

ENGINEERING STATEMENT

The engineering data contained herein have been prepared on behalf of RAPID BROADCASTING COMPANY, licensee of full-power commercial digital television station KNBN-DT, Channel 21 in Rapid City, South Dakota, in support of its Application for Construction Permit to specify an increase in effective radiated power to 100 kW. No change in site location or antenna height above average terrain from that licensed is proposed herein.

It is proposed to utilize the licensed Dielectric omnidirectional, elliptically-polarized slotted cylinder antenna, which is mounted at the 155-meter level of an existing 163.1-meter tower. Exhibit B is a map upon which the predicted service contours are plotted. As shown, the community of Rapid City is completely encompassed by the proposed 48 dBu city-grade service contour.

Elevation pattern data (from the KNBN-DT FCC license file) for the licensed Dielectric antenna are provided in Exhibit C. Exhibit D contains the summary results from a TVStudy interference study, which was conducted using a cell size of 2.0 kilometers and an increment spacing of 1.0 kilometer. It concludes that the proposed KNBN-DT facility meets the Commission's *de minimis* interference criteria to all co-channel and adjacent-channel post-repack full-power and Class A facilities. A power density calculation appears as Exhibit E.

Since no change in the overall height or location of the existing KNBN-DT tower is proposed herein, the Federal Aviation Administration has not been notified of this application. In addition, the FCC issued Antenna Structure Registration Number 1048502 to this tower.

EXHIBIT A

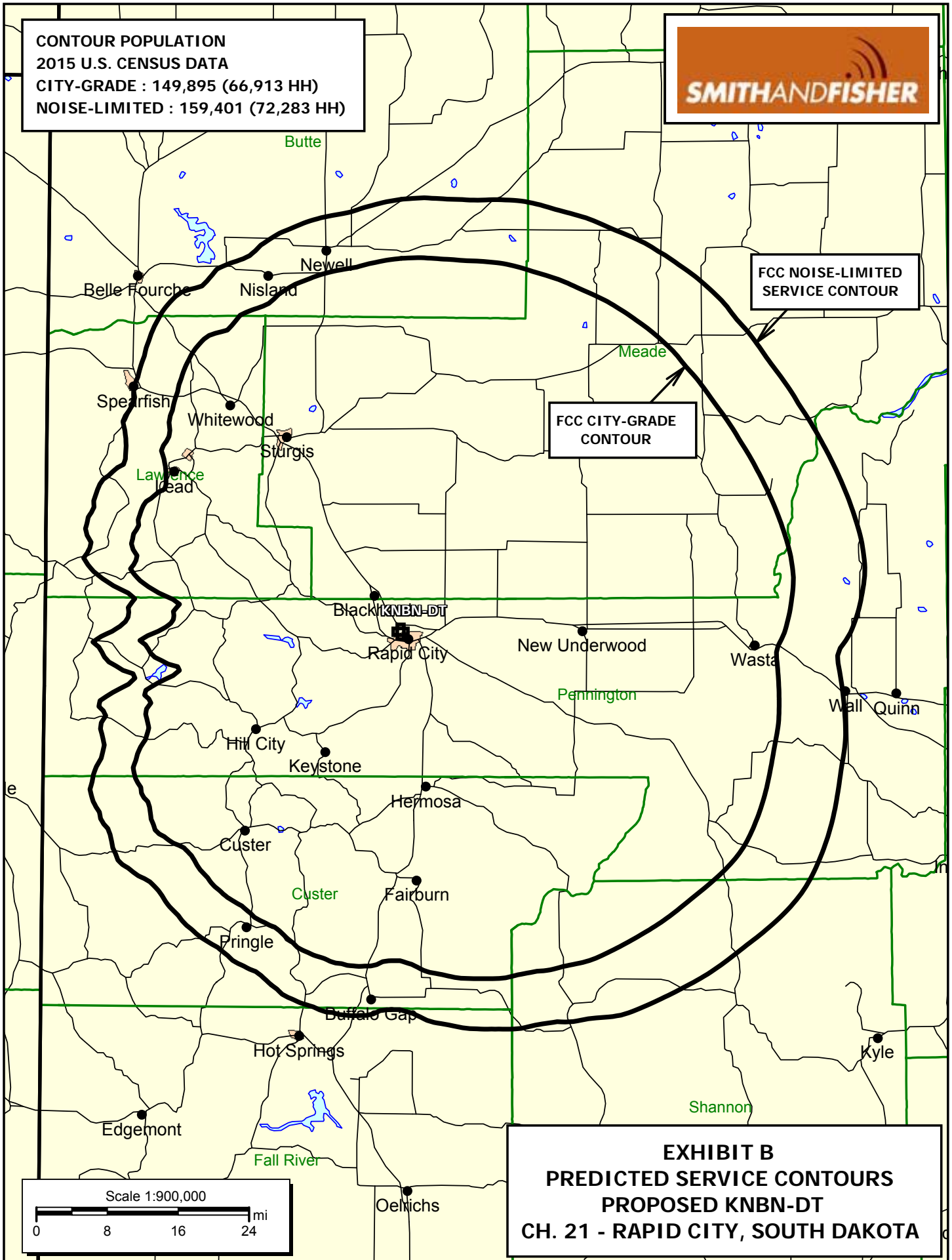
I declare under penalty of perjury that the foregoing statements and the attached exhibits, which were prepared by me or under my immediate supervision, are true and correct to the best of my knowledge and belief.

