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**ENGINEERING REPORT**

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**Texarkana, TX, Channel 259D FM Translator Application**

**ENGINEERING STATEMENT**

Juan Alberto Ayala ("Applicant") submits this technical minor amendment for its pending 2003 application for a new FM translator station at Texarkana, TX. The pending application file number is BNPFT-20030317ISP.

This filing includes a channel change from 257D to 259D in order to remove BNPFT-20030317ISP from Mutually Exclusive Group 461, thus making it a "Singleton" Application.

**PROTECTION TO BNPFT-20030317JOQ AND BNPFT-20030317IUC**

The two other pending applications that make up MX Group 461 (BNPFT-20030317JOQ and BNPFT-20030317IUC) propose service on channel 257D that is second-adjacent to the Applicant's amended facility. Using the well-established *Living Way Ministries* Methodology, no actual interference to any population is predicted to either BNPFT-20030317JOQ or BNPFT-20030317IUC.

Note that a rule waiver of Section 74.1204 for this second/third adjacent-channel protection using the well-established *Living Way Ministries* Methodology is respectfully requested if such a rule waiver is deemed necessary for protection to this station.

The F50,50 signal strength from BNPFT-20030317JOQ at the Applicant's transmitter site is 73 dBu (based on F50,50). The F50,50 signal strength from BNPFT-20030317IUC at the Applicant's transmitter site is 84 dBu (based on F50,50). The second/third adjacent-channel protection of Section 74.1204 is an undesired-to-desired ("U/D") dB signal strength ratio of 40:1. Therefore, the predicted interference level needed to protect both of the 257D facilities of the other two Group 461 applications is 113 dBu or greater.

Figure EE1 is the vertical plane relative field pattern for the proposed antenna. By adjusting for the vertical plane downward relative field values of the proposed antenna, it is herein demonstrated that the 113 dBu interfering signal (using a free space field determination) does not exist at any point a ground level. (Actually, the

study is made to 2 meters above ground level to account for a person's height.)

Attached as Figure EE2 is a tabulation of various points (at 2 meters above ground level) from the proposed translator tower base. (Column B is the different distances from the tower base to each studied point.) The actual distance from the antenna to each point is listed in Column C, the hypotenuse of the vertical height (Column A) and the horizontal distance (Column B). Because the calculated distance to the free space interfering signal (Column J) is less than the hypotenuse distance (Column C) for each studied point, the interfering signal does not reach any studied point. (In other words, the interfering signal does not make it to 2 meters above ground level to any point.) Therefore, pursuant to Section 74.1204(d) of the FCC Rules, both BNPFT-20030317JOQ and BNPFT-20030317IUC are adequately protected by the proposed facility.

The above study results of Figure EE2 assume uniform terrain elevation near the proposed tower. Because the clearance shown (Column C minus Column J values) is at least 57 meters for all rows, this assumption is acceptable for showing non-interference—no actual elevation within 400 meters of the proposed translator tower is at an elevation that is more than 20 meters above that of the tower base elevation.

#### **NO RECEIVED INTERFERENCE FROM BNPFT-20030317IUC**

The F50,50 signal strength from the proposed 259 facility at the BNPFT-20030317IUC transmitter site is 84 dBu (the “desired” signal). The second/third adjacent-channel protection of Section 74.1204 is an undesired-to-desired (“U/D”) dB signal strength ratio of 40:1. Therefore, predicted interference to the Applicant’s 259D facility from the proposed 257D facility is a signal of greater than or equal to 124 dBu.

The 124 dBu signal based on a free space field determination is predicted to extend out to 74 meters from the proposed 257D transmit antenna. Since BNPFT-20030317IUC proposes a transmit antenna height of 105 meters, the interfering signal level will not reach any point at ground level or at 2 meters above ground level. Therefore, pursuant to Section 74.1204(d) of the FCC Rules, no received interference results from BNPFT-20030317IUC.

