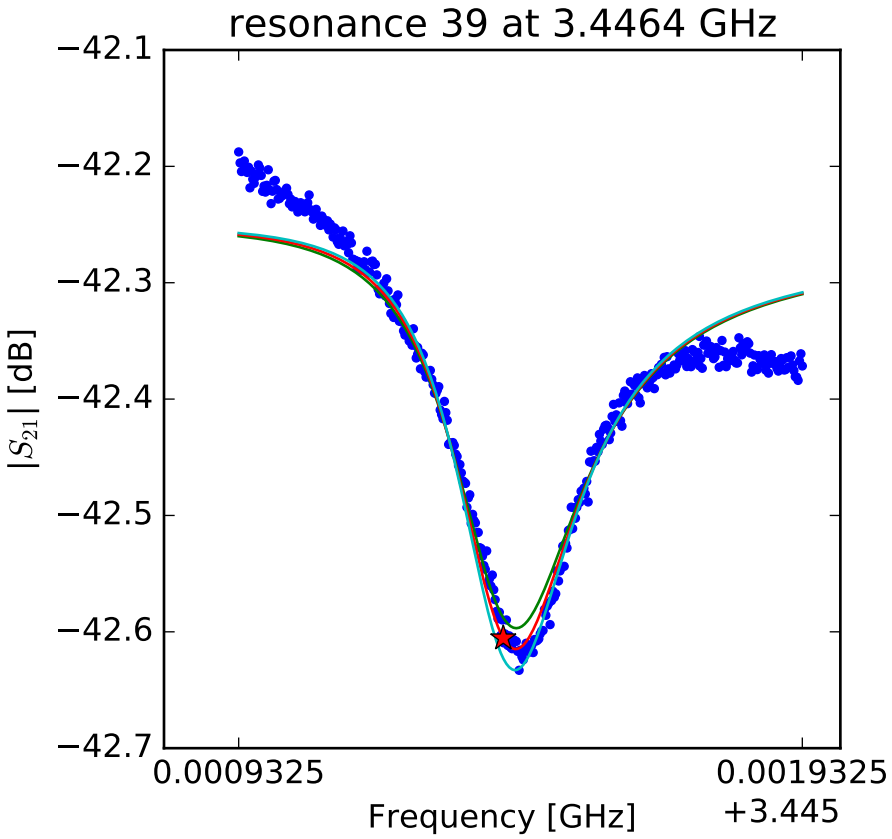



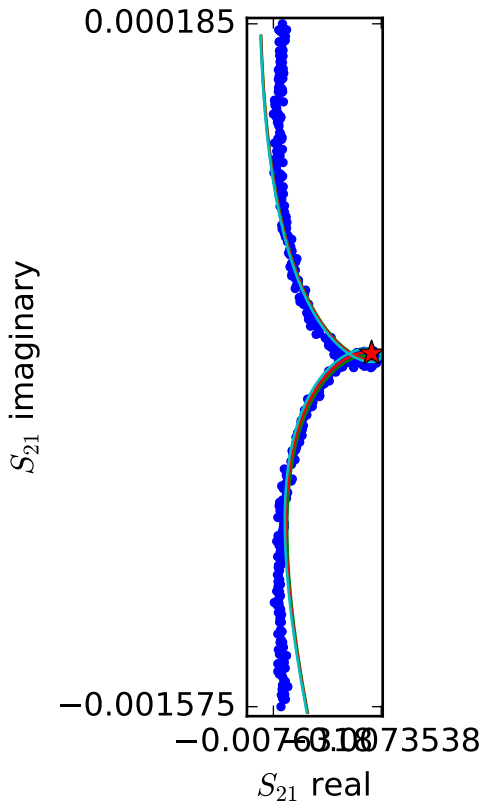



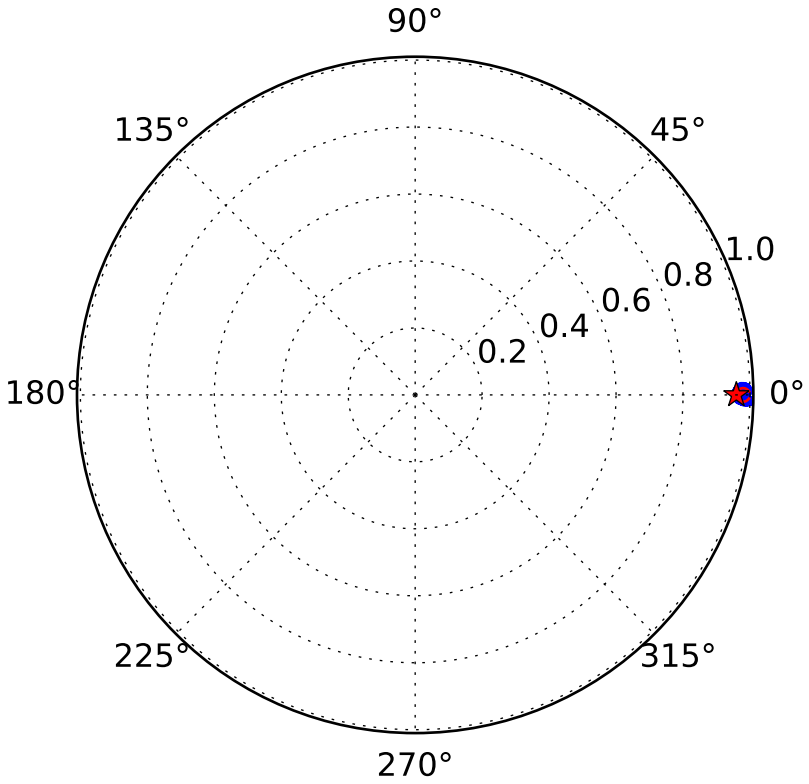



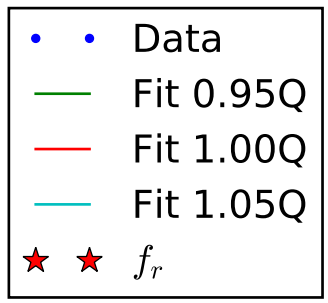

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.44045511922
$Q_r$ = 9549.14773202
$Q_c$ = 676617.802995
$a$ = (0.00845652530943+0.000785456793098j
$\phi_0$ = 0.975011196747
$\tau$ = 41.0584134533



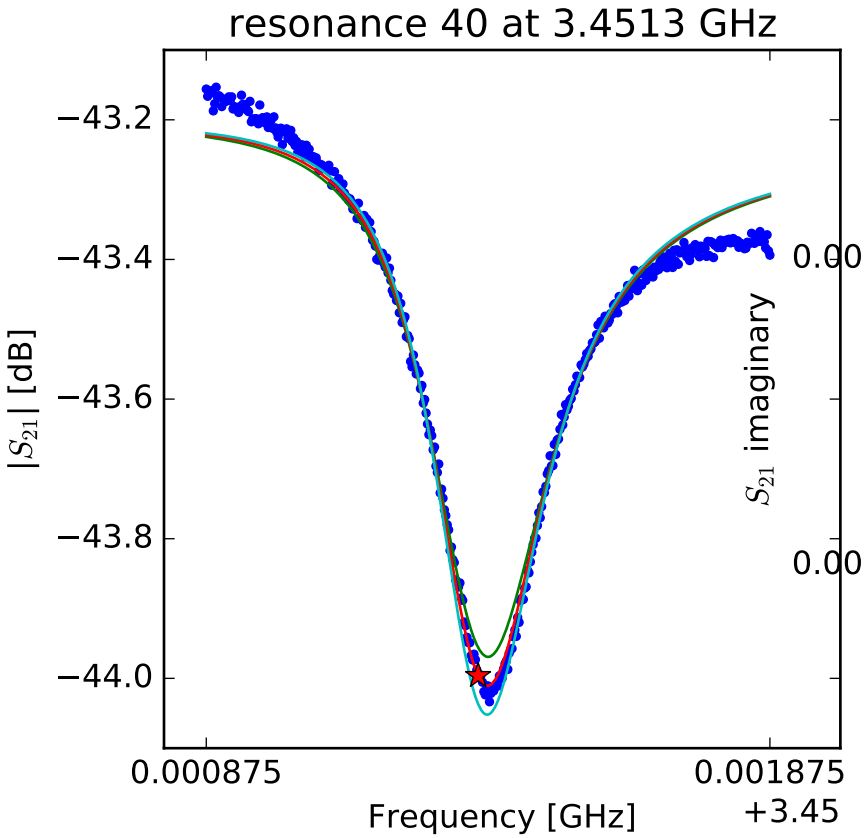



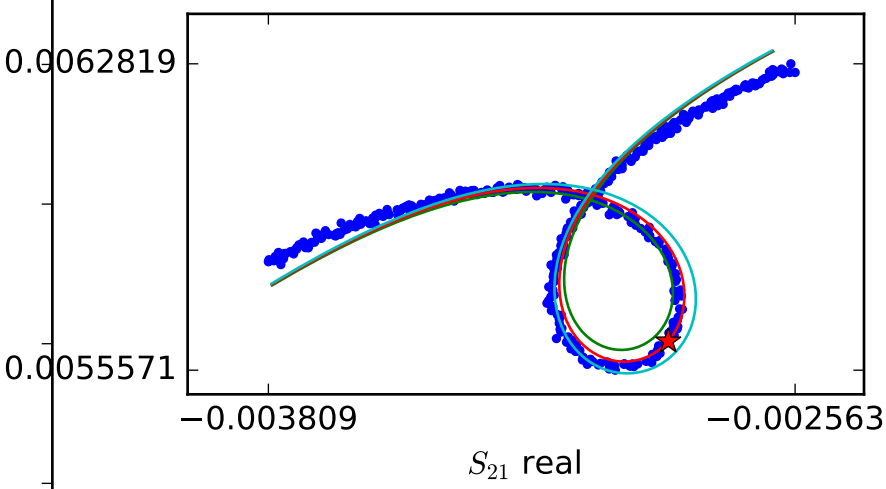



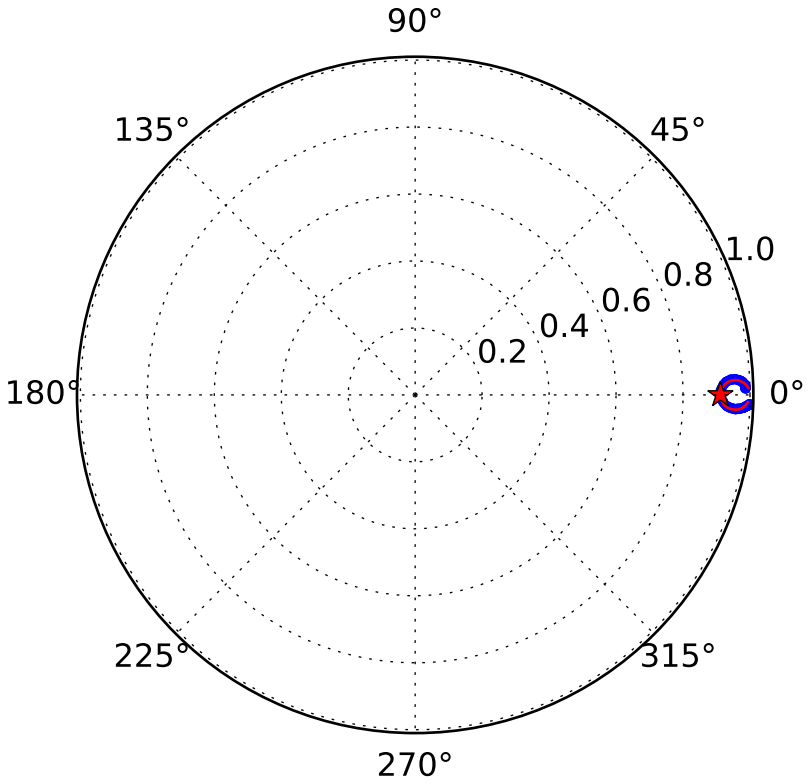



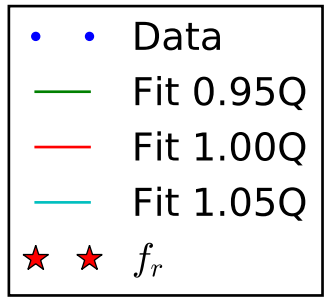

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.4464019593
$Q_r$ = 12623.9043553
$Q_c$ = 309312.170999
$a$ = (-0.00728625711069+0.00251232885006j)
$\phi_0$ = 0.311879863461
$\tau$ = 39.4413627894



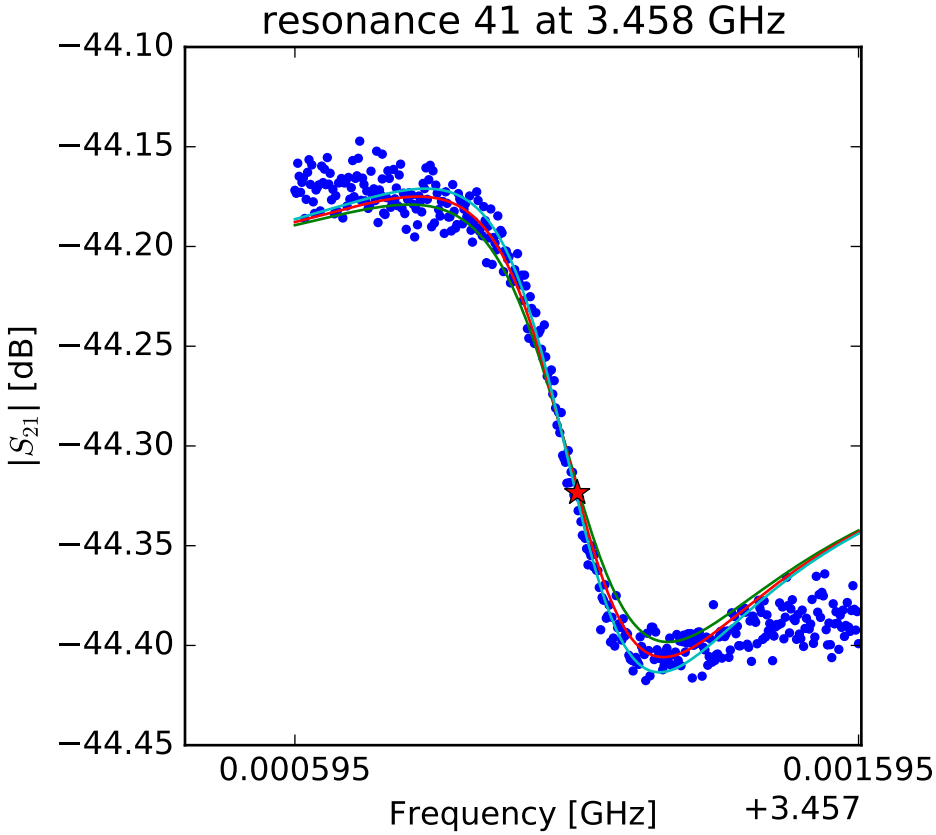



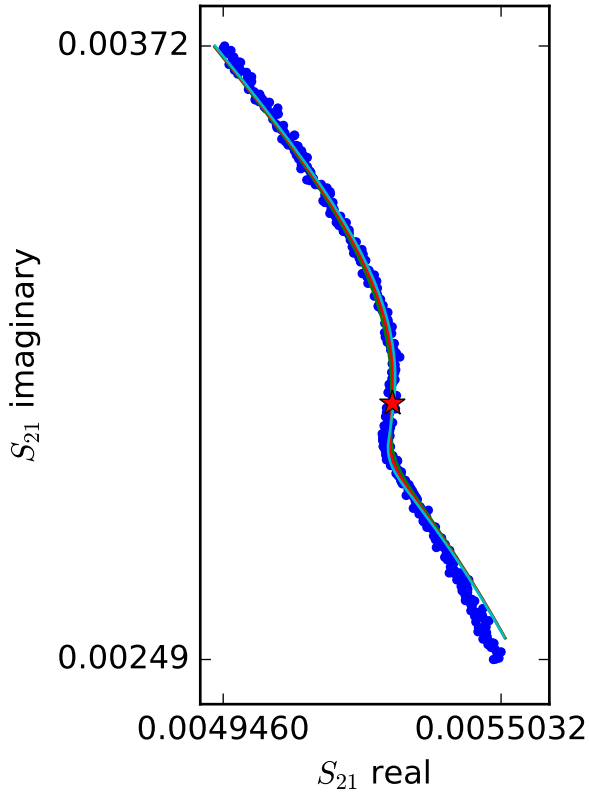



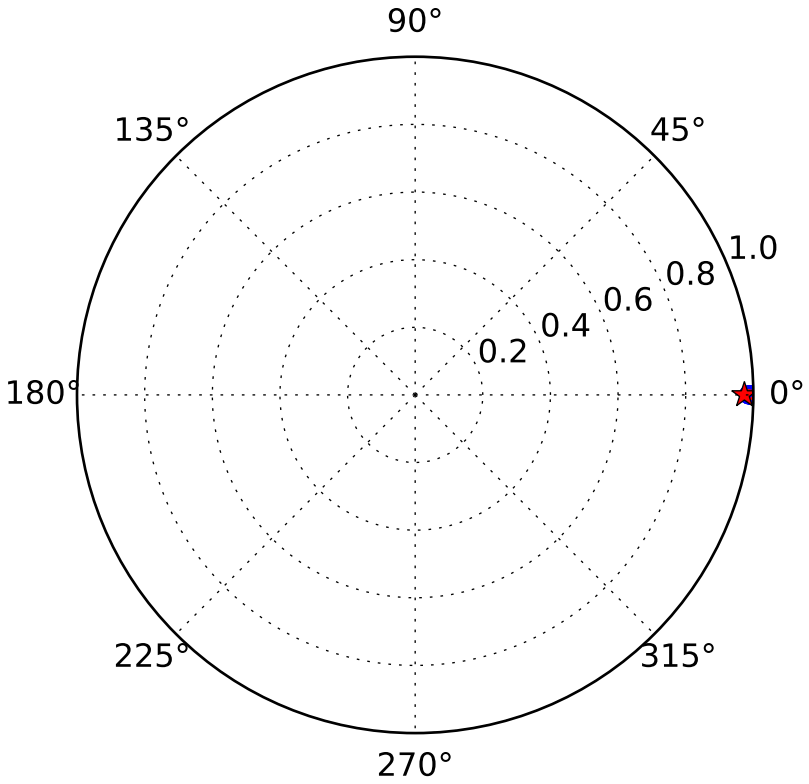



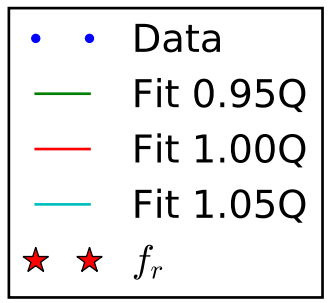

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.45135731474
$Q_r$ = 13172.3363202
$Q_c$ = 149051.427904
$a$ = (0.00195784692316+0.00661893917214j)
$\phi_0$ = 0.244708273164
$\tau$ = 37.0508077094



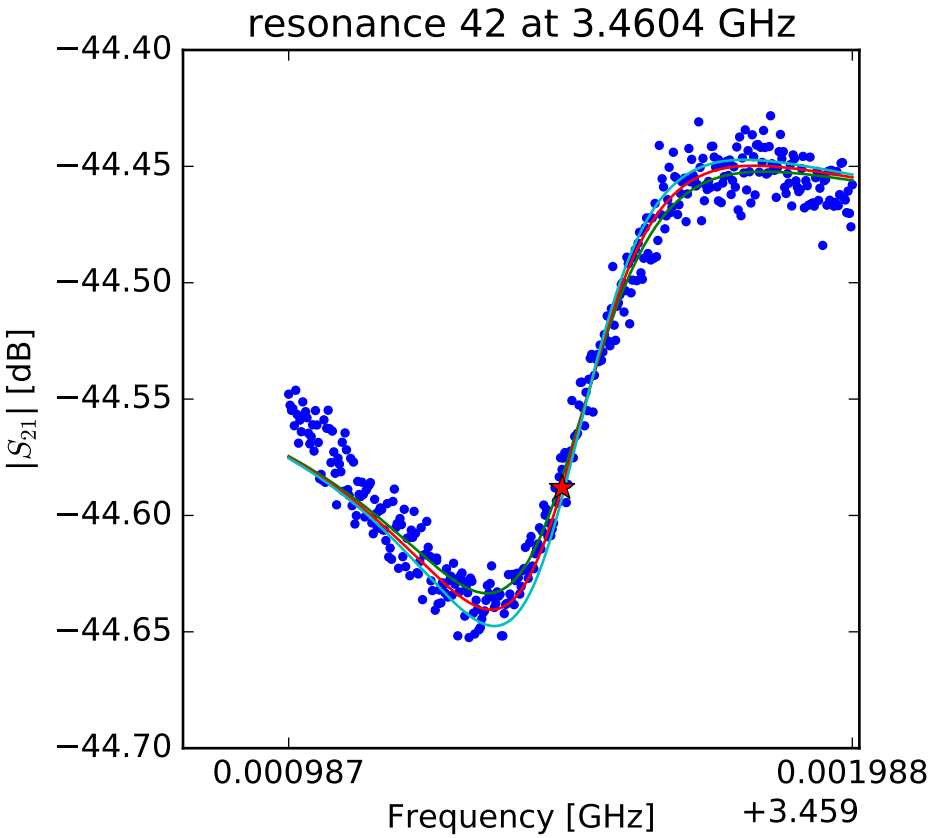



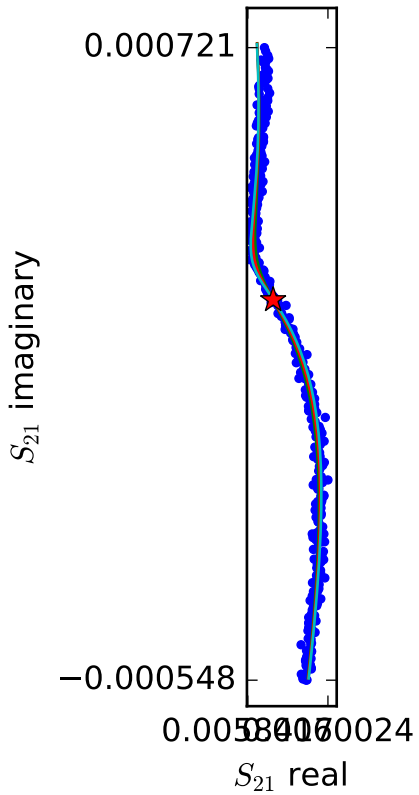



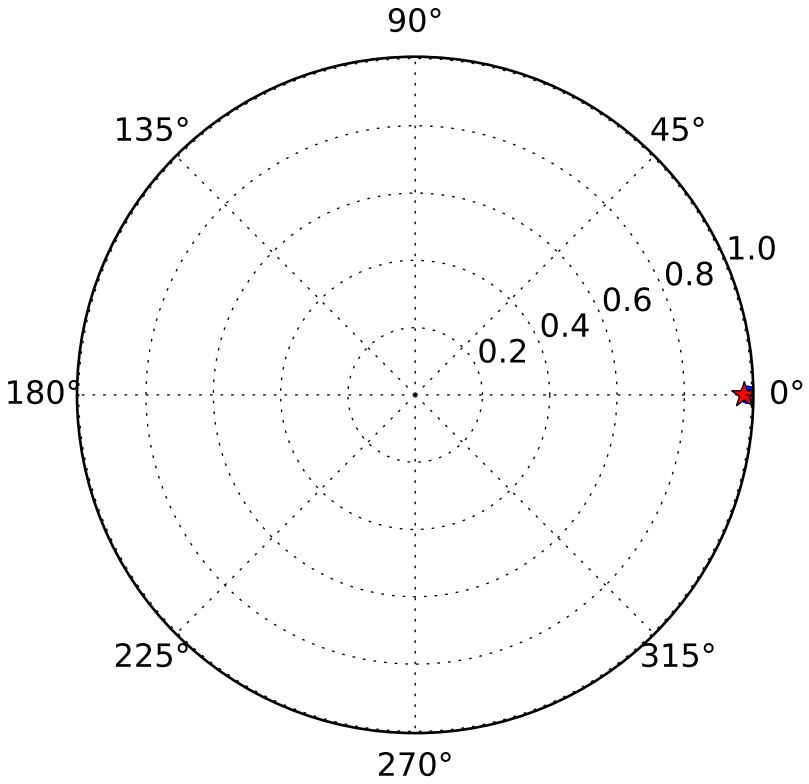



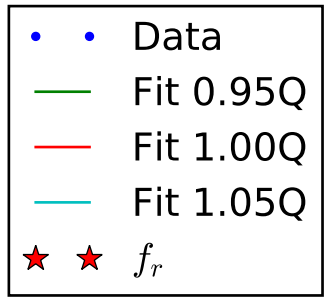

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.45809594212
$Q_r$ = 8315.1689247
$Q_c$ = 314089.846581
$a$ = (0.00428631322929-0.00437852306905j)
$\phi_0$ = 1.25526856911
$\tau$ = 35.2179430377