A handwritten signature in blue ink, appearing to read "K. T. Fisher". The signature is stylized with a large "K", a small "T", and a long horizontal stroke for the last name.

KEVIN T. FISHER

November 26, 2017

CONTOUR POPULATION
2015 U.S. CENSUS DATA
CITY-GRADE : 149,895 (66,913 HH)
NOISE-LIMITED : 159,401 (72,283 HH)



FCC NOISE-LIMITED
SERVICE CONTOUR

FCC CITY-GRADE
CONTOUR

EXHIBIT B
PREDICTED SERVICE CONTOURS
PROPOSED KNBN-DT
CH. 21 - RAPID CITY, SOUTH DAKOTA

DIELECTRIC COMMUNICATIONS

Proposal Number	DCA-7840	Revisio	1
Date	9-Feb-98		
Call Letters	KNBN	Channe	21
Location	Rapid City, SD		
Customer			
Antenna Type	TFU-25JTH/VP-R 04		

ELEVATION PATTERN

RMS Gain at Main Lobe	23.5 (13.71 dB)	Beam Tilt	0.75 deg
RMS Gain at Horizontal	16.5 (12.16 dB)	Frequency	515.00 MHz
Calculated / Measured	Calculated	Drawing #	25J235075-90

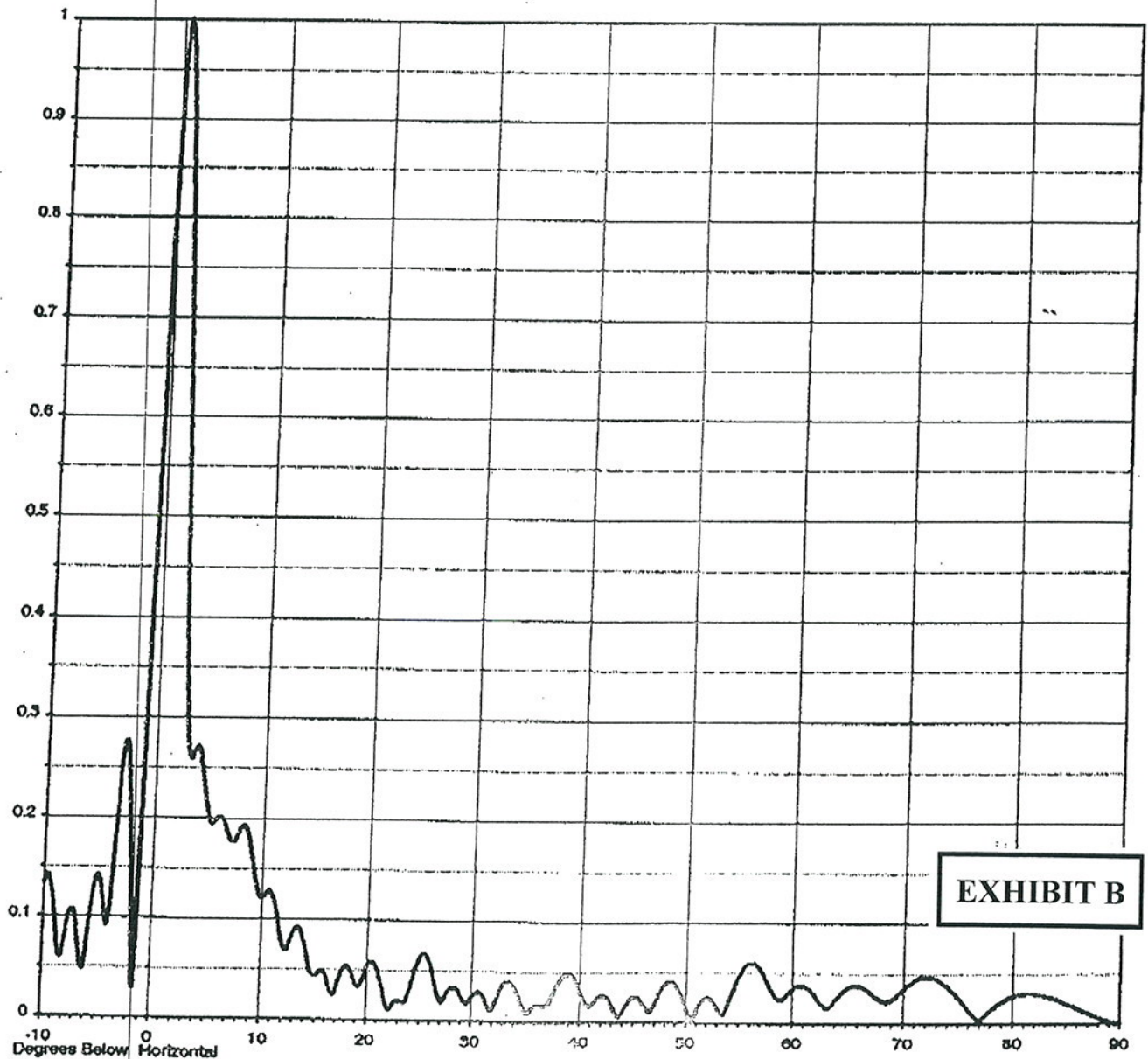


EXHIBIT B

GS DIELECTRIC COMMUNICATIONS
A UNIT OF GENERAL SIGNAL

DIELECTRIC COMMUNICATIONS

Proposal Number **DCA-7840** Revision: **1**
 Date **9-Feb-98**
 Call Letters **KNBN** Channel **21**
 Location **Rapid City, SD**
 Customer
 Antenna Type **TFU-25JTH/VP-R 04**

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **25J235075-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.134	2.4	0.443	10.8	0.127	30.5	0.028	51.0	0.009	71.5	0.045
-9.5	0.140	2.6	0.365	10.8	0.127	31.0	0.027	51.5	0.019	72.0	0.046
-9.0	0.109	2.8	0.306	11.0	0.125	31.5	0.018	52.0	0.024	72.5	0.046
-8.5	0.065	3.0	0.271	11.5	0.104	32.0	0.011	52.5	0.023	73.0	0.044
-8.0	0.072	3.2	0.259	12.0	0.076	32.5	0.023	53.0	0.016	73.5	0.040
-7.5	0.103	3.4	0.261	12.5	0.071	33.0	0.035	53.5	0.008	74.0	0.036
-7.0	0.102	3.6	0.267	13.0	0.087	33.5	0.040	54.0	0.015	74.5	0.030
-6.5	0.065	3.8	0.271	13.5	0.092	34.0	0.036	54.5	0.030	75.0	0.024
-6.0	0.056	4.0	0.269	14.0	0.077	34.5	0.024	55.0	0.043	75.5	0.018
-5.5	0.111	4.2	0.261	14.5	0.054	35.0	0.011	55.5	0.054	76.0	0.011
