



Proposal #: **C-01199**

Antenna Type: **TFU-27ETT/VP-R 4C130**

Channel: **45 DTV**

Call Letters: **WDIV-DT**

Location: **Detroit, MI**

Electrical Specifications		Value		Remarks	
		Ratio	dBd		
RMS Gain at Main Lobe over Halfwave Dipole	Hpol				
	Vpol				
RMS Gain at Horizontal over Halfwave Dipole	Hpol				
	Vpol				
Peak Directional Gain over Halfwave Dipole	Hpol	28.3	14.52		
	Vpol	4.3	6.33		
Peak Directional Gain at Horizontal over Halfwave Dipole	Hpol	19.1	12.81		
	Vpol	2.9	4.62		
Circularity Directional		dB			
Axial Ratio		dB			
Beam Tilt		0.75 deg			
Average Power DTV		40 kW	16.02 dBk		
Antenna Input: T/L		6 1/8 in	75.0 ohm	Type:	EIA/DCA
Maximum Antenna Input VSWR				Notes:	
		Channel 1.08 : 1			
Patterns	Azimuth	TFU-4C130-HP	TFU-4C190-VP		
	Elevation	27E240075	27E240075-90		
Mechanical Specifications		Metric	English	Bury Mount	
Height with Lightning Protector	H4	14.9 m	49.0 ft	56.5 ft	
Height Less Lightning Protector	H2	13.7 m	45.0 ft	TIA/EIA-222-F.	52.5 ft
Height of Center of Radiation	H3	7.0 m	22.5 ft	Above base flange	30 ft
Basic Wind Speed	V	120.7 km/h	75 mi/h		
Force Coeff. x Projected Area	CaAc	4.2 m²	45.5 ft²	Above base flange	78.5 ft²
Moment Arm	D1	7.5 m	24.5 ft	Above base flange	20.2 ft
Force Coeff. x Projected Area	CaAc	m²	ft²		46.3 ft²
Moment Arm	D3	m	ft		9.8 ft
Pole Bury Length	D2	m	ft		20 ft
Weight	W	2.1 t	4700.0 lbs		11,100 lbs
Radome					
Antenna designed in accordance with AISC specifications for design of structural steel for building as prescribed by TIA/EIA-222-F.					