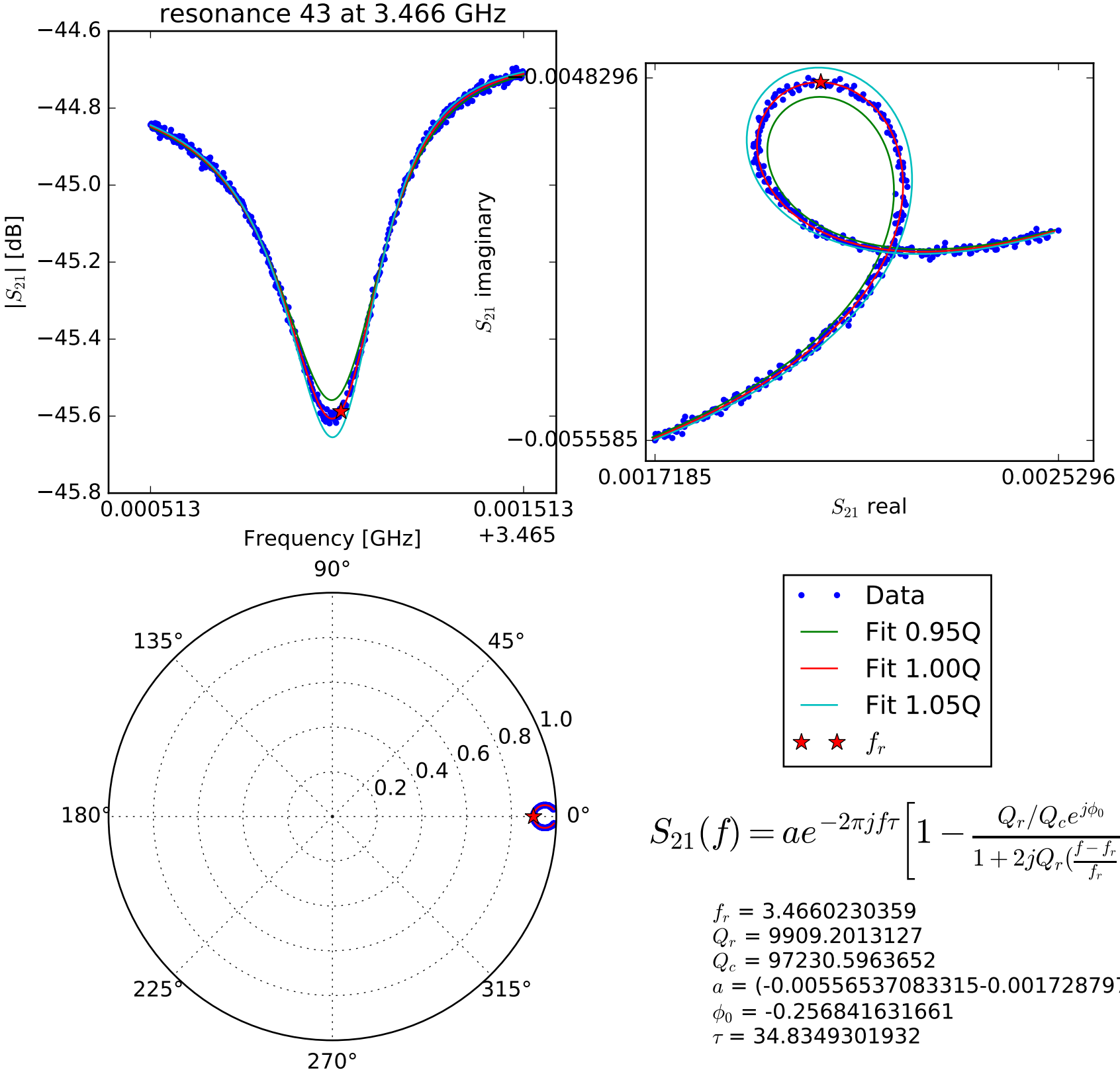



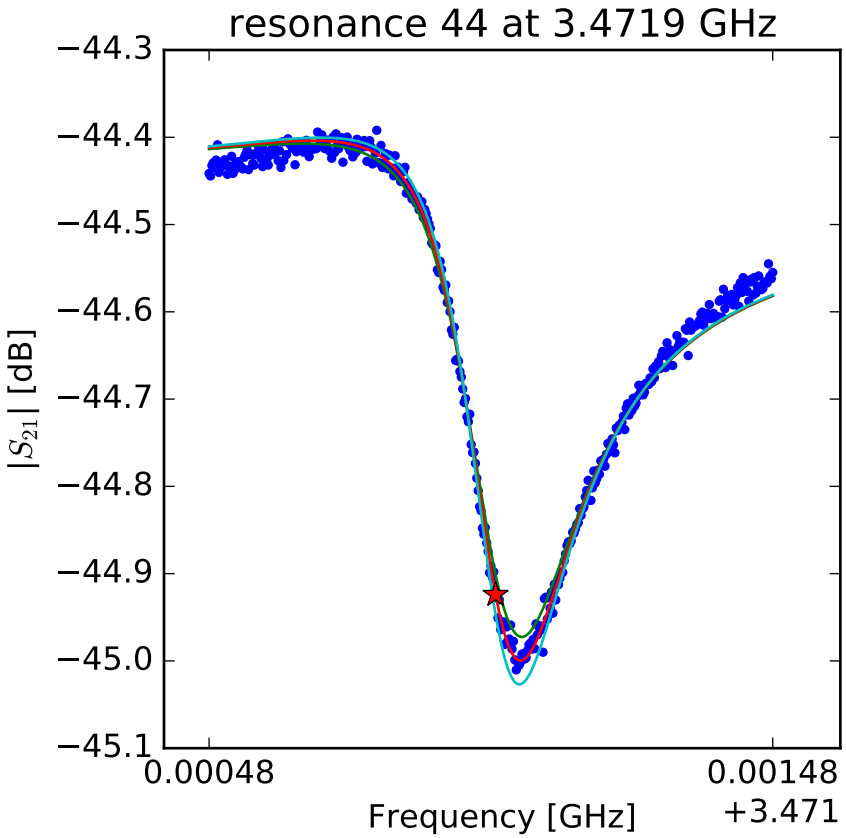

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

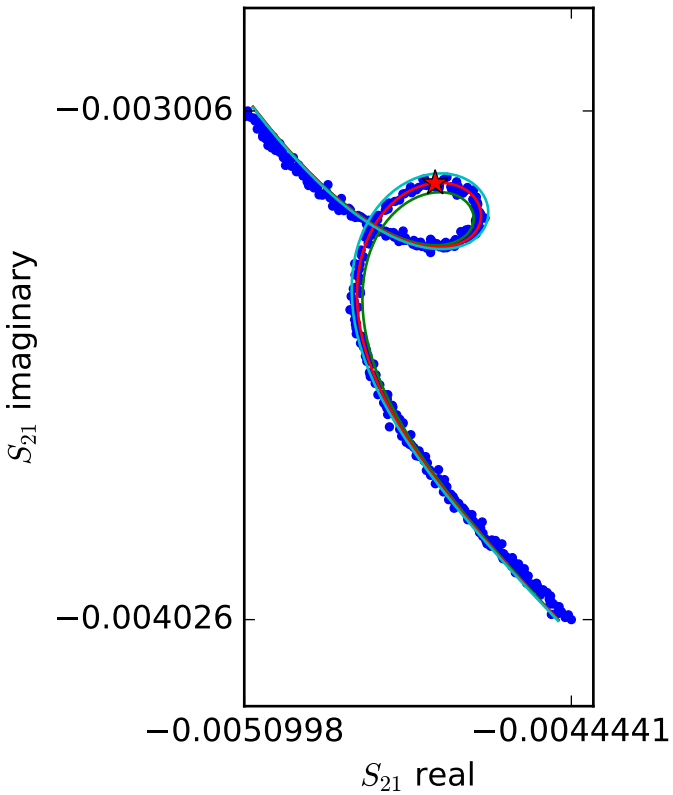
$f_r$ = 3.46047262213
$Q_r$ = 8358.5721804
$Q_c$ = 382466.719444
$a$ = (0.00594505379554-0.000365688418277j)
$\phi_0$ = -1.08409547491
$\tau$ = 35.2516973459

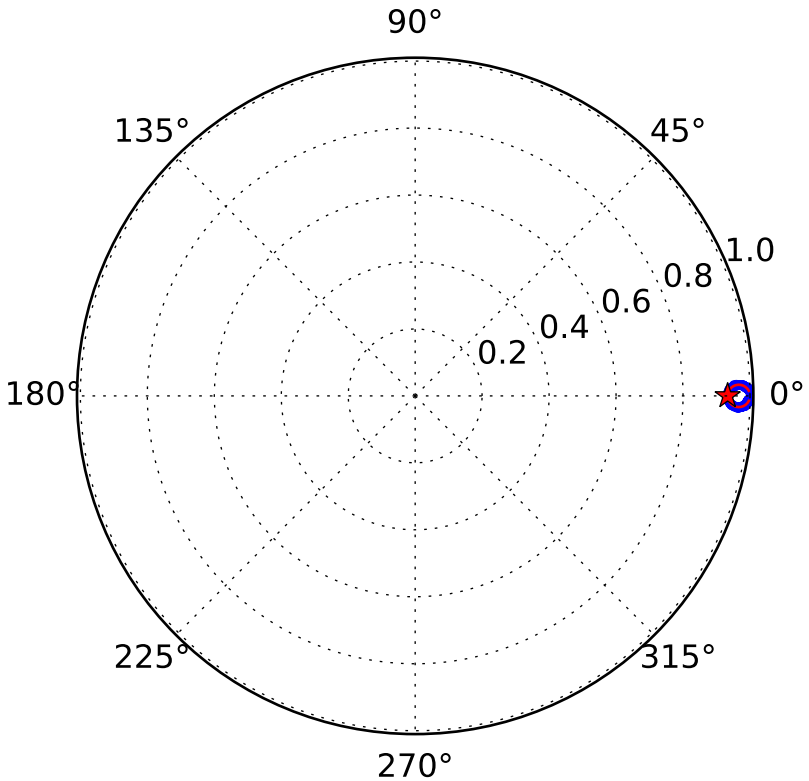


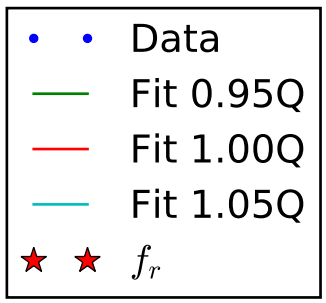

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.4660230359
$Q_r$ = 9909.2013127
$Q_c$ = 97230.5963652
$a$ = (-0.00556537083315-0.00172879790752j)
$\phi_0$ = -0.256841631661
$\tau$ = 34.8349301932



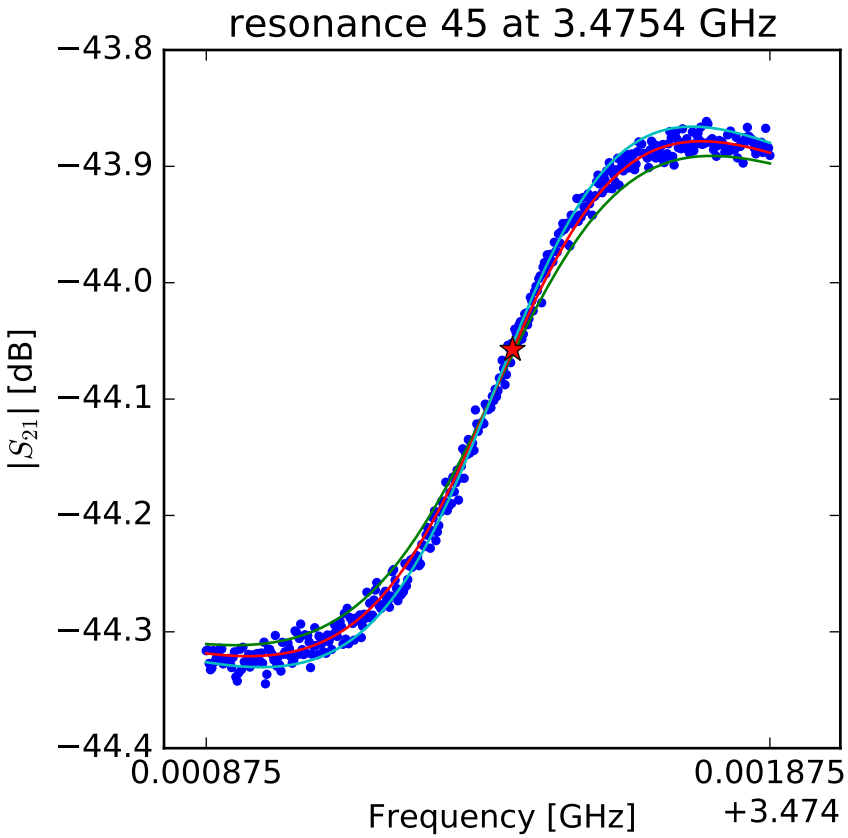



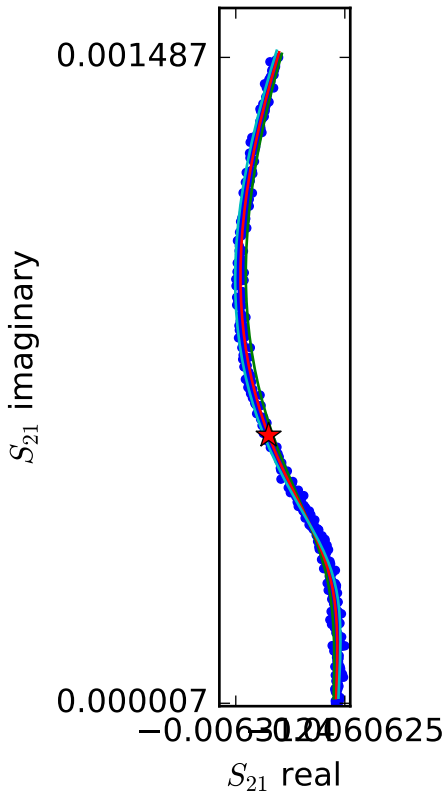



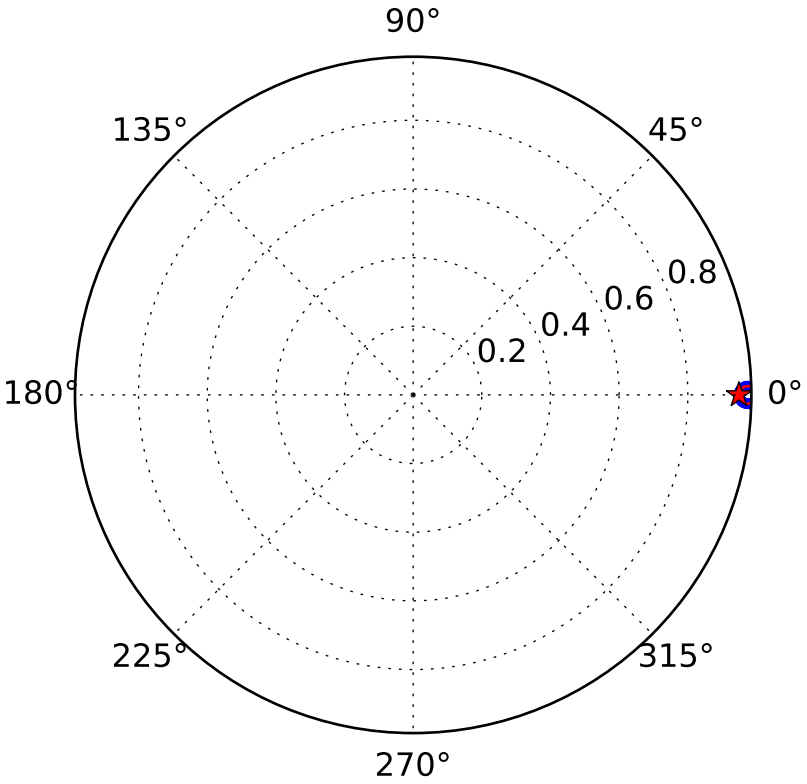



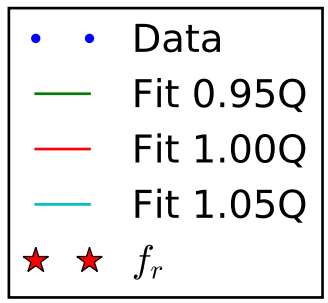

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.47198824169
$Q_r$ = 14440.9881109
$Q_c$ = 216135.26839
$a$ = (0.000945608894404+0.00590133906316j
$\phi_0$ = 0.684347550425
$\tau$ = 35.6060820025



