

# **GREG BEST CONSULTING, INC.**

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## **SUPPLEMENT EXHIBIT FOR INTERFERENCE ANALYSIS**

July 25, 2016

This exhibit supports an AM Revitalization window application for the minor mod of construction permit for K291CB, with proposed new location in Redding, CA and new channel 285. This proposal complies fully with the requirements of 47 C.F.R. §74.1204(a) with the exception of two facilities protected under 47 C.F.R. §74.1204(d) (KSHA & KRDG) by the Undesired to Desired (U/D) method described below. The proposed modified facilities create no mutual exclusivities with any licensed facilities, or construction permits.

K291CB has presently authorized facilities with file number BNPFT-20130826AGI. This application proposes a move from its authorized location in Carson City, NV to its proposed location near Redding, CA which is less than 250 miles away. The distance is in compliance with the AM Revitalization application requirements. In addition to the move, the proposed facility seeks to change its primary station. The new primary station is KNRO-AM. Other portions of this application identify the station and its compliance with providing fill-in service for KNRO-AM.

### **Interference analysis-- Undesired to Desired Method**

Protection to two facilities is provided through the use of Undesired to Desired Signal Strength Ratio (U/D) calculations according to the widely accepted Living Way exhibits.

Specifically, stations KSHA and KRDG are analyzed. Calculations performed relative to 74.1204 (d) indicate no interference is predicted to occur as shown in Exhibits 2 & 3 which are attached as separate exhibits to the application. The proposed antenna is a Scala CA5-FM/CP offset array (2 bay antenna with one bay offset from the mount by  $\frac{1}{4}$  wavelength) mounted at 33.5 meters RCAGL. The elevation pattern with tabulated values is shown in Exhibit 1. The height of the interference signal contours above ground are indicated for KSHA and KRDG respectively in separate attachments to the application labeled Exhibit 2 and 3.

The KSHA facility located about 55 km from the proposed facility, produces a field strength calculated at ground level of the proposed site of 77.5 dBu, as shown on the Interference Contour Analysis Map. For the translator interference contours, free space calculations are used along with the elevation pattern of the proposed antenna. The corresponding proposed facility 117.5 dBu field strength 1x contour was calculated and plotted in Exhibit 2. The proposed antenna

location is 33.5 meters above ground. As Exhibit 2 indicates, the interfering 117.5 dBu contour (or higher) field strength levels do not reach ground level.

Likewise for the KRDG facility, which is co-located with the proposed facility, the interference contours are closer to the tower itself, never hit the ground, and will never get to the value of +40 dB value relative to the KRDG signal. Exhibit 3 shows the signal strength of the KRDG facility as 110 dBu or greater on the ground. As a matter of confirmation only, the 150 dBu interfering contour heights are shown for the proposed facility.

The applicant recognizes that the U/D method is only a tool for predicting likely interference. Should any actual interference be experienced, the applicant will cooperate fully in correcting the interference. Corrective steps may require changes in the transmitting antenna or other steps which would require Commission authorization, may require that the translator cease operation except for brief equipment tests, or may require filtering at the receivers which report interference.

