

Engineering Statement
CBS Broadcasting Inc.
WBBM-TV(Aux) Chicago, Illinois
Facility ID 9617
Ch. 12 16.7 kW (Max-DA) 417.7 m

CBS Broadcasting Inc. (“ViacomCBS”) proposes to construct an additional auxiliary antenna for WBBM-TV Chicago, IL.¹ The proposed antenna, a Dielectric model TLS-V4M/VP-R, will be located 417.7 meters above average terrain (HAAT) and will operate with an effective radiated power (ERP) of 17.6 kW (Max-DA) horizontal polarization and 13.4 kW (Max-DA) vertical polarization. This Statement addresses allocations, environmental, and radiofrequency factors related to this proposal.

The attached coverage map (**Figure 1**) demonstrates that the proposed service contour will not extend beyond that of the WBBM-TV licensed antenna as required by FCC Rule §73.1675.² Because there are no AM transmitter sites within 3 kilometers of the proposed facility, FCC Rule §1.30002 will not be triggered. The nearest FCC monitoring station is 158.4 kilometers away at Allegan, Michigan, well beyond the protection radius specified in §73.1030(c). It is thus believed that the proposed auxiliary antenna system satisfies all allocation matters.

The proposed facility uses an existing support structure.³ According to Note 1 of FCC Rule §1.1306, the use of existing facilities is environmentally preferable to new construction. Since there will be no change in overall height, marking specifications, or lighting specifications, this application is categorically excluded from environmental processing.

The proposed operation was evaluated for human exposure to radiofrequency energy using equation ten (10) from the Commission’s OET Bulletin No. 65 along with the antenna manufacturer’s published 16 percent relative-field elevation pattern value at points 30 or more

¹ ViacomCBS wishes to retain the existing auxiliary antenna (file 0000058561).

² FCC Rule §73.1675 requires a comparison of Grade B contour locations. Because “Grade B” is not defined in a digital television context, Figure 1 provides 36 dB μ contours instead. For information regarding the main WBBM-TV antenna license, please see file number BLCDT-20090612ADR.

³ See Antenna Structure Registration 1009012.

Engineering Statement
CBS Broadcasting Inc.

