



Antenna Model: **TFU-22ETT/VP-R 4C170**

Proposal Number: **C-80069-4**
Date: **1-Aug-23**
Customer: **Tegna**
Location: **Decatur, TX**

Electrical Specifications

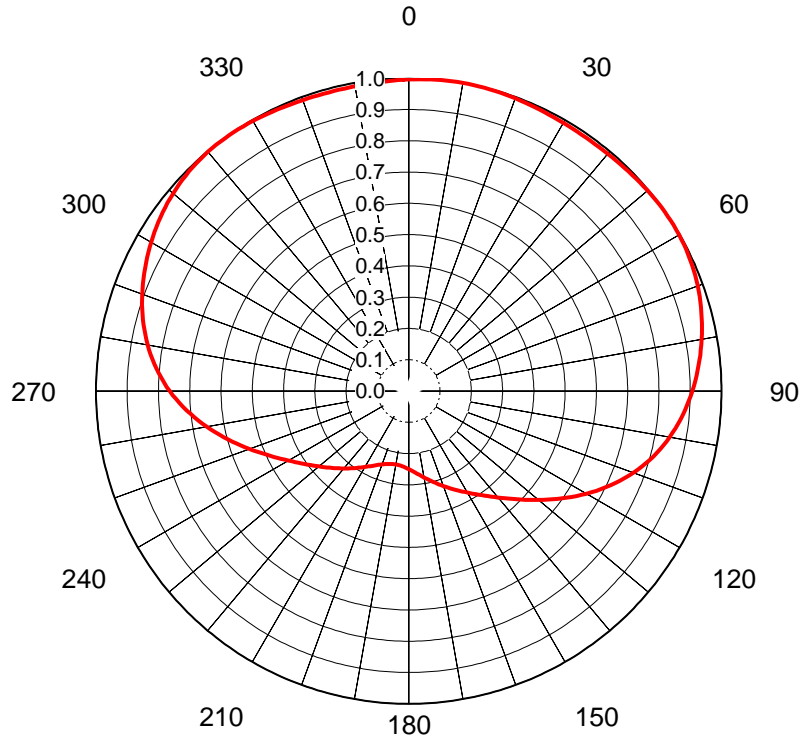
Polarization: **Elliptical**
Azimuth Pattern: **Directional**
Antenna Input: **6-1/8"** **75 Ohm** **EIA/DCA**
VSWR: **Channel** **1.08 : 1**
Bandwidth: **MHz**
Rated Input Power: **37 kW** **(15.68 dBk)** **Maximum Average Power**

Mechanical Specifications

Mounting: **Top Mounted**
Environmental Protection: **Full Radome**
Height: **43.1 ft (13.1m)** less Lightning Protector **46.1 ft (14.1m)** with Lightning Protector
Weight: **4450 lb (2t)**
Effective Projected Area: **41.9 ft² (3.9m²)** **TIA-222-H** Basic Wind Speed: **105 m/h (169 km/h)**

Channel Specifications

Call	CH	Freq	Hpol ERP	Vpol ERP	TPO	Peak Main Lobe Hpol Gain	Peak Main Lobe Vpol Gain	Peak at Horizontal Hpol Gain	Peak at Horizontal Vpol Gain
KMPX	30	569 MHz	1,000 kW (30.00 dBk)	300 kW (24.77 dBk)	51.1 kW (17.09 dBk)	30.82 (14.89dB)	9.25 (9.66dB)	18.51 (12.68dB)	5.55 (7.45dB)

