



**Jim Turvaville, CSRE**  
**SBE Certified Senior Radio Engineer**

***Turbo Technical Services***

4825-104 Garden Ranch Drive, Colorado Springs, CO 80918  
Phone: 719-459-1859 Fax: 719-278-4339

**EXHIBIT 12**  
**TURBO TECHNICAL SERVICES**  
**COMPREHENSIVE TECHNICAL STATEMENT**

**NEW TRANSLATOR, SMYRNA, TN FACID 158603**

**FCC FORM 349**

This Technical Statement is in support of FCC form 349 Auction 83 Long Form Application filed by Turbo Technical Services ("TTS") for a new FM translator station to serve Smyrna, Tennessee. The original "Tech Box" submission in 2003 specified a location which is no longer available to the applicant for filing this long-form request. Therefore, this application is requesting a change of transmitter location of 4.37km, modification of height above average terrain and an increase in effective radiated power to 30 watts on the originally requested Channel 244-D at a registered tower, ASRN 1227349 at Smyrna, Tennessee. TTS has obtained assurance from Middle Tennessee Two-Way, Inc., the owner of the tower structure, for the filing of this application and the construction of the facility thereupon, if granted.

The translator is proposed to provide fill-in service for AM station WNSR, Brentwood, Tennessee. A single -bay vertically polarized ground-plane non-directional FM antenna, Scala Model GP-FM, will be utilized and demonstrated to provide protection to adjacent channel facilities and ensure that the 60dBu (50,50) contour of the translator remains within the 2mV/m daytime contour of WNSR. TTS has obtained written permission from Southern Wabash Communications of Middle Tennessee, Inc., licensee of WNSR, to rebroadcast the AM station on the translator facility.

**LPFM CONSIDERATION**

The proposed destination of the facility, Smyrna, Tennessee is inside the Nashville urbanized area which is also a pending translator settlement market. The site is located in Rutherford County which is inside the Nashville, Tennessee Arbitron market, a Top-50 ranked and "Spectrum Available" designated market. Currently a series of other Auction 83 Singleton Applications within the Nashville Arbitron market are also being prosecuted. While this application requests a tower location different from the original short-form filing, this proposal will not result in a transmitter site located within 39 km of any "Spectrum Limited" market grid and/or at any out-of-grid location within a Spectrum Limited top-50 market. Further, this proposal will not result in a transmitter site that will eliminate any LPFM channel/point combination in this market or in any of the other "Appendix A market" grids.

From the FCC LPFM Grid Tool for the Metro Nashville consideration, we find that only one point is listed for both Least Preclusive and Most Preclusive spacings for Channel 244 in the entire market which is Point #953 at 36-16-57 087-02-04.

Chan	Avail	Chan	Avail	Chan	Avail	Chan	Avail	Chan	Avail
200	0	220	0	240	567	260	0	280	18
201	0	221	0	241	0	261	0	281	32
202	0	222	0	242	0	262	0	282	0
203	0	223	0	243	0	263	254	283	0
204	0	224	0	244	2	264	273	284	0
205	0	225	0	245	0	265	0	285	149
206	0	226	0	246	0	266	0	286	75
207	0	227	131	247	0	267	0	287	21
208	0	228	0	248	0	268	238	288	0
209	0	229	0	249	0	269	294	289	0
210	0	230	0	250	0	270	122	290	0
211	0	231	0	251	0	271	0	291	0
212	0	232	0	252	62	272	0	292	0
213	0	233	0	253	89	273	0	293	0
214	0	234	0	254	0	274	0	294	0
215	0	235	0	255	0	275	0	295	0
216	0	236	0	256	17	276	0	296	143
217	0	237	0	257	146	277	0	297	0
218	0	238	0	258	0	278	0	298	0
219	0	239	0	259	0	279	214	299	0
								300	68

That single channel/point combination is noted on Attachment 6 which demonstrates that this minor change to the originally filed short-form location will not preclude the potential operation of an LPFM at this location. As such, it is the opinion of the applicant that this proposal meets the requirement in FCC 12-29 ¶ 46.

