

Technical Report KRKC(AM) New 228D

This technical report is submitted for the long form application for a new fill-in translator at channel 228, FCC file no. BNPFT-20170731AFM, to serve as a fill-in to rebroadcast the primary KRKC(AM) 1490 kHz facility at King City, CA, FCC facility ID 54554.

New 228D Analysis:

An overlap study in exhibit E-1 shows the new 228D facility is within the KEXA(FM) 230B1 and KXSM(FM) 226A second-adjacent protected contours. The 117.93 and 110.63 +40 dBu F(50-10) interfering contours calculated within the protected contours (exhibits E-2 and E-3) do not encompass any population, buildings or roads (exhibit E-4). The 60 dBu F(50-50) contour is contained within a 25 mile/40 km radius from the KRKC(AM) daytime tower site (exhibit E-5). The plot also shows the 60 dBu contour of K285FW, which also serves as a fill-in facility for KRKC(AM), and has less than 50% overlap to the new 228D facility.

Antenna System:

The new 228D is to be located on the existing 24 meter tower at corrected coordinates:

36 22 58N 121 25 40W NAD 27.

A TOWAIR determination (exhibit E-6) shows the tower does not require registration. A Scala Twin Log vertically-polarized, directional antenna (exhibit E-7) will be mounted at a COR AGL of 14 meters, 956 meters AMSL, 502 meter HAAT (30 second FCC terrain

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data with 12 radials) and operate at an ERP of 0.245 kW.

RF Exposure Calculation:

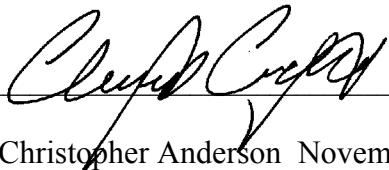
The RF contribution was calculated using the formula from the OET Bulletin 65:

$$S \text{ (RF in microwatts/cm}^2\text{)} = \frac{33.4 \times F^2 \times (H \text{ ERP} + V \text{ ERP in watts})}{R^2 \text{ (distance to radiation center in meters -2m)}}$$

Using a worst-case vertical (F) factor of 1.00, the resulting RF value is 57.99 $\mu\text{W/cm}^2$ to the ground, which is below the 1000 $\mu\text{W/cm}^2$ maximum permissible for controlled access.

Conclusion:

It is concluded that the New 228D application complies with all Commission rules and policies.



Christopher Anderson November 13, 2017
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REFERENCE	CH#	228D	-	93.5 MHz	Pwr= 0.245 kW	DA	HAAT= 502.3 M	COR= 956 M	DISPLAY DATES		
36 22 59.0 N.					Average Protected F(50-50)= 28.93 km				DATA 11-13-17		
121 25 40.0 W.					Standard Directional				SEARCH 11-13-17		
CH	CALL	TYPE	ANT	AZI	DIST	LAT	PWR(kW)	INT(km)	PRO(km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG	HAAT(M)	COR(M)	LICENSEE	(Overlap in km)	
228D	1761289	APP DV_		0.0	0.00	36 22 59.0	0.250	36.9	7.3	-42.0*	-36.7*
King City		CA		0.0	BNPFT20170731AFM	121 25 40.0		950	King City	Communications C	
230B1	KEXA	LIC_CN		91.0	18.97	36 22 48.0	5.400	4.2	54.4	-19.9*	-36.6*
King City		CA		271.1	BLH19871223KC	121 12 57.0	214	458	Inspiration Media Network,		
226A	KXSM	LIC_NCX		53.6	14.34	36 27 34.2	2.500	2.3	24.8	-18.3*	-11.1*
Chualar		CA		233.7	BLH20170531ADD	121 17 54.8	89	418	Lazer Licenses, Lic		
228D	K228FD	LIC_C_		297.9	29.32	36 30 22.0	0.099	38.6	9.0	-10.9*	4.3
Monterey		CA		117.7	BLFT20160720ACN	121 43 04.0		664	Educational Media Foundati		
229B	KSKS	LIC_CX		65.9	193.73	37 04 39.0	68.000	143.9	115.6	11.1	1.0
Fresno		CA		247.1	BMLH20050425ABM	119 26 01.0	580	1404	Cumulus Licensing Lic		
282A	KHIP	LIC_NCN		345.6	32.69	36 40 06.0	2.600	0.0	0.0	9.5R	23.2M
Gonzales		CA		165.5	BMLH19980709KB	121 31 09.0	155	435	Mapleton License Of Monter		

Terrain database is FCC NGDC 30 Sec , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= East Zone 2A, Co to 3rd adjacent.
All separation margins (if shown) include rounding.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
***affixed to 'IN' or 'OUT' values = site inside restricted contour.

