

Technical Report WHOP(AM) New 230D

This technical report is submitted for the Auction 100 long form application for a new fill-in translator at channel 230 to serve as a fill-in facility to rebroadcast WHOP(AM) 1230 kHz at Hopkinsville, KY, FCC facility I.D. no. 27634.

New 230D Translator Analysis:

An overlap study in exhibit E-1 shows the new 230D translator is within the WRND(FM) 232A second adjacent protected contour. A tabulation of the 127.52 +40 dBu F(50-10) contour (exhibit E-2) shows the interfering contour will not reach any population, roads or buildings (exhibit E-3). Based on this showing, a waiver of Section 74.1204 is requested, in accordance with *Living Way Ministries, Inc.* (FCC 08-242). The 60 dBu F(50-50) contour is contained within the WHOP(AM) 2.0 mV/m daytime contour and does not overlap W237BV, which also serves as a fill-in facility for WHOP(AM) (exhibit E-4).

Antenna System:

The new 230D translator is to be located on the existing tower, ASR #1224748, at coordinates:

36 40 53N 87 24 35W NAD 27.

An ERI 100A two bay, full wavelength spaced, nondirectional antenna will be mounted at a COR AGL of 60 meters, 223 meters AMSL and operate at 0.250 kW ERP.

RF Exposure Calculation:

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

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

Using a worst case vertical (F) factor of 1.0, the RF is calculated to be $4.96 \mu\text{W}/\text{cm}^2$ to the ground, which is well below 5% of the $200 \mu\text{W}/\text{cm}^2$ maximum permissible for general public exposure allowing exclusion from consideration.

Conclusion:

It is concluded that the application for a new 230D translator facility for WHOP(AM) complies with all Commission rules and policies.

A handwritten signature in black ink, appearing to read 'Christopher Anderson', is written over a horizontal line.

Christopher Anderson March 28, 2018
andersce@bham.rr.com
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E-1 WHOP(AM) New 230D Overlap Study

REFERENCE		CH# 230D - 93.9 MHz, Pwr= 0.25 kW, HAAT= 0.0 M, COR= 223 M								DISPLAY DATES	
36 40 53.0 N.		Average Protected F(50-50)= 7.09 km								DATA 03-28-18	
87 24 35.0 W.		Omni-directional								SEARCH 03-28-18	
CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
230C2	WKTG	LIC NCN		0.4	93.67	37 31 26.0	35.000	134.4	52.9	-49.6*	12.6
Madi sonvi lle		KY		180.4	BLH19980629KC	87 24 11.0	178	303	Sound Broadcasters, Inc.		
230D	1775532	APP _C_		0.0	0.00	36 40 53.0	0.250	0.00	0.00	64.5R	-64.5M
Hopki nsvi lle		KY		0.0	BNPFT20180131ACW	87 24 35.0		223	Hop Broadcasting, Inc.		
232A	WRND	LIC NCX		205.4	4.95	36 38 28.0	6.000	2.4	23.9	-8.0*	-20.1*(1)
Oak Grove		KY		25.4	BLH20040520AEY	87 26 01.0	78	238	Saga Communications Of Tuc		
229A	WFFI	LIC _C_		147.8	71.57	36 08 10.0	1.150	45.8	29.7	14.9	25.3
Kingston Springs		TN		328.0	BLH19991116AIQ	86 59 04.0	230	410	Salem Communications Hol di		
231D	W231DO	CP DC_		67.1	47.04	36 50 41.0	0.250	20.7	13.7	16.0	19.0
Russel lvi lle		KY		247.4	BMPFT20180216AAI	86 55 21.0		383	Logan Radio Inc.		
231C3	WLZK	LIC NCN		242.9	88.85	36 18 50.0	10.500	52.8	34.5	25.3	38.8
Pari s		TN		62.4	BLH19960209KC	88 17 33.0	100	244	Benton-weatherford Broadca		
227C1	WKYQ	LIC _CN		291.2	114.68	37 02 56.0	100.000	9.8	70.9	95.2	42.6
Paducah		KY		110.5	BMLH19981027KA	88 36 52.0	279	388	Bristol Broadcasting Compa		
230D	W230AD	LIC _CN		105.6	86.78	36 28 02.0	0.100	30.4	9.2	45.9	43.1
Gallatin		TN		286.2	BLFT19940621TA	86 28 30.0	115	328	Community Broadcasting, In		
231A	WFFH	LIC _CX		136.5	100.84	36 01 14.0	3.200	46.1	30.5	43.6	53.6
Smyrna		TN		317.0	BLH20060608ACY	86 38 18.0	138	328	Salem Communications Hol di		
233A	WHPY-FM	LIC _CX		152.8	75.34	36 04 40.0	5.100	2.6	27.2	61.0	44.7
Bellevue		TN		333.1	BLH20120210ABG	87 01 37.0	109	303	Kensington Digital Media,		

