

## **§74.1204 Clearance to KZNM (FM) Licensed and CP**

### **New FM Translator**

**Channel 272D – 102.3 MHz**

**0.205 kW ERP – 2065 m COR AMSL**

**Grants, New Mexico**

**August 2013**

This proposal clears all allocation requirements with the exception of the following:

### **KZNM (FM) Licensed and CP Facilities**

Section 74.1204(d) instructs us:

*“In addition, an application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur due to intervening terrain, lack of population or such other factors as may be applicable.”*

Through the use of the proposed Elevation Radiation Pattern from the antenna manufacturer and graphing the actual interfering contour, we will prove that the interference area never touches the ground and therefore there is no population being affected in this extremely small interference area.

The construction permit facility of KZNM (FM) has a center of radiation of 2107 meters AMSL. The KZNM (FM) CP places 82.4 dBu over the proposed translator site. Adding the 40 dBu U/D radio to the 82.4 dBu signal produces an interfering contour of 122.4 dBu.

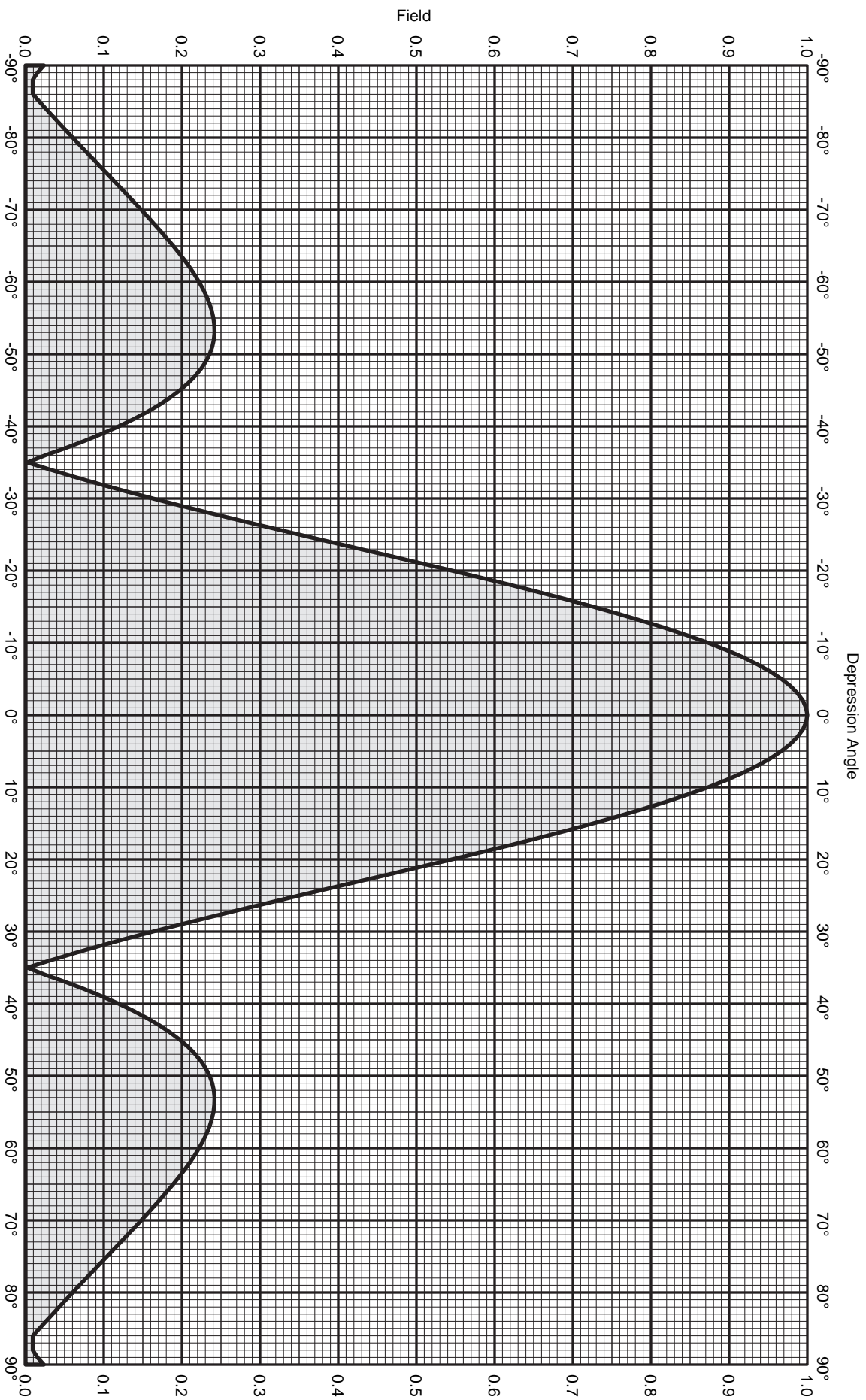
The applicant consulted Scala, the manufacturer of the FMVMP 2-bay antenna that is being proposed. The Elevation Pattern for this antenna is attached. This includes a relative field for each degree of elevation. Knowing the relative field at each degree of elevation allows us to calculate the power at each degree of elevation. From that, the distance to the 122.4 dBu interfering contour was calculated. The Excel spreadsheet program was instrumental in graphing the interfering contour. Using trigonometry, points on the 122.4 dBu interfering contour were transformed to point values that could be graphed on an X,Y axis. X is the distance from the antenna and Y is the height above ground.