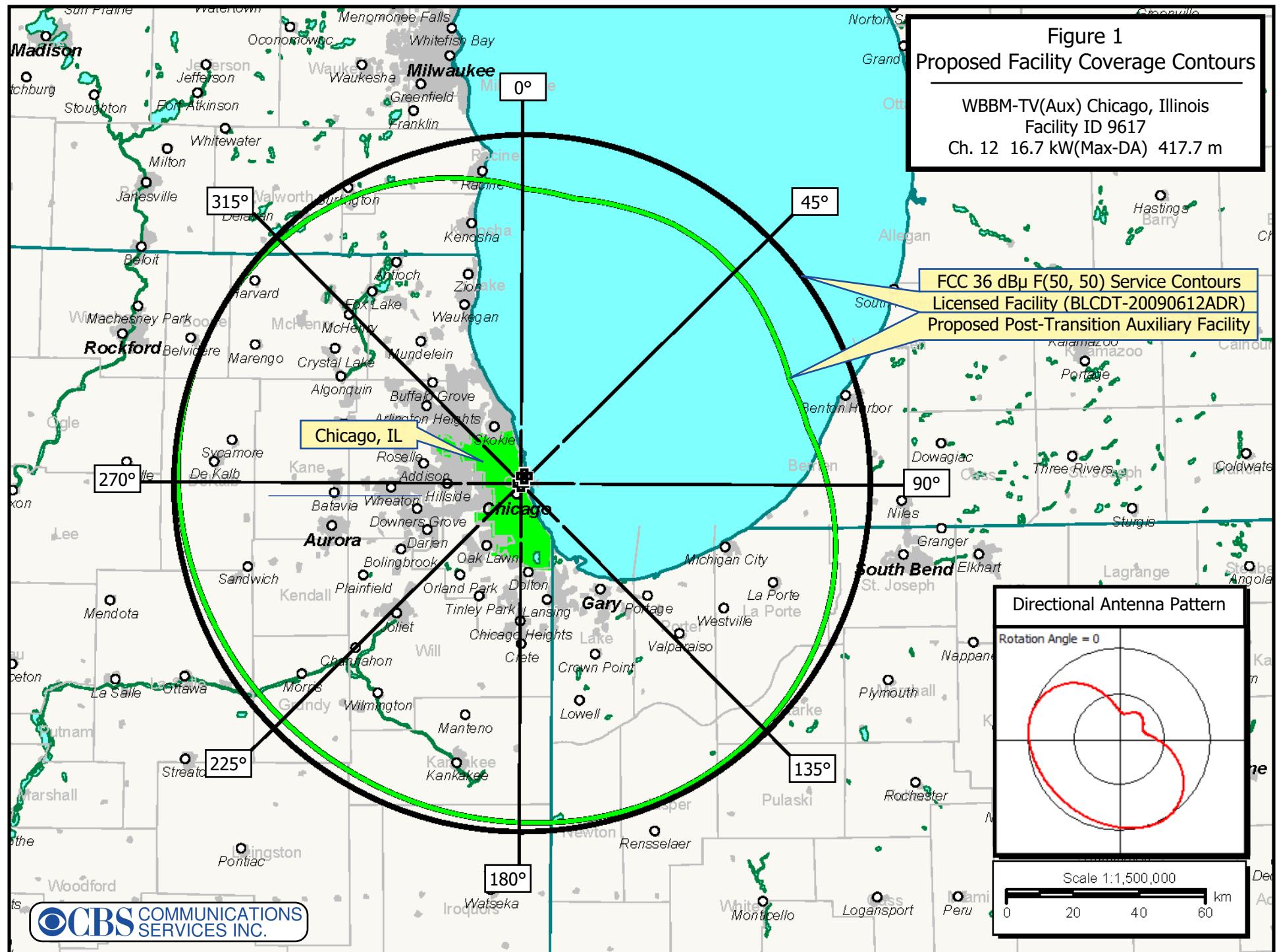
degrees below the horizontal. Calculations show that the proposed facility would contribute a maximum power density of 0.15 $\mu\text{W}/\text{cm}^2$ or 0.08 percent of the FCC's 200 $\mu\text{W}/\text{cm}^2$ "uncontrolled/general population" exposure limit for VHF Channel 12 (207 MHz) at a point two meters above ground-level and 4.3 $\mu\text{W}/\text{cm}^2$ or 2.2 percent of the FCC's "uncontrolled/general population" exposure limit at a point two meters above the building rooftop. According to §1.1307(b)(3), facilities at locations with multiple emitters