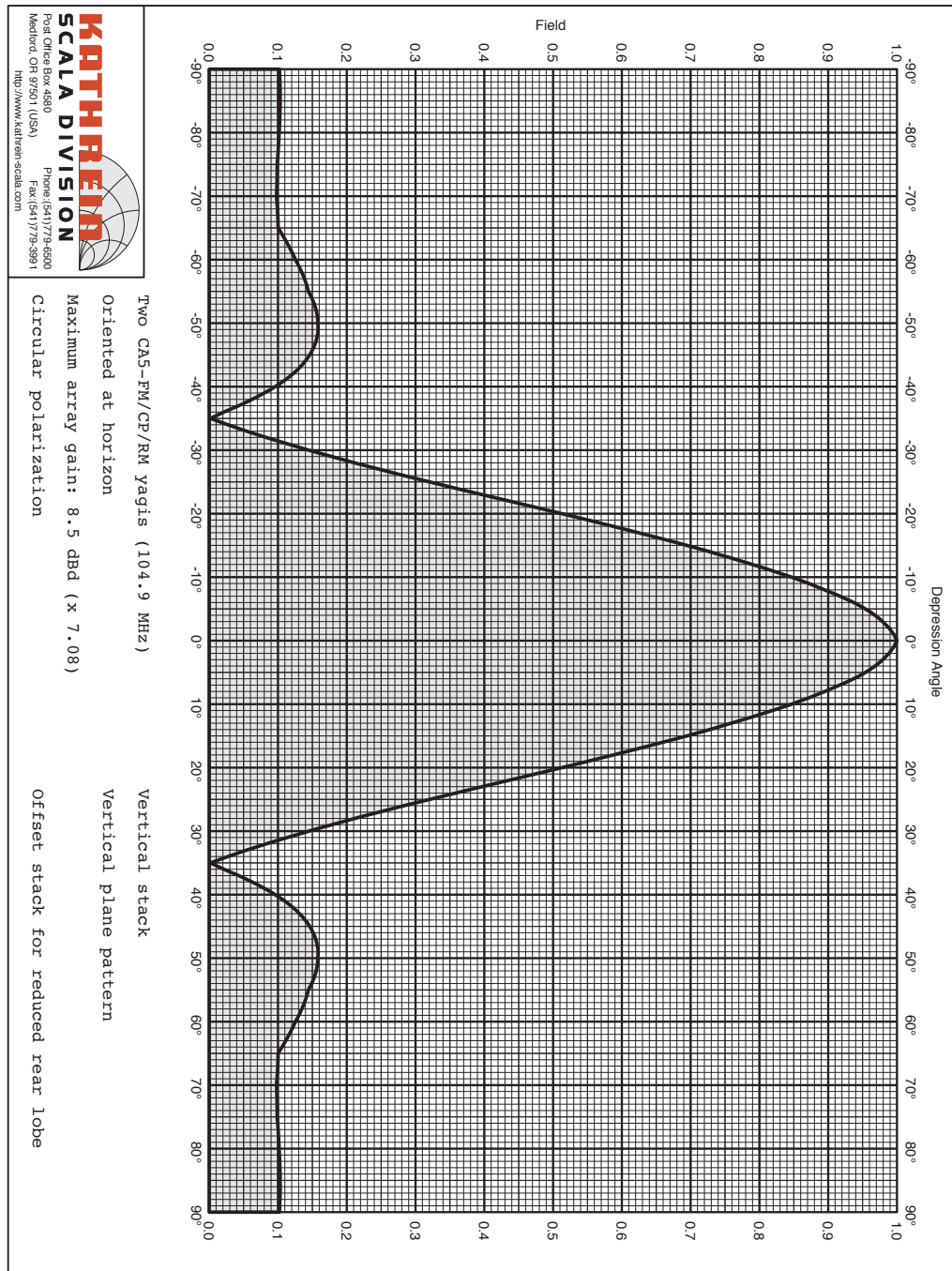


Exhibit #1-A— Elevation Pattern of the 2 Bay  $\frac{1}{4}$  wavelength offset antenna provided by Scala



Two CA5-FM/CP/RM yagis (104.9 MHz)

Vertical stack

Oriented at horizon

Vertical plane pattern

Maximum array gain: 8.5 dBd (x 7.08)