### FILL-IN STATUS

TTS certifies that the proposal is for a fill-in translator entirely within the primary station's protected contour and a 25-mile radius centered at the AM primary station's transmitter site. See map as Attachment 1 demonstrating compliance. The facility will be classified to be a fill-in translator signal for AM station WNSR.

### OVERLAP REQUIREMENTS

The Map of Contours as Attachment 2 and Channel Study Data Chart as Attachment 3 depict the proposed allocation situation with respect to all pertinent co and adjacent facilities. All facilities have been depicted utilizing either the maximum ERP or directional pattern data as on file with the commission and 1 degree radial intervals on close in contours in the interest of accuracy. AAT data for the proposed facility was derived from the FCC's 30 second database, ComStudy.

As seen on the Map of Contours, channel 244-D is operable at the proposed location with the proposed antenna and technical parameters with following facility notes:

- In compliance with 47 CFR 74.1204(g) the proposed facility operates at an effective radiated power which is not over 100 watts, therefore protection to intermediate frequency facilities has not been calculated.
- The proposed location is within the protected 60dbu (50,50) contour of second-adjacent station WCJK (FM) channel 242C-1 Murfreesboro, Tennessee, located 36.62km away. Therefore, an interference analysis has been conducted based on the U/D ratio of +40 dB at the proposed site. The signal of WCJK(FM) at the proposed location is 76.90 dBu (50,50) making the relevant interfering contour of the proposed facility 116.90 dBu (50,10). The free-space distance to that interfering contour utilizing the worse-case calculations of a dipole antenna is 54.89 meters.
- The proposed location is within the protected 60dbu (50,50) contour of second-adjacent station WLVU (FM) channel 246C-2 Belle Meade, Tennessee, located 38.19km away. Therefore, an interference analysis has been conducted based on the U/D ratio of +40 dB at the proposed site. The signal of WLVU(FM) at the proposed location is 68.50 dBu (50,50) making the relevant interfering contour of the proposed facility 108.50 dBu (50,10). The free-space distance to that interfering contour utilizing the worse-case calculations of a dipole antenna is 144.39 meters.
- The Aerial Photo in Attachment 4 is an accurate representation of the location of the tower structure of the proposed site for the proposed translator and the surrounding terrain and surface construction. This photo demonstrates that the largest of the above interfering contours, the 108.50dBu (50,10) contour falls well within the protected private area of the tower site. There is no public access or dwellings where humans are present within this interfering contour.
- Further, TTS proposes to utilize the Scala GP-FM ground plane FM antenna with the vertical radiation characteristics noted in Attachment 5 which will be used to prohibit either of the above noted interfering contours from reaching the ground or coming in contact with the general public in any manner.

With no buildings or other structures equal to or exceeding the tower height in the area, the interfering contour is clearly not within the reach of any population or any location where the general public would be present at any time.

Based on this showing, a waiver of Section 74.1204 is requested in accordance with *Living Way Ministries, Inc. (FCC 08-242)* on the basis of zero population in the area of interference.

## MULTIPLE TRANSLATORS

Applicant certifies that it does not have any interest in an application or an authorization for an FM Translator station that serves substantially the same area and rebroadcasts the same signal as the Proposed FM translator station.

## ENVIRONMENTAL PROTECTION ACT

Section 1.1307(b)(1) of the commission's rules exempts fm translators and boosters operating with an effective radiated power of 100 watts or less from the requirement to submit an environmental assessment to determine compliance with FCC specified guidelines for human exposure to radiofrequency radiation. The applicant proposes operation with an effective radiated power of 30 watts and therefore no calculations have been submitted.

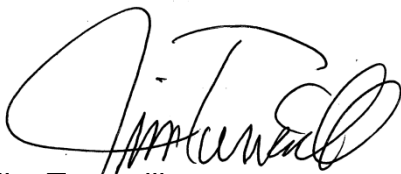
TTS also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic fields in excess of FCC guidelines.

