

**July 2016**  
**FM Translator K223BD**  
**Spokane, Washington Channel 231D**  
**Allocation Study**

**250 Mile Window Application**

This application is being filed as a "250 Mile Window Application" to modify an authorized FM translator for use with an AM station.

AM Station Callsign: KJRB 790 kHz Spokane  
AM Station Class: B

Translator Move Distance: 61 kilometers (38 miles)

The applicant is also the licensee of the AM station.

**Allocation Study**

The attached spacing study shows the spacing between the proposed translator site and the location of cochannel and adjacent channel stations and proposals. This study was made with the Commission's Class A spacing requirements, and individual situations were examined to determine the lack of prohibited contour overlap per the requirements of §74.1204 of the Rules. The attached allocation study map demonstrates compliance with the Commission's Rules for protection of FM broadcast stations and FM translators as outlined in §74.1204.

The proposed facility has been limited to an ERP of 99 watts. Therefore there are no spacing restrictions to stations which are 53 or 54 channels removed from the proposed operation.

**KDRK-FM 229C Spokane**

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KDRK-FM 229C Spokane. The following calculation, performed using the *Living Way* methodology, demonstrates interference protection to that station.

Protected Station	Distance & Bearing to Proposal	Station ERP and HAAT on that azimuth	Station Field Strength at Proposal	Corresponding Translator Interfering Contour	Distance to Translator Interfering Contour
KDRK-FM 229C	16.65 km 281 deg True	64 kW 775 meters	97.1 dBu F(50,50)	137.1 dBu	9.7 meters Free Space

The 137.1 dBu contour from the proposed facility extends only 9.7 meters from the antenna and does not reach ground level (which is 96 meters below the antenna). There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KDRK-FM.

**KHTQ 233C Hayden**

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KHTQ 233C Hayden. The following calculation, performed using the *Living Way* methodology, demonstrates interference protection to that station.

Protected Station	Distance & Bearing to Proposal	Station ERP and HAAT on that azimuth	Station Field Strength at Proposal	Corresponding Translator Interfering Contour	Distance to Translator Interfering Contour
KHTQ 233C	26.11 km 255 deg True	83 kW 741 meters	90.8 dBu F(50,50)	130.8 dBu	20.1 meters Free Space

The 130.8 dBu contour from the proposed facility extends only 20.1 meters from the antenna and does not reach ground level (which is 96 meters below the antenna). There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KHTQ.

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SEARCH PARAMETERS FM Database Date: 160722