**NOTE:**

Prepared By : SWB TLB Approved By : JLS  
Original Date : 26-Mar-07

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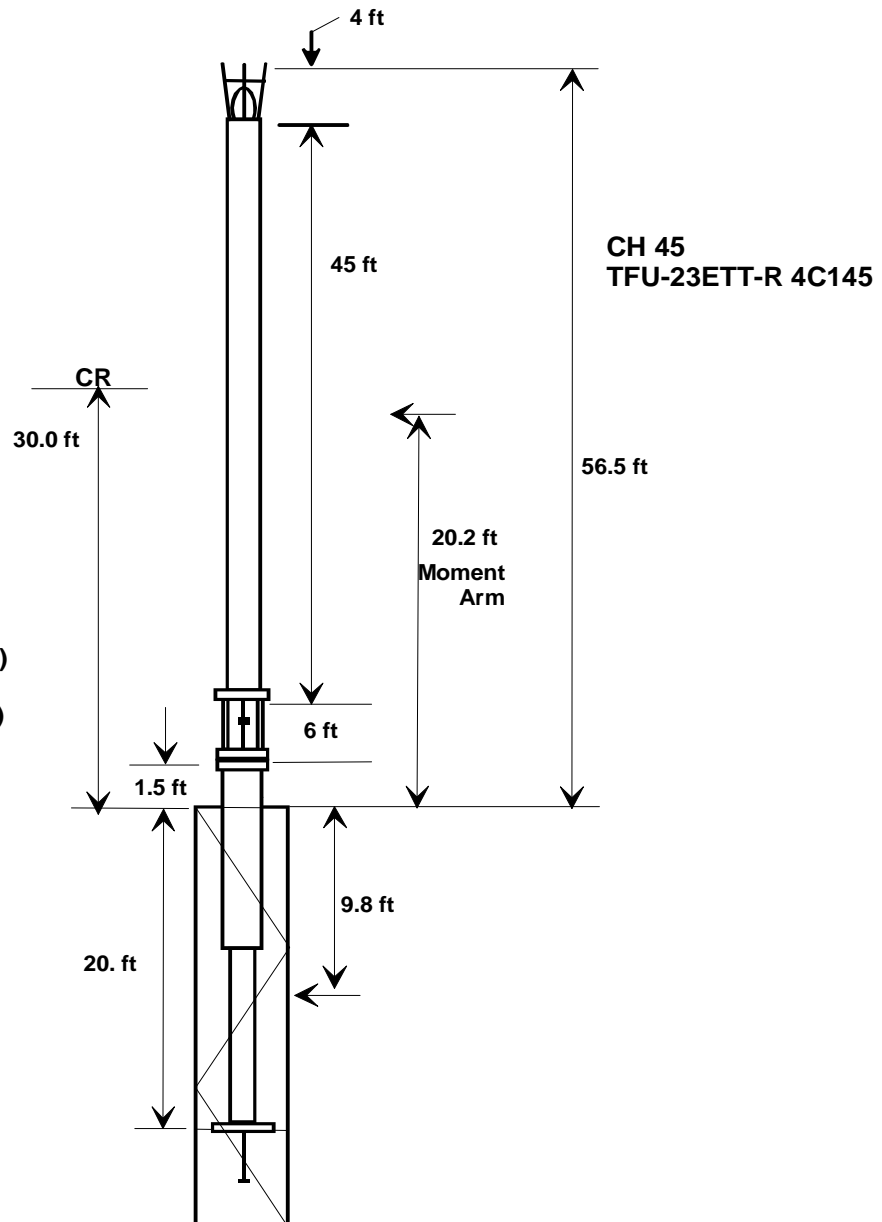
Channel: **45 DTV**

**Bury Mount  
MECHANICAL DATA**

**CaAc = 78.5 ft<sup>2</sup> (Above tower top)**  
**D1 = 20.2 ft (Above tower top)**  
**CaAc = 46.3 ft<sup>2</sup> (Below tower top)**  
**D3 = 9.8 ft (Below tower top)**

**Weight = 11,100 lbs**

**EIA-222-F Specification  
(75 mph basic wind speed)**



SWB-070402-1SK

Not to Scale

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Date	<b>26-Mar-07</b>	
Call Letters	<b>WDIV-DT</b>	Channel <b>45</b>
Location	<b>Detroit, MI</b>	
Customer	<b>WDIV Post Newsweek</b>	
Antenna Type	<b>TFU-27ETT/VP-R 4C130</b>	

## SYSTEM SUMMARY

### Antenna:

Type:	<b>TFU-27ETT/VP-R 4C130</b>	ERP:	<b>1000 kW</b>	<b>( 30.00 dBk )</b>	<b>150 kW</b>	<b>( 21.76 dBk )</b>
Channel:	<b>45</b>	Peak Gain*:	<b>28.3</b>	<b>( 14.52 dB )</b>	<b>4.3</b>	<b>( 6.28 dB )</b>
Location:	<b>Detroit, MI</b>	Input Power:	<b>35.3 kW</b>	<b>( 15.48 dBk )</b>		

### Transmission Line:

Type:	<b>EIA/DCA</b>	Attenuation:	<b>1.10 dB</b>
Size:	<b>8-3/16 in</b>	Efficiency:	<b>77.6%</b>
Impedance:	<b>75 ohm</b>		
Length:	<b>1,180 ft</b>		<b>359.7 m</b>

### Transmitter:

Power Required: **45.5 kW ( 16.58 dBk )**

\* Gain is with respect to half wave dipole.

