

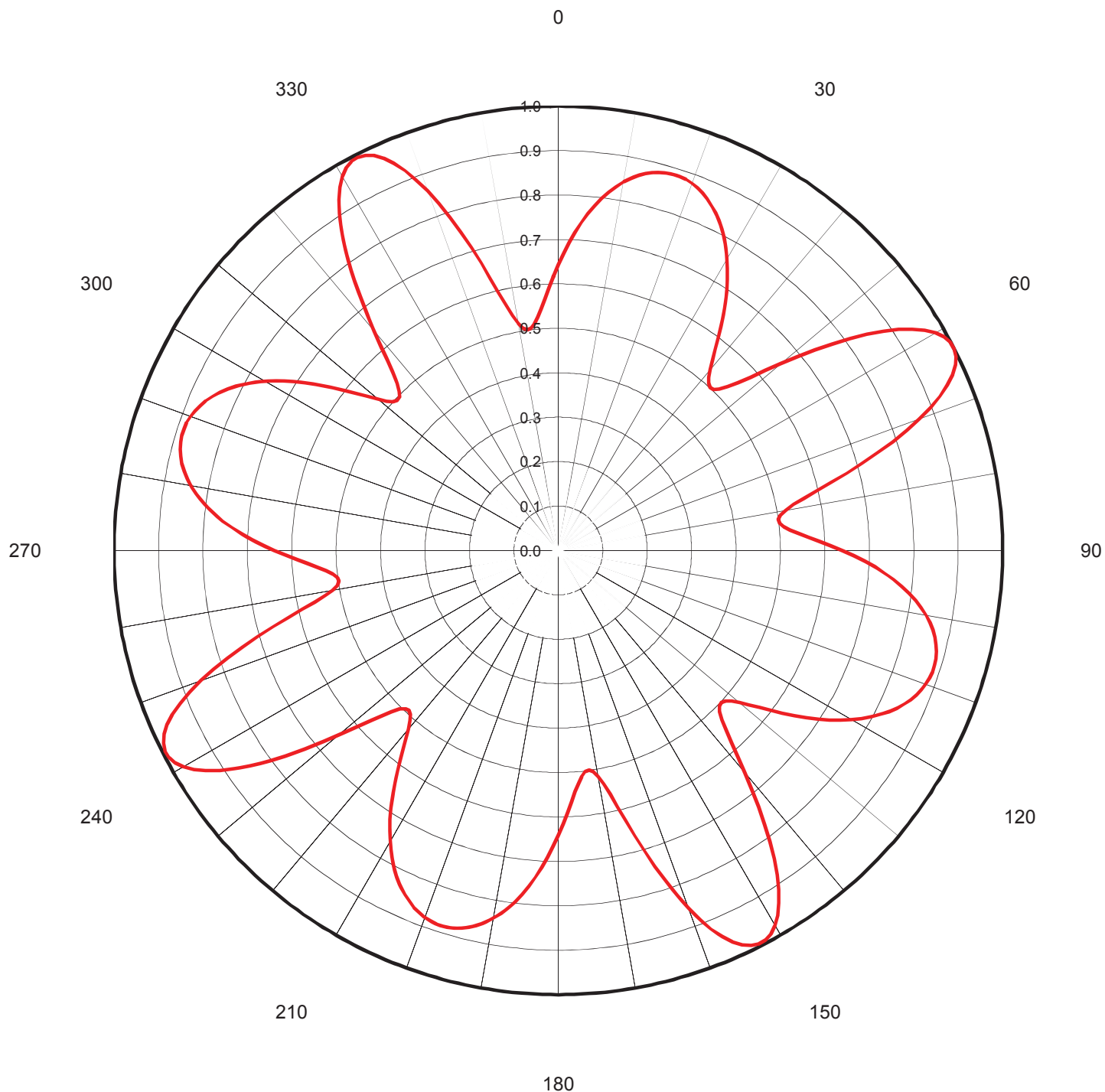


Proposal Number	<b>C-04082</b>	Revision:	<b>4</b>
Date	<b>20-Dec-10</b>		
Call Letters	<b>WFTV-DT</b>	Channel	<b>39</b>
Location	<b>Orlando, FL</b>		
Customer			
Antenna Type	<b>TUM20-O4SP-14/56H-2-R-T</b>		