Attachments:

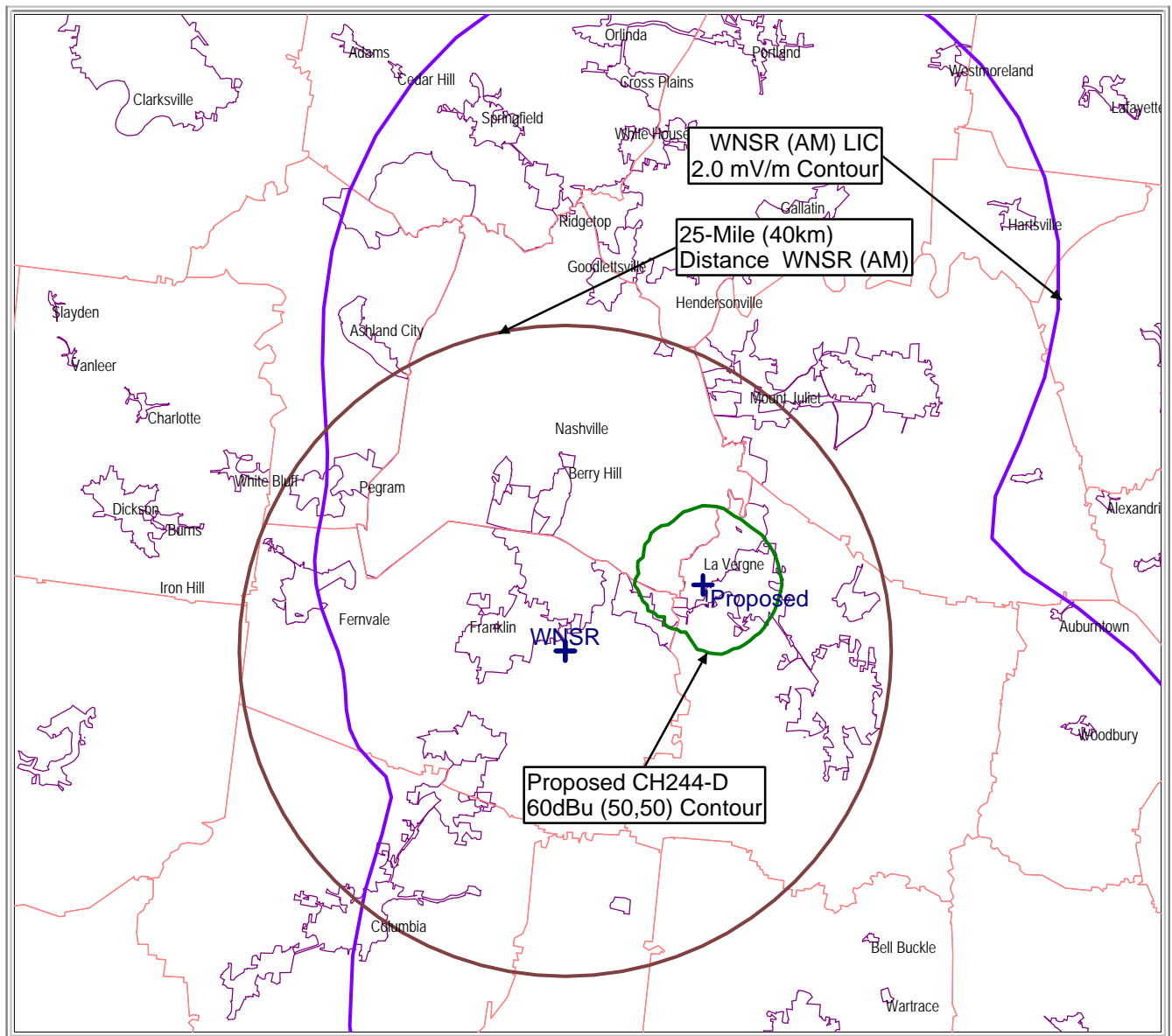
- 1- Primary Station Contour vs Proposed Fill-in Translator Contour Map
- 2- Map of Interfering Contours
- 3- Channel Study Data Chart
- 4- Aerial Photo of Tower Location
- 5- Scala GP-FM Antenna Manufacturer Data Sheet
- 6- LPFM Non-Preclusion Map