Terrain database is 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, 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.

- (1) The +40 127.52 F(50-10) dBu contour calculated within the second adjacent WRND-FM 232A protected contour (exhibit E-2) does not encompass any population, roads or buildings (exhibit E-3).

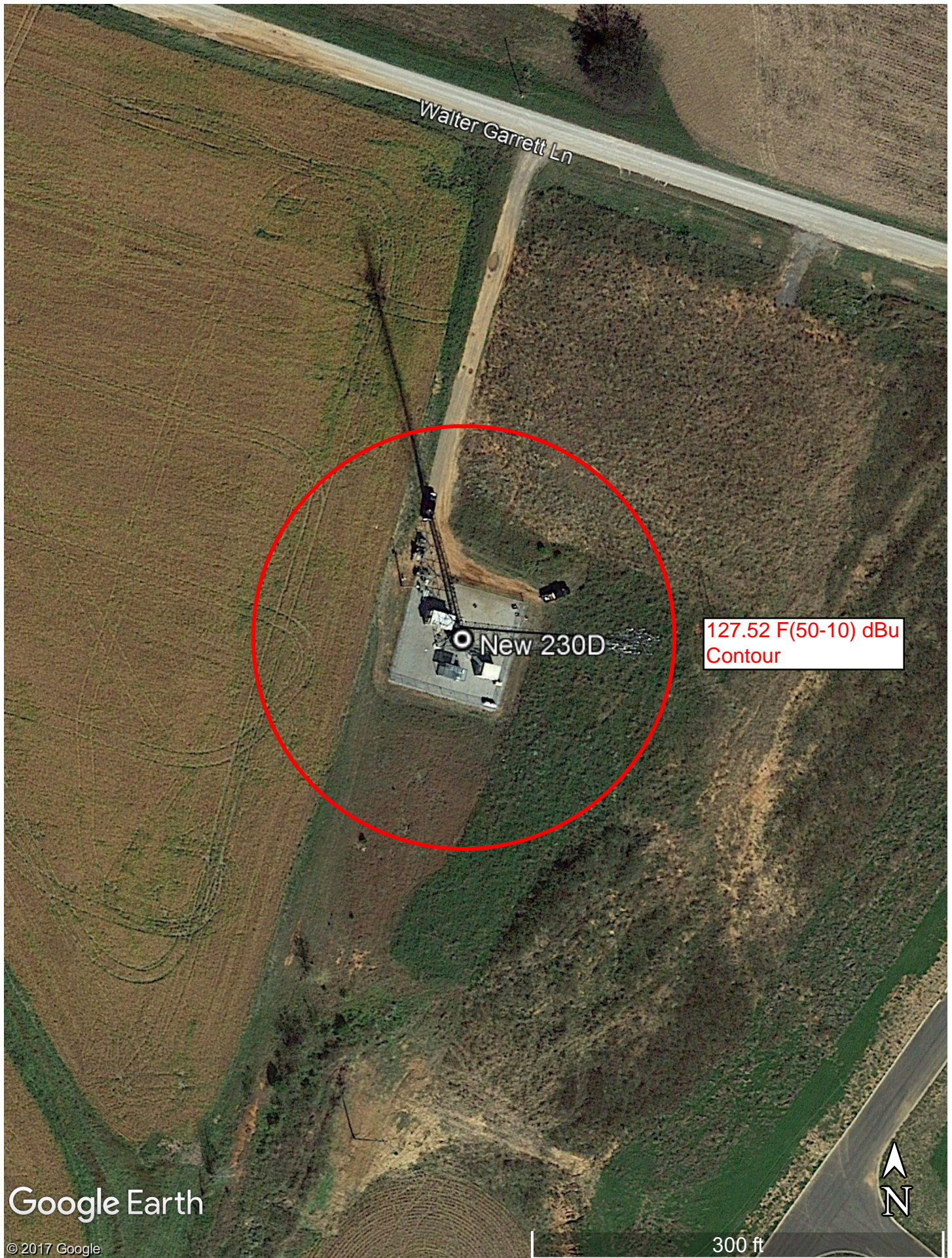
E-2 New 230D +40 dBu Tabulation Within WRND-FM 232A