## AZIMUTH PATTERN

Gain **1.75** **( 2.43 dB)**  
Calculated / Measured **Calculated**

Frequency **623.00 MHz**  
Drawing # **TUM-O4-39H**





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Call Letters **WFTV-DT** Channel **39**  
Location **Orlando, FL**  
Customer  
Antenna Type **TUM20-O4SP-14/56H-2-R-T**

## TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing #: **TUM-O4-39H**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.643	45	0.513	90	0.639	135	0.513	180	0.641	225	0.505	270	0.640	315	0.506
1	0.669	46	0.530	91	0.665	136	0.530	181	0.667	226	0.522	271	0.665	316	0.522
2	0.693	47	0.554	92	0.690	137	0.554	182	0.692	227	0.546	272	0.690	317	0.545
3	0.717	48	0.583	93	0.714	138	0.583	183	0.715	228	0.576	273	0.714	318	0.574
4	0.740	49	0.617	94	0.737	139	0.617	184	0.738	229	0.610	274	0.736	319	0.608
5	0.761	50	0.654	95	0.758	140	0.654	185	0.759	230	0.648	275	0.757	320	0.644
6	0.780	51	0.693	96	0.778	141	0.692	186	0.779	231	0.688	276	0.777	321	0.683
7	0.798	52	0.733	97	0.796	142	0.732	187	0.797	232	0.728	277	0.795	322	0.723
8	0.814	53	0.773	98	0.812	143	0.772	188	0.813	233	0.768	278	0.812	323	0.763
9	0.829	54	0.812	99	0.827	144	0.811	189	0.827	234	0.807	279	0.827	324	0.802
10	0.842	55	0.848	100	0.840	145	0.847	190	0.840	235	0.844	280	0.840	325	0.839
11	0.853	56	0.883	101	0.852	146	0.881	191	0.852	236	0.878	281	0.852	326	0.873
12	0.863	57	0.913	102	0.862	147	0.911	192	0.862	237	0.909	282	0.862	327	0.904
13	0.870	58	0.940	103	0.870	148	0.937	193	0.869	238	0.935	283	0.870	328	0.931
14	0.877	59	0.962	104	0.876	149	0.959	194	0.876	239	0.957	284	0.876	329	0.954
15	0.881	60	0.980	105	0.881	150	0.976	195	0.880	240	0.974	285	0.881	330	0.972
16	0.884	61	0.992	106	0.884	151	0.987	196	0.883	241	0.986	286	0.884	331	0.984
17	0.885	62	0.999	107	0.886	152	0.993	197	0.885	242	0.993	287	0.886	332	0.992
18	0.885	63	1.000	108	0.886	153	0.994	198	0.884	243	0.994	288	0.886	333	0.993
19	0.883	64	0.996	109	0.884	154	0.990	199	0.882	244	0.989	289	0.884	334	0.990
