



Application for Minor Change  
Translator Station K258DN Orchard Valley WY  
FCC Facility ID 202347

### TECHNICAL EXHIBITS

This technical exhibit is prepared on behalf of Townsquare License, LLC Permittee of Translator Station K258DN Orchard Valley, WY. This instant application requests a minor change of the translator construction permit to a new location on the authorized tower location with the same effective radiated power and operating frequency and utilize a directional antenna. The station will continue proposed service to rebroadcast co-owned primary station KGAB (AM).

### OVERLAP REQUIREMENTS

The attached Map of Contours depicts 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 attached maps of contours, channel 241-D is operable at the proposed location with the following facility notes:

- In compliance with 47 CFR 74.1204(g) the proposed facility operates at an effective radiated power which is over 100 watts, therefore protection to intermediate frequency facilities has been calculated and meets all mileage separation requirements.
- The proposed location is within the protected 60dbu (50,50) contour of second-adjacent station KUAD-FM Channel 256-C1 located 54.2 km away. Therefore, an interference analysis has been conducted based on the u/d ratio of +40 dB at the proposed site. The signal of KUAD-FM at the proposed location is 66.7 dBu (50,50) making the relevant interfering contour of the proposed facility 106.7 dBu (50,10).
- The proposed location is within the protected 60dbu (50,50) contour of second-adjacent station KKPL (FM) channel 260-C2 located 36.1 km away. Therefore, an interference analysis has been conducted based on the u/d ratio of +40 dB at the proposed site. The signal of KKPL (FM) at the proposed location is 70.0 dBu (50,50) making the relevant interfering contour of the proposed facility 110.0 dBu (50,10).
- The applicant will utilize the Scala HDCA5-CP 1-bay antenna mounted at a height of 22 meters above ground, with the vertical radiation characteristics in the attached chart. The elevation pattern field values were provided by the manufacturer. Utilizing the larger of the 2 adjacent channel contours - that being the 106.7 dBu contour - the attached chart calculates

the distance to actual interfering contour based on the antenna manufacturer elevation data. This chart demonstrates that the interfering contour never reaches a point 2 meters above ground any farther than 382 meters from the tower.

– In addition, the attached aerial photo of the tower site has the entire 420 meter clear space from the tower superimposed, demonstrating that the interfering contour incapable of reaching the general public.

