# ENGINEERING EXHIBIT

# APPLICATION FOR AUXILIARY ANTENNA CONSTRUCTION PERMIT

prepared for

**Lincoln Financial Media Company of California**

KSON(FM) San Diego, California

Facility ID 30832

Ch. 247B 0.65 kW (DA-MAX) 564 m

## Table of Contents



*This material supplies a "hard copy" of the engineering portions of this application as entered December 3, 2009 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*

**Section III-B - FM Engineering**

**TECHNICAL SPECIFICATIONS**

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

**TECH BOX**

| | | | |
|---|---|---|---|
| 1. | Channel Number: 247 | | |
| 2. | Class (select one):<br>○ A ○ B1 ◉ B ○ C3 ○ C2 ○ C1 ○ C0 ○ C ○ D | | |
| 3. | Antenna Location Coordinates: (NAD 27)<br><br>Latitude:<br>Degrees 32 Minutes 41 Seconds 48 ◉ North ○ South<br><br>Longitude:<br>Degrees 116 Minutes 56 Seconds 10 ◉ West ○ East | | |
| 4. | Proposed Allotment or Assignment Coordinates: (NAD 27) ☑ Not Applicable<br><br>Latitude:<br>Degrees Minutes Seconds ○ North ○ South<br><br>Longitude:<br>Degrees Minutes Seconds ○ West ○ East | | |
| 5. | Antenna Structure Registration Number:<br>☑ Not Applicable ☐ Notification filed with FAA | | |
| 6. | Overall Tower Height Above Ground Level: | 35meters | |
| 7. | Height of Radiation Center Above Mean Sea Level: | 806 meters(H) | 806 meters(V) |
| 8. | Height of Radiation Center Above Ground Level: | 30meters(H) | 30meters(V) |
| 9. | Height of Radiation Center Above Average Terrain: | 564meters(H) | 564meters(V) |
| 10. | Effective Radiated Power: | 0.65 kW(H) | 0.65 kW(V) |
| 11. | Maximum Effective Radiated Power: ☑ Not Applicable<br>(Beam-Tilt Antenna ONLY) | kW(H) | kW(V) |
| 12. | Directional Antenna Relative Field Values: ☐ Not applicable (Nondirectional)<br>Rotation (Degrees): 0 ☐ No Rotation | | |

| Degrees | Value | Degrees | Value | Degrees | Value | Degrees | Value | Degrees | Value | Degrees | Value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.775 | 10 | 0.627 | 20 | 0.508 | 30 | 0.411 | 40 | 0.346 | 50 | 0.302 |
| 60 | 0.263 | 70 | 0.229 | 80 | 0.2 | 90 | 0.166 | 100 | 0.141 | 110 | 0.141 |
| 120 | 0.141 | 130 | 0.158 | 140 | 0.177 | 150 | 0.198 | 160 | 0.222 | 170 | 0.248 |
| 180 | 0.277 | 190 | 0.333 | 200 | 0.4 | 210 | 0.48 | 220 | 0.558 | 230 | 0.649 |
| 240 | 0.755 | 250 | 0.877 | 260 | 0.937 | 270 | 1 | 280 | 1 | 290 | 1 |
| 300 | 1 | 310 | 1 | 320 | 1 | 330 | 1 | 340 | 0.918 | 350 | 0.843 |
| Additional Azimuths | | | | | | | | | | | |

Relative Field Polar Plot

**NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.**

**CERTIFICATION**

**AUXILIARY ANTENNA APPLICANTS ARE NOT REQUIRED TO RESPOND TO ITEMS 13-16. PROCEED TO ITEM 17.**

| | | |
|---|---|---|
| 13. | **Availability of Channels.** The proposed facility complies with the allotment requirements | ○ Yes ○ No |

