

Exhibit of Measurements  
For  
RF Radiation  
At  
KNIN-FM/KWFS-FM/KBZS Transmitter Site  
On  
2/13/2024

All RFR measurements were made with a Narda NBM-550 RFR measurement device, model number 0401/01B, serial number H-0406. The antenna used for measurements was a Narda model number 2402/07B, serial number 01269. Unit was selected to measure RF radiation as milliwatts per square centimeter ( $\text{mW}/\text{cm}^2$ ). The percentage of radiation was calculated to be the maximum permitted radiation for public exposure (% Public) on the FM broadcast band ( $200 \text{ uW}/\text{cm}^2$  or  $0.2 \text{ mW}/\text{cm}^2$ ). Initial measurements were done using an instantaneous peak of the field at the measurement point. If the radiation at any point was determined to be above 10% of the maximum permitted radiation for public exposure ( $20 \text{ uW}/\text{cm}^2$  or  $0.02 \text{ mW}/\text{cm}^2$ ) then a six-minute spatial average of the reading was obtained and logged for that location. This was using the guidelines published by the FCC's Office of Engineering and Technology (OET-65).

The tables below give the logged readings for the measurements. Distances to any given point were calculated using the guidelines in 47 CFR 73.208(c). Three radials were traversed for the site and the readings logged are documented in Tables 1 through 3 below.

Additionally, the FCC FMMODEL program was used to model the predicted amount of RF radiation for this antenna. The parameters selected for the model are shown in Figure 1 below. The frequency was selected to be the center frequency of all three FM stations combined into the antenna. Results of the calculation are shown in Table 5 below.

There is a perimeter fence around the facility to keep the general public out of the area. Additionally, although not required, signage will be posted at the single point where RF radiation exceeds 50% of the general population (Public) limit as specified in OET-65.

It is, therefore, my opinion that the amount of RF radiation at this site does not exceed the levels permitted by OET-65 for FM broadcast stations. I have been a broadcast engineer since 1978, and have operated the equipment specified in this exhibit, along with other types of measurement equipment on numerous occasions. I am familiar with the operation and limitations of such equipment. Additionally, I am a member of the Society of Broadcast Engineers and am certified as a Certified Professional Broadcast Engineer (CPBE), membership number 20832.



Edward C. Dulaney  
Regional Engineering Manager  
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Table 1 – 120 Degrees True

DIST(m)	mW/cm2	uW/cm2	% public	Latitude	Longitude	Tower Latitude	Tower Longitude	ML	KPDlat	KPDlong	NS	EW
4.97	0.00354	3.54200	1.77	33.88868	-98.56971	33.888662	-98.569658	33.88867	111.0003	-87.449	0.001998	0.004547
8.92	0.00430	4.29700	2.15	33.88866	-98.56976	33.888662	-98.569658	33.88866	111.0003	-87.4483	-0.00022	0.00892
13.76	0.00431	4.30500	2.15	33.88863	-98.56981	33.888662	-98.569658	33.88865	111.0003	-87.4473	-0.00355	0.013292
19.77	0.00416	4.15600	2.08	33.8886	-98.56987	33.888662	-98.569658	33.88863	111.0003	-87.4463	-0.00688	0.018539
26.34	0.00426	4.25700	2.13	33.88856	-98.56993	33.888662	-98.569658	33.88861	111.0003	-87.4449	-0.01132	0.023785
32.52	0.00349	3.48500	1.74	33.88853	-98.56999	33.888662	-98.569658	33.8886	111.0003	-87.4439	-0.01465	0.029031
38.71	0.00222	2.21500	1.11	33.8885	-98.57005	33.888662	-98.569658	33.88858	111.0004	-87.4428	-0.01798	0.034278
44.90	0.00160	1.60400	0.80	33.88847	-98.57011	33.888662	-98.569658	33.88857	111.0004	-87.4418	-0.02131	0.039524
49.04	0.00045	0.45400	0.23	33.88845	-98.57015	33.888662	-98.569658	33.88856	111.0004	-87.4411	-0.02353	0.043021
55.24	0.00013	0.12800	0.06	33.88842	-98.57021	33.888662	-98.569658	33.88854	111.0004	-87.4401	-0.02686	0.048267
62.75	0.00043	0.42600	0.21	33.88838	-98.57028	33.888662	-98.569658	33.88852	111.0004	-87.4387	-0.0313	0.054387
68.41	0.00068	0.68100	0.34	33.88836	-98.57034	33.888662	-98.569658	33.88851	111.0004	-87.438	-0.03352	0.059633
74.07	0.00043	0.42600	0.21	33.88834	-98.5704	33.888662	-98.569658	33.8885	111.0005	-87.4373	-0.03574	0.064878
80.51	0.00068	0.68100	0.34	33.88832	-98.57047	33.888662	-98.569658	33.88849	111.0005	-87.4366	-0.03796	0.070999
85.67	0.00061	0.61000	0.31	33.88831	-98.57053	33.888662	-98.569658	33.88849	111.0005	-87.4363	-0.03907	0.076244
92.92	0.00173	1.73200	0.87	33.88829	-98.57061	33.888662	-98.569658	33.88848	111.0005	-87.4356	-0.04129	0.083239
97.04	0.00160	1.60400	0.80	33.88827	-98.57065	33.888662	-98.569658	33.88847	111.0005	-87.4349	-0.04351	0.086735