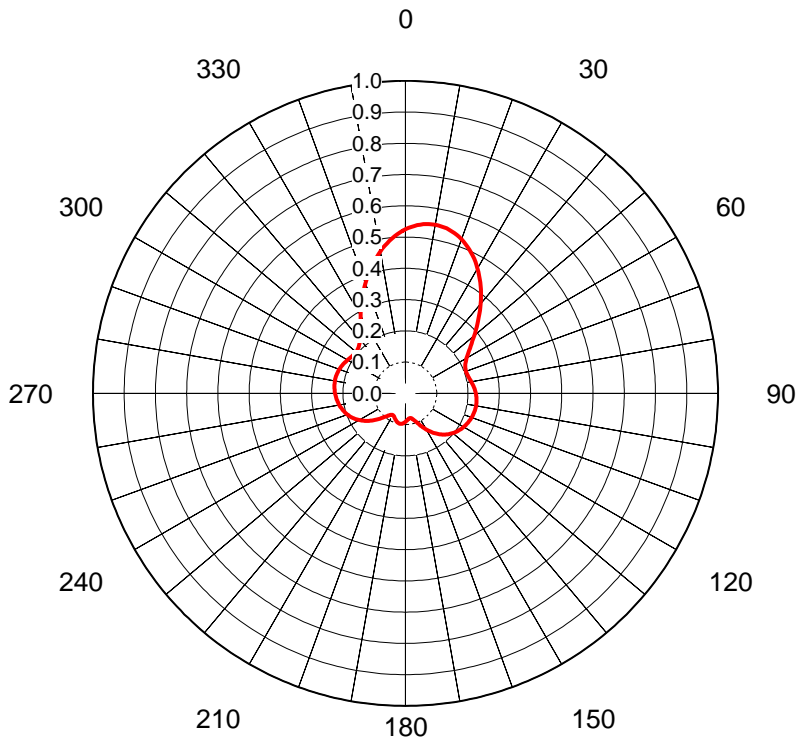


AZIMUTH PATTERN Horizontal Polarization

Proposal No. **C-80069-4**
 Date **1-Aug-23**
 Call Letters **KMPX**
 Channel **30**
 Frequency **569 MHz**
 Antenna Type **TFU-22ETT/VP-R 4C170**
 Gain **1.67 (2.23dB)**
 Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.996	36	0.989	72	0.978	108	0.783	144	0.414	180	0.250	216	0.305	252	0.564	288	0.896
1	0.997	37	0.989	73	0.975	109	0.774	145	0.407	181	0.248	217	0.309	253	0.575	289	0.902
2	0.997	38	0.989	74	0.972	110	0.764	146	0.400	182	0.246	218	0.314	254	0.587	290	0.907
3	0.998	39	0.989	75	0.969	111	0.754	147	0.393	183	0.244	219	0.319	255	0.598	291	0.912
4	0.998	40	0.990	76	0.966	112	0.744	148	0.387	184	0.243	220	0.323	256	0.610	292	0.917
5	0.999	41	0.990	77	0.962	113	0.734	149	0.381	185	0.241	221	0.328	257	0.622	293	0.921
6	0.999	42	0.991	78	0.959	114	0.723	150	0.375	186	0.240	222	0.333	258	0.633	294	0.926
7	1.000	43	0.992	79	0.955	115	0.713	151	0.369	187	0.240	223	0.338	259	0.645	295	0.930
8	1.000	44	0.992	80	0.951	116	0.702	152	0.364	188	0.239	224	0.343	260	0.656	296	0.935
9	1.000	45	0.993	81	0.947	117	0.691	153	0.358	189	0.239	225	0.348	261	0.668	297	0.939
10	1.000	46	0.994	82	0.943	118	0.679	154	0.353	190	0.239	226	0.353	262	0.679	298	0.943
11	1.000	47	0.995	83	0.939	119	0.668	155	0.348	191	0.239	227	0.358	263	0.691	299	0.947
12	1.000	48	0.995	84	0.935	120	0.656	156	0.343	192	0.239	228	0.364	264	0.702	300	0.951
13	1.000	49	0.996	85	0.930	121	0.645	157	0.338	193	0.240	229	0.369	265	0.713	301	0.955
14	0.999	50	0.997	86	0.926	122	0.633	158	0.333	194	0.240	230	0.375	266	0.723	302	0.959
15	0.999	51	0.997	87	0.921	123	0.622	159	0.328	195	0.241	231	0.381	267	0.734	303	0.962
16	0.998	52	0.998	88	0.917	124	0.610	160	0.323	196	0.243	232	0.387	268	0.744	304	0.966
17	0.998	53	0.999	89	0.912	125	0.598	161	0.319	197	0.244	233	0.393	269	0.754	305	0.969
18	0.997	54	0.999	90	0.907	126	0.587	162	0.314	198	0.246	234	0.400	270	0.764	306	0.972
19	0.997	55	0.999	91	0.902	127	0.575	163	0.309	199	0.248	235	0.407	271	0.774	307	0.975
20	0.996	56	0.999	92	0.896	128	0.564	164	0.305	200	0.250	236	0.414	272	0.783	308	0.978
21	0.995	57	0.999	93	0.891	129	0.553	165	0.301	201	0.252	237	0.421	273	0.792	309	0.981
22	0.994	58	0.999	94	0.885	130	0.542	166	0.296	202	0.254	238	0.429	274	0.801	310	0.983
23	0.994	59	0.999	95	0.879	131	0.531	167	0.292	203	0.257	239	0.436	275	0.809	311	0.985
24	0.993	60	0.998	96	0.874	132	0.520	168	0.288	204	0.260	240	0.445	276	0.817	312	0.988
25	0.992	61	0.998	97	0.867	133	0.510	169	0.284	205	0.263	241	0.453	277	0.825	313	0.990
26	0.992	62	0.997	98	0.861	134	0.500	170	0.280	206	0.266	242	0.462	278	0.833	314	0.991
27	0.991	63	0.996	99	0.854	135	0.490	171	0.277	207	0.270	243	0.471	279	0.840	315	0.993
28	0.990	64	0.995	100	0.847	136	0.480	172	0.273	208	0.273	244	0.480	280	0.847	316	0.994
29	0.990	65	0.993	101	0.840	137	0.471	173	0.270	209	0.277	245	0.490	281	0.854	317	0.996
30	0.989	66	0.991	102	0.833	138	0.462	174	0.266	210	0.280	246	0.500	282	0.861	318	0.997
31	0.989	67	0.990	103	0.825	139	0.453	175	0.263	211	0.284	247	0.510	283	0.867	319	0.998
32	0.989	68	0.988	104	0.817	140	0.445	176	0.260	212	0.288	248	0.520	284	0.874	320	0.998
33	0.989	69	0.985	105	0.809	141	0.436	177	0.257	213	0.292	249	0.531	285	0.879	321	0.999
34	0.988	70	0.983	106	0.801	142	0.429	178	0.254	214	0.296	250	0.542	286	0.885	322	0.999
35	0.988	71	0.981	107	0.792	143	0.421	179	0.252	215	0.301	251	0.553	287	0.891	323	0.999

