

DELAWDER COMMUNICATIONS, INC.

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ENGINEERING REPORT

W228DF, Orlando, FL, Channel 228D Minor Mod (Facility Increase)

ENGINEERING STATEMENT

PROTECTION TO W226BT

All contour non-overlap protection requirements are met with the exception of W226BT, Orlando, FL (228D), discussed below.

W226BT (13 kilometers at 91 degrees True from 228D site) is second adjacent-channel to the proposed channel 228D facility. The 60 dBu F50,50 service contour of this station extends beyond the proposed 228D transmitter site. Using the well-established *Living Way Ministries* Methodology, no actual interference to any population is predicted to exist to W226BT.

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 any station.

The F50,50 signal strength from W226BT at the proposed 228D transmitter site is at least 62 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 W226BT from the proposed 228D facility is a signal of greater than or equal to 102 dBu.

The centerline for the proposed Scala CA2-FM/CP 5-bay (half wavelength spaced) antenna is 115 meters above ground level. The attached table (requested for use by the FCC for these studies) demonstrates that the 102 dBu interference signal is predicted to be at least 8.2 meters above ground level. (A vertical plane pattern is also attached.) There are no tall buildings near the site. Any second floor persons in a nearby building or home should be adequately protected based on the clearance shown on the table. Therefore, W226BT is adequately protected by the proposed facility.

