

**AUCTION 83
SPECTRUM LIMITED SHORT FORM AMENDMENT
NOBLESVILLE, IN FACILITY ID #155792 - BNPFT-20030317GWL**

This short form amendment requests minor changes from channel 285 to adjacent channel 286, move to a new tower site, change in ERP and use of a directional antenna. All are minor changes. Even though this is a short form filing, a full engineering form and associated exhibits are provided in an abundance of caution. The translator will rebroadcast station WSHW (facility ID#33466) at Frankfort, IN.

An LPFM preclusion showing is included as exhibit 1 demonstrating that the proposal will not impact any protected LPFM channel points in the Indianapolis “spectrum limited” market and that it does not preclude the only LPFM availability at its site.

Allocation discussion:

All exhibits were developed utilizing the FCC 30 second terrain database.

Allocation exhibits are provided as follows:

- E1 Channel study
- E1A Interference plot to WJJK and WYXB 3rd adjacent channel stations
- E1B Aerial view of interference area
- E1C DA pattern
- E2 54 and 60 dBu contours
- E3 ASR-NADCON

A channel study is included as E1 and interference plots as E1A demonstrating compliance with 74.1204. A plot of the proposed and short form 60 dBu contours is provided as E2 showing that they overlap and that the proposed 54 dBu is contained within the WSHW 54 dBu.

The proposed channel 286 facility will be located inside the protected contour of third adjacent channel stations WJJK on 283B and WYXB on 289B. Therefore, an interference analysis has been conducted based on the D/U ratio of +40 dB at the proposed site. The WJJK contour at that site is 69.85 dBu and the proposed interference contour is 109.85dBu (50:10). The WYXB contour is 68 dBu and the proposed interference contour is 108 dBu (50:10) or 176.6 meters. When the depression angle of 18.8 degrees based on the mounting height of 60

Anderson Associates

meters AGL is considered the ERP reduces to 0.019 kW yielding an interfering 108 dBu (50:10) contour of 121.7 meters (see E1B for an aerial view). Furthermore, this interference contour has been evaluated at the initial depression angle and every five degrees through 90 degrees to establish the vertical clearance from the interfering contour to ground level. An aerial photograph is included as E1A demonstrating that the tallest buildings in the area are two stores while the minimum clearance demonstrated below is 20.6 meters. Based on this showing that the interfering contour will not reach a populated area, a waiver of Section 74.1204 is requested.

Vertical clearance is demonstrated in the following table.

Angle (depression)	F	ERP X F ² kW	108 dBu meters	Vertical Clearance to ground meters
18.8	0.686	0.019	121.7	20.8
20	0.650	0.017	115.1	20.6
25	0.493	0.0044	87.0	23.2
30	0.331	0.0044	58.6	30.7
35	0.178	0.0013	31.8	41.8
40	0.043	0.0001	8.8	54.3
45	0.068	0.0002	12.5	51.2
50	0.149	0.0009	26.5	39.7
55	0.202	0.0016	35.3	31.1
60	0.227	0.0021	40.5	24.9
65	0.226	0.0020	39.5	24.2
70	0.205	0.0017	36.4	25.8
75	0.0168	0.0011	29.3	31.7
80	0.118	0.0006	21.6	38.7
85	0.061	0.00015	10.8	49.2
90	0.001	0.000	00.0	60.0

RF Exposure Calculation:

The RF contribution of the proposed translator was calculated using FMMODEL for the PSI FML-2 0.75 wavelength antenna mounted at 60 meters AG to be 0.04 $\mu\text{Watts}/\text{cm}^2$ or 0.02% of the maximum permissible 200 $\mu\text{Watts}/\text{cm}^2$ exposure for general population/uncontrolled exposure, and less than the 5% requiring consideration.