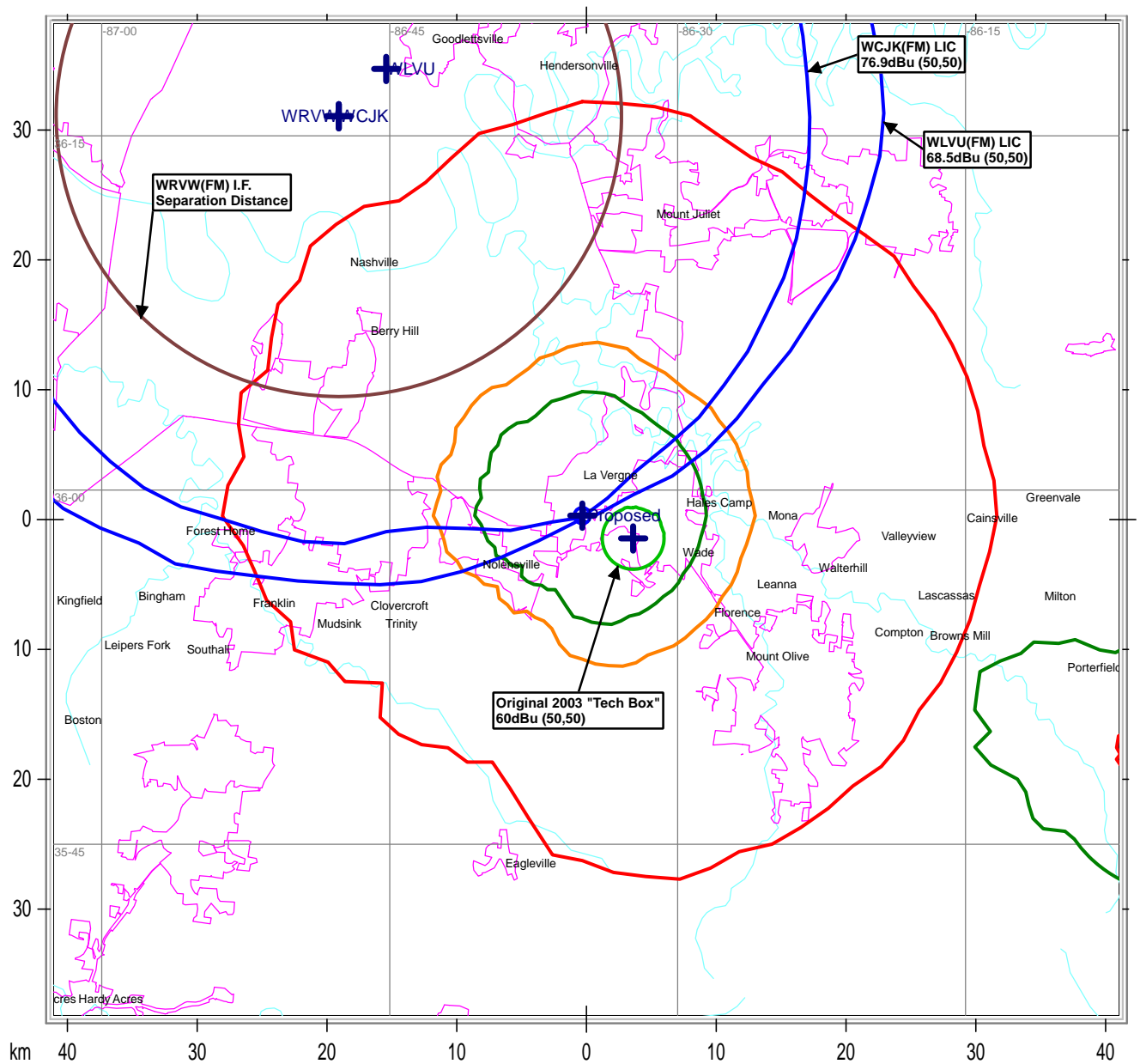
In summary, it was determined that the new proposed operation at Smyrna, Tennessee Channel 244-D can meet all of the technical requirements under current FCC rules.