The closest the 122.4 dBu contour comes to the ground is 2.0 meters (6.6 meters) at a horizontal distance of 10 meters from the tower. This is produced along the 55 degree azimuth from the antenna. At a horizontal distance of 50.8 meters and 45.0 meters from the tower, the 122.4 dBu contour is 2.4 meters (7.9 feet) above the ground. This is produced along the 16 and 18 degree azimuths respectively from the antenna. At this distance from the transmitter, there are no buildings. The maximum distance this contour extends from the antenna at any azimuth is 76.6 meters. Within the entire area of the

122.4 dBu contour, there are only shorter single story buildings, a road and countryside. Google Earth was used to make this determination.

The interfering contour to the licensed facility to KZNM (FM) is 126.3 dBu and extends a maximum distance of 48.5 meters, which is not as far as that of the construction permit facility, therefore it also does not reach the ground.

In conclusion, based on the foregoing explanation and related exhibits showing that no persons will receive interference because the interfering contour never touches the ground, it is thought this application with regard to the licensed and construction permit facilities of KZNM (FM) is in compliance with Section 74.1204 using Section 74.1204(d).



FMVMP-2

FM

Maximum gain: 3.5 dBd

Vertical polarization

Vertical radiation pattern

0 degree electrical downtilt



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Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	3.50	2.24	45	0.198	-14.09	-10.59	0.09
1	0.998	-0.01	3.49	2.23	46	0.208	-13.63	-10.13	0.10
2	0.994	-0.05	3.45	2.21	47	0.217	-13.26	-9.76	0.11
3	0.988	-0.11	3.39	2.18	48	0.225	-12.97	-9.47	0.11
4	0.978	-0.19	3.31	2.14	49	0.231	-12.74	-9.24	0.12
5	0.967	-0.29	3.21	2.09	50	0.235	-12.56	-9.06	0.12
6	0.953	-0.42	3.08	2.03	51	0.239	-12.44	-8.94	0.13
7	0.936	-0.57	2.93	1.96	52	0.241	-12.37	-8.87	0.13
8	0.918	-0.74	2.76	1.89	53	0.242	-12.33	-8.83	0.13
9	0.896	-0.95	2.55	1.80	54	0.241	-12.34	-8.84	0.13
10	0.873	-1.18	2.32	1.71	55	0.240	-12.38	-8.88	0.13
11	0.847	-1.44	2.06	1.61	56	0.238	-12.46	-8.96	0.13
12	0.820	-1.73	1.77	1.50	57	0.235	-12.57	-9.07	0.12
13	0.790	-2.05	1.45	1.40	58	0.232	-12.71	-9.21	0.12
14	0.759	-2.40	1.10	1.29	59	0.227	-12.87	-9.37	0.12
15	0.726	-2.78	0.72	1.18	60	0.222	-13.08	-9.58	0.11
16	0.693	-3.19	0.31	1.07	61	0.216	-13.30	-9.80	0.10
17	0.657	-3.65	-0.15	0.97	62	0.210	-13.55	-10.05	0.10
18	0.621	-4.14	-0.64	0.86	63	0.204	-13.83	-10.33	0.09
19	0.584	-4.68	-1.18	0.76	64	0.196	-14.14	-10.64	0.09
20	0.545	-5.26	-1.76	0.67	65	0.189	-14.47	-10.97	0.08
21	0.507	-5.91	-2.41	0.57	66	0.181	-14.85	-11.35	0.07
22	0.468	-6.60	-3.10	0.49	67	0.173	-15.23	-11.73	0.07
23	0.428	-7.36	-3.86	0.41	68	0.165	-15.66	-12.16	0.06
24	0.389	-8.20	-4.70	0.34	69	0.157	-16.11	-12.61	0.05
25	0.350	-9.12	-5.62	0.27	70	0.148	-16.59	-13.09	0.05
26	0.311	-10.14	-6.64	0.22	71	0.139	-17.11	-13.61	0.04
27	0.273	-11.28	-7.78	0.17	72	0.131	-17.69	-14.19	0.04
28	0.235	-12.56	-9.06	0.12	73	0.122	-18.28	-14.78	0.03
29	0.199	-14.04	-10.54	0.09	74	0.113	-18.93	-15.43	0.03
30	0.163	-15.77	-12.27	0.06	75	0.104	-19.64	-16.14	0.02
31	0.128	-17.86	-14.36	0.04	76	0.095	-20.42	-16.92	0.02
32	0.095	-20.49	-16.99	0.02	77	0.087	-21.25	-17.75	0.02
33	0.062	-24.11	-20.61	0.01	78	0.078	-22.19	-18.69	0.01
34	0.032	-30.02	-26.52	0.00	79	0.069	-23.22	-19.72	0.01
35	0.010	-40.00	-36.50	0.00	80	0.060	-24.40	-20.90	0.01
36	0.025	-31.91	-28.41	0.00	81	0.052	-25.74	-22.24	0.01
37	0.051	-25.78	-22.28	0.01	82	0.043	-27.33	-23.83	0.00
38	0.076	-22.41	-18.91	0.01	83	0.035	-29.24	-25.74	0.00
39	0.098	-20.14	-16.64	0.02	84	0.026	-31.71	-28.21	0.00
40	0.119	-18.47	-14.97	0.03	85	0.018	-35.09	-31.59	0.00
41	0.138	-17.18	-13.68	0.04	86	0.010	-40.00	-36.50	0.00
42	0.156	-16.15	-12.65	0.05	87	0.010	-40.00	-36.50	0.00
43	0.171	-15.32	-11.82	0.07	88	0.010	-40.00	-36.50	0.00
44	0.185	-14.64	-11.14	0.08	89	0.015	-36.31	-32.81	0.00
					90	0.023	-32.64	-29.14	0.00

## 122.4 dBu Interference Above Ground Scala FMVMP 2-Bay Full Wave