#### **NO RECEIVED INTERFERENCE FROM BNPFT-20030317JOQ**

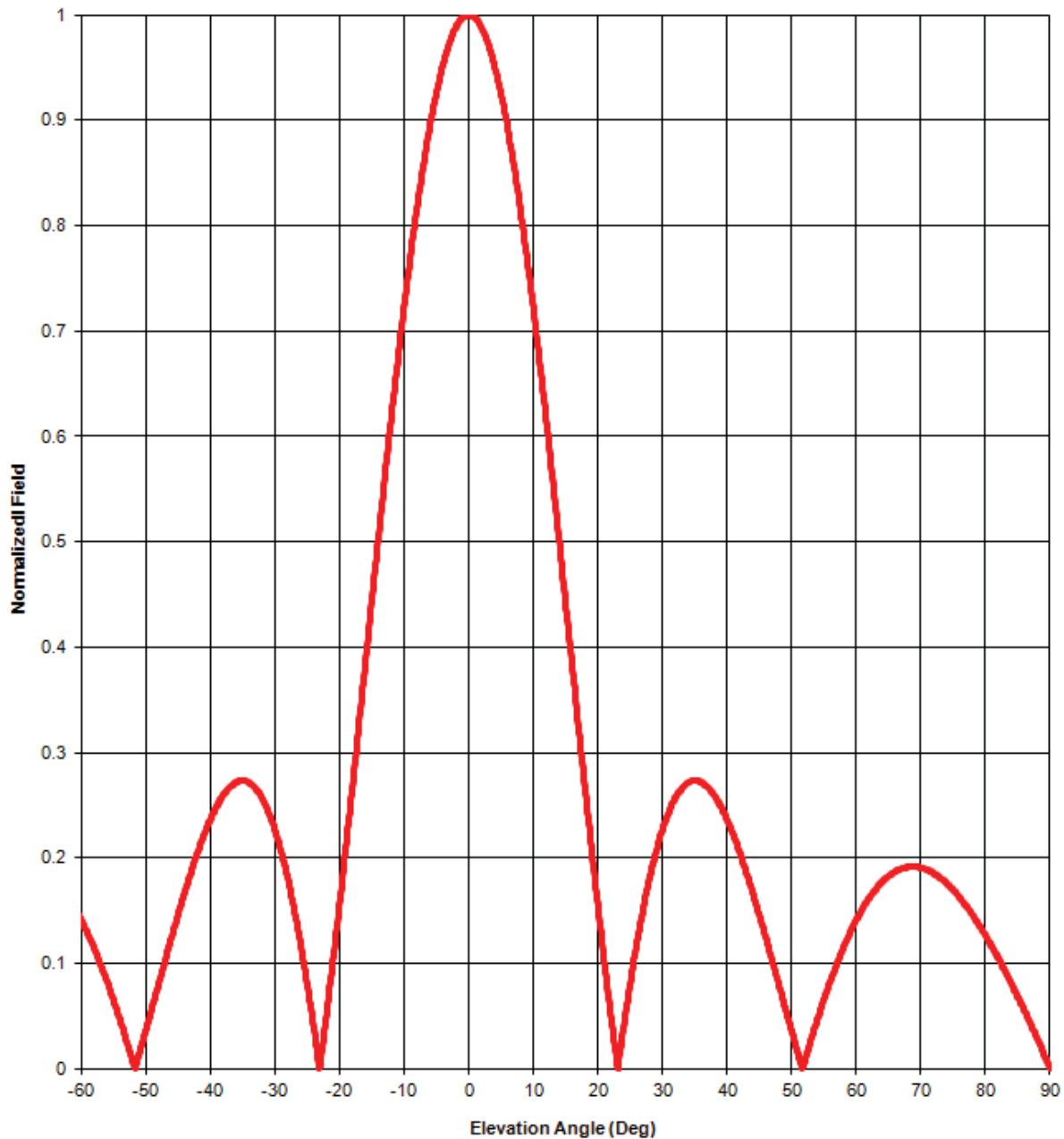
The F50,50 signal strength from the proposed 259 facility at the BNPFT-

20030317JOQ transmitter site is 75 dBu (the “desired” signal). The second/third adjacent-channel protection of Section 74.1204 is an undesired-to-desired (“U/D”) dB signal strength ratio of 40:1. Therefore, predicted interference to the Applicant’s 259D facility from the proposed 257D facility is a signal of greater than or equal to 115 dBu.

The 115 dBu signal based on a free space field determination is predicted to extend out to 198 meters from the proposed 257D transmit antenna. There are a few homes within this distance to the southwest of the channel 257D transmitter site but with the Scala CL-FM transmit antenna of BNPFT-20030317IUC aimed at 160 degrees True (as proposed), the 115 dBu signal towards any population extend only 57 meters from the transmit antenna to the southwest and does not reach any population. Furthermore, since any actual interference to the Applicant’s 259D facility from BNPFT-20030317IUC is 2<sup>nd</sup> adjacent-channel received interference, the applicant will accept any such interference that might actually exist (to a few homes to the southwest) in order to remove the MX with this application.