New Tx Hopkinsville, KY, Showing Protection to WRND-FM
74.1204(d) Study - Using FCC 30 SEC Terrain Database
Translator or LPFM Maximum Licensed ERP = 0.25
Translator or LPFM Antenna Height AG = 60 Meters
New Tx Antenna Model = SHPX2F

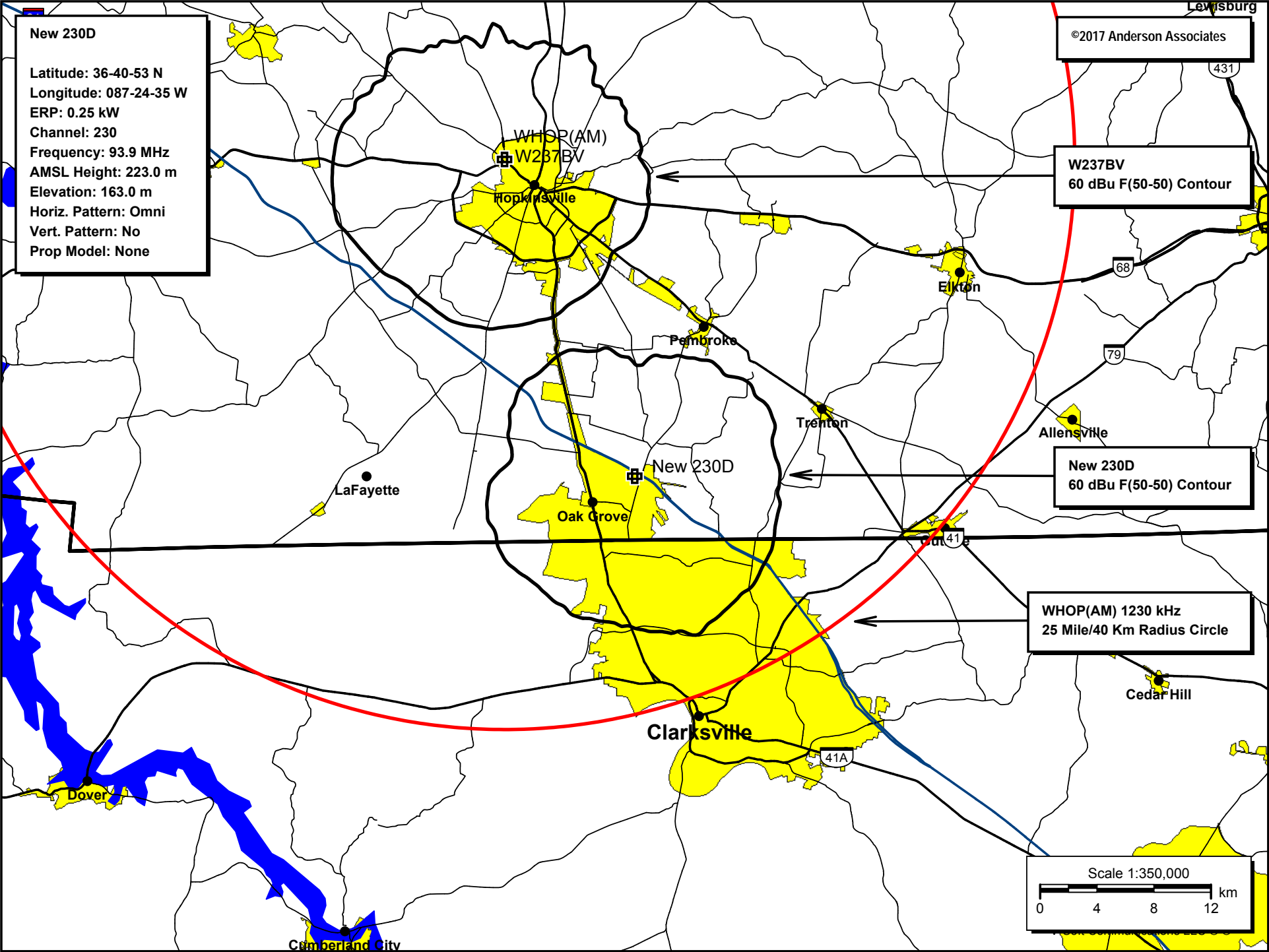
Protected Station's Contour = 87.52106 dBu
Translator's or LPFM's full Interference contour 127.52106

