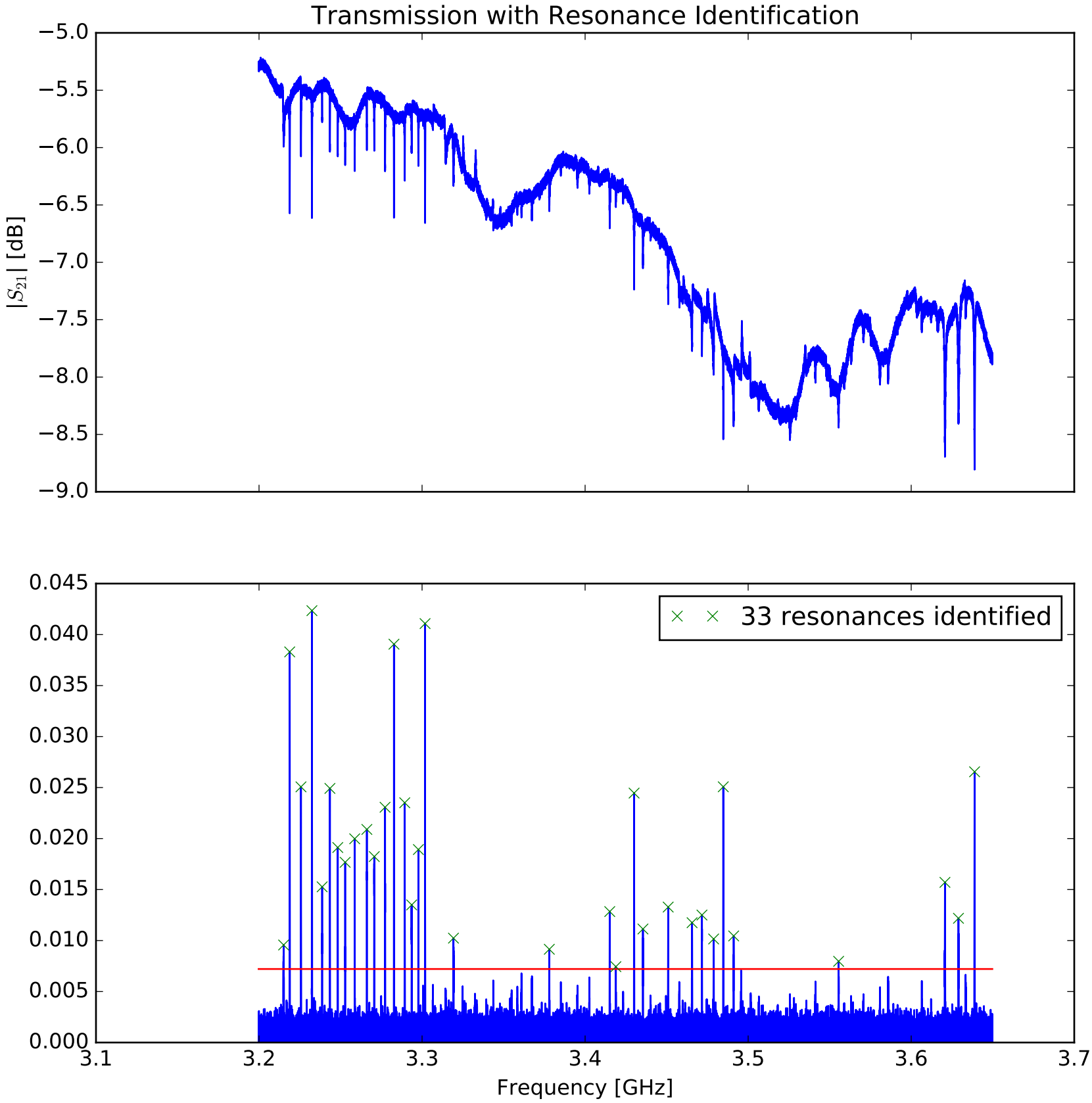
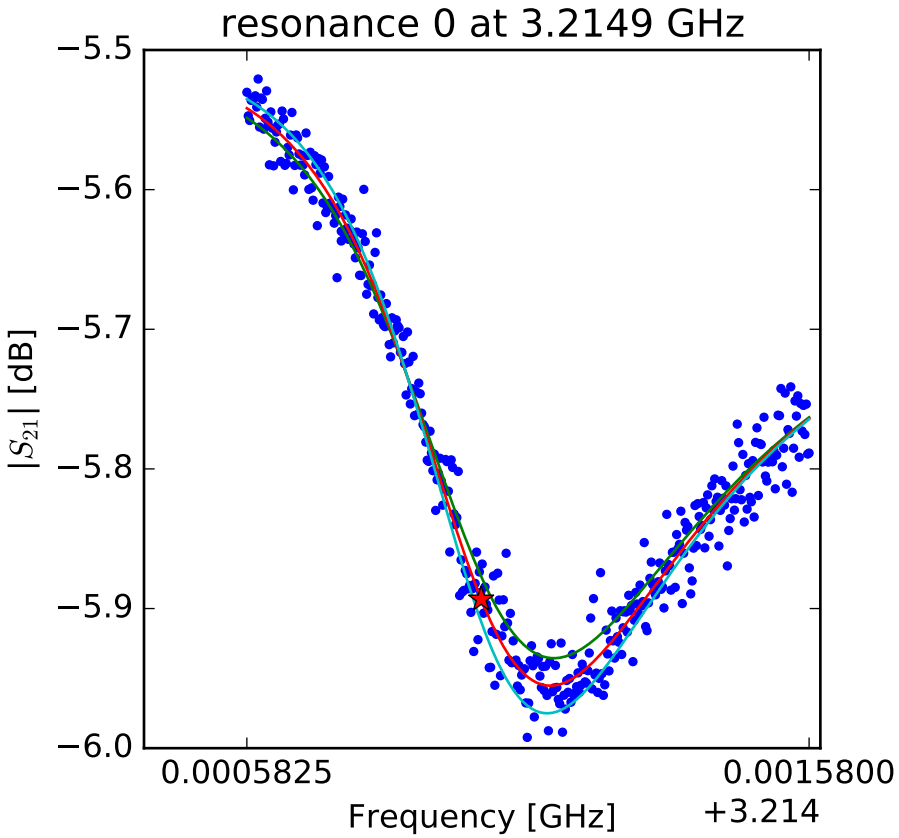
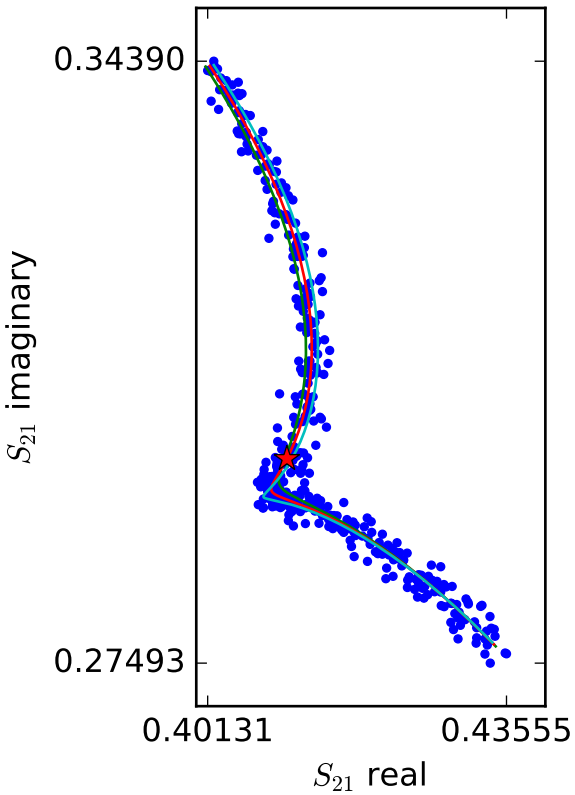
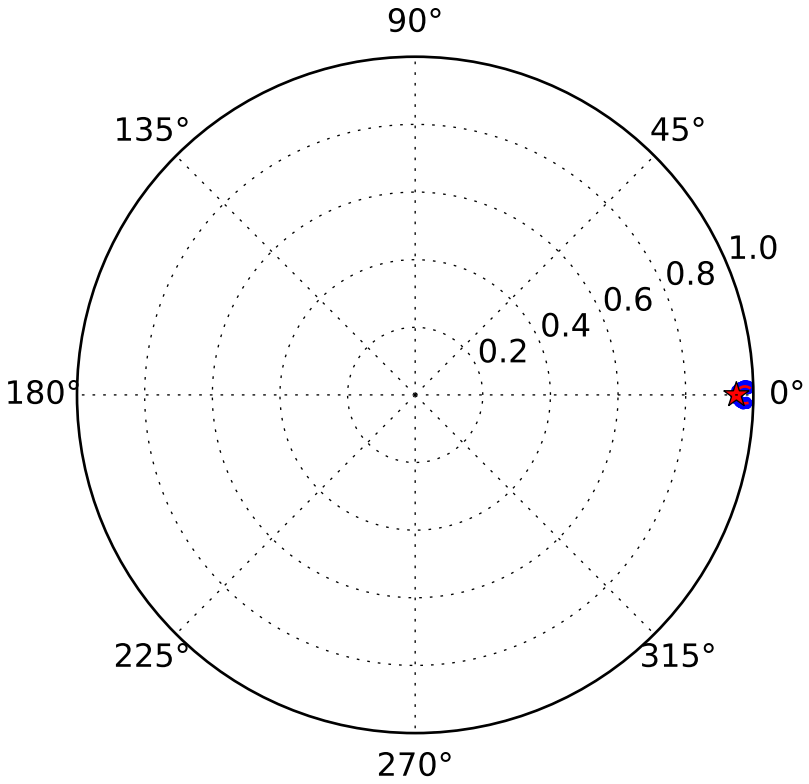
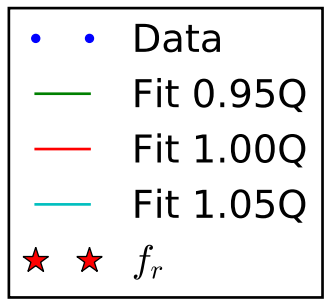

Transmission with Resonance Identification
−5.0
−5.5
−6.0
−6.5
−7.0
−7.5
−8.0
−8.5
−9.0
$|S_{21}|$ [dB]
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
33 resonances identified
3.1
3.2
3.3
3.4
3.5
3.6
3.7
Frequency [GHz]



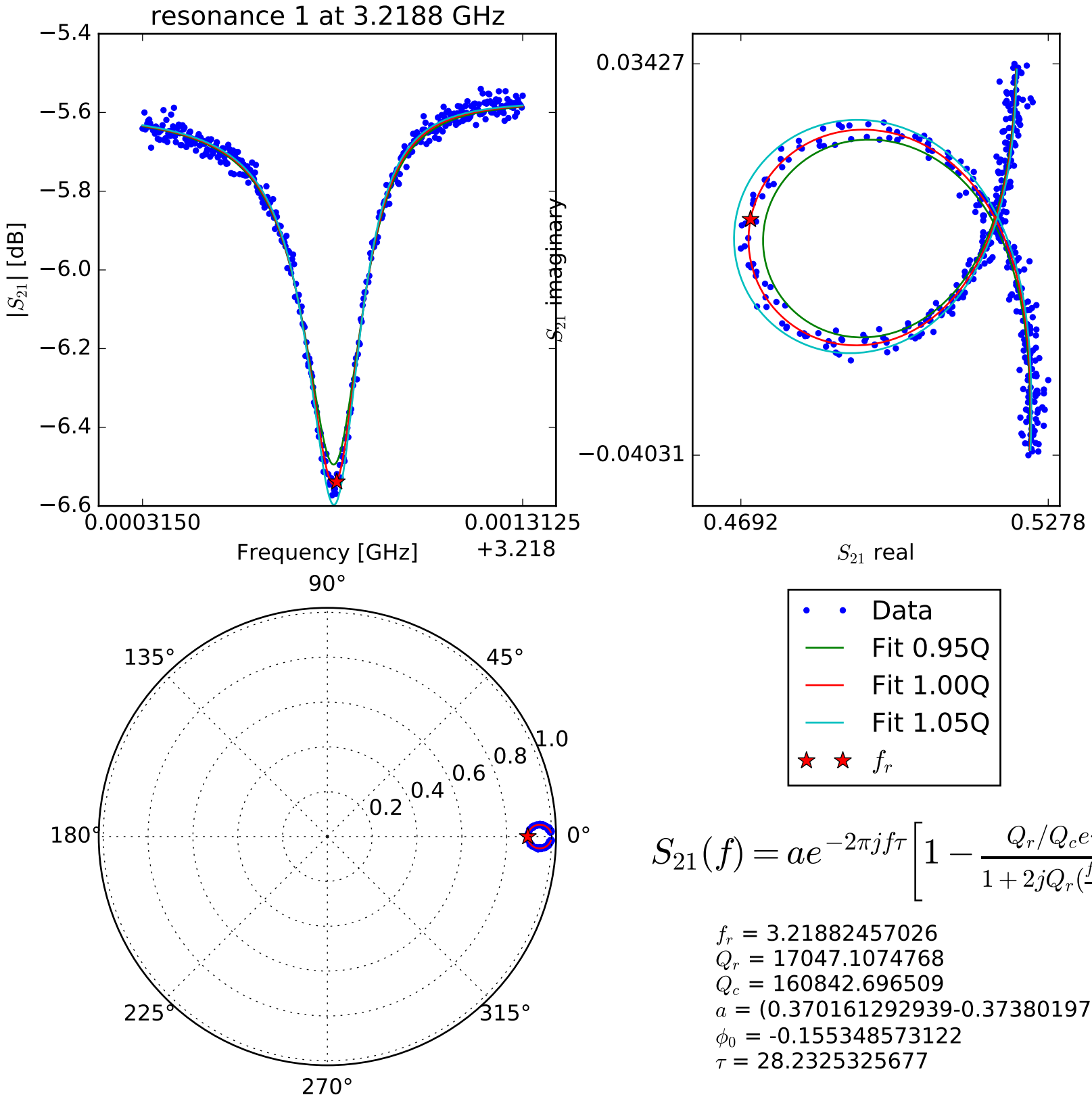






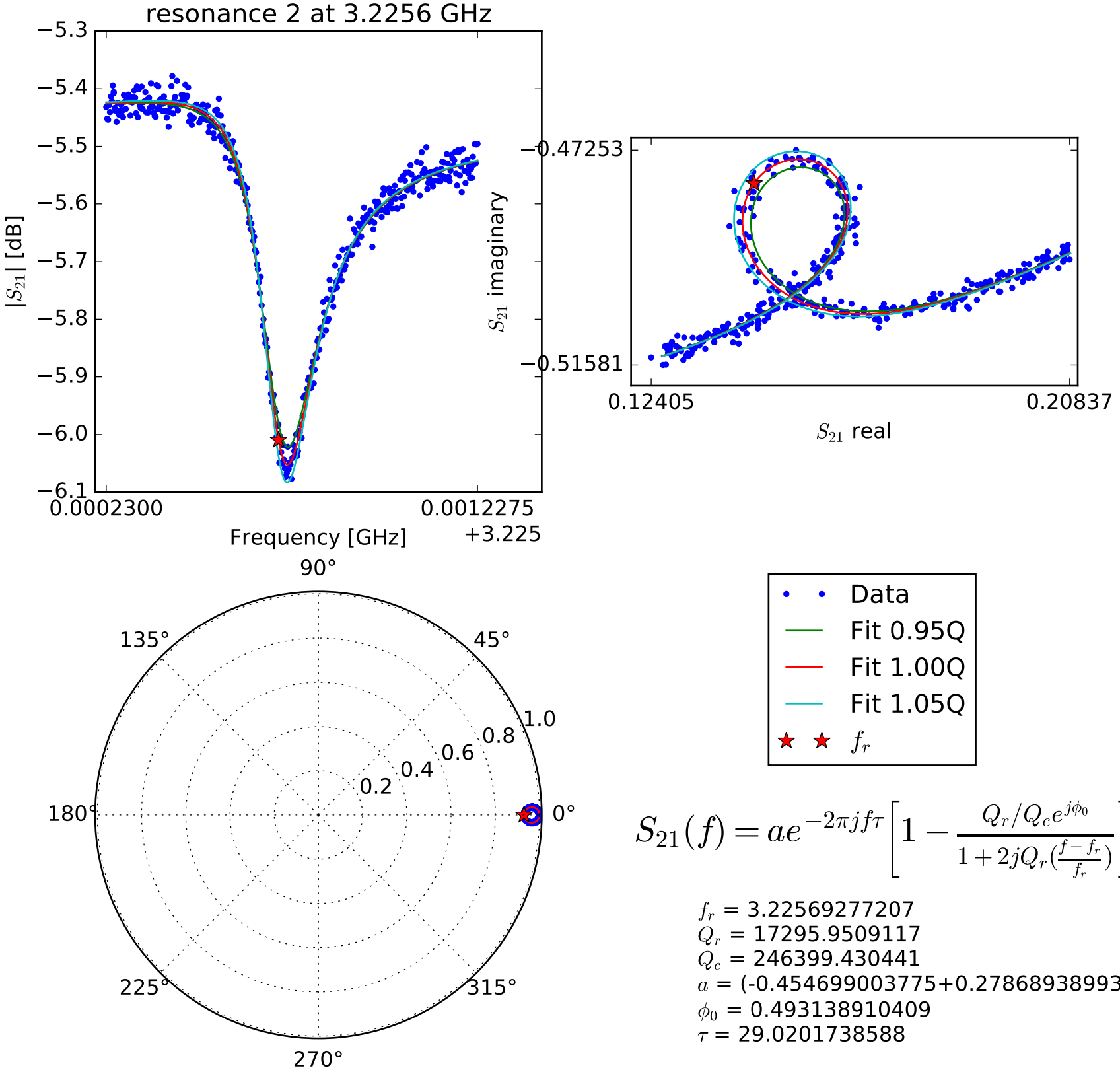
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.21499828966
Q_r = 5142.1551212
Q_c = 102549.871394
a = (0.270993090928+0.451682028164j)
ϕ_0 = 0.730861751079
τ = 28.3230054445



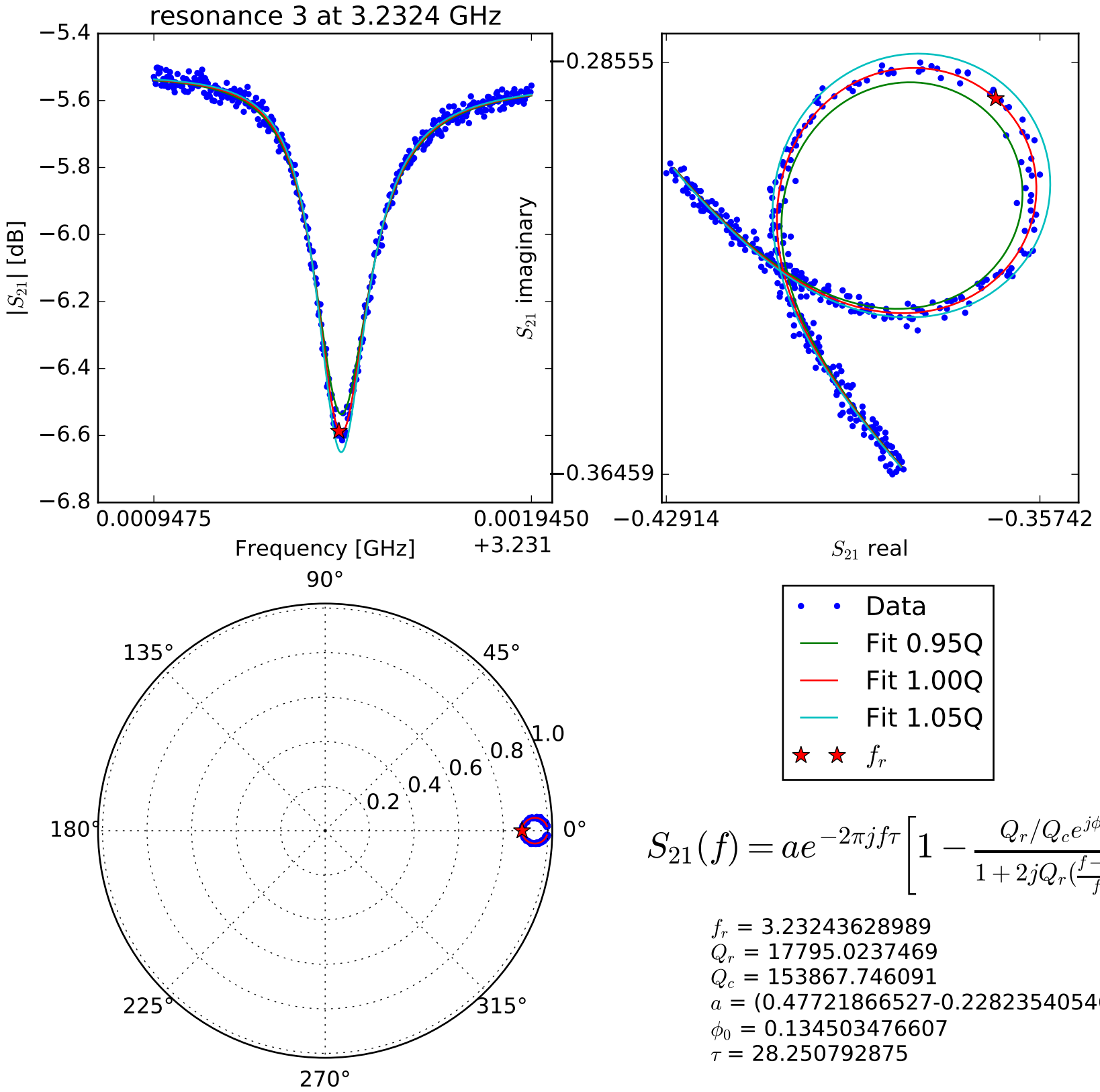
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.21882457026
Q_r = 17047.1074768
Q_c = 160842.696509
a = (0.370161292939-0.373801979777j)
ϕ_0 = -0.155348573122
τ = 28.2325325677



