

TECHNICAL EXHIBIT
MINOR CHANGE APPLICATION FOR FM
TRANSLATOR STATION K216BR (FACILITY ID 69392)
HEBER, UTAH

JULY 23, 2004

CH 213D 0.037 KW (MAX-DA) 2567 M AMSL

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Technical Narrative

This Technical Exhibit was prepared in support of a minor change application for FM translator station K216BR at Heber, Utah. The currently licensed operation for K216BR is on channel 216 with a maximum directional effective radiated power (ERP) of 0.037 kilowatt (37 Watts) and an antenna height above mean sea level (AMSL) of 2566 meters (BLFT-19900911TA). This application proposes to change frequency to channel 213 and operate at the same site with the no change in directional antenna or ERP (or TPO). There is a correction to the coordinates, but no actual change in site. The licensed antenna will also be slightly increased in height on the existing supporting pole to comply with the revised (1997) RFR guidelines.

Since the proposed channel change is third-adjacent to the license operation this can be considered a minor change application. The support structure does not require tower registration as it is less than 6.1 meters (20 feet).

Predicted Coverage Contour

The Ch 213D predicted 60 dBu coverage contour was calculated in accordance with Section 73.313 of the FCC Rules. The average terrain elevations from 3 to 16 km from the proposed site were computed using the N.G.D.C. 30-second terrain database. The distances to the predicted 60 dBu coverage contour for the proposal were determined using

the average elevations of radials spaced every 10-degrees of azimuth. A Scala CL-FM directional antenna will continue to be used (vertical polarization only). The antenna will remain oriented at 133 degrees True. Figure 3 is a map showing the predicted 60 dBu coverage contour of the proposed translator facility along with the primary station's (KUER-FM) 60 dBu contour.

Allocation Considerations

Figure 4 summarizes the allocation study for the proposed facility. There is no prohibited contour overlap with any co-channel or adjacent-channel station, except for KRCL, Ch 215C, Salt Lake City, Utah.

Waiver of Section 74.1204(a)(3)

Station KRCL is licensed to operate on channel 215C with an ERP of 16.5 kilowatts and an HAAT of 1149 meters at a location 62 kilometers west of the K216BR site (BLED-19791109AC). Station KRCL is also authorized (CP, BPED-20011025AC) to operate on channel 215C with an ERP of 25 kilowatts and an HAAT of 1140 meters at the same location. The K216BR site is located within the protected contour (60 dBu) for both KRCL facilities. Therefore, waiver of Section 74.1204(a)(3) is respectfully requested.

The currently licensed operation for K216BR operates on channel 216, which is a upper first-adjacent channel to KRCL. The proposed K216BR operation is on channel 213, which is a lower second-adjacent channel to KRCL. The contour protection requirements in § 74.1204(a)(3) specify a less stringent desired-to-undesired (D/U) ratio for second-adjacent channel relationships than first-adjacent channels (+6 dB versus -40 dB).

An analysis of the interference potential was conducted based on the desired-to-undesired (D/U) signal strength ratio method. The predicted KRCL F(50,50) field strength is 70.7 dBu at the K216BR site. Since the resulting interfering contour would be 110.7 dBu (-40 dB D/U ratio), a free-space calculation was used to determine the interference area.

Sheet 3 of Figure 4 depicts the proposed K216BR 110.7 dBu F(50,10). The calculated interference area encompasses 0.011 square kilometer. This area is located on a remote mountaintop where no people reside.

An analysis of the interference potential was also conducted to the KRCL(CP) operation. The predicted KRCL(CP) F(50,50) field strength is 72.5 dBu at the K216BR site, thus the resulting interfering contour would be 112.5 dBu (-40 dB D/U ratio) at the K216BR site. Since this interfering contour is stronger than that for the licensed KRCL operation, the predicted interference area will be entirely within the predicted interference area for the licensed KRCL operation.

It is noted that this is a proposed 98 percent reduction in calculated interference area to KRCL from the licensed K216BR operation (due to the new, less stringent second-adjacent channel relationship).

The appendix contains a certification from the proposed antenna manufacturer that the proposed antenna re-location will not affect the other antennas located nearby.

TV Channel 6 Allocation

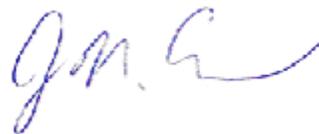
There is no predicted contour overlap, as required in § 74.1205, to any authorized TV channel 6 facility.