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AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-80069-4**
 Date **1-Aug-23**
 Call Letters **KMPX**
 Channel **30**
 Frequency **569 MHz**
 Antenna Type **TFU-22ETT/VP-R 4C170**
 Gain **4.11 (6.13dB)**
 Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.525	36	0.411	72	0.206	108	0.227	144	0.157	180	0.091	216	0.086	252	0.202	288	0.227	324	0.246
1	0.529	37	0.402	73	0.207	109	0.226	145	0.153	181	0.092	217	0.088	253	0.204	289	0.226	325	0.252
2	0.533	38	0.393	74	0.207	110	0.225	146	0.150	182	0.094	218	0.090	254	0.206	290	0.225	326	0.258
3	0.536	39	0.383	75	0.208	111	0.224	147	0.146	183	0.095	219	0.093	255	0.208	291	0.224	327	0.265
4	0.539	40	0.374	76	0.209	112	0.224	148	0.142	184	0.096	220	0.096	256	0.209	292	0.223	328	0.272
5	0.542	41	0.365	77	0.210	113	0.223	149	0.138	185	0.097	221	0.099	257	0.211	293	0.222	329	0.279
6	0.544	42	0.356	78	0.211	114	0.222	150	0.134	186	0.098	222	0.103	258	0.212	294	0.221	330	0.287
7	0.546	43	0.347	79	0.212	115	0.221	151	0.130	187	0.098	223	0.106	259	0.214	295	0.220	331	0.295
8	0.547	44	0.338	80	0.214	116	0.220	152	0.126	188	0.099	224	0.110	260	0.215	296	0.219	332	0.303
9	0.547	45	0.329	81	0.215	117	0.219	153	0.122	189	0.099	225	0.114	261	0.216	297	0.218	333	0.312
10	0.548	46	0.320	82	0.216	118	0.218	154	0.118	190	0.099	226	0.118	262	0.218	298	0.216	334	0.320
11	0.547	47	0.312	83	0.218	119	0.216	155	0.114	191	0.099	227	0.122	263	0.219	299	0.215	335	0.329
12	0.547	48	0.303	84	0.219	120	0.215	156	0.110	192	0.099	228	0.126	264	0.220	300	0.214	336	0.338
13	0.546	49	0.295	85	0.220	121	0.214	157	0.106	193	0.098	229	0.130	265	0.221	301	0.212	337	0.347
14	0.544	50	0.287	86	0.221	122	0.212	158	0.103	194	0.098	230	0.134	266	0.222	302	0.211	338	0.356
15	0.542	51	0.279	87	0.222	123	0.211	159	0.099	195	0.097	231	0.138	267	0.223	303	0.210	339	0.365
16	0.539	52	0.272	88	0.223	124	0.209	160	0.096	196	0.096	232	0.142	268	0.224	304	0.209	340	0.374
17	0.536	53	0.265	89	0.224	125	0.208	161	0.093	197	0.095	233	0.146	269	0.224	305	0.208	341	0.383
18	0.533	54	0.258	90	0.225	126	0.206	162	0.090	198	0.094	234	0.150	270	0.225	306	0.207	342	0.393
19	0.529	55	0.252	91	0.226	127	0.204	163	0.088	199	0.092	235	0.153	271	0.226	307	0.207	343	0.402
20	0.525	56	0.246	92	0.227	128	0.202	164	0.086	200	0.091	236	0.157	272	0.227	308	0.206	344	0.411
21	0.520	57	0.240	93	0.227	129	0.200	165	0.084	201	0.090	237	0.161	273	0.227	309	0.206	345	0.419
22	0.515	58	0.235	94	0.228	130	0.198	166	0.083	202	0.088	238	0.164	274	0.228	310	0.206	346	0.428
23	0.509	59	0.230	95	0.228	131	0.196	167	0.082	203	0.087	239	0.168	275	0.228	311	0.206	347	0.437
24	0.503	60	0.226	96	0.229	132	0.193	168	0.081	204	0.085	240	0.171	276	0.228	312	0.207	348	0.445
25	0.497	61	0.222	97	0.229	133	0.191	169	0.080	205	0.084	241	0.174	277	0.229	313	0.208	349	0.453
26	0.491	62	0.219	98	0.229	134	0.188	170	0.080	206	0.083	242	0.177	278	0.229	314	0.209	350	0.461
27	0.484	63	0.216	99	0.229	135	0.186	171	0.081	207	0.082	243	0.180	279	0.229	315	0.211	351	0.469
28	0.477	64	0.213	100	0.229	136	0.183	172	0.081	208	0.081	244	0.183	280	0.229	316	0.213	352	0.477
29	0.469	65	0.211	101	0.229	137	0.180	173	0.082	209	0.081	245	0.186	281	0.229	317	0.216	353	0.484
30	0.461	66	0.209	102	0.229	138	0.177	174	0.083	210	0.080	246	0.188	282	0.229	318	0.219	354	0.491
31	0.453	67	0.208	103	0.229	139	0.174	175	0.084	211	0.080	247	0.191	283	0.229	319	0.222	355	0.497
32	0.445	68	0.207	104	0.228	140	0.171	176	0.085	212	0.081	248	0.193	284	0.229	320	0.226	356	0.503
33	0.437	69	0.206	105	0.228	141	0.168	177	0.087	213	0.082	249	0.196	285	0.228	321	0.230	357	0.509
34	0.428	70	0.206	106	0.228	142	0.164	178	0.088	214	0.083	250	0.198	286	0.228	322	0.235	358	0.515
35	0.419	71	0.206	107	0.227	143	0.161	179	0.090	215	0.084	251	0.200	287	0.227	323	0.240	359	0.520