60 dBu contour and HAAT:

N. Lat. = 400544 W. Lng. = 855716
HAAT and Distance to Contour,
FCC, FM 2-10 Mi, 51 pts Method - FCC 30 SEC

Azi.	AV EL	HAAT	dBk	60-F5
000	252.0	55.0	-13.98	6.08
030	241.5	65.5	-13.98	6.59
060	247.3	59.7	-21.94	4.03
090	254.1	52.9	-33.98	1.95
120	254.5	52.5	-35.92	1.73
150	248.6	58.4	-34.89	1.93
180	242.2	64.8	-33.98	2.11
210	232.9	74.1	-27.54	3.19
240	245.5	61.5	-13.98	6.41
270	254.6	52.4	-13.98	5.93
300	257.2	49.8	-13.98	5.79
330	251.5	55.5	-13.98	6.10

Ave El= 248.49 M HAAT= 58.51 M AMSL= 307 M

Reference 60 dBu = 6.7 km


Charles M. Anderson, March 29, 2013

E1 CHANNEL STUDY

REFERENCE
40 05 44.0 N.
85 57 16.0 W.

CH# 286D - 105.1 MHz, Pwr= 0.04 kw DA, HAAT= 59.5 M, COR= 307 M
Average Protected F(50-50)= 6.31 km
Standard Directional

DISPLAY DATES
DATA 03-29-13
SEARCH 03-29-13

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*
283B Noblesville	AL9217	RSV-A	---	213.7 33.6	34.08 RM10153	39 50 25.0 86 10 34.0	50.000 150	6.2 391	66.6	21.4	-33.2*
283B Noblesville	WJJK	LIC _CX	IN	213.7 33.6	34.08 BMLH20030828AYT	39 50 25.0 86 10 34.0	50.000 150	6.2 390	66.5	21.4	-33.1* (1)
289B Indianapolis	WYXB	LIC ZCX	IN	186.5 6.5	36.66 BLH20030403AAC	39 46 03.0 86 00 12.0	50.000 150	6.0 398	65.4	25.2	-29.2* (1)
285D Noblesville	649046	APP _C_	IN	216.3 36.2	8.31 BNPFT20030317GWL	40 02 07.0 86 00 44.0	0.250 11	10.1 259	7.1	-8.3*	-8.2
285A Muncie	WERK	LIC _CX	IN	81.4 261.7	45.19 BMLH20050322ADL	40 09 19.0 85 25 48.0	6.000 100	46.6 392	30.0	-6.8*	7.7
287D Anderson	W287BC	LIC _C_	IN	121.1 301.2	24.21 BLFT20061002AED	39 58 59.0 85 42 41.0	0.038 59	9.3 330	6.5	10.0	11.4
287B Lafayette	WKOA	LIC _CN	IN	294.5 113.9	83.43 BLH6529	40 24 08.0 86 50 59.0	50.000 94	65.3 291	52.6	12.5	19.6
286B1 Huntertown	WQHK-FM	LIC _CX	IN	29.3 209.8	129.75 BLH20120307AAG	41 06 39.0 85 11 44.0	5.700 210	102.3 457	45.7	20.9	58.2
286A Ellettsville	WHCC	APP _CX	IN	212.5 32.0	119.22 BPH20120416ACB	39 11 19.0 86 41 53.0	1.850 182	82.7 405	28.9	30.0	69.1
286A Ellettsville	WHCC	LIC _C_	IN	212.5 32.1	118.79 BLH20000502AAN	39 11 32.0 86 41 46.0	1.700 189	82.1 408	28.7	30.2	69.0
287D Greenwood	W287BE	CP _C_	IN	198.3 18.2	47.98 BPFT20120319AHZ	39 41 07.0 86 07 51.0	0.080	7.5 260	5.3	34.3	35.2
286B Cincinnati	WUBE-FM	LIC _CX	OH	130.4 311.3	165.03 BMLH20071226AAR	39 07 30.0 84 29 56.0	14.500 279	123.8 490	63.7	36.2	77.5
287D Carthage	W287BR	CP _C_	IN	138.3 318.6	51.32 BPFT20110429ABT	39 45 01.0 85 33 19.0	0.060	8.0 328	5.6	38.2	38.0
287D Carthage	W287BR	LIC _C_	IN	140.3 320.5	57.56 BLFT20090818ACR	39 41 48.0 85 31 28.0	0.250 18	10.1 302	7.1	42.3	43.2

(1) See technical report.

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, 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 protected contour.