20	0.879	65	0.986	110	0.880	155	0.980	200	0.879	245	0.979	290	0.881	335	0.980
21	0.874	66	0.971	111	0.875	156	0.964	201	0.874	246	0.964	291	0.876	336	0.966
22	0.867	67	0.951	112	0.869	157	0.944	202	0.867	247	0.943	292	0.870	337	0.947
23	0.859	68	0.927	113	0.861	158	0.919	203	0.859	248	0.918	293	0.862	338	0.922
24	0.849	69	0.898	114	0.851	159	0.890	204	0.849	249	0.889	294	0.852	339	0.894
25	0.838	70	0.865	115	0.840	160	0.857	205	0.837	250	0.856	295	0.841	340	0.861
26	0.826	71	0.830	116	0.827	161	0.822	206	0.824	251	0.821	296	0.828	341	0.826
27	0.811	72	0.791	117	0.813	162	0.784	207	0.810	252	0.783	297	0.814	342	0.788
28	0.795	73	0.752	118	0.798	163	0.744	208	0.794	253	0.743	298	0.798	343	0.749
29	0.778	74	0.712	119	0.780	164	0.704	209	0.776	254	0.703	299	0.780	344	0.709
30	0.760	75	0.672	120	0.762	165	0.665	210	0.757	255	0.664	300	0.761	345	0.669
31	0.739	76	0.633	121	0.741	166	0.627	211	0.737	256	0.626	301	0.741	346	0.631
32	0.718	77	0.598	122	0.720	167	0.592	212	0.715	257	0.591	302	0.719	347	0.596
33	0.695	78	0.566	123	0.697	168	0.561	213	0.691	258	0.560	303	0.696	348	0.564
34	0.672	79	0.539	124	0.673	169	0.535	214	0.667	259	0.535	304	0.672	349	0.538
35	0.647	80	0.519	125	0.649	170	0.516	215	0.642	260	0.516	305	0.647	350	0.519
36	0.622	81	0.506	126	0.623	171	0.504	216	0.617	261	0.504	306	0.621	351	0.506
37	0.598	82	0.500	127	0.599	172	0.500	217	0.591	262	0.499	307	0.596	352	0.501
38	0.574	83	0.502	128	0.575	173	0.502	218	0.567	263	0.501	308	0.572	353	0.504
39	0.552	84	0.510	129	0.552	174	0.511	219	0.544	264	0.510	309	0.549	354	0.512
40	0.532	85	0.524	130	0.533	175	0.526	220	0.524	265	0.524	310	0.529	355	0.527
41	0.517	86	0.543	131	0.517	176	0.544	221	0.508	266	0.543	311	0.512	356	0.546
42	0.506	87	0.564	132	0.506	177	0.566	222	0.497	267	0.565	312	0.501	357	0.568
43	0.502	88	0.588	133	0.502	178	0.590	223	0.493	268	0.589	313	0.495	358	0.592
44	0.504	89	0.613	134	0.504	179	0.616	224	0.495	269	0.614	314	0.497	359	0.617