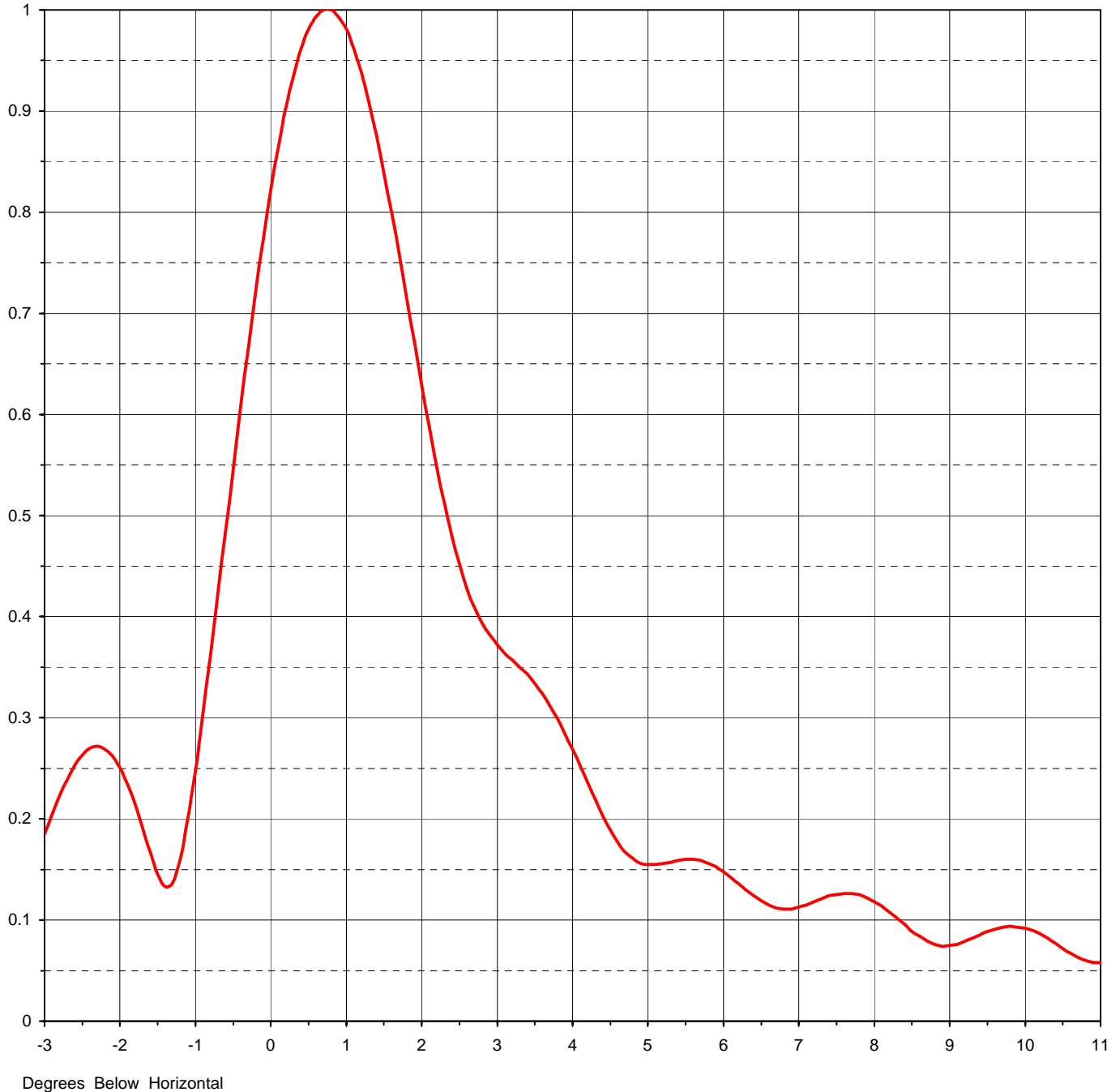
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Customer	<b>WDIV Post Newsweek</b>	
Antenna Type	<b>TFU-27ETT/VP-R 4C130</b>	