| | | |
|---|---|---|
| | [illegible] of 47 C.F.R. Section 73.203. | [illegible] Yes [illegible] No<br>See Explanation in [Exhibit 24] |
| 14. | **Community Coverage.** The proposed facility complies with 47 C.F.R. Section 73.315. | ○ Yes ○ No<br>See Explanation in [Exhibit 25] |
| 15. | **Main Studio Location.** The proposed main studio location complies with 47 C.F.R. Section 73.1125. | ○ Yes ○ No<br>See Explanation in [Exhibit 26] |
| 16. | **Interference.** The proposed facility complies with all of the following applicable rule sections:<br>Check all those that apply:<br><br>**Separation Requirements.**<br>☐ a) 47 C.F.R. Section 73.207<br><br>**Grandfathered Short-Spaced.**<br><br>☐ b) 47 C.F.R. Section 73.213(a) with respect to station(s): [Exhibit 28]<br>**Exhibit required**<br>☐ c) 47 C.F.R. Section 73.213(b) with respect to station(s): [Exhibit 29]<br>**Exhibit required**<br>☐ d) 47 C.F.R. Section 73.213(c) with respect to station(s): [Exhibit 30]<br>**Exhibit required.**<br><br>**Contour Protection**<br><br>☐ e) 47 C.F.R. Section 73.215 with respect to station(s): [Exhibit 31]<br>**Exhibit required.** | ○ Yes ○ No<br>See Explanation in [Exhibit 27] |
| 17. | **Environmental Protection Act.** The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an **Exhibit is required.**<br><br>By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines. | ◉ Yes ○ No<br>See Explanation in [Exhibit 32] |
| 18. | **Community of License Change - Section 307(b).** If the application is being submitted to change the facility's community of license, then the applicant certifies that it has attached an exhibit containing information demonstrating that the proposed community of license change constitutes a preferential arrangement of station assignments under Section 307(b) of the Communications Act of 1934, as amended (47 U.S.C. Section 307(b)).<br><br>**An exhibit is required** unless this question is not applicable. | ○ Yes ○ No<br>◉ N/A<br>[Exhibit 33] |

**PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.**

## SECTION III - PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

| | | |
|---|---|---|
| Name<br>ROBERT J. CLINTON | Relationship to Applicant (e.g., Consulting Engineer)<br>CONSULTANT | |
| Signature | Date<br>12/3/2009 | |
| Mailing Address<br>CAVELL, MERTZ & ASSOCIATES, INC.<br>7839 ASHTON AVENUE | | |
| City<br>MANASSAS | State or Country (if foreign address)<br>VA | Zip Code<br>20109 -2883 |
| Telephone Number (include area code)<br>7033929090 | E-Mail Address (if available)<br>BCLINTON@CAVELLMERTZ.COM | |

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

## Exhibits

**Exhibit 32**
**Description:** EXHIBIT 32 - STATEMENT A

EXHIBIT 32 - STATEMENT A - CONSOLIDATED ENGINEERING STATEMENT (WITH TABLE OF CONTENTS AND COPY OF FORM 301 SECTION III-B)

**Attachment 32**

| Description |
|---|
| EXHIBIT 32 - STATEMENT A |

Exhibit 32 – Statement A

**CONSOLIDATED ENGINEERING STATEMENT**

prepared for

**Lincoln Financial Media Company of California**

KSON(FM) San Diego, California

Facility ID 30832

Ch. 247B 0.65 kW (DA-MAX) 564 m

*Lincoln Financial Media Company of California ("Lincoln"),* licensee of FM radio station KSON(FM) (Ch. 247B, San Diego, CA), is presently authorized (BLH-19820120AK) to operate at 50 kW effective radiated power ("ERP") as a Class B station. *Lincoln* herein requests authorization to construct an auxiliary antenna for KSON at a different transmitter location.

