

**EXHIBIT 29**  
**EXCLUSION FROM ENVIRONMENTAL**  
**PROCESSING FOR MULTI-USER**  
**SUPPORT STRUCTURE**

**INTRODUCTION**

The applicant, The Trustees of Indiana University, is requesting authority to modify the co-located broadcast facilities of WFIU(FM), 103.7 MHz, and WTIU(TV), analog TV Channel 30, and WTIU-DT, DTV Channel 14, in Bloomington, Indiana, to specify a new antenna supporting structure. The existing structure will be replaced with a new tower at essentially the same geographic location. This proposal involves a shared antenna system for the digital and analog TV operations of WTIU and WTIU-DT and a new side mounted FM antenna for WFIU. The replacement antenna structure will be erected at a site adjacent to the existing structure and it will have a slightly higher overall elevation of 442.6 meters above mean sea level (AMSL). Accordingly, notice of the proposed construction was filed with the Federal Aviation Administration and upon a determination of no hazard to air navigation, the requisite antenna structure registration will be submitted.

**EXCLUSION TO ENVIRONMENTAL PROCESSING**

The proposals for WFIU(FM), WTIU(TV) and WTIU-DT are categorically excluded from environmental processing by Section 1.1306 of the FCC Rules. They are excluded

since the applications do not involve a site location as described in Section 1.1307(a) and as described below the safety limits for human exposure to radio-frequency (RF) energy in Section 1.1307(b) will not be exceeded. Since the collective proposals are considered not to have a significant effect on the quality of the human environment under Section 1.1307(a) and (b), environmental processing is not required.

## **RF EXPOSURE COMPLIANCE**

The proposed modifications to co-owned stations WFIU(FM), WTIU(TV) and WTIU-DT will not subject workers or the general population to levels of radiofrequency energy in excess of the *Radiofrequency Radiation Exposure Limits* contained in Section 1.1310 of the FCC Rules. General access to the immediate site will continue to be controlled and the based facilities for the combined FM, TV and DTV operations will be equipped with suitable warning signs. In addition, there are no other active broadcast facilities operating at the site or within the general vicinity.

The shared antenna radiation center height for WTIU(TV), 566-572 MHz, and WTIU-DT, 470-476 MHz, will be 191 meters (AGL). WTIU(TV) will increase effective radiated peak visual power to 1622 kW, while WTIU-DT will have a reduced average effective radiated power (ERP) of 224 kW. An evaluation of the cumulative effect of the shared antenna was conducted in accordance with the methodology outlined in *OET Bulletin 65, Version 97-01* and the results demonstrate compliance with the Commission's rules concerning RF exposure.

The EPA model for predicting ground-level power density contained in the Commission's bulletin was used to determine the "worst case" power density level for all locations 2 meters above ground. Based on the antenna elevation pattern and tabulation for Channel 30 attached as Figures 1A and 1B and the alike pattern and tabulation for Channel 14 in Figures 2A and 2B, the combined worst case power density level is estimated to be less than 8% of the general MPE limit for uncontrolled exposure and less than 2% of the occupational MPE limit for controlled exposure at any location 2 meters above ground.

WFIU will employ a new eight bay nondirectional antenna, Dielectric Model No. DCR-C8CRP, at an increased radiation center height of 167 meters above ground level (AGL). The effective radiated power (ERP) will be decreased to 29 kW (58 kW total H+V) to compensate for the additional antenna height. The worst case contribution from the transmitter of WFIU-FM is calculated to be  $7.49 \mu\text{W}/\text{cm}^2$  at a distance of 41 meters from the base of the supporting structure as demonstrated on the *Power Density vs Distance* graph attached as Figure 3. The graph was developed using the Commission's *FM Model, Version 2.10*, which is designed to calculate power density levels accessible at locations two meters above ground based on the type of antenna. This worst case exposure level is less than 4% of uncontrolled limit and less than 1% of the controlled limit.

The continued co-location of the three stations will result in RF contributions that total well below the exposure limits in Section 1.1310. Based on the above worst case

calculations, combined RF emission levels are not expected to be higher than 12% of the guidelines for uncontrolled exposure and 3% for the guidelines for controlled exposure.