E-2 New 228D +40 dBu Tabulation Within KXSM(FM) 226A

New 228D King City, CA, Showing Protection to KXSM
74.1204(d) Study - Using GLOBE 30 SEC Terrain Database
Translator or LPFM Maximum Licensed ERP = 0.25
Translator or LPFM Antenna Height AG = 14 Meters
New 228D Antenna Model = SCALA TWIN LOG V

Protected Station's Contour = 70.63306 dBu
Translator's or LPFM's full Interference contour 110.63306

Review Azimuth = 75 Degrees True
Relative Field on the horizon at Review Azimuth = 1.000
Translator/LPFM ERP on the horizon at Review Azimuth = 0.25 kW
Distance between stations = 14.4 km
Protected Station= KXSM, 2.5 kW, 417.6 M Meters COR AMSL

Depression Angle From Horizon(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle(m)	Dist to IX Contour From Tower Base(m)	Height IX Above Ground (m) (1)
00.00	1.0	1.0	0.2500	326.0746	326.0746	014.000
05.00	0.98	1.0	0.2401	319.5531	318.3371	-013.851
10.00	0.95	1.0	0.2256	309.7709	305.0648	-039.791
15.00	0.895	1.0	0.2003	291.8368	281.8927	-061.533
20.00	0.82	1.0	0.1681	267.3812	251.2561	-077.450
25.00	0.735	1.0	0.1351	239.6649	217.2101	-087.287
30.00	0.645	1.0	0.1040	210.3181	182.1408	-091.159
35.00	0.562	1.0	0.0790	183.2539	150.1128	-091.110
40.00	0.47	1.0	0.0552	153.2551	117.4002	-084.510
45.00	0.36	1.0	0.0324	117.3869	083.0051	-069.005
50.00	0.25	1.0	0.0156	081.5187	052.3992	-048.447
55.00	0.155	1.0	0.0060	050.5416	028.9895	-027.401
60.00	0.085	1.0	0.0018	027.7163	013.8582	-010.003
65.00	0.045	1.0	0.0005	014.6734	006.2012	000.701
70.00	0.02	1.0	0.0001	006.5215	002.2305	007.872
75.00	0.01	1.0	0.0000	003.2607	000.8439	010.850
80.00	0.01	1.0	0.0000	003.2607	000.5662	010.789
85.00	0.01	1.0	0.0000	003.2607	000.2842	010.752
90.00	0.01	1.0	0.0000	003.2607	000.0000	010.739

(1) An aerial photo of the 110.63 F(50-10) dBu contour in exhibit E-4 shows the contour does not encompass any population, roads or buildings.