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Date	<b>20-Dec-10</b>		
Call Letters	<b>WFTV-DT</b>	Channel	<b>39</b>
Location	<b>Orlando, FL</b>		
Customer			
Antenna Type	<b>TUM20-O4SP-14/56H-2-R-T</b>		

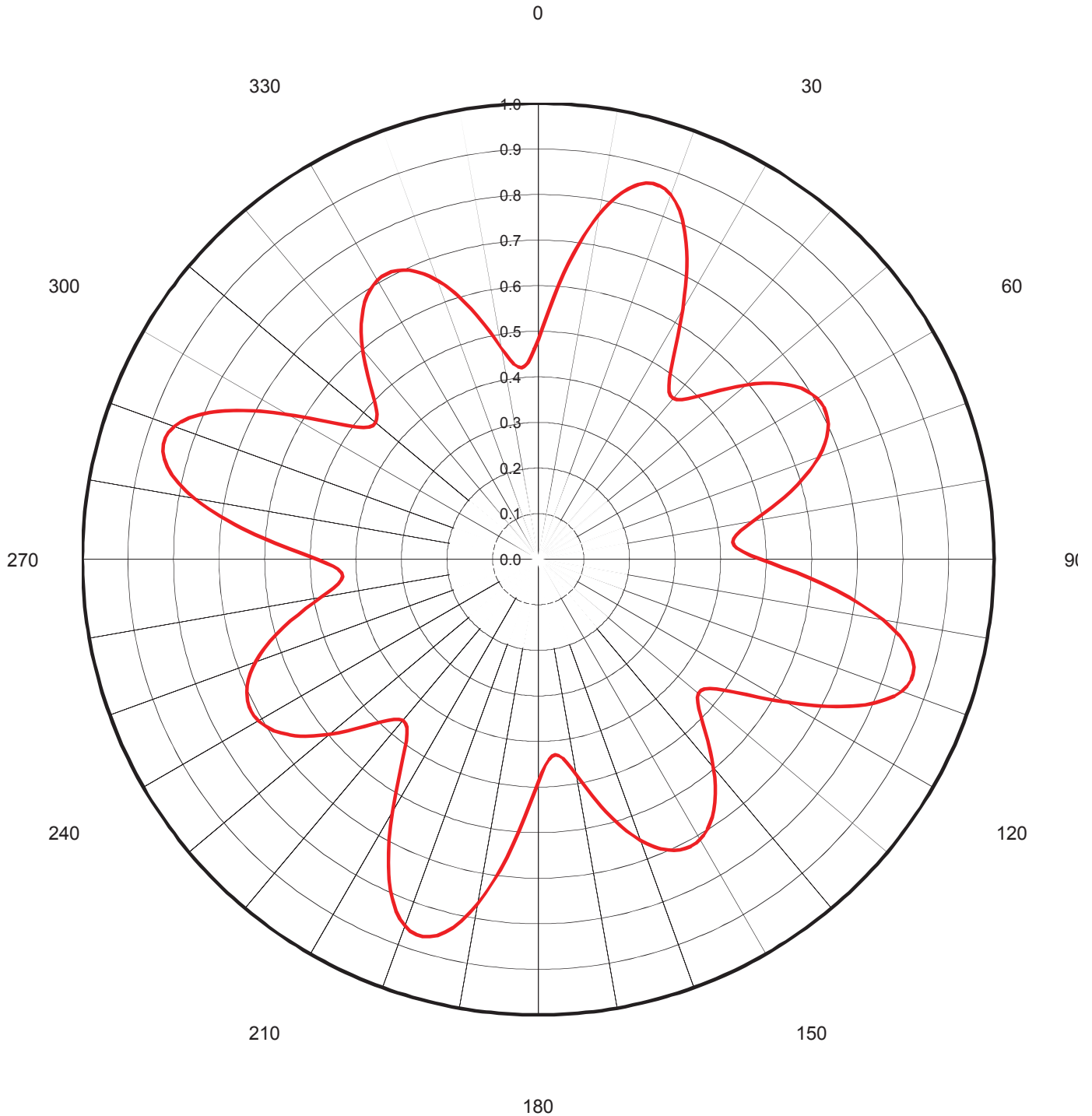
## AZIMUTH PATTERN/VERTICAL POLARIZATION