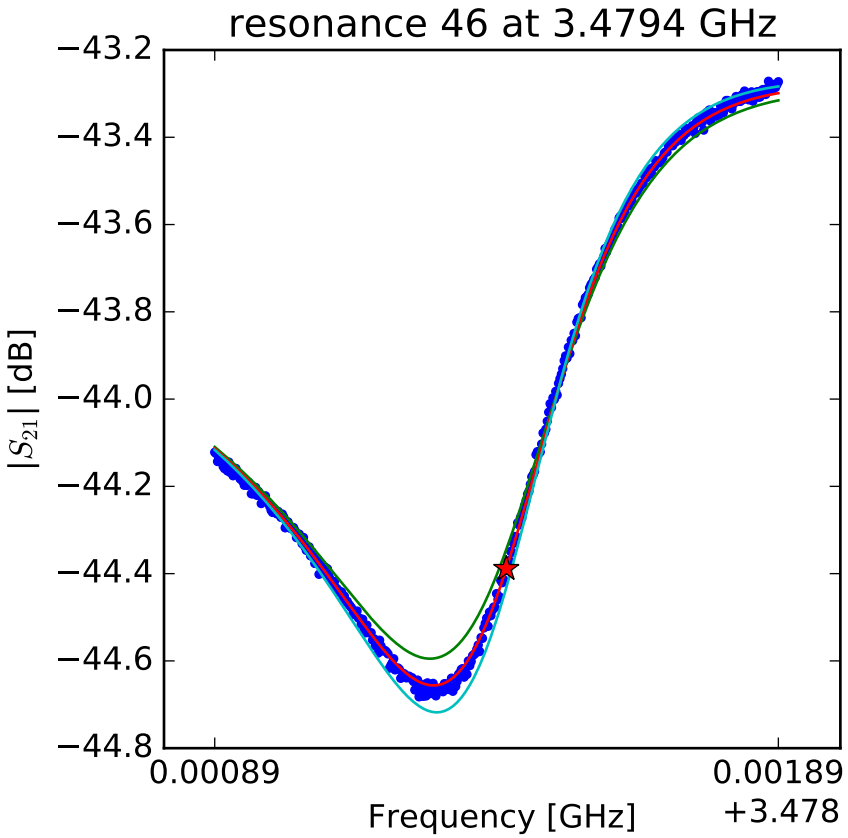



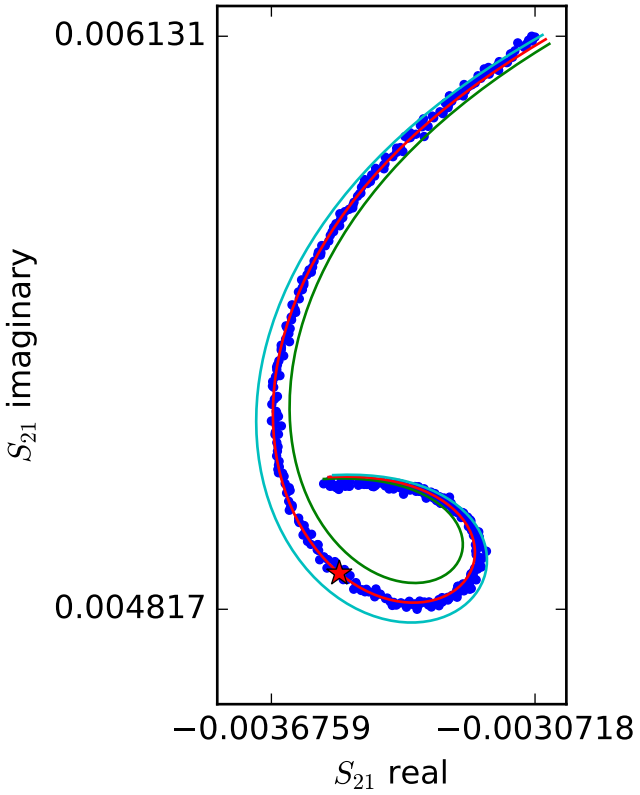



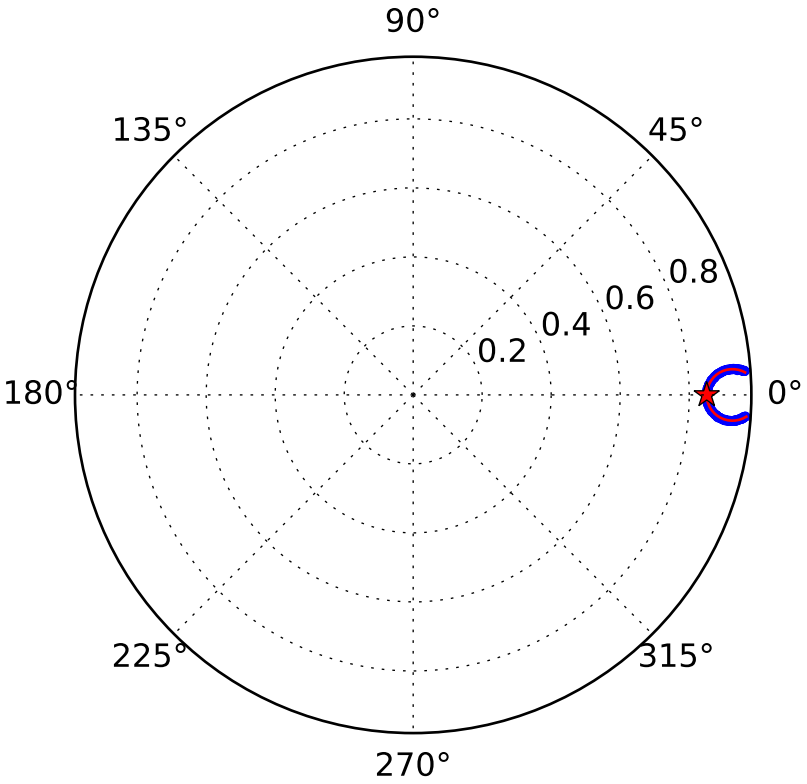



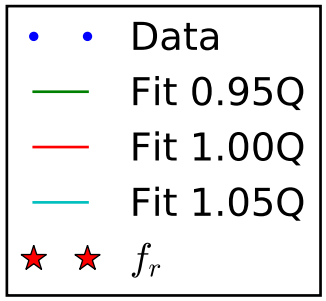

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.47541841152
$Q_r$ = 4385.79552779
$Q_c$ = 85755.7930919
$a$ = (-0.00545779211082-0.0029733485824j)
$\phi_0$ = -1.71250990752
$\tau$ = 36.5720486786



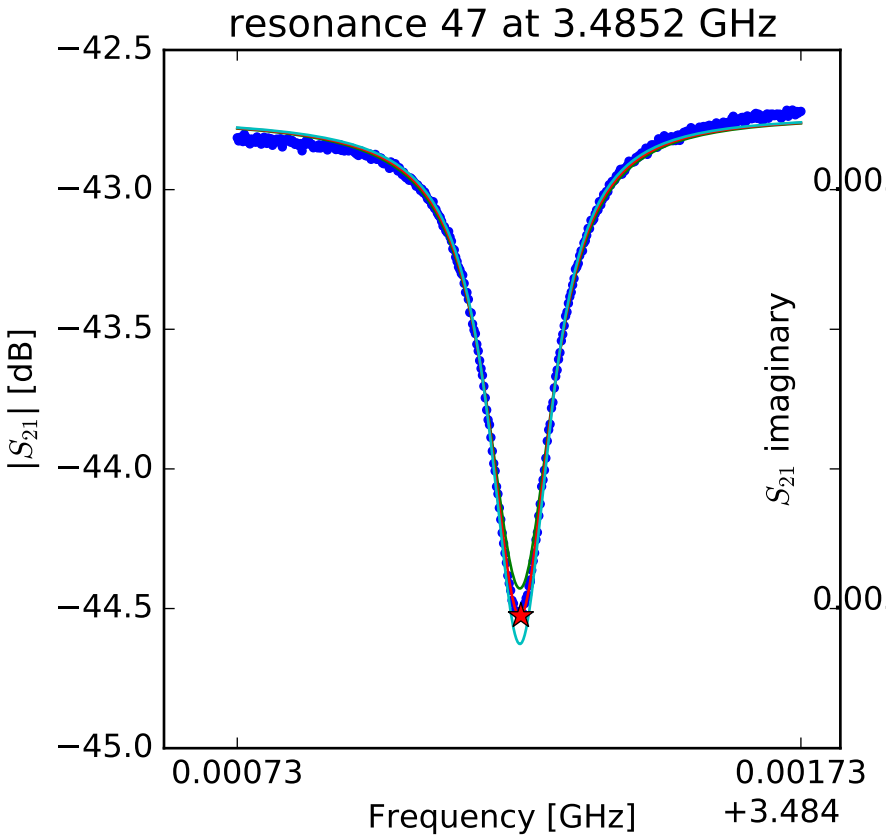



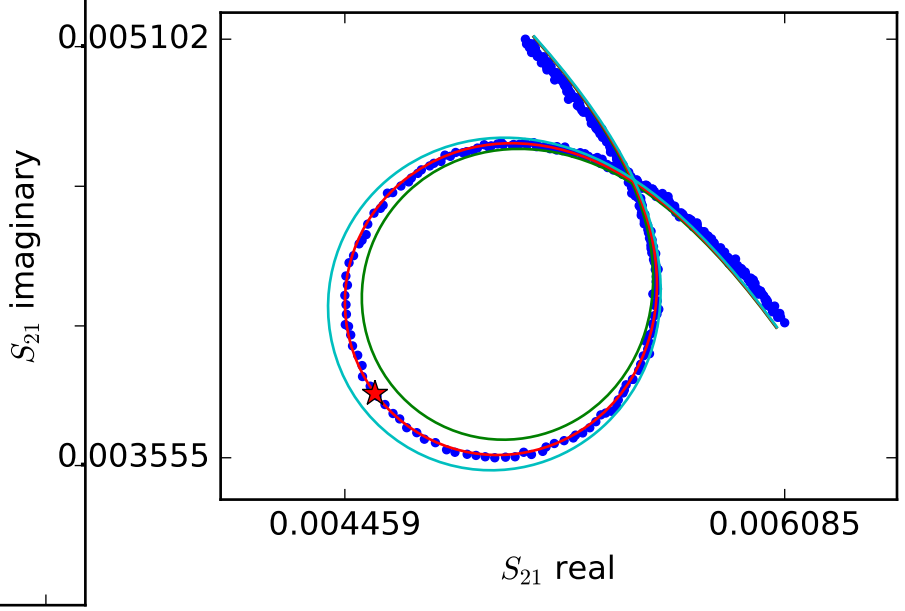



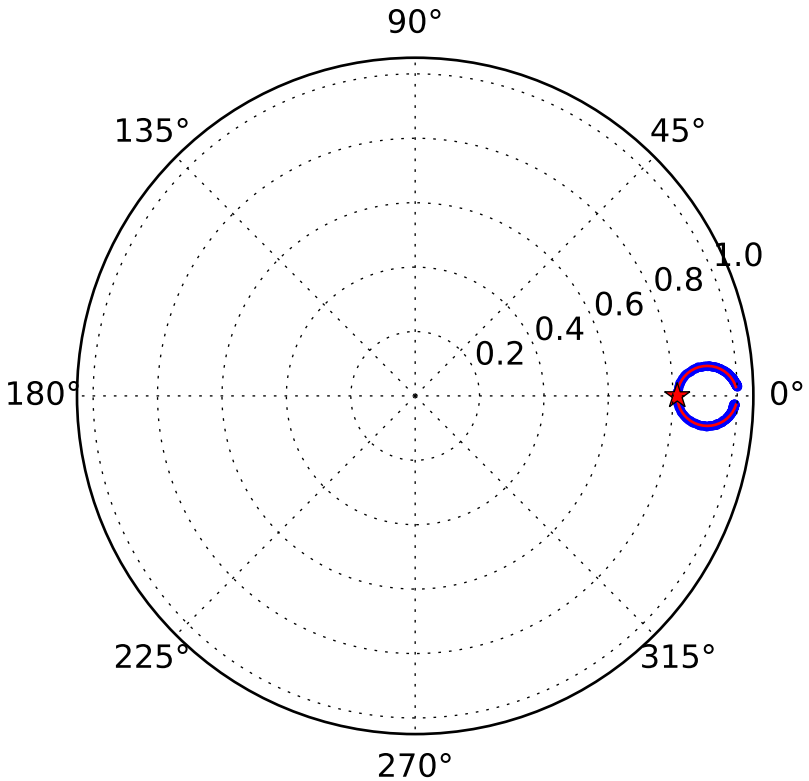



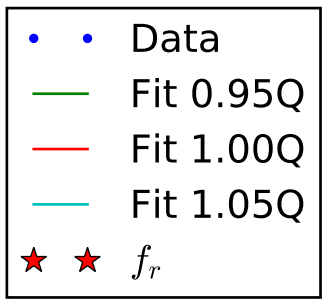

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.47940731288
$Q_r$ = 6130.9208764
$Q_c$ = 41024.4526733
$a$ = (0.00668286436046+0.000295123744774j
$\phi_0$ = -0.797326434493
$\tau$ = 37.5571970416



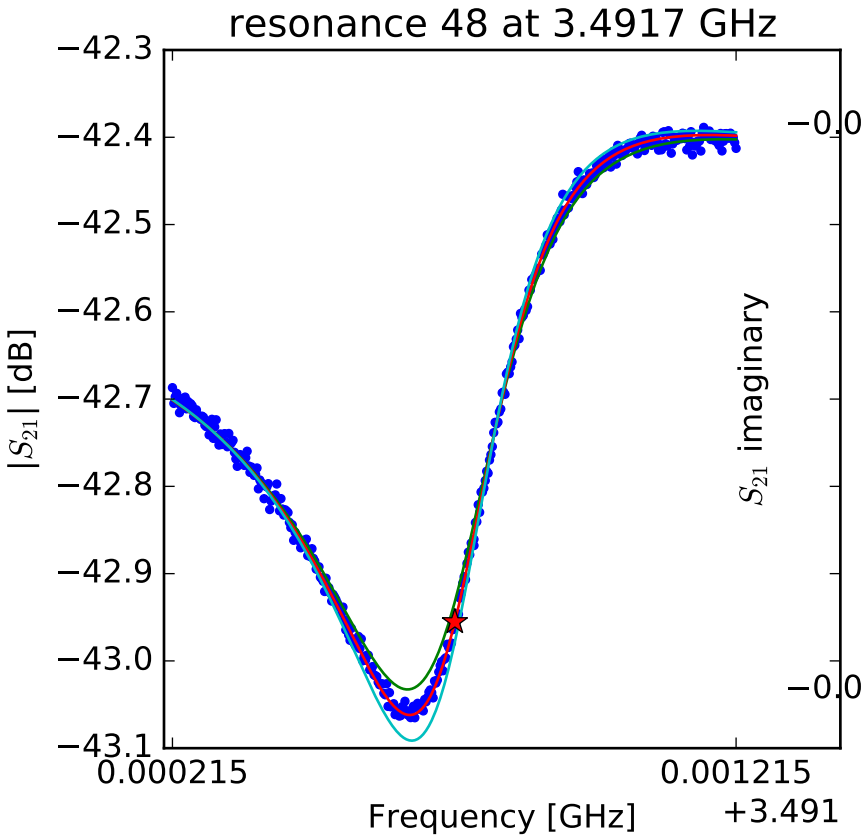



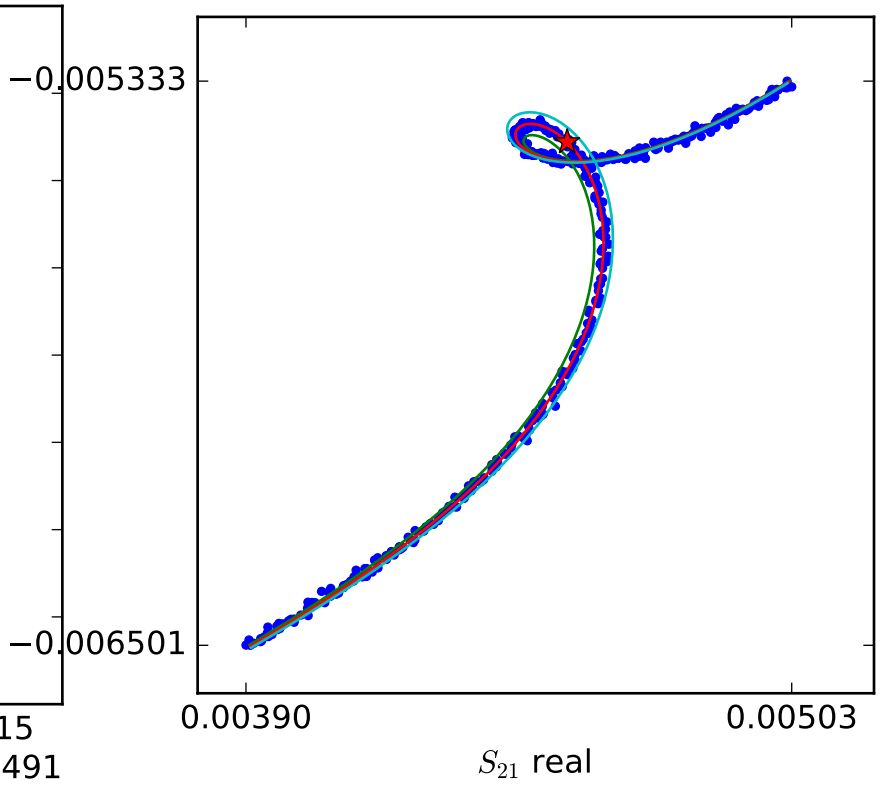



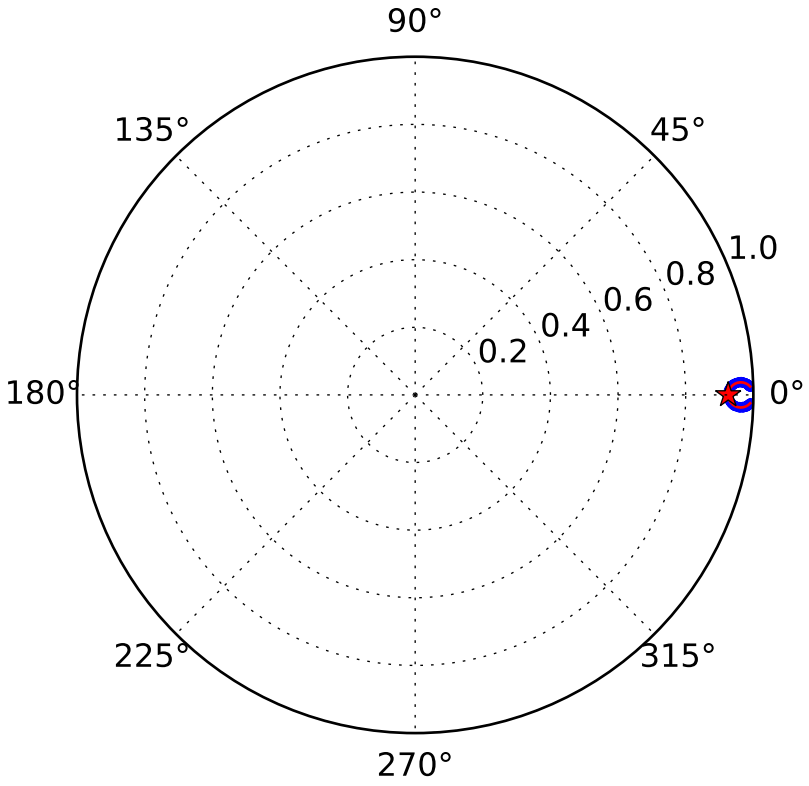



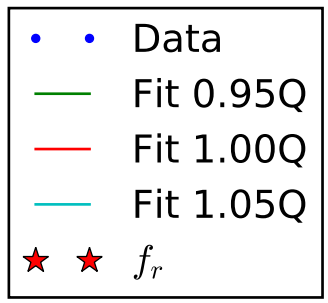

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.48523310037
$Q_r$ = 23019.3256272
$Q_c$ = 123545.578136
$a$ = (-0.000678935134112-0.00726528975141j)
$\phi_0$ = -0.0403118276097
$\tau$ = 39.4884388421