Radiofrequency Electromagnetic Field Exposure

The proposed FM facility was evaluated in terms of potential radio frequency (RF) energy exposure at ground level to workers and the general public. The radiation center for the Scala CL-FM antenna is located 5.8 meters above ground level. The proposed ERP is 0.037 kW (vertical polarization only). Detailed studies based on the horizontal and vertical antenna patterns have been made to ensure the proposal will comply with the FCC's RFR guidelines. The "worst-case" (highest) power density value is calculated to occur in the

azimuth of the main lobe (133° True) at an angle of 30 degrees below horizontal (see Figure 5). This calculation assumes a distance of 7.3 meters (24 feet) from the center of the antenna and a vertical relative field 0.65 (azimuthal relative field of 1.0). The resulting calculated maximum power density value at this point and 2 meters above ground level is 0.0098 mW/cm² or 4.9 percent of the FCC's recommended limit of 0.2 mW/cm² for FM frequencies for an "uncontrolled" environment.

Access to the transmitting site will be restricted and appropriately marked with warning signs. In the event that workers or other authorized personnel enter restricted areas or climb the tower, appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the stations are at reduced power or shut down.



Jonathan N. Edwards

du Treil, Lundin & Rackley, Inc.
201 Fletcher Avenue
Sarasota, Florida 34237
941.329.6000

July 23, 2004



ASRN: Not Required

NAD 27
Site Coordinates:
40° 33' 45" N
111° 28' 30" W

SCALA CL-FM Antenna

Transmit
Radiation Center
2566.7 m AMSL
(8421 ft AMSL)

Receive
Radiation Center
2565.5 m AMSL
(8417 ft AMSL)

5.8 m
(19 ft)

4.6 m
(15 ft)

Equipment
Shelter

2560.9 m AMSL
(8402 ft AMSL)

250 ft

Not to Scale

ANTENNA AND SUPPORTING STRUCTURE

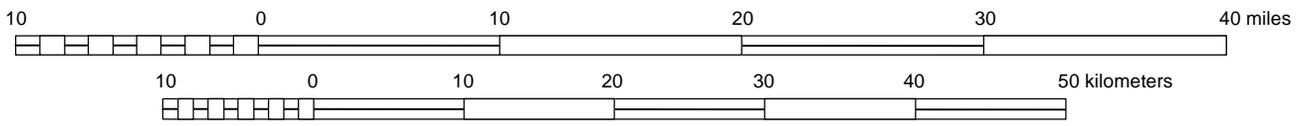
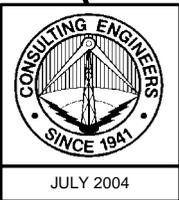
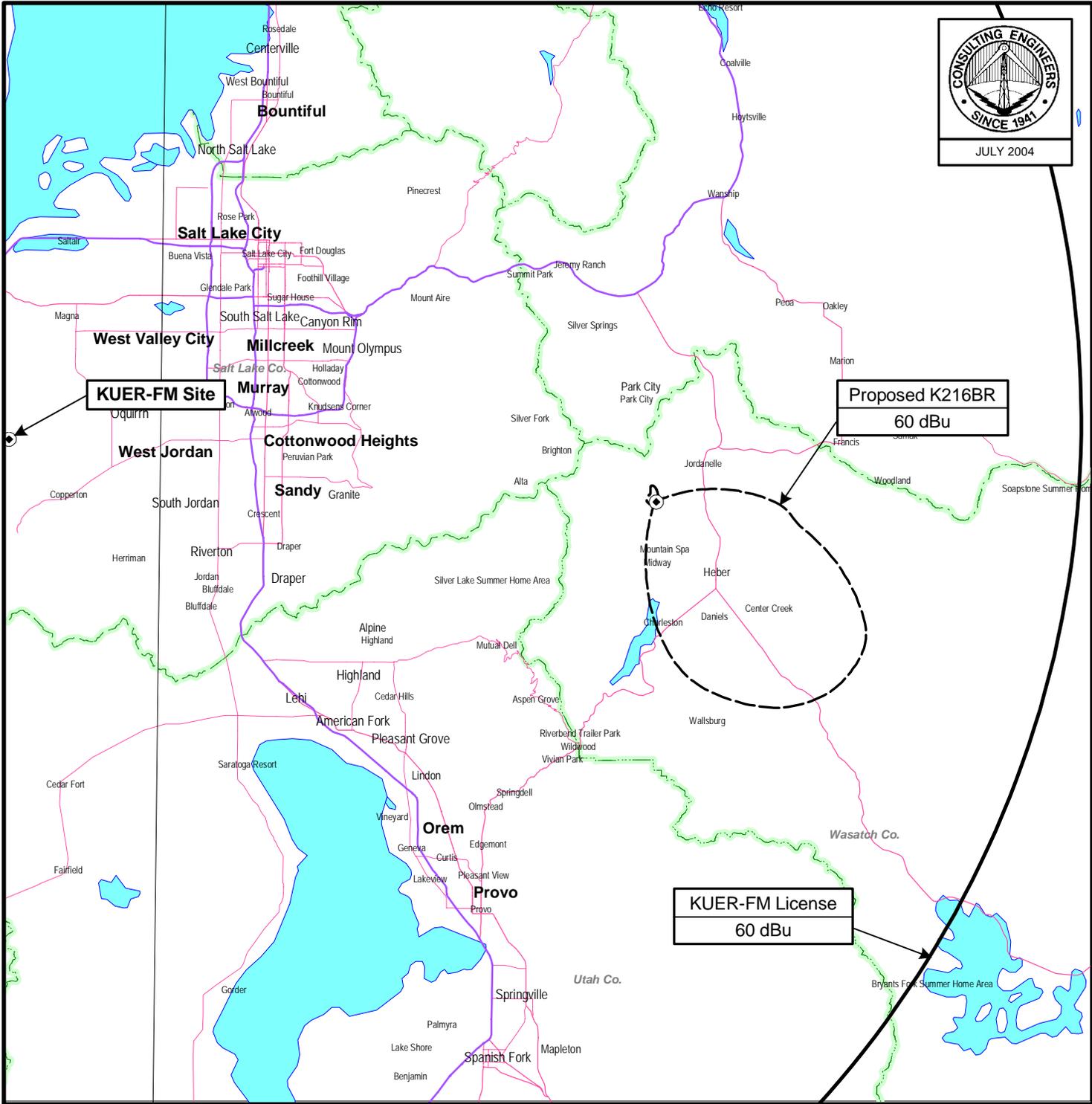
FM TRANSLATOR STATION K216BR

