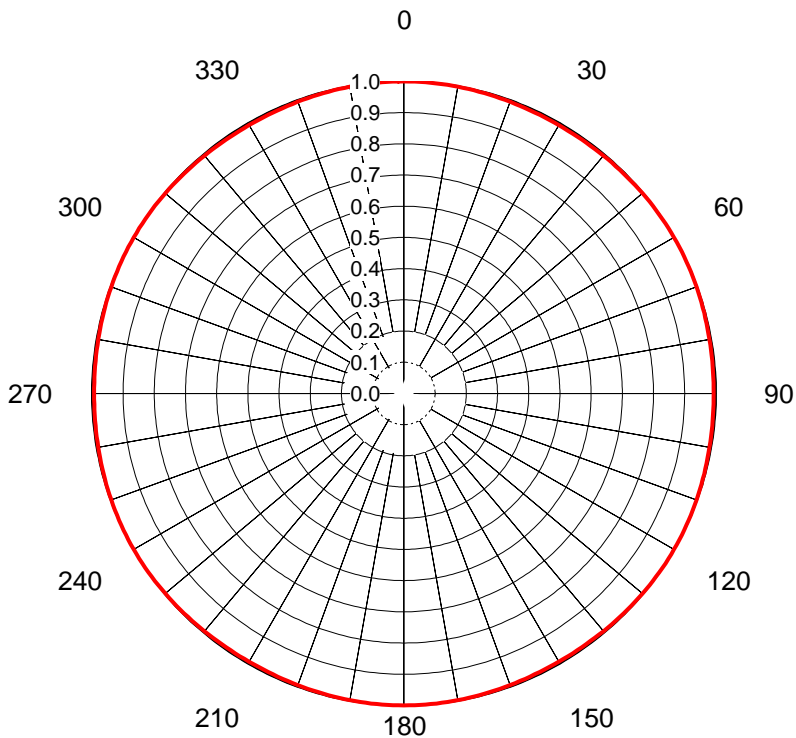


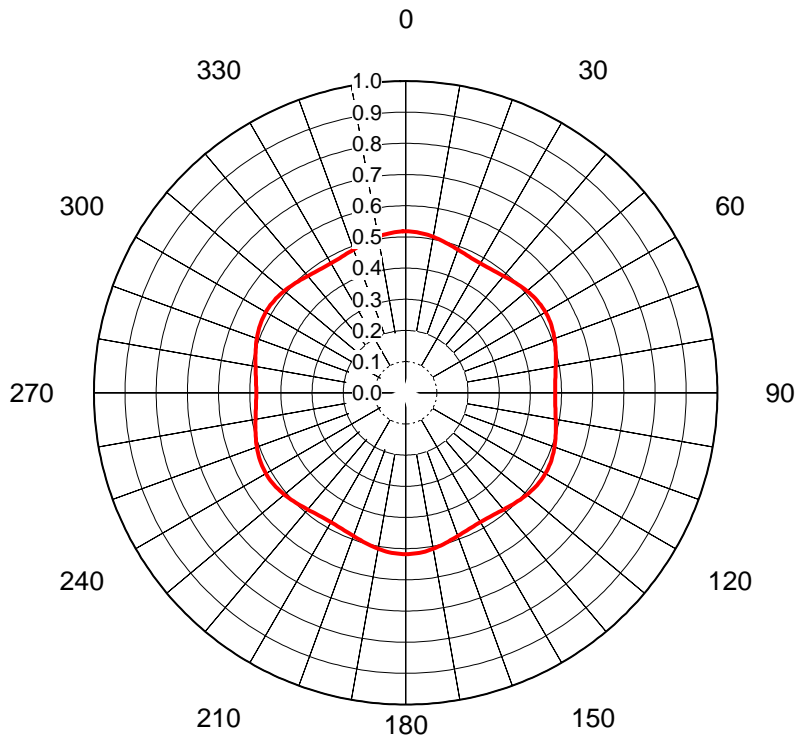
AZIMUTH PATTERN Horizontal Polarization

Proposal No. **C-71140-1**
 Date **12-Jun-18**
 Call Letters **WTVH**
 Channel **18**
 Frequency **497 MHz**
 Antenna Type **TFU-32JTH/VP-R O6**
 Gain **1.01 (0.03dB)**
 Calculated
 Circularity **+/- 1.0 dB**
 TFU-O4-18H



Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	1.000	36	0.994	72	0.998	108	0.998	144	0.994	180	1.000	216	0.994	252	0.998	288	0.998
1	1.000	37	0.994	73	0.997	109	0.998	145	0.993	181	1.000	217	0.994	253	0.997	289	0.998
2	1.000	38	0.994	74	0.997	110	0.998	146	0.993	182	1.000	218	0.994	254	0.997	290	0.998
3	1.000	39	0.994	75	0.996	111	0.999	147	0.993	183	1.000	219	0.994	255	0.996	291	0.999
4	1.000	40	0.995	76	0.996	112	0.999	148	0.993	184	1.000	220	0.995	256	0.996	292	0.999
5	1.000	41	0.995	77	0.996	113	0.999	149	0.993	185	1.000	221	0.995	257	0.996	293	0.999
6	0.999	42	0.995	78	0.995	114	0.999	150	0.993	186	0.999	222	0.995	258	0.995	294	0.999
7	0.999	43	0.996	79	0.995	115	1.000	151	0.993	187	0.999	223	0.996	259	0.995	295	1.000
8	0.999	44	0.996	80	0.995	116	1.000	152	0.993	188	0.999	224	0.996	260	0.995	296	1.000
9	0.999	45	0.996	81	0.994	117	1.000	153	0.993	189	0.999	225	0.996	261	0.994	297	1.000
10	0.998	46	0.997	82	0.994	118	1.000	154	0.993	190	0.998	226	0.997	262	0.994	298	1.000
11	0.998	47	0.997	83	0.994	119	1.000	155	0.993	191	0.998	227	0.997	263	0.994	299	1.000
12	0.998	48	0.998	84	0.994	120	1.000	156	0.994	192	0.998	228	0.998	264	0.994	300	1.000
13	0.997	49	0.998	85	0.993	121	1.000	157	0.994	193	0.997	229	0.998	265	0.993	301	1.000
14	0.997	50	0.998	86	0.993	122	1.000	158	0.994	194	0.997	230	0.998	266	0.993	302	1.000
15	0.996	51	0.999	87	0.993	123	1.000	159	0.994	195	0.996	231	0.999	267	0.993	303	1.000
16	0.996	52	0.999	88	0.993	124	1.000	160	0.995	196	0.996	232	0.999	268	0.993	304	1.000
17	0.996	53	0.999	89	0.993	125	1.000	161	0.995	197	0.996	233	0.999	269	0.993	305	1.000
18	0.995	54	0.999	90	0.993	126	0.999	162	0.995	198	0.995	234	0.999	270	0.993	306	0.999
19	0.995	55	1.000	91	0.993	127	0.999	163	0.996	199	0.995	235	1.000	271	0.993	307	0.999
20	0.995	56	1.000	92	0.993	128	0.999	164	0.996	200	0.995	236	1.000	272	0.993	308	0.999
21	0.994	57	1.000	93	0.993	129	0.999	165	0.996	201	0.994	237	1.000	273	0.993	309	0.999
22	0.994	58	1.000	94	0.993	130	0.998	166	0.997	202	0.994	238	1.000	274	0.993	310	0.998
23	0.994	59	1.000	95	0.993	131	0.998	167	0.997	203	0.994	239	1.000	275	0.993	311	0.998
24	0.994	60	1.000	96	0.994	132	0.998	168	0.998	204	0.994	240	1.000	276	0.994	312	0.998
25	0.993	61	1.000	97	0.994	133	0.997	169	0.998	205	0.993	241	1.000	277	0.994	313	0.997
26	0.993	62	1.000	98	0.994	134	0.997	170	0.998	206	0.993	242	1.000	278	0.994	314	0.997
27	0.993	63	1.000	99	0.994	135	0.996	171	0.999	207	0.993	243	1.000	279	0.994	315	0.996
28	0.993	64	1.000	100	0.995	136	0.996	172	0.999	208	0.993	244	1.000	280	0.995	316	0.996
29	0.993	65	1.000	101	0.995	137	0.996	173	0.999	209	0.993	245	1.000	281	0.995	317	0.996
30	0.993	66	0.999	102	0.995	138	0.995	174	0.999	210	0.993	246	0.999	282	0.995	318	0.995
31	0.993	67	0.999	103	0.996	139	0.995	175	1.000	211	0.993	247	0.999	283	0.996	319	0.995
32	0.993	68	0.999	104	0.996	140	0.995	176	1.000	212	0.993	248	0.999	284	0.996	320	0.995
33	0.993	69	0.999	105	0.996	141	0.994	177	1.000	213	0.993	249	0.999	285	0.996	321	0.994
34	0.993	70	0.998	106	0.997	142	0.994	178	1.000	214	0.993	250	0.998	286	0.997	322	0.994
35	0.993	71	0.998	107	0.997	143	0.994	179	1.000	215	0.993	251	0.998	287	0.997	323	0.994