Review Azimuth = 0 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 = 5.0 km
Protected Station= WRND-FM, 6 kW, 238 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)
00.00	1.0	1.0	0.2500	046.6570	046.6570	060.000
05.00	0.96	1.0	0.2304	044.7907	044.6203	056.096
10.00	0.845	1.0	0.1785	039.4252	038.8262	053.154
15.00	0.669	1.0	0.1119	031.2135	030.1500	051.921
20.00	0.455	1.0	0.0518	021.2289	019.9487	052.739
25.00	0.226	1.0	0.0128	010.5445	009.5566	055.544
30.00	0.006	1.0	0.0000	000.2799	000.2424	059.860
35.00	0.187	1.0	0.0087	008.7249	007.1470	054.996
40.00	0.339	1.0	0.0287	015.8167	012.1163	049.833
45.00	0.445	1.0	0.0495	020.7624	014.6812	045.319
50.00	0.506	1.0	0.0640	023.6085	015.1752	041.915
55.00	0.525	1.0	0.0689	024.4949	014.0497	039.935
60.00	0.511	1.0	0.0653	023.8417	011.9209	039.352
65.00	0.472	1.0	0.0557	022.0221	009.3069	040.041
70.00	0.416	1.0	0.0433	019.4093	006.6384	041.761
75.00	0.35	1.0	0.0306	016.3300	004.2265	044.226
80.00	0.277	1.0	0.0192	012.9240	002.2442	047.272
85.00	0.202	1.0	0.0102	009.4247	000.8214	050.611
90.00	0.126	1.0	0.0040	005.8788	000.0000	054.121



E-4 New 230D 60 dBu Contour Plot



ASR Registration 1224748

Registration Detail

Reg Number	1224748	Status	Constructed
File Number	A0609920	Constructed	03/11/2001
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

Structure Type TOWER - Free standing or Guyed Structure used for Commu

Location (in NAD83 Coordinates)

Lat/Long	36-40-53.3 N 087-24-35.3 W	Address	2603 WALTER GARRETT LANE
City, State	OAK GROVE , KY		
Zip	42262	County	CHRISTIAN
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
163.0	88.3
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
251.3	87.4

Painting and Lighting Specifications

FAA Chapters 4, 8, 12
Paint and Light in Accordance with FAA Circular Number 70/7460-1K

FAA Notification

FAA Study	00-ASO-2852-OE	FAA Issue Date	06/07/2000
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Owner & Contact Information

