

Environmental and Radio Frequency Exposure Statement

This application does not propose a facility that would be in an officially designated wilderness area, or officially designated wildlife preserve, nor will it affect listed, threatened or endangered species or designated critical habitats; nor is it likely to jeopardize the continued existence of any proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats, as determined by the Secretary of the Interior pursuant to the Endangered Species Act of 1973. Also it will not affect districts, sites, buildings, structures or objects, significant in American history, architecture, archeology, engineering or culture, that are listed, or are eligible for listing, in the National Register of Historic Places.

This minor modification application proposes operation at an effective radiated power of 2.16 KW ERP at 11 meters above ground. Table 1 of 47 CFR Section 1.1310 sets forth a maximum Maximum Permissible Exposure (MPE) to radio frequency electromagnetic fields for general population uncontrolled exposure in milliwatts per square centimeter to (frequency over 1500). Center frequency is 497 MHz. Thus permitted exposure to the general public is .331 mW/cm sq.

We have determined that when this station is constructed as proposed, field strength will be safely under the allowed MPE. A vertical plane pattern elevation pattern was downloaded from Kathrein Scala ¹. The pattern was edited into file fmmodel.ant, thus adding the SL-8 pattern to FMMODEL, software specifically written by OET.

The antenna supporting structure will be fitted with barriers preventing unauthorized persons to climb on the supporting structure. This station will reduce power or cease operation as necessary to protect individuals having access to locations closer to the antenna than those allowed the general public.

Attached is a listing of power density versus distance out to 50 meters from the transmitting antenna. It can be seen the highest predicted power density is 42.6 micro Watts per square cm. Found 4.2 meters from the antenna.

-Jeremy Lansman
Signed 7 August 2017

1 <https://www.kathreinusa.com/patterns/product-number-sl-8/>

Application Proposed Power Density

Highest Value is Highlighted in Yellow

Distance (meters) = 50
Horizontal ERP (W) = 2160
Vertical ERP (W) = 0
Antenna Height (m) = 11
Antenna Type = 12 'Scala SL-8'
Number of Elements = 1
Element Spacing = 1
Y-axis (Linear) = -1
X-axis Setup = 0, 500

X (meters)	Y (μW/cm²)
0	8.90928150769352E-02
.1	.12101084768901
.2	.157752561906908
.3	.199270943333308
.4	.245507246635964
.5	.296391220750938
.6	.351841388663189
.7	.411765379692323
.8	.469550522347453
.9	.484095205102297
1	.498675382284327
1.1	.513274768344939
1.2	.527877035772798
1.3	.542465865807505
1.4	.55702499863201
1.5	.571538282752657
1.6	.575880064892032
1.7	.514994939481449
1.8	.457841802471794
1.9	.404387208957437
2	.354590457011607
2.1	.308403944694568
2.2	.265773545679778
2.3	.226639000546245
2.4	.190934320793557
2.5	.532667791763637
2.6	1.12851218237152
2.7	1.93416374752919
2.8	2.94125120601539
2.9	4.14123467547056
3	5.52543922767229
3.1	7.08508755938205
3.2	8.81133163662694
3.3	10.8406814376044
3.4	13.5443602370461
3.5	16.4991494786824
3.6	19.6904030504933
3.7	23.1035579133939
3.8	26.7241741688672
3.9	30.5379725221164
4	34.5308690942111
4.1	38.6890075579429
4.2	42.5934508344614
4.3	34.8903887385072
4.4	28.0600299324078
4.5	22.0665838710808
4.6	16.874503258713
4.7	12.44856676112
4.8	8.75395529653072
4.9	5.75632198318398
5	3.4218558556706
5.1	1.71733949172853
5.2	.641442417327095
5.3	.623637537488242
5.4	.606278332511099
5.5	.589358188953764
5.6	.572870257082721
5.7	.556807478869119
5.8	.541162614709214
5.9	.525928268858644
6	.511096913577908
6.1	.496660911993303
6.2	.482612539683908
6.3	.468944005010706
6.4	.599752496621207
6.5	.746505615289225