## ELEVATION PATTERN

RMS Gain at Main Lobe	<b>24.00 ( 13.80 dB )</b>	Beam Tilt	<b>0.75 deg</b>
RMS Gain at Horizontal	<b>16.20 ( 12.10 dB )</b>	Frequency	<b>659.00 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>27E240075</b>

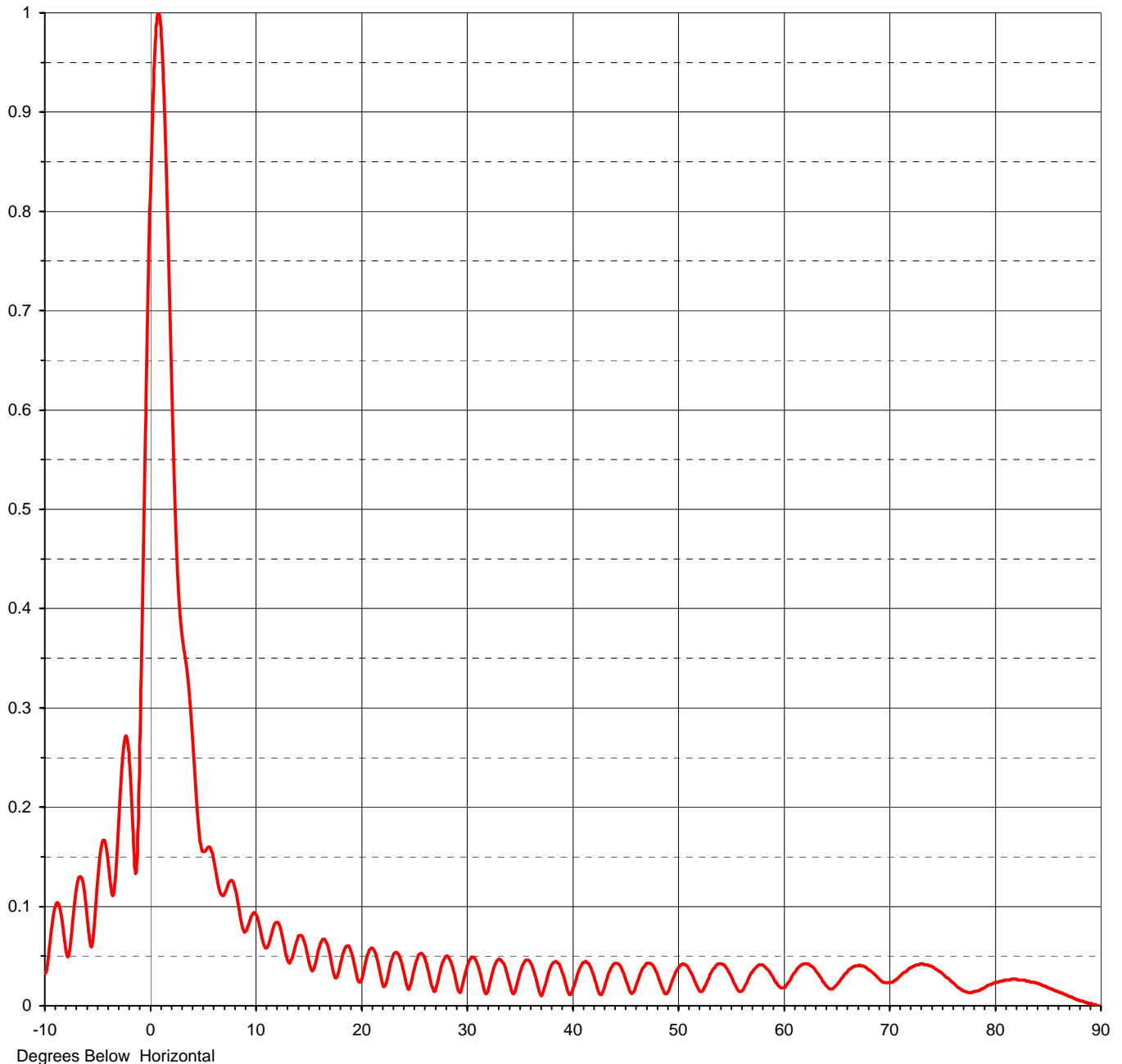




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RMS Gain at Horizontal	<b>16.20 ( 12.10 dB )</b>	Frequency	<b>659.00 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>27E240075-90</b>





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## TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **27E240075-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.033	2.4	0.480	10.6	0.072	30.5	0.049	51.0	0.039	71.5	0.034
-9.5	0.064	2.6	0.428	10.8	0.063	31.0	0.044	51.5	0.029	72.0	0.038
-9.0	0.100	2.8	0.394	11.0	0.058	31.5	0.025	52.0	0.017	72.5	0.041
-8.5	0.095	3.0	0.372	11.5	0.069	32.0	0.013	52.5	0.017	73.0	0.042
-8.0	0.057	3.2	0.357	12.0	0.084	32.5	0.033	53.0	0.028	73.5	0.041
-7.5	0.067	3.4	0.343	12.5	0.075	33.0	0.046	53.5	0.038	74.0	0.039
-7.0	0.117	3.6	0.324	13.0	0.050	33.5	0.043	54.0	0.042	74.5	0.036
-6.5	0.128	3.8	0.299	13.5	0.048	34.0	0.026	54.5	0.040	75.0	0.032
-6.0	0.088	4.0	0.269	14.0	0.067	34.5	0.012	55.0	0.031	75.5	0.028
-5.5	0.063	4.2	0.236	14.5	0.069	35.0	0.030	55.5	0.020	76.0	0.023
-5.0	0.127	4.4	0.203	15.0	0.049	35.5	0.044	56.0	0.014	76.5	0.018
-4.5	0.167	4.6	0.177	15.5	0.036	36.0	0.045	56.5	0.022	77.0	0.015
-4.0	0.144	4.8	0.161	16.0	0.056	36.5	0.031	57.0	0.033	77.5	0.013
-3.5	0.112	5.0	0.155	16.5	0.067	37.0	0.012	57.5	0.039	78.0	0.014
-3.0	0.185	5.2	0.156	17.0	0.056	37.5	0.021	58.0	0.041	78.5	0.016