Table 2 – 240 Degrees True

DIST(m)	mW/cm2	uW/cm2	% public	Latitude	Longitude	Tower Latitude	Tower Longitude	ML	KPDlat	KPDlong	NS	EW
7.70	0.00337	3.36700	1.68	33.88866	-98.56957	33.888662	-98.569658	33.88866	111.0003	-87.4483	-0.00022	-0.0077
12.07	0.00801	8.00600	4.00	33.88866	-98.56952	33.888662	-98.569658	33.88866	111.0003	-87.4483	-0.00022	-0.01207
20.25	0.01000	9.99700	5.00	33.88863	-98.56943	33.888662	-98.569658	33.88865	111.0003	-87.4473	-0.00355	-0.01994
26.47	0.01604	16.04200	8.02	33.88862	-98.56936	33.888662	-98.569658	33.88864	111.0003	-87.447	-0.00466	-0.02606
32.31	0.01499	14.98700	7.49	33.88859	-98.5693	33.888662	-98.569658	33.88863	111.0003	-87.4459	-0.00799	-0.03131
36.53	0.01115	11.14800	5.57	33.88854	-98.56927	33.888662	-98.569658	33.8886	111.0003	-87.4442	-0.01354	-0.03393
42.79	0.00611	6.10500	3.05	33.88849	-98.56922	33.888662	-98.569658	33.88858	111.0004	-87.4425	-0.01909	-0.0383
48.20	0.00284	2.84100	1.42	33.88846	-98.56917	33.888662	-98.569658	33.88856	111.0004	-87.4414	-0.02242	-0.04267
52.81	0.00109	1.09300	0.55	33.88848	-98.5691	33.888662	-98.569658	33.88857	111.0004	-87.4421	-0.0202	-0.04879
59.39	0.00034	0.34000	0.17	33.88844	-98.56904	33.888662	-98.569658	33.88855	111.0004	-87.4408	-0.02464	-0.05404
66.80	0.00098	0.98300	0.49	33.88837	-98.56899	33.888662	-98.569658	33.88852	111.0004	-87.4383	-0.03241	-0.05841
73.55	0.00155	1.55300	0.78	33.88833	-98.56893	33.888662	-98.569658	33.8885	111.0005	-87.437	-0.03685	-0.06365
81.28	0.00156	1.56400	0.78	33.8883	-98.56885	33.888662	-98.569658	33.88848	111.0005	-87.4359	-0.04018	-0.07065
86.17	0.00293	2.92600	1.46	33.88828	-98.5688	33.888662	-98.569658	33.88847	111.0005	-87.4352	-0.0424	-0.07502
93.69	0.00313	3.12500	1.56	33.88824	-98.56873	33.888662	-98.569658	33.88845	111.0005	-87.4339	-0.04684	-0.08114
98.59	0.14476	144.75800	72.38	33.88822	-98.56868	33.888662	-98.569658	33.88844	111.0005	-87.4332	-0.04906	-0.08551
103.48	0.00172	1.71800	0.86	33.8882	-98.56863	33.888662	-98.569658	33.88843	111.0005	-87.4325	-0.05128	-0.08988

Line in **yellow** denotes that RF radiation was above 10% of general population limit, and six-minute spatial averaging was performed for that point to ensure that it did not exceed 100% of general population limit (200 uW/cm<sup>2</sup>). Note that this point was near a tower guy anchor and was likely reradiation of RF energy.