6.6	.905564389726947
6.7	1.07594601798197
6.8	1.25670808079168
6.9	1.44694801387851
7	1.64580249745043
7.1	1.85244677217213
7.2	2.06609389039623
7.3	2.28599391096113
7.4	2.51143304537613
7.5	2.74173276273054
7.6	2.88389574943722
7.7	2.92653721407687
7.8	2.96796433012433
7.9	3.00817640727172
8	3.0471745671801
8.1	3.08496163058525
8.2	3.12154200781828
8.3	3.15692159285111
8.4	3.19110766095122
8.5	3.22410877000663
8.6	3.25593466556004
8.7	3.28659618957195
8.8	3.31610519291437
8.9	3.34447445158118
9	3.37171758658663
9.1	3.44208178117218
9.2	3.51097059307479
9.3	3.57836647285693
9.4	3.64425507119237
9.5	3.70862505060662
9.6	3.77146790420175
9.7	3.83277778133457
9.8	3.89255132019336
9.9	3.95078748719673
10	4.00748742311953
10.1	4.06265429583456
10.2	4.11629315954406
10.3	4.16841082036362
10.4	4.21901570811007
10.5	4.26811775413694
10.6	4.31572827505391
10.7	4.36185986216085
10.8	4.33506812258349
10.9	4.28390415710821
11	4.23346609953431
11.1	4.18374480838344
11.2	4.13473112184342
11.3	4.08641586768288
11.4	4.03878987254532
11.5	3.99184397065035
11.6	3.94556901192894
11.7	3.89995586961874
11.8	3.85499544734467
11.9	3.81067868570932
12	3.76699656841676
12.1	3.72394012795247
12.2	3.6815004508416
12.3	3.63966868250657
12.4	3.59843603174452
12.5	3.55779377484426
12.6	3.51773325936147
12.7	3.47824590757034
12.8	3.43932321960905
12.9	3.38623194545501
13	3.31770076096722
13.1	3.25082360143363
13.2	3.18555603958194
13.3	3.12185489721164
13.4	3.05967821147075
13.5	2.99898520182797
13.6	2.93973623774494
13.7	2.88189280705171
13.8	2.82541748502642
13.9	2.77027390417856
14	2.71642672473372
14.1	2.66384160581629
14.2	2.61248517732554
14.3	2.56232501249905
14.4	2.51332960115692
14.5	2.46546832361889
14.6	2.41871142528611
14.7	2.37302999187836
14.8	2.32839592531695
14.9	2.28478192024324
15	2.24216144116203
15.1	2.20050870019878
15.2	2.15979863545938
15.3	2.12000688998085
15.4	2.08110979126119
15.5	2.04308433135644
15.6	2.00870182948752
15.7	1.99613461374257
15.8	1.98363344814129
15.9	1.97119919547923
16	1.95883265904576
16.1	1.94653458486183
16.2	1.93430566384849
16.3	1.92214653392776
16.4	1.91005778205745