are categorically excluded from responsibility for taking corrective action in areas where their contribution is less than five percent of the limit.

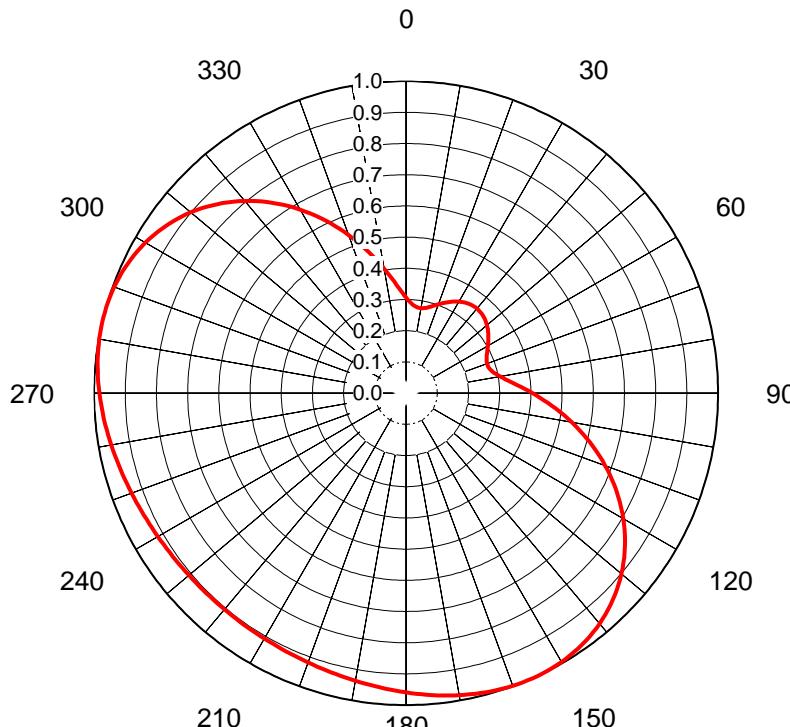
Access to building rooftop and any tower locations that may exceed exposure limits will continue to be strictly controlled by the building owner. ViacomCBS will participate in the building owner's RF exposure safety program that, in cooperation with other broadcasters, includes restriction of access, power reduction, or shutdown of facilities when predicted or measured RF exposure would otherwise be exceeded.