It has been demonstrated that occupational exposure in excess of the guidelines is not possible at any ground-level location. Nevertheless, the applicant has adopted a work policy that is designed to avoid harmful exposure when work is being done at higher elevations on the tower. Accordingly, workers will be protected from excessive exposure to radiofrequency fields in areas of close proximity to the radiofrequency source by employing the methods recommended in *OET Bulletin No. 65, Version 97-01*. Preventive steps to avoid excessive exposure shall include scheduling work on the tower when the facility is shut down or operating at reduced power or by time averaging.

Prepared by

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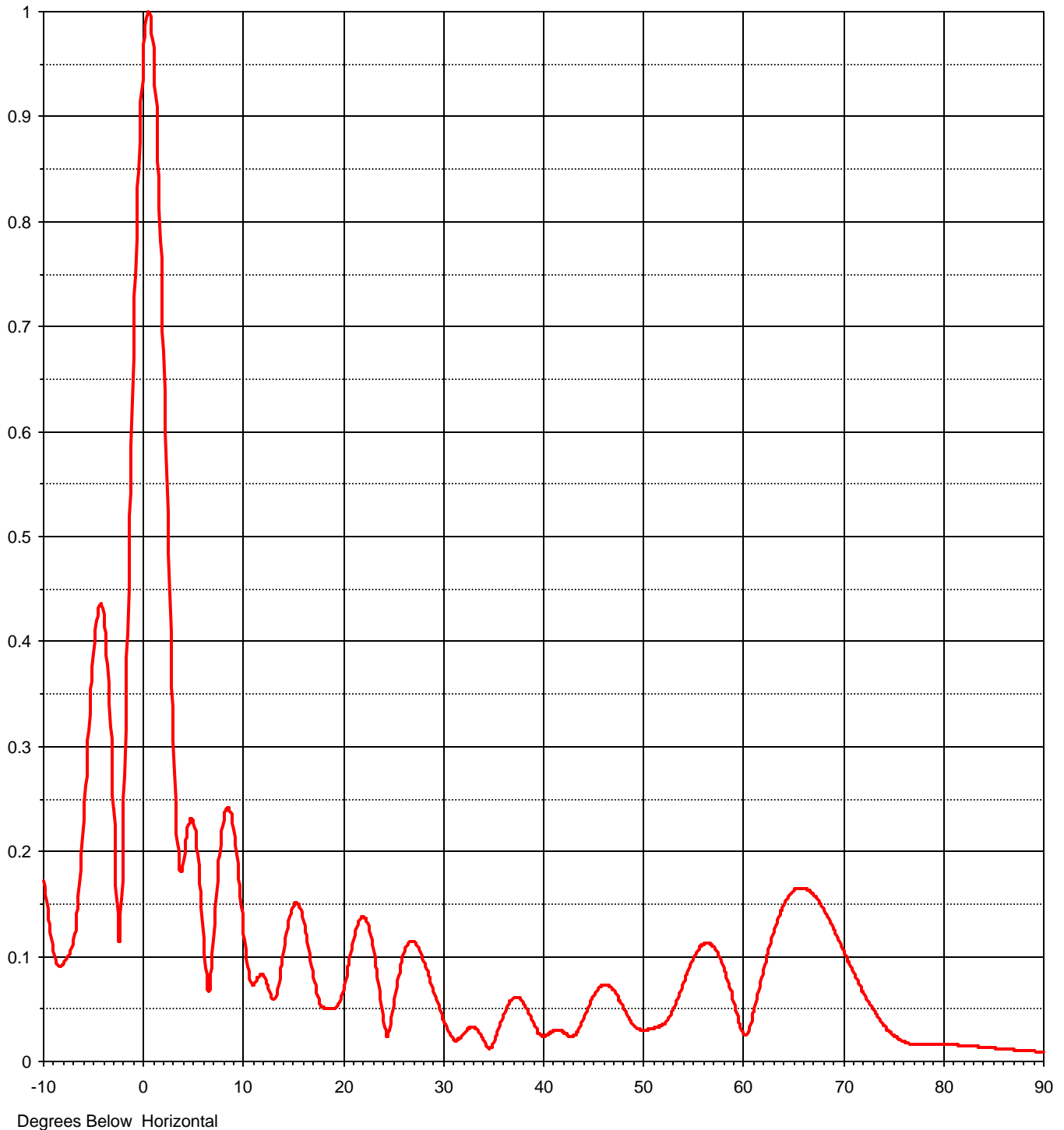
April, 2002