EXHIBIT E1A

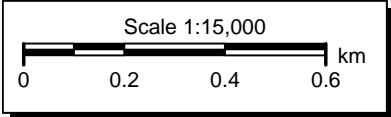
#155792
BNPFT20030317GWL
Latitude: 40-05-44 N
Longitude: 085-57-16 W
ERP: 0.019 kW
Channel: 286
Frequency: 105.1 MHz
AMSL Height: 307.0 m
Elevation: 247.0 m
Horiz. Pattern: Directional

PROPOSED 108 DBU INTERFERENCE CONTOUR
BASED ON REDUCED ERP OF 0.019 KW USING
F FACTOR OF 0.686 AT 18.8 DEGREES.

TECHNICAL REPORT CALCULATIONS DEMONSTRATE
THAT THIS CONTOUR WILL NOT REACH ANY BUILDINGS
OR MAJOR HIGHWAYS.

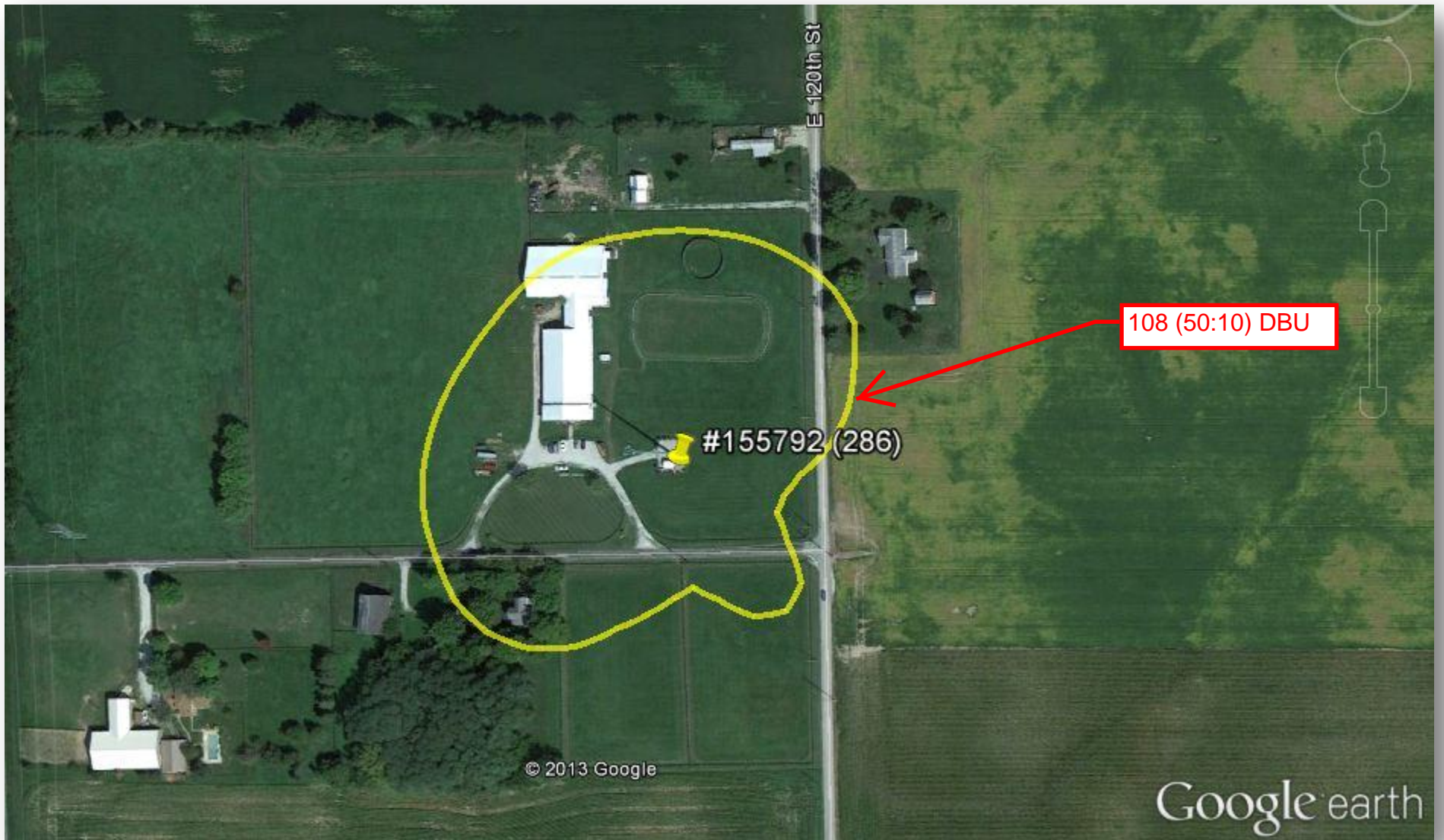
WYXB CONTOUR = 68 DBU

WJJK CONTOUR = 69.85 DBU