The proposed KSON(FM) auxiliary antenna, an ERI model 1081-1-CP-DA-SP, is an *existing antenna* also employed for the KBZT(FM) auxiliary antenna.[1] The antenna is side-mounted on an existing support structure, is directional in the horizontal plane and employs no beam tilt. **Exhibit 32 – Figure 1** supplies the proposed antenna's relative field horizontal plane envelope pattern. Tabulated relative field data is supplied in the accompanying FCC Form 301 Section III-B FM Engineering "Tech Box" Item 12. Considering the directional nature of panel antennas, the envelope pattern supplied specifies a minimum ERP which is 16.99 dB below the maxima. It is believed that Auxiliary antennas are excluded from the 15 dB maximum-to-minimum ratio limit specified in §73.316(b)(1) of the Rules. However, if the Rule is deemed to apply to auxiliary antennas, a waiver of the Rule is respectfully requested on behalf of *Lincoln*. The instant application proposes the use of an existing, licensed directional antenna which is not required to provide interference protection to other stations.

A graphical representation of the proposed antenna's vertical plane (elevation) pattern is provided in **Exhibit 32 – Figure 2**. The proposed auxiliary antenna will operate at 0.65 kW ERP with an antenna height above average terrain of 570 meters.

**Exhibit 32 - Figure 3** demonstrates that the 60 dBμ (1 mV/m) contour of the proposed Class B auxiliary facility would not extend beyond the bounds of the 60 dBμ contour of the licensed

[1] Channel 235B, San Diego, CA. See FCC File number BXLH-19881011KB.

main facility, in compliance with §73.1675(a)(1).[2] Because minimum distance spacing and contour protection rules do not apply to auxiliary facilities, the instant proposal is believed to comply with all pertinent FCC allocations requirements.

The proposed transmitter site is located 16.2 km from the U. S. – Mexican border. Since the proposed operation does not extend the main facility's protected contour in any direction, it is believed that international coordination is not necessary for the instant proposal. However, if coordination is deemed necessary, *Lincoln* respectfully requests that coordination be performed.

Based on data extracted from the FCC's CDBS database, no AM broadcast stations are located within 3.2 km (2 miles) of the proposed site. The nearest FCC monitoring station is at Douglas, Arizona at a distance of 700.1 km from the proposed site. This exceeds by a great margin the minimum distance specified in §73.1030(c)(3)(iv) that would suggest consideration of the monitoring station.

It is thus believed that the facility proposed herein will satisfy all of the pertinent Commission Rules and Policies now in effect regarding allocation matters for an auxiliary facility.

**Environmental Considerations**

The existing antenna system to be employed for the KSON Auxiliary antenna is side-mounted on an existing antenna support structure. The proposed effective radiated power ("ERP") is 0.65 kilowatts with an antenna height above ground of 30 meters.

The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules. The existing structure is less than 60.1 meters and passes the FCC's TOWAIR program. No change in structure height is proposed, thus no change in current structure marking and lighting requirements is

[2] The 1 mV (60 dBμ) contours were generated using the F(50, 50) chart of §73.333 Figure 1 and the HAAT calculation along 360 radials (every degree) for each facility. HAAT calculations were based on 30 second terrain data. The relative field values of the contours between each ten-degree radial were linearly interpolated to derive the predicted contour for every degree.

anticipated. Therefore, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's rules.

**Human Exposure to Radiofrequency Radiation**

In keeping with §1.1307(b) of the Commission's Rules, the proposed operation has been evaluated for human exposure to radiofrequency energy using the procedures outlined by the Federal Communications Commission in FCC OET Bulletin No. 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility exceeds the radiofrequency exposure guidelines specified in §1.1310 of the Commission's Rules. Under present Commission policy, a facility may be presumed to comply with the limits in §1.1310 of the Commission's Rules if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

The KSON(FM) transmitter site is situated on a remote peak of San Miguel Mountain. There are numerous other transmitting facilities at this site area situated on various antenna supporting structures. According to information provided by the applicant, access to the transmitting site is controlled by a large, locked gate with warning signs posted at the base of the mountain. The transmitting site is located on "protected" land and is not open to the public. Additionally, a fence surrounds the transmitter site, with additional warning signs posted. Based on this information, it is believed that the site may be considered to be a controlled access site. Therefore, the radiofrequency power density calculations are based on the "occupational/ controlled" exposure limits.