## Elevation pattern

FIGURE EE1 (PAGE 1 OF 2)



Antenna model: 6812b, 3-bay full-wave-spaced

Test frequency: 98.1 MHz

Gain (maximum):

Power	dB
1.55	1.91 dB

Document No. 6812b 3-bay fw (130701)

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FIGURE EE1 (PAGE 2 OF 2)

Degrees	Rel. Field	Degrees	Rel. Field	Degrees	Rel. Field	Degrees	Rel. Field	Degrees	Rel. Field
1	0.997	19	0.210	37	0.267	55	0.066	73	0.181
2	0.988	20	0.155	38	0.260	56	0.083	74	0.176
3	0.973	21	0.102	39	0.249	57	0.100	75	0.170
4	0.952	22	0.052	40	0.236	58	0.115	76	0.163
5	0.926	23	0.004	41	0.221	59	0.129	77	0.155
6	0.894	24	0.040	42	0.205	60	0.141	78	0.146
7	0.858	25	0.081	43	0.186	61	0.153	79	0.137
8	0.816	26	0.118	44	0.167	62	0.162	80	0.127
9	0.771	27	0.151	45	0.146	63	0.171	81	0.116
10	0.723	28	0.181	46	0.124	64	0.177	82	0.105
11	0.671	29	0.206	47	0.103	65	0.183	83	0.093
12	0.616	30	0.227	48	0.080	66	0.187	84	0.081
13	0.560	31	0.244	49	0.058	67	0.190	85	0.069
14	0.502	32	0.257	50	0.036	68	0.191	86	0.056
15	0.443	33	0.266	51	0.014	69	0.192	87	0.042
16	0.384	34	0.272	52	0.007	70	0.191	88	0.029
17	0.325	35	0.274	53	0.028	71	0.189	89	0.015
18	0.267	36	0.272	54	0.047	72	0.185	90	0.000

Elevation Pattern Tabulation

Antenna model: 6812b, 3-bay full-wave-spaced  
 Relative Field at 0° Depression = 1.000

## FIGURE EE2

### FREE SPACE FIELD STRENGTH AT A DISTANCE STUDY RESULTS

PROJECT: TEXARKANA, TX, CHANNEL 259D

8-Jul-13

	Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I	Column J
	Vertical	Horizontal	Hypotenuse	Downward			Pattern	Free	Adjusted	
	Distance	Distance	Distance	Angle			Relative	Space	ERP in	
	From	From	From	From			Field at	Inter-	Down-	
	Antenna	Tower	Antenna	Antenna	Max	Max	Down-	ferring	ward	OUTPUT
	Bottom	Base	Bottom	Bottom	ERP	ERP	ward	Signal	Angle	Distance
Point	(meters)	(meters)	(meters)	(degrees)	(watts)	(dBmW)	Angle	(dBu)	(dBmW)	(meters)
1	67	0.1	67.0	<a href="#">89.9</a>	100	<a href="#">50.00</a>	0.015	113.0	<a href="#">13.52</a>	2.4
2	67	10	67.7	<a href="#">81.5</a>	100	<a href="#">50.00</a>	0.116	113.0	<a href="#">31.29</a>	18.3
3	67	25	71.5	<a href="#">69.5</a>	100	<a href="#">50.00</a>	0.192	113.0	<a href="#">35.67</a>	30.3
4	67	40	78.0	<a href="#">59.2</a>	100	<a href="#">50.00</a>	0.129	113.0	<a href="#">32.21</a>	20.3
5	67	50	83.6	<a href="#">53.3</a>	100	<a href="#">50.00</a>	0.028	113.0	<a href="#">18.94</a>	4.4
6	67	70	96.9	<a href="#">43.7</a>	100	<a href="#">50.00</a>	0.186	113.0	<a href="#">35.39</a>	29.3
7	67	90	112.2	<a href="#">36.7</a>	100	<a href="#">50.00</a>	0.272	113.0	<a href="#">38.69</a>	42.9
8	67	110	128.8	<a href="#">31.3</a>	100	<a href="#">50.00</a>	0.244	113.0	<a href="#">37.75</a>	38.4
9	67	140	155.2	<a href="#">25.6</a>	100	<a href="#">50.00</a>	0.081	113.0	<a href="#">28.17</a>	12.8
10	67	170	182.7	<a href="#">21.5</a>	100	<a href="#">50.00</a>	0.102	113.0	<a href="#">30.17</a>	16.1
11	67	200	210.9	<a href="#">18.5</a>	100	<a href="#">50.00</a>	0.267	113.0	<a href="#">38.53</a>	42.1
12	67	250	258.8	<a href="#">15.0</a>	100	<a href="#">50.00</a>	0.443	113.0	<a href="#">42.93</a>	69.8
13	67	300	307.4	<a href="#">12.6</a>	100	<a href="#">50.00</a>	0.616	113.0	<a href="#">45.79</a>	97.1
14	67	400	405.6	<a href="#">9.5</a>	100	<a href="#">50.00</a>	1.000	113.0	<a href="#">50.00</a>	157.6

NOTE: Study point at 2 meters above ground level.

Worst-case relative field of 1.000 used for last examined point.

**RESULTS: COLUMN J DISTANCES ARE LESS THAN COLUMN C DISTANCES IN ALL INSTANCES; THEREFORE, INTERFERRING SIGNAL DOES NOT EXIST AT ANY LOCATION (TWO METERS OR LESS ABOVE GROUND LEVEL)**