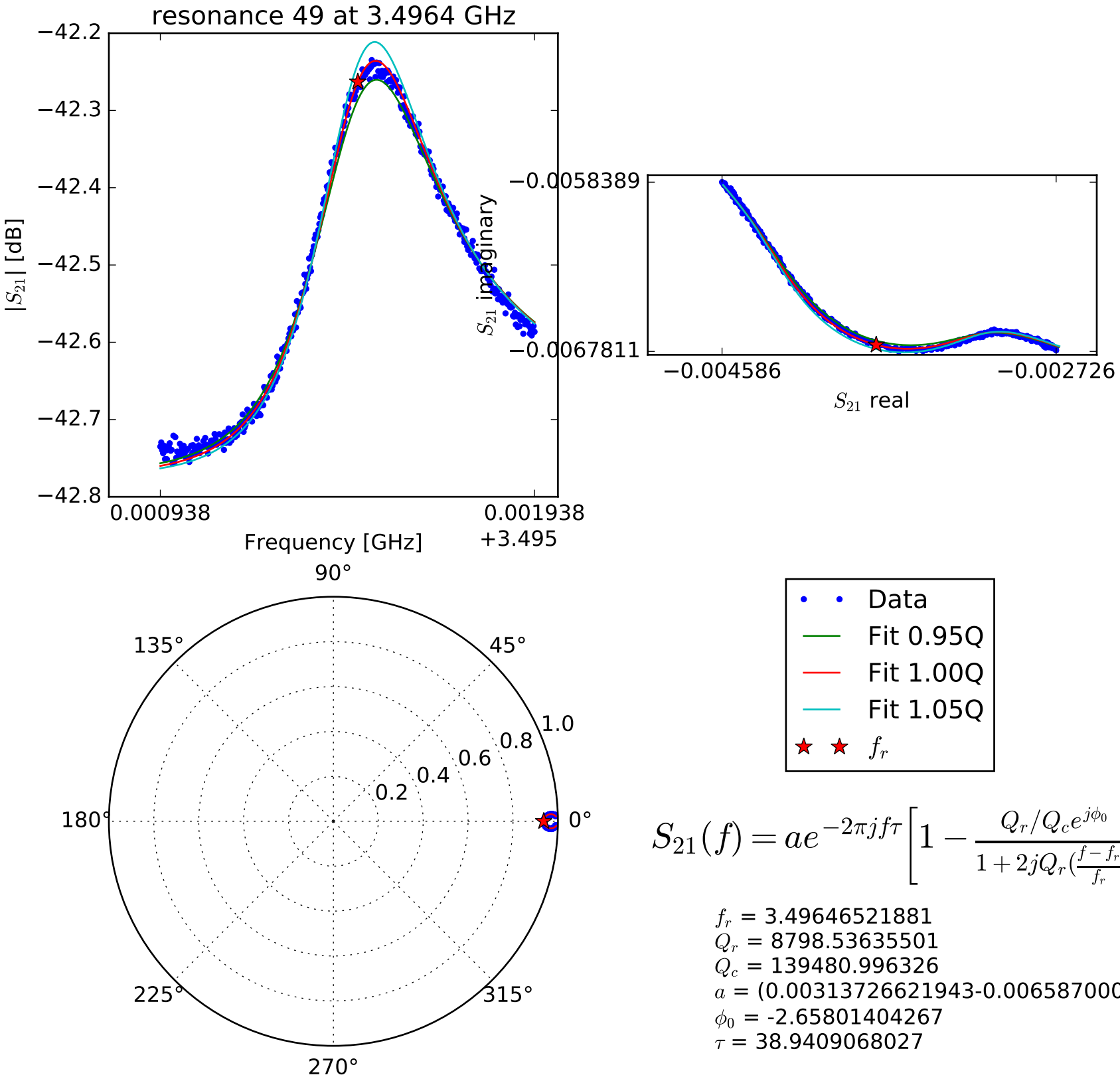



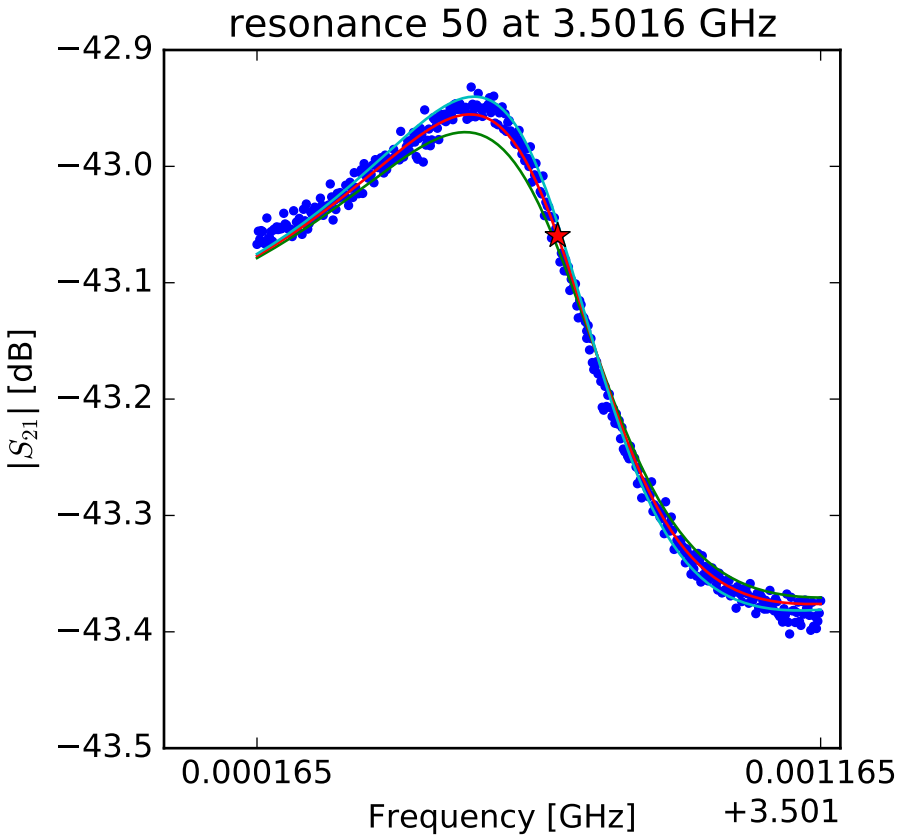

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

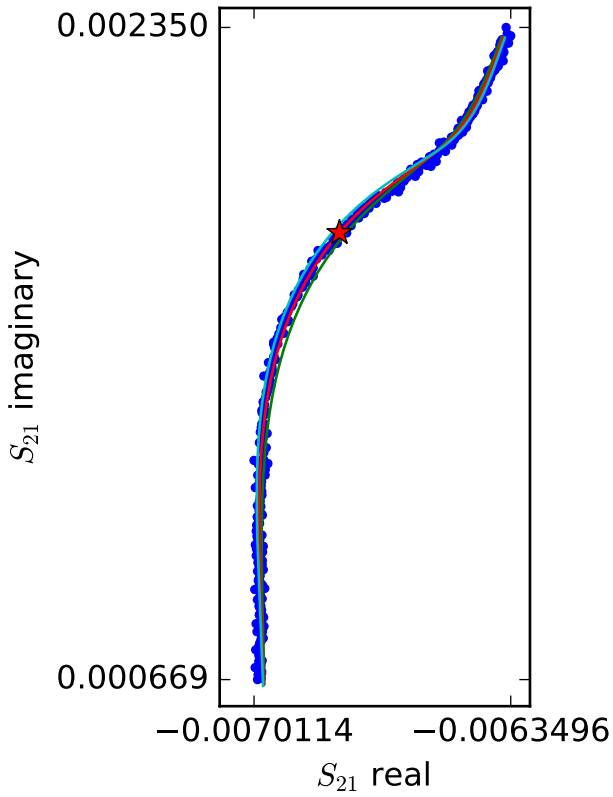
$f_r$ = 3.49171605319
$Q_r$ = 9182.7358072
$Q_c$ = 123327.28707
$a$ = (-0.00574410197477-0.00483255167741j)
$\phi_0$ = -0.770208401396
$\tau$ = 39.7395382585

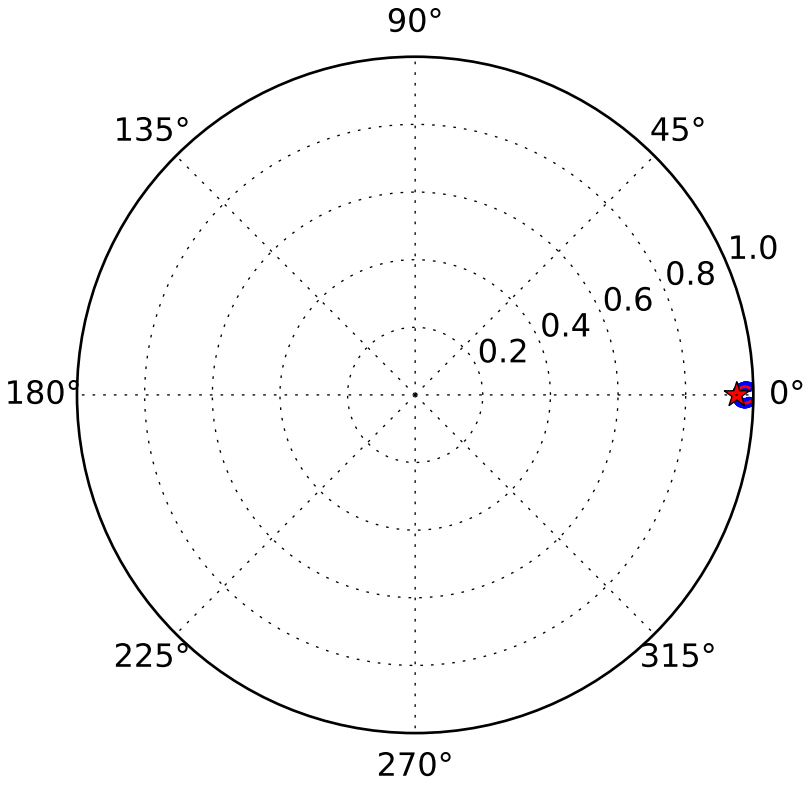


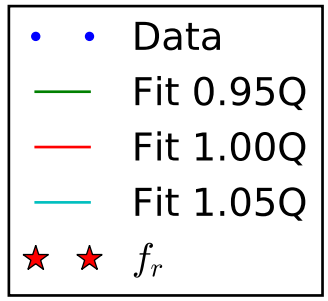

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.49646521881
$Q_r$ = 8798.53635501
$Q_c$ = 139480.996326
$a$ = (0.00313726621943-0.00658700072807j)
$\phi_0$ = -2.65801404267
$\tau$ = 38.9409068027



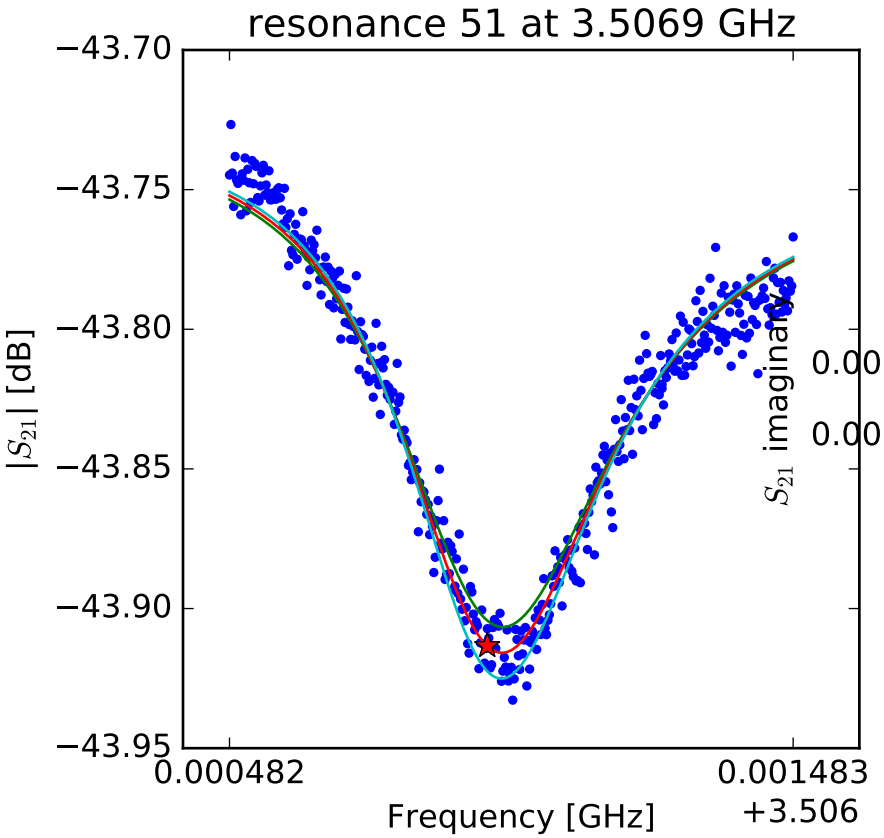



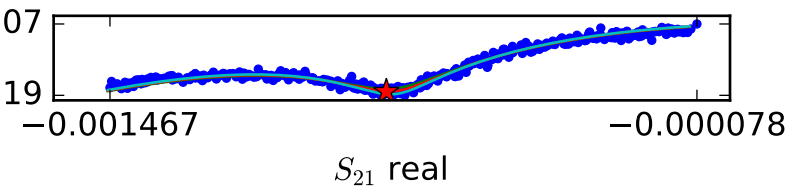



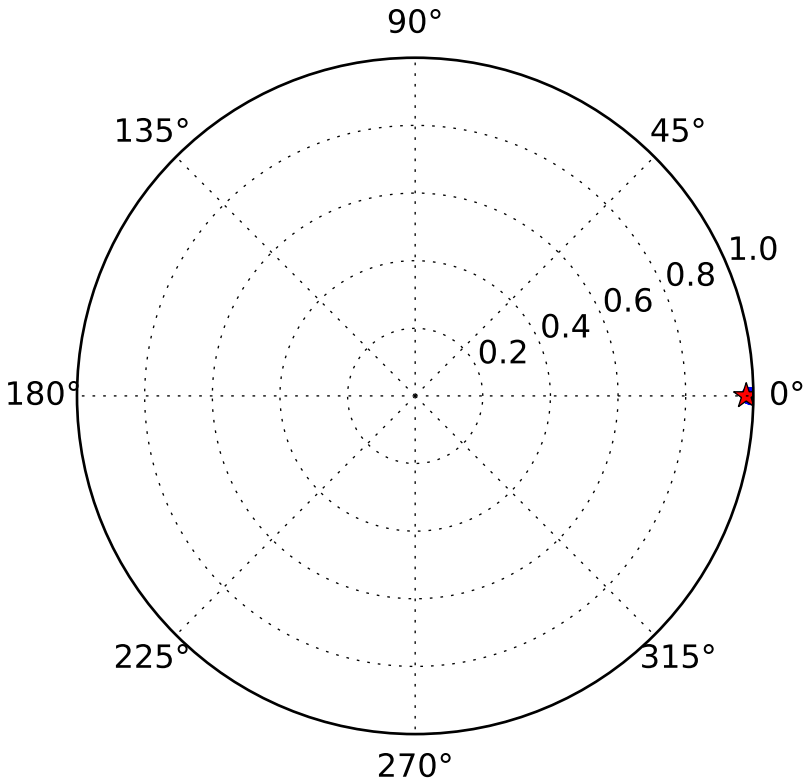



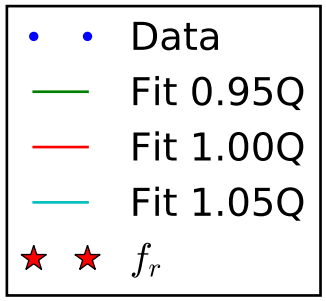

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.50169847329
$Q_r$ = 6612.77553339
$Q_c$ = 134943.356749
$a$ = (-0.00452840047496-0.00516296910634j)
$\phi_0$ = 2.05676641532
$\tau$ = 37.4590659527



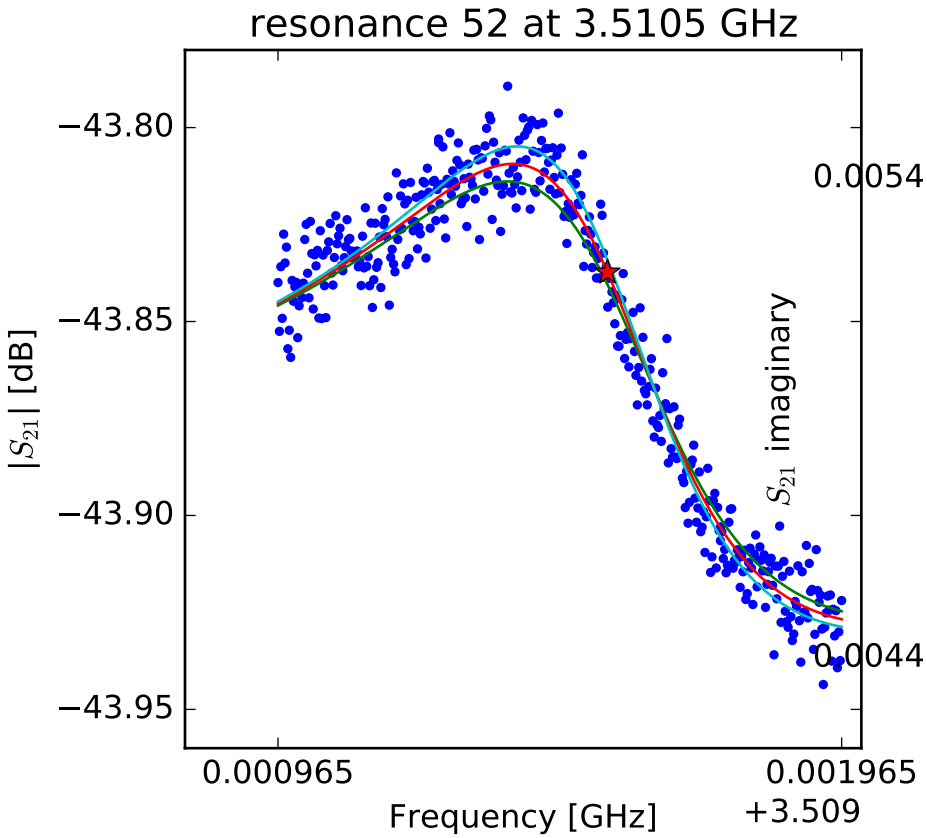



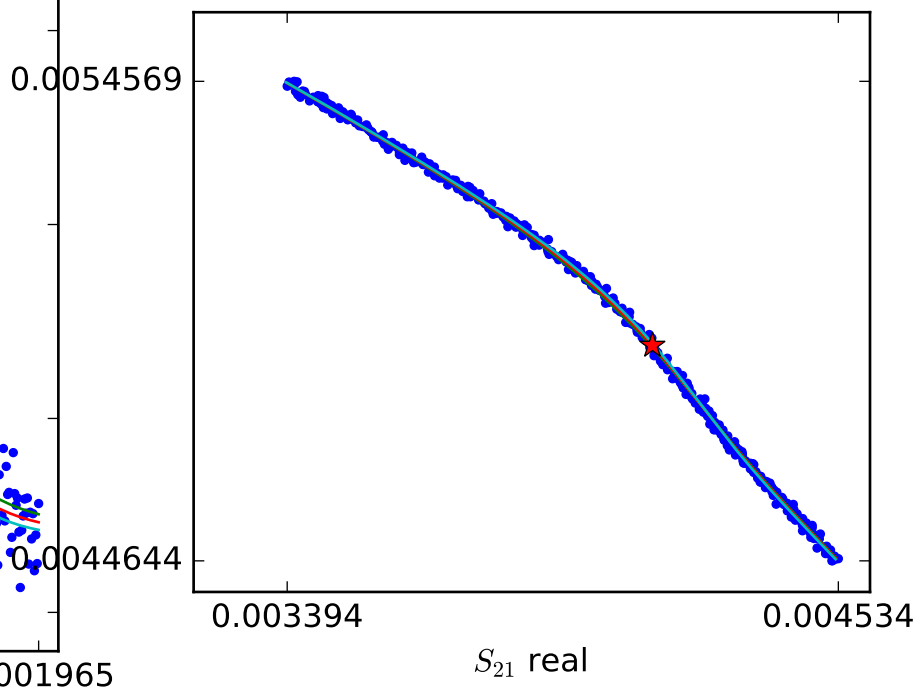



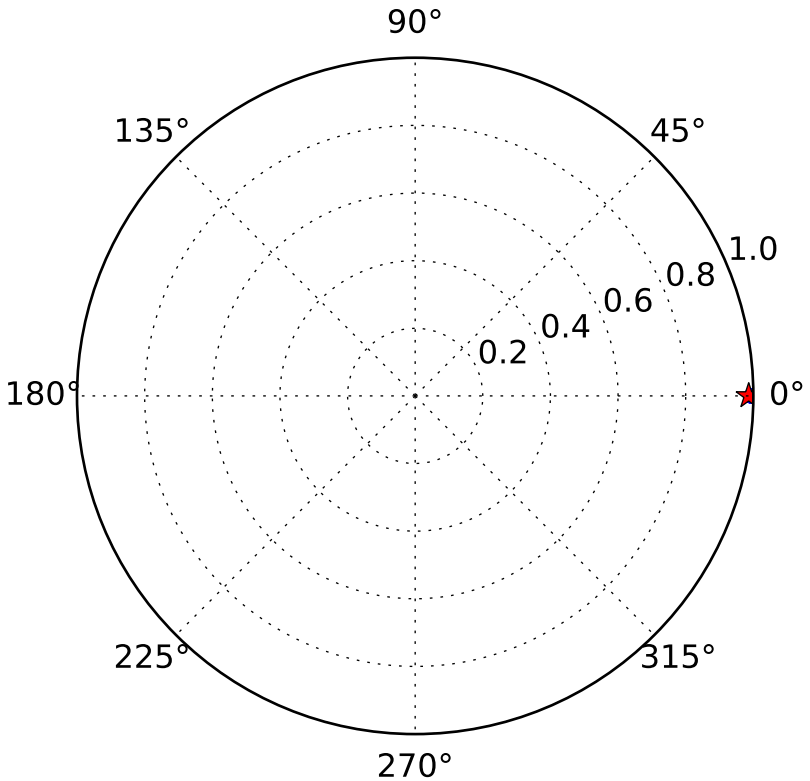



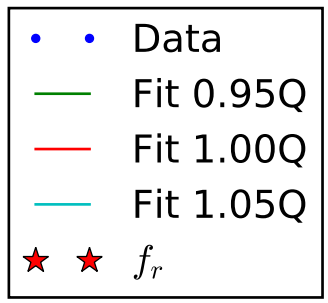

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.50693975216
$Q_r$ = 7688.98129757
$Q_c$ = 365196.000527
$a$ = (-0.00648469247046-0.000528562344695j)
$\phi_0$ = 0.227509028081
$\tau$ = 36.5680121443