Proposal Number	<b>DCA-9469</b>	Revision:	<b>2</b>
Date	<b>16-Oct-01</b>		
Call Letters	<b>WTIU</b>	Channel	<b>30</b>
Location	<b>Bloomington, IN</b>		
Customer	<b>Indiana University</b>		
Antenna Type	<b>TUA-SP4-8/32H-1-TR</b>		

## ELEVATION PATTERN

RMS Gain at Main Lobe	<b>15.10 ( 11.79 dB )</b>
RMS Gain at Horizontal	<b>14.00 ( 11.46 dB )</b>
Calculated / Measured	<b>Calculated</b>

Beam Tilt	<b>0.50 deg</b>
Frequency	<b>569.00 MHz</b>
Drawing #	<b>08U151050-90</b>



Proposal Number **DCA-9469**      Revision: **2**  
 Date **16-Oct-01**  
 Call Letters **WTIU**      Channel **30**  
 Location **Bloomington, IN**  
 Customer **Indiana University**  
 Antenna Type **TUA-SP4-8/32H-1-TR**

## TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **08U151050-90**

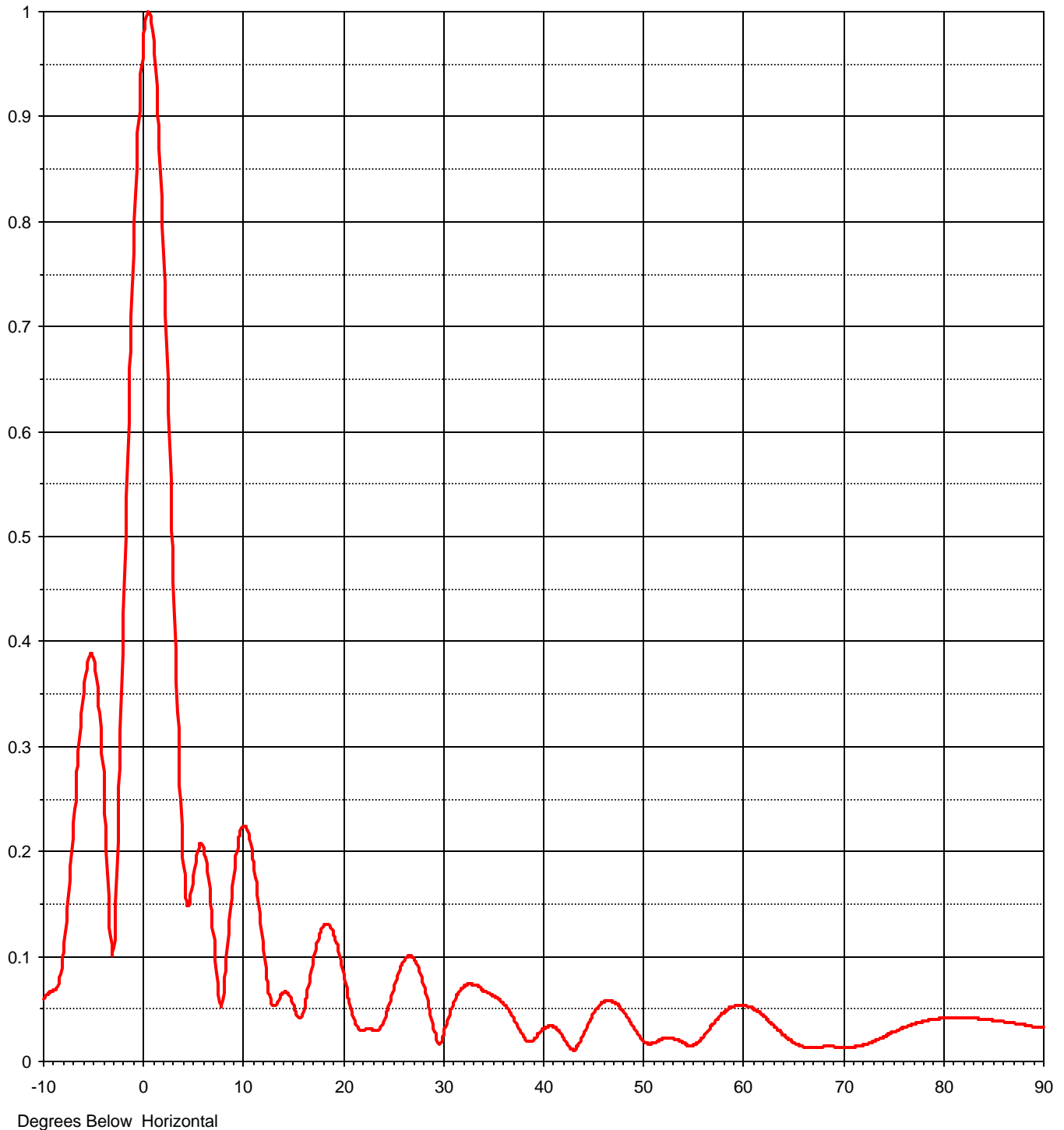
Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.172	2.4	0.524	10.6	0.084	30.5	0.031	51.0	0.031	71.5	0.075
-9.5	0.138	2.6	0.447	10.8	0.076	31.0	0.022	51.5	0.032	72.0	0.065
-9.0	0.105	2.8	0.373	11.0	0.073	31.5	0.020	52.0	0.035	72.5	0.056
-8.5	0.091	3.0	0.306	11.5	0.079	32.0	0.025	52.5	0.040	73.0	0.048
-8.0	0.094	3.2	0.249	12.0	0.082	32.5	0.031	53.0	0.048	73.5	0.041