Figure 1
Proposed Facility Coverage Contours

WBBM-TV(Aux) Chicago, Illinois
Facility ID 9617
Ch. 12 16.7 kW(Max-DA) 417.7 m

FCC 36 dB μ F(50, 50) Service Contours
Licensed Facility (BLCDT-20090612ADR)
Proposed Post-Transition Auxiliary Facility





AZIMUTH PATTERN Horizontal Polarization

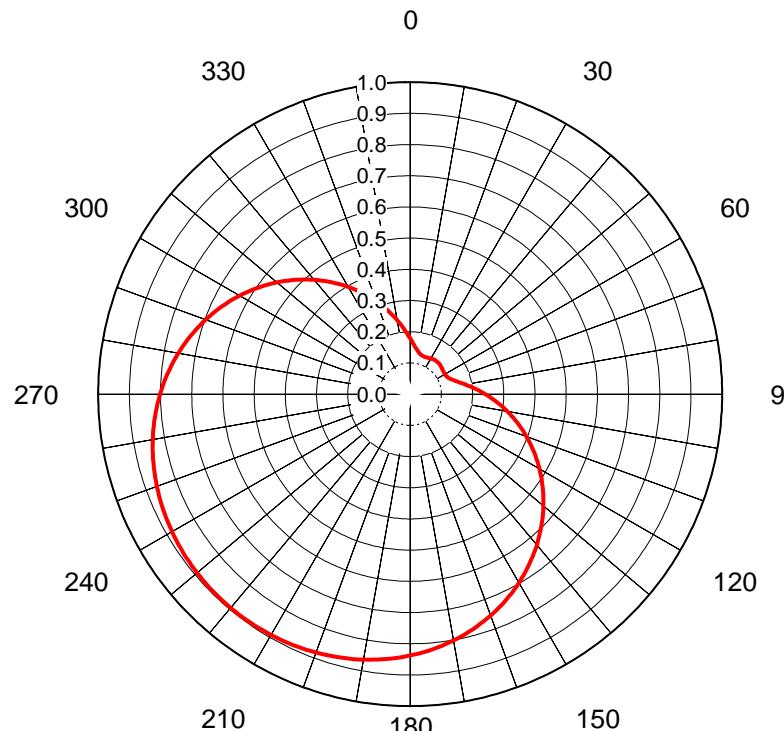
Proposal No. C-71469-2
 Date 14-Sep-20
 Call Letters
 Channel 12
 Frequency 207 MHz
 Antenna Type TLS-V4M/VP-R
 Gain 1.7 (2.31dB)
 Calculated