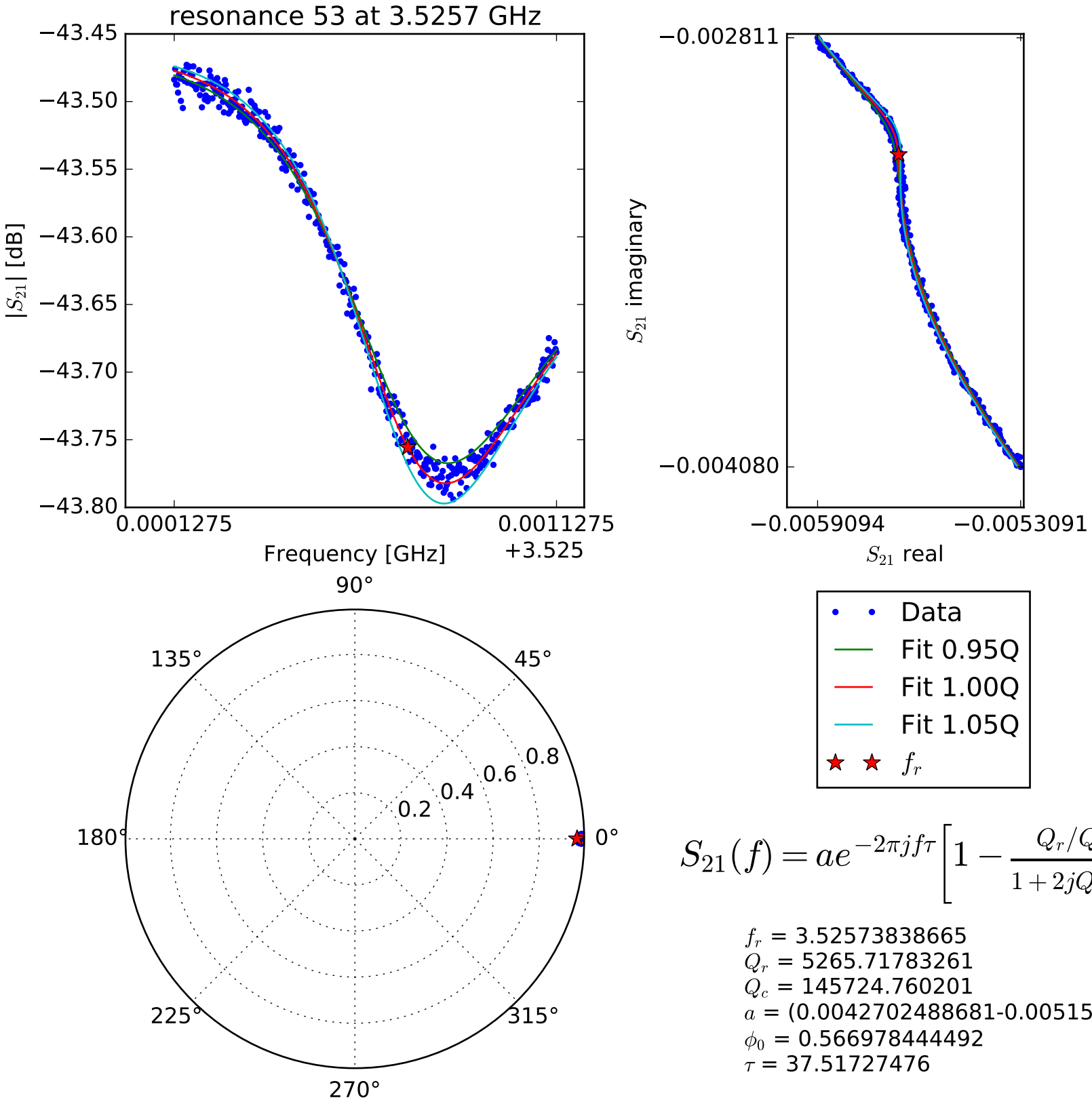



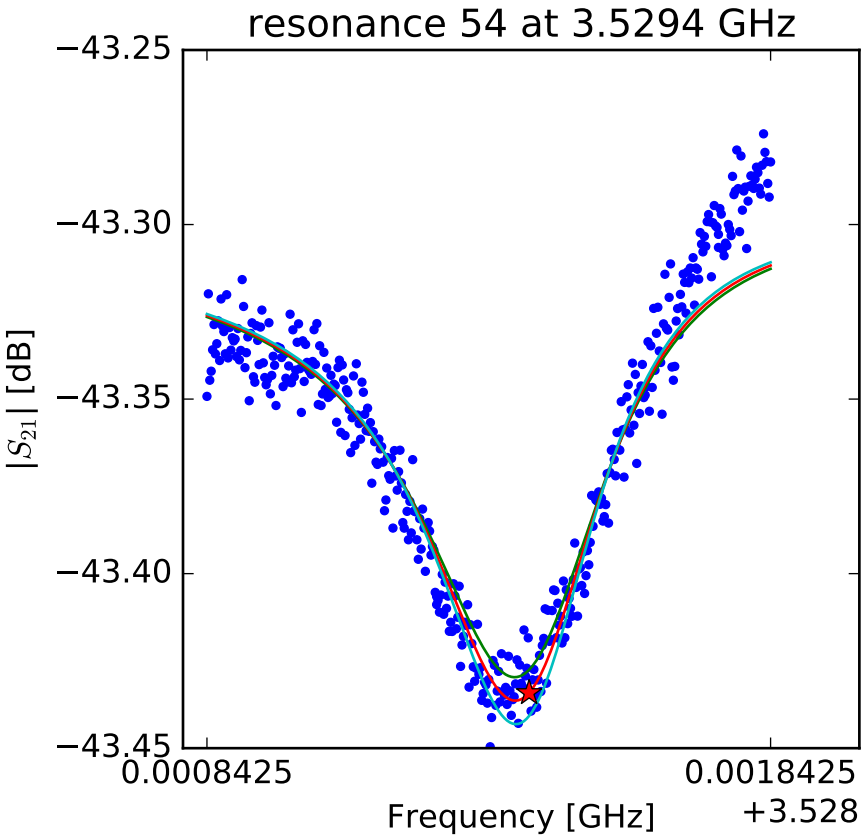

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

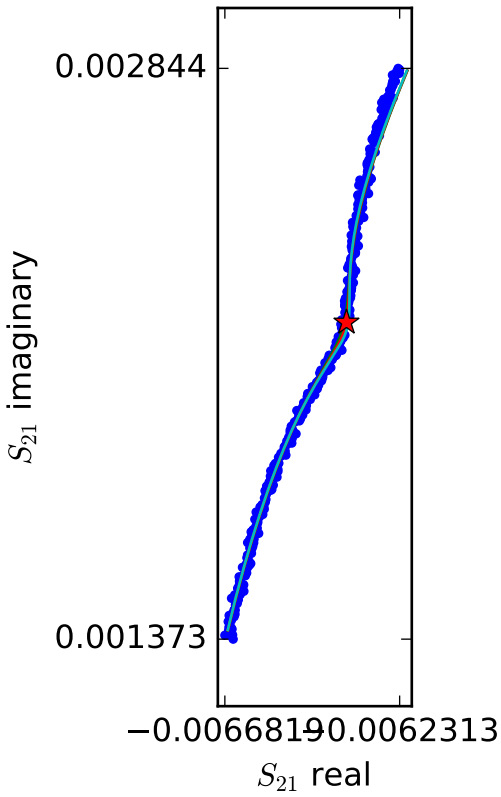
$f_r$ = 3.5105495591
$Q_r$ = 5804.58093474
$Q_c$ = 421611.973683
$a$ = (-0.00596823587229+0.0022624148417j)
$\phi_0$ = 2.11861009322
$\tau$ = 36.2627394522

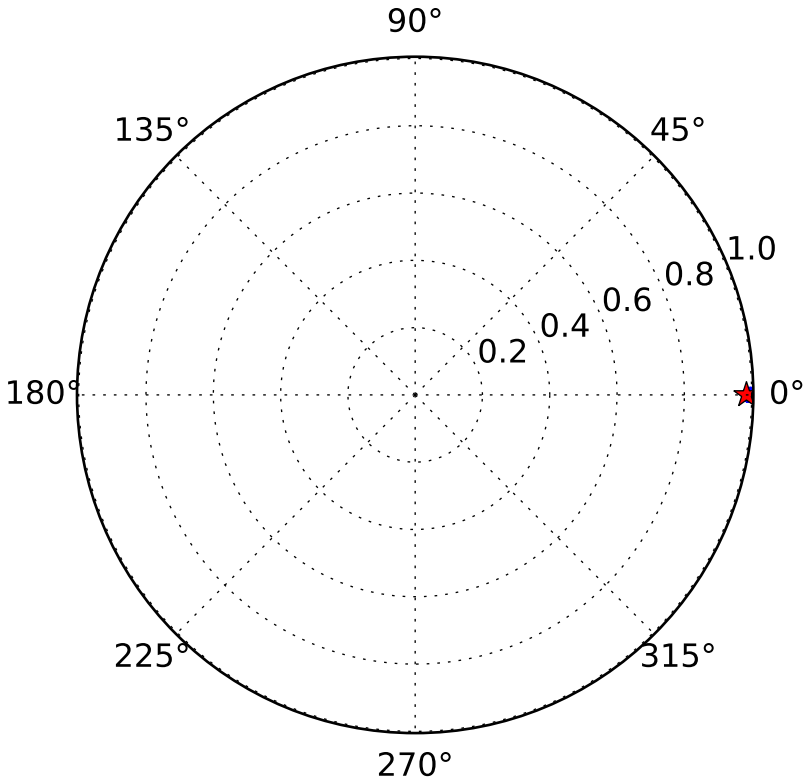


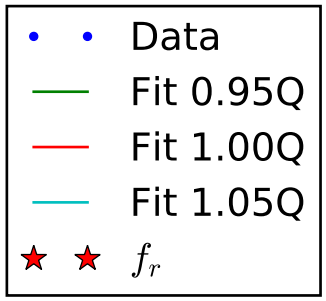

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.52573838665
$Q_r$ = 5265.71783261
$Q_c$ = 145724.760201
$a$ = (0.0042702488681-0.00515290740135j)
$\phi_0$ = 0.566978444492
$\tau$ = 37.51727476



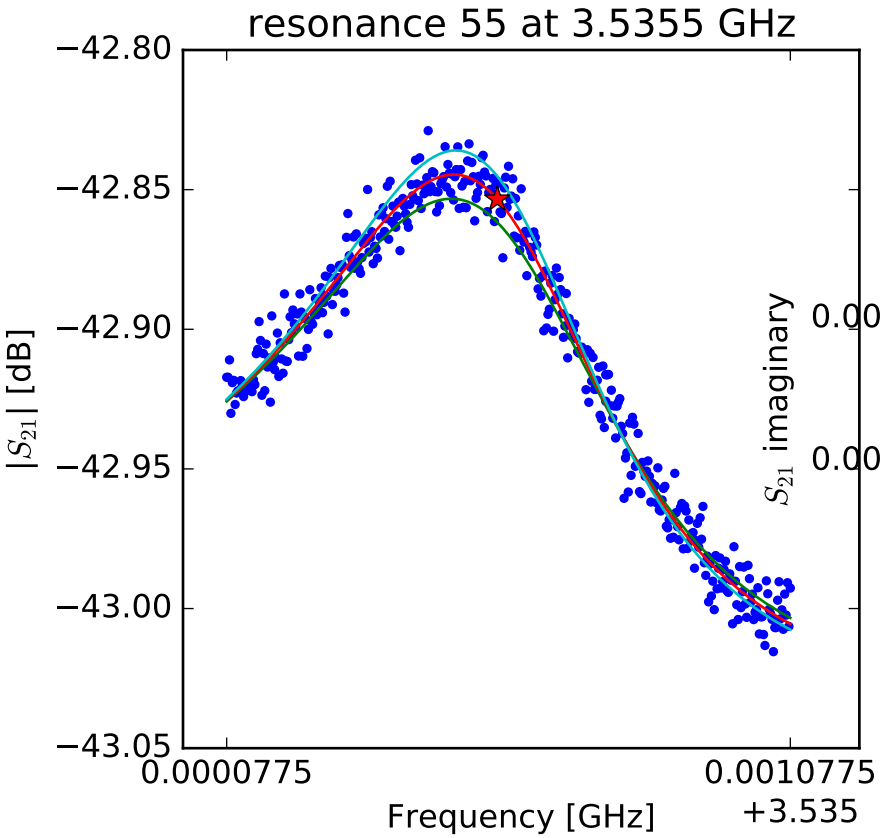



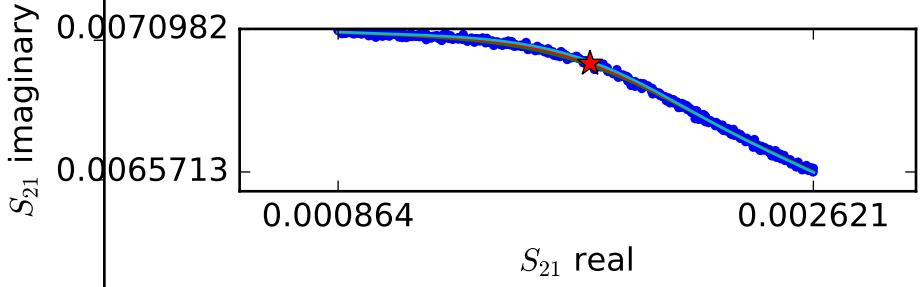



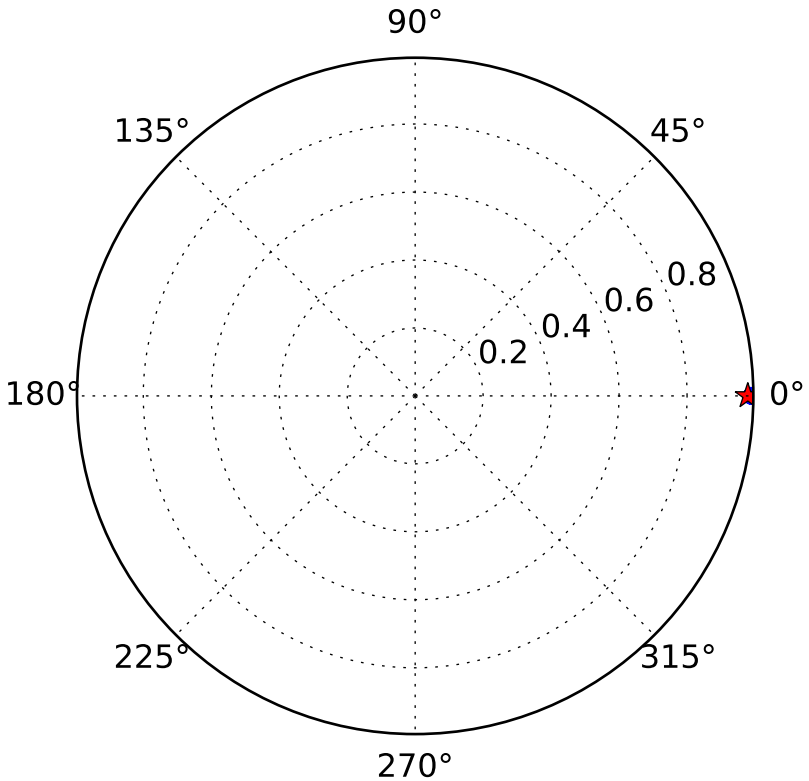



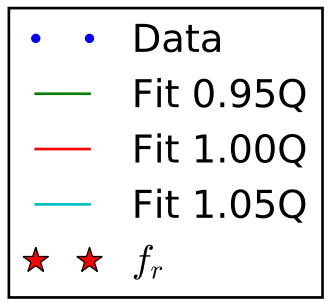

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.52941408504
$Q_r$ = 9262.79862207
$Q_c$ = 597647.518678
$a$ = (0.0034198793777+0.00592000681736j)
$\phi_0$ = -0.253663537765
$\tau$ = 37.0372977358



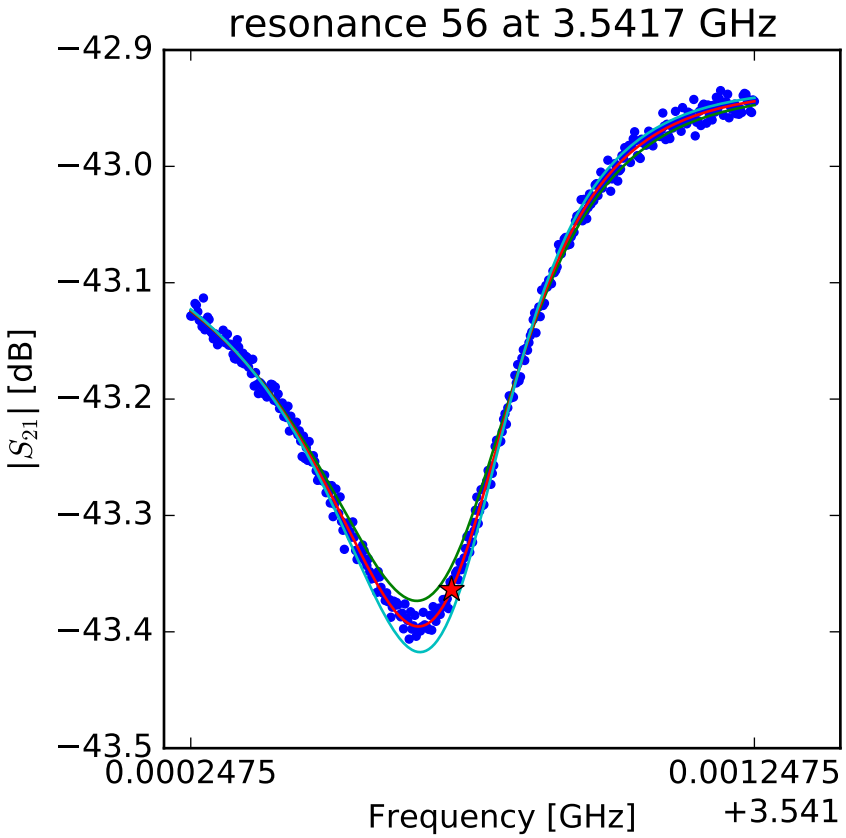



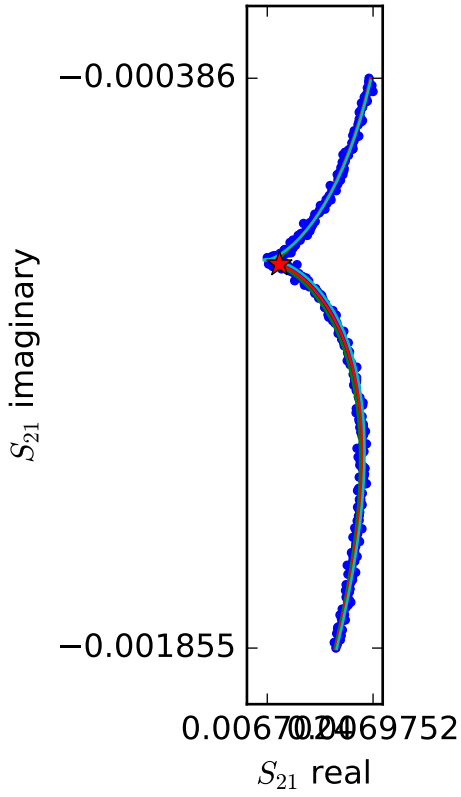



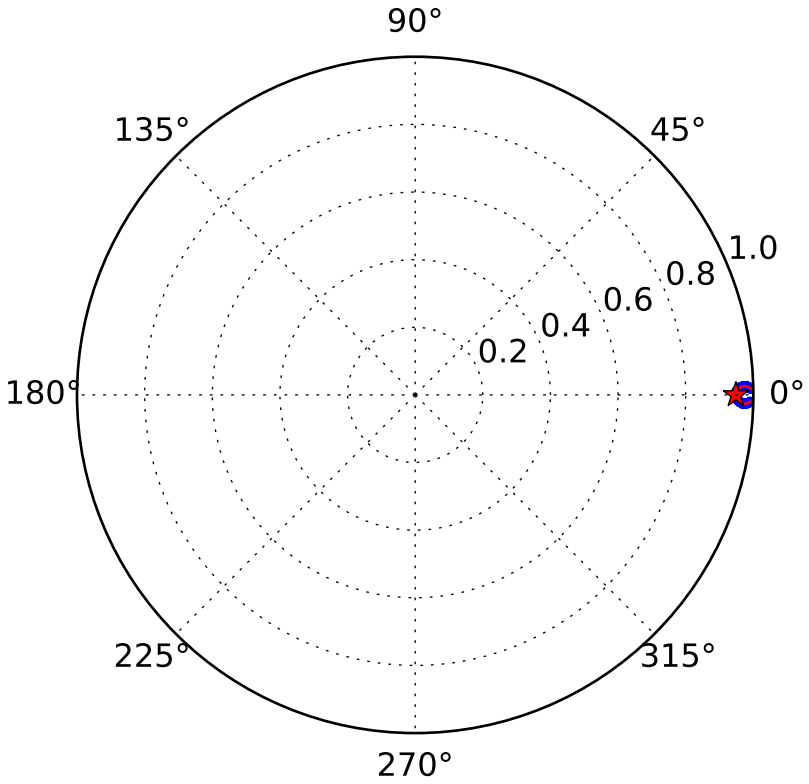



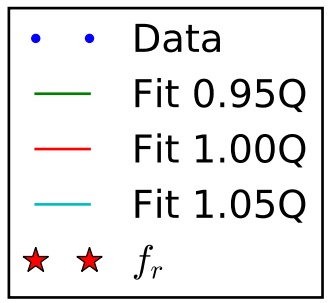

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.53555760982
$Q_r$ = 5183.53130132
$Q_c$ = 242638.364637
$a$ = (-0.00259561986718-0.0065696557078j)
$\phi_0$ = 2.69052773606
$\tau$ = 38.318923498