Gain **1.83**  
Calculated / Measured

**( 2.62 dB)**  
**Calculated**

Frequency  
Drawing #

**623.00 MHz**  
**TUM-O4-39V**

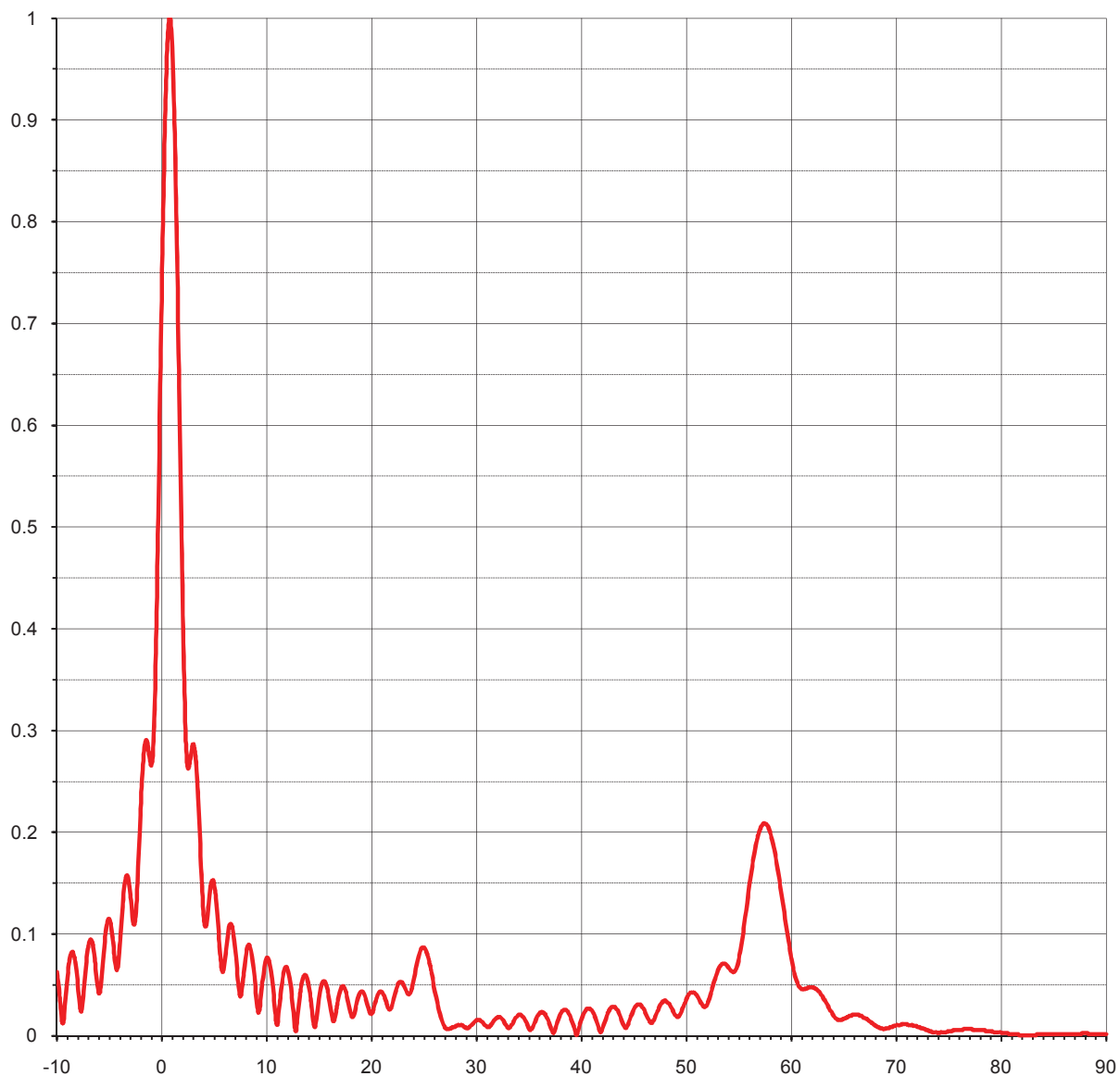




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Antenna Type	<b>TUM20-O4SP-14/56H-2-R-T</b>		

## ELEVATION PATTERN

RMS Gain at Main Lobe	<b>27.50 ( 14.39 dB )</b>	Beam Tilt	<b>0.70 deg</b>
RMS Gain at Horizontal	<b>15.00 ( 11.76 dB )</b>	Frequency	<b>623.00 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>14U275070-90</b>