ANDERSON ASSOCIATES

E1B AERIAL PHOTOGRAPH OF PROPOSED WYXB-WJJJ INTERFERENCE



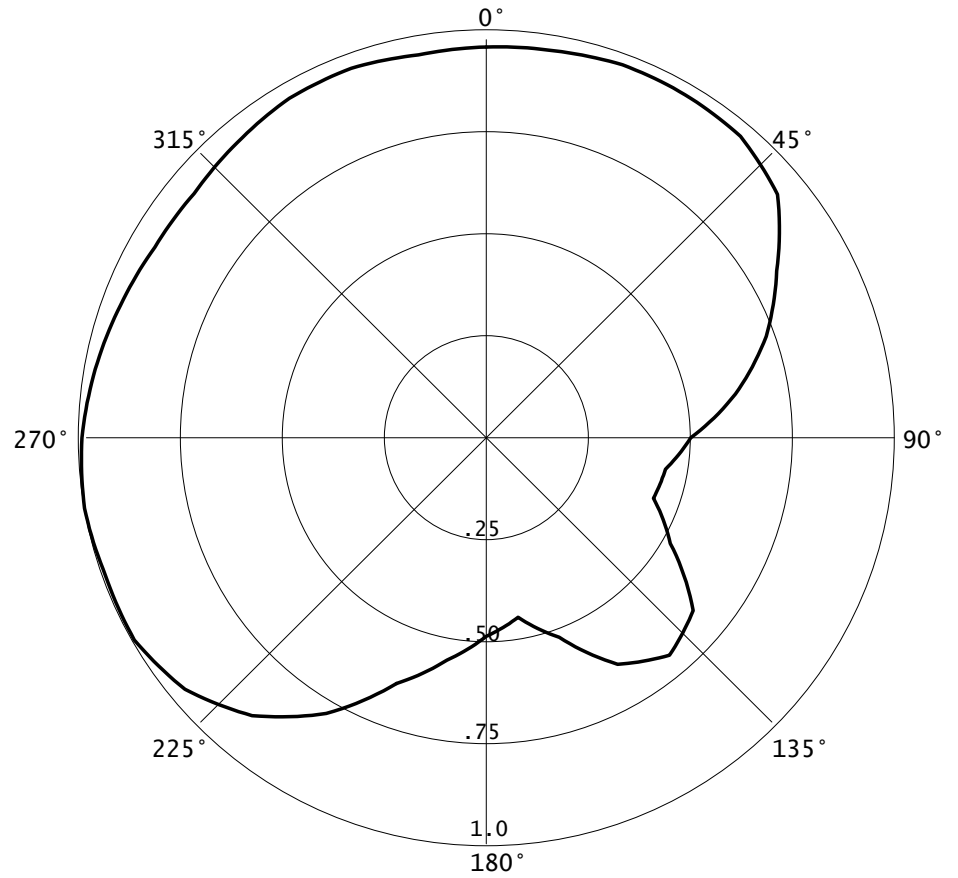
E1C

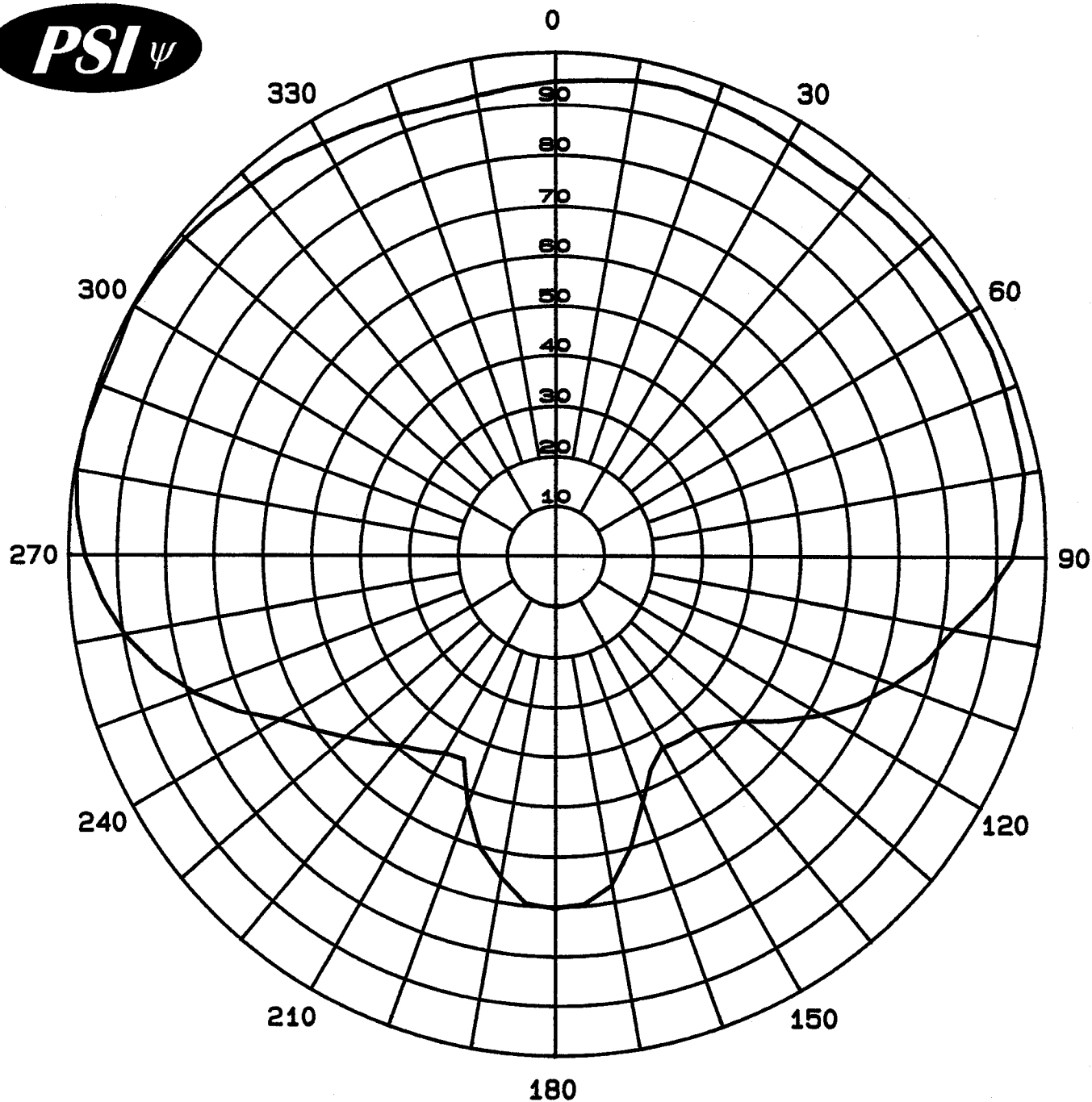
03-29-2013

RMS(V)= .824

Graph is Relative Field

Azi	Field	dBk	kw
000	0.962	-14.316	0.037
010	0.967	-14.271	0.037
020	0.977	-14.182	0.038
030	0.975	-14.199	0.038
040	0.969	-14.253	0.038
050	0.932	-14.591	0.035
060	0.822	-15.682	0.027
070	0.730	-16.713	0.021
080	0.620	-18.132	0.015
090	0.501	-19.983	0.010
100	0.446	-20.993	0.008
110	0.436	-21.190	0.008
120	0.521	-19.643	0.011
130	0.662	-17.562	0.018
140	0.699	-17.090	0.020
150	0.644	-17.802	0.017
160	0.523	-19.609	0.011
170	0.449	-20.934	0.008
180	0.489	-20.193	0.010
190	0.556	-19.078	0.012
200	0.644	-17.802	0.017
210	0.784	-16.093	0.025
220	0.893	-14.962	0.032
230	0.964	-14.298	0.037
240	0.996	-14.014	0.040
250	0.993	-14.040	0.039
260	1.000	-13.979	0.040
270	0.991	-14.058	0.039
280	0.973	-14.217	0.038
290	0.954	-14.388	0.036
300	0.938	-14.535	0.035
310	0.935	-14.563	0.035
320	0.949	-14.434	0.036
330	0.965	-14.289	0.037
340	0.968	-14.262	0.037
350	0.957	-14.361	0.037