This document contains proprietary and confidential information of Dielectric. It is to be used solely for the purpose for which it is provided. No disclosure, reproduction, or use of this document or any part of it may be made without the written permission of Dielectric.



AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-71140-1**
 Date **12-Jun-18**
 Call Letters **WTVH**
 Channel **18**
 Frequency **497 MHz**
 Antenna Type **TFU-32JTH/VP-R O6**
 Gain **1.08 (0.33dB)**
 Calculated
 Circularity **+/- 1.0 dB**
 TFU-O4-18V

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.518	36	0.483	72	0.504	108	0.504	144	0.483	180	0.518	216	0.483	252	0.504	288	0.504
1	0.518	37	0.484	73	0.502	109	0.506	145	0.482	181	0.518	217	0.484	253	0.502	289	0.506
2	0.517	38	0.486	74	0.500	110	0.508	146	0.481	182	0.517	218	0.486	254	0.500	290	0.508
3	0.517	39	0.487	75	0.498	111	0.510	147	0.480	183	0.517	219	0.487	255	0.498	291	0.510
4	0.516	40	0.489	76	0.496	112	0.511	148	0.480	184	0.516	220	0.489	256	0.496	292	0.511
5	0.515	41	0.491	77	0.494	113	0.513	149	0.479	185	0.515	221	0.491	257	0.494	293	0.513
6	0.514	42	0.492	78	0.492	114	0.514	150	0.479	186	0.514	222	0.492	258	0.492	294	0.514
7	0.513	43	0.494	79	0.491	115	0.515	151	0.479	187	0.513	223	0.494	259	0.491	295	0.515
8	0.511	44	0.496	80	0.489	116	0.516	152	0.480	188	0.511	224	0.496	260	0.489	296	0.516
9	0.510	45	0.498	81	0.487	117	0.517	153	0.480	189	0.510	225	0.498	261	0.487	297	0.517
10	0.508	46	0.500	82	0.486	118	0.517	154	0.481	190	0.508	226	0.500	262	0.486	298	0.517
11	0.506	47	0.502	83	0.484	119	0.518	155	0.482	191	0.506	227	0.502	263	0.484	299	0.518
12	0.504	48	0.504	84	0.483	120	0.518	156	0.483	192	0.504	228	0.504	264	0.483	300	0.518
13	0.502	49	0.506	85	0.482	121	0.518	157	0.484	193	0.502	229	0.506	265	0.482	301	0.518
14	0.500	50	0.508	86	0.481	122	0.517	158	0.486	194	0.500	230	0.508	266	0.481	302	0.517
15	0.498	51	0.510	87	0.480	123	0.517	159	0.487	195	0.498	231	0.510	267	0.480	303	0.517
16	0.496	52	0.511	88	0.480	124	0.516	160	0.489	196	0.496	232	0.511	268	0.480	304	0.516
17	0.494	53	0.513	89	0.479	125	0.515	161	0.491	197	0.494	233	0.513	269	0.479	305	0.515
18	0.492	54	0.514	90	0.479	126	0.514	162	0.492	198	0.492	234	0.514	270	0.479	306	0.514
19	0.491	55	0.515	91	0.479	127	0.513	163	0.494	199	0.491	235	0.515	271	0.479	307	0.513
20	0.489	56	0.516	92	0.480	128	0.511	164	0.496	200	0.489	236	0.516	272	0.480	308	0.511
21	0.487	57	0.517	93	0.480	129	0.510	165	0.498	201	0.487	237	0.517	273	0.480	309	0.510
22	0.486	58	0.517	94	0.481	130	0.508	166	0.500	202	0.486	238	0.517	274	0.481	310	0.508
23	0.484	59	0.518	95	0.482	131	0.506	167	0.502	203	0.484	239	0.518	275	0.482	311	0.506
24	0.483	60	0.518	96	0.483	132	0.504	168	0.504	204	0.483	240	0.518	276	0.483	312	0.504
25	0.482	61	0.518	97	0.484	133	0.502	169	0.506	205	0.482	241	0.518	277	0.484	313	0.502
26	0.481	62	0.517	98	0.486	134	0.500	170	0.508	206	0.481	242	0.517	278	0.486	314	0.500
27	0.480	63	0.517	99	0.487	135	0.498	171	0.510	207	0.480	243	0.517	279	0.487	315	0.498
28	0.480	64	0.516	100	0.489	136	0.496	172	0.511	208	0.480	244	0.516	280	0.489	316	0.496
29	0.479	65	0.515	101	0.491	137	0.494	173	0.513	209	0.479	245	0.515	281	0.491	317	0.494
30	0.479	66	0.514	102	0.492	138	0.492	174	0.514	210	0.479	246	0.514	282	0.492	318	0.492
31	0.479	67	0.513	103	0.494	139	0.491	175	0.515	211	0.479	247	0.513	283	0.494	319	0.491
32	0.480	68	0.511	104	0.496	140	0.489	176	0.516	212	0.480	248	0.511	284	0.496	320	0.489
33	0.480	69	0.510	105	0.498	141	0.487	177	0.517	213	0.480	249	0.510	285	0.498	321	0.487
34	0.481	70	0.508	106	0.500	142	0.486	178	0.517	214	0.481	250	0.508	286	0.500	322	0.486
35	0.482	71	0.506	107	0.502	143	0.484	179	0.518	215	0.482	251	0.506	287	0.502	323	0.484