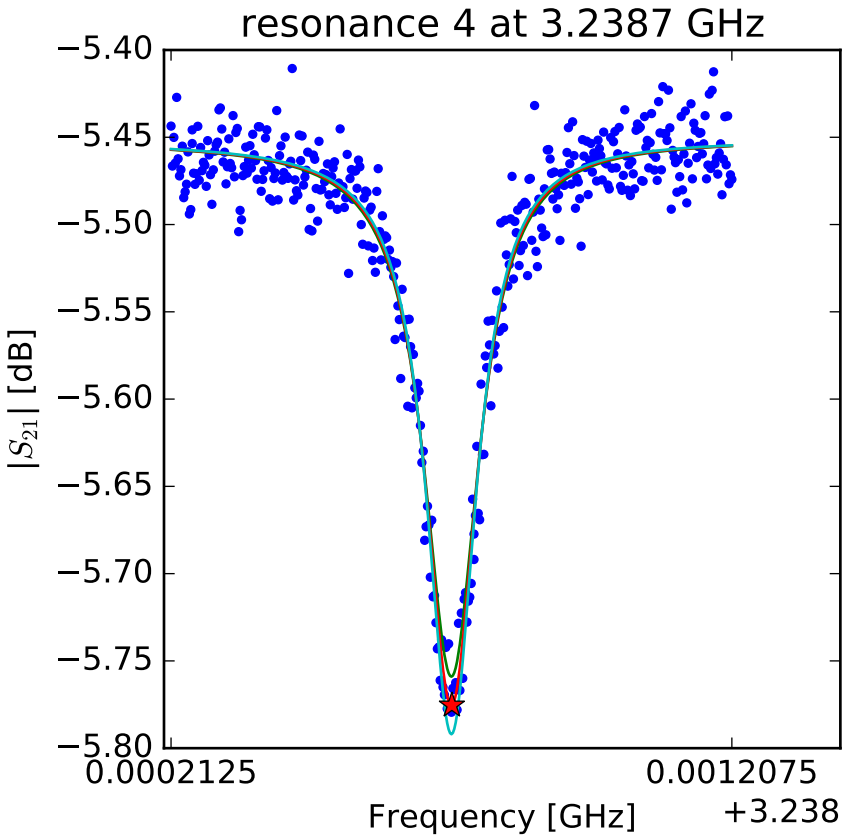
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

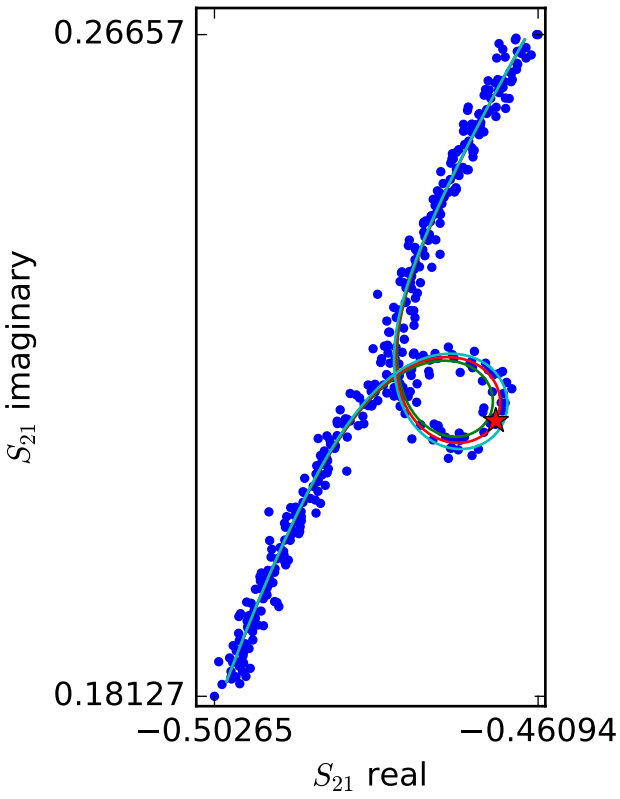
f_r = 3.22569277207
Q_r = 17295.9509117
Q_c = 246399.430441
a = (-0.454699003775+0.278689389932j)
ϕ_0 = 0.493138910409
τ = 29.0201738588

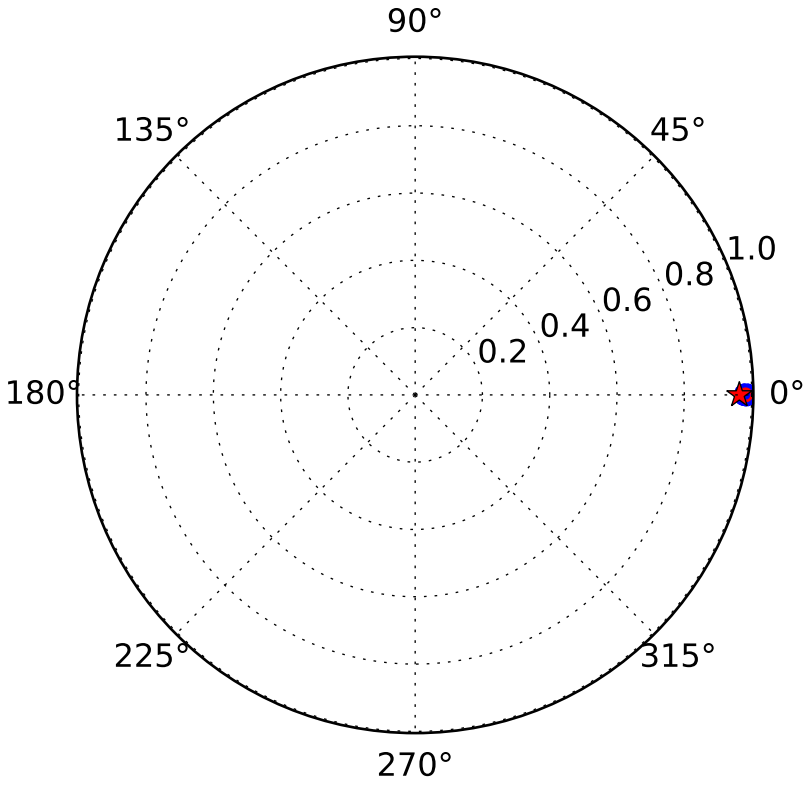


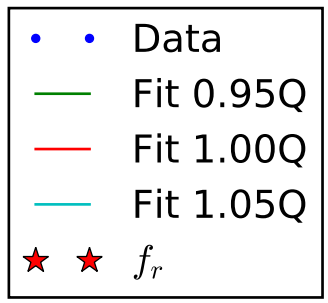
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.23243628989
Q_r = 17795.0237469
Q_c = 153867.746091
a = (0.47721866527-0.22823540546j)
ϕ_0 = 0.134503476607
τ = 28.250792875



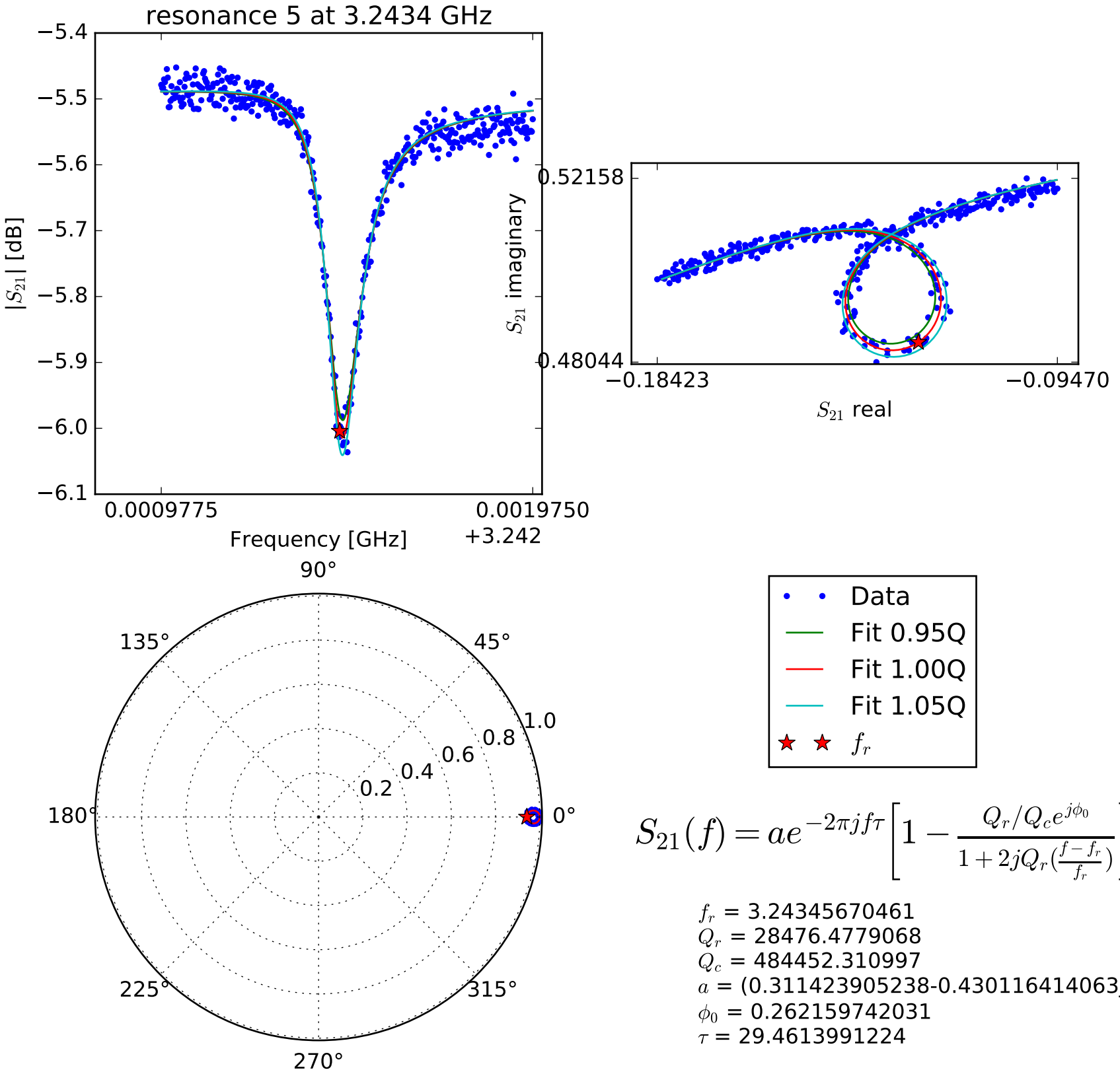






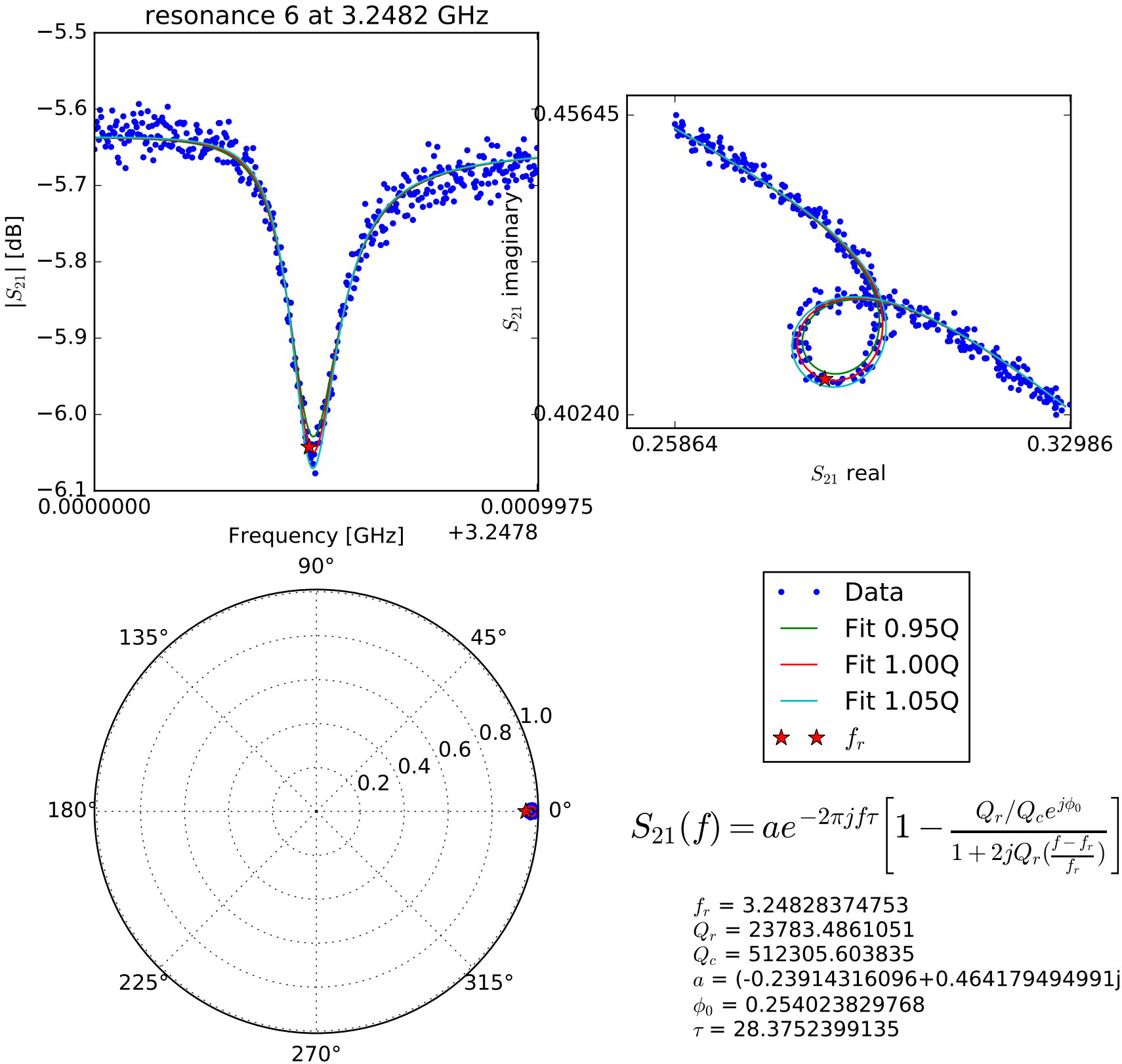
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.23871072558
Q_r = 28046.9154228
Q_c = 766370.753925
a = (-0.488601496479+0.215073832484j)
ϕ_0 = -0.0290016637711
τ = 28.7161889801



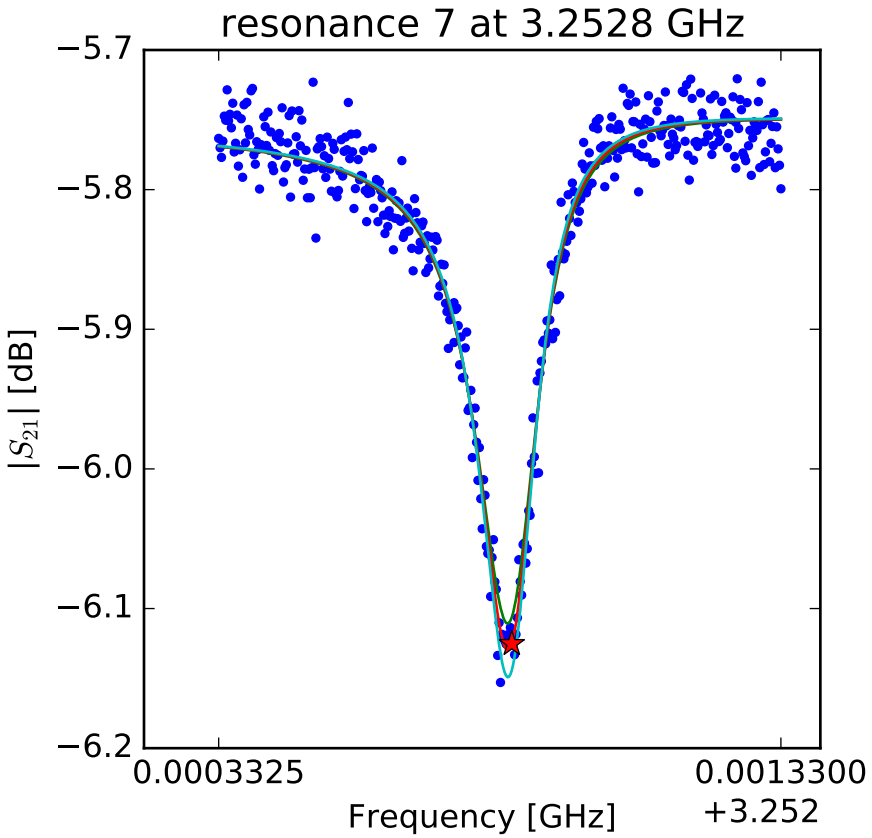
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

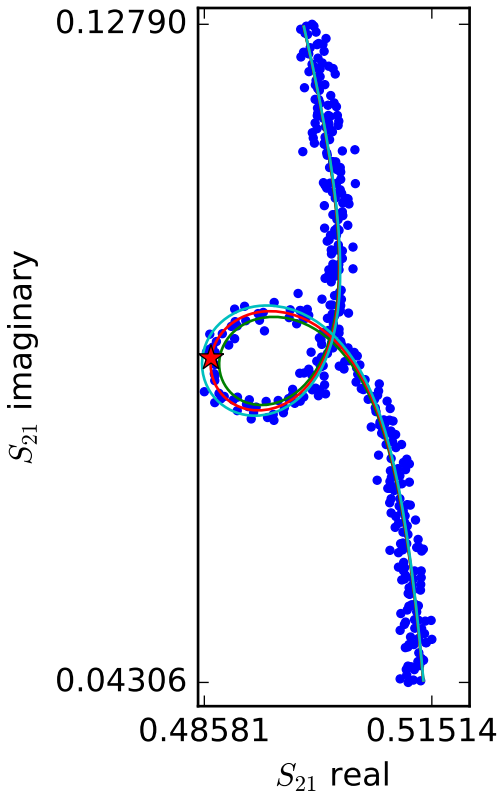
f_r = 3.24345670461
Q_r = 28476.4779068
Q_c = 484452.310997
a = (0.311423905238-0.430116414063j)
ϕ_0 = 0.262159742031
τ = 29.4613991224

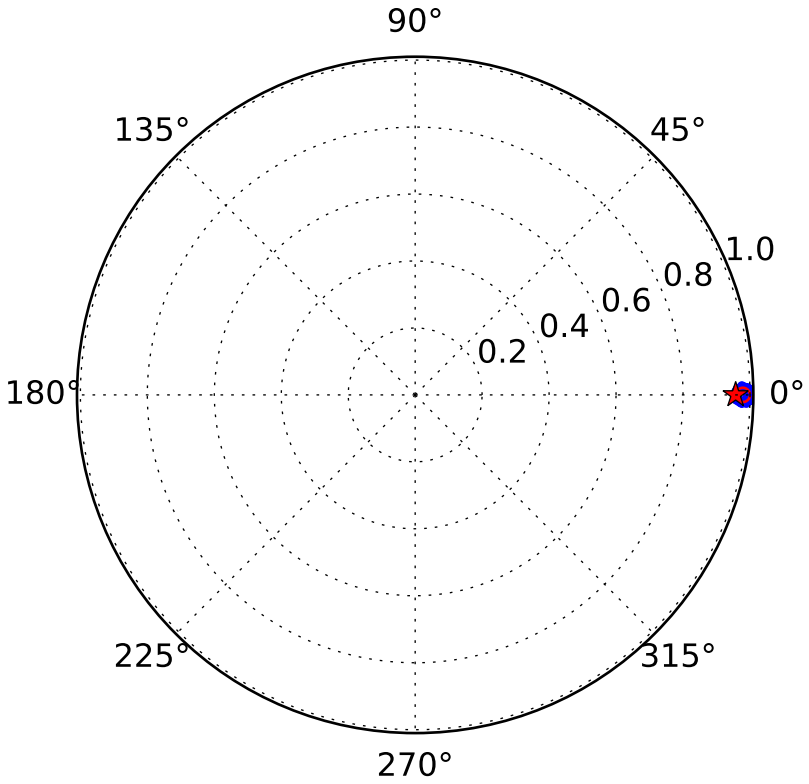


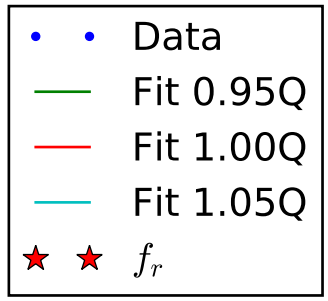
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.24828374753
Q_r = 23783.4861051
Q_c = 512305.603835
a = (-0.23914316096+0.464179494991j)
ϕ_0 = 0.254023829768
τ = 28.3752399135