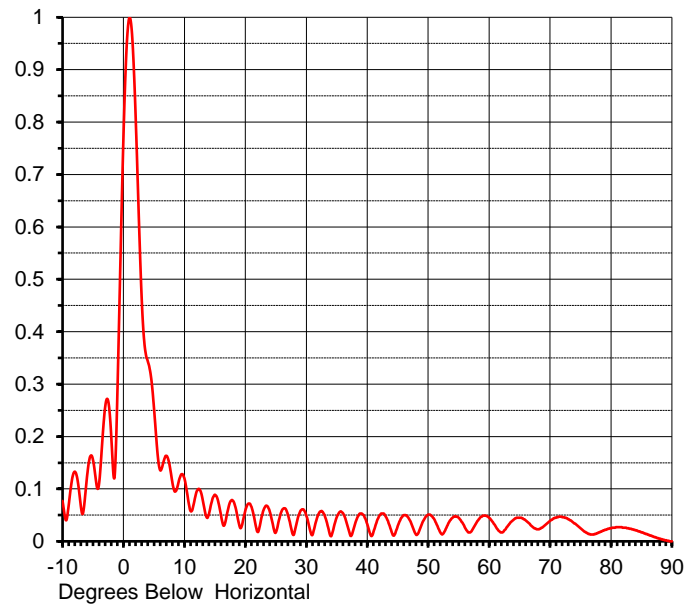
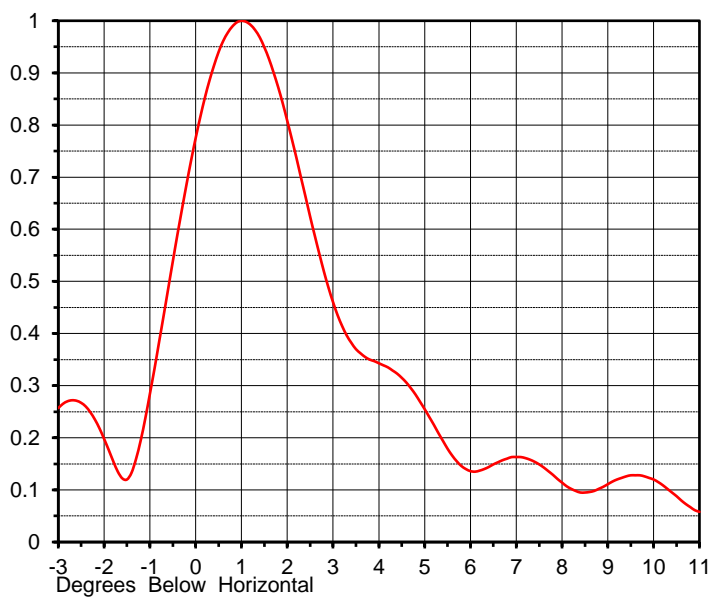
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ELEVATION PATTERN