FRN	0018133256	Owner Entity Type	
Assignor FRN	0012953394	Assignor ID	L00987739

Owner

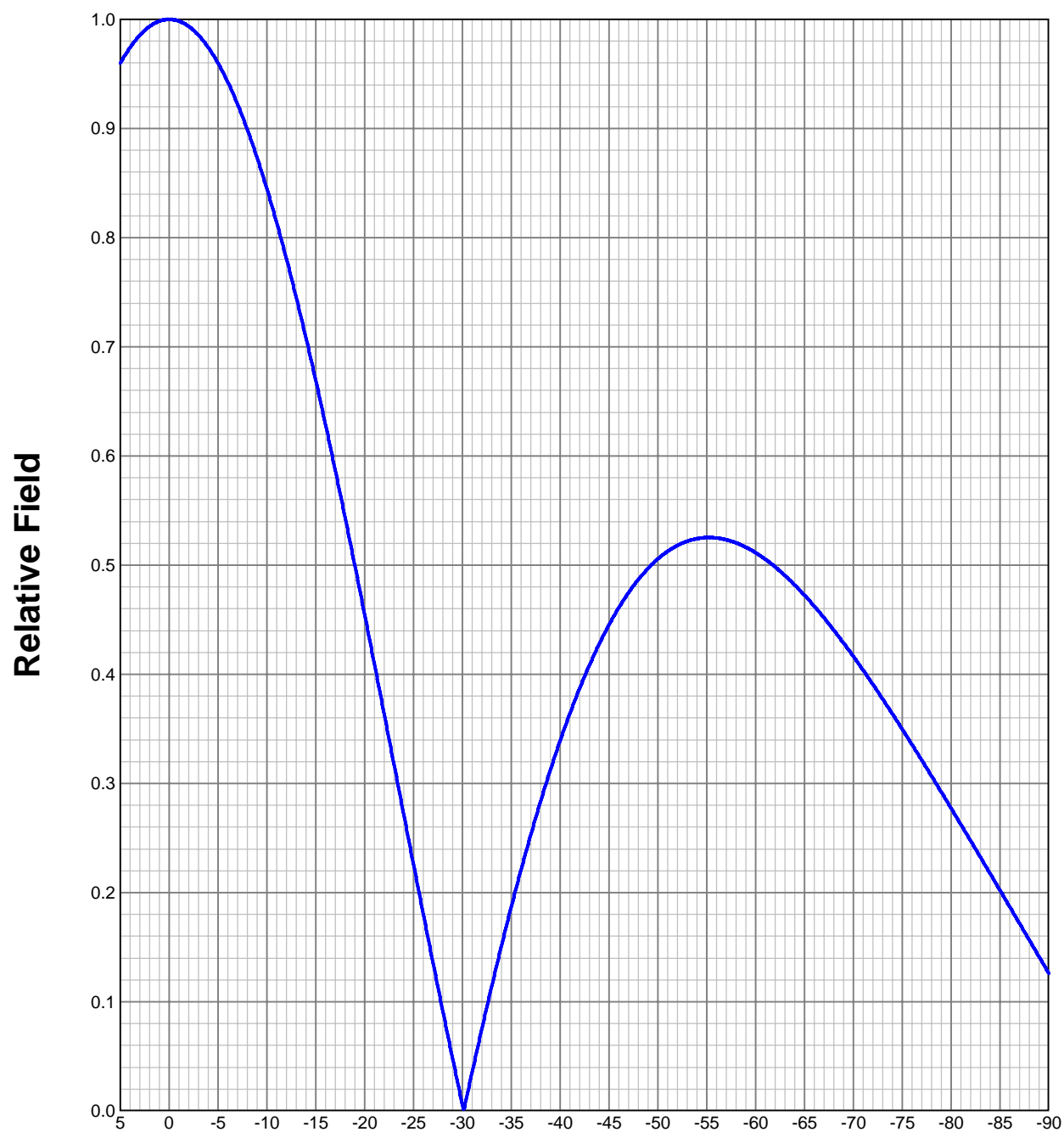
SBA Infrastructures, LLC	P: (561)995-7670
Attention To: Edward G. Roach	F:
8051 Congress Avenue	E: ERoach@sbsite.com
Boca Raton , FL 33487	

Contact

Roach , Edward G	P: (561)995-7670
8051 Congress Avenue	F:
Boca Raton , FL 33487	E: ERoach@sbsite.com

Last Action Status

Status	Constructed	Received	09/22/2008
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ELEVATION PATTERN**Type:****1002F****Channel:****230****Directivity:****Numeric****dBd****Location:****Main Lobe:****0.90****-0.47****Beam Tilt:****0.00****Horizontal:****0.90****-0.47****Polarization:****Circular***Preliminary, subject to final design and review.*