Respectfully,

A handwritten signature in black ink, appearing to read 'Jim Turville', with a large, stylized initial 'J' and 'T'.

Jim Turville  
SBE Certified Senior Radio Engineer





National Borders    State Borders    City Borders    Water Features    Lat/Lon Grid

**Attachment #3**  
**Turbo Technical Services**

ComStudy 2.2  
 Search of channel 244  
 (96.7 MHz Class D)  
 at  
 35-58-55.0 N, 86-34-58.0 W.

CALL	CITY	ST CHN CL	DIST	SEP	BRNG	CLEARANCE
NEW	SMYRNA	TN 244 D	4.37	0.00	114.3	-43.77 dB
(This Tech Box 2003 Submission - Mutually Exclusive)						
WCJK	MURFREESBORO	TN 242 C1	36.62	75.00	328.9	-17.32 dB
(Adjacent Channel waiver Requested in Narrative)						
WLVU	BELLE MEADE	TN 246 C2	38.19	55.00	336.5	-9.04 dB
(Adjacent Channel waiver Requested in Narrative)						
DW244CJ	WOODBURY	TN 244 D	50.79	0.00	112.5	6.77 dB
WBVR-FM	AUBURN	KY 244 C2	99.89	166.00	16.8	7.94 dB
WRVW	LEBANON	TN 298 C1	36.60	22.00	328.9	14.60 dB
WNKX-FM	CENTERVILLE	TN 244 A	90.51	115.00	259.3	15.57 dB
WCJK	MURFREESBORO	TN 242 C1	17.27	75.00	48.2	18.03 dB
WLVU*	BELLE MEADE	TN 246 C2	38.19	55.00	336.5	23.45 dB
WNKX-FM	CENTERVILLE	TN 244 A	90.51	115.00	259.3	23.86 dB
WRS-A-FM	HOLLY POND	AL 245 C0	165.60	152.00	181.4	26.04 dB
WBVR-FM	AUBURN	KY 244 C2	118.22	166.00	6.0	28.22 dB
WUUQ	SOUTH PITTSBURG	TN 247 C2	141.34	55.00	142.3	31.94 dB
861216MD	GOODLETTSVILLE	TN 246 C2	38.82	55.00	5.3	32.34 dB
WXFL	FLORENCE	AL 241 C2	140.70	55.00	212.0	33.56 dB
WDOD-FM	CHATTANOOGA	TN 243 C0	146.40	152.00	128.2	34.78 dB
W243CH	HOPKINSVILLE	KY 243 D	126.22	0.00	321.0	36.55 dB
W243CH	HOPKINSVILLE	KY 243 D	126.22	0.00	321.0	36.32 dB
WSTO	OWENSBORO	KY 241 C	210.34	95.00	341.1	37.20 dB
WDDJ	PADUCAH	KY 245 C1	217.11	133.00	303.8	37.42 dB
WJNU-LP	COOKEVILLE	TN 245 LP100	104.41	56.00	75.9	37.73 dB
W245BJ	CROSSVILLE	TN 245 D	139.59	0.00	91.0	37.98 dB