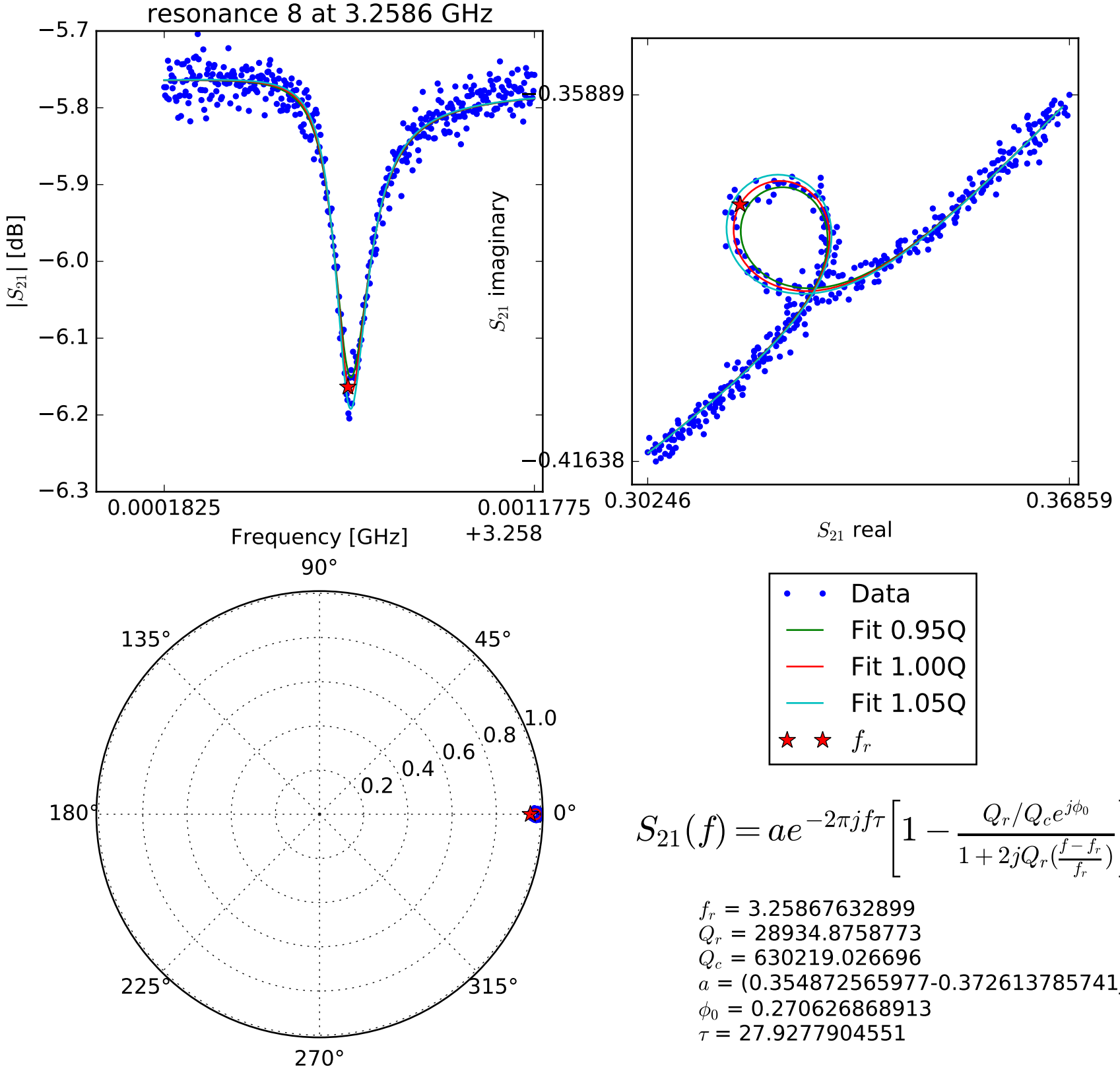






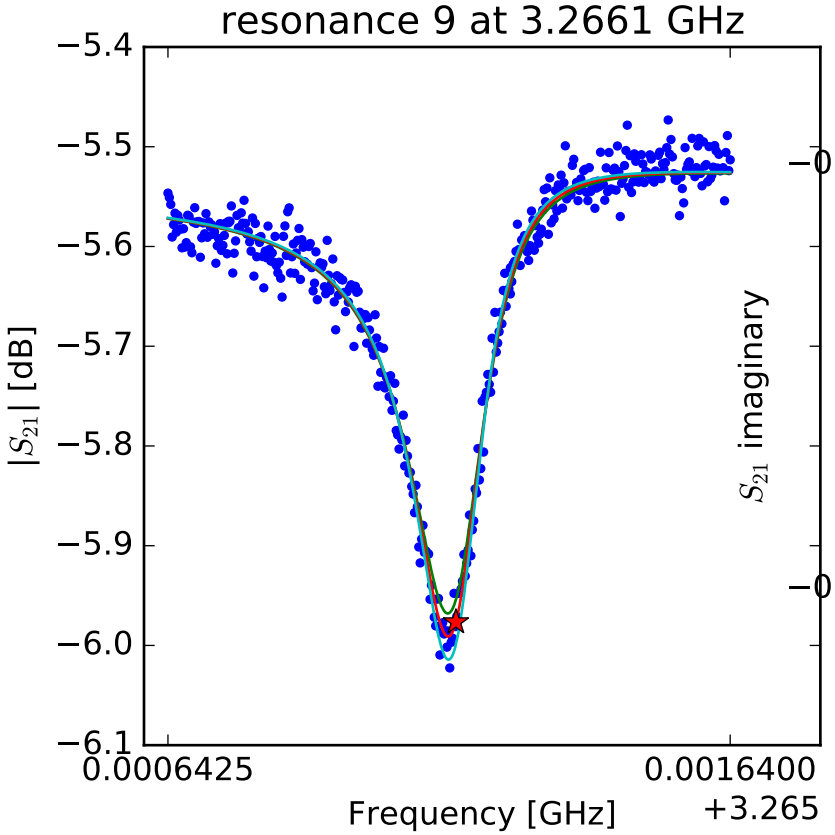
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

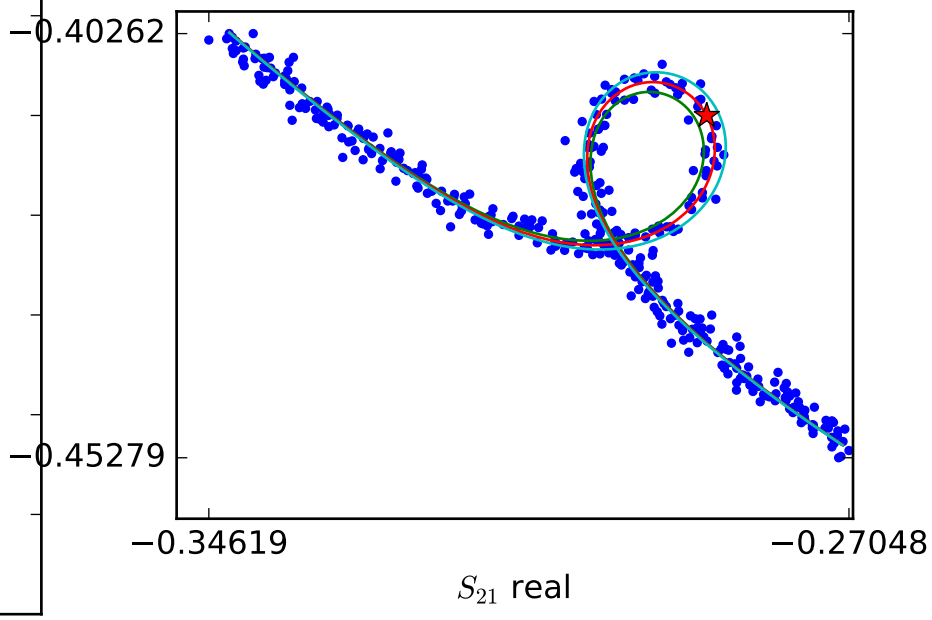
f_r = 3.25285258309
Q_r = 24950.0203742
Q_c = 581377.878529
a = (0.506391843492+0.097058475172j)
ϕ_0 = -0.215075470076
τ = 28.2841520312

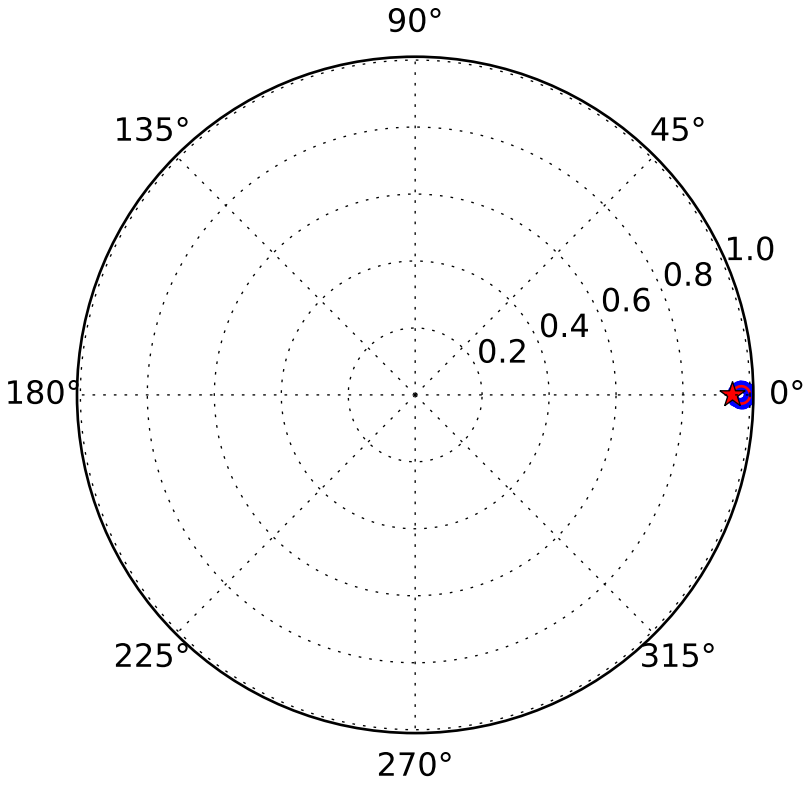


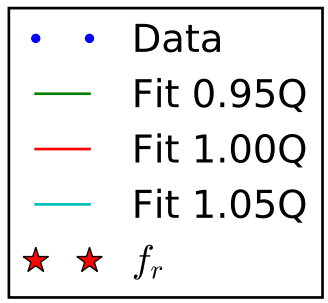
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.25867632899
Q_r = 28934.8758773
Q_c = 630219.026696
a = (0.354872565977-0.372613785741j)
ϕ_0 = 0.270626868913
τ = 27.9277904551



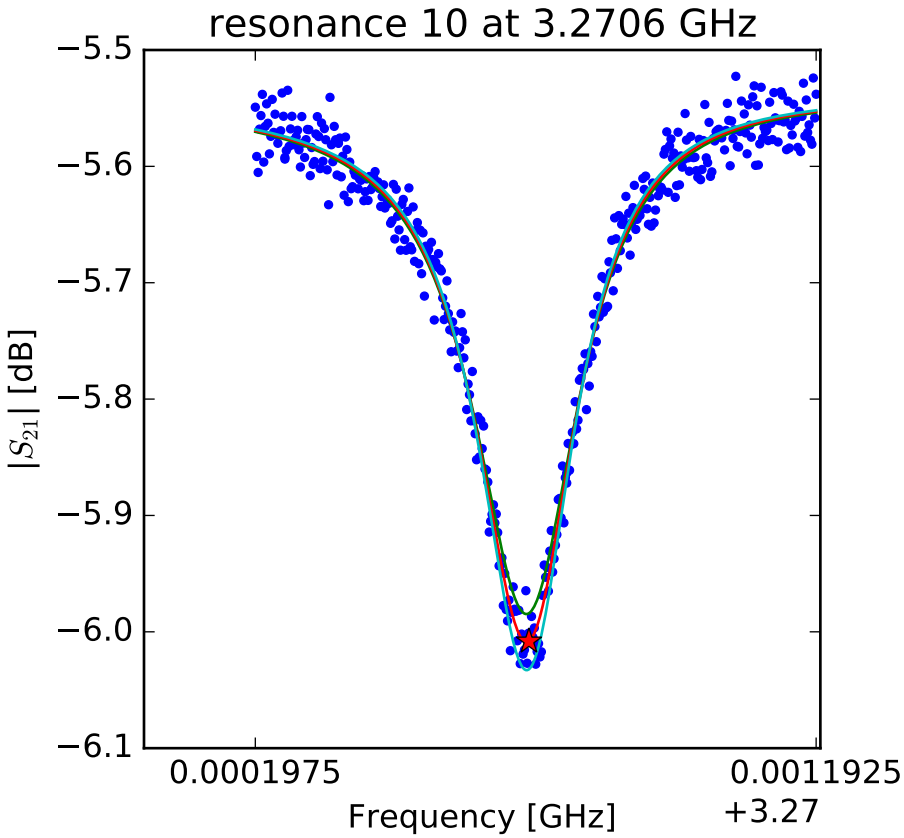


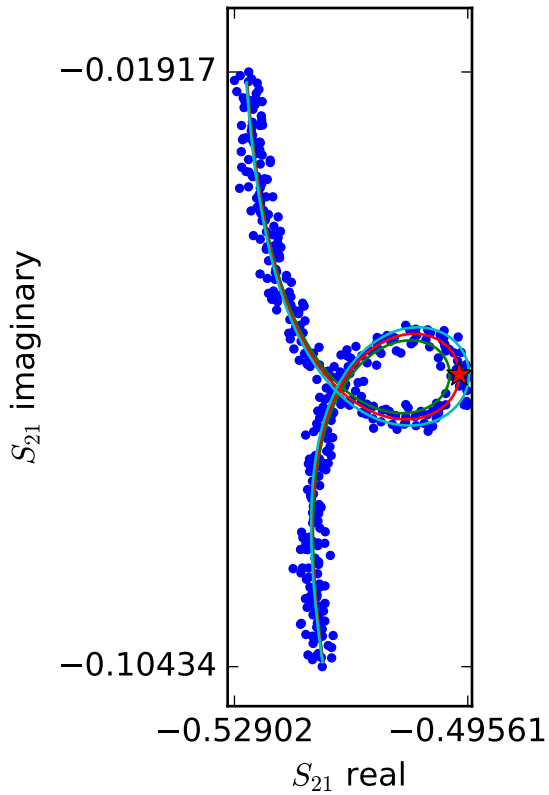


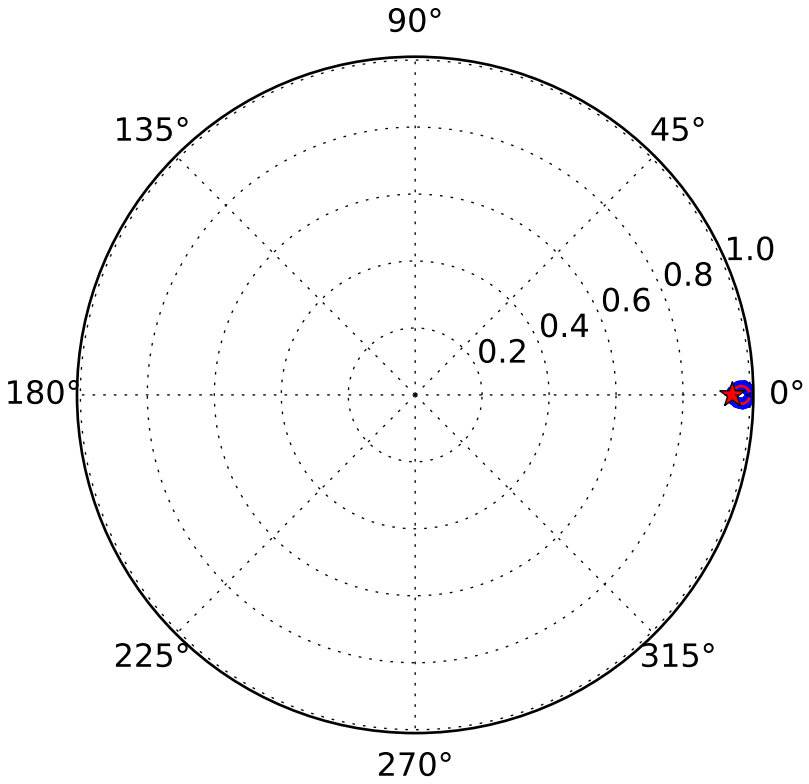


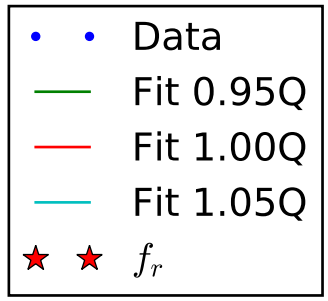
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.26615344758
Q_r = 20671.7782977
Q_c = 395845.379091
a = (0.51218179412-0.130303311919j)
ϕ_0 = -0.338063484164
τ = 28.8749772892



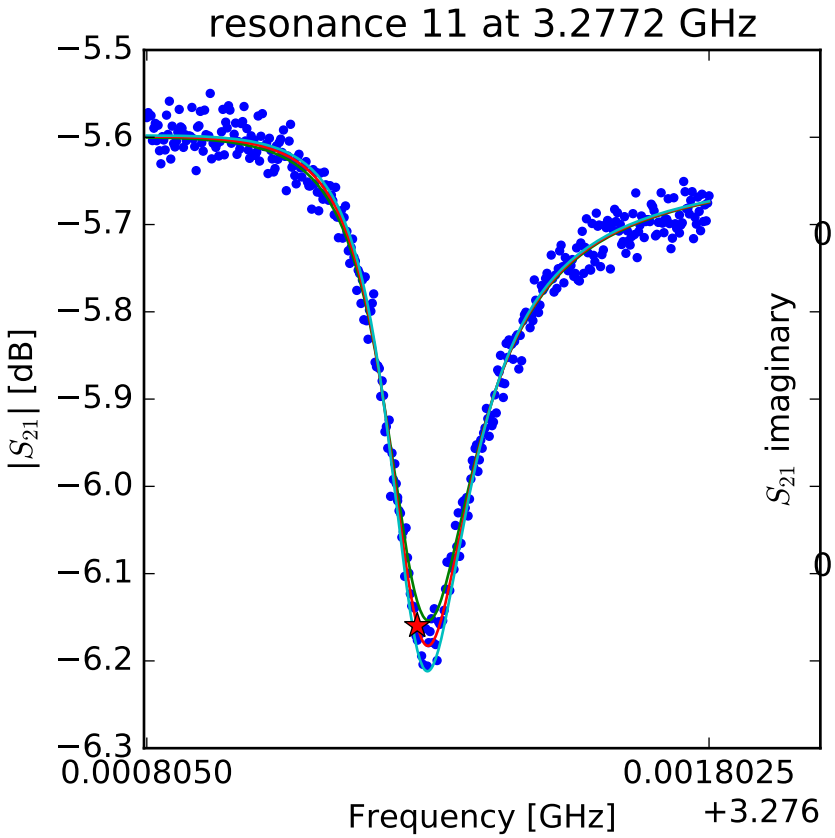


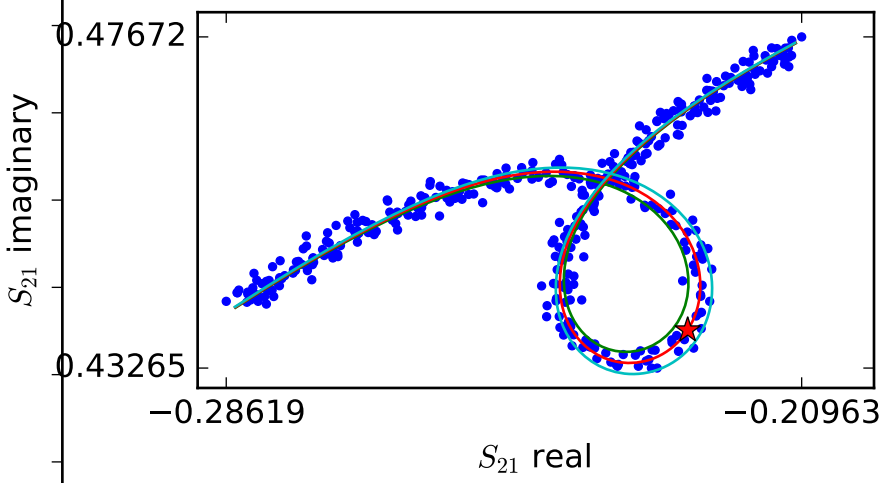


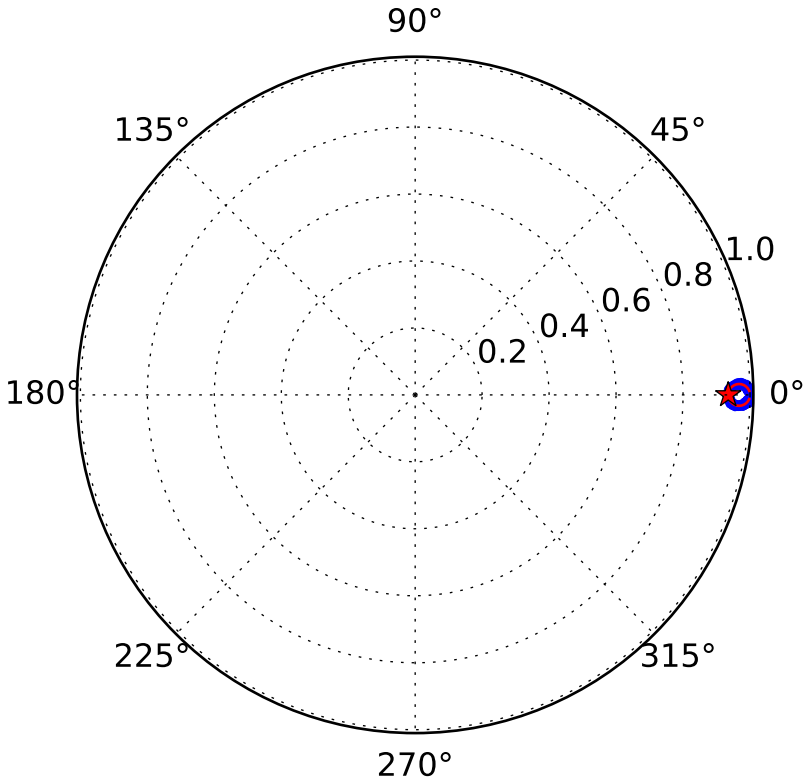


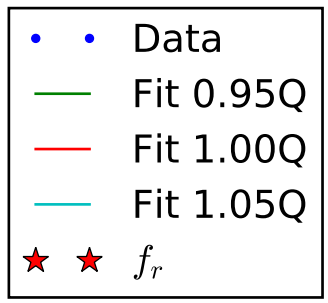
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.27068296315
Q_r = 14657.4622299
Q_c = 278269.1948
a = (-0.499247290915+0.173317107251j)
ϕ_0 = -0.0739470823129
τ = 29.0237753007