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du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 3



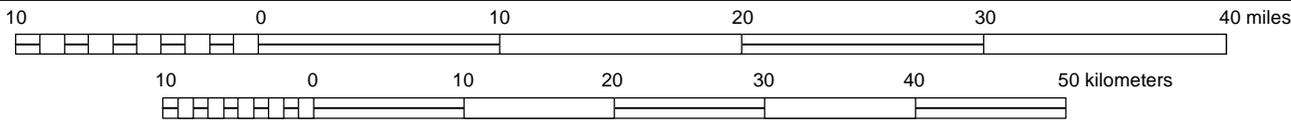
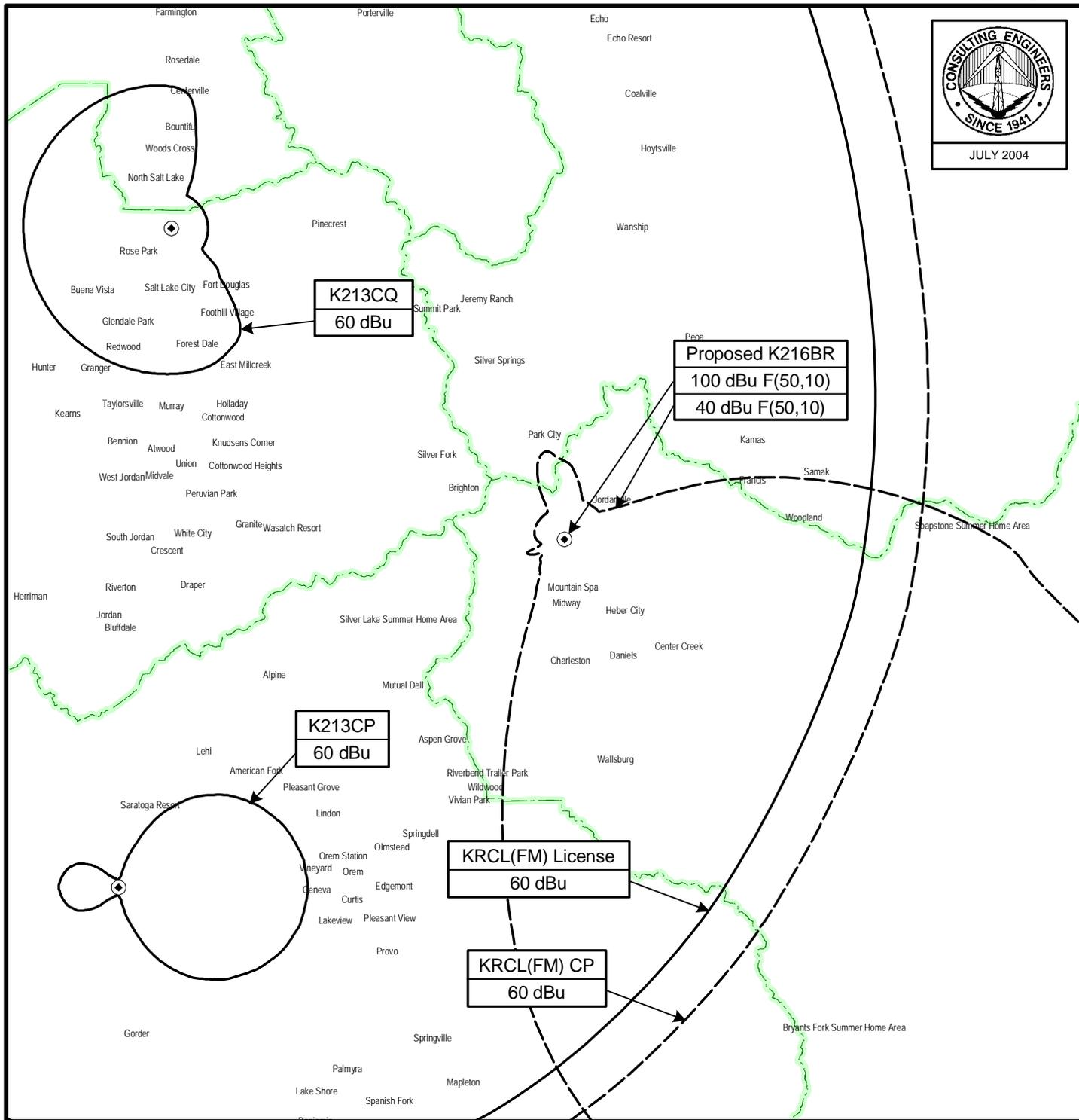
PREDICTED COVERAGE CONTOUR MAP
FM TRANSLATOR STATION K216BR
HEBER, UTAH
CH 213D 0.037 KW (MAX-DA) 2567 M AMSL
 du Treil, Lundin & Rackley, Inc Sarasota, Florida