Pattern Number TLS-M-12 Hpol

Deg	Value																		
0	0.306	36	0.351	72	0.277	108	0.652	144	0.981	180	0.959	216	0.906	252	0.941	288	0.998	324	0.757
1	0.300	37	0.352	73	0.278	109	0.666	145	0.984	181	0.957	217	0.906	253	0.943	289	0.997	325	0.744
2	0.294	38	0.353	74	0.279	110	0.679	146	0.987	182	0.955	218	0.905	254	0.945	290	0.995	326	0.732
3	0.289	39	0.353	75	0.282	111	0.693	147	0.989	183	0.952	219	0.905	255	0.947	291	0.994	327	0.719
4	0.285	40	0.353	76	0.285	112	0.706	148	0.992	184	0.950	220	0.905	256	0.950	292	0.992	328	0.706
5	0.282	41	0.353	77	0.289	113	0.719	149	0.994	185	0.947	221	0.905	257	0.952	293	0.989	329	0.693
6	0.279	42	0.353	78	0.294	114	0.732	150	0.995	186	0.945	222	0.905	258	0.955	294	0.987	330	0.679
7	0.278	43	0.352	79	0.300	115	0.744	151	0.997	187	0.943	223	0.906	259	0.957	295	0.984	331	0.666
8	0.277	44	0.351	80	0.306	116	0.757	152	0.998	188	0.941	224	0.906	260	0.959	296	0.981	332	0.652
9	0.276	45	0.350	81	0.313	117	0.769	153	0.999	189	0.938	225	0.906	261	0.962	297	0.977	333	0.638
10	0.276	46	0.348	82	0.321	118	0.781	154	0.999	190	0.936	226	0.906	262	0.964	298	0.973	334	0.624
11	0.277	47	0.346	83	0.330	119	0.793	155	1.000	191	0.934	227	0.907	263	0.967	299	0.969	335	0.610
12	0.279	48	0.344	84	0.339	120	0.804	156	1.000	192	0.932	228	0.907	264	0.969	300	0.965	336	0.596
13	0.280	49	0.341	85	0.349	121	0.815	157	1.000	193	0.930	229	0.908	265	0.972	301	0.960	337	0.582
14	0.283	50	0.339	86	0.359	122	0.826	158	1.000	194	0.928	230	0.909	266	0.974	302	0.955	338	0.568
15	0.285	51	0.336	87	0.370	123	0.836	159	0.999	195	0.927	231	0.909	267	0.976	303	0.949	339	0.553
16	0.289	52	0.333	88	0.381	124	0.847	160	0.998	196	0.925	232	0.910	268	0.979	304	0.943	340	0.539
17	0.292	53	0.329	89	0.393	125	0.857	161	0.998	197	0.923	233	0.911	269	0.981	305	0.937	341	0.525
18	0.295	54	0.326	90	0.405	126	0.866	162	0.996	198	0.922	234	0.912	270	0.983	306	0.931	342	0.511
19	0.299	55	0.322	91	0.417	127	0.875	163	0.995	199	0.920	235	0.913	271	0.985	307	0.924	343	0.497
20	0.303	56	0.318	92	0.430	128	0.884	164	0.994	200	0.919	236	0.914	272	0.987	308	0.917	344	0.483
21	0.307	57	0.314	93	0.443	129	0.893	165	0.992	201	0.917	237	0.915	273	0.989	309	0.909	345	0.470
22	0.311	58	0.311	94	0.456	130	0.901	166	0.991	202	0.916	238	0.916	274	0.991	310	0.901	346	0.456
23	0.314	59	0.307	95	0.470	131	0.909	167	0.989	203	0.915	239	0.917	275	0.992	311	0.893	347	0.443
24	0.318	60	0.303	96	0.483	132	0.917	168	0.987	204	0.914	240	0.919	276	0.994	312	0.884	348	0.430
25	0.322	61	0.299	97	0.497	133	0.924	169	0.985	205	0.913	241	0.920	277	0.995	313	0.875	349	0.417
26	0.326	62	0.295	98	0.511	134	0.931	170	0.983	206	0.912	242	0.922	278	0.996	314	0.866	350	0.405
27	0.329	63	0.292	99	0.525	135	0.937	171	0.981	207	0.911	243	0.923	279	0.998	315	0.857	351	0.393
28	0.333	64	0.289	100	0.539	136	0.943	172	0.979	208	0.910	244	0.925	280	0.998	316	0.847	352	0.381
29	0.336	65	0.285	101	0.553	137	0.949	173	0.976	209	0.909	245	0.927	281	0.999	317	0.836	353	0.370
30	0.339	66	0.283	102	0.568	138	0.955	174	0.974	210	0.909	246	0.928	282	1.000	318	0.826	354	0.359
31	0.341	67	0.280	103	0.582	139	0.960	175	0.972	211	0.908	247	0.930	283	1.000	319	0.815	355	0.349
32	0.344	68	0.279	104	0.596	140	0.965	176	0.969	212	0.907	248	0.932	284	1.000	320	0.804	356	0.339
33	0.346	69	0.277	105	0.610	141	0.969	177	0.967	213	0.907	249	0.934	285	1.000	321	0.793	357	0.330
34	0.348	70	0.276	106	0.624	142	0.973	178	0.964	214	0.906	250	0.936	286	0.999	322	0.781	358	0.321
35	0.350	71	0.276	107	0.638	143	0.977	179	0.962	215	0.906	251	0.938	287	0.999	323	0.769	359	0.313