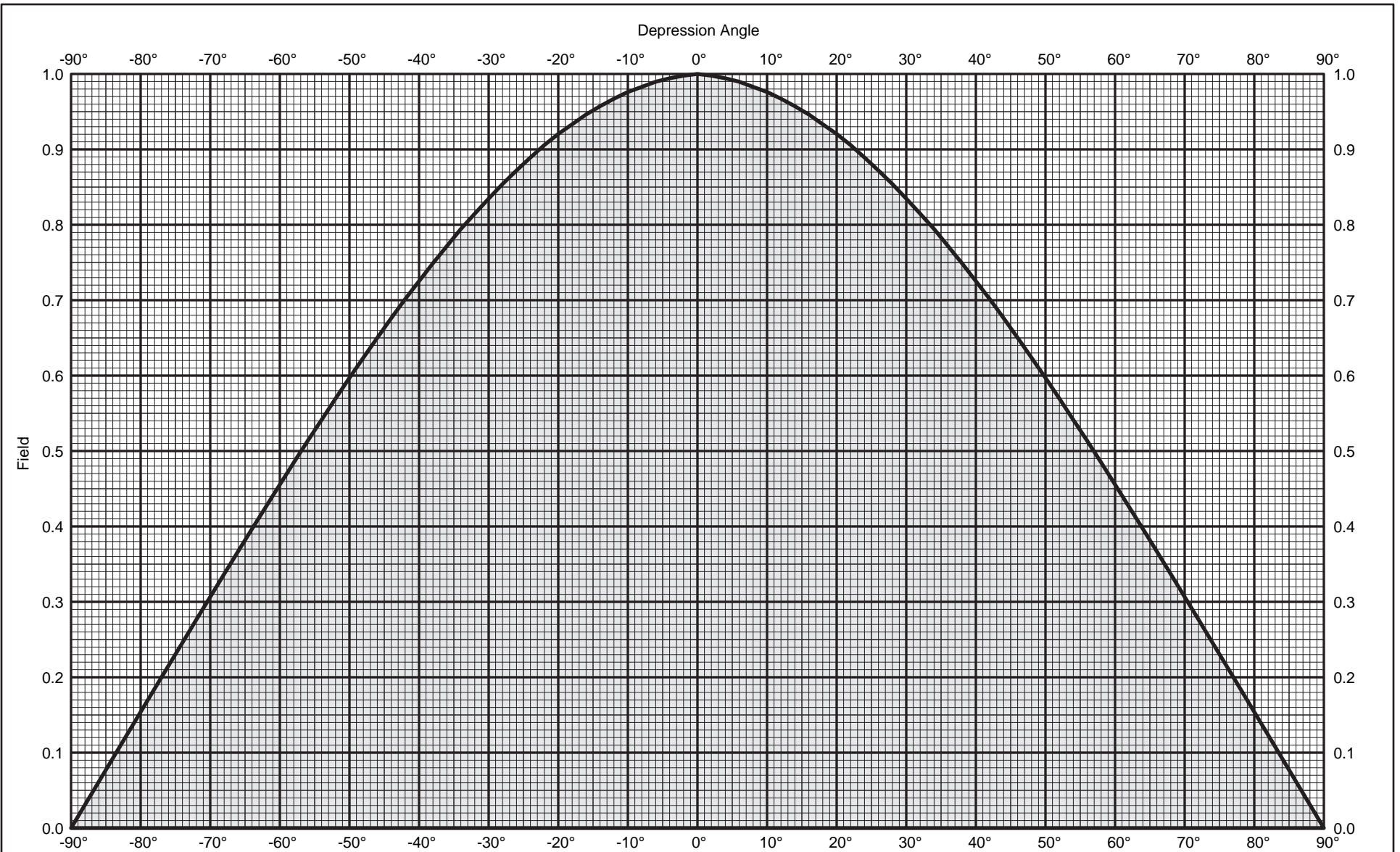
World • United States • TN • Rutherford Co. • La Vergne

Actual Proposed  
108.5 dBu (50,10)  
Contour 144.39 m

NEW FM Translator  
Channel 244-D  
35-58-55.0 N  
86-34-58.0 W  
HAGL: 40m  
HAMSL: 314m  
HAAT: 129m  
Tower: ASRN 1227349