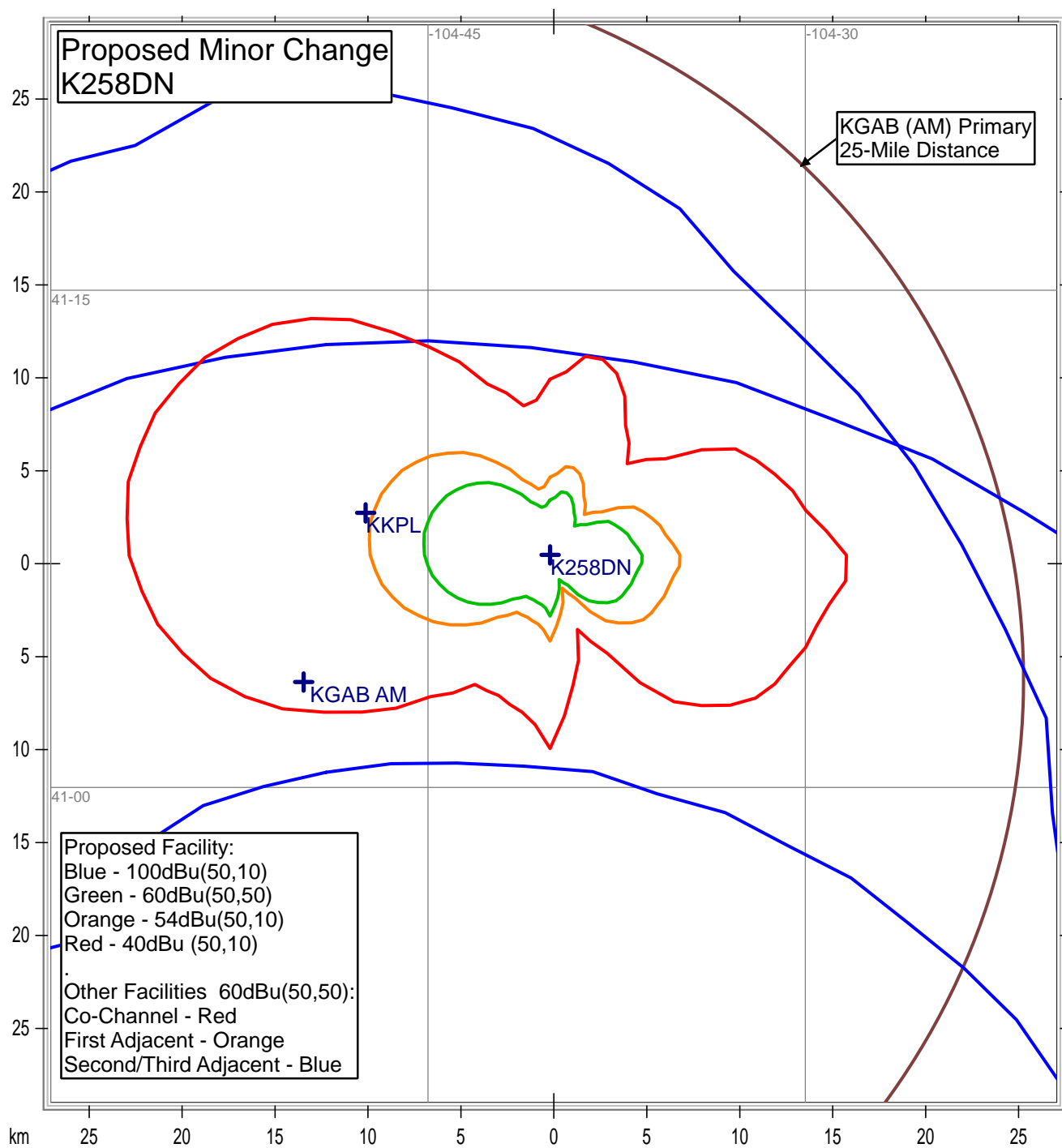
– Based on this showing, a waiver of Section 74.1204 is requested in accordance with Living Way Ministries, Inc. (FCC 08-242) on the basis of zero population in the area of interference.

It should be noted that should any actual real world interference occur, the applicant acknowledges that it will promptly suspend operation of this translator in accordance with 47 C.F.R. 74.1203.

Respectfully,

A handwritten signature in black ink, appearing to read "Jim Turvaille". The signature is stylized with large, flowing loops and a prominent "J" and "T".

Jim Turvaille, Owner  
Turbo Tech Services  
Certified Radio Engineer – Consultant



Lat/Lon Grid

# SCALA

## 1 Bay Model HDCA5-CP RM Circularly Polarized FM Antenna



Frequency = 98.7 Mhz  
Interfering Contour 106.7 dBu (50,10)

ERP= 250 watts  
Height = 20 m AGL

Depression Angle	Relative Field	Effective Power (w)	Distance to Contour (m)	Distance from Antenna to Ground (m)	Clearance (m)
1	0.997	248.5	511.29	1,145.97	635
2	0.994	247.0	509.75	573.07	63
3	0.991	245.5	508.21	382.15	(126)
4	0.988	244.0	506.67	286.71	(220)
5	0.985	242.6	505.13	229.47	(276)
6	0.979	239.6	502.06	191.34	(311)
7	0.972	236.2	498.47	164.11	(334)
8	0.965	232.8	494.88	143.71	(351)
9	0.959	229.9	491.80	127.85	(364)
10	0.952	226.6	488.21	115.18	(373)
11	0.941	221.4	482.57	104.82	(378)
12	0.929	215.8	476.42	96.19	(380)
13	0.918	210.7	470.77	88.91	(382)
14	0.906	205.2	464.62	82.67	(382)
15	0.895	200.3	458.98	77.27	(382)
16	0.878	192.7	450.26	72.56	(378)
17	0.861	185.3	441.54	68.41	(373)
18	0.844	178.1	432.83	64.72	(368)
19	0.827	171.0	424.11	61.43	(363)
20	0.810	164.0	415.39	58.48	(357)
21	0.789	155.6	404.62	55.81	(349)
22	0.769	147.8	394.36	53.39	(341)
23	0.748	139.9	383.59	51.19	(332)
24	0.728	132.5	373.34	49.17	(324)
25	0.707	125.0	362.57	47.32	(315)
26	0.685	117.3	351.29	45.62	(306)
27	0.663	109.9	340.00	44.05	(296)
28	0.640	102.4	328.21	42.60	(286)
29	0.618	95.5	316.93	41.25	(276)
30	0.595	88.5	305.13	40.00	(265)
31	0.573	82.1	293.85	38.83	(255)
32	0.551	75.9	282.57	37.74	(245)
33	0.529	70.0	271.28	36.72	(235)
34	0.507	64.3	260.00	35.77	(224)
35	0.485	58.8	248.72	34.87	(214)
36	0.465	54.1	238.46	34.03	(204)
37	0.446	49.7	228.72	33.23	(195)
38	0.427	45.6	218.98	32.49	(186)
39	0.407	41.4	208.72	31.78	(177)
40	0.387	37.4	198.46	31.11	(167)
41	0.369	34.0	189.23	30.49	(159)
42	0.349	30.5	178.98	29.89	(149)
43	0.329	27.1	168.72	29.33	(139)
44	0.309	23.9	158.46	28.79	(130)
45	0.290	21.0	148.72	28.28	(120)