-2.8	0.223	5.4	0.159	17.5	0.031	38.0	0.039	58.5	0.037	79.0	0.018
-2.6	0.253	5.6	0.160	18.0	0.037	38.5	0.045	59.0	0.030	79.5	0.021
-2.4	0.270	5.8	0.156	18.5	0.057	39.0	0.037	59.5	0.021	80.0	0.023
-2.2	0.269	6.0	0.148	19.0	0.058	39.5	0.020	60.0	0.018	80.5	0.025
-2.0	0.251	6.2	0.136	19.5	0.038	40.0	0.013	60.5	0.024	81.0	0.026
-1.8	0.214	6.4	0.124	20.0	0.024	40.5	0.031	61.0	0.032	81.5	0.027
-1.6	0.167	6.6	0.115	20.5	0.046	41.0	0.043	61.5	0.039	82.0	0.027
-1.4	0.133	6.8	0.111	21.0	0.058	41.5	0.043	62.0	0.042	82.5	0.026
-1.2	0.161	7.0	0.113	21.5	0.049	42.0	0.032	62.5	0.041	83.0	0.025
-1.0	0.248	7.2	0.118	22.0	0.025	42.5	0.015	63.0	0.037	83.5	0.024
-0.8	0.362	7.4	0.124	22.5	0.026	43.0	0.016	63.5	0.029	84.0	0.022
-0.6	0.485	7.6	0.126	23.0	0.048	43.5	0.033	64.0	0.021	84.5	0.020
-0.4	0.608	7.8	0.125	23.5	0.053	44.0	0.042	64.5	0.017	85.0	0.018
-0.2	0.722	8.0	0.118	24.0	0.038	44.5	0.041	65.0	0.021	85.5	0.016
0.0	0.822	8.2	0.108	24.5	0.017	45.0	0.030	65.5	0.028	86.0	0.014
0.2	0.903	8.4	0.096	25.0	0.033	45.5	0.015	66.0	0.034	86.5	0.012
0.4	0.961	8.6	0.084	25.5	0.051	46.0	0.017	66.5	0.039	87.0	0.009
0.6	0.994	8.8	0.076	26.0	0.050	46.5	0.032	67.0	0.040	87.5	0.007
0.8	1.000	9.0	0.075	26.5	0.032	47.0	0.042	67.5	0.040	88.0	0.005
1.0	0.981	9.2	0.079	27.0	0.014	47.5	0.042	68.0	0.036	88.5	0.003
1.2	0.938	9.4	0.085	27.5	0.034	48.0	0.034	68.5	0.032	89.0	0.002
1.4	0.876	9.6	0.091	28.0	0.049	48.5	0.019	69.0	0.027	89.5	0.001
1.6	0.800	9.8	0.093	28.5	0.045	49.0	0.012	69.5	0.023	90.0	0.000
1.8	0.715	10.0	0.093	29.0	0.026	49.5	0.025	70.0	0.023		
2.0	0.629	10.2	0.090	29.5	0.015	50.0	0.037	70.5	0.026		
2.2	0.548	10.4	0.082	30.0	0.036	50.5	0.042	71.0	0.030		