Azimuth Plane Pattern
Composite Relative Field
Antenna Model: PSIFMT-2A-3DB
Type: Directional Translator
Polarization: Circular
Number of Bays: Two
Gain: 1.55 (1.90 dB)
Date: 11-1-2011

Propagation Systems Inc.
PO Box 113
Ebensburg, PA 15931



Composite Azimuth Pattern Tabulation

Antenna Model: PSIFMT-2A-3DB

Gain: 1.55 (1.90 dB)

Angle	Relative Field	Power Gain	Gain (dBd)
0	0.949	1.40	1.45
10	0.965	1.44	1.59
20	0.968	1.45	1.62
30	0.957	1.42	1.52
40	0.962	1.43	1.57
50	0.967	1.45	1.61
60	0.977	1.48	1.70
70	0.975	1.47	1.68
80	0.969	1.46	1.63
90	0.932	1.35	1.29
100	0.822	1.05	0.20
110	0.730	0.83	-0.83
120	0.620	0.60	-2.25
130	0.501	0.39	-4.10
140	0.446	0.31	-5.11
150	0.436	0.29	-5.31
160	0.521	0.42	-3.76
170	0.662	0.68	-1.68
180	0.699	0.76	-1.21
190	0.644	0.64	-1.92
200	0.523	0.42	-3.73
210	0.449	0.31	-5.05
220	0.489	0.37	-4.31
230	0.556	0.48	-3.20
240	0.644	0.64	-1.92
250	0.784	0.95	-0.21
260	0.893	1.24	0.92
270	0.964	1.44	1.58
280	0.996	1.54	1.87
290	0.993	1.53	1.84
300	1.000	1.55	1.90
310	0.991	1.52	1.82
320	0.973	1.47	1.67
330	0.954	1.41	1.49
340	0.938	1.36	1.35
350	0.935	1.36	1.32





Propagation Systems Inc.