Channel: 231A 94.1 MHz Page 1

Latitude: 47 35 58

Longitude: 117 17 57

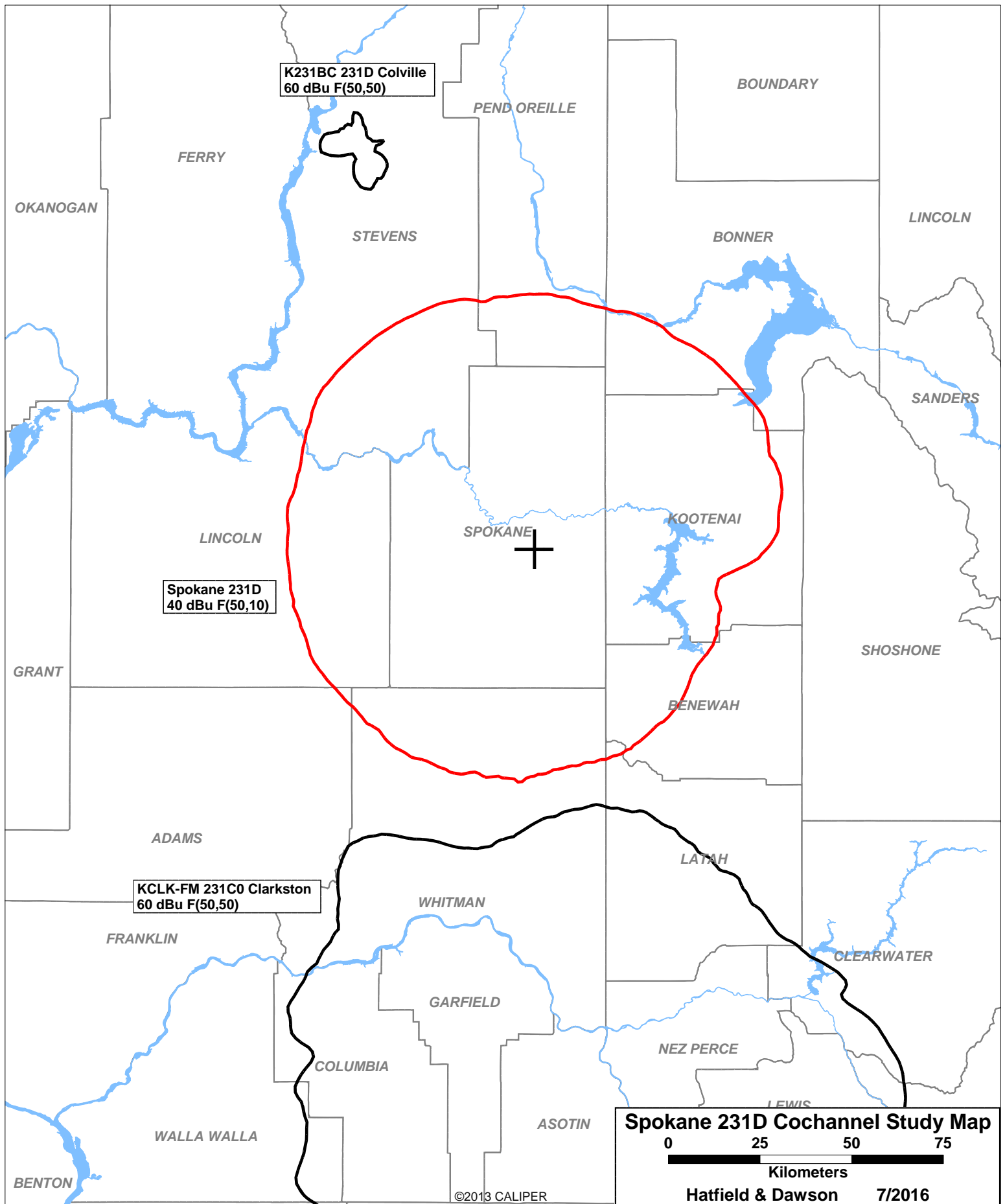
Safety Zone: 50 km

Job Title: SPOKANE 231

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KDRK-FM	SPOKANE		229C	64.000	47-34-14	101.1	16.65	95
LIC	WA BLH-40728AFM		93.7	739.0	117-04-55		-78.35	SHORT
	CRESTON		231C1	0.000	49-09-56	14.5	180.13	243
	BC -		94.1	0.0	116-40-39		-62.87	SHORT
	SALMO		231A	0.000	49-11-50	0.3	177.67	151
	BC -		94.1	0.0	117-17-04		26.67	CLEAR
KCLK-FM	CLARKSTON		231C0	100.000	46-27-27	173.2	127.84	215
LIC	WA BLH-831227AC		94.1	376.0	117-06-03		-87.16	SHORT
K231BC	COLVILLE		231D	0.010	48-34-49	337.4	118.41	0
LIC	WA BLFT-70611AEJ		94.1	409.0	117-55-06		0.00	TRANS
KHTQ	HAYDEN		233C	83.000	47-39-34	75.0	26.11	95
LIC	ID BLH-91103AAZ		94.5	665.0	116-57-48		-68.89	SHORT
KEEH	SPOKANE		285C1	10.500	47-34-45	176.8	2.26	22
LIC	WA BLED-21121AAW		104.9	472.0	117-17-51	SS	-19.74	SHORT

NOTE: TRANSLATOR ERP LIMITED TO 99 WATTS, SO NO SPACING REQUIREMENT TO KEEH

===== END OF FM SPACING STUDY FOR CHANNEL 231 =====



**July 2016**  
**FM Translator K223BD**  
**Spokane, Washington Channel 231D**  
**RF Exposure Study**

**Facilities Proposed**

The proposed operation will be on Channel 231D (94.1 MHz) with an effective radiated power of 99 watts. Operation is proposed with an antenna to be mounted on an existing tower on Krell Hill, with FCC Antenna Structure Registration Number 1033014.

**RF Exposure Calculations**

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

*D* is the distance in meters from the center of radiation to the calculation point.