250 feet 50 m





GP-FM Groundplane

FM

Maximum gain: 0.0 dBd

Vertical polarization

Vertical radiation pattern

0 degree electrical downtilt



GP-FM Groundplane

FM

Maximum gain: 0.0 dBd

Vertical polarization

Vertical radiation pattern

0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	0.00	1.00	45	0.663	-3.57	-3.57	0.44
1	0.999	-0.01	-0.01	1.00	46	0.650	-3.74	-3.74	0.42
2	0.998	-0.02	-0.02	1.00	47	0.637	-3.92	-3.92	0.41
3	0.996	-0.03	-0.03	0.99	48	0.624	-4.10	-4.10	0.39
4	0.994	-0.05	-0.05	0.99	49	0.610	-4.29	-4.29	0.37
5	0.992	-0.07	-0.07	0.98	50	0.597	-4.48	-4.48	0.36
6	0.990	-0.09	-0.09	0.98	51	0.583	-4.68	-4.68	0.34
7	0.986	-0.12	-0.12	0.97	52	0.570	-4.89	-4.89	0.32
8	0.983	-0.15	-0.15	0.97	53	0.555	-5.11	-5.11	0.31
9	0.979	-0.18	-0.18	0.96	54	0.541	-5.33	-5.33	0.29
10	0.976	-0.21	-0.21	0.95	55	0.527	-5.56	-5.56	0.28
11	0.972	-0.25	-0.25	0.94	56	0.513	-5.79	-5.79	0.26
12	0.967	-0.29	-0.29	0.94	57	0.499	-6.04	-6.04	0.25
13	0.962	-0.33	-0.33	0.93	58	0.485	-6.29	-6.29	0.23
14	0.957	-0.38	-0.38	0.92	59	0.470	-6.56	-6.56	0.22
15	0.952	-0.43	-0.43	0.91	60	0.456	-6.83	-6.83	0.21
16	0.946	-0.48	-0.48	0.90	61	0.441	-7.12	-7.12	0.19
17	0.940	-0.54	-0.54	0.88	62	0.426	-7.41	-7.41	0.18
18	0.933	-0.60	-0.60	0.87	63	0.411	-7.71	-7.71	0.17
19	0.927	-0.66	-0.66	0.86	64	0.397	-8.03	-8.03	0.16
20	0.920	-0.72	-0.72	0.85	65	0.382	-8.36	-8.36	0.15
21	0.913	-0.79	-0.79	0.83	66	0.367	-8.71	-8.71	0.13
22	0.906	-0.86	-0.86	0.82	67	0.352	-9.07	-9.07	0.12
23	0.897	-0.94	-0.94	0.81	68	0.337	-9.45	-9.45	0.11
24	0.889	-1.02	-1.02	0.79	69	0.322	-9.85	-9.85	0.10
25	0.881	-1.10	-1.10	0.78	70	0.307	-10.27	-10.27	0.09
26	0.872	-1.19	-1.19	0.76	71	0.291	-10.71	-10.71	0.08
27	0.863	-1.28	-1.28	0.74	72	0.276	-11.17	-11.17	0.08
28	0.854	-1.37	-1.37	0.73	73	0.261	-11.67	-11.67	0.07
29	0.844	-1.47	-1.47	0.71	74	0.246	-12.19	-12.19	0.06
30	0.835	-1.57	-1.57	0.70	75	0.231	-12.75	-12.75	0.05
31	0.825	-1.67	-1.67	0.68	76	0.215	-13.34	-13.34	0.05
32	0.815	-1.78	-1.78	0.66	77	0.200	-13.98	-13.98	0.04
33	0.805	-1.89	-1.89	0.65	78	0.185	-14.67	-14.67	0.03
34	0.794	-2.00	-2.00	0.63	79	0.169	-15.42	-15.42	0.03
35	0.783	-2.12	-2.12	0.61	80	0.154	-16.25	-16.25	0.02
36	0.772	-2.25	-2.25	0.60	81	0.139	-17.16	-17.16	0.02
37	0.760	-2.38	-2.38	0.58	82	0.123	-18.18	-18.18	0.02
38	0.749	-2.51	-2.51	0.56	83	0.108	-19.34	-19.34	0.01
39	0.737	-2.65	-2.65	0.54	84	0.092	-20.68	-20.68	0.01
40	0.725	-2.79	-2.79	0.53	85	0.077	-22.26	-22.26	0.01
41	0.713	-2.93	-2.93	0.51	86	0.062	-24.20	-24.20	0.00
42	0.701	-3.08	-3.08	0.49	87	0.046	-26.70	-26.70	0.00
43	0.689	-3.24	-3.24	0.47	88	0.031	-30.22	-30.22	0.00
44	0.676	-3.40	-3.40	0.46	89	0.015	-36.24	-36.24	0.00
					90	0.010	-40.00	-40.00	0.00

# Attachment #6 Turbo Technical Services