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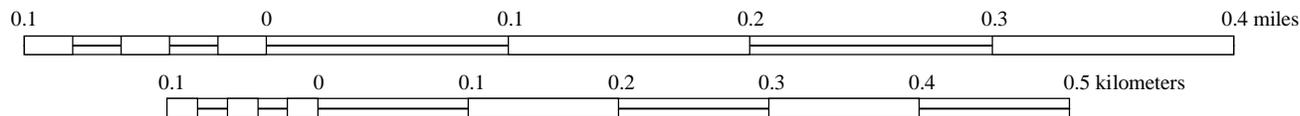
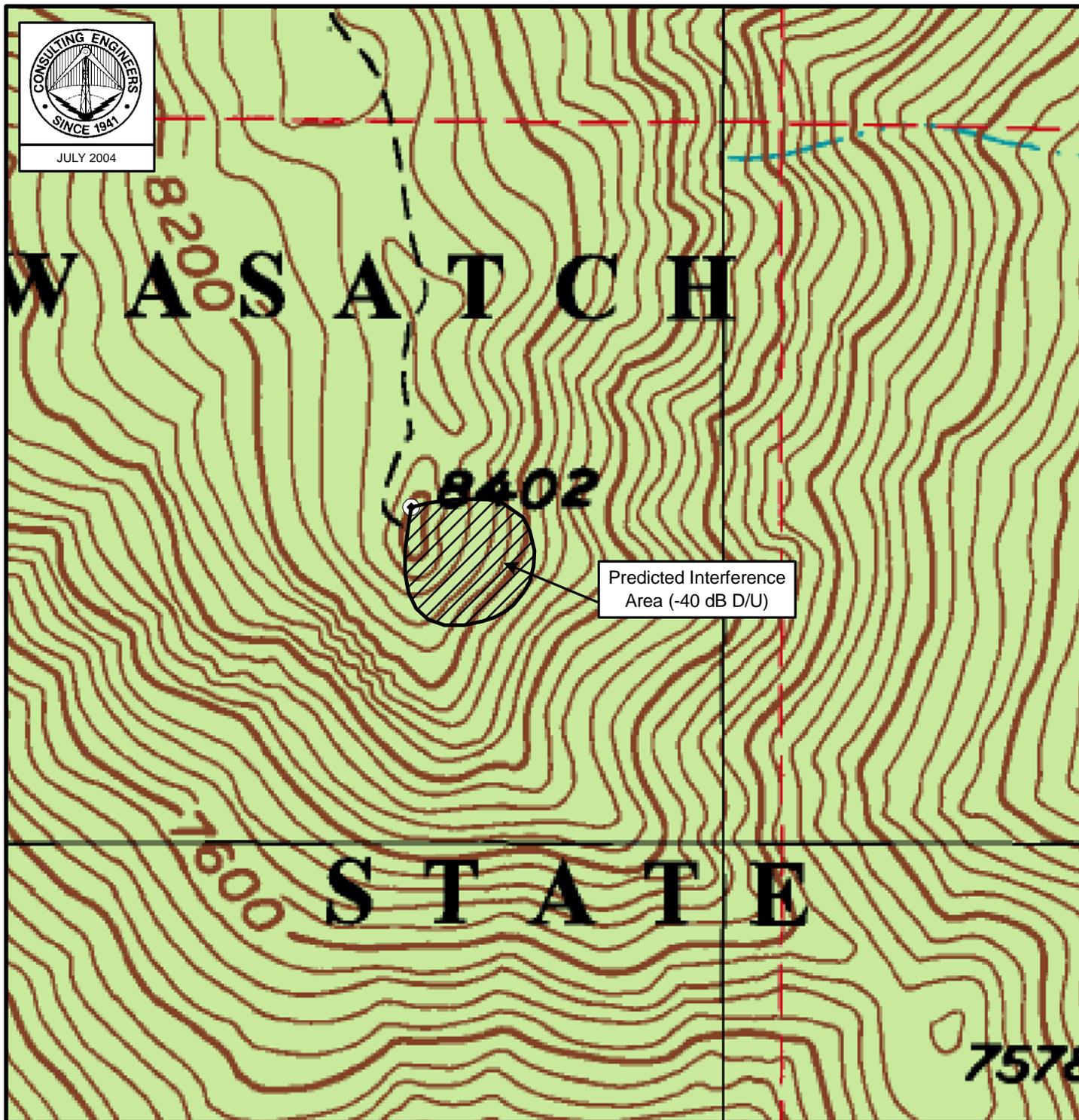
Summary of Allocation Analysis

40° 33' 45" North Latitude 111° 28' 30" West Longitude
Channel: 213 / 0.037 kW/ 877 meter MAX HAAT