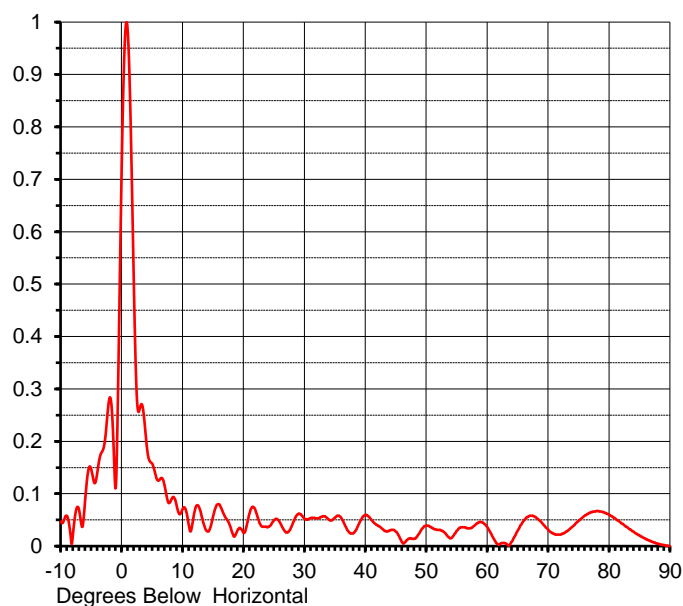
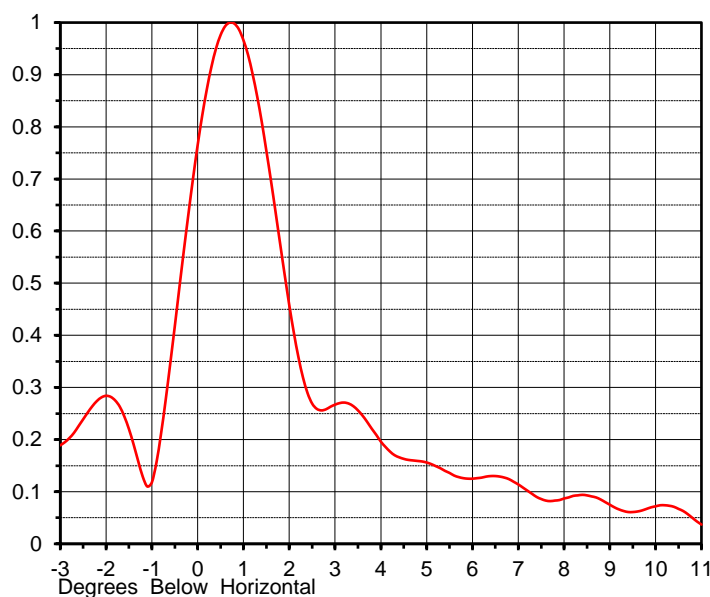
This document contains proprietary and confidential information of Dielectric. It is to be used solely for the purpose for which it is provided. No disclosure, reproduction, or use of this document or any part of it may be made without the written permission of Dielectric.