Elevation Pattern Tabulation

Antenna: PSIFML-2 Special

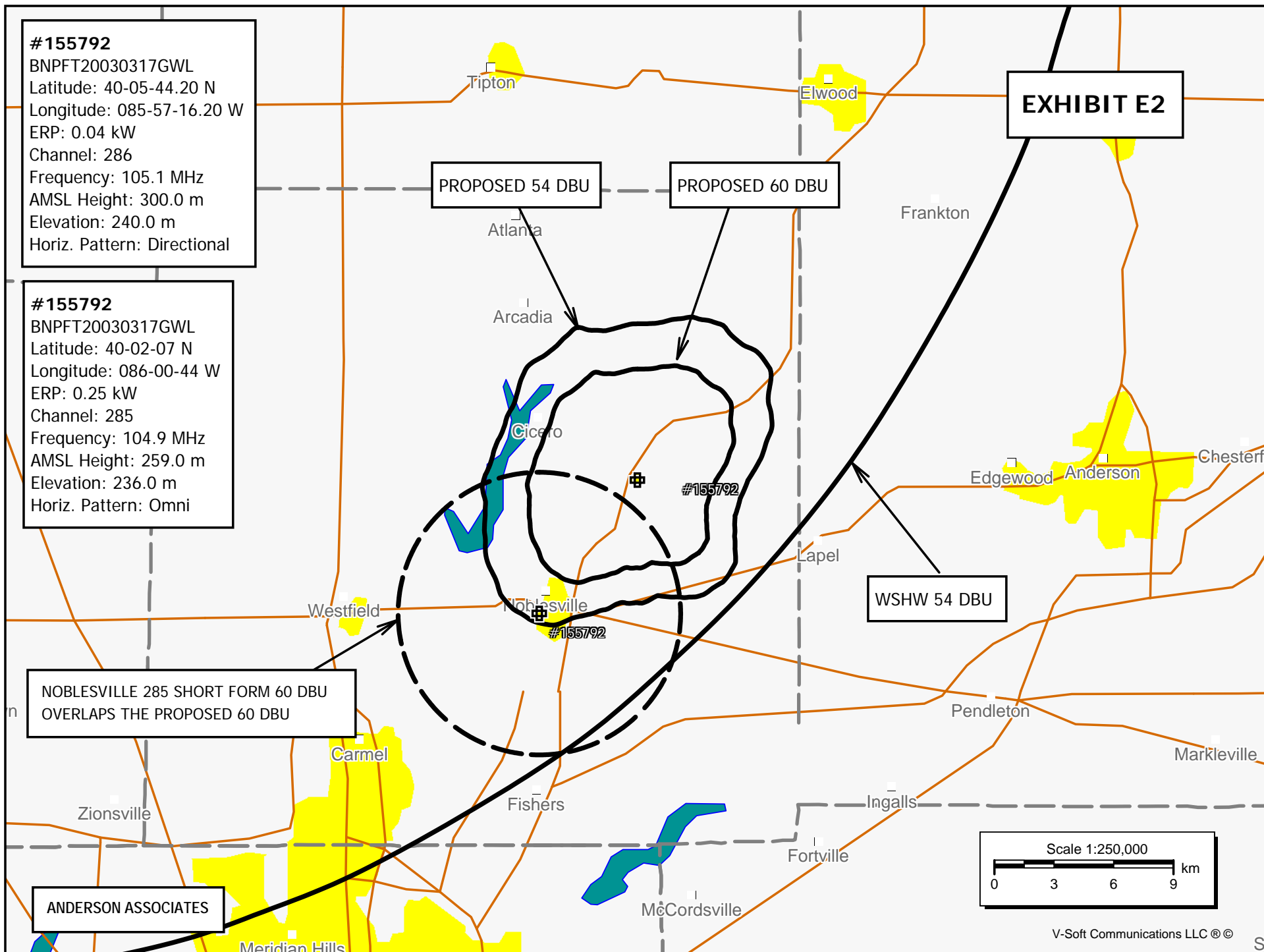
Bay spacing: 3/4 wave

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
-90.0	0.001	-60.000	-50.0	0.149	-16.513	-10.0	0.903	-0.883
-89.0	0.012	-38.221	-49.0	0.135	-17.364	-9.0	0.921	-0.713
-88.0	0.025	-32.201	-48.0	0.120	-18.405	-8.0	0.937	-0.561
-87.0	0.037	-28.679	-47.0	0.104	-19.677	-7.0	0.952	-0.429
-86.0	0.049	-26.207	-46.0	0.086	-21.289	-6.0	0.964	-0.315
-85.0	0.061	-24.285	-45.0	0.068	-23.404	-5.0	0.975	-0.219
-84.0	0.073	-22.748	-44.0	0.048	-26.425	-4.0	0.984	-0.139
-83.0	0.085	-21.443	-43.0	0.027	-31.481	-3.0	0.991	-0.079
-82.0	0.096	-20.349	-42.0	0.005	-46.848	-2.0	0.996	-0.036
-81.0	0.107	-19.378	-41.0	0.018	-34.664	-1.0	0.999	-0.009
-80.0	0.118	-18.538	-40.0	0.043	-27.417	0.0	1.000	0.000
-79.0	0.129	-17.792	-39.0	0.068	-23.365	1.0	0.999	-0.009
-78.0	0.139	-17.125	-38.0	0.094	-20.529	2.0	0.996	-0.036
-77.0	0.149	-16.522	-37.0	0.121	-18.329	3.0	0.991	-0.079
-76.0	0.159	-15.984	-36.0	0.149	-16.531	4.0	0.984	-0.139
-75.0	0.168	-15.508	-35.0	0.178	-14.998	5.0	0.975	-0.219
-74.0	0.176	-15.072	-34.0	0.207	-13.669	6.0	0.964	-0.315
-73.0	0.184	-14.685	-33.0	0.237	-12.489	7.0	0.952	-0.429
-72.0	0.192	-14.335	-32.0	0.268	-11.431	8.0	0.937	-0.561
-71.0	0.199	-14.026	-31.0	0.299	-10.475	9.0	0.921	-0.713
-70.0	0.205	-13.752	-30.0	0.331	-9.602	10.0	0.903	-0.882
-69.0	0.211	-13.518	-29.0	0.363	-8.801	11.0	0.884	-1.072
-68.0	0.216	-13.315	-28.0	0.395	-8.061	12.0	0.863	-1.279
-67.0	0.220	-13.146	-27.0	0.428	-7.377	13.0	0.841	-1.508
-66.0	0.224	-13.009	-26.0	0.460	-6.742	14.0	0.817	-1.757
-65.0	0.226	-12.904	-25.0	0.493	-6.151	15.0	0.792	-2.029
-64.0	0.228	-12.834	-24.0	0.525	-5.599	16.0	0.765	-2.322
-63.0	0.229	-12.800	-23.0	0.557	-5.083	17.0	0.738	-2.639
-62.0	0.229	-12.794	-22.0	0.589	-4.603	18.0	0.710	-2.979
-61.0	0.228	-12.829	-21.0	0.620	-4.154	19.0	0.680	-3.344
-60.0	0.227	-12.898	-20.0	0.650	-3.736	20.0	0.650	-3.736
-59.0	0.224	-13.009	-19.0	0.680	-3.344	21.0	0.620	-4.154
-58.0	0.220	-13.158	-18.0	0.710	-2.979	22.0	0.589	-4.603