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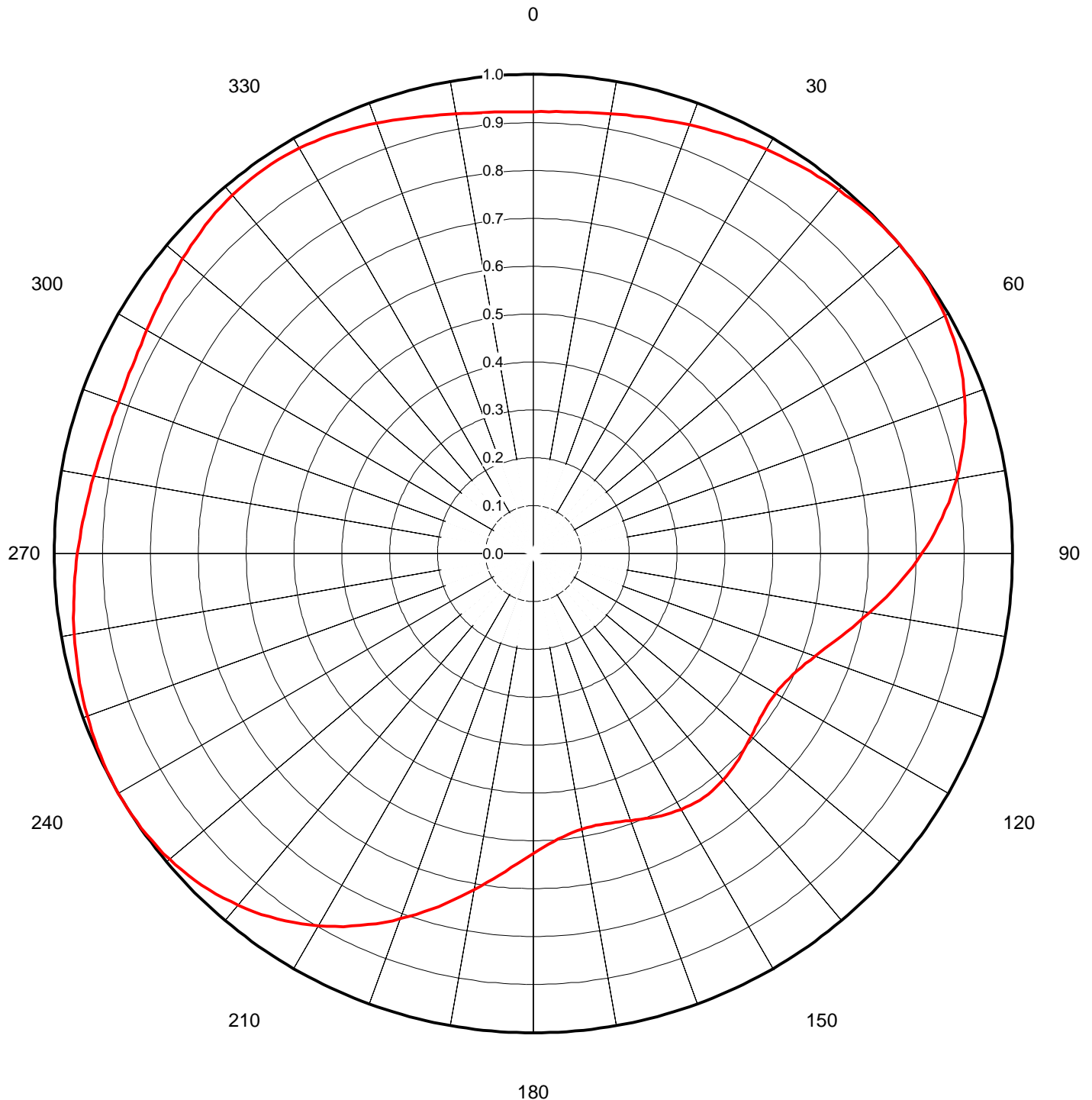