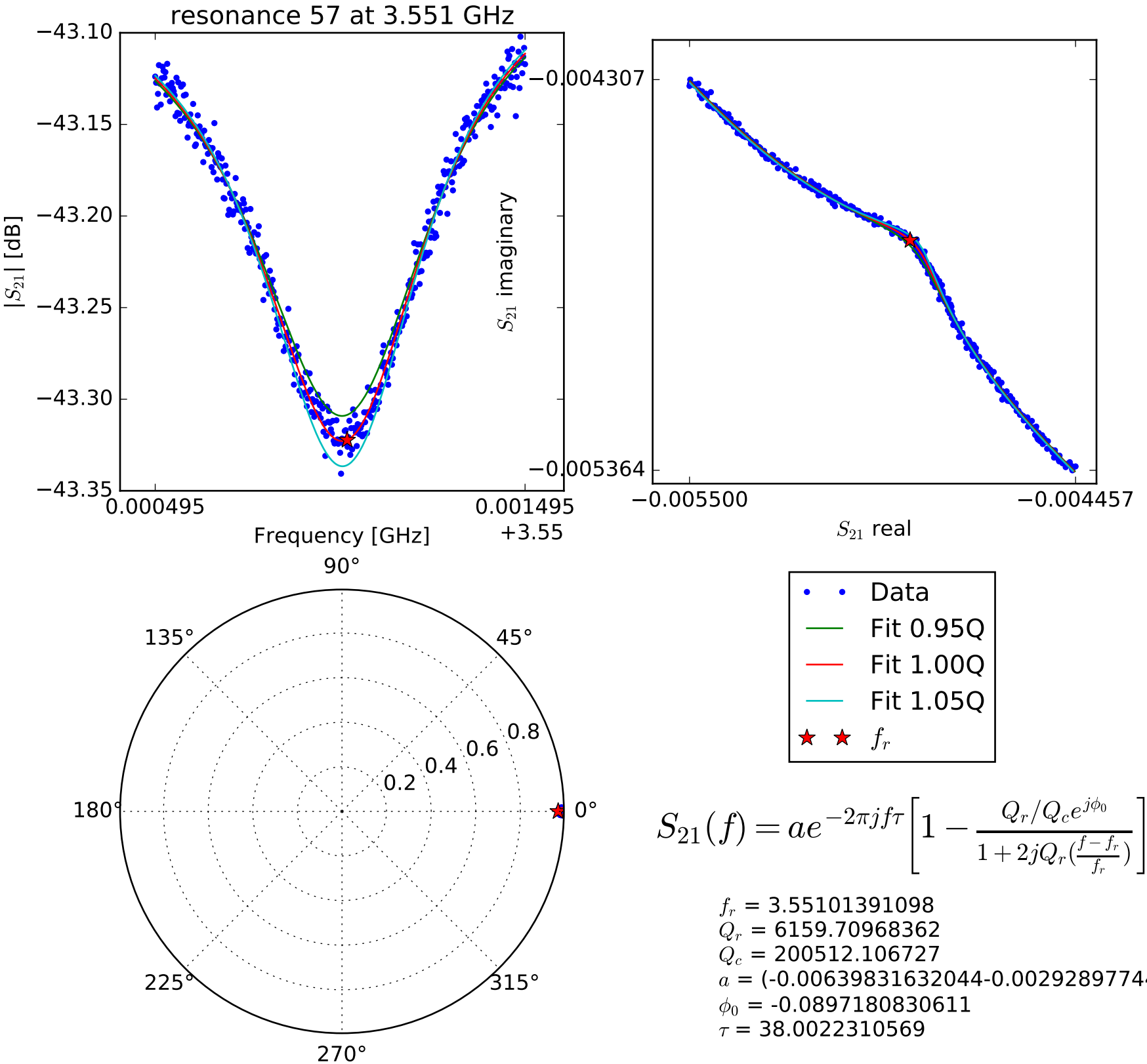



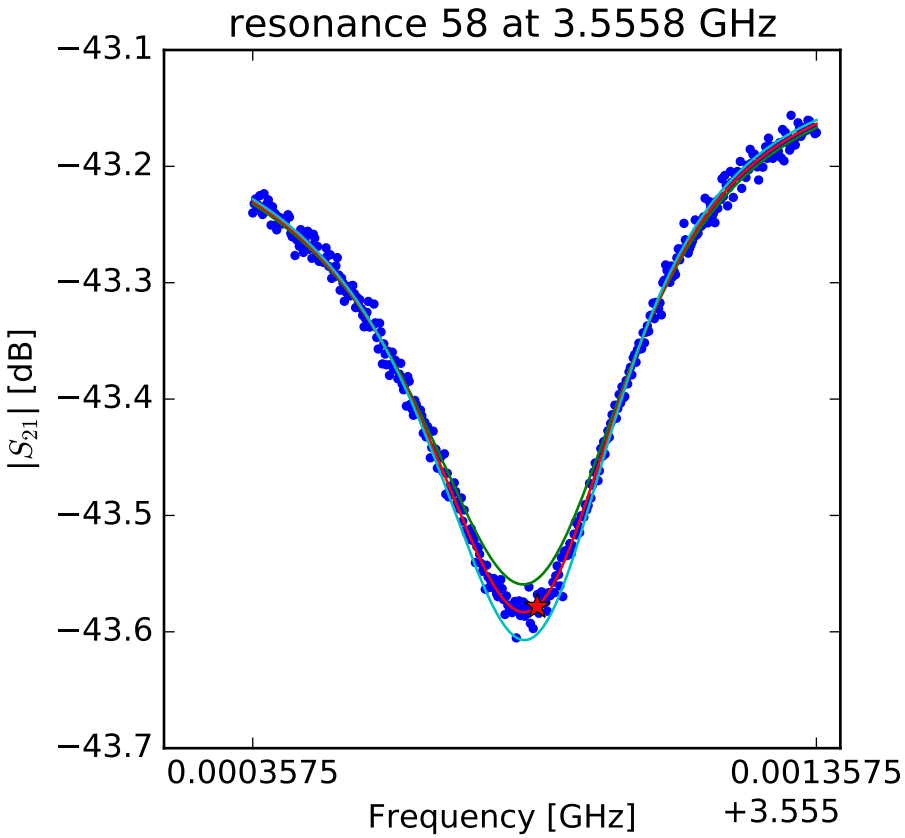

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

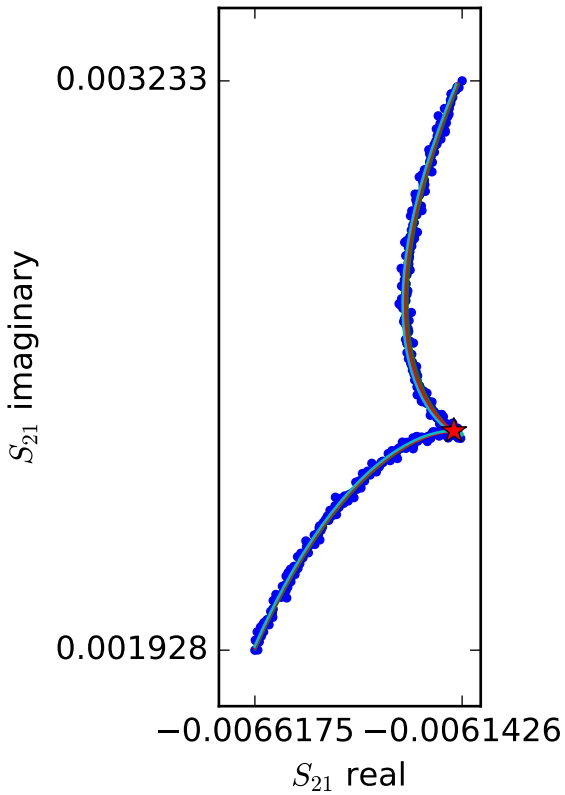
$f_r$ = 3.54171024313
$Q_r$ = 7982.96757681
$Q_c$ = 154600.315457
$a$ = (-0.00577904343257-0.00413829849275j)
$\phi_0$ = -0.505084402921
$\tau$ = 38.2931984592

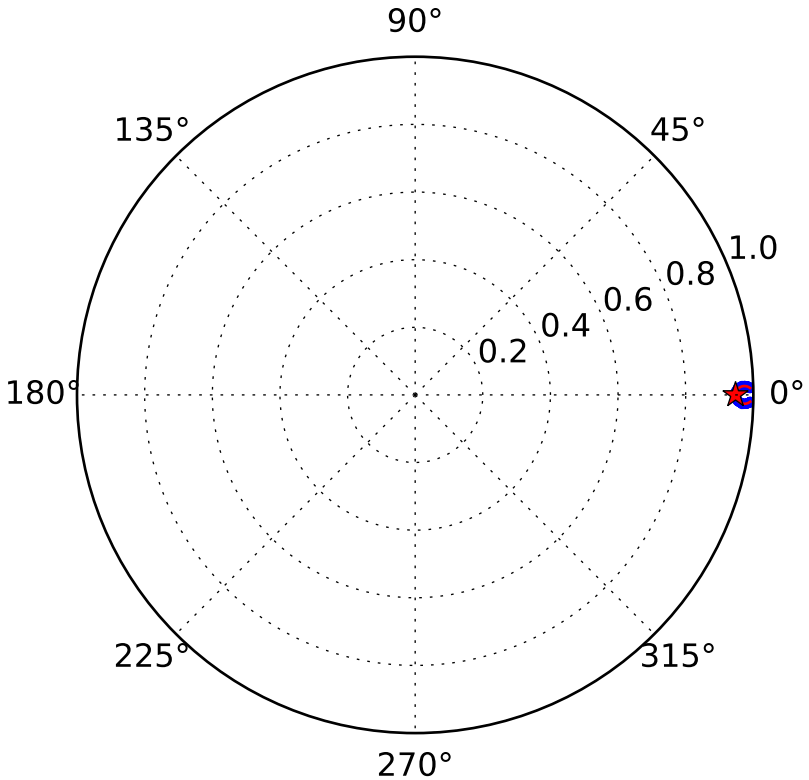


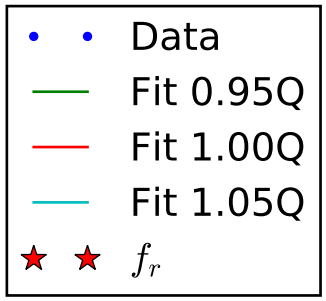

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.55101391098
$Q_r$ = 6159.70968362
$Q_c$ = 200512.106727
$a$ = (-0.00639831632044-0.0029289774467j)
$\phi_0$ = -0.0897180830611
$\tau$ = 38.0022310569



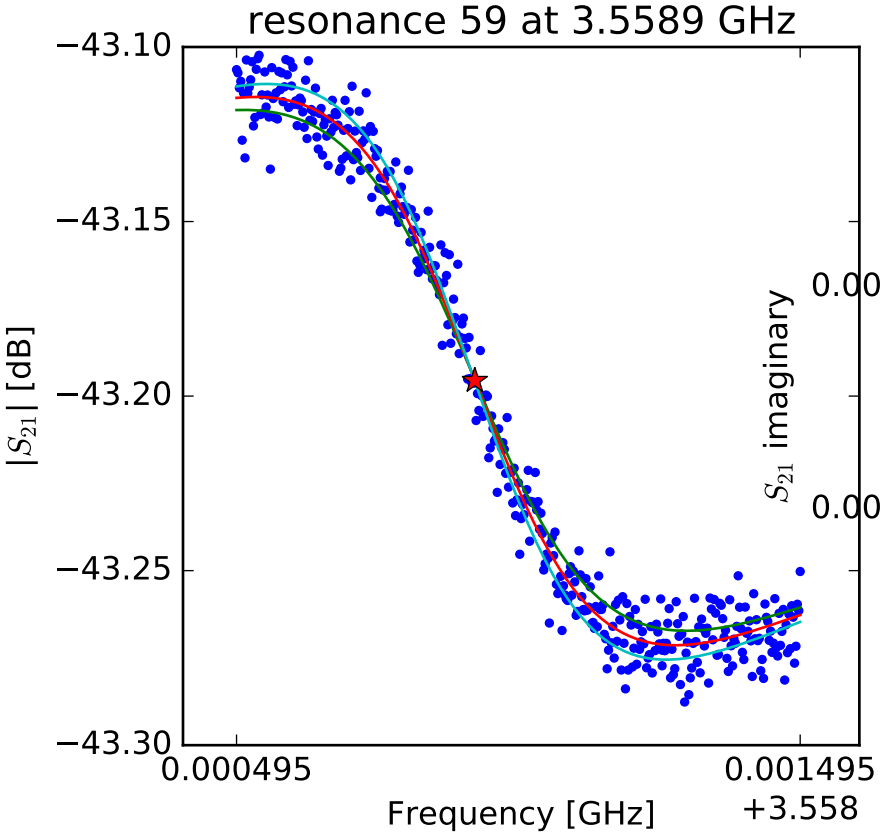



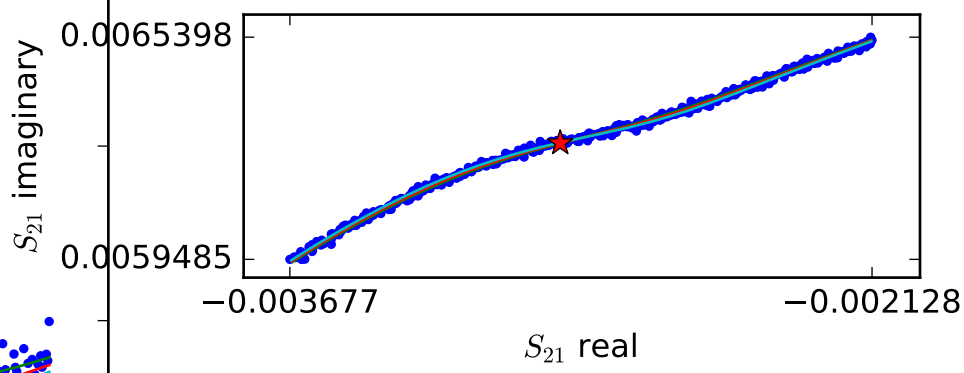



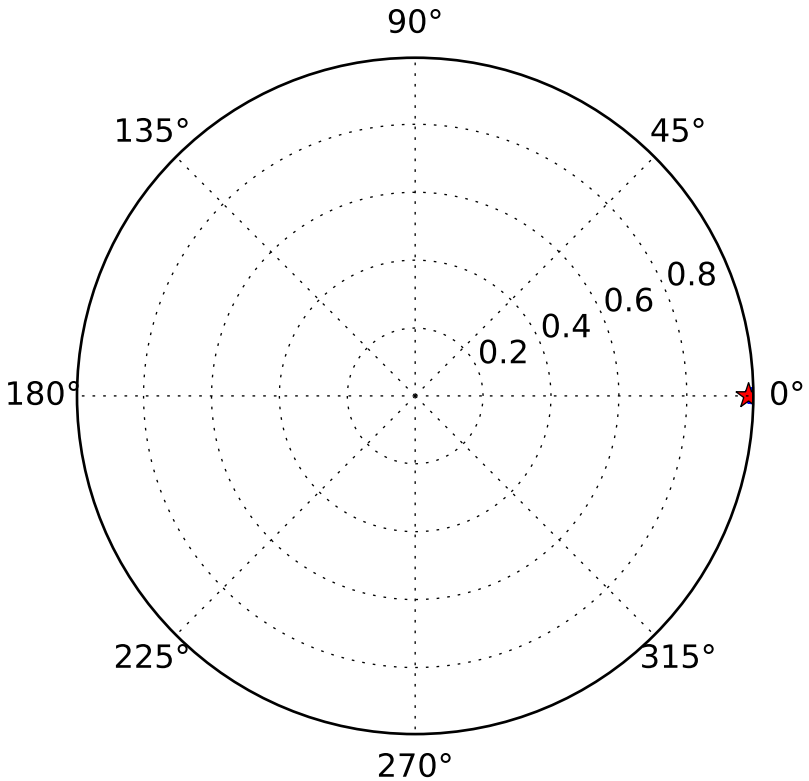



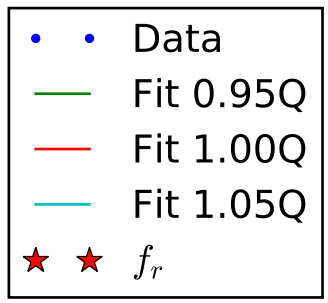

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.55586220043
$Q_r$ = 7594.42612431
$Q_c$ = 144116.11149
$a$ = (-0.00661353658359+0.00224504814251j)
$\phi_0$ = -0.194865360124
$\tau$ = 37.9681282058



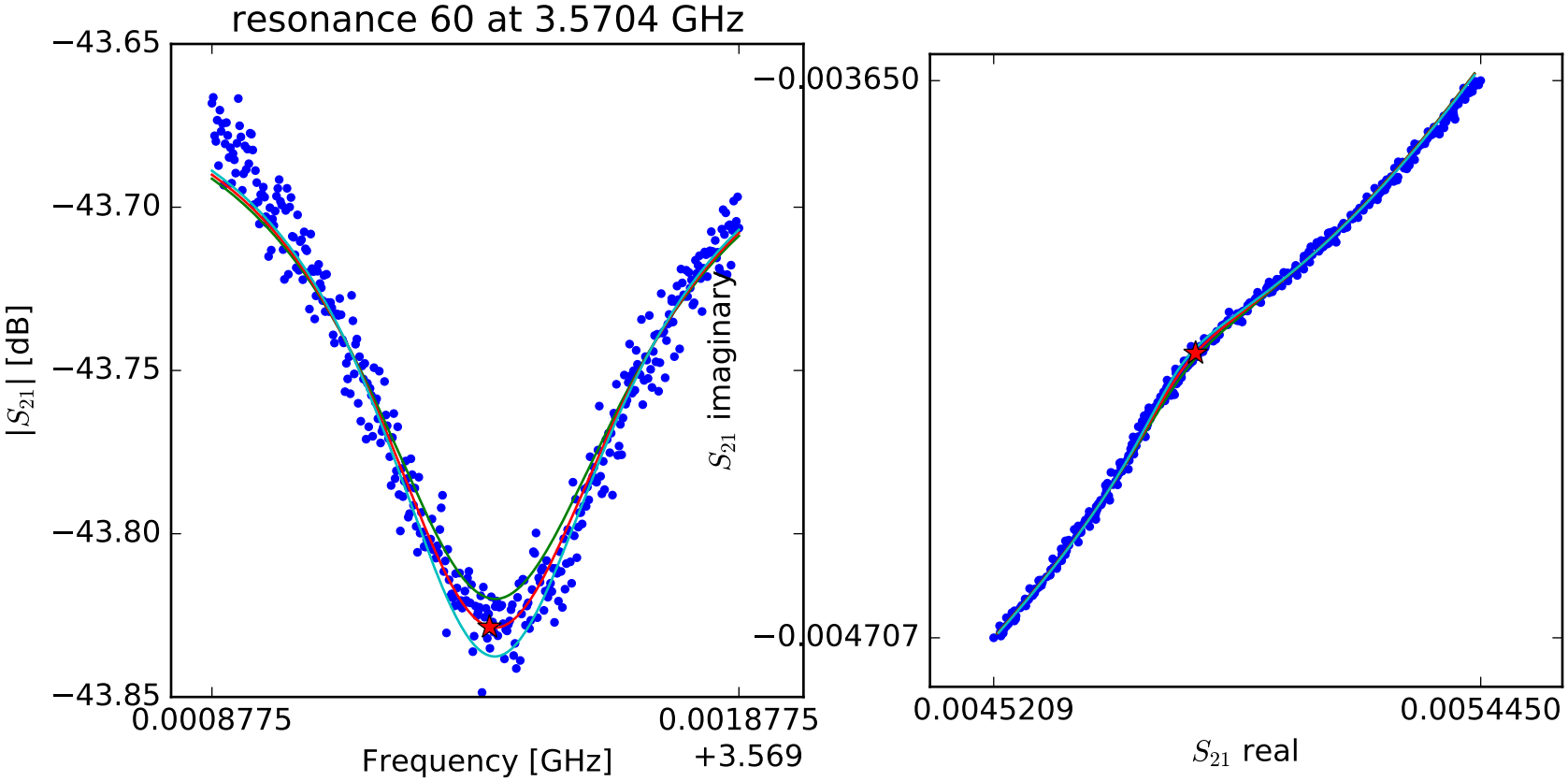



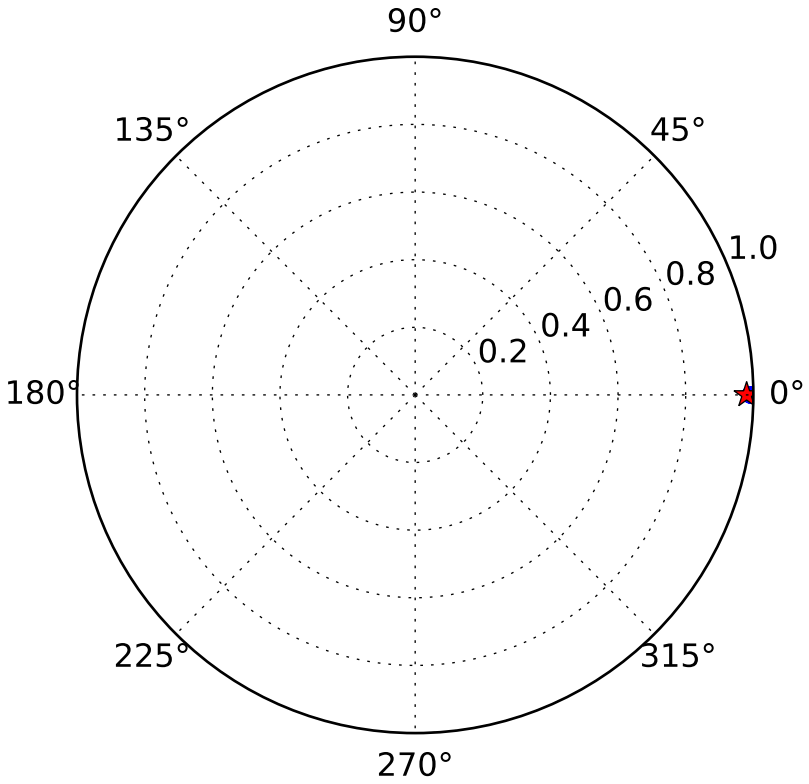



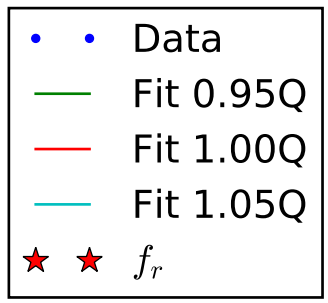




$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.55891768923
$Q_r$ = 4783.16112891
$Q_c$ = 264622.224883
$a$ = (0.00586580816591+0.00368510680806j)
$\phi_0$ = 1.51806825398
$\tau$ = 38.429137283