-7.5	0.101	3.4	0.207	12.5	0.072	33.0	0.032	53.5	0.060	74.0	0.035
-7.0	0.116	3.6	0.185	13.0	0.060	33.5	0.030	54.0	0.072	74.5	0.029
-6.5	0.157	3.8	0.182	13.5	0.068	34.0	0.022	54.5	0.085	75.0	0.025
-6.0	0.229	4.0	0.192	14.0	0.098	34.5	0.014	55.0	0.097	75.5	0.022
-5.5	0.314	4.2	0.206	14.5	0.128	35.0	0.016	55.5	0.105	76.0	0.019
-5.0	0.389	4.4	0.220	15.0	0.147	35.5	0.028	56.0	0.111	76.5	0.017
-4.5	0.432	4.6	0.229	15.5	0.150	36.0	0.042	56.5	0.113	77.0	0.016
-4.0	0.426	4.8	0.232	16.0	0.138	36.5	0.053	57.0	0.110	77.5	0.016
-3.5	0.361	5.0	0.227	16.5	0.114	37.0	0.059	57.5	0.103	78.0	0.016
-3.0	0.240	5.2	0.216	17.0	0.086	37.5	0.061	58.0	0.092	78.5	0.016
-2.8	0.182	5.4	0.198	17.5	0.062	38.0	0.057	58.5	0.078	79.0	0.016
-2.6	0.131	5.6	0.175	18.0	0.051	38.5	0.049	59.0	0.061	79.5	0.016
-2.4	0.114	5.8	0.147	18.5	0.050	39.0	0.038	59.5	0.043	80.0	0.016
-2.2	0.155	6.0	0.117	19.0	0.050	39.5	0.029	60.0	0.028	80.5	0.016
-2.0	0.229	6.2	0.089	19.5	0.053	40.0	0.024	60.5	0.027	81.0	0.016
-1.8	0.315	6.4	0.070	20.0	0.065	40.5	0.025	61.0	0.043	81.5	0.015
-1.6	0.406	6.6	0.070	20.5	0.087	41.0	0.028	61.5	0.063	82.0	0.015
-1.4	0.497	6.8	0.089	21.0	0.112	41.5	0.030	62.0	0.084	82.5	0.015