-5.0	0.142	4.4	0.247	15.0	0.044	35.5	0.009	56.0	0.059	76.5	0.008
-4.5	0.123	4.6	0.230	15.5	0.048	36.0	0.015	56.5	0.060	77.0	0.003
-4.0	0.092	4.8	0.214	16.0	0.045	36.5	0.016	57.0	0.055	77.5	0.008
-3.5	0.158	5.0	0.202	16.5	0.031	37.0	0.015	57.5	0.046	78.0	0.013
-3.0	0.248	5.2	0.195	17.0	0.027	37.5	0.022	58.0	0.035	78.5	0.017
-2.8	0.270	5.4	0.194	17.5	0.043	38.0	0.035	58.5	0.026	79.0	0.021
-2.6	0.277	5.6	0.196	18.0	0.054	38.5	0.045	59.0	0.022	79.5	0.024
-2.4	0.269	5.8	0.200	18.5	0.049	39.0	0.049	59.5	0.026	80.0	0.026
-2.2	0.242	6.0	0.201	19.0	0.036	39.5	0.045	60.0	0.032	80.5	0.028
-2.0	0.196	6.2	0.200	19.5	0.036	40.0	0.035	60.5	0.036	81.0	0.028
-1.8	0.133	6.4	0.197	20.0	0.050	40.5	0.021	61.0	0.037	81.5	0.029
-1.6	0.055	6.6	0.190	20.5	0.058	41.0	0.015	61.5	0.034	82.0	0.029
-1.4	0.058	6.8	0.184	21.0	0.052	41.5	0.021	62.0	0.029	82.5	0.028
-1.2	0.163	7.0	0.178	21.5	0.034	42.0	0.026	62.5	0.022	83.0	0.027
-1.0	0.280	7.2	0.176	22.0	0.014	42.5	0.025	63.0	0.016	83.5	0.025
-0.8	0.402	7.4	0.176	22.5	0.014	43.0	0.018	63.5	0.015	84.0	0.023
-0.6	0.524	7.6	0.180	23.0	0.019	43.5	0.007	64.0	0.021	84.5	0.021
-0.4	0.640	7.8	0.185	23.5	0.017	44.0	0.009	64.5	0.029	85.0	0.019
-0.2	0.746	8.0	0.190	24.0	0.024	44.5	0.019	65.0	0.034	85.5	0.017
0.0	0.838	8.2	0.192	24.5	0.044	45.0	0.024	65.5	0.037	86.0	0.014
0.2	0.911	8.4	0.191	25.0	0.061	45.5	0.024	66.0	0.037	86.5	0.012
0.4	0.964	8.6	0.185	25.5	0.067	46.0	0.017	66.5	0.035	87.0	0.010
0.6	0.994	8.8	0.176	26.0	0.059	46.5	0.010	67.0	0.031	87.5	0.007
0.8	1.000	9.0	0.164	26.5	0.040	47.0	0.016	67.5	0.026	88.0	0.005
1.0	0.983	9.2	0.151	27.0	0.021	47.5	0.028	68.0	0.022	88.5	0.004
1.2	0.943	9.4	0.138	27.5	0.022	48.0	0.037	68.5	0.020	89.0	0.002
1.4	0.884	9.6	0.128	28.0	0.032	48.5	0.041	69.0	0.023	89.5	0.001
1.6	0.809	9.8	0.124	28.5	0.033	49.0	0.039	69.5	0.028	90.0	0.000
1.8	0.722	10.0	0.121	29.0	0.026	49.5	0.030	70.0	0.033		
2.0	0.628	10.2	0.122	29.5	0.018	50.0	0.018	70.5	0.039		
2.2	0.533	10.4	0.124	30.0	0.022	50.5	0.004	71.0	0.043		