The highest nearby ground elevation within 1000 meters of the antenna supporting structure is 781.8 meters AMSL according to USGS topographic maps. Given the antenna height above ground for this antenna system (30 meters) and that the ground elevation rises in one direction from the tower structure, supplemental calculations were made at various points along radials at ground level locations away from the tower structure. The terrain elevations for the KSON site were derived from a U.S.G.S. 7-1/2 minute topographic map and used in the calculations of signal density. The calculations consider terrain, the provided directional envelope pattern and the theoretical elevation pattern of the existing antenna system, an ERI model 1081-1-CP-DA-SP (see **Exhibit 32 - Figure 2**). The "controlled/occupational" limit specified in §1.1310 for the FM Band is 1000 $\mu W/cm^2$.

The formula used for calculating FM signal density in this analysis, shown below, is essentially the same as equation (10) in OET 65:

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

| | | |
|---|---|---|
| S | = | power density in microwatts/cm$^2$ |
| ERP | = | total (average) ERP in Watts |
| F | = | relative field factor |
| D | = | distance in meters |

Using this formula, the above referenced terrain data, and the antenna's directional characteristics, the proposed facility would contribute a maximum power density of 9.35 μW/cm² at two meters above ground, or 0.9 percent of the occupational/controlled MPE limit and 4.7 percent of the general population/uncontrolled MPE limit. Thus, the proposed facility complies with §1.1307(b) of the Commission's Rules regarding exposure to radiofrequency radiation for controlled/occupational locations.

§1.1307(b)(3) states that facilities at locations with multiple transmitters (such as the case at hand) are categorically excluded from responsibility for taking any corrective action in the areas where their contribution is less than five percent. Since the instant situation meets the five percent exclusion test at all ground level areas, the impact of any other facilities using this site may be considered independently from this proposal. Accordingly, it is believed that the impact of the proposed operation should not be considered to be a factor at or near ground level as defined under §1.1307(b).

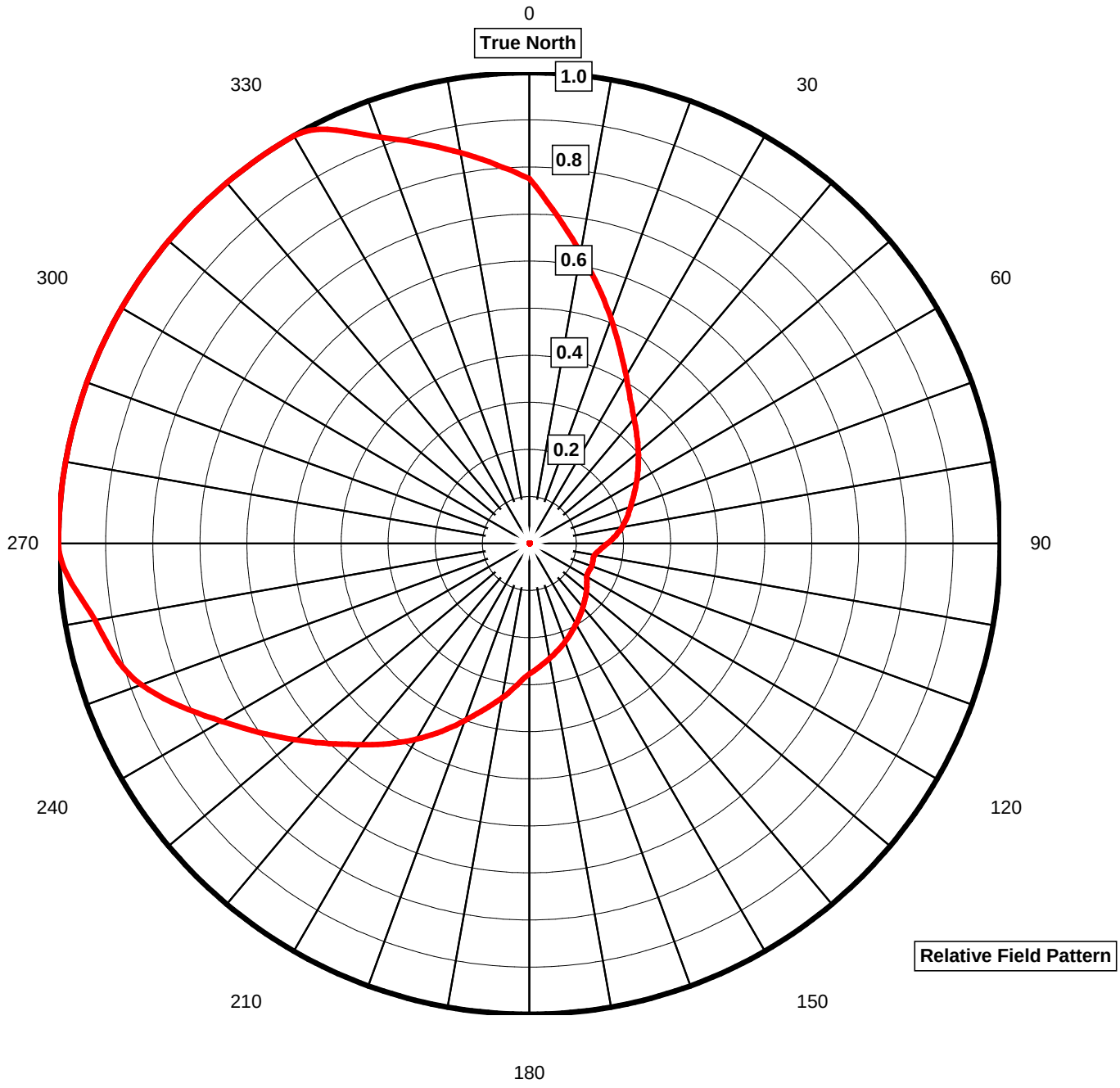
**Safety of Tower Workers and the General Public**