E-3 New 228D +40 dBu Tabulation Within KEXA(FM) 230B1

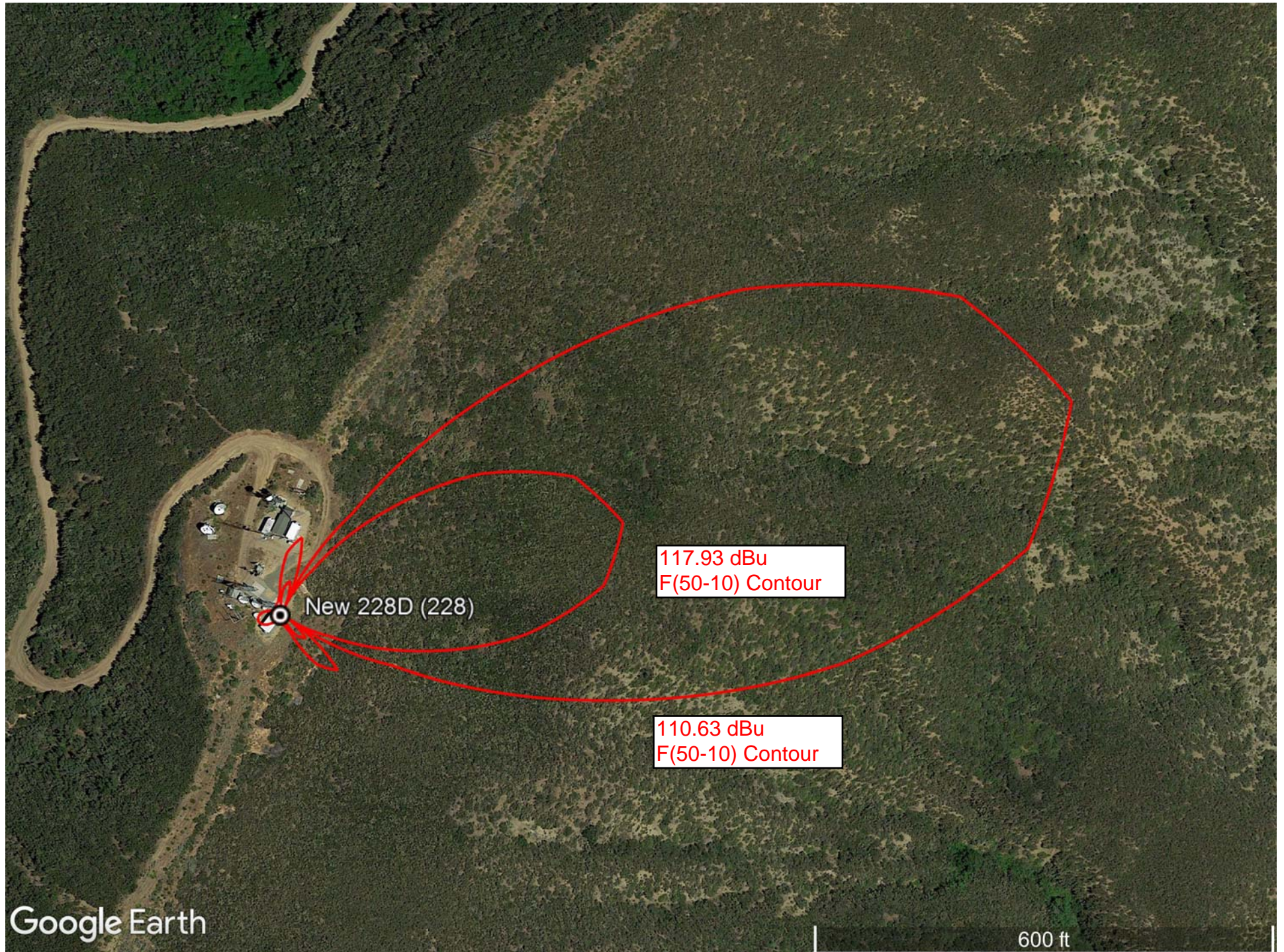
New 228D King City, CA, Showing Protection to KEXA
74.1204(d) Study - Using GLOBE 30 SEC Terrain Database
Translator or LPFM Maximum Licensed ERP = 0.25
Translator or LPFM Antenna Height AG = 14 Meters
New 228D Antenna Model = SCALA TWIN LOG V

Protected Station's Contour = 77.92545 dBu
Translator's or LPFM's full Interference contour 117.92545