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AZIMUTH PATTERN Vertical Polarization

Proposal No. C-71469-2
 Date 14-Sep-20
 Call Letters
 Channel 12
 Frequency 207 MHz
 Antenna Type TLS-V4M/VP-R
 Gain 2.23 (3.48dB)
 Calculated

Pattern Number TLS-M-12 Vpol

Deg	Value																		
0	0.179	36	0.135	72	0.145	108	0.380	144	0.659	180	0.838	216	0.894	252	0.859	288	0.710	324	0.446
1	0.174	37	0.135	73	0.149	109	0.389	145	0.666	181	0.841	217	0.894	253	0.857	289	0.704	325	0.438
2	0.169	38	0.135	74	0.152	110	0.397	146	0.672	182	0.844	218	0.894	254	0.855	290	0.698	326	0.429
3	0.164	39	0.135	75	0.156	111	0.405	147	0.679	183	0.847	219	0.894	255	0.852	291	0.691	327	0.421
4	0.160	40	0.135	76	0.160	112	0.413	148	0.685	184	0.849	220	0.894	256	0.849	292	0.685	328	0.413
5	0.156	41	0.135	77	0.164	113	0.421	149	0.691	185	0.852	221	0.894	257	0.847	293	0.679	329	0.405
6	0.152	42	0.135	78	0.169	114	0.429	150	0.698	186	0.855	222	0.894	258	0.844	294	0.672	330	0.397
7	0.149	43	0.135	79	0.174	115	0.438	151	0.704	187	0.857	223	0.894	259	0.841	295	0.666	331	0.389
8	0.145	44	0.135	80	0.179	116	0.446	152	0.710	188	0.859	224	0.894	260	0.838	296	0.659	332	0.380
9	0.143	45	0.134	81	0.184	117	0.454	153	0.716	189	0.862	225	0.894	261	0.835	297	0.652	333	0.372
10	0.140	46	0.134	82	0.190	118	0.462	154	0.722	190	0.864	226	0.893	262	0.831	298	0.645	334	0.364
11	0.138	47	0.134	83	0.196	119	0.470	155	0.728	191	0.866	227	0.893	263	0.828	299	0.638	335	0.356
12	0.136	48	0.133	84	0.201	120	0.478	156	0.733	192	0.868	228	0.892	264	0.825	300	0.631	336	0.348
13	0.134	49	0.133	85	0.208	121	0.486	157	0.739	193	0.870	229	0.892	265	0.821	301	0.624	337	0.340
14	0.132	50	0.132	86	0.214	122	0.494	158	0.744	194	0.872	230	0.891	266	0.817	302	0.617	338	0.332
15	0.131	51	0.131	87	0.220	123	0.502	159	0.750	195	0.874	231	0.891	267	0.814	303	0.610	339	0.324
16	0.130	52	0.131	88	0.227	124	0.510	160	0.755	196	0.875	232	0.890	268	0.810	304	0.603	340	0.316
17	0.129	53	0.130	89	0.234	125	0.518	161	0.760	197	0.877	233	0.889	269	0.806	305	0.595	341	0.308
18	0.129	54	0.130	90	0.241	126	0.526	162	0.765	198	0.879	234	0.888	270	0.802	306	0.588	342	0.300
19	0.128	55	0.129	91	0.248	127	0.534	163	0.770	199	0.880	235	0.887	271	0.797	307	0.580	343	0.293
20	0.128	56	0.129	92	0.255	128	0.542	164	0.775	200	0.881	236	0.886	272	0.793	308	0.573	344	0.285
21	0.128	57	0.129	93	0.262	129	0.550	165	0.780	201	0.883	237	0.885	273	0.789	309	0.565	345	0.277
22	0.128	58	0.128	94	0.270	130	0.557	166	0.784	202	0.884	238	0.884	274	0.784	310	0.557	346	0.270
23	0.129	59	0.128	95	0.277	131	0.565	167	0.789	203	0.885	239	0.883	275	0.780	311	0.550	347	0.262
24	0.129	60	0.128	96	0.285	132	0.573	168	0.793	204	0.886	240	0.881	276	0.775	312	0.542	348	0.255
25	0.129	61	0.128	97	0.293	133	0.580	169	0.797	205	0.887	241	0.880	277	0.770	313	0.534	349	0.248
26	0.130	62	0.129	98	0.300	134	0.588	170	0.802	206	0.888	242	0.879	278	0.765	314	0.526	350	0.241
27	0.130	63	0.129	99	0.308	135	0.595	171	0.806	207	0.889	243	0.877	279	0.760	315	0.518	351	0.234
28	0.131	64	0.130	100	0.316	136	0.603	172	0.810	208	0.890	244	0.875	280	0.755	316	0.510	352	0.227
29	0.131	65	0.131	101	0.324	137	0.610	173	0.814	209	0.891	245	0.874	281	0.750	317	0.502	353	0.220
30	0.132	66	0.132	102	0.332	138	0.617	174	0.817	210	0.891	246	0.872	282	0.744	318	0.494	354	0.214
31	0.133	67	0.134	103	0.340	139	0.624	175	0.821	211	0.892	247	0.870	283	0.739	319	0.486	355	0.208
32	0.133	68	0.136	104	0.348	140	0.631	176	0.825	212	0.892	248	0.868	284	0.733	320	0.478	356	0.201
33	0.134	69	0.138	105	0.356	141	0.638	177	0.828	213	0.893	249	0.866	285	0.728	321	0.470	357	0.196
34	0.134	70	0.140	106	0.364	142	0.645	178	0.831	214	0.893	250	0.864	286	0.722	322	0.462	358	0.190
35	0.134	71	0.143	107	0.372	143	0.652	179	0.835	215	0.894	251	0.862	287	0.716	323	0.454	359	0.184