As demonstrated herein, the transmitting site is a controlled access area. Consequently, members of the general public will not be exposed to RF levels in excess of the Commission's guidelines. Nevertheless, tower site access will continue to be restricted and controlled through the use of a locked fence. Additionally, appropriate RF exposure warning signs will continue to be posted.

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure would not occur in areas at ground level. A site exposure policy is employed protecting maintenance workers from excessive exposure when work must be performed on the tower or in areas where high RF levels may be present. Such protective measures may include, but are not limited to: restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines would otherwise be exceeded. *Lincoln* will coordinate with other licensees utilizing this site. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas.

**Conclusion**

Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under §1.1306 of the Rules; hence preparation of an Environmental Assessment is not required.




## EXHIBIT 32 - FIGURE 1

### HORIZONTAL PLANE RADIATION PATTERN

prepared December 2009 for

**Lincoln Financial Media Company of California**

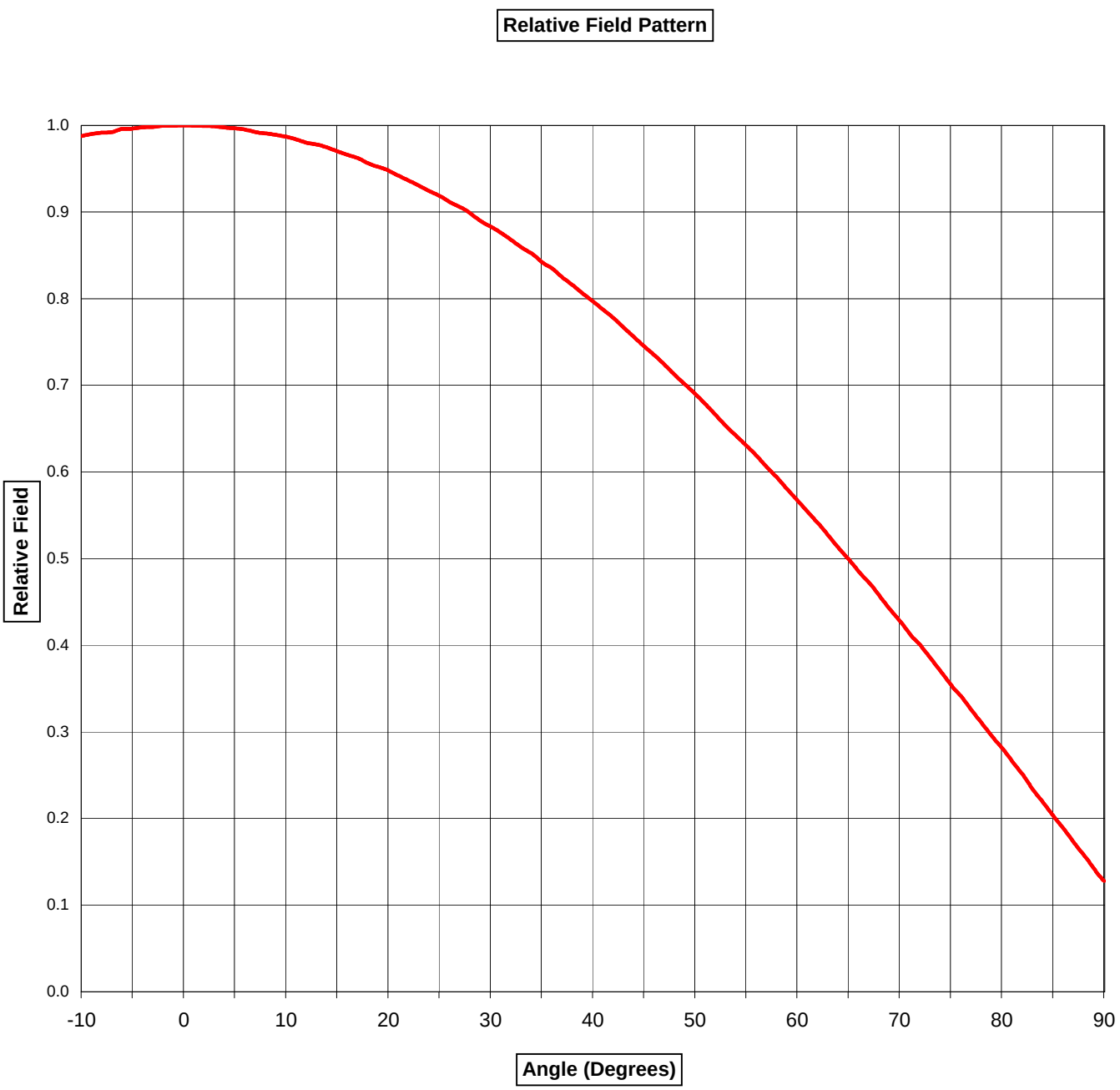
KSON(FM) San Diego, California

Facility Id 30832

Ch. 247B (97.3 MHz) 0.65 kW (DA-MAX) 564 m

**Cavell, Mertz & Associates, Inc.**

Manassas, Virginia




## EXHIBIT 32 - FIGURE 2

### ANTENNA VERTICAL (ELEVATION) PLANE RADIATION PATTERN

prepared December 2009 for

**Lincoln Financial Media Company of California**
KSON(FM) San Diego, California
Facility Id 30832
Ch. 247B (97.3 MHz) 0.65 kW (DA-MAX) 564m