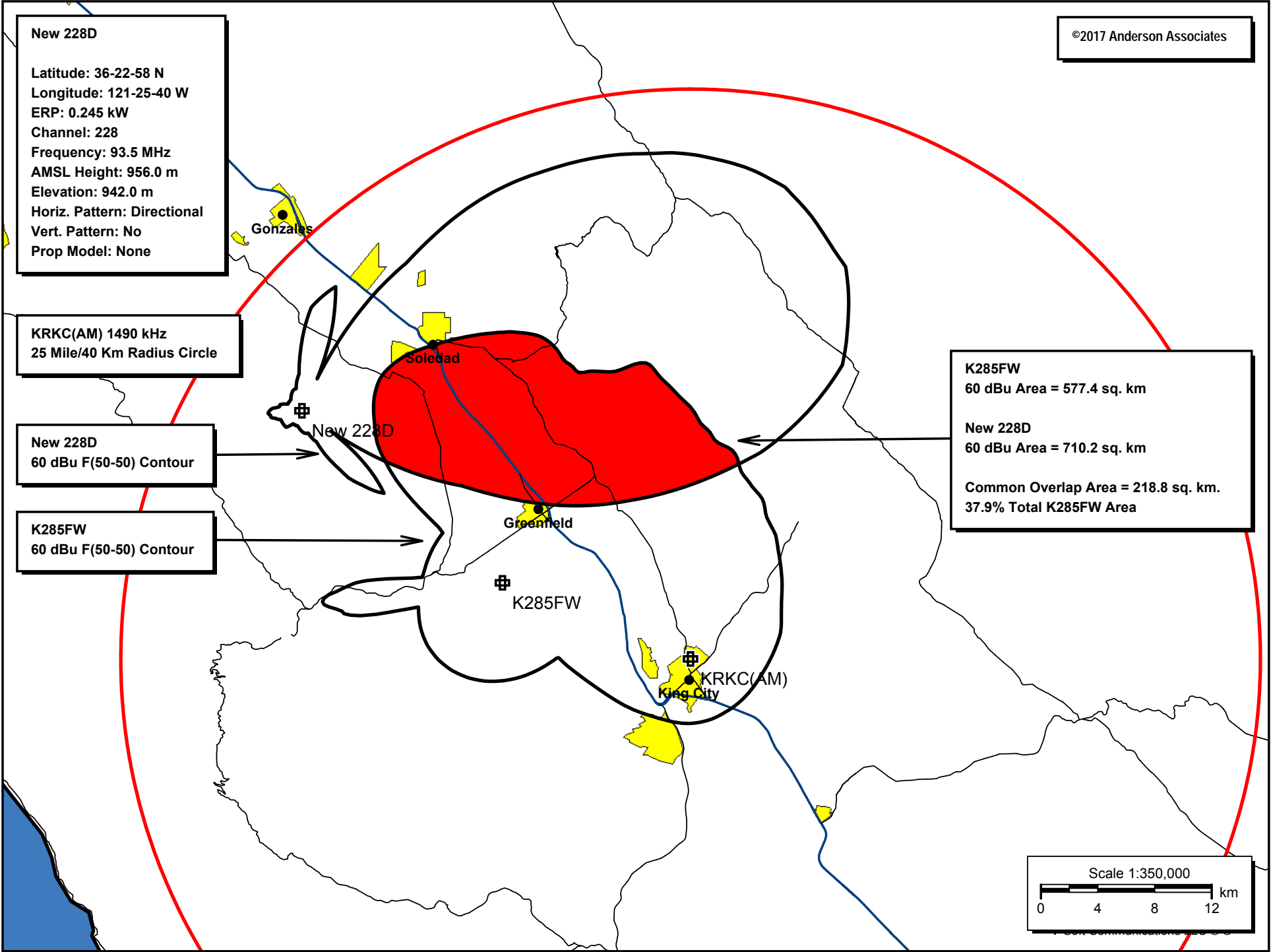
Review Azimuth = 75 Degrees True
Relative Field on the horizon at Review Azimuth = 1.000
Translator/LPFM ERP on the horizon at Review Azimuth = 0.25 kW
Distance between stations = 19.0 km
Protected Station= KEXA, 5.4 kW, 458 M Meters COR AMSL

Depression Angle From Horizon(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle(m)	Dist to IX Contour From Tower Base(m)	Height IX Above Ground (m) (1)
00.00	1.0	1.0	0.2500	140.8308	140.8308	014.000
05.00	0.98	1.0	0.2401	138.0141	137.4890	001.971
10.00	0.95	1.0	0.2256	133.7892	131.7567	-009.232
15.00	0.895	1.0	0.2003	126.0435	121.7487	-018.622
20.00	0.82	1.0	0.1681	115.4812	108.5168	-025.497
25.00	0.735	1.0	0.1351	103.5106	093.8125	-029.745
30.00	0.645	1.0	0.1040	090.8358	078.6661	-031.418
35.00	0.562	1.0	0.0790	079.1469	064.8333	-031.397
40.00	0.47	1.0	0.0552	066.1905	050.7048	-028.546
45.00	0.36	1.0	0.0324	050.6991	035.8497	-021.850
50.00	0.25	1.0	0.0156	035.2077	022.6311	-012.971
55.00	0.155	1.0	0.0060	021.8288	012.5205	-003.881
60.00	0.085	1.0	0.0018	011.9706	005.9853	003.633
65.00	0.045	1.0	0.0005	006.3374	002.6783	008.256
70.00	0.02	1.0	0.0001	002.8166	000.9633	011.353
75.00	0.01	1.0	0.0000	001.4083	000.3645	012.640
80.00	0.01	1.0	0.0000	001.4083	000.2446	012.613
85.00	0.01	1.0	0.0000	001.4083	000.1227	012.597
90.00	0.01	1.0	0.0000	001.4083	000.0000	012.592

(1) An aerial photo of the 117.93 F(50-10) contour in exhibit E-4 shows the contour does not encompass any population, roads or buildings.