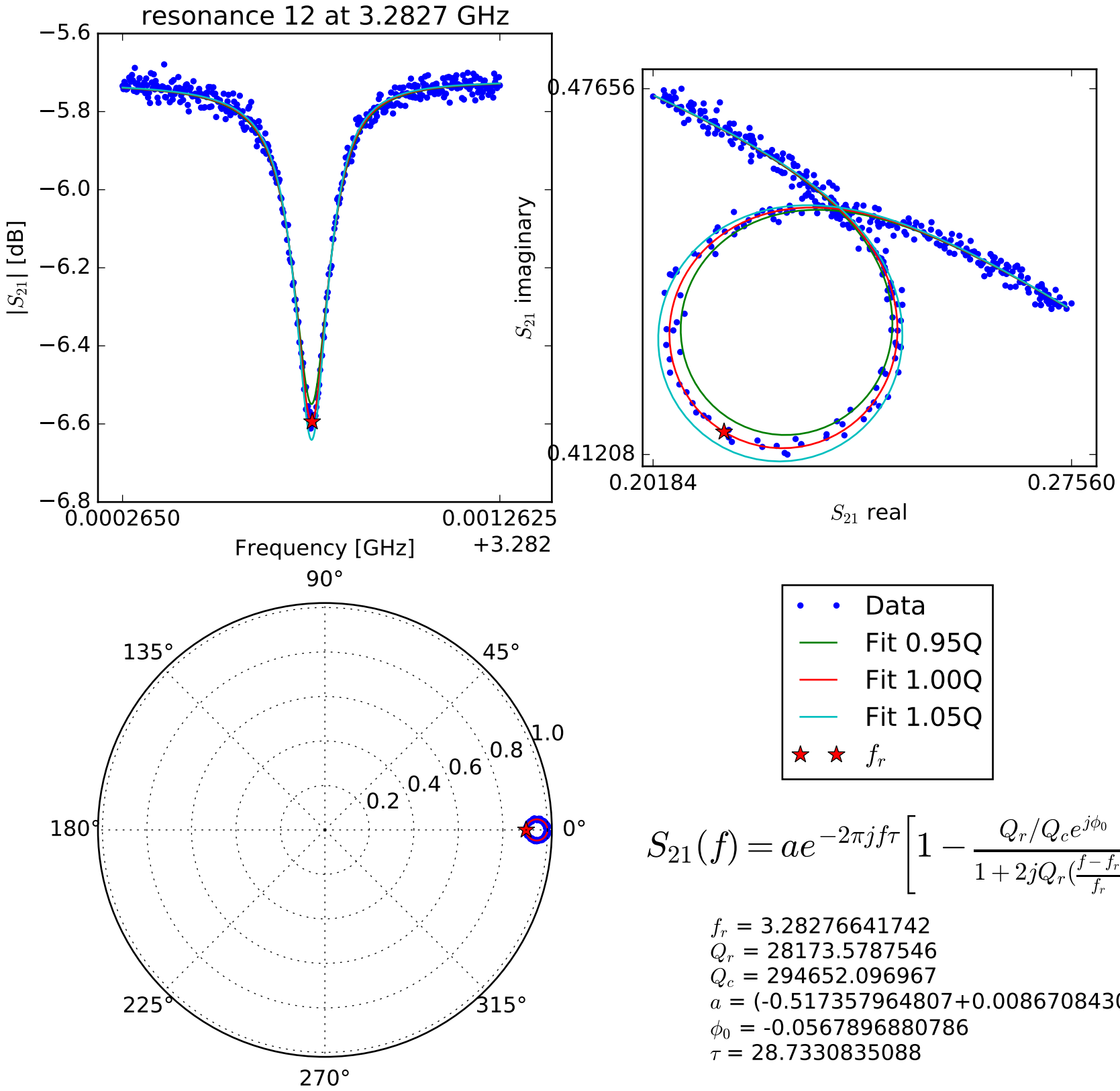






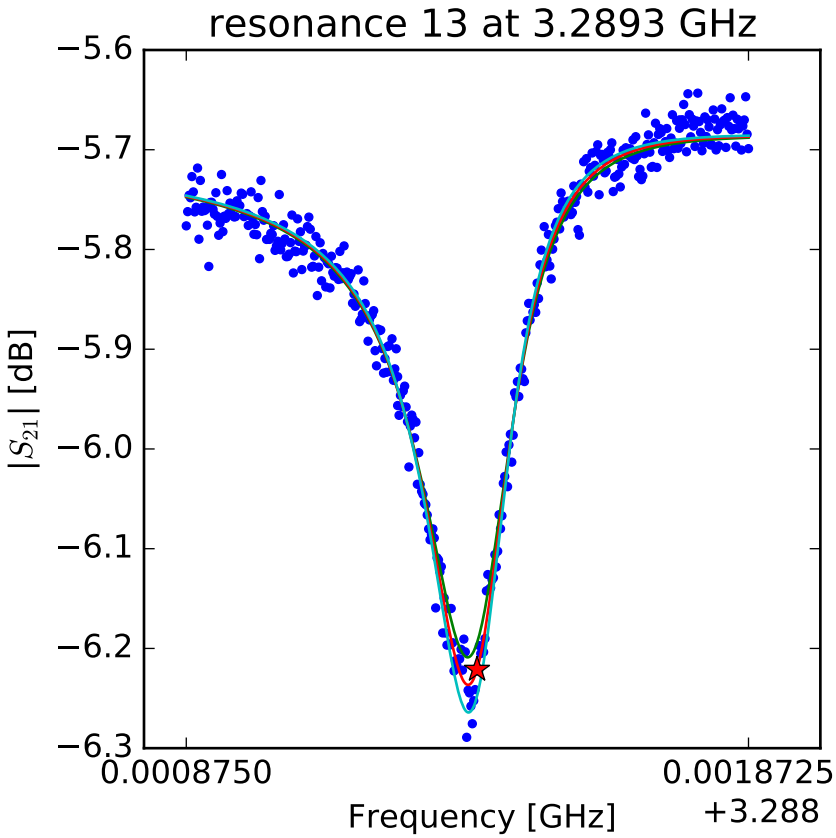
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

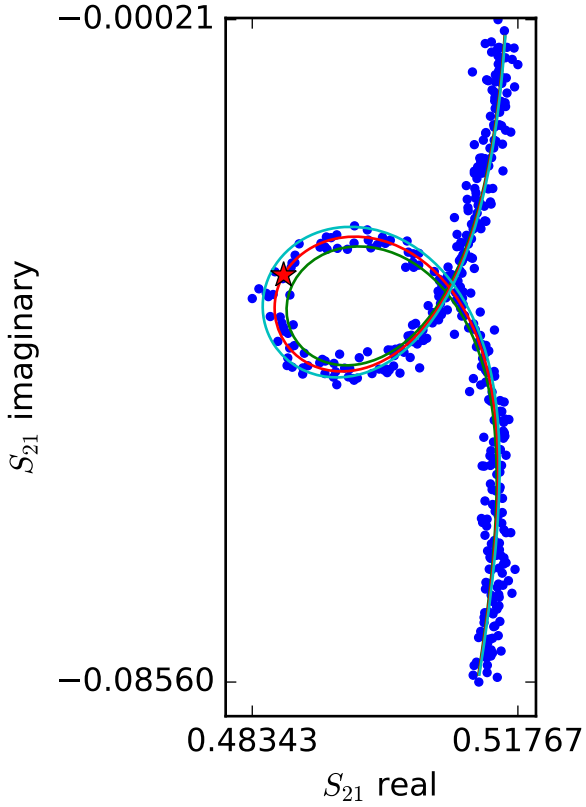
f_r = 3.27728479723
Q_r = 16996.2753231
Q_c = 260894.524031
a = (-0.266056818215-0.451010824878j)
ϕ_0 = 0.375037674459
τ = 28.7846887946

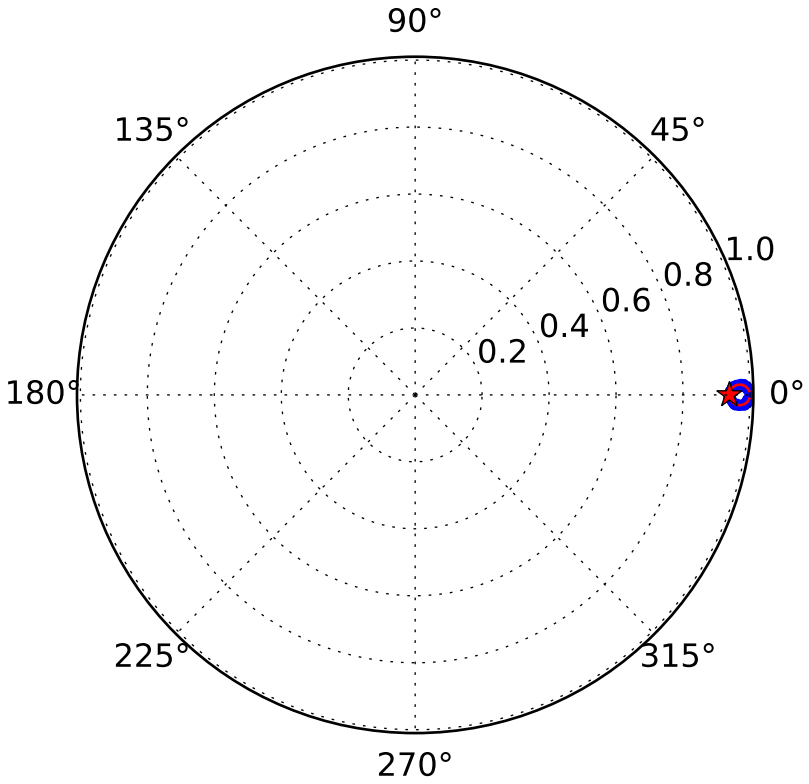


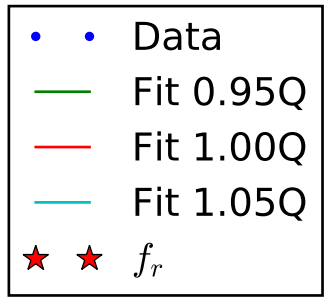
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.28276641742
Q_r = 28173.5787546
Q_c = 294652.096967
a = (-0.517357964807+0.0086708430082j)
ϕ_0 = -0.0567896880786
τ = 28.7330835088



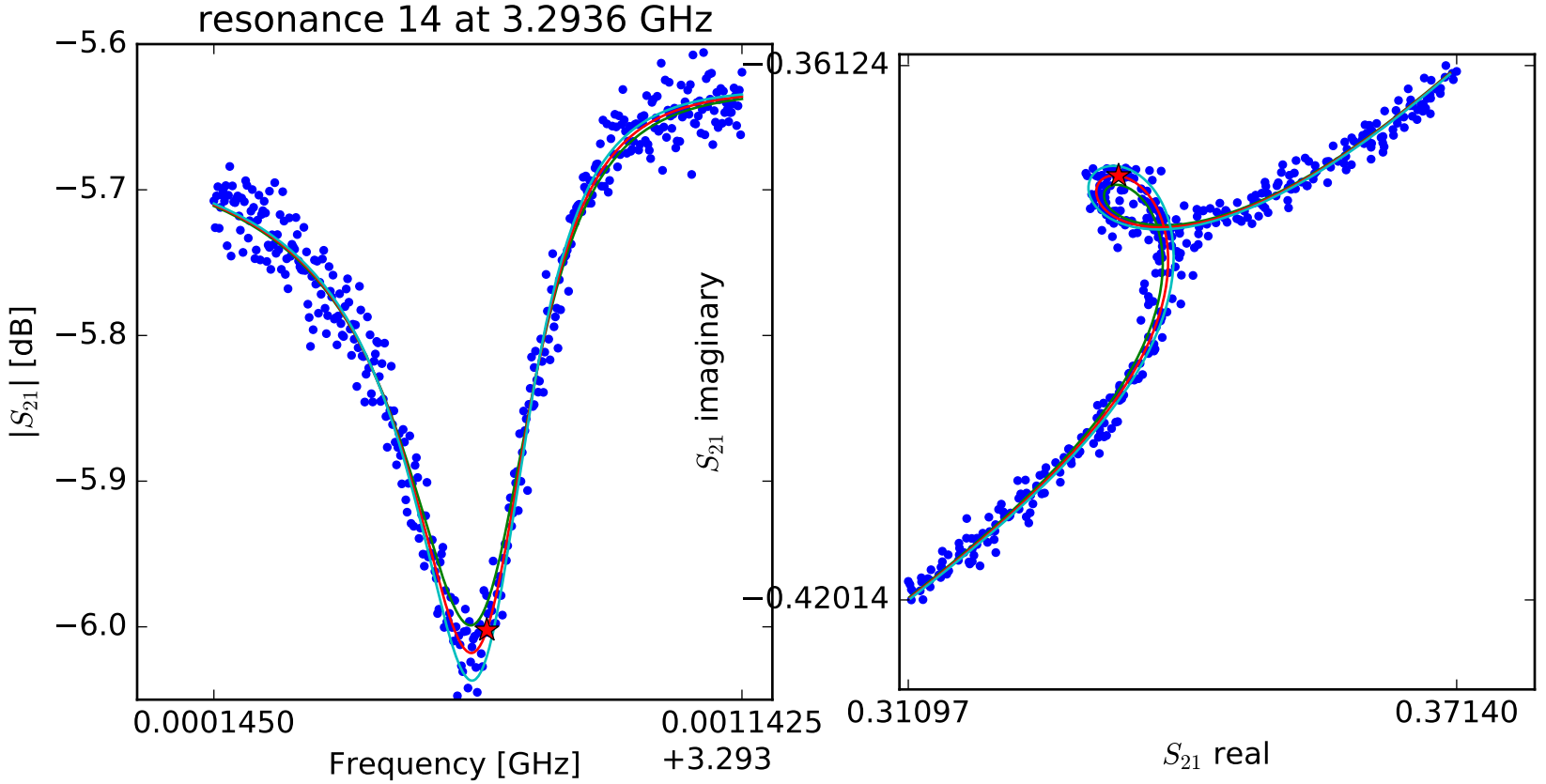


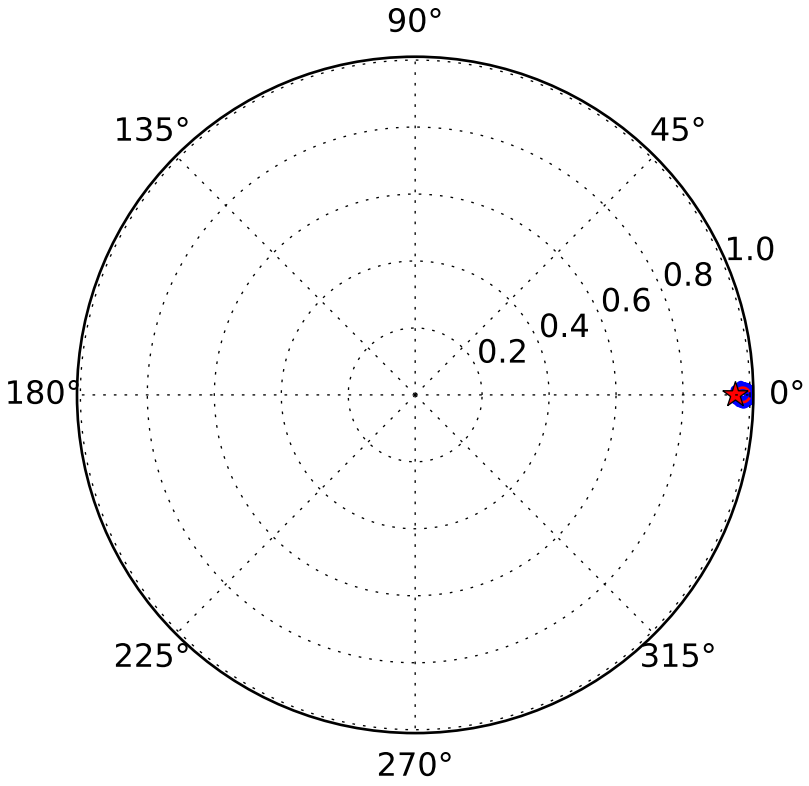


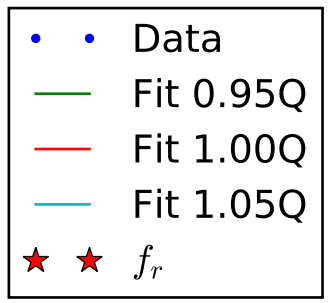


$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.28939091028
Q_r = 17078.6780593
Q_c = 277759.885545
a = (0.478534599643-0.200403283033j)
ϕ_0 = -0.316745033255
τ = 28.8658053646

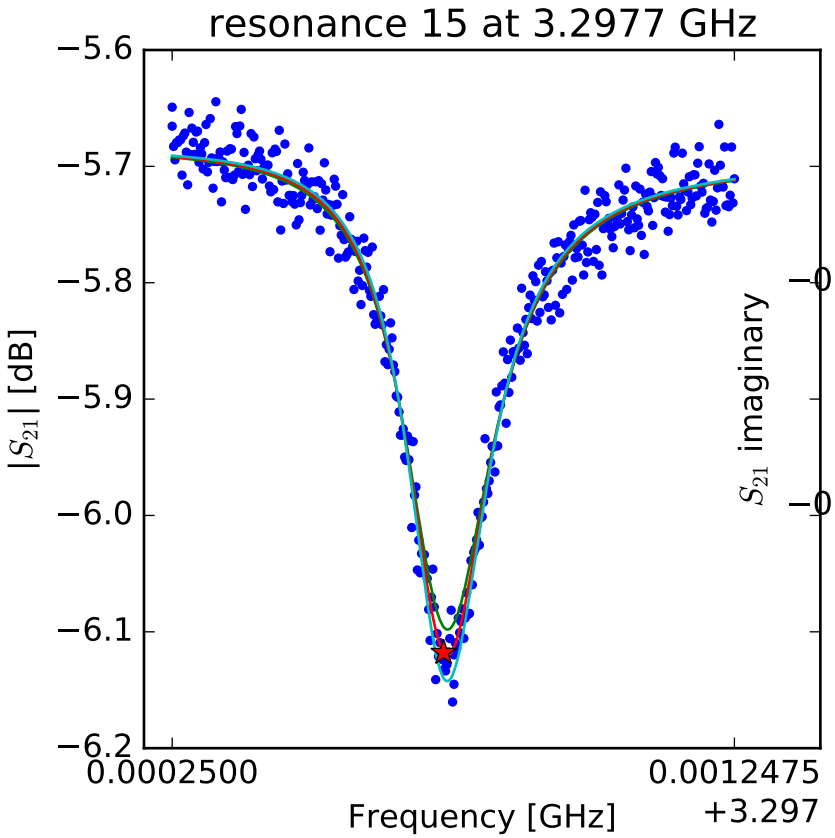


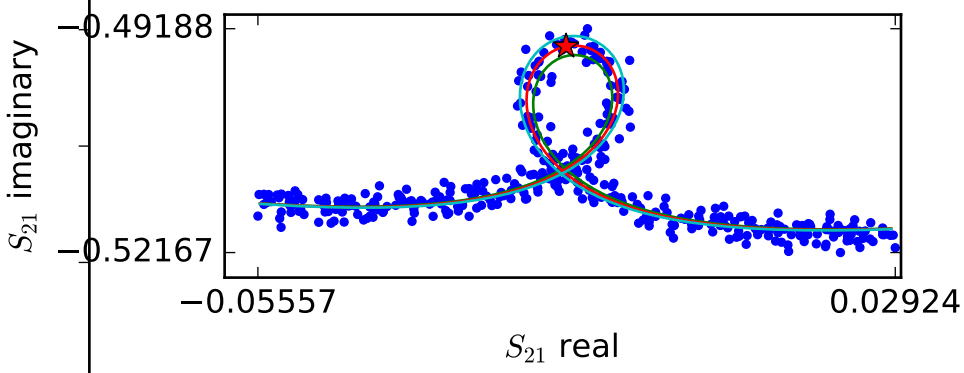


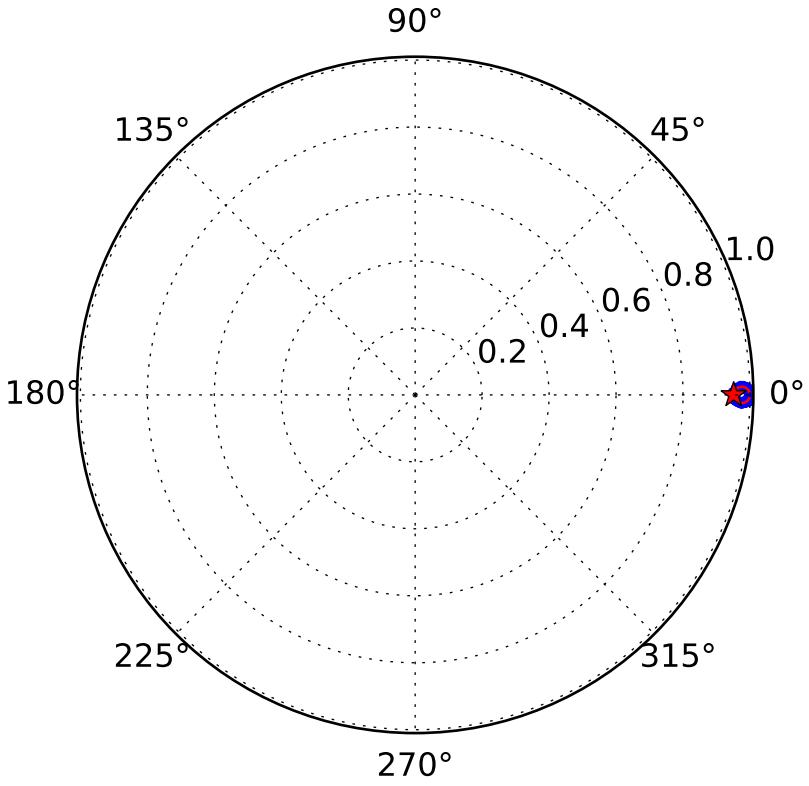


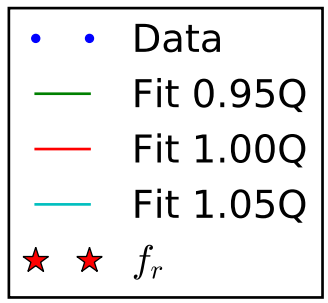
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.29366059753
Q_r = 11338.7864056
Q_c = 260982.386467
a = (0.520137375569+0.0435577107815j)
ϕ_0 = -0.390148889446
τ = 28.8887844812