16.5	1.89803994620152
16.6	1.88609351723764
16.7	1.87421894080345
16.8	1.8624166190831
16.9	1.85068691253566
17	1.839030141567
17.1	1.82744658814648
17.2	1.81593649737011
17.3	1.8045000789716
17.4	1.79313750878281
17.5	1.78184893014484
17.6	1.77063445527148
17.7	1.75949416656611
17.8	1.74842811789356
17.9	1.7374363358082
18	1.72651882073958
18.1	1.71567554813692
18.2	1.7049064695736
18.3	1.69421151381295
18.4	1.68359058783652
18.5	1.67304357783591
18.6	1.66257035016945
18.7	1.65217075228462
18.8	1.64184461360747
18.9	1.63159174639999
19	1.62141194658646
19.1	1.61130499454984
19.2	1.60127065589902
19.3	1.59130868220809
19.4	1.53201311483553
19.5	1.4744242678604
19.6	1.41876327356278
19.7	1.36496846130253
19.8	1.31298017691675
19.9	1.2627407141749
20	1.21419424865034
20.1	1.16728677392089
20.2	1.12196604001449
20.3	1.07818149401884
20.4	1.03588422277697
20.5	.995026897593486
20.6	.955563720879017
20.7	.917450374662848
20.8	.880643970906517
20.9	.845103003553412
21	.810787302251858
21.1	.777657987691442
21.2	.745677428494537
21.3	.714809199607062
21.4	.685018042134653
21.5	.656269824572258
21.6	.628531505377199
21.7	.601771096837481
21.8	.575957630188934
21.9	.551061121936471
22	.527052541336368
22.1	.503903778998064
22.2	.481587616565475
22.3	.460077697439322
22.4	.439348498503337
22.5	.419375302818599
22.6	.400134173251547
22.7	.381601927002486
22.8	.363756111002596
22.9	.346574978148664
23	.330037464345823
23.1	.314123166329733
23.2	.298812320240618
23.3	.28408578092264
23.4	.269925001923003
23.5	.256312016166156
23.6	.243229417279329
23.7	.230660341546524
23.8	.218588450468897
23.9	.206997913910278
24	.19587339380735
24.1	.185200028424743
24.2	.174963417136007
24.3	.165149605712149
24.4	.155745072100038
24.5	.146736712673659
24.6	.138111828941783
24.7	.129858114696236
24.8	.134321342451879
24.9	.14362511632365
25	.153094673489471
25.1	.162718618249527
25.2	.172485997227428
25.3	.18238628370931
25.4	.192409362535961
25.5	.202545515527987
25.6	.21278540742477
25.7	.223120072318686
25.8	.233540900566756
25.9	.24403962616253
26	.254608314551693
26.1	.265239350875424
26.2	.275925428626211
26.3	.28665953870131

26.4	.297434958839642
26.5	.308245243428421
26.6	.319084213666298
26.7	.32994594807033
26.8	.340824773314509
26.9	.351715255388054
27	.362612191062117
27.1	.37351059965392
27.2	.384405715077822
27.3	.395292978173092
27.4	.406168029298657
27.5	.417026701185336
27.6	.427865012036502
27.7	.438679158868384
27.8	.449465511081594
27.9	.460220604255703
28	.470941134159058
28.1	.481623950966258
28.2	.492266053676007
28.3	.50286458472233
28.4	.513416824772365
28.5	.523920187704222
28.6	.534372215758595
28.7	.544770574858089
28.8	.555113050088385
28.9	.565397541335623
29	.575622059074565
29.1	.585784720302277
29.2	.5958837446123
29.3	.605917450404416
29.4	.615884251225316
29.5	.625782652235628
29.6	.635611246798943
29.7	.645368713188611
29.8	.655053811408245
29.9	.664665380121994
30	.674202333690828
30.1	.683663659311151
30.2	.693048414252237
30.3	.702355723189091
30.4	.71158477562744
30.5	.720734823417711
30.6	.729805178354926
30.7	.738795209861571
30.8	.747704342750609
30.9	.756532055065876
31	.765277875997224
31.1	.77394138386785
31.2	.782522204191348
31.3	.79102000779611
31.4	.79943450901476
31.5	.807765463936432
31.6	.81601266871972
31.7	.824175957964259
31.8	.832255203138933
31.9	.840250311064779
32	.848161222450741
32.1	.855987910480464
32.2	.863730379448406
32.3	.871388663443597
32.4	.878962825079418
32.5	.886452954267841
32.6	.893859167036644
32.7	.901181604388115
32.8	.908420431197864
32.9	.915575835152383
33	.922648025724022
33.1	.929637233182149
33.2	.936543707639248
33.3	.943367718130778
33.4	.950109551727664
33.5	.956769512680298
33.6	.964900237359796
33.7	.984864784422473
33.8	1.00477898377331
33.9	1.02463847755016
34	1.04443908277093
34.1	1.06417678588355
34.2	1.08384773747979
34.3	1.1034482471677
34.4	1.12297477859798
34.5	1.14242394463958
34.6	1.16179250269983
34.7	1.18107735018492
34.8	1.20027552009623
34.9	1.21938417675862
35	1.23840061167643
35.1	1.25732223951351
35.2	1.27614659419346
35.3	1.29487132511636
35.4	1.31349419348866
35.5	1.33201306876257
35.6	1.35042592518189
35.7	1.3687308384309
35.8	1.38692598238326
35.9	1.40500962594797
36	1.4229801300094
36.1	1.44083594445855
36.2	1.45857560531297