E-5 New 228D 60 dBu Contour Plot



TOWAIR Determination Results

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates

Latitude	36-22-57.9 north
Longitude	121-25-43.8 west

Measurements (Meters)

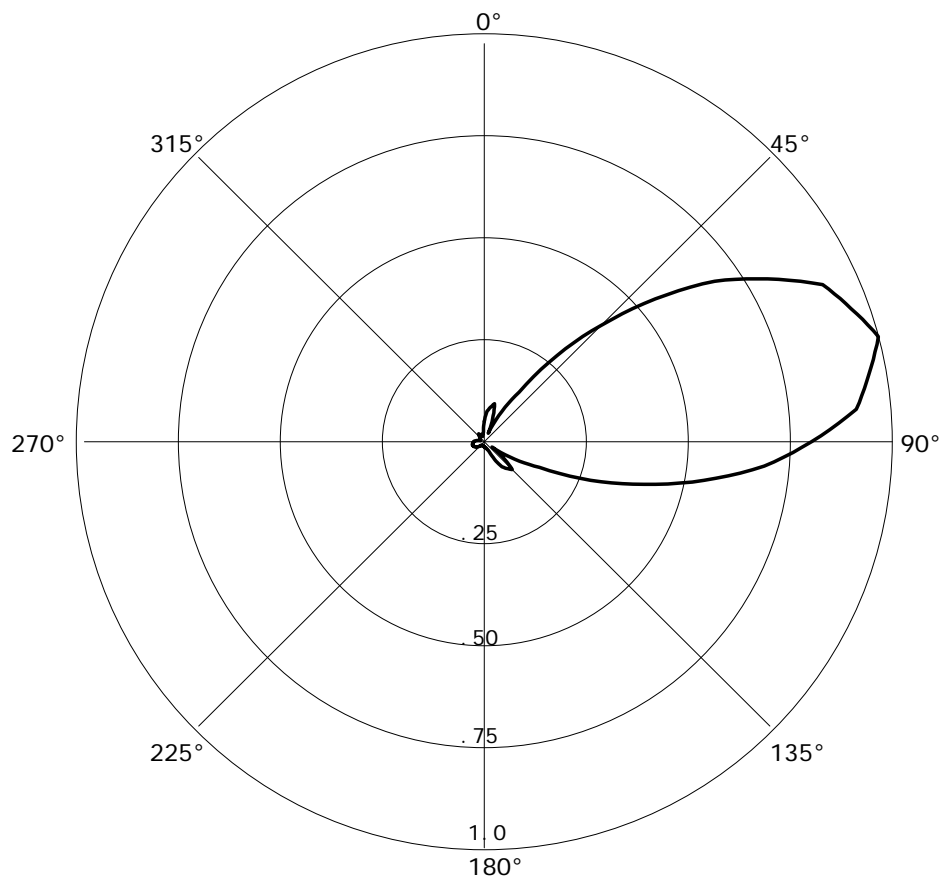
Overall Structure Height (AGL)	24
Support Structure Height (AGL)	0
Site Elevation (AMSL)	942