ELEVATION PATTERN

Proposal No. **C-71140-1**
 Date **12-Jun-18**
 Call Letters **WTVH**
 Channel **18**
 Frequency **497 MHz**
 Antenna Type **TFU-32JTH/VP-R O6**

RMS Directivity at Main Lobe **29.1 (14.64 dB)**
 RMS Directivity at Horizontal **17.0 (12.30 dB)**
Calculated

Beam Tilt **0.75 deg**
 Pattern Number **32J291075**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.047	10.0	0.072	30.0	0.052	50.0	0.039	70.0	0.030
-9.0	0.057	11.0	0.037	31.0	0.054	51.0	0.034	71.0	0.023
-8.0	0.030	12.0	0.071	32.0	0.053	52.0	0.031	72.0	0.022
-7.0	0.065	13.0	0.060	33.0	0.057	53.0	0.025	73.0	0.028
-6.0	0.097	14.0	0.028	34.0	0.050	54.0	0.015	74.0	0.038
-5.0	0.143	15.0	0.060	35.0	0.055	55.0	0.030	75.0	0.049
-4.0	0.146	16.0	0.079	36.0	0.053	56.0	0.036	76.0	0.059
-3.0	0.189	17.0	0.054	37.0	0.030	57.0	0.034	77.0	0.065
-2.0	0.284	18.0	0.028	38.0	0.025	58.0	0.041	78.0	0.067
-1.0	0.118	19.0	0.031	39.0	0.046	59.0	0.046	79.0	0.065
0.0	0.765	20.0	0.025	40.0	0.060	60.0	0.035	80.0	0.059
1.0	0.966	21.0	0.066	41.0	0.049	61.0	0.014	81.0	0.052
2.0	0.458	22.0	0.064	42.0	0.039	62.0	0.004	82.0	0.043
3.0	0.267	23.0	0.037	43.0	0.030	63.0	0.005	83.0	0.035
4.0	0.196	24.0	0.037	44.0	0.030	64.0	0.009	84.0	0.027
5.0	0.156	25.0	0.050	45.0	0.027	65.0	0.031	85.0	0.020
6.0	0.125	26.0	0.043	46.0	0.007	66.0	0.050	86.0	0.013
7.0	0.114	27.0	0.026	47.0	0.014	67.0	0.058	87.0	0.008
8.0	0.087	28.0	0.043	48.0	0.014	68.0	0.054	88.0	0.004
9.0	0.075	29.0	0.062	49.0	0.029	69.0	0.043	89.0	0.002
								90.0	0.000

This document contains proprietary and confidential information of Dielectric. It is to be used solely for the purpose for which it is provided. No disclosure, reproduction, or use of this document or any part of it may be made without the written permission of Dielectric.

***FutureFill** refers to broadband panels or limited bandwidth slotted coaxial antennas that can be modified in the field to provide the flexibility to customize the null structure at a future date.*