TABULATED DATA FOR ELEVATION PATTERN

Type: 1002F

Polarization: Circular

ANGLE FIELD	dB	ANGLE FIELD	dB	ANGLE FIELD	dB	ANGLE FIELD	dB	ANGLE FIELD	dB					
5.00	0.960	-0.36	-6.75	0.927	-0.65	-27.00	0.135	-17.37	-50.50	0.509	-5.86	-74.00	0.364	-8.79
4.75	0.964	-0.32	-7.00	0.922	-0.70	-27.50	0.113	-18.92	-51.00	0.513	-5.80	-74.50	0.357	-8.95
4.50	0.967	-0.29	-7.25	0.917	-0.76	-28.00	0.091	-20.80	-51.50	0.516	-5.75	-75.00	0.350	-9.13
4.25	0.971	-0.26	-7.50	0.911	-0.81	-28.50	0.069	-23.17	-52.00	0.518	-5.71	-75.50	0.343	-9.30
4.00	0.974	-0.23	-7.75	0.905	-0.87	-29.00	0.048	-26.39	-52.50	0.520	-5.68	-76.00	0.336	-9.48
3.75	0.977	-0.20	-8.00	0.899	-0.93	-29.50	0.027	-31.51	-53.00	0.522	-5.65	-76.50	0.328	-9.67
3.50	0.980	-0.17	-8.25	0.893	-0.99	-30.00	0.006	-45.12	-53.50	0.523	-5.63	-77.00	0.321	-9.86
3.25	0.983	-0.15	-8.50	0.886	-1.05	-30.50	0.015	-36.36	-54.00	0.524	-5.61	-77.50	0.314	-10.06
3.00	0.985	-0.13	-8.75	0.880	-1.11	-31.00	0.036	-28.95	-54.50	0.525	-5.60	-78.00	0.307	-10.27
2.75	0.988	-0.11	-9.00	0.873	-1.18	-31.50	0.056	-25.06	-55.00	0.525	-5.59	-78.50	0.299	-10.48
2.50	0.990	-0.09	-9.25	0.866	-1.25	-32.00	0.076	-22.42	-55.50	0.525	-5.59	-79.00	0.292	-10.69
2.25	0.992	-0.07	-9.50	0.859	-1.32	-32.50	0.095	-20.43	-56.00	0.525	-5.60	-79.50	0.285	-10.91
2.00	0.994	-0.06	-9.75	0.852	-1.39	-33.00	0.114	-18.84	-56.50	0.524	-5.61	-80.00	0.277	-11.14
1.75	0.995	-0.04	-10.00	0.845	-1.47	-33.50	0.133	-17.52	-57.00	0.523	-5.63	-80.50	0.270	-11.38
1.50	0.996	-0.03	-10.50	0.829	-1.62	-34.00	0.151	-16.40	-57.50	0.522	-5.65	-81.00	0.262	-11.62
1.25	0.997	-0.02	-11.00	0.814	-1.79	-34.50	0.169	-15.42	-58.00	0.520	-5.67	-81.50	0.255	-11.87
1.00	0.998	-0.01	-11.50	0.797	-1.97	-35.00	0.187	-14.56	-58.50	0.519	-5.70	-82.00	0.247	-12.13
0.75	0.999	-0.01	-12.00	0.781	-2.15	-35.50	0.204	-13.80	-59.00	0.516	-5.74	-82.50	0.240	-12.40
0.50	1.000	0.00	-12.50	0.763	-2.35	-36.00	0.221	-13.12	-59.50	0.514	-5.78	-83.00	0.232	-12.68
0.25	1.000	0.00	-13.00	0.745	-2.55	-36.50	0.237	-12.50	-60.00	0.511	-5.83	-83.50	0.225	-12.96
0.00	1.000	0.00	-13.50	0.727	-2.77	-37.00	0.253	-11.93	-60.50	0.508	-5.88	-84.00	0.217	-13.26
-0.25	1.000	0.00	-14.00	0.708	-3.00	-37.50	0.269	-11.42	-61.00	0.505	-5.93	-84.50	0.210	-13.57