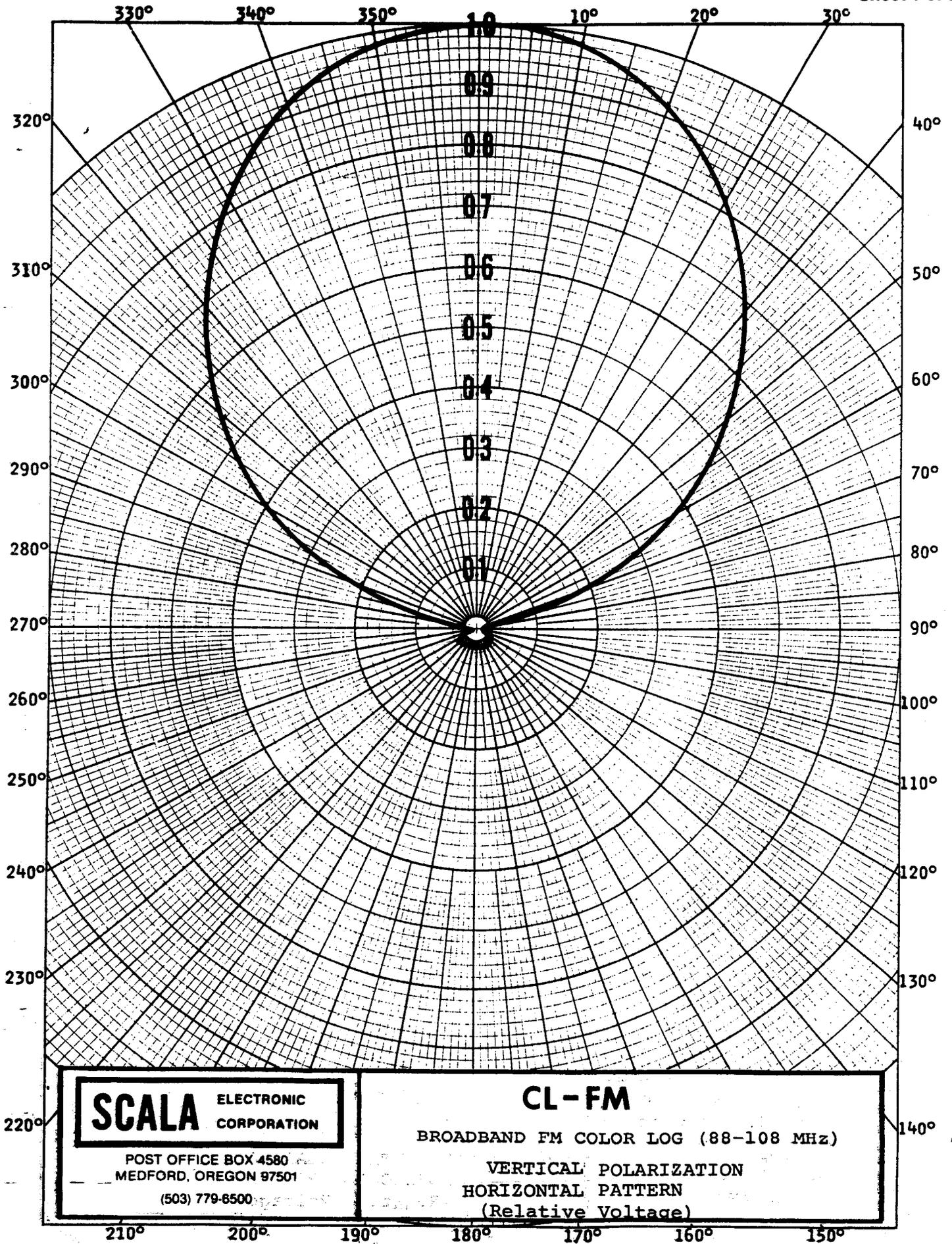
Call Id	City St	File Status	Num	Channel Freq	ERP MaxHAAT	DA Id	Latitude Longitude	73 215	Bear	Dist. (km)	Req. (km)
KUER-F 124934	ALTA UT	BLFTB LIC	C C	211 90.1	D 615	Y 35450	40-35-18 111-38-32	N	281.6	14.45 0.15	0.0 Close
KUER-F 60.0 dBu Desired = 13.9 km ; Proposed 100. dbu; Undesired = .4											
KUER-F 69171	SALT LAKE UT	C LIC	C C	211 90.1	C 1127	N	40-36-30 112-09-34	N	275.3	58.17	
(Applicant's primary station)											
KUER-F 69171	SALT LAKE UT	C LIC	C C	211 90.1	C 896	N	40-36-29 112-09-36	N	275.2	58.21	
(Applicant's primary station)											
K213CQ 89166	SALT LAKE UT	C LIC	C C	213 90.5	D 516	N 33449	40-48-27 111-53-18	N	308.1	44.28 -46.82	103.7 Short
K213CQ 60.0 dBu Desired = 13.1 km ; Proposed 40.0 dbu; Undesired = 78.0 (No proposed contour overlap. See Sheet 2)											
K213CP 88622	PLEASANT UT	GR LIC	C C	213 90.5	D 968	Y 16125	40-16-57 111-56-10	N	231.6	49.98 -44.72	107.4 Short
K213CP 60.0 dBu Desired = 16.7 km ; Proposed 40.0 dbu; Undesired = 78.0 Translator for KLOVFM, Winchester, OR (No proposed contour overlap. See Sheet 2)											
KRCL 37766	SALT LAKE UT	C CP	C C	215 90.9	C 1140	N	40-39-34 112-12-05	N	280.2	62.41 -30.29	92.9 Short
KRCL 60.0 dBu Desired = 92.3 km ; Proposed 100. dbu; Undesired = .4 (Proposal moving from 1 st -adjacent to 2 nd -adjacent channel. See text)											
KRCL 37766	SALT LAKE UT	C LIC	C C	215 90.9	C 1504	N	40-39-35 112-12-05	N	280.2	62.42 -30.88	93.5 Short
KRCL 60.0 dBu Desired = 92.9 km ; Proposed 100. dbu; Undesired = .4 (Proposal moving from 1 st -adjacent to 2 nd -adjacent channel. See text)											
K216BR 69392	HEBER UT	BLFT LIC	C C	216 91.1	D 877	Y 16150	40-33-36 111-28-32	N	189.5	0.28	
Translator for KUER-FM, Salt Lake City, UT (Applicant's existing facility)											