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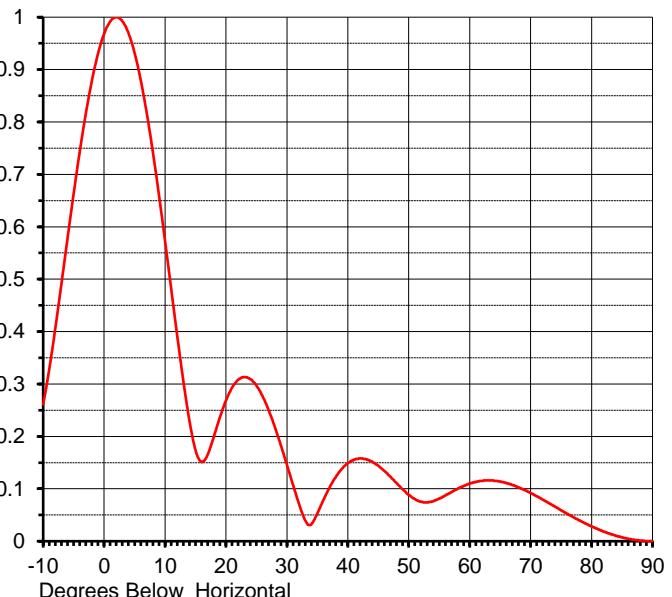
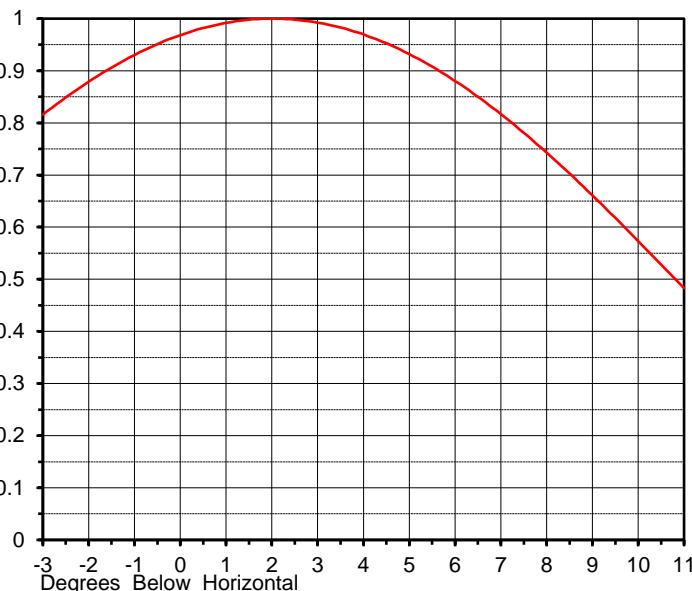
ELEVATION PATTERN

Proposal No. **C-71469-2**
 Date **14-Sep-20**
 Call Letters
 Channel **12**
 Frequency **207 MHz**
 Antenna Type **TLS-V4M/VP-R**

RMS Directivity at Main Lobe
 RMS Directivity at Horizontal

4.2 (6.18 dB)
3.9 (5.91 dB)
Calculated

Beam Tilt **2.00 deg**
 Pattern Number **04T041200-12**



Angle	Field								
-10.0	0.261	10.0	0.573	30.0	0.146	50.0	0.088	70.0	0.092
-9.0	0.328	11.0	0.483	31.0	0.108	51.0	0.080	71.0	0.086
-8.0	0.407	12.0	0.392	32.0	0.071	52.0	0.075	72.0	0.079
-7.0	0.491	13.0	0.306	33.0	0.040	53.0	0.074	73.0	0.073
-6.0	0.578	14.0	0.230	34.0	0.032	54.0	0.076	74.0	0.066
-5.0	0.663	15.0	0.174	35.0	0.053	55.0	0.081	75.0	0.059
-4.0	0.743	16.0	0.151	36.0	0.079	56.0	0.087	76.0	0.052
-3.0	0.816	17.0	0.165	37.0	0.102	57.0	0.094	77.0	0.046
-2.0	0.879	18.0	0.199	38.0	0.122	58.0	0.100	78.0	0.040
-1.0	0.930	19.0	0.236	39.0	0.138	59.0	0.105	79.0	0.034
0.0	0.968	20.0	0.268	40.0	0.149	60.0	0.110	80.0	0.028
1.0	0.992	21.0	0.293	41.0	0.155	61.0	0.113	81.0	0.023
2.0	1.000	22.0	0.308	42.0	0.158	62.0	0.115	82.0	0.018
3.0	0.992	23.0	0.313	43.0	0.156	63.0	0.116	83.0	0.014
4.0	0.970	24.0	0.309	44.0	0.152	64.0	0.115	84.0	0.010
5.0	0.932	25.0	0.297	45.0	0.144	65.0	0.114	85.0	0.007
6.0	0.880	26.0	0.277	46.0	0.134	66.0	0.111	86.0	0.005
7.0	0.817	27.0	0.250	47.0	0.123	67.0	0.107	87.0	0.003
8.0	0.743	28.0	0.219	48.0	0.111	68.0	0.103	88.0	0.001
9.0	0.661	29.0	0.183	49.0	0.099	69.0	0.098	89.0	0.000
									90.0 0.000

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