-0.50	1.000	0.00	-14.50	0.689	-3.24	-38.00	0.284	-10.94	-61.50	0.502	-5.99	-85.00	0.202	-13.89
-0.75	0.999	-0.01	-15.00	0.669	-3.49	-38.50	0.298	-10.51	-62.00	0.498	-6.05	-85.50	0.195	-14.22
-1.00	0.998	-0.01	-15.50	0.649	-3.76	-39.00	0.312	-10.11	-62.50	0.494	-6.12	-86.00	0.187	-14.57
-1.25	0.997	-0.02	-16.00	0.629	-4.03	-39.50	0.326	-9.74	-63.00	0.490	-6.19	-86.50	0.179	-14.93
-1.50	0.996	-0.03	-16.50	0.608	-4.33	-40.00	0.339	-9.39	-63.50	0.486	-6.26	-87.00	0.172	-15.30
-1.75	0.995	-0.04	-17.00	0.587	-4.63	-40.50	0.352	-9.07	-64.00	0.482	-6.34	-87.50	0.164	-15.70
-2.00	0.994	-0.06	-17.50	0.565	-4.96	-41.00	0.364	-8.77	-64.50	0.477	-6.43	-88.00	0.156	-16.11
-2.25	0.992	-0.07	-18.00	0.544	-5.30	-41.50	0.376	-8.50	-65.00	0.472	-6.51	-88.50	0.149	-16.54
-2.50	0.990	-0.09	-18.50	0.522	-5.65	-42.00	0.387	-8.24	-65.50	0.467	-6.61	-89.00	0.141	-17.00
-2.75	0.988	-0.11	-19.00	0.499	-6.03	-42.50	0.398	-8.00	-66.00	0.462	-6.70	-89.50	0.134	-17.48
-3.00	0.985	-0.13	-19.50	0.477	-6.43	-43.00	0.409	-7.78	-66.50	0.457	-6.80	-90.00	0.126	-17.99
-3.25	0.983	-0.15	-20.00	0.455	-6.85	-43.50	0.418	-7.57	-67.00	0.452	-6.90			
-3.50	0.980	-0.17	-20.50	0.432	-7.29	-44.00	0.428	-7.37	-67.50	0.446	-7.01			
-3.75	0.977	-0.20	-21.00	0.409	-7.76	-44.50	0.437	-7.19	-68.00	0.440	-7.12			
-4.00	0.974	-0.23	-21.50	0.386	-8.26	-45.00	0.445	-7.03	-68.50	0.435	-7.24			
-4.25	0.971	-0.26	-22.00	0.363	-8.79	-45.50	0.453	-6.87	-69.00	0.429	-7.36			
-4.50	0.967	-0.29	-22.50	0.340	-9.36	-46.00	0.461	-6.73	-69.50	0.423	-7.48			
-4.75	0.964	-0.32	-23.00	0.317	-9.97	-46.50	0.468	-6.59	-70.00	0.416	-7.61			
-5.00	0.960	-0.36	-23.50	0.294	-10.62	-47.00	0.475	-6.47	-70.50	0.410	-7.74			
-5.25	0.956	-0.39	-24.00	0.272	-11.32	-47.50	0.481	-6.36	-71.00	0.404	-7.88			
-5.50	0.952	-0.43	-24.50	0.249	-12.09	-48.00	0.487	-6.25	-71.50	0.397	-8.02			
-5.75	0.947	-0.47	-25.00	0.226	-12.93	-48.50	0.492	-6.16	-72.00	0.391	-8.16			
-6.00	0.942	-0.51	-25.50	0.203	-13.85	-49.00	0.497	-6.07	-72.50	0.384	-8.31			
-6.25	0.938	-0.56	-26.00	0.180	-14.88	-49.50	0.502	-5.99	-73.00	0.377	-8.47			
-6.50	0.933	-0.61	-26.50	0.158	-16.04	-50.00	0.506	-5.92	-73.50	0.370	-8.62			

Preliminary, subject to final design and review.