Proposal No. **C-80069-4**
 Date **1-Aug-23**
 Call Letters **KMPX**
 Channel **30**
 Frequency **569 MHz**
 Antenna Type **TFU-22ETT/VP-R 4C170**

RMS Directivity at Main Lobe **20.7 (13.16 dB)**
 RMS Directivity at Horizontal **12.4 (10.93 dB)**
Calculated

Beam Tilt **1.00 deg**
 Pattern Number **22E207100**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.077	10.0	0.120	30.0	0.049	50.0	0.051	70.0	0.039
-9.0	0.068	11.0	0.058	31.0	0.012	51.0	0.042	71.0	0.045
-8.0	0.133	12.0	0.095	32.0	0.052	52.0	0.017	72.0	0.046
-7.0	0.067	13.0	0.079	33.0	0.050	53.0	0.026	73.0	0.042
-6.0	0.122	14.0	0.051	34.0	0.010	54.0	0.045	74.0	0.034
-5.0	0.155	15.0	0.089	35.0	0.046	55.0	0.045	75.0	0.025
-4.0	0.111	16.0	0.050	36.0	0.054	56.0	0.027	76.0	0.016
-3.0	0.257	17.0	0.053	37.0	0.020	57.0	0.018	77.0	0.013
-2.0	0.198	18.0	0.077	38.0	0.033	58.0	0.037	78.0	0.017
-1.0	0.284	19.0	0.031	39.0	0.053	59.0	0.049	79.0	0.022
0.0	0.775	20.0	0.059	40.0	0.033	60.0	0.045	80.0	0.025
1.0	1.000	21.0	0.066	41.0	0.017	61.0	0.030	81.0	0.027
2.0	0.808	22.0	0.018	42.0	0.049	62.0	0.017	82.0	0.026
3.0	0.460	23.0	0.060	43.0	0.048	63.0	0.028	83.0	0.024
4.0	0.343	24.0	0.057	44.0	0.018	64.0	0.041	84.0	0.021
5.0	0.255	25.0	0.017	45.0	0.029	65.0	0.045	85.0	0.017
6.0	0.136	26.0	0.059	46.0	0.050	66.0	0.040	86.0	0.013
7.0	0.163	27.0	0.050	47.0	0.040	67.0	0.029	87.0	0.009
8.0	0.114	28.0	0.014	48.0	0.013	68.0	0.023	88.0	0.005
9.0	0.111	29.0	0.057	49.0	0.034	69.0	0.029	89.0	0.002
								90.0	0.000