Exhibit D

TVSTUDY INTERFERENCE SUMMARY
PROPOSED KNBN-DT
CH. 21 - RAPID CITY, SOUTH DAKOTA

Study created: 2017.11.26 18:39:26

Study build station data: LMS TV 2017-11-22 (3)

Proposal: KNBN D21 DT LIC RAPID CITY, SD
File number: BLCDT20090206ACK
Facility ID: 81464
Station data: User record
Record ID: 126
Country: U.S.
Zone: II

No protected stations found.

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D21
Latitude: 44 5 33.00 N (NAD83)
Longitude: 103 14 55.00 W
Height AMSL: 1301.0 m
HAAT: 210.8 m
Peak ERP: 100 kW
Antenna: Omnidirectional
Elev Pattn: Generic
Elec Tilt: 0.75

39.5 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	100 kW	281.7 m	78.8 km
45.0	100	323.9	83.2
90.0	100	310.5	81.7
135.0	100	324.9	83.3
180.0	100	152.9	68.8
225.0	100	100.1	63.9
270.0	100	31.5	49.2
315.0	100	135.1	67.3

Exhibit D

Database HAAT does not agree with computed HAAT

Database HAAT: 211 m Computed HAAT: 208 m

**Proposal service area extends beyond baseline plus 1.0%

Proposal service area population is more than 95.0% of baseline

Distance to Canadian border: 545.4 km

Distance to Mexican border: 1397.7 km

Conditions at FCC monitoring station: Grand Island NE

Bearing: 130.1 degrees Distance: 529.1 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

Bearing: 201.1 degrees Distance: 467.2 km

No land mobile station failures found

Study cell size: 2.00 km

Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%

Maximum new IX to LPTV: 2.00%

No IX check failures found.

POWER DENSITY CALCULATION

PROPOSED KNBN-DT
CHANNEL 21 – RAPID CITY, SOUTH DAKOTA

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this Rapid City facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 100 kW, an antenna radiation center 155 meters above ground, and the specific elevation pattern of the licensed Dielectric antenna, maximum power density two meters above ground of 0.00065 mW/cm^2 is calculated to occur 48 meters from the base of the tower. Since this is only 0.2 percent of the 0.34 mW/cm^2 reference for uncontrolled environments (areas with public access) surrounding a facility operating on Channel 21 (512-518 MHz), a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.