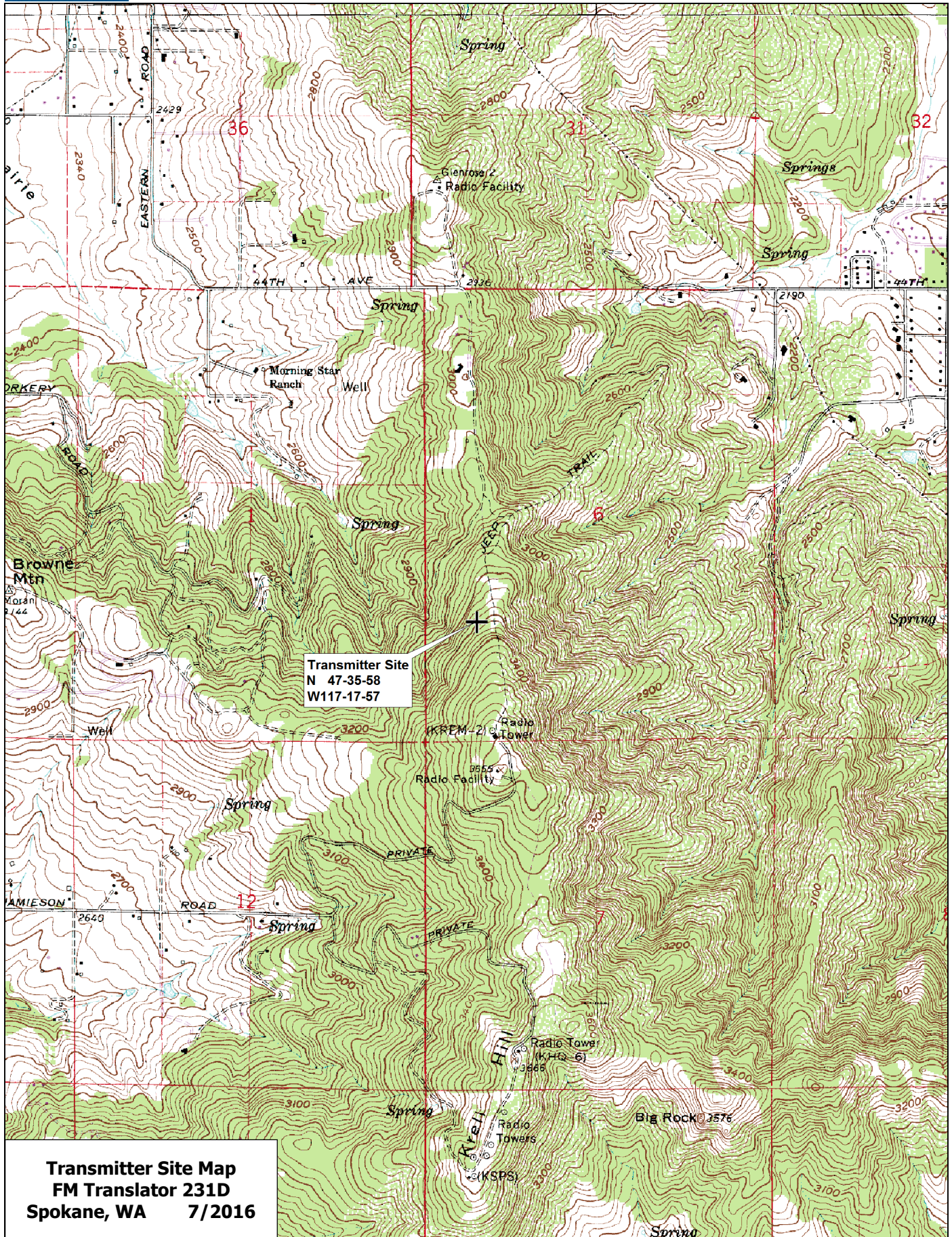
Calculations of the power density produced by the proposed antenna system have been made assuming that the antenna will radiate 100% power straight down to a point 2 meters above ground at the base of the tower (94 meters below the antenna). Under this worst-case assumption, the highest calculated ground level power density from the proposed operation alone occurs at the

base of the antenna support structure. At this point the power density is calculated to be  $0.75 \mu\text{W}/\text{cm}^2$ , which is 0.4% of  $200 \mu\text{W}/\text{cm}^2$  (the FCC standard for uncontrolled environments).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.





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