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MECHANICAL SPECIFICATIONS

Proposal No. **C-80069-4**
 Date **1-Aug-23**
 Call Letters **KMPX**
 Channel **30**
 Frequency **569 MHz**
 Antenna Type **TFU-22ETT/VP-R 4C170**

Preliminary Specifications

Top Mounted

With ice TIA-222-H

Design Ult. Wind Speed 105 m/h (169 km/h)

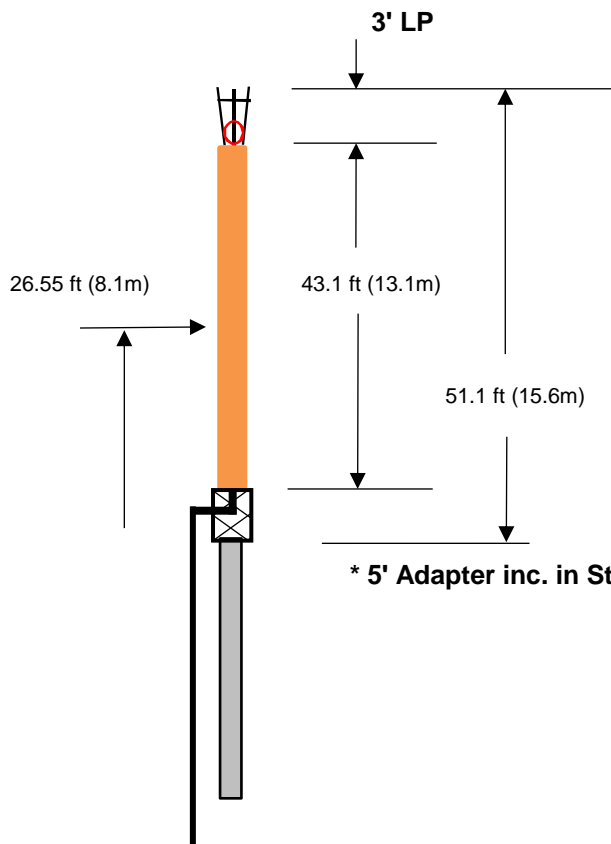
Risk Category II

Exposure Category C

Topography Category 1

Design Ice 1.5 in $t_{iz} = 2.10$ in

Wind Speed w/Ice 36 m/h (57.9 km/h)



* Support Pole Not inc. in Loads

* 5' Adapter inc. in Stack Loads

Mechanical Specifications		without ice	with ice	full stack	full stack with ice
Height with Lightning Protector	H4	46.1 ft (14.1m)		51.1 ft (15.6m)	
Height less Lightning Protector	H2	43.1 ft (13.1m)		48.1 ft (14.7m)	
Height of Center of Radiation	H3	21.55 ft (6.6m)		26.55 ft (8.1m)	
Force Coeff. x Projected Area	CaAc	41.9 ft² (3.9m²)	112.3 ft² (10.4m²)	59.9 ft² (5.6m²)	134.3 ft² (12.5m²)
Moment Arm	D1	22.8 ft (6.9m)	23.1 ft (7m)	23.8 ft (7.3m)	24.2 ft (7.4m)

Weight	W	4450 lb (2t)	6850 lb (3.1t)	6650 lb (3t)	9850 lb (4.5t)
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Antenna designed in accordance with AISC specifications for design of structural steel as prescribed by TIA-222-H

Prepared by: CAB Date: 17-Jul-23 ME: EE:
 Rev. No.4 by: CAB Date: 1-Aug-23

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Summary

Proposal No. **C-80069-4**
Date **1-Aug-23**
Call Letters **KMPX**
Channel **30**
Frequency **569 MHz**
Antenna Type **TFU-22ETT/VP-R 4C170**

Antenna

	Hpol		Vpol	
ERP:	1,000 kW	(30.00 dBk)	300 kW	(24.77 dBk)
Peak Gain*	30.82	(14.89 dB)	9.25	(9.66 dB)

Antenna Input Power **32.4 kW (15.11 dBk)**

Transmission Line

Type:	Rigid	Attenuation:	(1.98 dB)
Size:	6-1/8"	Efficiency:	63.4%
Impedance:	75 Ohm		
Length:	1700 ft	518.2 m	

Transmitter Output

51.1 kW (17.09 dBk)

Transmitter filter losses not included

* Directivity and Gain are with respect to half wave dipole. The gain includes feed system losses

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