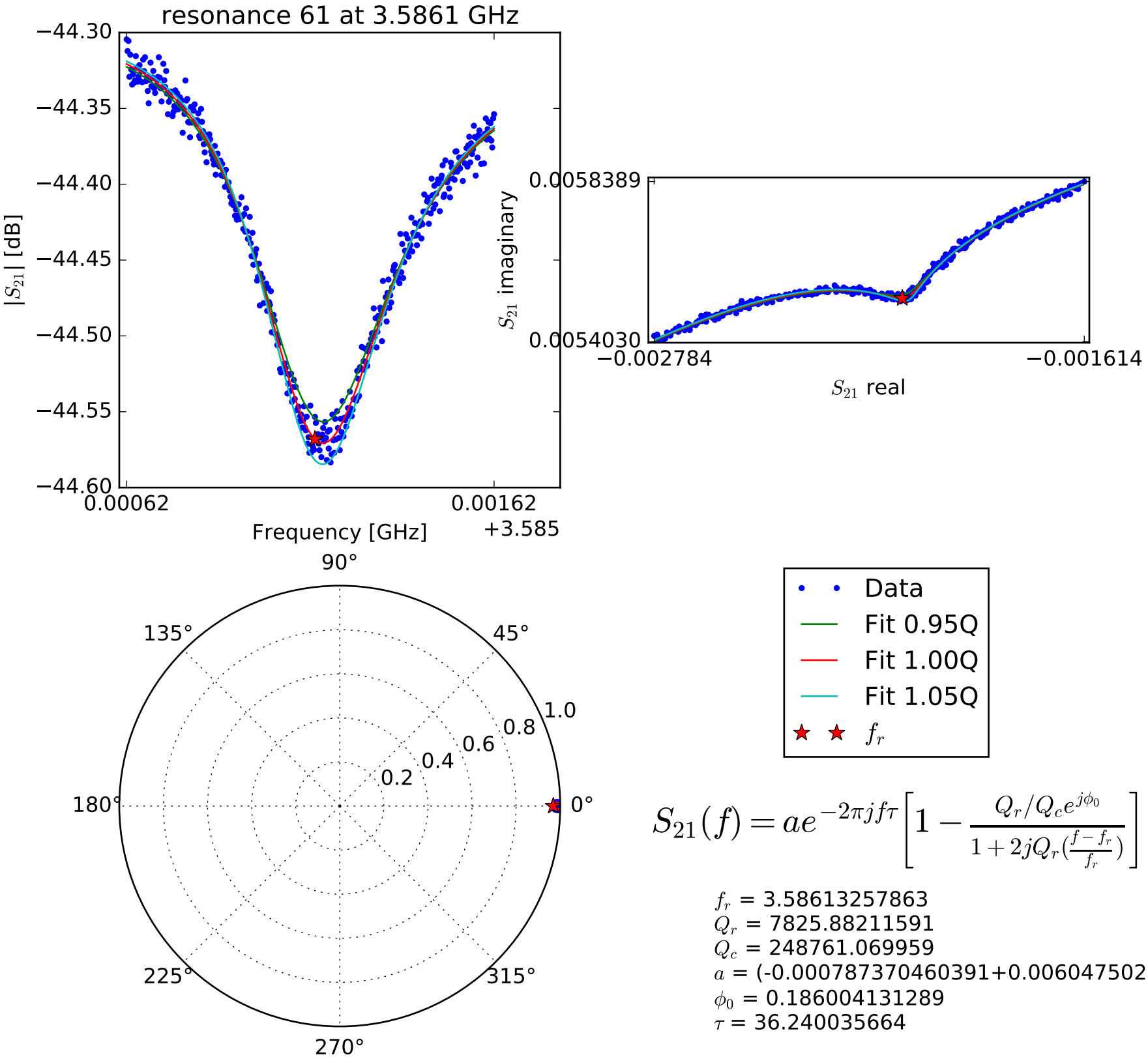


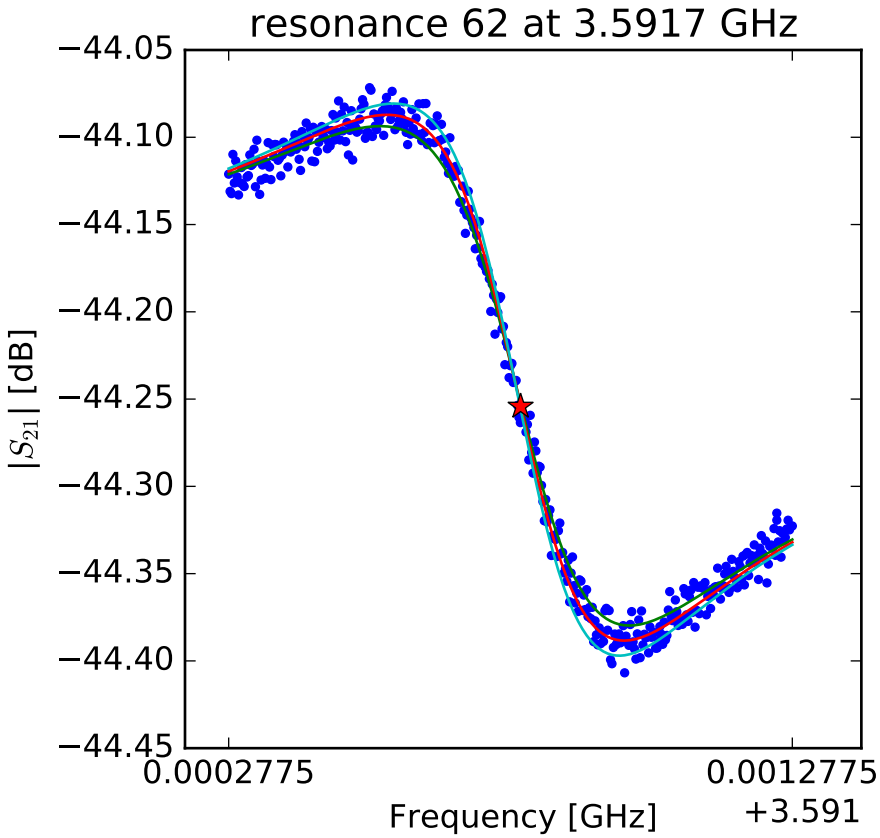

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

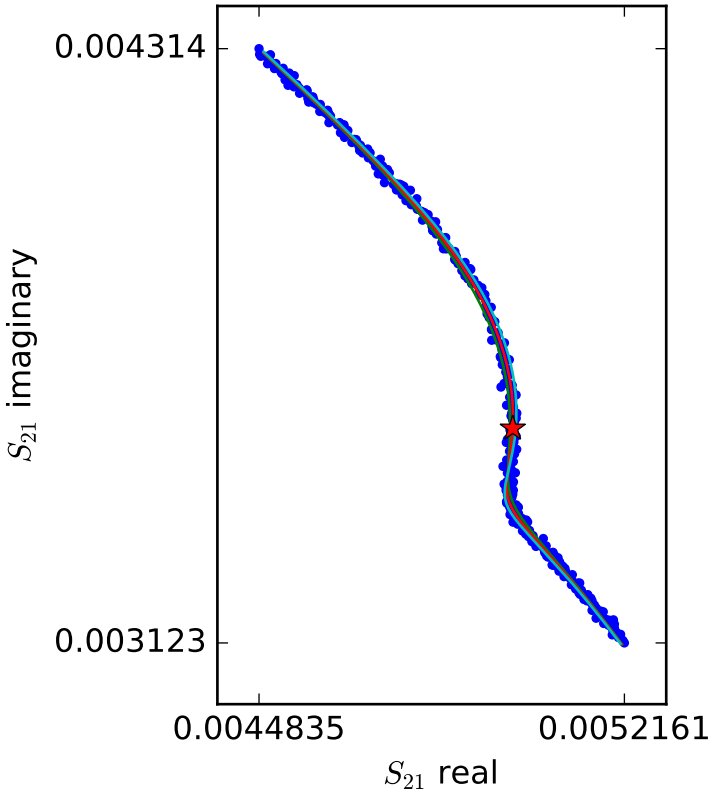
$f_r$ = 3.57040415926
$Q_r$ = 6054.68370663
$Q_c$ = 304063.602658
$a$ = (0.000173956881797+0.0065634471477j)
$\phi_0$ = 0.070197523841
$\tau$ = 36.7906966569

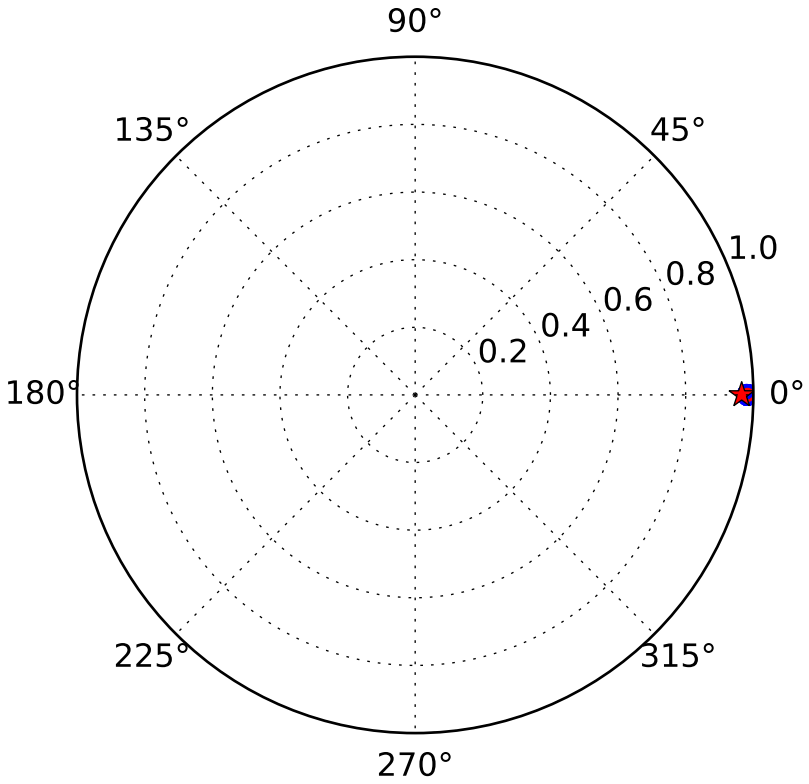


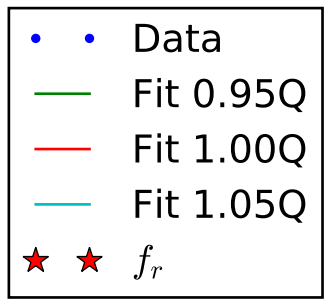

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.58613257863
$Q_r$ = 7825.88211591
$Q_c$ = 248761.069959
$a$ = (-0.000787370460391+0.00604750217187
$\phi_0$ = 0.186004131289
$\tau$ = 36.240035664



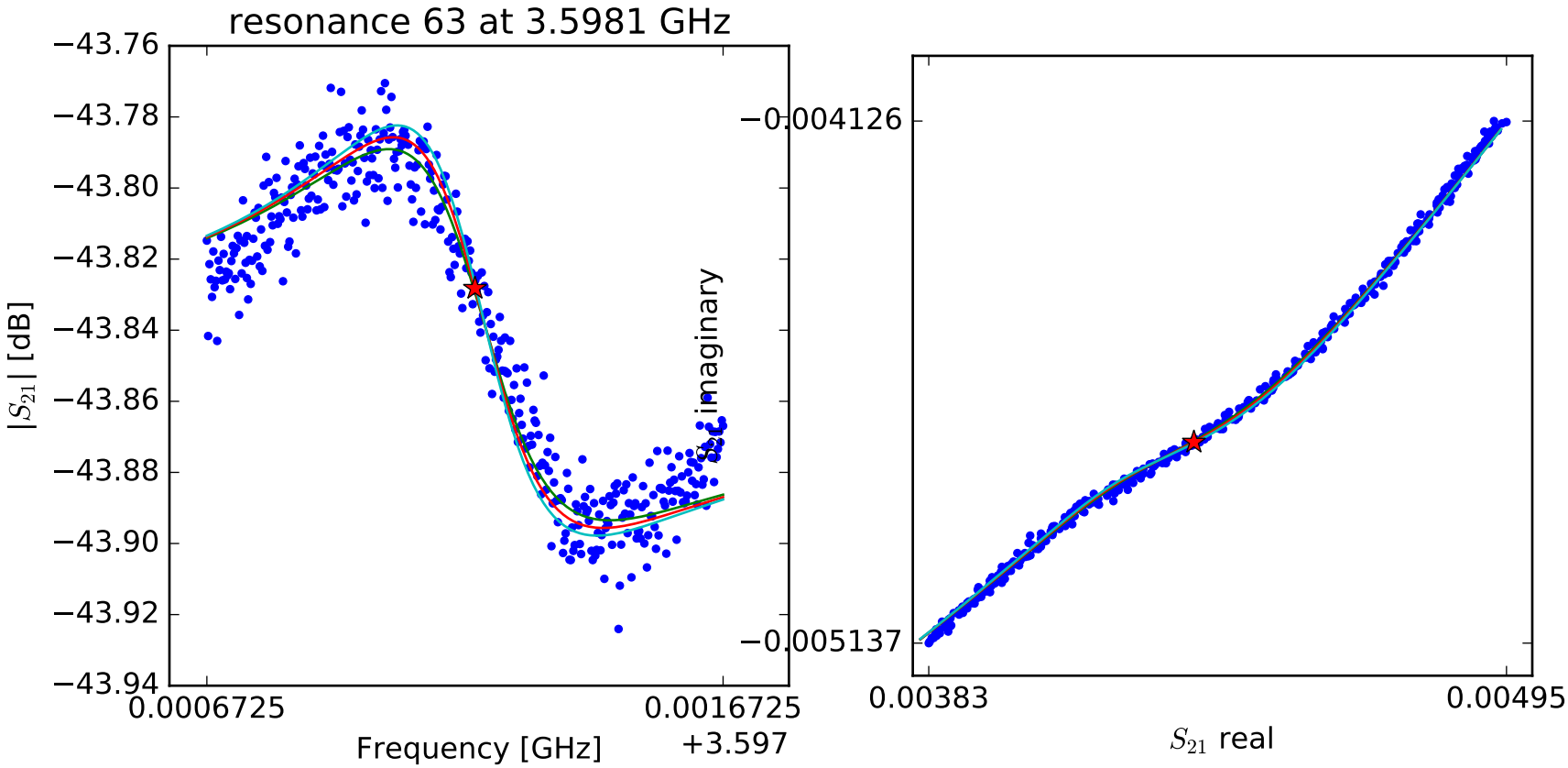



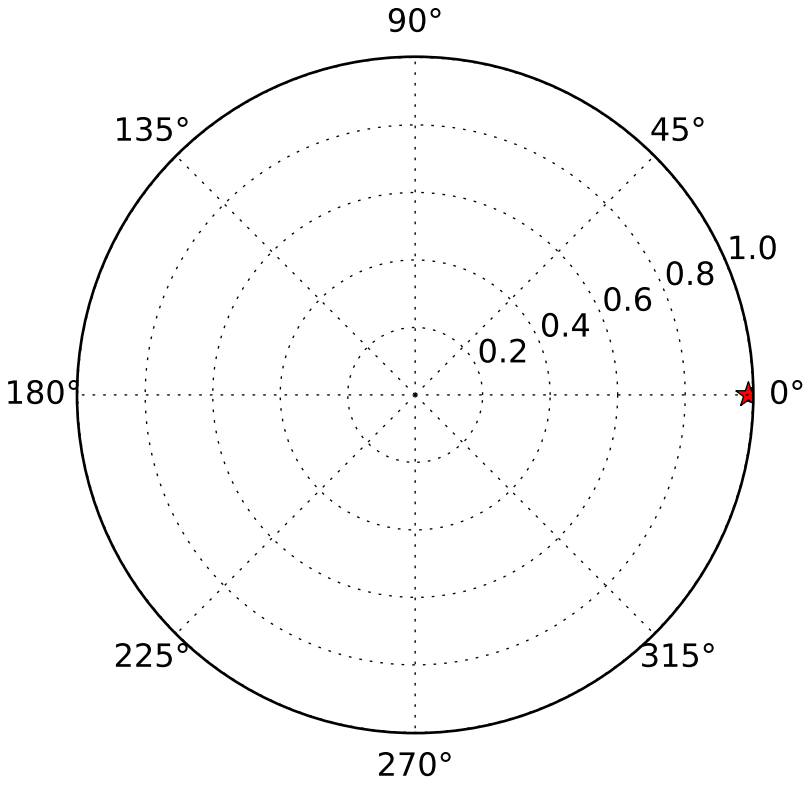



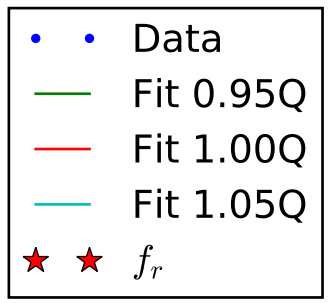




$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.59179538622
$Q_r$ = 8608.60053513
$Q_c$ = 248820.367106
$a$ = (0.0046265062374+0.00405870586176j)
$\phi_0$ = 1.42698402061
$\tau$ = 36.1965742948

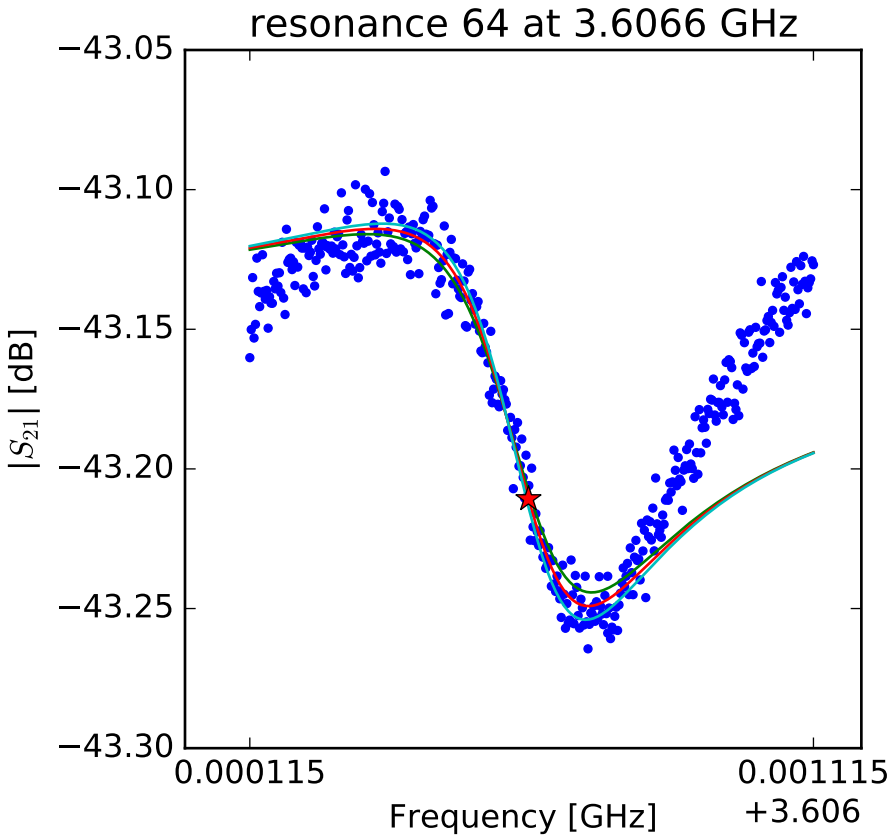


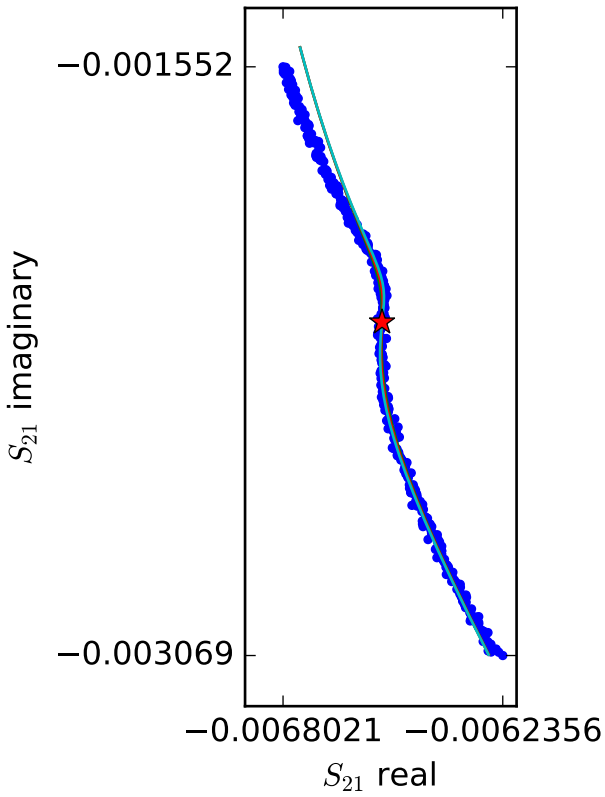



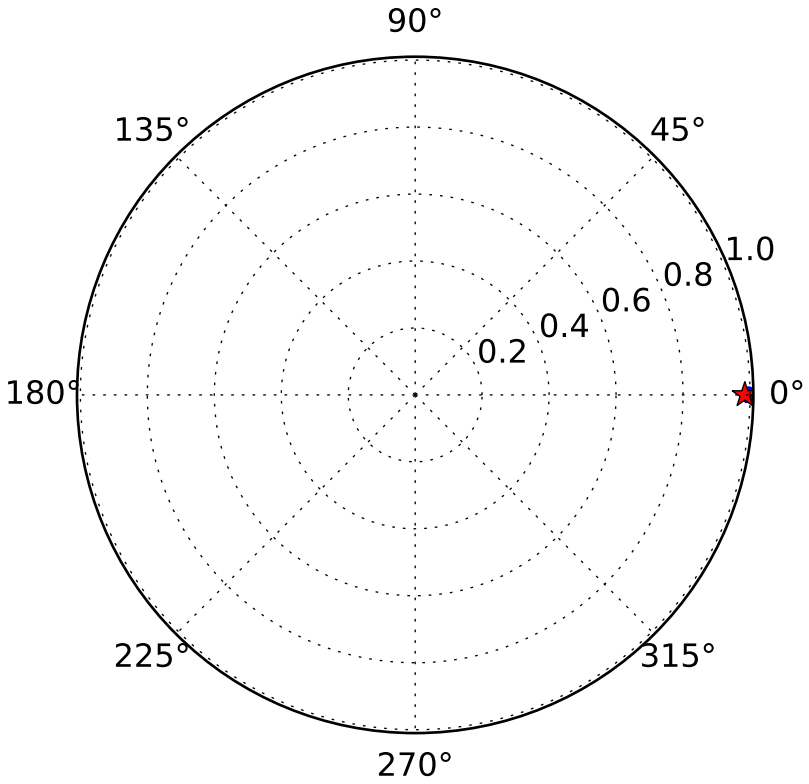



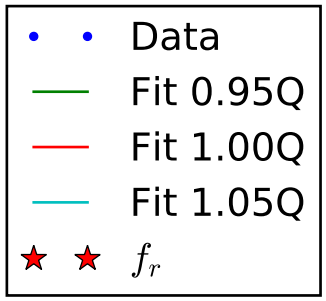

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.59819184887
$Q_r$ = 9072.92403922
$Q_c$ = 716011.645581
$a$ = (-0.004221212612+0.00483399411804j)
$\phi_0$ = 1.78741423304
$\tau$ = 36.8224768837