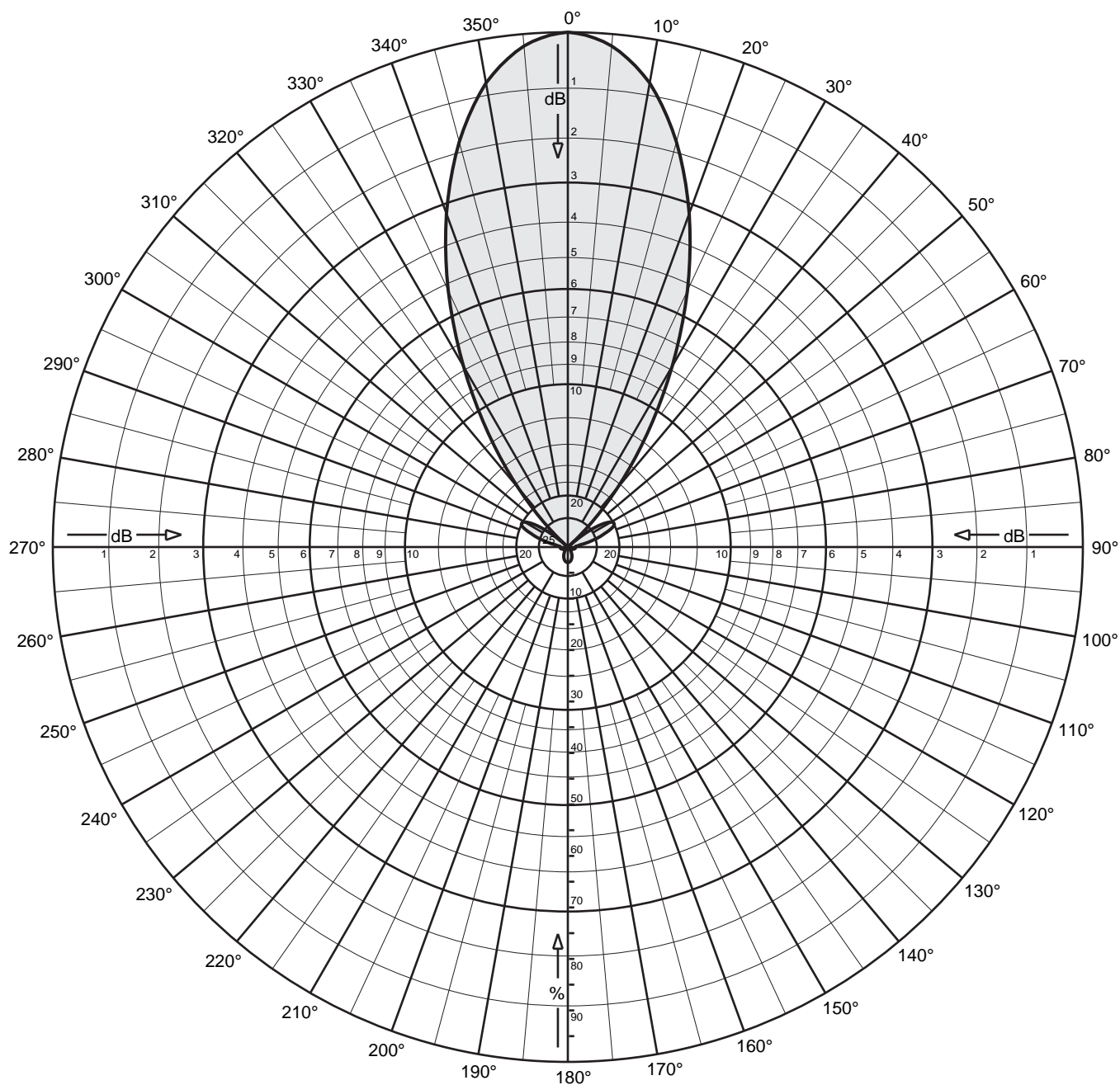
Structure Type

LTOWER - Lattice Tower

Graph is Relative Field

Azi	Field	dBk	kW
000	0.050	-32.129	0.001
010	0.086	-27.418	0.002
020	0.060	-30.545	0.001
030	0.086	-27.418	0.002
040	0.277	-17.259	0.019
050	0.547	-11.349	0.073
060	0.802	-08.025	0.158
070	0.957	-06.490	0.224
080	0.957	-06.490	0.224
090	0.802	-08.025	0.158
100	0.547	-11.349	0.073
110	0.277	-17.259	0.019
120	0.086	-27.418	0.002
130	0.060	-30.545	0.001
140	0.086	-27.418	0.002
150	0.050	-32.129	0.001
160	0.020	-40.088	0.000
170	0.014	-43.186	0.000
180	0.013	-43.829	0.000
190	0.011	-45.280	0.000
200	0.010	-46.108	0.000
210	0.010	-46.108	0.000
220	0.012	-44.525	0.000
230	0.019	-40.533	0.000
240	0.025	-38.150	0.000
250	0.029	-36.860	0.000
260	0.029	-36.860	0.000
270	0.025	-38.150	0.000
280	0.016	-42.026	0.000
290	0.010	-46.108	0.000
300	0.011	-45.280	0.000
310	0.013	-43.829	0.000
320	0.020	-40.088	0.000
330	0.019	-40.533	0.000
340	0.014	-43.186	0.000
350	0.020	-40.088	0.000