**Cavell, Mertz & Associates, Inc.**
Manassas, Virginia

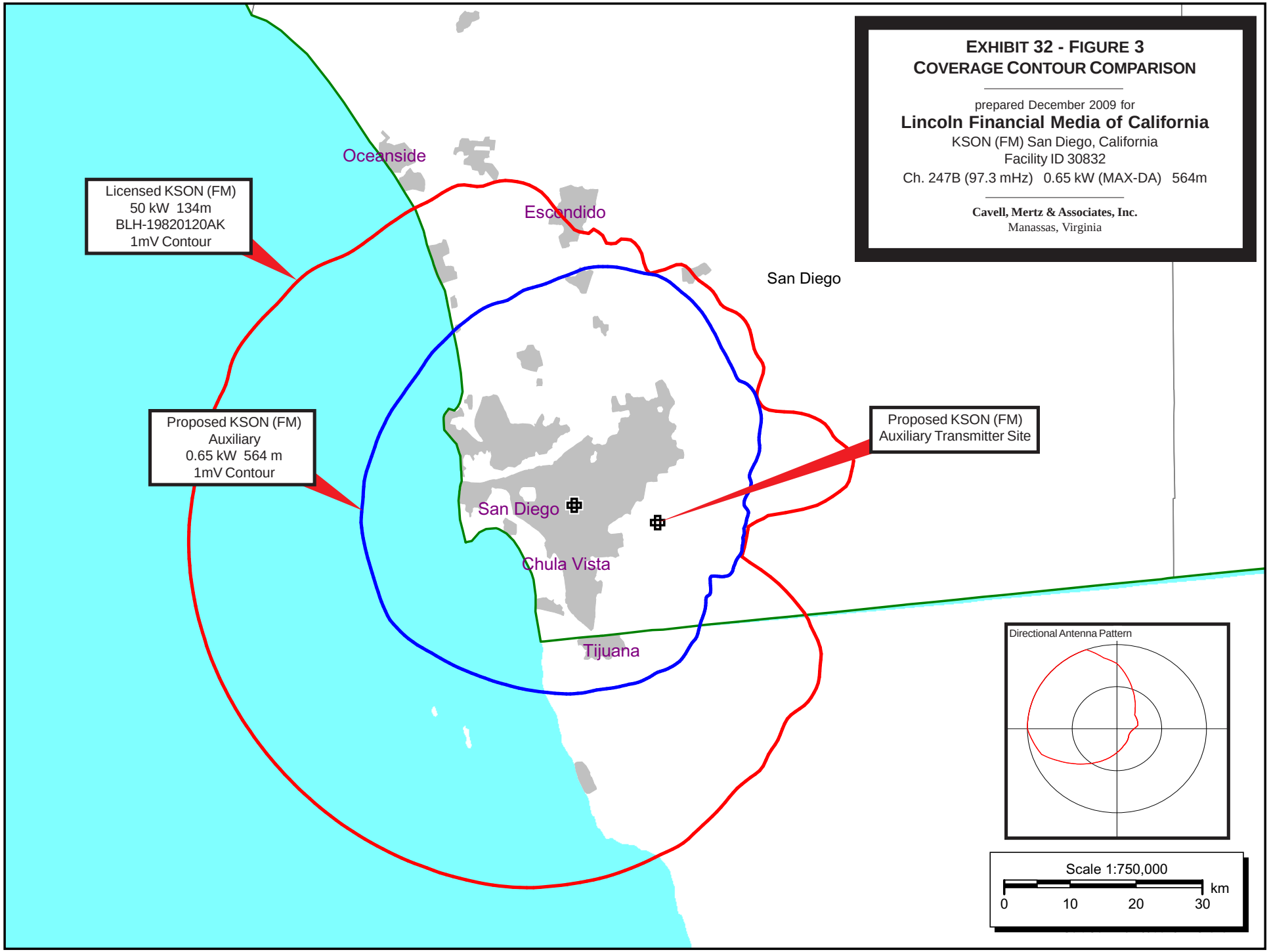


EXHIBIT 32 - FIGURE 3
COVERAGE CONTOUR COMPARISON
prepared December 2009 for
Lincoln Financial Media of California
KSON (FM) San Diego, California
Facility ID 30832
Ch. 247B (97.3 mHz) 0.65 kW (MAX-DA) 564m
Cavell, Mertz & Associates, Inc.
Manassas, Virginia
Licensed KSON (FM)
50 kW 134m
BLH-19820120AK
1mV Contour
Proposed KSON (FM)
Auxiliary
0.65 kW 564 m
1mV Contour
Proposed KSON (FM)
Auxiliary Transmitter Site
Oceanside
Escondido
San Diego
San Diego
Chula Vista
Tijuana
Directional Antenna Pattern
Scale 1:750,000
0
10
20
30
km