-1.2	0.586	7.0	0.116	21.5	0.131	42.0	0.028	62.5	0.103	83.0	0.014
-1.0	0.670	7.2	0.145	22.0	0.138	42.5	0.025	63.0	0.120	83.5	0.014
-0.8	0.747	7.4	0.173	22.5	0.131	43.0	0.024	63.5	0.135	84.0	0.014
-0.6	0.817	7.6	0.196	23.0	0.111	43.5	0.029	64.0	0.147	84.5	0.013
-0.4	0.876	7.8	0.216	23.5	0.080	44.0	0.039	64.5	0.157	85.0	0.013
-0.2	0.925	8.0	0.230	24.0	0.045	44.5	0.050	65.0	0.163	85.5	0.012
0.0	0.962	8.2	0.238	24.5	0.023	45.0	0.061	65.5	0.165	86.0	0.012
0.2	0.987	8.4	0.242	25.0	0.047	45.5	0.068	66.0	0.165	86.5	0.012
0.4	0.999	8.6	0.240	25.5	0.077	46.0	0.073	66.5	0.163	87.0	0.011
0.6	0.998	8.8	0.233	26.0	0.099	46.5	0.073	67.0	0.159	87.5	0.011
0.8	0.984	9.0	0.221	26.5	0.112	47.0	0.069	67.5	0.153	88.0	0.010
1.0	0.959	9.2	0.206	27.0	0.115	47.5	0.062	68.0	0.145	88.5	0.010
1.2	0.920	9.4	0.188	27.5	0.110	48.0	0.053	68.5	0.136	89.0	0.010
1.4	0.871	9.6	0.168	28.0	0.099	48.5	0.043	69.0	0.126	89.5	0.009
1.6	0.813	9.8	0.157	28.5	0.085	49.0	0.036	69.5	0.116	90.0	0.009
1.8	0.748	10.0	0.136	29.0	0.070	49.5	0.031	70.0	0.105		
2.0	0.677	10.2	0.115	29.5	0.056	50.0	0.030	70.5	0.095		
2.2	0.601	10.4	0.098	30.0	0.042	50.5	0.030	71.0	0.085		