Table 3 – 0 Degrees True

DIST(m)	mW/cm2	uW/cm2	% public	Latitude	Longitude	Tower Latitude	Tower Longitude	ML	KPDlat	KPDlong	NS	EW
9.89	0.00177	1.77400	0.89	33.88875	-98.56964	33.888662	-98.569658	33.88871	111.0002	-87.4514	0.009768	-0.00157
14.29	0.00310	3.09600	1.55	33.88879	-98.56964	33.888662	-98.569658	33.88873	111.0002	-87.4528	0.014208	-0.00157
21.99	0.00275	2.74600	1.37	33.88886	-98.56965	33.888662	-98.569658	33.88876	111.0002	-87.4552	0.021978	-0.0007
30.87	0.00452	4.51800	2.26	33.88894	-98.56965	33.888662	-98.569658	33.8888	111.0001	-87.458	0.030858	-0.0007
38.63	0.00607	6.06800	3.03	33.88901	-98.56965	33.888662	-98.569658	33.88884	111.0001	-87.4604	0.038628	-0.0007
45.29	0.00380	3.79900	1.90	33.88907	-98.56966	33.888662	-98.569658	33.88887	111	-87.4624	0.045288	0.000175
51.95	0.00360	3.59600	1.80	33.88913	-98.56966	33.888662	-98.569658	33.8889	111	-87.4645	0.051948	0.000175
57.50	0.00221	2.21300	1.11	33.88918	-98.56965	33.888662	-98.569658	33.88892	111	-87.4662	0.057498	-0.0007
63.05	0.00126	1.26400	0.63	33.88923	-98.56965	33.888662	-98.569658	33.88895	111	-87.4679	0.063048	-0.0007
70.82	0.00107	1.06800	0.53	33.8893	-98.56965	33.888662	-98.569658	33.88898	110.9999	-87.4703	0.070818	-0.0007
76.38	0.00096	0.96000	0.48	33.88935	-98.56964	33.888662	-98.569658	33.88901	110.9999	-87.4721	0.076368	-0.00157
84.15	0.00170	1.69500	0.85	33.88942	-98.56964	33.888662	-98.569658	33.88904	110.9999	-87.4745	0.084138	-0.00157
90.80	0.00247	2.46900	1.23	33.88948	-98.56965	33.888662	-98.569658	33.88907	110.9998	-87.4765	0.090798	-0.0007
97.46	0.00350	3.50200	1.75	33.88954	-98.56965	33.888662	-98.569658	33.8891	110.9998	-87.4786	0.097458	-0.0007
104.12	0.00429	4.29100	2.15	33.8896	-98.56966	33.888662	-98.569658	33.88913	110.9998	-87.4807	0.104118	0.000175
110.78	0.01023	10.22700	5.11	33.88966	-98.56966	33.888662	-98.569658	33.88916	110.9997	-87.4827	0.110778	0.000175
115.22	0.00085	0.85000	0.43	33.8897	-98.56966	33.888662	-98.569658	33.88918	110.9997	-87.4841	0.115218	0.000175

Figure 1 – FCC FM Model Parameters

Channel Selection	Channel 264 (100.7 MHz) ▾		
Antenna Type +	EPA Type 3: Opposed U Dipole ▾		
Height (m)	<input type="text" value="114"/>	Distance (m)	<input type="text" value="150"/>
ERP-H (W)	<input type="text" value="250000"/>	ERP-V (W)	<input type="text" value="250000"/>
Num of Elements	<input type="text" value="12"/>	λ	<input type="text" value="1"/>
Num of Points	<input type="text" value="20"/>	<input type="button" value="Apply"/>	

Table 5 – FM Model Results

Distance (m)	Power Density (μW/cm²)
0	40.6
7.5	40.3
15	51.0
22.5	61.6
30	55.0
37.5	26.9
45	2.9
52.5	3.4
60	10.5
67.5	4.3
75	0.3
82.5	4.9
90	3.6
97.5	0.0
105	2.1
112.5	3.2
120	0.7
127.5	0.3
135	2.0
142.5	2.1
150	0.5