-57.0	0.215	-13.351	-17.0	0.738	-2.639	23.0	0.557	-5.083
-56.0	0.209	-13.600	-16.0	0.765	-2.323	24.0	0.525	-5.599
-55.0	0.202	-13.894	-15.0	0.792	-2.029	25.0	0.493	-6.151
-54.0	0.194	-14.260	-14.0	0.817	-1.759	26.0	0.460	-6.742
-53.0	0.184	-14.685	-13.0	0.840	-1.510	27.0	0.428	-7.377
-52.0	0.174	-15.192	-12.0	0.863	-1.281	28.0	0.395	-8.061
-51.0	0.162	-15.795	-11.0	0.884	-1.072	29.0	0.363	-8.801
						30.0	0.331	-9.602

file: FML 2-bay elevation tabulation

revision: A

Date: 1/28/08





Antenna Structure Registration

[FCC](#) > [WTB](#) > [ASR](#) > [Online Systems](#) > ASR Search

[FCC Site Map](#)

ASR Registration Search

Registration 1280796

[? HELP](#)

[New Search](#) [Return to Results](#) [Printable Page](#) [Reference Copy](#) [Map Registration](#)

Registration Detail

Reg Number	1280796	Status	Constructed
File Number	A0819849	Constructed	12/19/2007
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

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

Location (in NAD83 Coordinates - [Convert to NAD27](#))

Lat/Long	40-05-44.4 N 085-57-16.2 W	Address	Noblesville, IN (272463)
City, State	Noblesville , IN		
Zip	46060	County	HAMILTON
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
247.2	79.2
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
326.4	79.2

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	2011-AGL-5484-OE	FAA Issue Date	10/05/2011
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Output from NADCON for station NOBLESVILLE

North American Datum Conversion

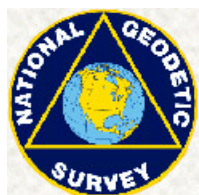
NAD 83 to NAD 27

NADCON Program Version 2.11

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Transformation #: 1 Region: Conus

	Latitude	Longitude
NAD 27 datum values:	40 05 44.26573	85 57 16.26141
NAD 83 datum values:	40 05 44.40000	85 57 16.20000
NAD 27 - NAD 83 shift values:	-0.13427	0.06141(secs.)
	-4.141	1.455 (meters)
Magnitude of total shift:		4.389(meters)



[NGS HOME PAGE](http://www.ngs.noaa.gov/cgi-bin/nadcon.prl3/28/2013)http://www.ngs.noaa.gov/cgi-bin/nadcon.prl3/28/2013 11:29 AM