Two CL-FM/VRM Log-periodic Antennas

Oriented at 0 degrees

Frequency: 104.9 MHz

Gain: 9.5 dBd (X 8.9)

Vertical Polarization

Horizontal stacked

Horizontal plane Pattern



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<http://www.kathrein-scala.com>



Two CL-FM/VRM Log-periodic Antennas
 Oriented at 0 degrees
 Frequency: 104.9 MHz
 Gain: 9.5 dBd (X 8.9)

Vertical Polarization
 Horizontal stacked
 Horizontal plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	9.50	8.91	180	0.030	-30.46	-20.96	0.01
5	0.977	-0.20	9.30	8.50	185	0.029	-30.60	-21.10	0.01
10	0.915	-0.77	8.73	7.47	190	0.028	-31.05	-21.55	0.01
15	0.815	-1.78	7.72	5.91	195	0.026	-31.82	-22.32	0.01
20	0.689	-3.23	6.27	4.23	200	0.023	-32.93	-23.43	0.00
25	0.549	-5.20	4.30	2.69	205	0.019	-34.47	-24.97	0.00
30	0.405	-7.85	1.65	1.46	210	0.015	-36.56	-27.06	0.00
35	0.269	-11.42	-1.92	0.64	215	0.011	-39.44	-29.94	0.00
40	0.149	-16.53	-7.03	0.20	220	0.010	-40.00	-30.50	0.00
45	0.051	-25.87	-16.37	0.02	225	0.010	-40.00	-30.50	0.00
50	0.023	-32.92	-23.42	0.00	230	0.010	-40.00	-30.50	0.00
55	0.071	-22.92	-13.42	0.05	235	0.010	-40.00	-30.50	0.00
60	0.097	-20.24	-10.74	0.08	240	0.010	-40.00	-30.50	0.00
65	0.099	-20.07	-10.57	0.09	245	0.010	-40.00	-30.50	0.00
70	0.075	-22.47	-12.97	0.05	250	0.012	-38.51	-29.01	0.00
75	0.049	-26.19	-16.69	0.02	255	0.013	-37.47	-27.97	0.00
80	0.024	-32.37	-22.87	0.01	260	0.014	-36.81	-27.31	0.00
85	0.015	-36.44	-26.94	0.00	265	0.015	-36.44	-26.94	0.00
90	0.015	-36.32	-26.82	0.00	270	0.015	-36.32	-26.82	0.00
95	0.015	-36.44	-26.94	0.00	275	0.015	-36.44	-26.94	0.00
100	0.014	-36.81	-27.31	0.00	280	0.024	-32.37	-22.87	0.01
105	0.013	-37.47	-27.97	0.00	285	0.049	-26.19	-16.69	0.02
110	0.012	-38.51	-29.01	0.00	290	0.075	-22.47	-12.97	0.05
115	0.010	-40.00	-30.50	0.00	295	0.099	-20.07	-10.57	0.09
120	0.010	-40.00	-30.50	0.00	300	0.097	-20.24	-10.74	0.08
125	0.010	-40.00	-30.50	0.00	305	0.071	-22.92	-13.42	0.05
130	0.010	-40.00	-30.50	0.00	310	0.023	-32.92	-23.42	0.00
135	0.010	-40.00	-30.50	0.00	315	0.051	-25.87	-16.37	0.02
140	0.010	-40.00	-30.50	0.00	320	0.149	-16.53	-7.03	0.20
145	0.011	-39.44	-29.94	0.00	325	0.269	-11.42	-1.92	0.64
150	0.015	-36.56	-27.06	0.00	330	0.405	-7.85	1.65	1.46
155	0.019	-34.47	-24.97	0.00	335	0.549	-5.20	4.30	2.69
160	0.023	-32.93	-23.43	0.00	340	0.689	-3.23	6.27	4.23
165	0.026	-31.82	-22.32	0.01	345	0.815	-1.78	7.72	5.91
170	0.028	-31.05	-21.55	0.01	350	0.915	-0.77	8.73	7.47
175	0.029	-30.60	-21.10	0.01	355	0.977	-0.20	9.30	8.50