

High Frequency Design Guide

High Frequency Design Guide for EN-A1, AQ Synthetic Quartz and AL-X2000 Series Fluoropolymer

AQ

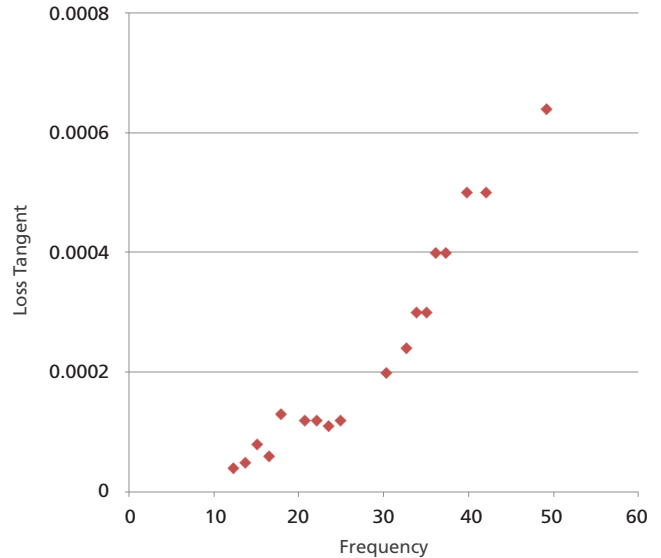
Table 1. Average thicknesses and standard deviations for regions that were measured for the samples tested in DI Model 600T Open Resonator.

Sample	Device	Location/Orientation
AQ	Model 600T	x & y
EN-A1	Model 600T	x & y

Table 2. AQ sample dielectric constant (DK) and loss tangent (DF) measured with DI Model 600T Open Resonator at room temperature.

Frequency (GHz)	DK - (x)	DK - (y)	DF - (x)	DF - (y)
31.5	3.841	3.842	0.00040	0.00029
32.7	3.834	3.834	0.00033	0.00032
33.8	3.831	3.832	0.00028	0.00033
35.0	3.830	3.830	0.00029	0.00016
36.2	3.830	3.831	0.00050	0.00054
37.4	3.826	3.825	0.00041	0.00050
38.5	3.826	3.825	0.00026	0.00028
39.7	3.827	3.825	0.00049	0.00031
40.9	3.827	3.824	0.00042	0.00048
42.1	3.829	3.825	0.00052	0.00041
43.2	3.828	3.824	0.00037	0.00027
44.4	3.823	3.819	0.00022	0.00022
45.6	3.825	3.821	0.00081	0.00078
46.8	3.826	3.822	0.00021	0.00018
47.9	3.824	3.821	0.00048	0.00023
49.1	3.834	3.820	0.00064	0.00057
Average	3.828	3.826	0.00041	0.00037
Std. Dev.	0.004	0.006	0.00016	0.00017

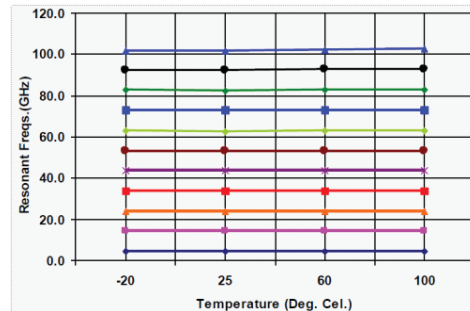
AQ Loss from 10 GHz - 50 GHz



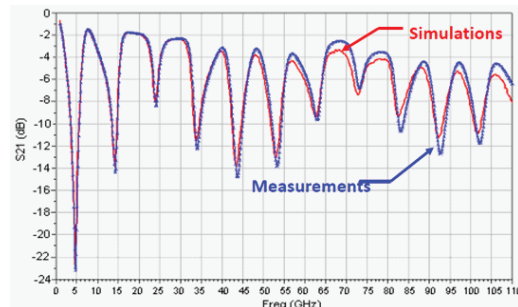
AL-X2000 Series

ALX, a fluoropolymer, has excellent electrical performance from 1-100 GHz. In addition, ALX shows excellent stability over a range of temperatures as shown in the chart below.

Change in Dk from -20°C - 100°C



S21 from 10 - 100 GHz



High Frequency Design Guide

EN-A1

Table 3. EN-A1 sample dielectric constant (DK) and loss tangent (DF) measured with DI Model 600T Open Resonator at room temperature.

Frequency (GHz)	DK - (x)	DK - (y)	DF - (x)	DF - (y)
30.3	5.485	5.498	0.0079	0.0079
31.5	5.484	5.496	0.0079	0.0079
32.6	5.480	5.492	0.0080	0.0080
33.8	5.481	5.492	0.0074	0.0076
35.0	5.482	5.494	0.0077	0.0078
36.1	5.484	5.496	0.0084	0.0085
37.3	5.474	5.484	0.0090	0.0090
38.5	5.475	5.483	0.0086	0.0086
39.7	5.478	5.487	0.0088	0.0088
40.8	5.481	5.489	0.0088	0.0088
42.0	5.485	5.492	0.0094	0.0095
43.2	5.481	5.488	0.0089	0.0089
44.4	5.471	5.479	0.0096	0.0099
45.6	5.471	5.476	0.0100	0.0101
46.7	5.470	5.478	0.0099	0.0099
47.9	5.477	5.485	0.0107	0.0105
49.1	5.476	5.485	0.0111	0.0110
Average	5.479	5.488	0.0089	0.0090
Std. Dev.	0.005	0.007	0.0010	0.0010

Loss Tangent EN-A1