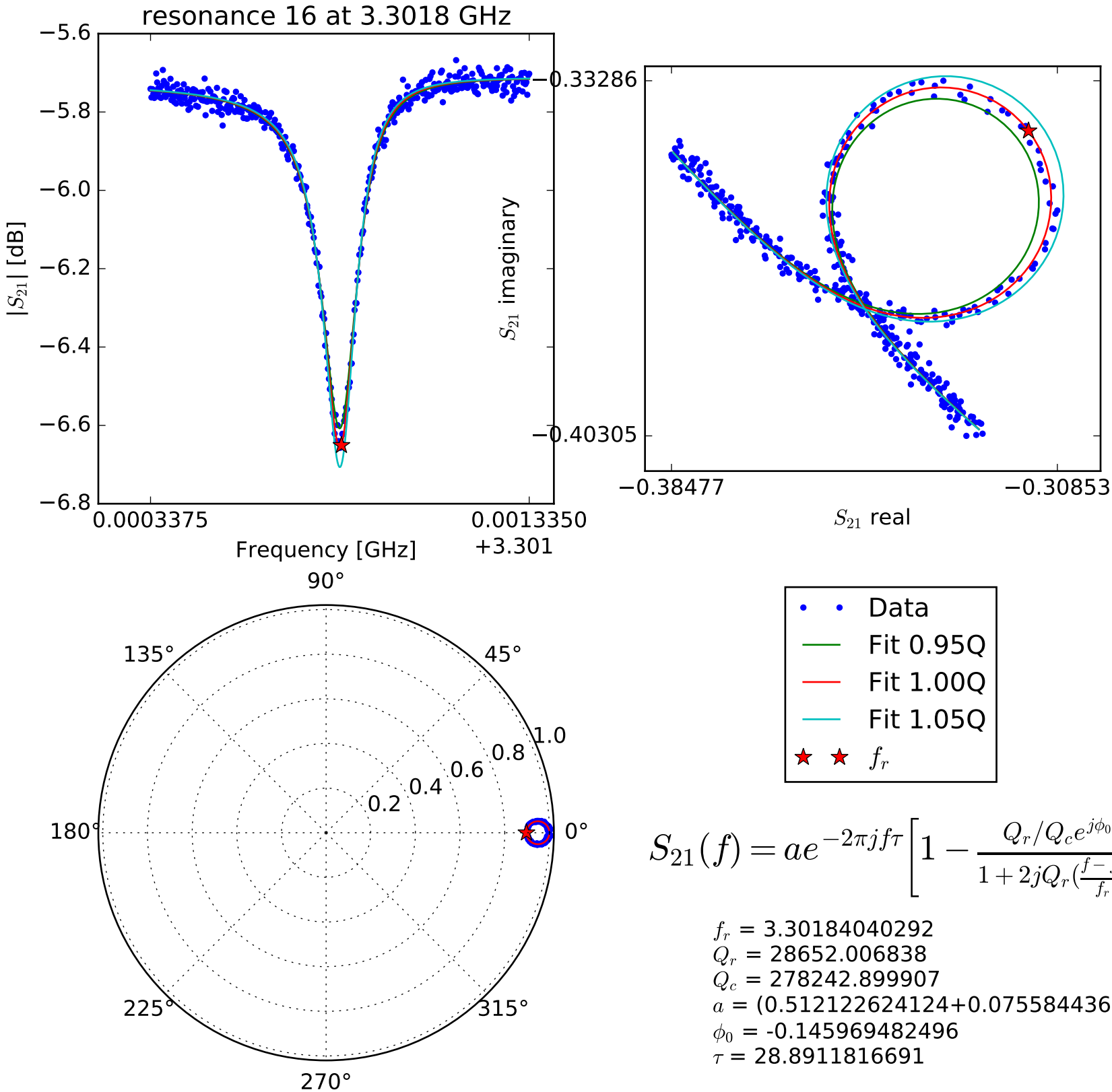






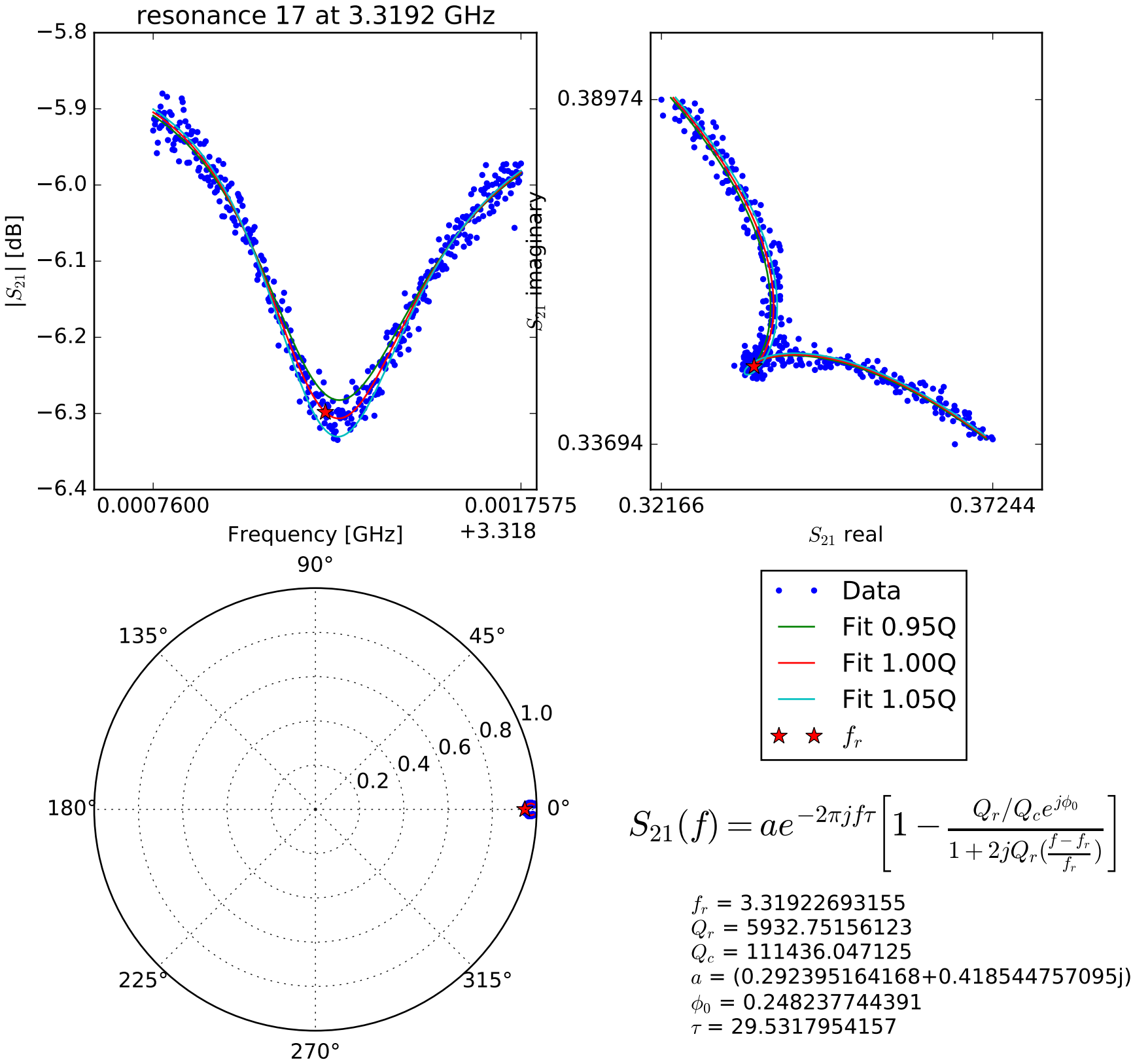
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.29773147543
Q_r = 17589.3664797
Q_c = 360349.606424
a = (-0.259249094875+0.45022043766j)
ϕ_0 = 0.141924236396
τ = 28.6823488831



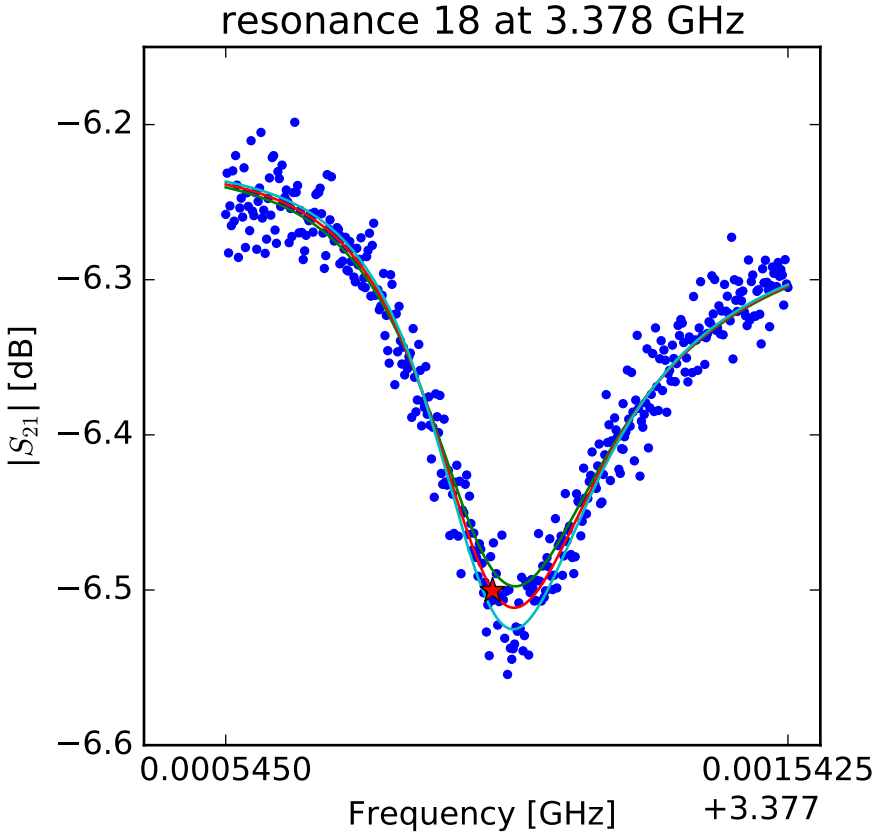
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

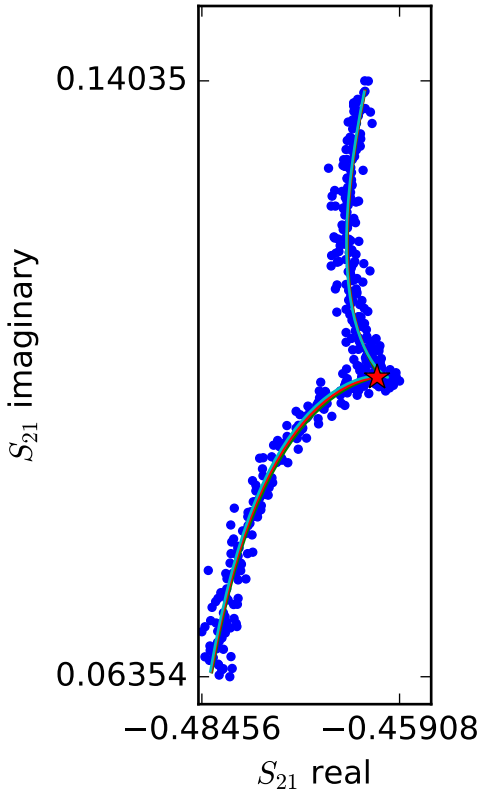
f_r = 3.30184040292
Q_r = 28652.006838
Q_c = 278242.899907
a = (0.512122624124+0.075584436862j)
ϕ_0 = -0.145969482496
τ = 28.8911816691

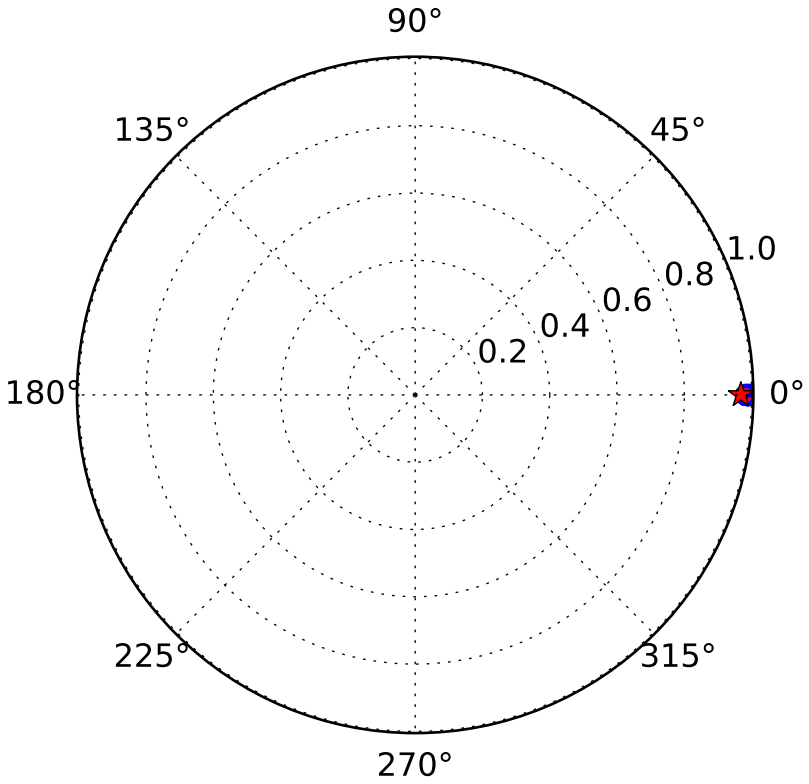


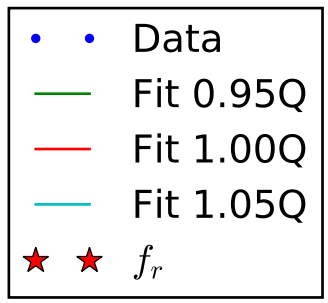
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.31922693155
Q_r = 5932.75156123
Q_c = 111436.047125
a = (0.292395164168+0.418544757095j)
ϕ_0 = 0.248237744391
τ = 29.5317954157



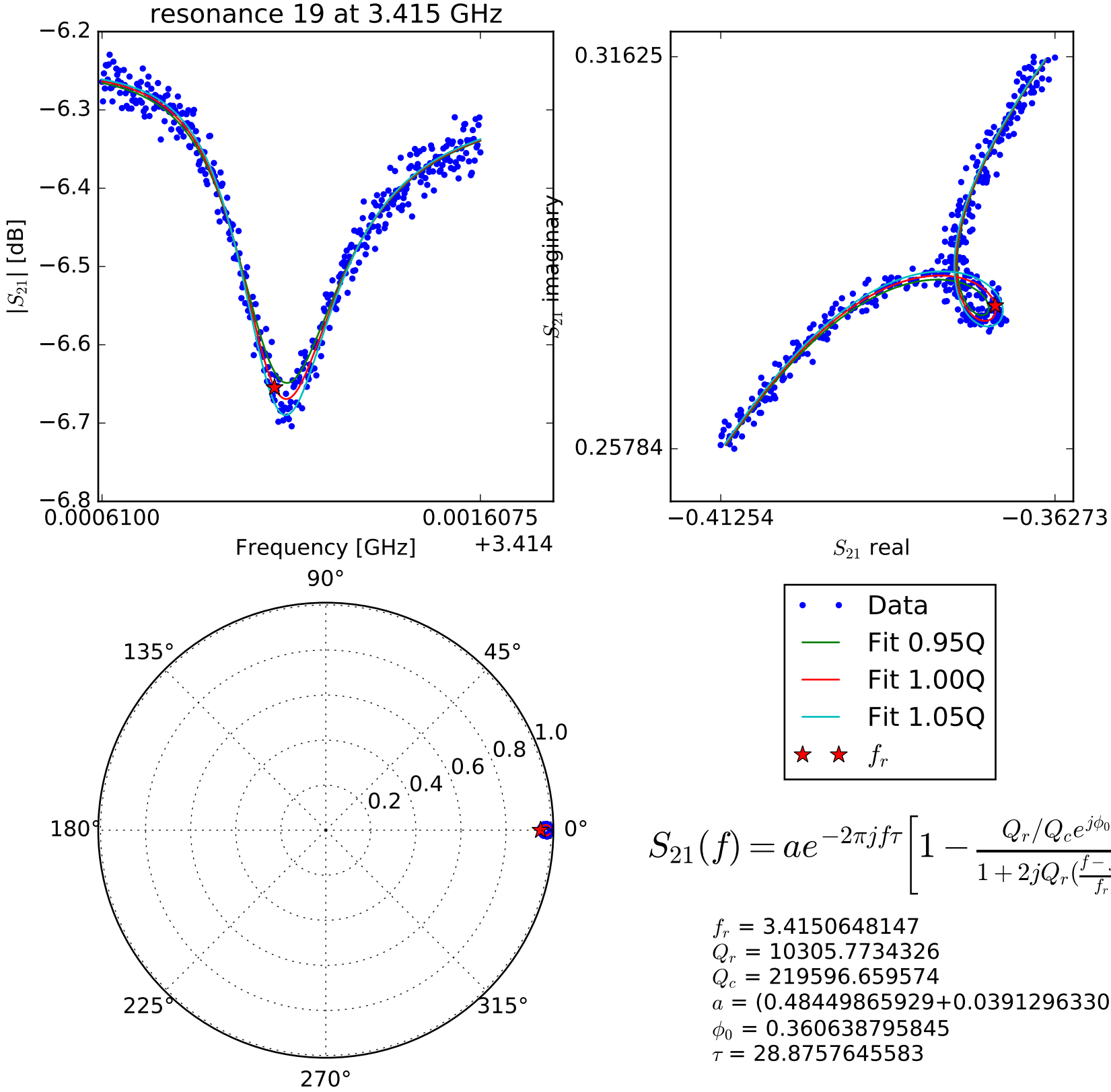






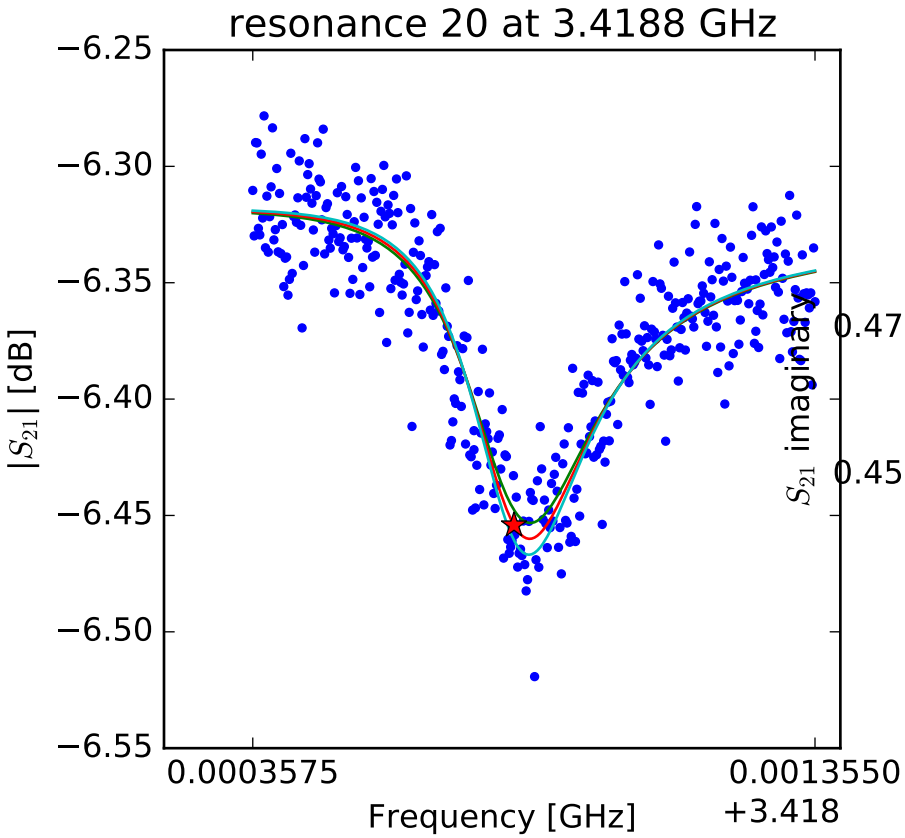
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

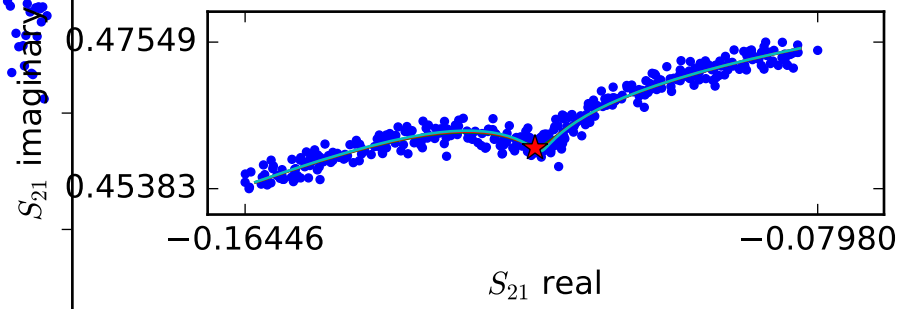
f_r = 3.37801841685
Q_r = 8737.26760702
Q_c = 272359.931921
a = (-0.215719092939+0.437270118019j)
ϕ_0 = 0.385716545712
τ = 28.6723113683

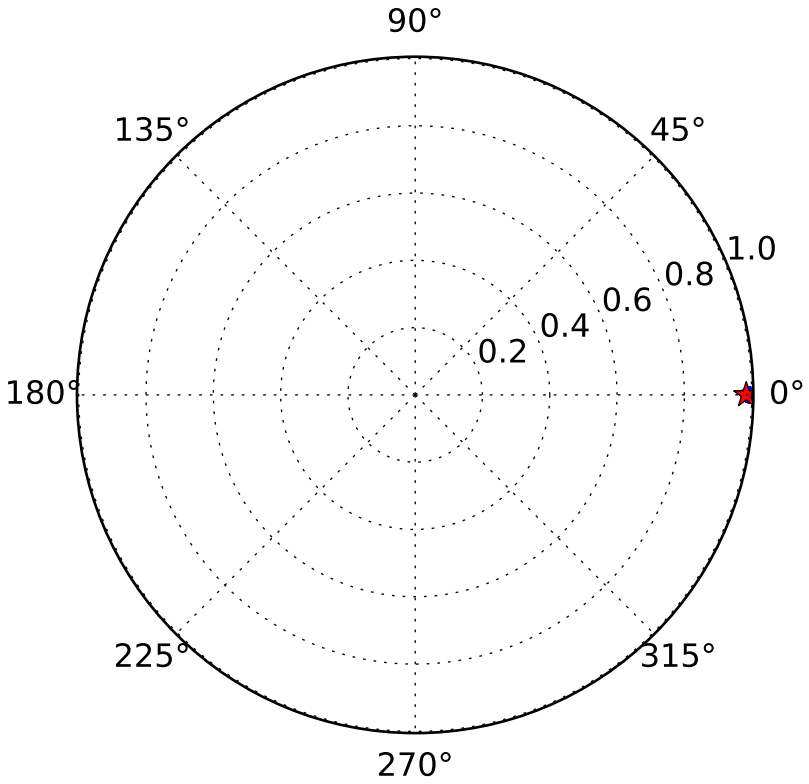


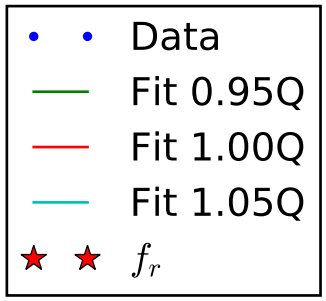
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.4150648147
Q_r = 10305.7734326
Q_c = 219596.659574
a = (0.48449865929+0.039129633062j)
ϕ_0 = 0.360638795845
τ = 28.8757645583