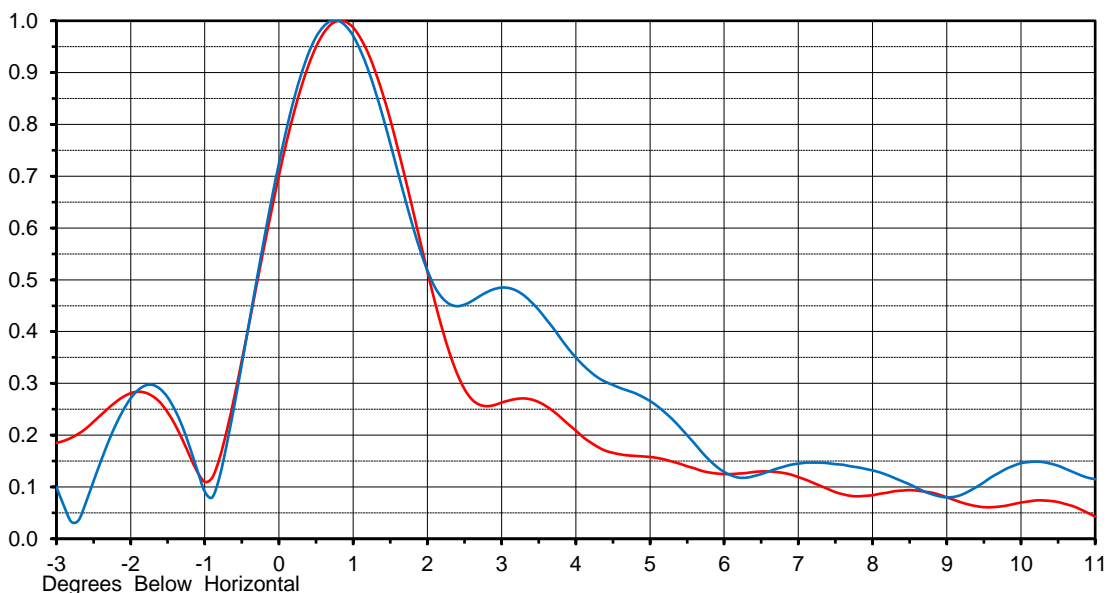
FutureFill OVERLAY

Proposal No. **C-71140-1**
 Date **12-Jun-18**
 Call Letters **WTVH**
 Channel **18**
 Frequency **497 MHz**
 Antenna Type **TFU-32JTH/VP-R O6**

RMS Directivity 29.1 **(14.64dB)**
 RMS Directivity 19.7 **(12.93dB)**
 Calculated

Beam Tilt 0.75
 Beam Tilt 0.75

Pattern No. 32J291075 **Red**
 Pattern No. 32J291075FF **Blue**



Tabulations for 32J291075FF

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.034	10.0	0.146	30.0	0.043	50.0	0.086	70.0	0.036
-9.0	0.103	11.0	0.115	31.0	0.029	51.0	0.094	71.0	0.034
-8.0	0.066	12.0	0.197	32.0	0.031	52.0	0.085	72.0	0.032
-7.0	0.168	13.0	0.229	33.0	0.022	53.0	0.061	73.0	0.027
-6.0	0.158	14.0	0.214	34.0	0.046	54.0	0.044	74.0	0.025
-5.0	0.135	15.0	0.241	35.0	0.094	55.0	0.053	75.0	0.032
-4.0	0.242	16.0	0.192	36.0	0.108	56.0	0.048	76.0	0.044
-3.0	0.100	17.0	0.097	37.0	0.092	57.0	0.030	77.0	0.054
-2.0	0.271	18.0	0.115	38.0	0.100	58.0	0.050	78.0	0.059
-1.0	0.091	19.0	0.090	39.0	0.139	59.0	0.072	79.0	0.060
0.0	0.725	20.0	0.077	40.0	0.154	60.0	0.070	80.0	0.057
1.0	0.971	21.0	0.141	41.0	0.117	61.0	0.051	81.0	0.052
2.0	0.518	22.0	0.127	42.0	0.074	62.0	0.037	82.0	0.044
3.0	0.485	23.0	0.068	43.0	0.076	63.0	0.038	83.0	0.036
4.0	0.350	24.0	0.071	44.0	0.087	64.0	0.050	84.0	0.028
5.0	0.266	25.0	0.115	45.0	0.085	65.0	0.067	85.0	0.020
6.0	0.129	26.0	0.121	46.0	0.094	66.0	0.078	86.0	0.014
7.0	0.145	27.0	0.106	47.0	0.108	67.0	0.077	87.0	0.009
8.0	0.132	28.0	0.117	48.0	0.094	68.0	0.065	88.0	0.005
9.0	0.080	29.0	0.108	49.0	0.077	69.0	0.048	89.0	0.002
								90.0	0.000

This document contains proprietary and confidential information of Dielectric. It is to be used solely for the purpose for which it is provided. No disclosure, reproduction, or use of this document or any part of it may be made without the written permission of Dielectric.