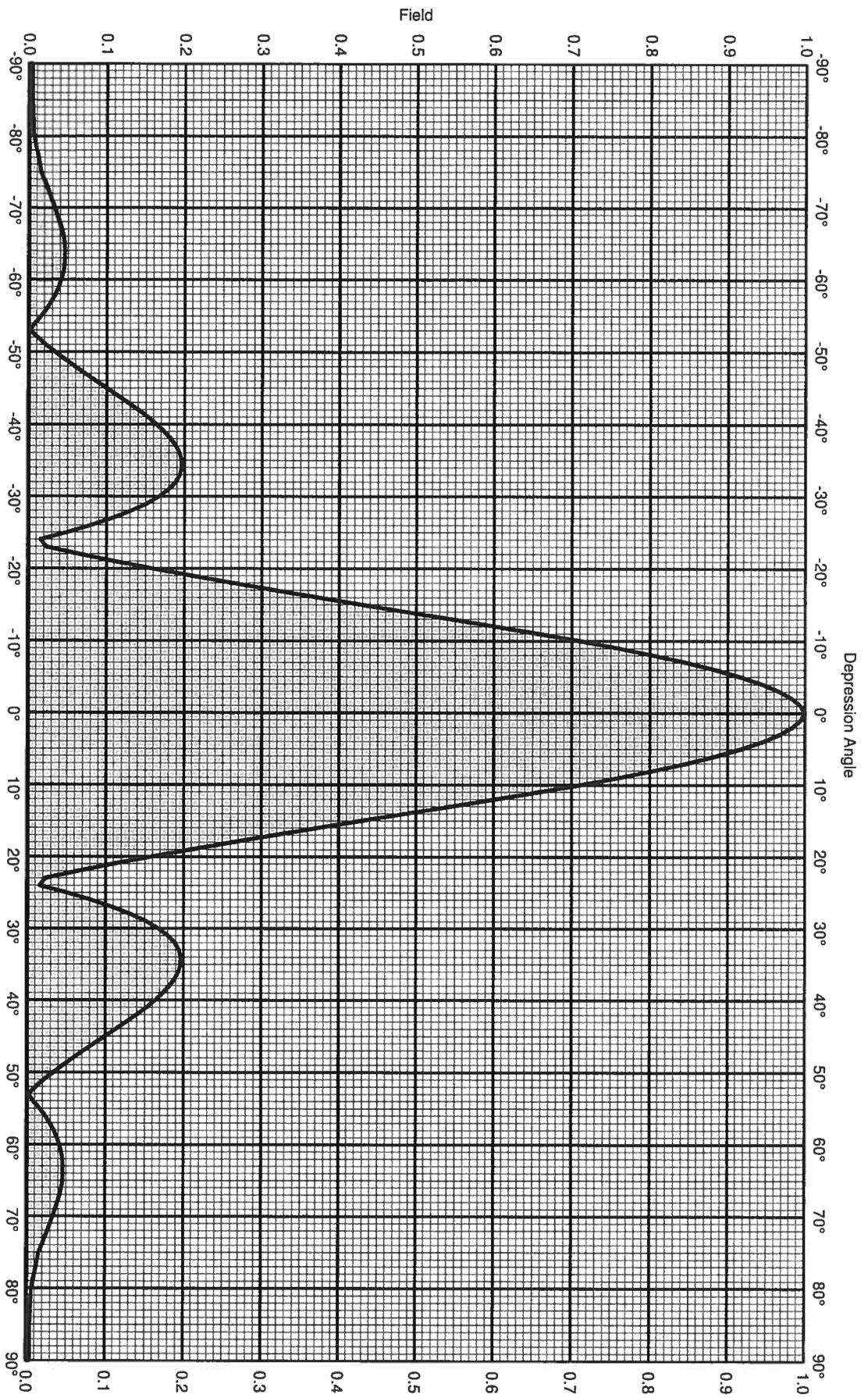
74.1204(d) Showing

Orlando, FL 228D
Scala CA2-FM/CP 5-bay HW

ERP (kw)	0.24
Height of Antenna above Ground (m)	115
Translator's IX Contour	102

<u>Depression Angle from Horizon</u>	<u>Antenna Relative Field</u>	<u>ERP (kw) from the Antenna RF</u>	<u>Dist. To IX Contour (m)</u>	<u>Height IX Contour Above Ground (m)</u>
0	1	0.2400	863.1885	115.000
5	0.917	0.2018	791.5438	46.012
10	0.712	0.1217	614.5902	8.278
15	0.43	0.0444	371.1710	18.934
20	0.159	0.0061	137.2470	68.059
25	0.051	0.0006	44.0226	96.395
30	0.168	0.0068	145.0157	42.492
35	0.196	0.0092	169.1849	17.960
40	0.164	0.0065	141.5629	24.005
45	0.1	0.0024	86.3188	53.963
50	0.034	0.0003	29.3484	92.518
55	0.016	0.0001	13.8110	103.687
60	0.042	0.0004	36.2539	83.603
65	0.046	0.0005	39.7067	79.014
70	0.033	0.0003	28.4852	88.233
75	0.015	0.0001	12.9478	102.493
80	0.01	0.0000	8.6319	106.499
85	0.01	0.0000	8.6319	106.401
90	0.01	0.0000	8.6319	106.368

Note: Input the ERP, Height of the antenna above Ground, the Calculated Translator IX contour, and the specified Antenna Relative Field Pat



5 x CA2-FM/HV Array

Frequency: 106.1 MHz (CH 291)

Gain: 9.8 dBd (x 9.5)

Horizontal Polarization

Vertical Stacked 0.5 wavelength

Vertical plane Pattern

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5 x CA2-FM/HV Array

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Vertical Stacked 0.5 wavelength