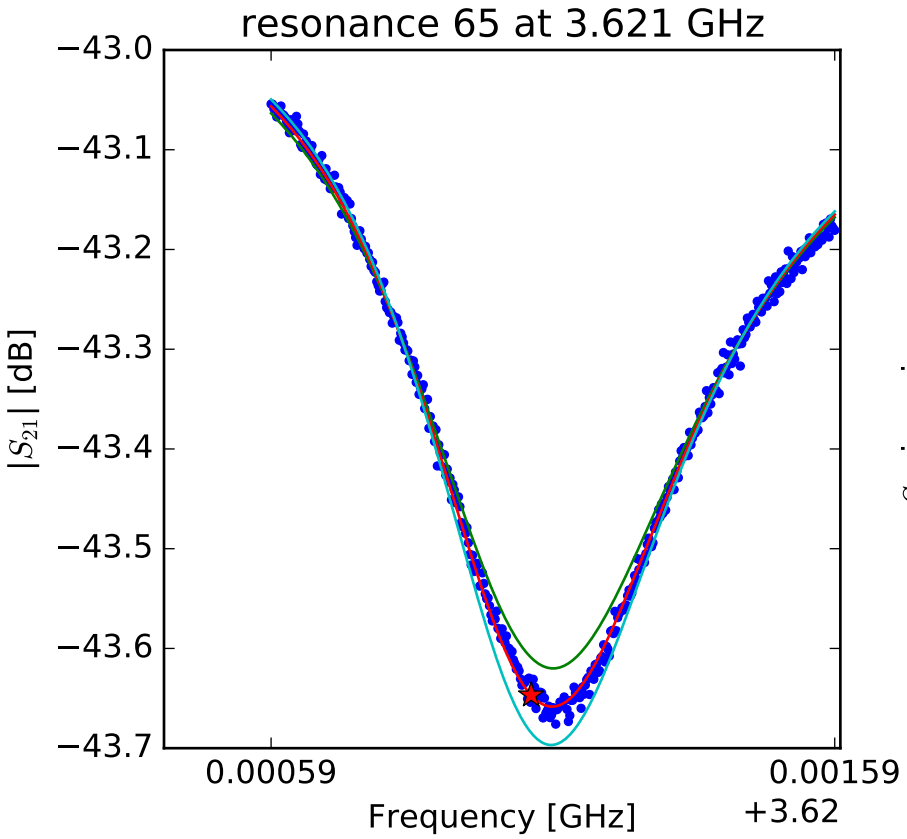



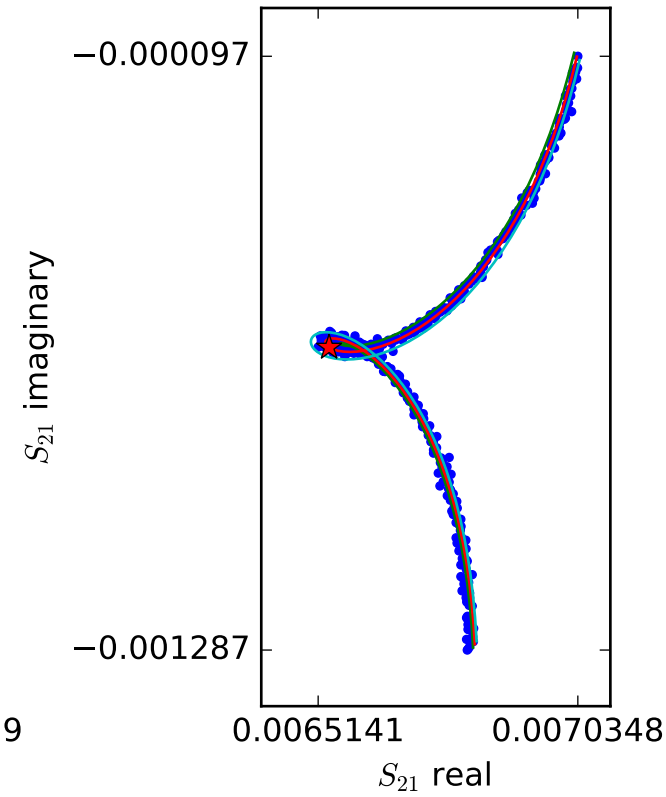



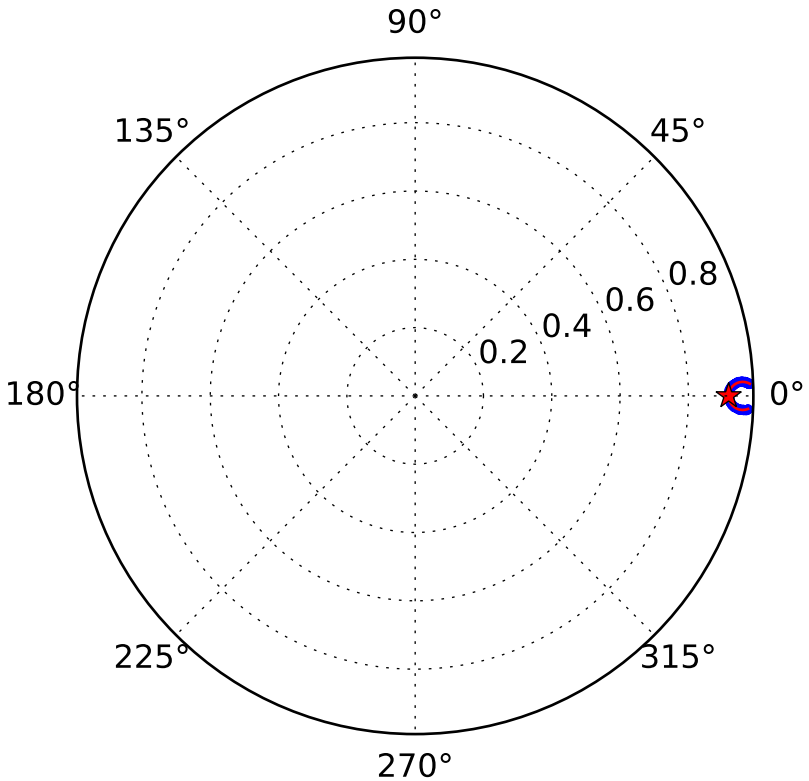



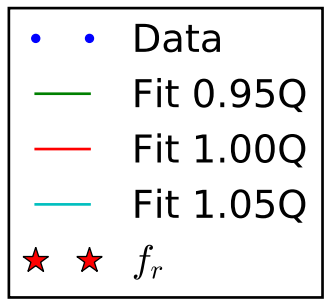

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.6066093671
$Q_r$ = 10605.4376066
$Q_c$ = 684280.246398
$a$ = (-0.00689414949295-0.000932793074829j)
$\phi_0$ = 1.11069979559
$\tau$ = 38.2540360744



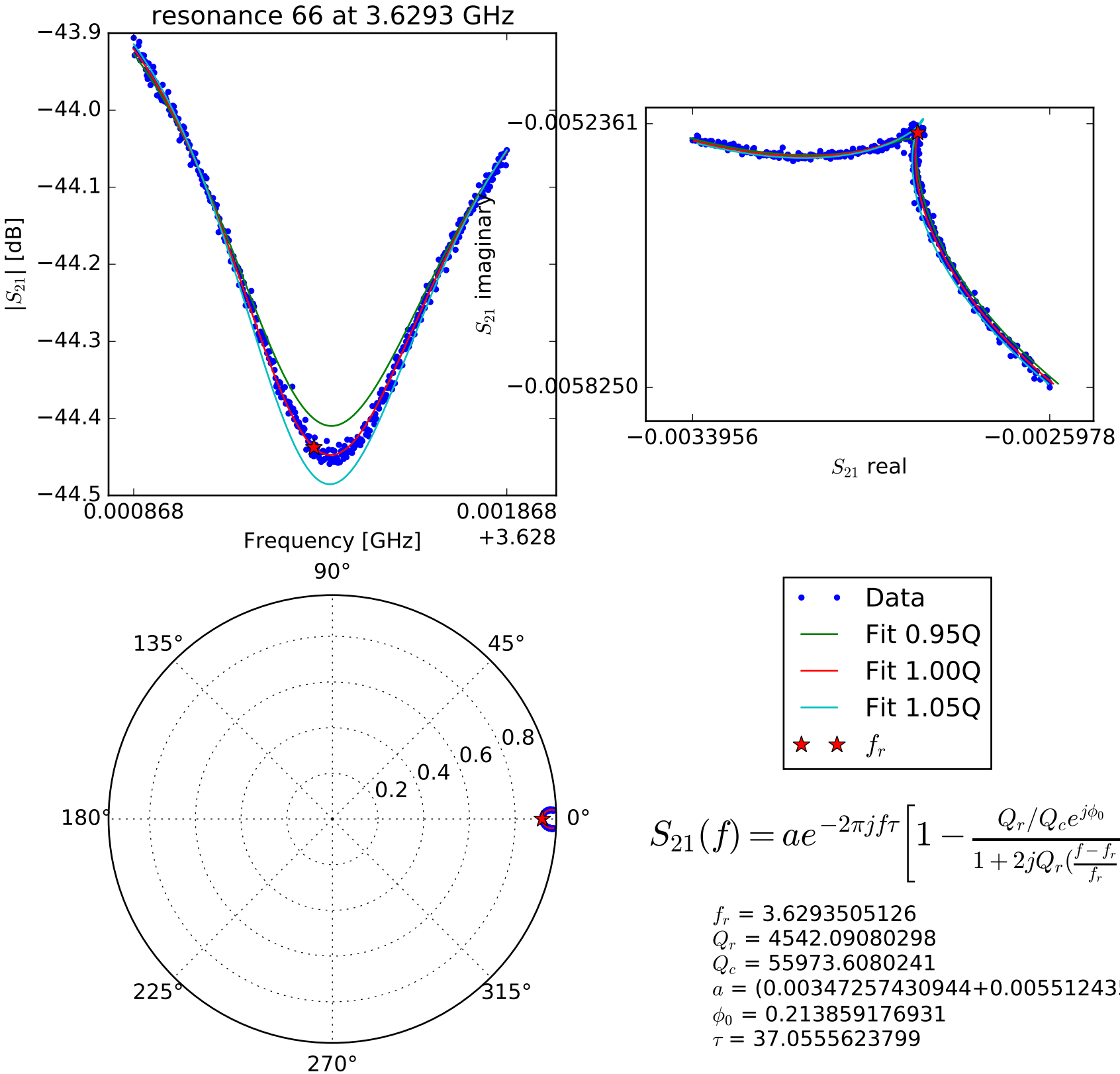



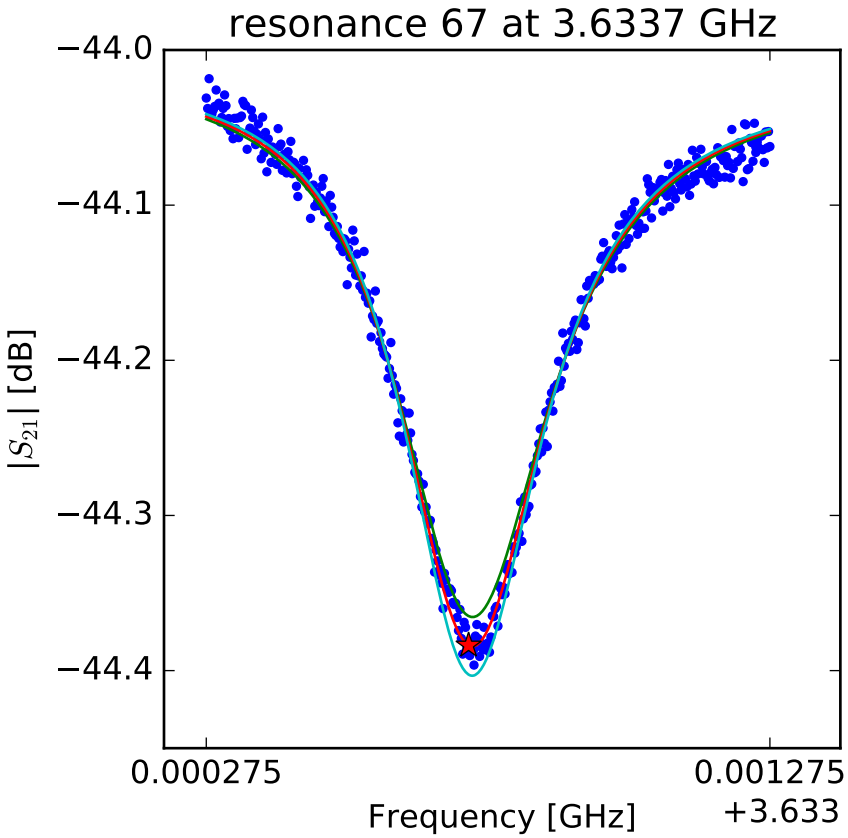

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

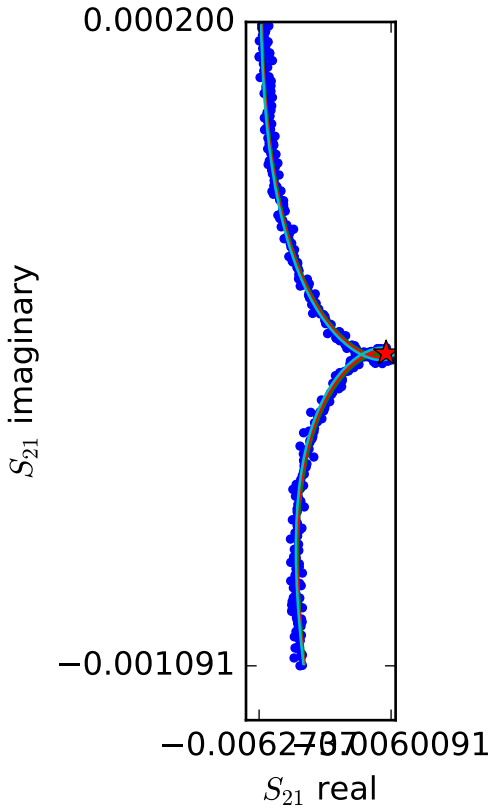
$f_r$ = 3.62105137017
$Q_r$ = 5850.29519693
$Q_c$ = 71042.6934517
$a$ = (-0.00386911719189+0.00600424242856j)
$\phi_0$ = 0.22895722035
$\tau$ = 39.0368352068

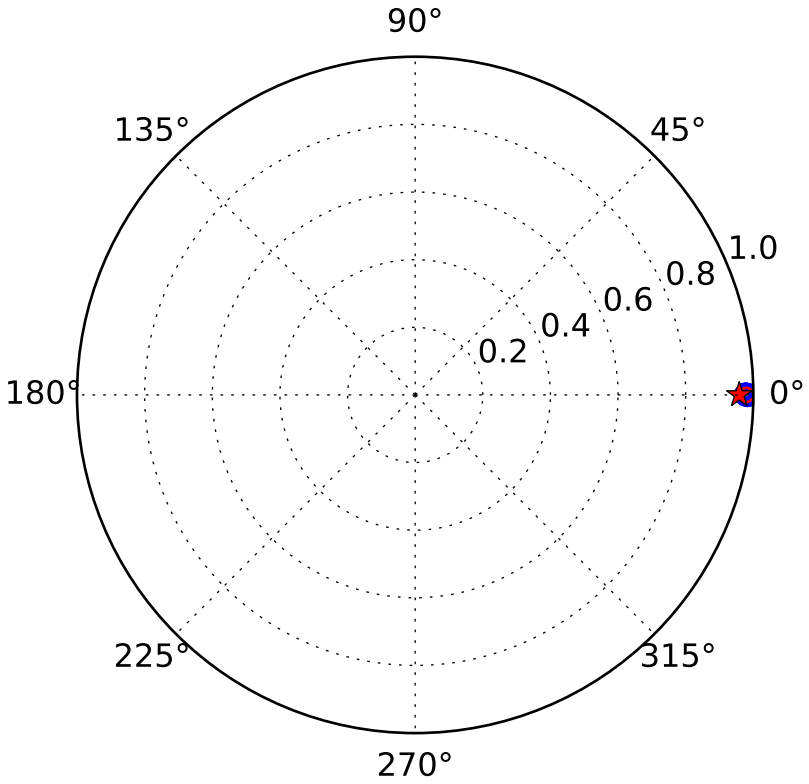


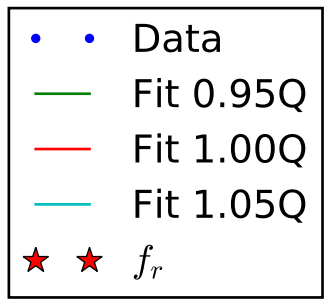

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.6293505126
$Q_r$ = 4542.09080298
$Q_c$ = 55973.6080241
$a$ = (0.00347257430944+0.00551243552111j)
$\phi_0$ = 0.213859176931
$\tau$ = 37.0555623799



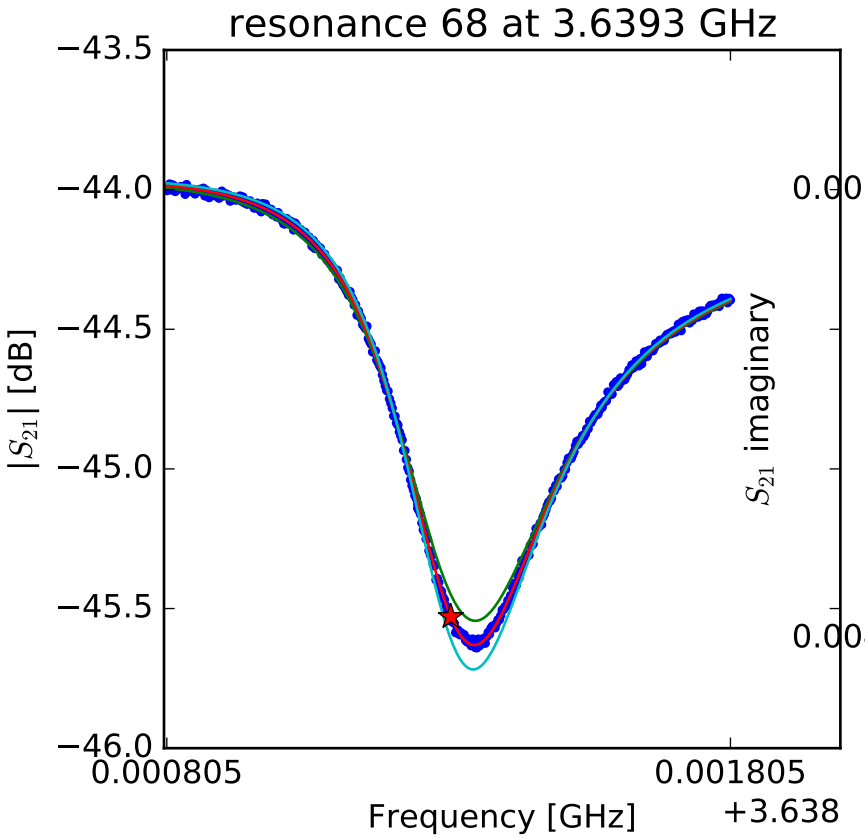



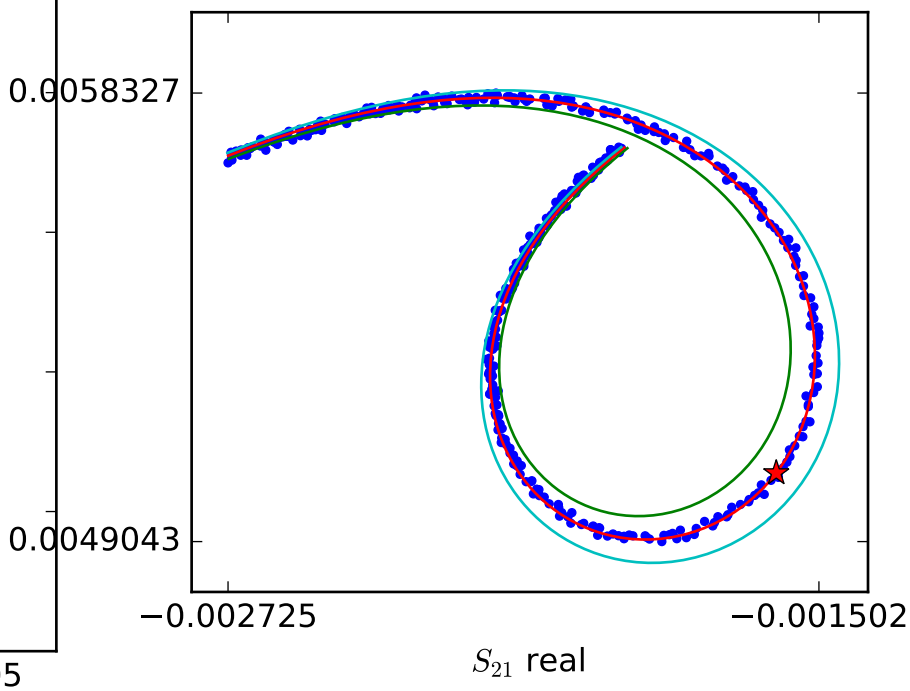



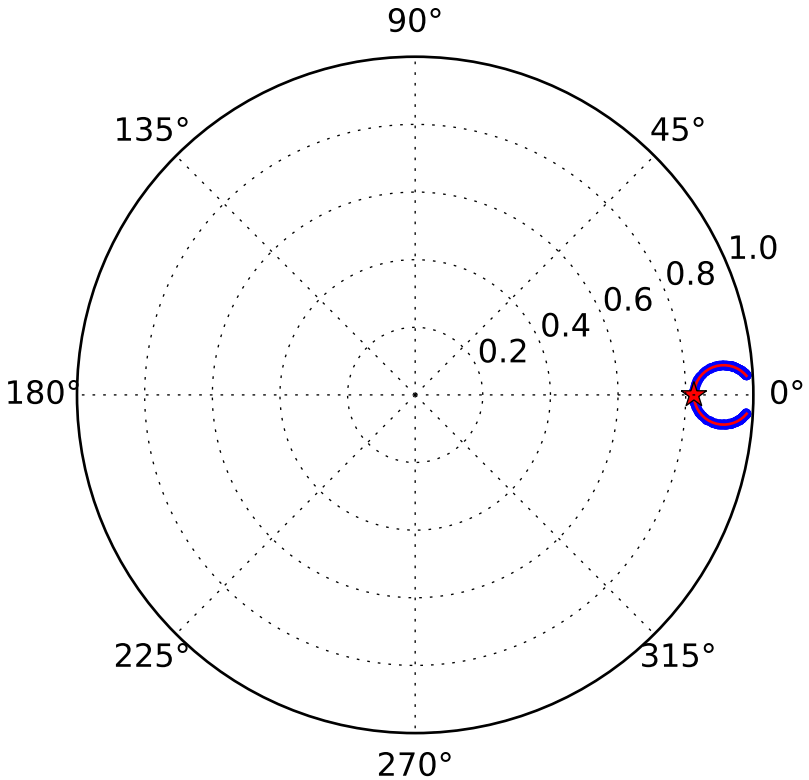



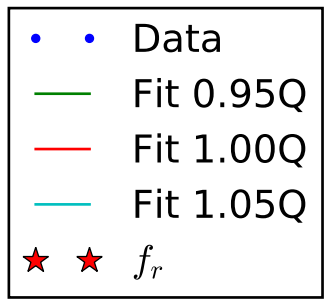

$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.63374039452
$Q_r$ = 11324.7835626
$Q_c$ = 271099.427785
$a$ = (0.00291422725579+0.00558445751013j)
$\phi_0$ = 0.0824845114572
$\tau$ = 36.5080107154




$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

$f_r$ = 3.63930877087
$Q_r$ = 10097.740974
$Q_c$ = 57435.1401682
$a$ = (-0.00612262660144+0.00141042850844j)
$\phi_0$ = 0.414868526573
$\tau$ = 36.3123844954