ALLOCATION MAP
FM TRANSLATOR STATION K216BR
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PREDICTED INTERFERENCE TO KRCL
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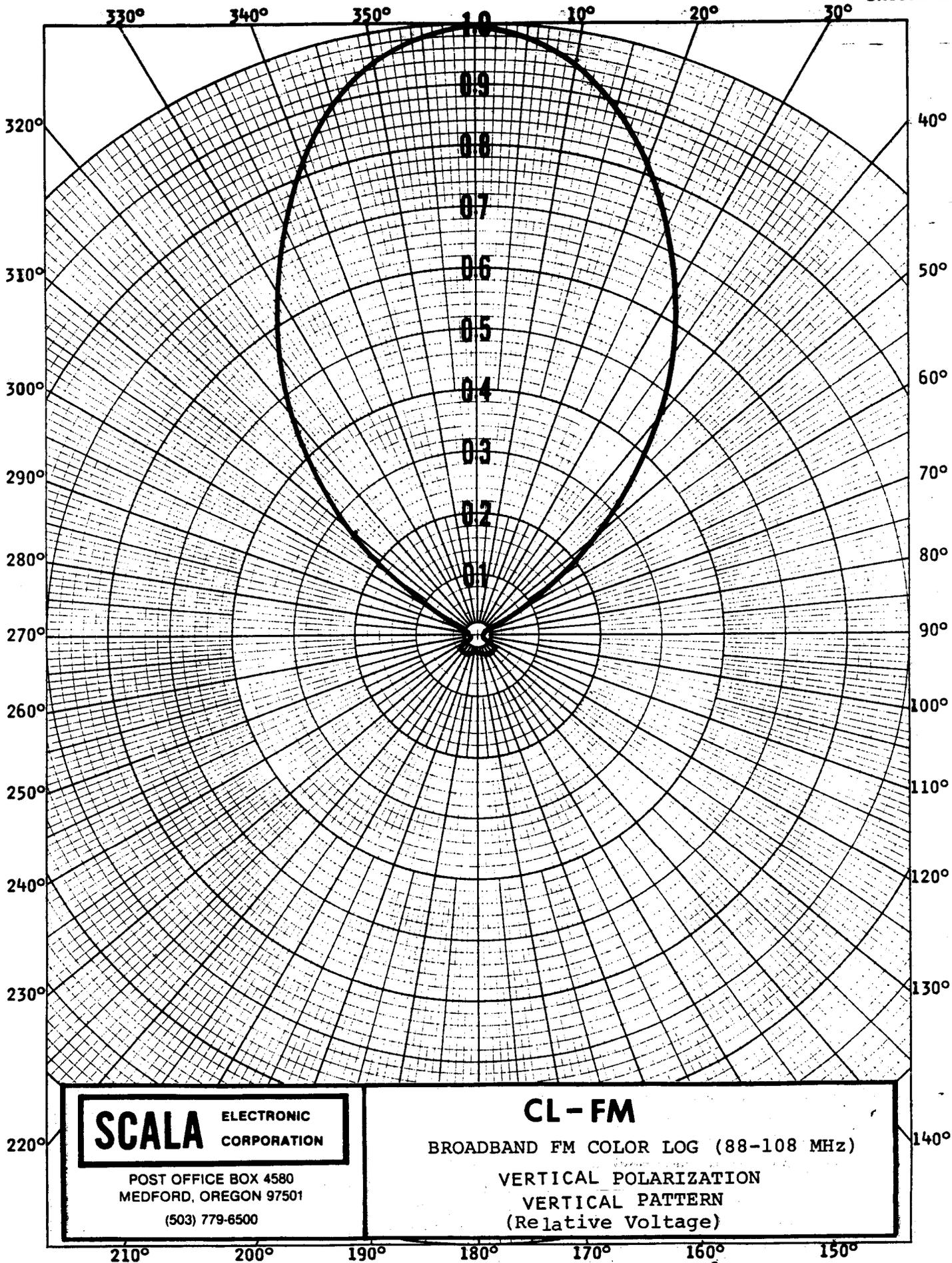
SCALA ELECTRONIC CORPORATION

POST OFFICE BOX 4580
MEDFORD, OREGON 97501
(503) 779-8500

CL-FM

BROADBAND FM COLOR LOG (88-108 MHz)