Circular polarization

Offset stack for reduced rear lobe

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	8.50	7.08	45	0.146	-16.72	-8.22	0.15
1	0.995	-0.04	8.46	7.01	46	0.151	-16.40	-7.90	0.16
2	0.988	-0.10	8.40	6.92	47	0.155	-16.18	-7.68	0.17
3	0.979	-0.18	8.32	6.79	48	0.158	-16.05	-7.55	0.18
4	0.968	-0.28	8.22	6.63	49	0.158	-16.00	-7.50	0.18
5	0.955	-0.40	8.10	6.45	50	0.158	-16.03	-7.53	0.18
6	0.937	-0.57	7.93	6.21	51	0.157	-16.06	-7.56	0.18
7	0.917	-0.75	7.75	5.95	52	0.156	-16.15	-7.65	0.17
8	0.895	-0.96	7.54	5.68	53	0.153	-16.31	-7.81	0.17
9	0.872	-1.19	7.31	5.38	54	0.149	-16.53	-8.03	0.16
10	0.847	-1.44	7.06	5.08	55	0.144	-16.81	-8.31	0.15
11	0.819	-1.73	6.77	4.75	56	0.142	-16.97	-8.47	0.14
12	0.790	-2.05	6.45	4.42	57	0.139	-17.17	-8.67	0.14
13	0.759	-2.39	6.11	4.08	58	0.135	-17.41	-8.91	0.13
14	0.728	-2.76	5.74	3.75	59	0.130	-17.70	-9.20	0.12
15	0.695	-3.16	5.34	3.42	60	0.125	-18.03	-9.53	0.11
16	0.660	-3.61	4.89	3.08	61	0.121	-18.33	-9.83	0.10
17	0.624	-4.10	4.40	2.76	62	0.116	-18.68	-10.18	0.10
18	0.588	-4.62	3.88	2.44	63	0.111	-19.06	-10.56	0.09
19	0.551	-5.18	3.32	2.15	64	0.106	-19.50	-11.00	0.08
20	0.514	-5.78	2.72	1.87	65	0.100	-19.98	-11.48	0.07
21	0.474	-6.48	2.02	1.59	66	0.100	-19.99	-11.49	0.07
22	0.435	-7.23	1.27	1.34	67	0.100	-20.02	-11.52	0.07
23	0.396	-8.04	0.46	1.11	68	0.099	-20.07	-11.57	0.07
24	0.358	-8.92	-0.42	0.91	69	0.099	-20.12	-11.62	0.07
25	0.321	-9.88	-1.38	0.73	70	0.098	-20.19	-11.69	0.07
26	0.283	-10.96	-2.46	0.57	71	0.098	-20.15	-11.65	0.07
27	0.247	-12.15	-3.65	0.43	72	0.099	-20.12	-11.62	0.07
28	0.212	-13.48	-4.98	0.32	73	0.099	-20.11	-11.61	0.07
29	0.178	-15.01	-6.51	0.22	74	0.099	-20.10	-11.60	0.07
30	0.145	-16.78	-8.28	0.15	75	0.099	-20.10	-11.60	0.07
31	0.113	-18.94	-10.44	0.09	76	0.100	-20.03	-11.53	0.07
32	0.083	-21.64	-13.14	0.05	77	0.100	-19.98	-11.48	0.07
33	0.054	-25.33	-16.83	0.02	78	0.101	-19.93	-11.43	0.07
34	0.027	-31.31	-22.81	0.01	79	0.101	-19.89	-11.39	0.07
35	0.010	-40.00	-31.50	0.00	80	0.102	-19.86	-11.36	0.07
36	0.021	-33.37	-24.87	0.00	81	0.102	-19.82	-11.32	0.07
37	0.043	-27.34	-18.84	0.01	82	0.103	-19.78	-11.28	0.07
38	0.063	-24.07	-15.57	0.03	83	0.103	-19.75	-11.25	0.07
39	0.080	-21.91	-13.41	0.05	84	0.103	-19.73	-11.23	0.08
40	0.096	-20.35	-11.85	0.07	85	0.103	-19.72	-11.22	0.08
41	0.110	-19.19	-10.69	0.09	86	0.103	-19.72	-11.22	0.08
42	0.122	-18.30	-9.80	0.10	87	0.103	-19.74	-11.24	0.08
43	0.131	-17.62	-9.12	0.12	88	0.103	-19.76	-11.26	0.07
44	0.140	-17.10	-8.60	0.14	89	0.103	-19.79	-11.29	0.07
					90	0.102	-19.82	-11.32	0.07

Exhibit #1-B— Elevation Pattern of the 2 Bay  $\frac{1}{4}$  wavelength offset antenna provided by Scala

Source of Data

Transmitter location, effective radiated power, antenna patterns, and elevation data are extracted from the Commission's CDBS for the existing facility stations. All contours for existing and proposed facilities are calculated using height above average terrain calculated at one degree horizontal increments using the FCC broadcast link for FM HAAT. The proposed antenna azimuth and elevation patterns were provided by the antenna manufacturer, Scala.

Sincerely,

A handwritten signature in black ink, appearing to read "Gregory L. Best, PE". The signature is fluid and cursive, with the initials "PE" clearly visible at the end.

President