Depression Angle	Relative Field	Effective Power (w)	Distance to Contour (m)	Distance from Antenna to Ground (m)	Clearance (m)
46	0.269	18.1	137.95	27.80	(110)
47	0.248	15.4	127.18	27.35	(100)
48	0.227	12.9	116.41	26.91	(89)
49	0.206	10.6	105.64	26.50	(79)
50	0.185	8.6	94.87	26.11	(69)
51	0.169	7.1	86.67	25.74	(61)
52	0.153	5.9	78.46	25.38	(53)
53	0.137	4.7	70.26	25.04	(45)
54	0.121	3.7	62.05	24.72	(37)
55	0.105	2.8	53.85	24.42	(29)
56	0.105	2.8	53.85	24.12	(30)
57	0.106	2.8	54.36	23.85	(31)
58	0.106	2.8	54.36	23.58	(31)
59	0.107	2.9	54.87	23.33	(32)
60	0.108	2.9	55.39	23.09	(32)
61	0.109	3.0	55.90	22.87	(33)
62	0.111	3.1	56.92	22.65	(34)
63	0.114	3.2	58.46	22.45	(36)
64	0.116	3.4	59.49	22.25	(37)
65	0.117	3.4	60.00	22.07	(38)
66	0.122	3.7	62.56	21.89	(41)
67	0.126	4.0	64.62	21.73	(43)
68	0.131	4.3	67.18	21.57	(46)
69	0.136	4.6	69.74	21.42	(48)
70	0.140	4.9	71.80	21.28	(51)
71	0.146	5.3	74.87	21.15	(54)
72	0.152	5.8	77.95	21.03	(57)
73	0.158	6.2	81.03	20.91	(60)
74	0.164	6.7	84.10	20.81	(63)
75	0.170	7.2	87.18	20.71	(66)
76	0.176	7.7	90.26	20.61	(70)
77	0.182	8.3	93.33	20.53	(73)
78	0.188	8.8	96.41	20.45	(76)
79	0.194	9.4	99.49	20.37	(79)
80	0.200	10.0	102.57	20.31	(82)
81	0.197	9.7	101.03	20.25	(81)
82	0.194	9.4	99.49	20.20	(79)
83	0.191	9.1	97.95	20.15	(78)
84	0.188	8.8	96.41	20.11	(76)
85	0.185	8.6	94.87	20.08	(75)
86	0.175	7.7	89.74	20.05	(70)
87	0.165	6.8	84.62	20.03	(65)
88	0.155	6.0	79.49	20.01	(59)
89	0.145	5.3	74.36	20.00	(54)
90	0.135	4.6	0.00	20.00	20

### NOTES:

- HEIGHT HAS BEEN REDUCED BY 2 METERS TO ALLOW FOR HUMAN EXPOSURE
- DISTANCE FROM ANTENNA TO GROUND IS ACTUALLY TO A POINT 2 METERS ABOVE GROUND



Campsteel Rd

209

Actual 420 Meter Clear Area

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Imagery Date: 10/14/2017 41°07'07.34" N 104°40'27.78" W elev 1801 m eye alt 4.02 km