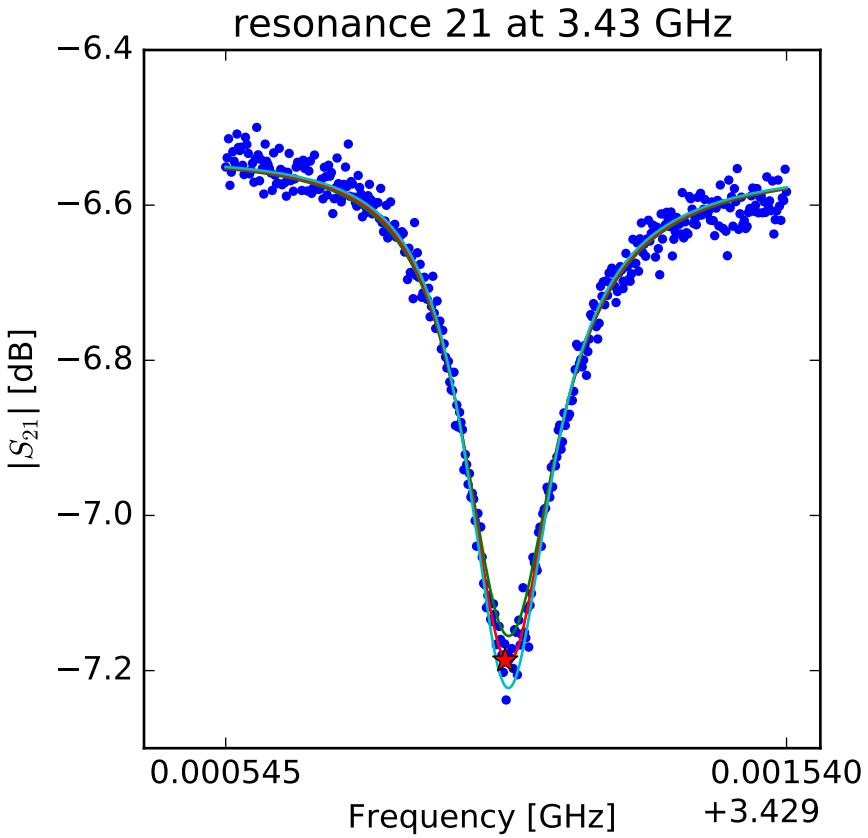


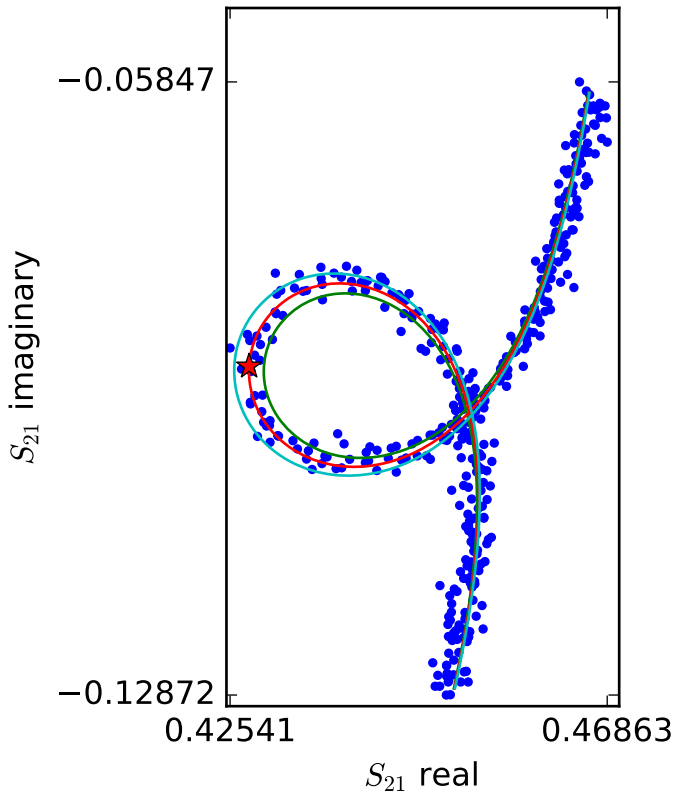


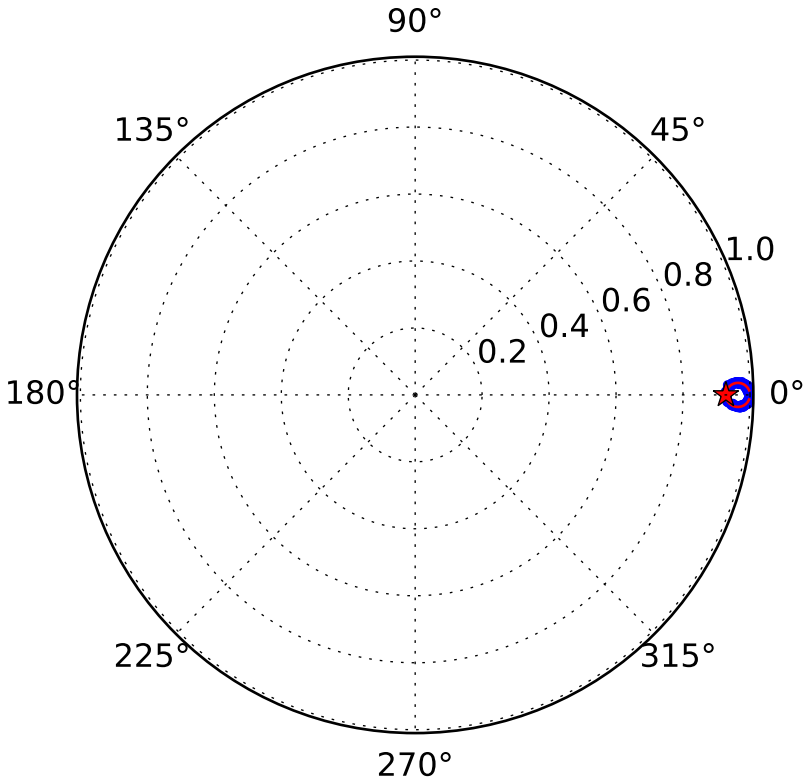


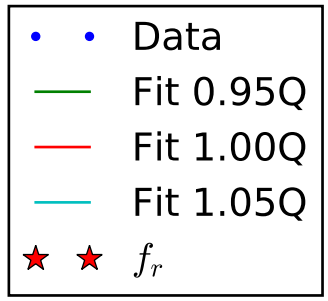
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.41882098579
Q_r = 12775.1892292
Q_c = 790990.141634
a = (-0.184830818376+0.446033289822j)
ϕ_0 = 0.404644558184
τ = 28.6708058269



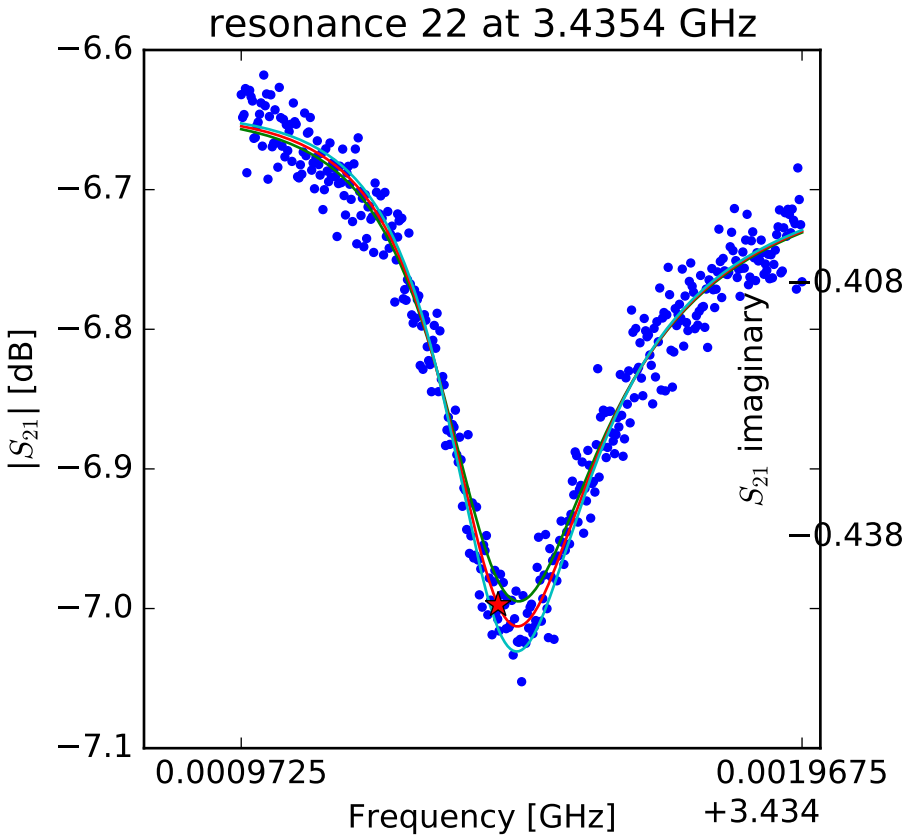


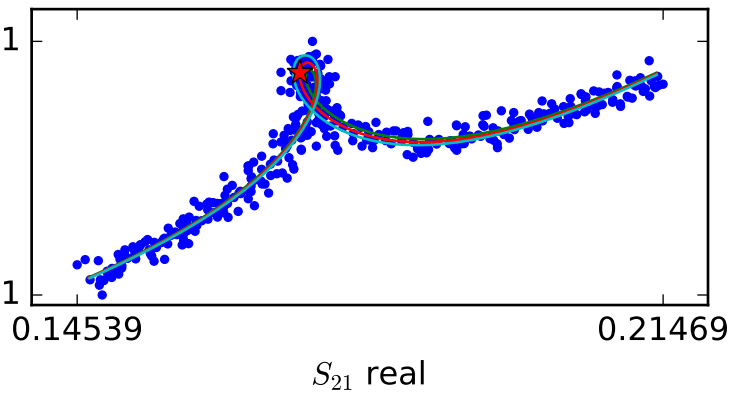


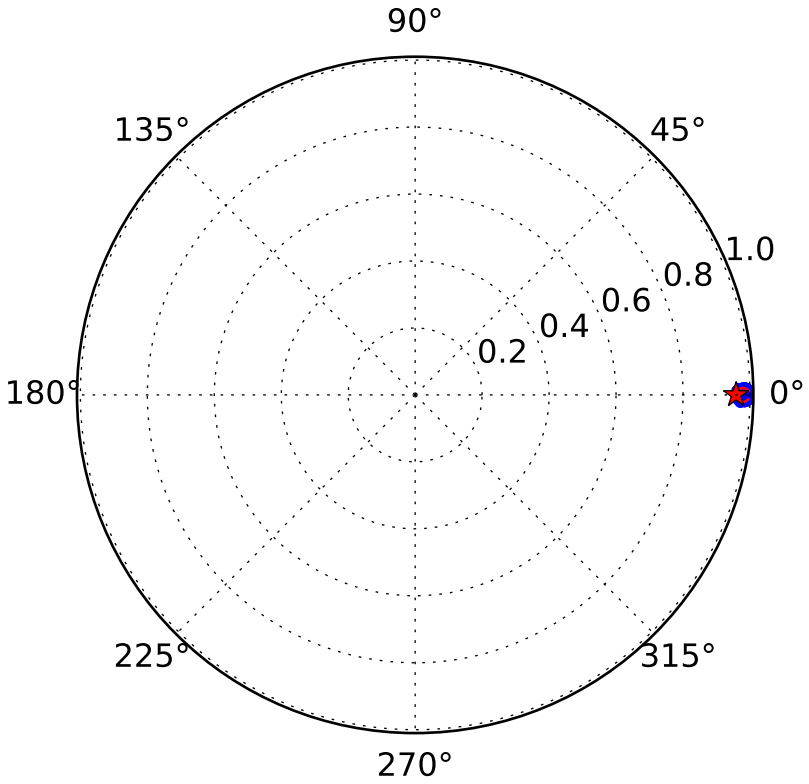


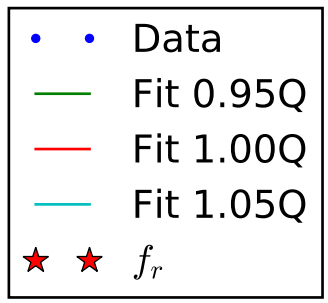
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.43004100446
Q_r = 17300.9278489
Q_c = 240239.572786
a = (0.301059871367-0.362055406382j)
ϕ_0 = 0.110343023249
τ = 28.2481853987



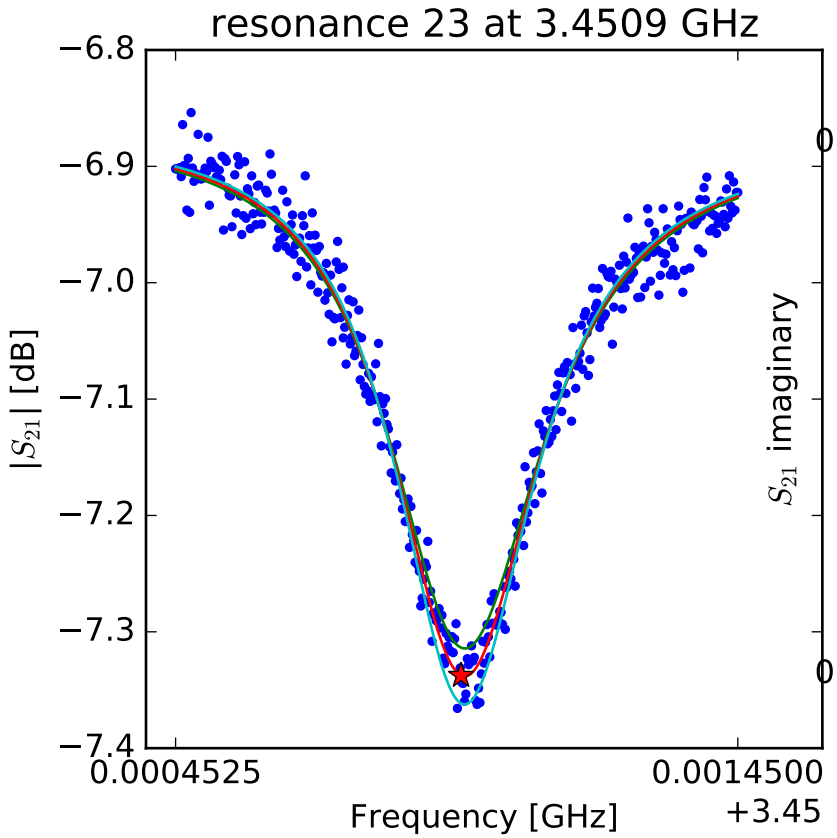


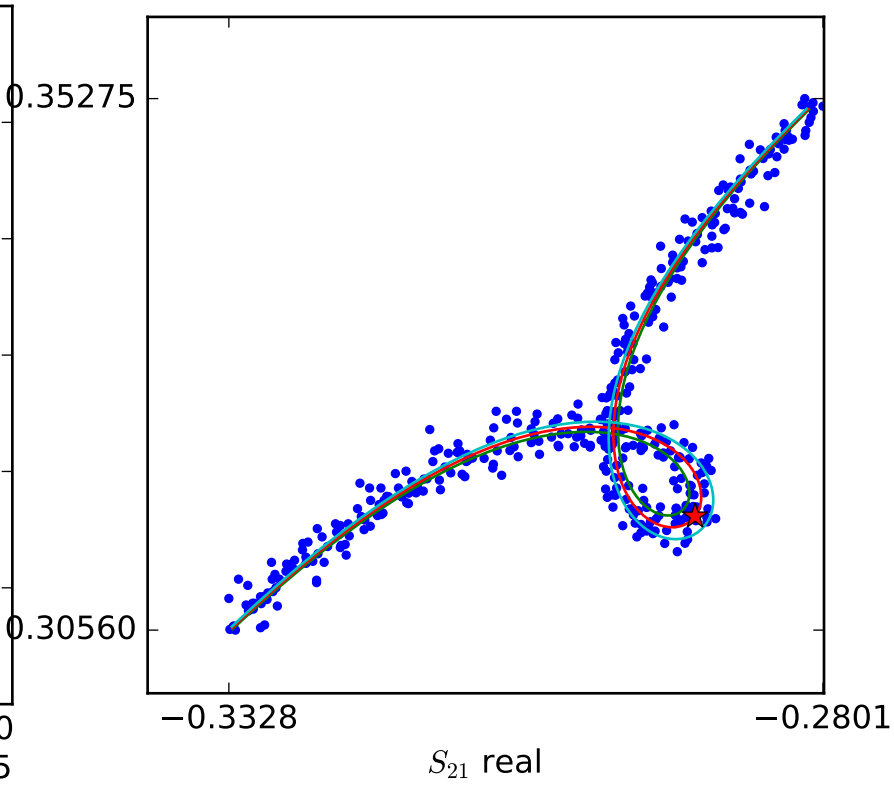


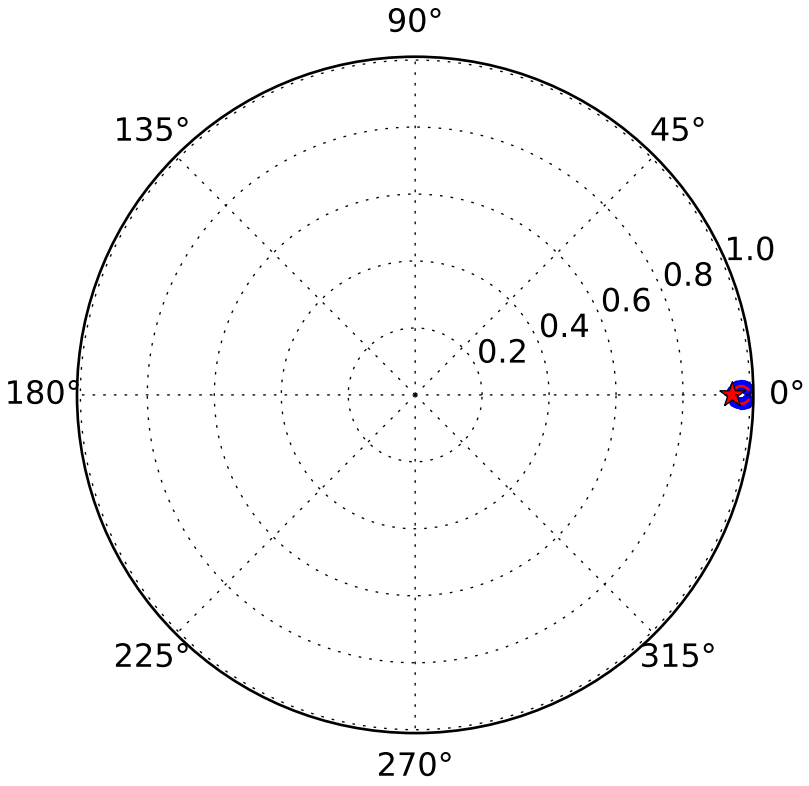


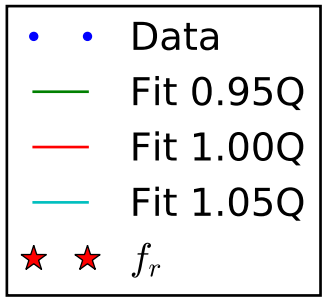
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.43542819572
Q_r = 10196.4133784
Q_c = 246550.776376
a = (-0.438409919484-0.153388025158j)
ϕ_0 = 0.397658498902
τ = 28.4500588928