36.3	1.47619773192243
36.4	1.49370102425797
36.5	1.51108426028183
36.6	1.52834629339569
36.7	1.54548604996504
36.8	1.5625025269174
36.9	1.57939478941204
37	1.5961619685793
37.1	1.61280325932724
37.2	1.62931791821373
37.3	1.64570526138203
37.4	1.66196466255791
37.5	1.67809555110661
37.6	1.69409741014772
37.7	1.70996977472637
37.8	1.72571223003907
37.9	1.74132440971249
38	1.75680599413373
38.1	1.77215670883051
38.2	1.78737632289979
38.3	1.80246464748341
38.4	1.81742153428943
38.5	1.83224687415769
38.6	1.84694059566843
38.7	1.86150266379262
38.8	1.87593307858281
38.9	1.89023187390331
39	1.9043991161985
39.1	1.91843490329827
39.2	1.93233936325934
39.3	1.94611265324156
39.4	1.95975495841809
39.5	1.97326649091847
39.6	1.98664748880364
39.7	1.99989821507198
39.8	2.01301895669543
39.9	2.0260100236849
40	2.03887174818396
40.1	2.05160448359016
40.2	2.06420860370307
40.3	2.07668450189825
40.4	2.08903259032652
40.5	2.1012532991376
40.6	2.11334707572759
40.7	2.12531438400953
40.8	2.13715570370628
40.9	2.14887152966525
41	2.16046237119421
41.1	2.17192875141758
41.2	2.1832712066527
41.3	2.19449028580532
41.4	2.20558654978404
41.5	2.21656057093278
41.6	2.22741293248106
41.7	2.23814422801147
41.8	2.24875506094379
41.9	2.25924604403529
42	2.26961779889682
42.1	2.27987095552414
42.2	2.29000615184411
42.3	2.30002403327519
42.4	2.30992525230207
42.5	2.31971046806377
42.6	2.32938034595494
42.7	2.33893555723998
42.8	2.3483767786796
42.9	2.35770469216941
43	2.36691998439025
43.1	2.37602334646992
43.2	2.38501547365589
43.3	2.39389706499881
43.4	2.40266882304638
43.5	2.41133145354736
43.6	2.4198856651654
43.7	2.42833216920233
43.8	2.43667167933083
43.9	2.44490491133598
44	2.45303258286554
44.1	2.46105541318875
44.2	2.46897412296332
44.3	2.47678943401038
44.4	2.4845020690972
44.5	2.49211275172744
44.6	2.49962220593863
44.7	2.50703115610688
44.8	2.51434032675827
44.9	2.52155044238711
45	2.52866222728055
45.1	2.53567640534951
45.2	2.54259369996577
45.3	2.54941483380488
45.4	2.55614052869496
45.5	2.56277150547091
45.6	2.56930848383419
45.7	2.57575218221778
45.8	2.58210331765623
45.9	2.58836260566069
46	2.59453076009873
46.1	2.60060849307882

46.2	2.60659651483933
46.3	2.61249553364191
46.4	2.6183062556691
46.5	2.62402938492616
46.6	2.62966562314676
46.7	2.63521566970269
46.8	2.64068022151723
46.9	2.64605997298227
47	2.65135561587885
47.1	2.65656783930129
47.2	2.66169732958449
47.3	2.6667447702346
47.4	2.67171084186272
47.5	2.6765962221217
47.6	2.68140158564585
47.7	2.68612760399352
47.8	2.69077494559242
47.9	2.69534427568769
48	2.69983625629246
48.1	2.70425154614104
48.2	2.70859080064445
48.3	2.71285467184841
48.4	2.71704380839354
48.5	2.72115885547781
48.6	2.72520045482116
48.7	2.72916924463218
48.8	2.73306585957677
48.9	2.73689093074884
49	2.74064508564282
49.1	2.74432894812804
49.2	2.74794313842485
49.3	2.7514882730825
49.4	2.75496496495866
49.5	2.7583738232005
49.6	2.76171545322738
49.7	2.76499045671506
49.8	2.76819943158126
49.9	2.77134297197276