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## TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **14U275070-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.063	2.4	0.269	10.6	0.056	30.5	0.015	51.0	0.041	71.5	0.011
-9.5	0.013	2.6	0.265	10.8	0.035	31.0	0.010	51.5	0.032	72.0	0.009
-9.0	0.058	2.8	0.279	11.0	0.013	31.5	0.012	52.0	0.030	72.5	0.008
-8.5	0.083	3.0	0.287	11.5	0.049	32.0	0.018	52.5	0.045	73.0	0.006
-8.0	0.050	3.2	0.275	12.0	0.068	32.5	0.017	53.0	0.062	73.5	0.004
-7.5	0.038	3.4	0.245	12.5	0.038	33.0	0.009	53.5	0.071	74.0	0.003
-7.0	0.089	3.6	0.201	13.0	0.016	33.5	0.012	54.0	0.069	74.5	0.004
-6.5	0.084	3.8	0.153	13.5	0.055	34.0	0.020	54.5	0.063	75.0	0.005
-6.0	0.042	4.0	0.116	14.0	0.054	34.5	0.019	55.0	0.072	75.5	0.006
-5.5	0.087	4.2	0.108	14.5	0.017	35.0	0.009	55.5	0.102	76.0	0.006
-5.0	0.115	4.4	0.124	15.0	0.032	35.5	0.010	56.0	0.141	76.5	0.007
-4.5	0.077	4.6	0.144	15.5	0.054	36.0	0.021	56.5	0.176	77.0	0.007
-4.0	0.090	4.8	0.153	16.0	0.039	36.5	0.023	57.0	0.200	77.5	0.006
-3.5	0.153	5.0	0.148	16.5	0.015	37.0	0.013	57.5	0.209	78.0	0.006
-3.0	0.139	5.2	0.130	17.0	0.041	37.5	0.005	58.0	0.202	78.5	0.005
-2.8	0.117	5.4	0.103	17.5	0.047	38.0	0.020	58.5	0.181	79.0	0.005
-2.6	0.110	5.6	0.075	18.0	0.026	38.5	0.026	59.0	0.150	79.5	0.004
-2.4	0.134	5.8	0.063	18.5	0.025	39.0	0.020	59.5	0.115	80.0	0.003
-2.2	0.180	6.0	0.074	19.0	0.043	39.5	0.004	60.0	0.081	80.5	0.003
-2.0	0.229	6.2	0.093	19.5	0.038	40.0	0.014	60.5	0.057	81.0	0.002
-1.8	0.267	6.4	0.107	20.0	0.022	40.5	0.026	61.0	0.047	81.5	0.002
-1.6	0.288	6.6	0.110	20.5	0.035	41.0	0.026	61.5	0.047	82.0	0.001
-1.4	0.289	6.8	0.102	21.0	0.044	41.5	0.015	62.0	0.048	82.5	0.001
-1.2	0.275	7.0	0.084	21.5	0.033	42.0	0.005	62.5	0.046	83.0	0.001
-1.0	0.266	7.2	0.061	22.0	0.029	42.5	0.020	63.0	0.040	83.5	0.002
-0.8	0.290	7.4	0.042	22.5	0.048	43.0	0.029	63.5	0.031	84.0	0.002
-0.6	0.364	7.6	0.044	23.0	0.053	43.5	0.026	64.0	0.022	84.5	0.002
-0.4	0.477	7.8	0.062	23.5	0.042	44.0	0.013	64.5	0.016	85.0	0.002
-0.2	0.608	8.0	0.079	24.0	0.051	44.5	0.011	65.0	0.017	85.5	0.002
0.0	0.738	8.2	0.089	24.5	0.076	45.0	0.025	65.5	0.020	86.0	0.002
0.2	0.852	8.4	0.088	25.0	0.087	45.5	0.031	66.0	0.021	86.5	0.002
0.4	0.939	8.6	0.078	25.5	0.077	46.0	0.027	66.5	0.020	87.0	0.002
0.6	0.990	8.8	0.060	26.0	0.051	46.5	0.016	67.0	0.018	87.5	0.002
0.8	1.000	9.0	0.037	26.5	0.026	47.0	0.016	67.5	0.014	88.0	0.003
1.0	0.969	9.2	0.023	27.0	0.010	47.5	0.029	68.0	0.010	88.5	0.002
1.2	0.898	9.4	0.035	27.5	0.007	48.0	0.035	68.5	0.008	89.0	0.002
1.4	0.795	9.6	0.055	28.0	0.009	48.5	0.031	69.0	0.008	89.5	0.002
1.6	0.671	9.8	0.063	28.5	0.011	49.0	0.021	69.5	0.009	90.0	0.002
1.8	0.539	10.0	0.074	29.0	0.009	49.5	0.022	70.0	0.011		
2.0	0.414	10.2	0.077	29.5	0.010	50.0	0.034	70.5	0.012		
2.2	0.318	10.4	0.070	30.0	0.015	50.5	0.043	71.0	0.012		

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