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## AZIMUTH PATTERN

Gain **1.30** (1.14 dB)  
Calculated / Measured **Calculated**

Frequency **659.00 MHz**  
Drawing # **TFU-4C130-HP**





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## TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing #: **TFU-4C130-HP**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.922	45	0.997	90	0.811	135	0.606	180	0.626	225	0.978	270	0.952	315	0.968
1	0.922	46	0.998	91	0.801	136	0.609	181	0.633	226	0.981	271	0.949	316	0.970
2	0.923	47	0.999	92	0.792	137	0.611	182	0.641	227	0.984	272	0.947	317	0.972
3	0.923	48	0.999	93	0.782	138	0.613	183	0.649	228	0.987	273	0.945	318	0.974
4	0.924	49	1.000	94	0.772	139	0.615	184	0.657	229	0.989	274	0.943	319	0.975
5	0.925	50	1.000	95	0.762	140	0.617	185	0.665	230	0.992	275	0.941	320	0.977
6	0.926	51	1.000	96	0.752	141	0.618	186	0.674	231	0.993	276	0.939	321	0.978
7	0.927	52	1.000	97	0.742	142	0.619	187	0.684	232	0.995	277	0.937	322	0.979
8	0.929	53	1.000	98	0.732	143	0.620	188	0.693	233	0.996	278	0.935	323	0.979
9	0.930	54	0.999	99	0.722	144	0.621	189	0.703	234	0.998	279	0.933	324	0.980
10	0.932	55	0.998	100	0.712	145	0.621	190	0.712	235	0.998	280	0.932	325	0.980
11	0.933	56	0.998	101	0.703	146	0.621	191	0.722	236	0.999	281	0.930	326	0.980
12	0.935	57	0.996	102	0.693	147	0.620	192	0.732	237	1.000	282	0.928	327	0.979
13	0.937	58	0.995	103	0.684	148	0.619	193	0.742	238	1.000	283	0.927	328	0.979
14	0.939	59	0.993	104	0.674	149	0.618	194	0.752	239	1.000	284	0.926	329	0.978
15	0.941	60	0.992	105	0.666	150	0.617	195	0.762	240	1.000	285	0.925	330	0.977
16	0.943	61	0.989	106	0.657	151	0.615	196	0.772	241	1.000	286	0.924	331	0.975
17	0.945	62	0.987	107	0.649	152	0.613	197	0.782	242	0.999	287	0.923	332	0.974
18	0.947	63	0.984	108	0.641	153	0.611	198	0.792	243	0.999	288	0.922	333	0.972
19	0.950	64	0.981	109	0.633	154	0.609	199	0.801	244	0.998	289	0.922	334	0.970
20	0.952	65	0.978	110	0.626	155	0.606	200	0.811	245	0.997	290	0.922	335	0.968
21	0.954	66	0.975	111	0.619	156	0.603	201	0.820	246	0.996	291	0.922	336	0.966