Proposal Number	<b>DCA-9469</b>	Revision:	<b>1</b>
Date	<b>7-Aug-01</b>		
Call Letters	<b>WTIU-DT</b>	Channel	<b>14</b>
Location	<b>Bloomington, IN</b>		
Customer	<b>Indiana University</b>		
Antenna Type	<b>TUA-SP4-8/32H-1</b>		

## ELEVATION PATTERN

RMS Gain at Main Lobe **14.40 ( 11.58 dB )**  
RMS Gain at Horizontal **13.70 ( 11.37 dB )**  
Calculated / Measured **Calculated**

Beam Tilt **0.50 deg**  
Frequency **473.00 MHz**  
Drawing # **08U144050-90**



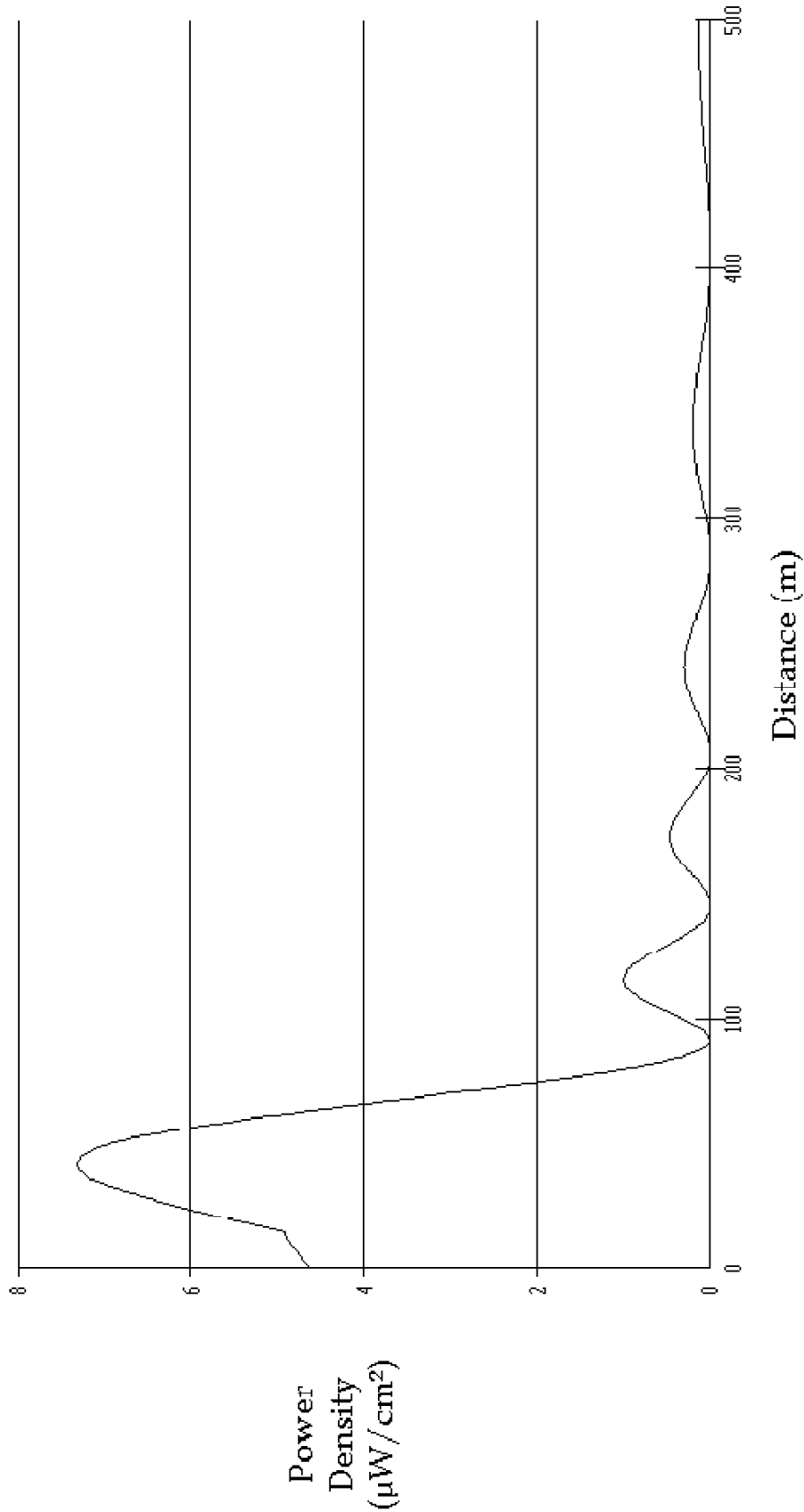
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 Antenna Type **TUA-SP4-8/32H-1**

## TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **08U144050-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.059	2.4	0.651	10.6	0.216	30.5	0.039	51.0	0.017	71.5	0.015
-9.5	0.065	2.6	0.587	10.8	0.207	31.0	0.054	51.5	0.019	72.0	0.016
-9.0	0.068	2.8	0.522	11.0	0.196	31.5	0.064	52.0	0.021	72.5	0.017
-8.5	0.074	3.0	0.457	11.5	0.159	32.0	0.070	52.5	0.022	73.0	0.019
-8.0	0.104	3.2	0.393	12.0	0.115	32.5	0.073	53.0	0.022	73.5	0.021
-7.5	0.159	3.4	0.332	12.5	0.075	33.0	0.073	53.5	0.020	74.0	0.023
-7.0	0.227	3.6	0.276	13.0	0.054	33.5	0.072	54.0	0.018	74.5	0.026
-6.5	0.295	3.8	0.226	13.5	0.057	34.0	0.068	54.5	0.015	75.0	0.028
-6.0	0.351	4.0	0.186	14.0	0.065	34.5	0.066	55.0	0.015	75.5	0.030
-5.5	0.384	4.2	0.160	14.5	0.065	35.0	0.063	55.5	0.018	76.0	0.032
-5.0	0.384	4.4	0.148	15.0	0.056	35.5	0.060	56.0	0.023	76.5	0.034
-4.5	0.345	4.6	0.151	15.5	0.043	36.0	0.056	56.5	0.029	77.0	0.036
-4.0	0.266	4.8	0.163	16.0	0.045	36.5	0.051	57.0	0.035	77.5	0.037
-3.5	0.158	5.0	0.177	16.5	0.066	37.0	0.043	57.5	0.041	78.0	0.038
-3.0	0.108	5.2	0.190	17.0	0.092	37.5	0.034	58.0	0.046	78.5	0.039
-2.8	0.149	5.4	0.200	17.5	0.114	38.0	0.025	58.5	0.049	79.0	0.040
-2.6	0.210	5.6	0.206	18.0	0.128	38.5	0.019	59.0	0.052	79.5	0.041
-2.4	0.279	5.8	0.207	18.5	0.131	39.0	0.020	59.5	0.054	80.0	0.041
-2.2	0.352	6.0	0.204	19.0	0.124	39.5	0.025	60.0	0.054	80.5	0.042
-2.0	0.426	6.2	0.195	19.5	0.109	40.0	0.030	60.5	0.053	81.0	0.042
-1.8	0.500	6.4	0.182	20.0	0.088	40.5	0.033	61.0	0.051	81.5	0.042
-1.6	0.573	6.6	0.164	20.5	0.064	41.0	0.033	61.5	0.047	82.0	0.042
-1.4	0.642	6.8	0.144	21.0	0.044	41.5	0.030	62.0	0.044	82.5	0.042
-1.2	0.709	7.0	0.121	21.5	0.032	42.0	0.024	62.5	0.040	83.0	0.041
-1.0	0.770	7.2	0.097	22.0	0.030	42.5	0.017	63.0	0.035	83.5	0.041
-0.8	0.825	7.4	0.074	22.5	0.031	43.0	0.011	63.5	0.030	84.0	0.040
-0.6	0.873	7.6	0.056	23.0	0.030	43.5	0.014	64.0	0.026	84.5	0.040
-0.4	0.915	7.8	0.053	23.5	0.030	44.0	0.024	64.5	0.021	85.0	0.039
-0.2	0.948	8.0	0.065	24.0	0.036	44.5	0.034	65.0	0.018	85.5	0.039
0.0	0.974	8.2	0.086	24.5	0.049	45.0	0.044	65.5	0.015	86.0	0.038
0.2	0.991	8.4	0.110	25.0	0.066	45.5	0.051	66.0	0.014	86.5	0.037
0.4	0.999	8.6	0.134	25.5	0.082	46.0	0.056	66.5	0.014	87.0	0.037
0.6	0.999	8.8	0.156	26.0	0.093	46.5	0.058	67.0	0.014	87.5	0.036
0.8	0.989	9.0	0.176	26.5	0.100	47.0	0.057	67.5	0.014	88.0	0.035
1.0	0.972	9.2	0.192	27.0	0.099	47.5	0.054	68.0	0.014	88.5	0.034
1.2	0.945	9.4	0.206	27.5	0.091	48.0	0.048	68.5	0.014	89.0	0.033
1.4	0.911	9.6	0.216	28.0	0.077	48.5	0.041	69.0	0.014	89.5	0.033
1.6	0.870	9.8	0.219	28.5	0.058	49.0	0.034	69.5	0.014	90.0	0.032
1.8	0.823	10.0	0.224	29.0	0.036	49.5	0.026	70.0	0.014		
2.0	0.770	10.2	0.225	29.5	0.018	50.0	0.020	70.5	0.014		
2.2	0.712	10.4	0.222	30.0	0.022	50.5	0.017	71.0	0.014		

Power Density vs Distance



Office of Engineering and Technology

Distance (m):	<input type="text" value="500"/>	Antenna Type:	<input (epa)"="" bfc"="" type="text" value="RCA "/>
Horizontal ERP (W):	<input type="text" value="29000"/>	Number of Elements:	<input type="text" value="8"/>
Vertical ERP (W):	<input type="text" value="29000"/>	Element Spacing:	<input type="text" value="1"/>
Antenna Height (m):	<input type="text" value="167"/>		