Vertical plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
-90	0.010	-40.00	-30.20	0.00	-45	0.100	-19.99	-10.19	0.10
-89	0.010	-40.00	-30.20	0.00	-44	0.114	-18.89	-9.09	0.12
-88	0.010	-40.00	-30.20	0.00	-43	0.127	-17.92	-8.12	0.15
-87	0.010	-40.00	-30.20	0.00	-42	0.140	-17.07	-7.27	0.19
-86	0.010	-40.00	-30.20	0.00	-41	0.152	-16.34	-6.54	0.22
-85	0.010	-40.00	-30.20	0.00	-40	0.164	-15.71	-5.91	0.26
-84	0.010	-40.00	-30.20	0.00	-39	0.174	-15.20	-5.40	0.29
-83	0.010	-40.00	-30.20	0.00	-38	0.182	-14.80	-5.00	0.32
-82	0.010	-40.00	-30.20	0.00	-37	0.189	-14.48	-4.68	0.34
-81	0.010	-40.00	-30.20	0.00	-36	0.193	-14.27	-4.47	0.36
-80	0.010	-40.00	-30.20	0.00	-35	0.196	-14.16	-4.36	0.37
-79	0.010	-40.00	-30.20	0.00	-34	0.196	-14.14	-4.34	0.37
-78	0.010	-40.00	-30.20	0.00	-33	0.194	-14.25	-4.45	0.36
-77	0.012	-38.59	-28.79	0.00	-32	0.189	-14.49	-4.69	0.34
-76	0.014	-37.31	-27.51	0.00	-31	0.180	-14.90	-5.10	0.31
-75	0.015	-36.22	-26.42	0.00	-30	0.168	-15.49	-5.69	0.27
-74	0.019	-34.29	-24.49	0.00	-29	0.152	-16.37	-6.57	0.22
-73	0.023	-32.75	-22.95	0.01	-28	0.132	-17.57	-7.77	0.17
-72	0.027	-31.51	-21.71	0.01	-27	0.109	-19.26	-9.46	0.11
-71	0.030	-30.47	-20.67	0.01	-26	0.082	-21.76	-11.96	0.06
-70	0.033	-29.61	-19.81	0.01	-25	0.051	-25.92	-16.12	0.02
-69	0.036	-28.77	-18.97	0.01	-24	0.016	-36.04	-26.24	0.00
-68	0.039	-28.08	-18.28	0.01	-23	0.023	-32.87	-23.07	0.00
-67	0.042	-27.53	-17.73	0.02	-22	0.065	-23.78	-13.98	0.04
-66	0.044	-27.10	-17.30	0.02	-21	0.110	-19.16	-9.36	0.12
-65	0.046	-26.80	-17.00	0.02	-20	0.159	-16.00	-6.20	0.24
-64	0.046	-26.70	-16.90	0.02	-19	0.209	-13.58	-3.78	0.42
-63	0.046	-26.72	-16.92	0.02	-18	0.262	-11.63	-1.83	0.66
-62	0.045	-26.86	-17.06	0.02	-17	0.317	-9.98	-0.18	0.96
-61	0.044	-27.16	-17.36	0.02	-16	0.373	-8.56	1.24	1.33
-60	0.042	-27.63	-17.83	0.02	-15	0.430	-7.33	2.47	1.77
-59	0.038	-28.32	-18.52	0.01	-14	0.488	-6.24	3.56	2.27
-58	0.034	-29.30	-19.50	0.01	-13	0.545	-5.27	4.53	2.84
-57	0.029	-30.69	-20.89	0.01	-12	0.602	-4.40	5.40	3.46
-56	0.023	-32.71	-22.91	0.01	-11	0.658	-3.63	6.17	4.14
-55	0.016	-35.88	-26.08	0.00	-10	0.712	-2.95	6.85	4.84
-54	0.010	-40.00	-30.20	0.00	-9	0.761	-2.38	7.42	5.52
-53	0.010	-40.00	-30.20	0.00	-8	0.806	-1.88	7.92	6.20
-52	0.011	-38.95	-29.15	0.00	-7	0.847	-1.44	8.36	6.86
-51	0.022	-33.08	-23.28	0.00	-6	0.885	-1.06	8.74	7.47
-50	0.034	-29.39	-19.59	0.01	-5	0.917	-0.75	9.05	8.04
-49	0.046	-26.71	-16.91	0.02	-4	0.945	-0.49	9.31	8.53
-48	0.059	-24.57	-14.77	0.03	-3	0.967	-0.29	9.51	8.94
-47	0.072	-22.80	-13.00	0.05	-2	0.984	-0.14	9.66	9.25
-46	0.086	-21.29	-11.49	0.07	-1	0.995	-0.04	9.76	9.45
					0	1.000	0.00	9.80	9.55