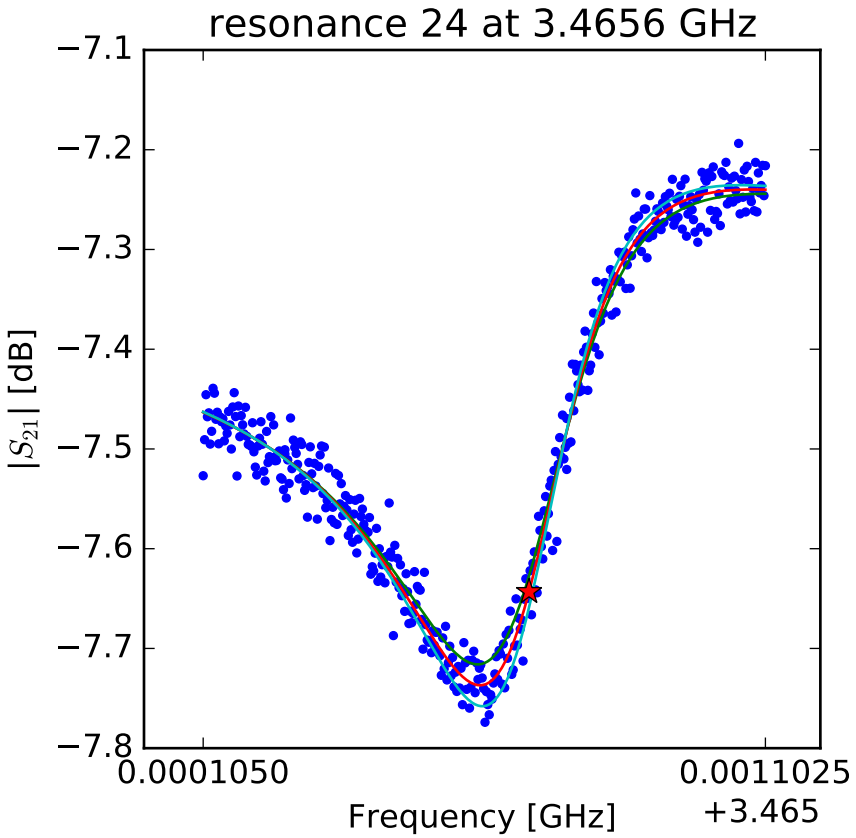


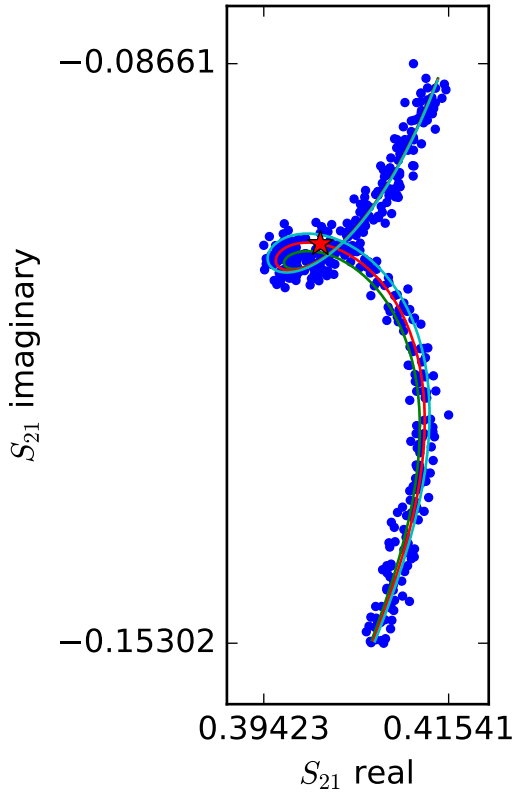


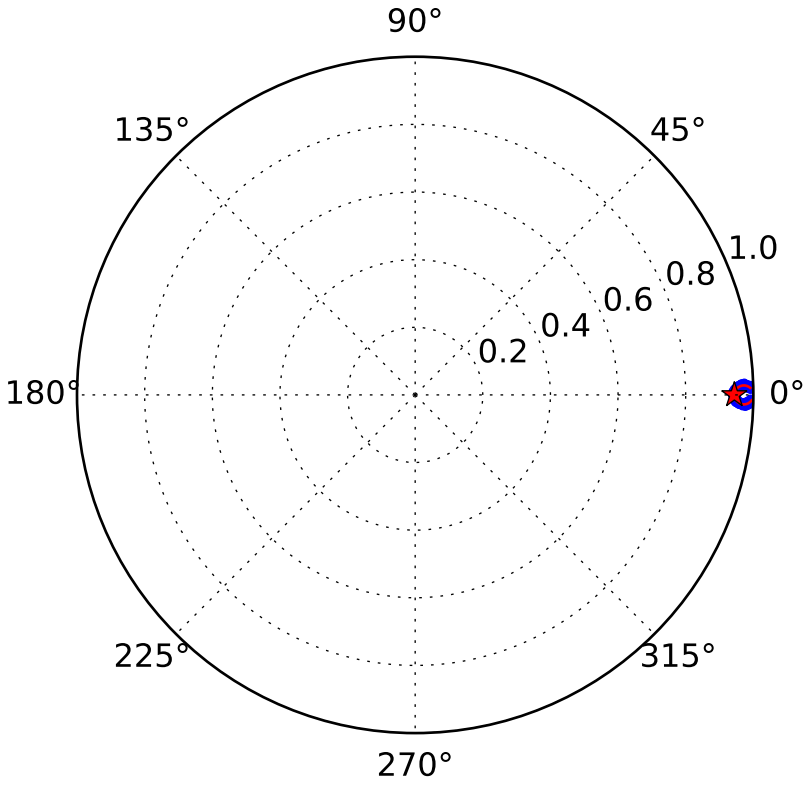


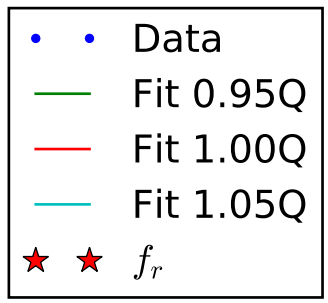
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.45095892704
Q_r = 10553.8407575
Q_c = 200870.525262
a = (-0.445407406838+0.0847773753146j)
ϕ_0 = 0.0770504694051
τ = 29.2964210217



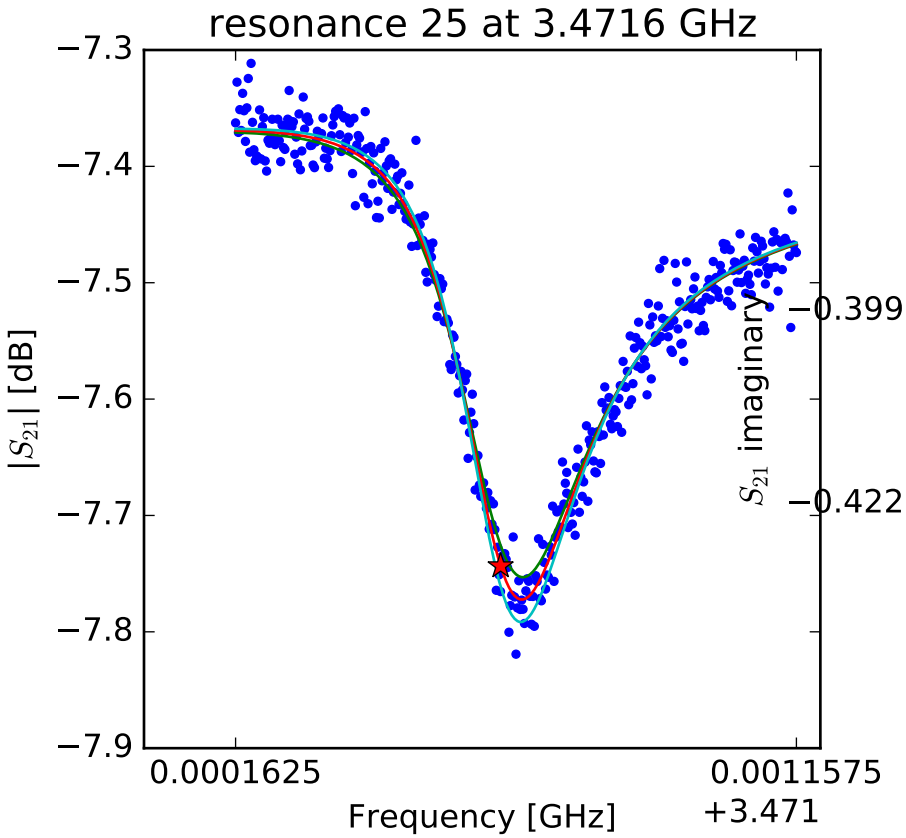


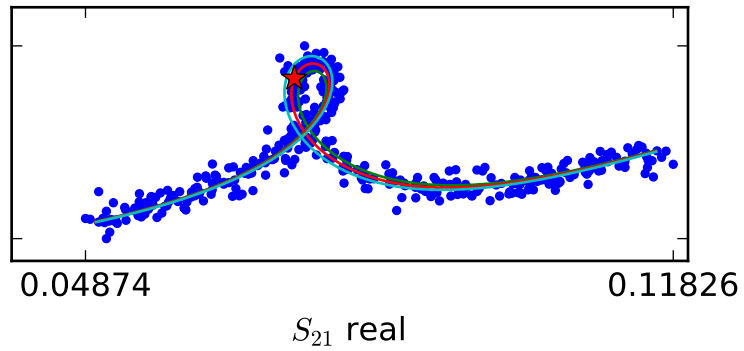


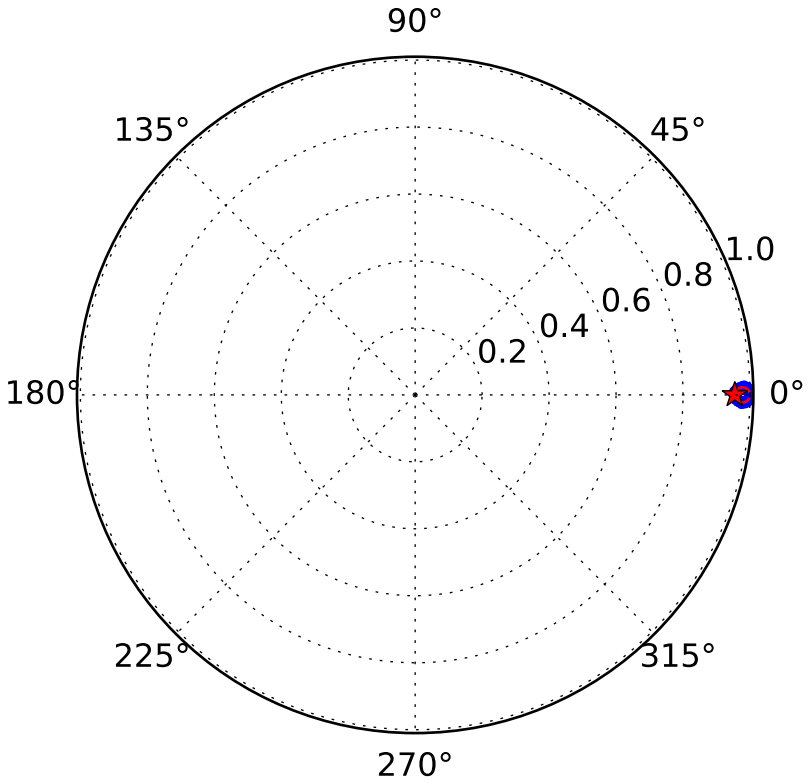


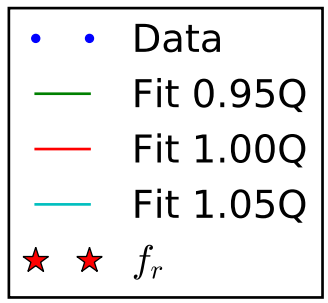
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.46568314988
Q_r = 9346.61929329
Q_c = 166382.516274
a = (-0.133004264674+0.409194459036j)
ϕ_0 = -0.854764311233
τ = 28.0893069568



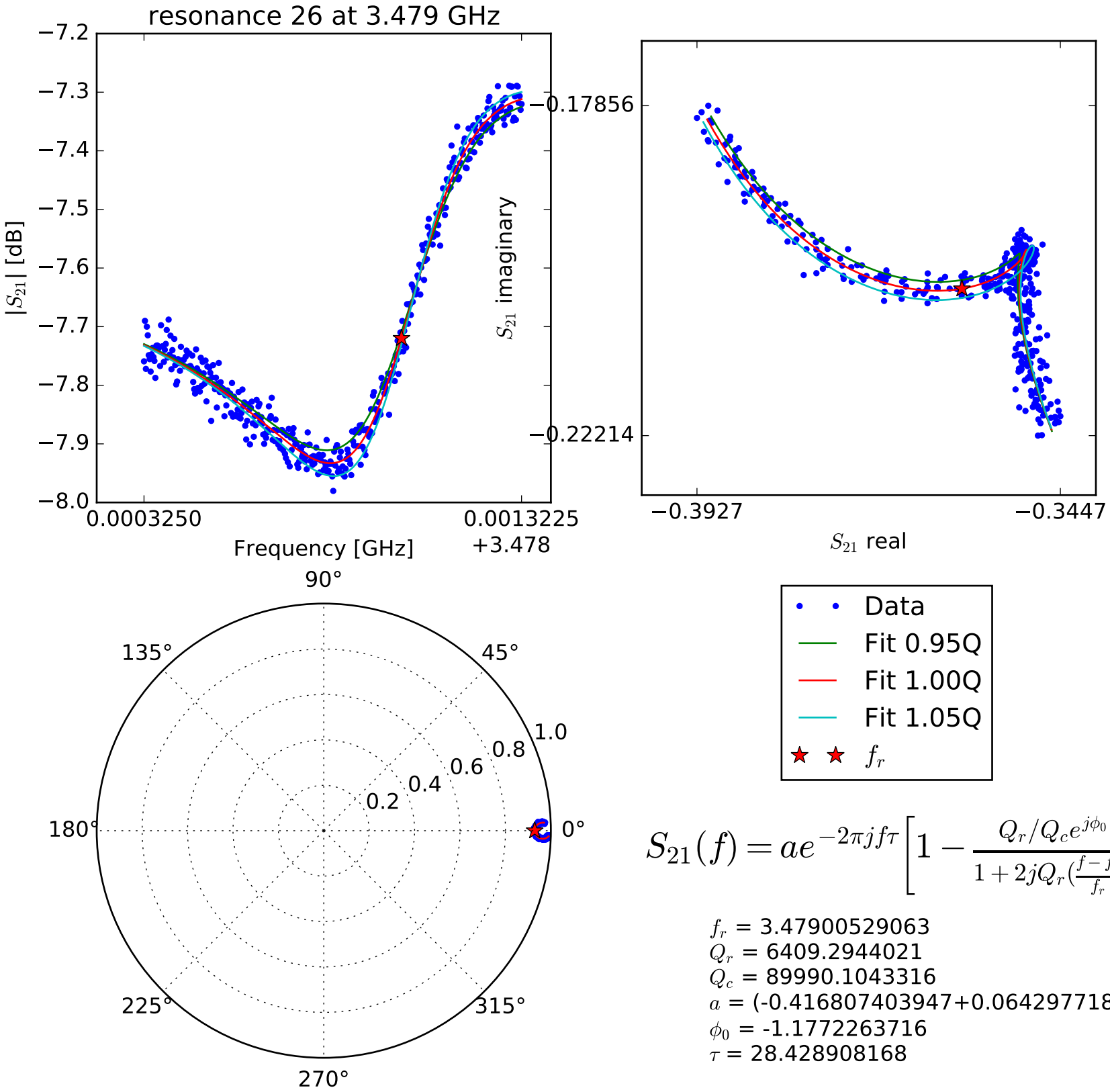






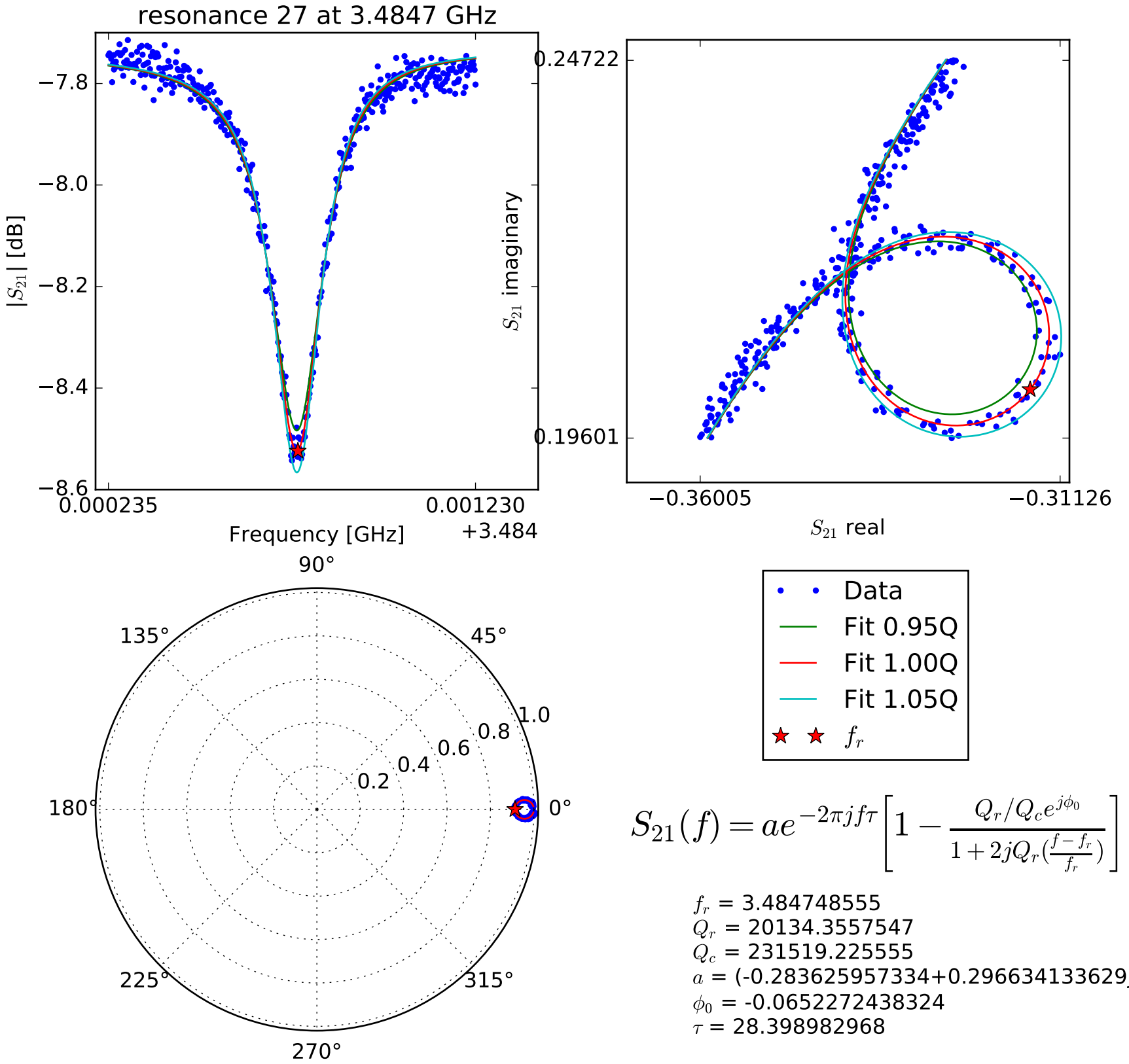
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.47163269404
Q_r = 12522.3962228
Q_c = 275170.680539
a = (-0.257192920415+0.340601760358j)
ϕ_0 = 0.5183321116
τ = 28.3931367718



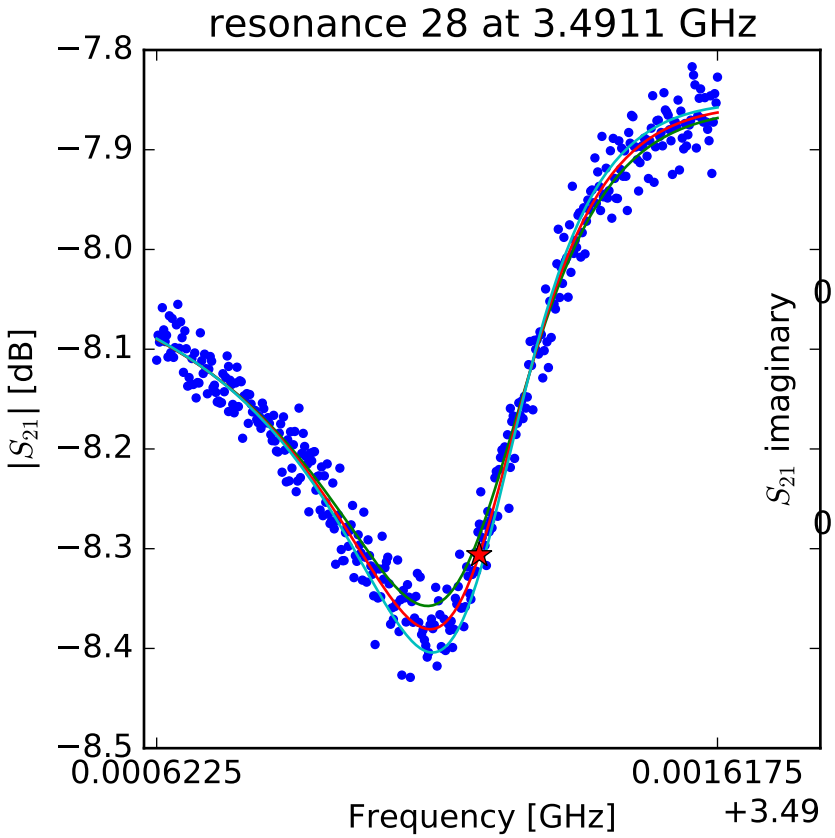
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

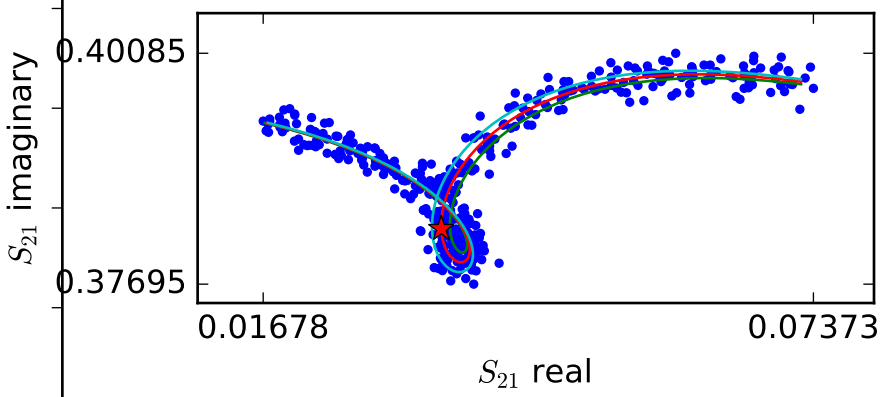
f_r = 3.47900529063
Q_r = 6409.2944021
Q_c = 89990.1043316
a = (-0.416807403947+0.0642977181527j)
ϕ_0 = -1.1772263716
τ = 28.428908168

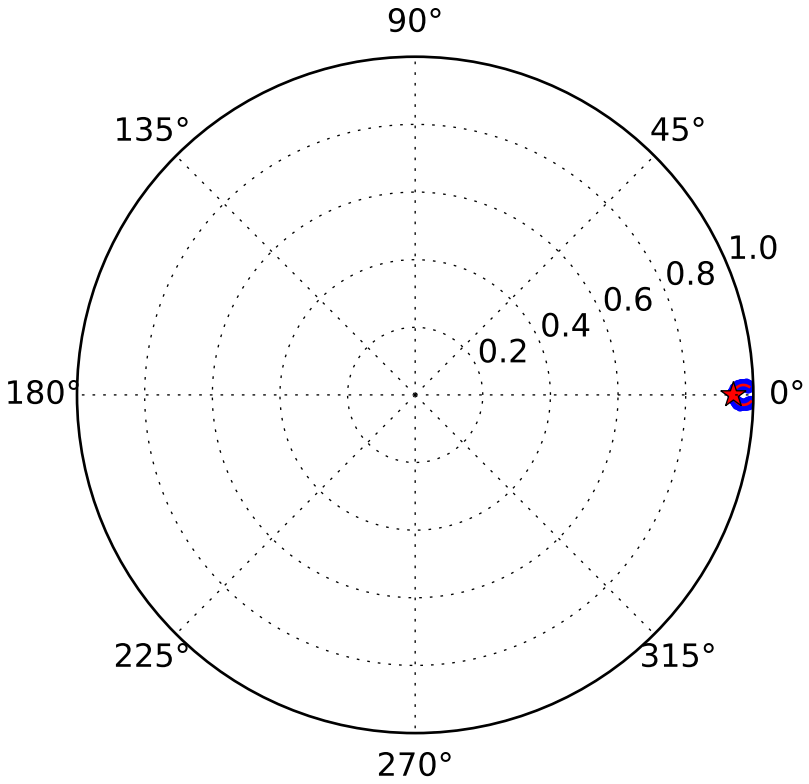


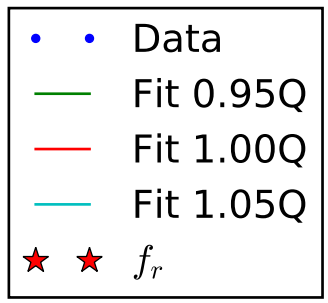
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.484748555
Q_r = 20134.3557547
Q_c = 231519.225555
a = (-0.283625957334+0.296634133629j)
ϕ_0 = -0.0652272438324
τ = 28.398982968