22	0.956	67	0.971	112	0.613	157	0.601	202	0.830	247	0.995	292	0.922	337	0.963
23	0.958	68	0.967	113	0.607	158	0.598	203	0.839	248	0.994	293	0.922	338	0.961
24	0.961	69	0.963	114	0.602	159	0.596	204	0.848	249	0.992	294	0.923	339	0.958
25	0.963	70	0.958	115	0.598	160	0.593	205	0.856	250	0.991	295	0.924	340	0.956
26	0.965	71	0.953	116	0.594	161	0.591	206	0.865	251	0.989	296	0.925	341	0.953
27	0.967	72	0.948	117	0.591	162	0.589	207	0.873	252	0.988	297	0.926	342	0.951
28	0.969	73	0.942	118	0.588	163	0.587	208	0.881	253	0.986	298	0.928	343	0.948
29	0.971	74	0.937	119	0.586	164	0.585	209	0.889	254	0.984	299	0.929	344	0.945
30	0.973	75	0.931	120	0.584	165	0.584	210	0.897	255	0.983	300	0.931	345	0.943
31	0.975	76	0.924	121	0.583	166	0.583	211	0.904	256	0.981	301	0.933	346	0.940
32	0.977	77	0.918	122	0.582	167	0.582	212	0.911	257	0.979	302	0.935	347	0.938
33	0.979	78	0.911	123	0.582	168	0.582	213	0.918	258	0.977	303	0.938	348	0.936
34	0.981	79	0.904	124	0.583	169	0.583	214	0.924	259	0.975	304	0.940	349	0.933
35	0.983	80	0.897	125	0.584	170	0.584	215	0.931	260	0.973	305	0.943	350	0.931
36	0.984	81	0.889	126	0.585	171	0.585	216	0.937	261	0.971	306	0.945	351	0.930
37	0.986	82	0.881	127	0.587	172	0.588	217	0.943	262	0.969	307	0.948	352	0.928
38	0.988	83	0.873	128	0.589	173	0.590	218	0.948	263	0.967	308	0.950	353	0.926
39	0.989	84	0.865	129	0.591	174	0.594	219	0.953	264	0.965	309	0.953	354	0.925
40	0.991	85	0.856	130	0.593	175	0.598	220	0.958	265	0.963	310	0.956	355	0.924
41	0.992	86	0.848	131	0.596	176	0.602	221	0.963	266	0.960	311	0.958	356	0.923
42	0.994	87	0.839	132	0.598	177	0.607	222	0.967	267	0.958	312	0.961	357	0.923
43	0.995	88	0.830	133	0.601	178	0.613	223	0.971	268	0.956	313	0.963	358	0.922
44	0.996	89	0.820	134	0.604	179	0.619	224	0.975	269	0.954	314	0.966	359	0.922

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Customer	<b>WDIV Post Newsweek</b>	
Antenna Type	<b>TFU-27ETT/VP-R 4C130</b>	

### AZIMUTH PATTERN/VERTICAL POLARIZATION

Gain	<b>1.90</b>	<b>( 2.79 dB)</b>
Calculated / Measured		<b>Calculated</b>

Frequency	<b>659.00 MHz</b>
Drawing #	<b>TFU-4C190-VP</b>