VERTICAL POLARIZATION
HORIZONTAL PATTERN
(Relative Voltage)



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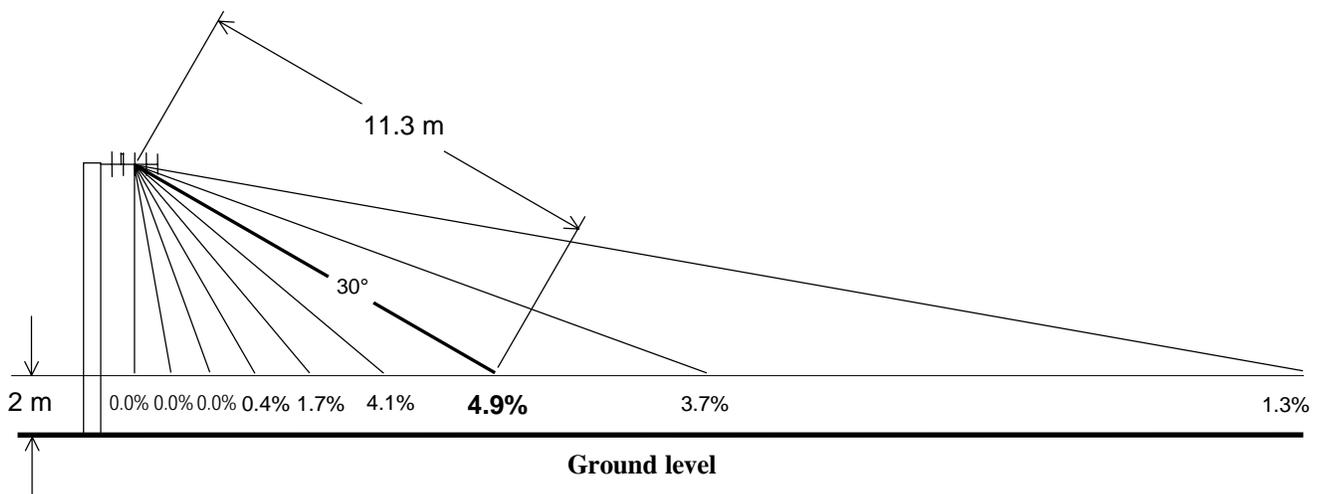
CL-FM

BROADBAND FM COLOR LOG (88-108 MHz)

VERTICAL POLARIZATION
VERTICAL PATTERN
(Relative Voltage)



Power Density Calculations at various locations (2 meters above ground level)



Not to Scale

ANTENNA AND SUPPORTING STRUCTURE

FM TRANSLATOR STATION K216BR

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APPENDIX

July 22, 2004

Antennas • Filters

Kathrein Inc., Scala Division

P.O. Box 4580
Medford, OR 97501 USA
Phone: 541-779-6500
Fax: 541-779-3991
mail@kathrein.com
www.kathrein.com

Attn: Lewis Downey
Chief Engineer
KUER Radio
101 S. Wasatch Drive Room 240
University of Utah
Salt Lake City, Utah 84112
801-581-5010

Dear Mr. Downey:

Ref: Minor Modification to existing Translator K216BR

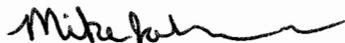
Thank you for your drawings and narrative regarding the proposed change installation height of the K216BR directional FM translator antenna located at the same sight as the KSD 2xCL-FM-HV array of translators: K284AJ, K292AB, K296AF, K220AY, K292AB, the KSD K723147 panel antenna of translators: K18GV, K25HF, K27GC, K31FP, K33FX, K35EW, K38-sta and the KSD 4DR-8S panel array of translator K21DY.

With the proposed installation of the K216BR KSD CL-FM/VRM antenna on a separate structure located 25 feet east of the structures the above mentioned translator are installed on, there is no anticipated significant adverse effect to the directional radiation pattern of the above mentioned translators from the installation of the K216BR KSD CL-FM/VRM or the routing of the transmission line.

This opinion carries no performance guarantee and is based solely on the data provided by KUER Radio and the practical experience of our sales engineers. It is by no means a comprehensive analysis and Kathrein-Scala recommends KUER Radio to engage the services of a qualified communications firm for a definitive evaluation. The furnished data has not been verified by Kathrein-Scala for completeness or accuracy.

Please feel free to contact me if you need further assistance.

Best regards,



Mike Johnson,
Sales Engineer
KATHREIN INC., SCALA DIVISION
mjohnson@kathrein.com