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Vertical plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	9.80	9.55	45	0.100	-19.99	-10.19	0.10
1	0.995	-0.04	9.76	9.45	46	0.086	-21.29	-11.49	0.07
2	0.984	-0.14	9.66	9.25	47	0.072	-22.80	-13.00	0.05
3	0.967	-0.29	9.51	8.94	48	0.059	-24.57	-14.77	0.03
4	0.945	-0.49	9.31	8.53	49	0.046	-26.71	-16.91	0.02
5	0.917	-0.75	9.05	8.04	50	0.034	-29.39	-19.59	0.01
6	0.885	-1.06	8.74	7.47	51	0.022	-33.08	-23.28	0.00
7	0.847	-1.44	8.36	6.86	52	0.011	-38.95	-29.15	0.00
8	0.806	-1.87	7.93	6.20	53	0.010	-40.00	-30.20	0.00
9	0.761	-2.38	7.42	5.52	54	0.010	-40.00	-30.20	0.00
10	0.712	-2.95	6.85	4.84	55	0.016	-35.89	-26.09	0.00
11	0.658	-3.63	6.17	4.14	56	0.023	-32.71	-22.91	0.01
12	0.602	-4.40	5.40	3.46	57	0.029	-30.69	-20.89	0.01
13	0.545	-5.27	4.53	2.84	58	0.034	-29.30	-19.50	0.01
14	0.488	-6.24	3.56	2.27	59	0.038	-28.32	-18.52	0.01
15	0.430	-7.33	2.47	1.77	60	0.042	-27.63	-17.83	0.02
16	0.373	-8.56	1.24	1.33	61	0.044	-27.16	-17.36	0.02
17	0.317	-9.98	-0.18	0.96	62	0.045	-26.86	-17.06	0.02
18	0.262	-11.63	-1.83	0.66	63	0.046	-26.72	-16.92	0.02
19	0.209	-13.58	-3.78	0.42	64	0.046	-26.70	-16.90	0.02
20	0.159	-15.99	-6.19	0.24	65	0.046	-26.80	-17.00	0.02
21	0.110	-19.16	-9.36	0.12	66	0.044	-27.10	-17.30	0.02
22	0.065	-23.78	-13.98	0.04	67	0.042	-27.53	-17.73	0.02
23	0.023	-32.87	-23.07	0.00	68	0.039	-28.08	-18.28	0.01
24	0.016	-36.05	-26.25	0.00	69	0.036	-28.77	-18.97	0.01
25	0.051	-25.92	-16.12	0.02	70	0.033	-29.61	-19.81	0.01
26	0.082	-21.76	-11.96	0.06	71	0.030	-30.47	-20.67	0.01
27	0.109	-19.26	-9.46	0.11	72	0.027	-31.51	-21.71	0.01
28	0.132	-17.57	-7.77	0.17	73	0.023	-32.75	-22.95	0.01
29	0.152	-16.37	-6.57	0.22	74	0.019	-34.29	-24.49	0.00
30	0.168	-15.49	-5.69	0.27	75	0.015	-36.22	-26.42	0.00
31	0.180	-14.90	-5.10	0.31	76	0.014	-37.31	-27.51	0.00
32	0.189	-14.49	-4.69	0.34	77	0.012	-38.59	-28.79	0.00
33	0.194	-14.25	-4.45	0.36	78	0.010	-40.00	-30.20	0.00
34	0.196	-14.14	-4.34	0.37	79	0.010	-40.00	-30.20	0.00
35	0.196	-14.16	-4.36	0.37	80	0.010	-40.00	-30.20	0.00
36	0.193	-14.27	-4.47	0.36	81	0.010	-40.00	-30.20	0.00
37	0.189	-14.48	-4.68	0.34	82	0.010	-40.00	-30.20	0.00
38	0.182	-14.80	-5.00	0.32	83	0.010	-40.00	-30.20	0.00
39	0.174	-15.20	-5.40	0.29	84	0.010	-40.00	-30.20	0.00
40	0.164	-15.71	-5.91	0.26	85	0.010	-40.00	-30.20	0.00
41	0.152	-16.34	-6.54	0.22	86	0.010	-40.00	-30.20	0.00
42	0.140	-17.07	-7.27	0.19	87	0.010	-40.00	-30.20	0.00
43	0.127	-17.92	-8.12	0.15	88	0.010	-40.00	-30.20	0.00
44	0.114	-18.88	-9.08	0.12	89	0.010	-40.00	-30.20	0.00
					90	0.010	-40.00	-30.20	0.00