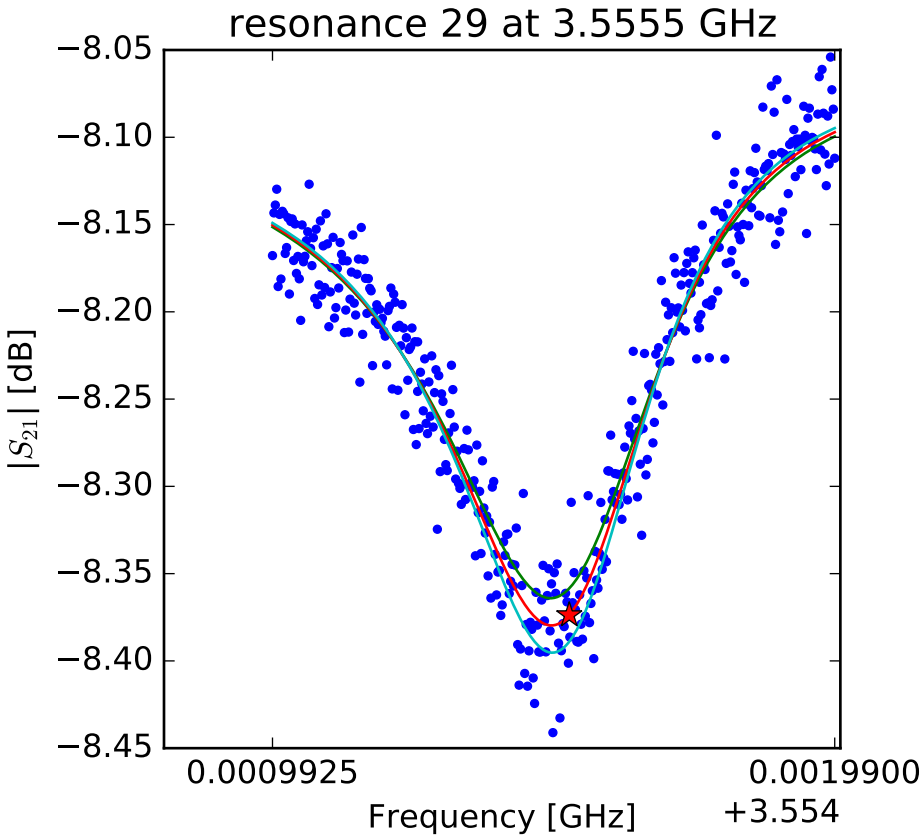


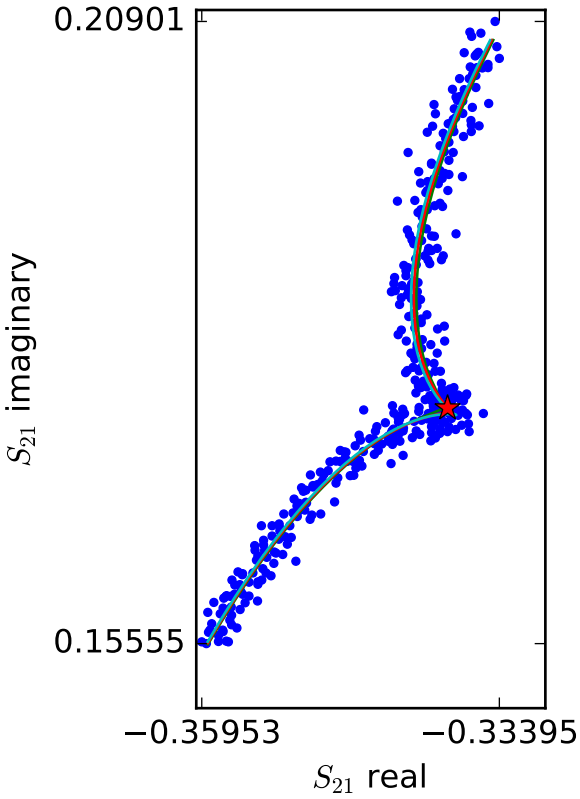


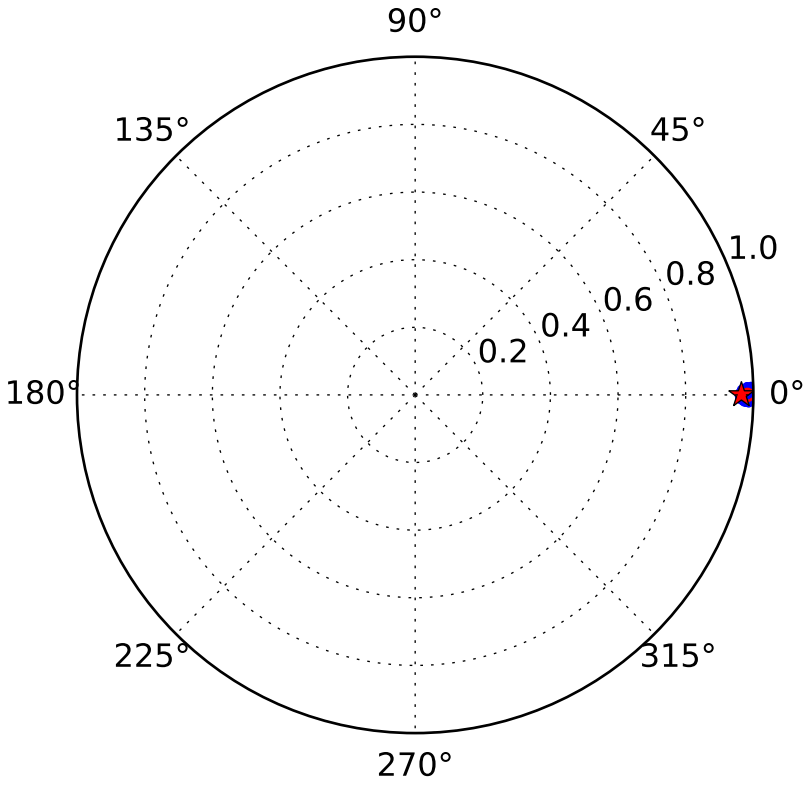


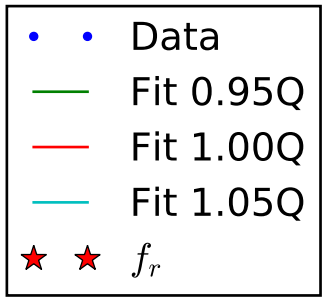
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.49119481746
Q_r = 7911.22410417
Q_c = 134233.349068
a = (-0.30613502525-0.259902153619j)
ϕ_0 = -0.732966410072
τ = 27.6075092622



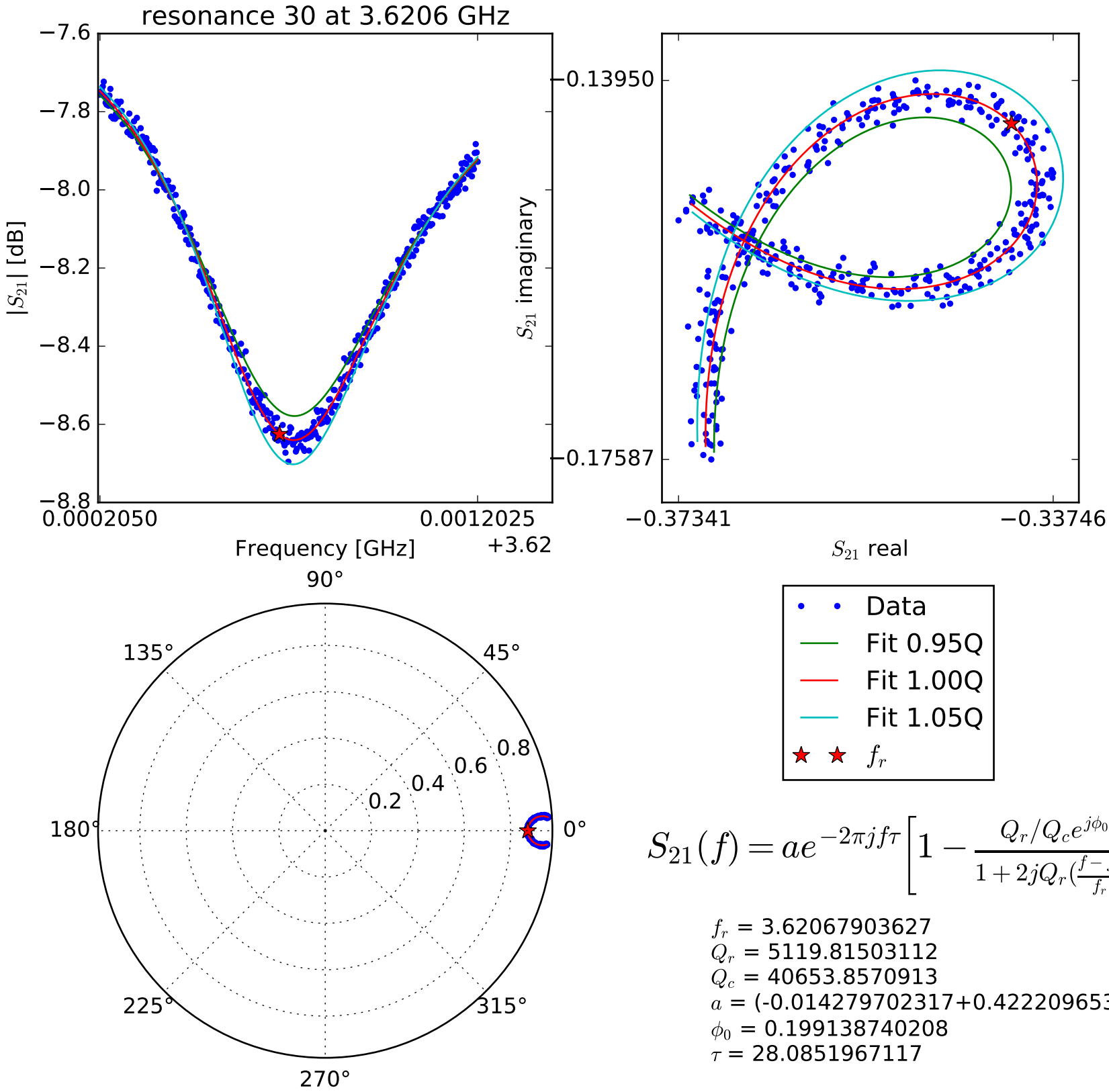






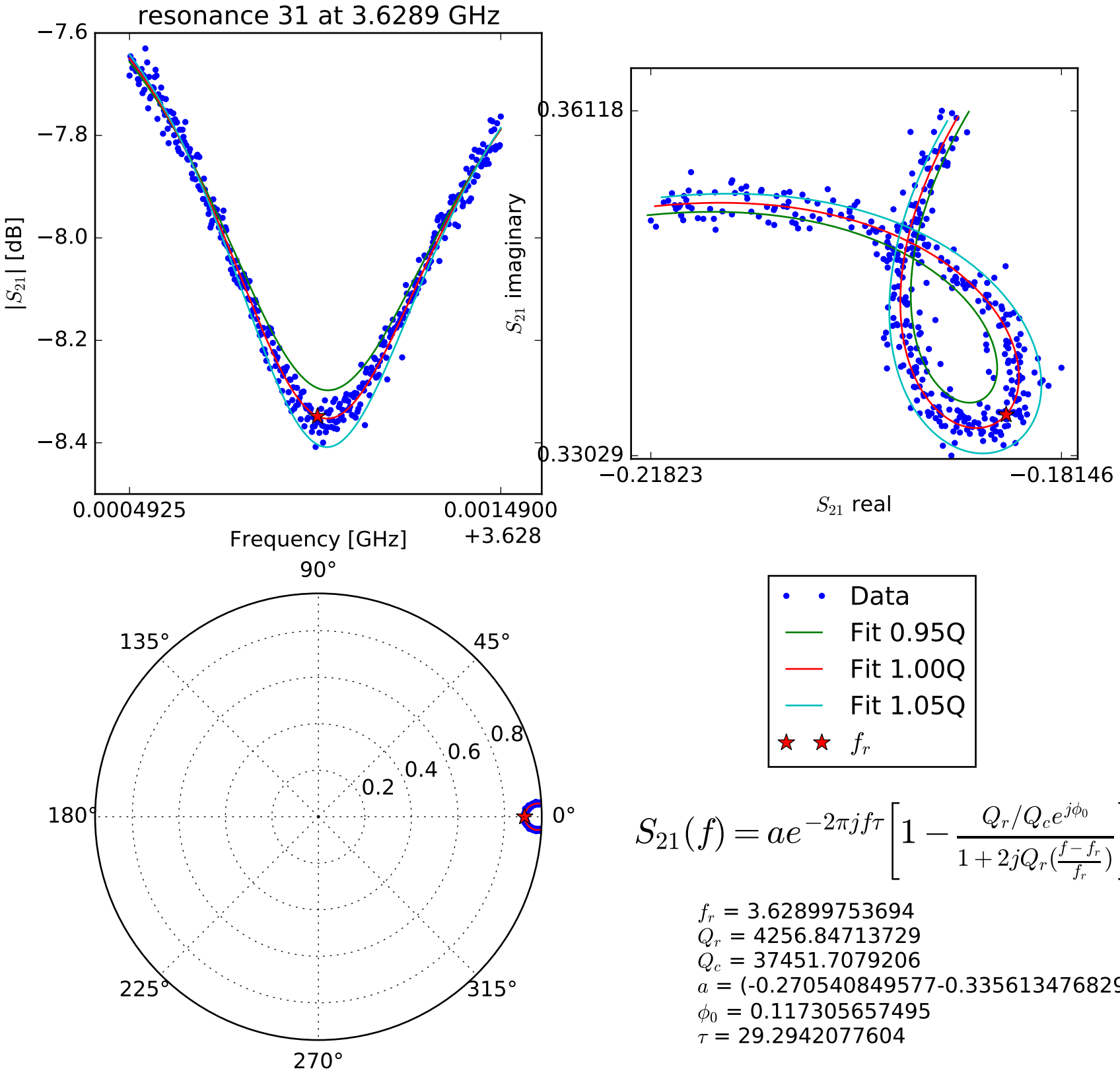
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.55551899604
Q_r = 7728.44788193
Q_c = 218839.123001
a = (0.257963945481+0.298823555192j)
ϕ_0 = -0.268360155887
τ = 27.4824729861



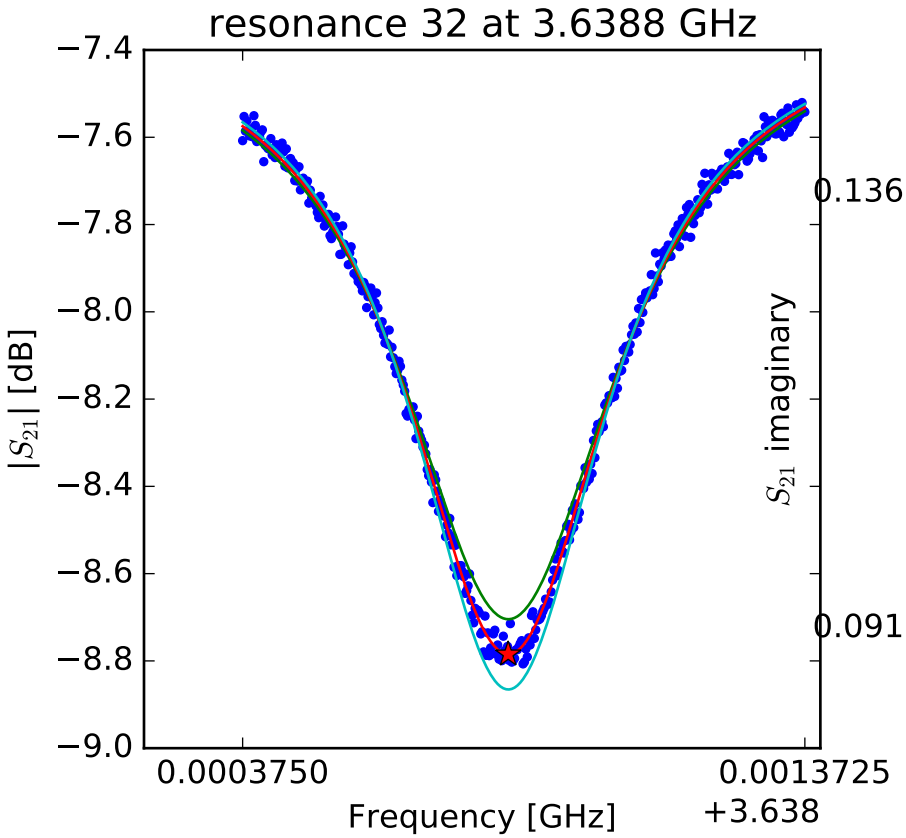
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

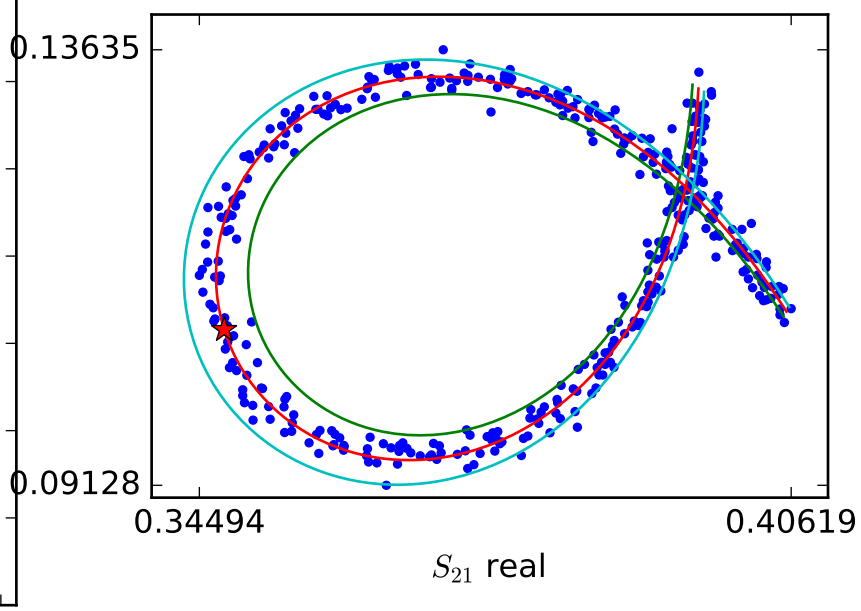
f_r = 3.62067903627
Q_r = 5119.81503112
Q_c = 40653.8570913
a = (-0.014279702317+0.422209653842j)
ϕ_0 = 0.199138740208
τ = 28.0851967117

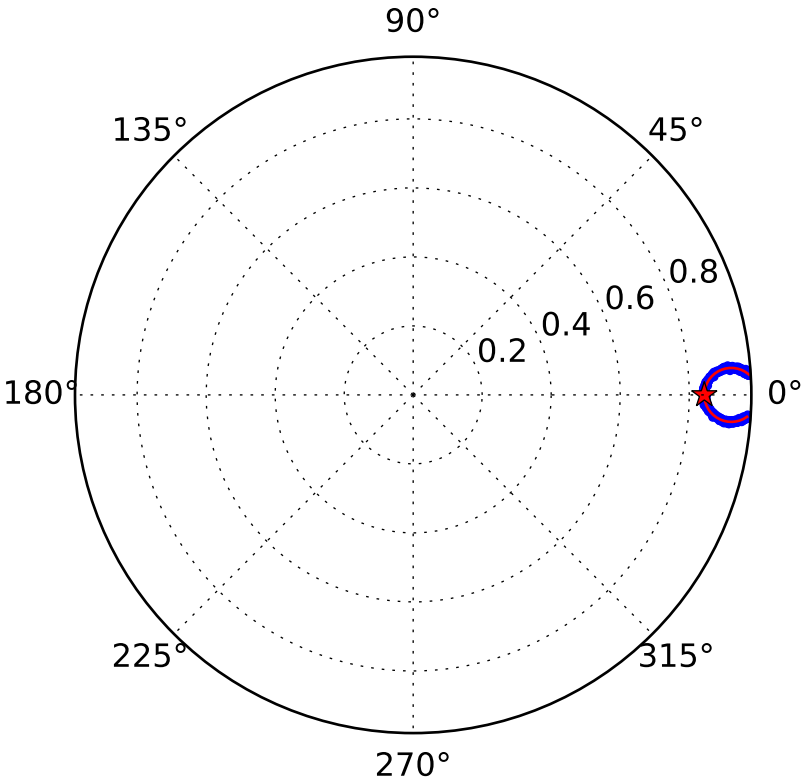


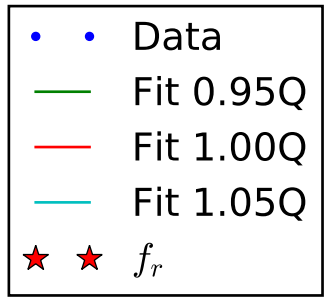
$$S_{21}(f) = ae^{-2\pi jf\tau}\left[1 - \frac{Q_r/Q_c e^{j\phi_0}}{1 + 2jQ_r(\frac{f-f_r}{f_r})}\right]$$

f_r = 3.62899753694
Q_r = 4256.84713729
Q_c = 37451.7079206
a = (-0.270540849577-0.335613476829j)
ϕ_0 = 0.117305657495
τ = 29.2942077604









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

f_r = 3.63884615621
Q_r = 7539.54484656
Q_c = 48213.2323778
a = (-0.274756251347-0.332253615864j)
ϕ_0 = 0.00205827154122
τ = 29.5676888008