

# EXHIBIT 12 – COMPREHENSIVE TECHNICAL EXHIBIT

## Narrative

With the instant application licensee/applicant seeks to relocate FM Translator K207DL, FID# 121885, Twin Falls, ID and modify the antenna system.

## Contour Overlap Study and Waiver Request of Section 74.1204, with Showing of Compliance

The following study (**Figure 1**) of nearby facilities details the contour relationships with all relevant 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> adjacent or I.F. related authorizations or applications, and reveals the absence of any conflict excepting the following. The proposed FM translator is located within the protected 60 dBu F(50,50) contours of 2<sup>nd</sup> adjacent station KEFX, Twin Falls, ID, Channel 205, facility ID # 8432, and 3<sup>rd</sup> adjacent station KAWZ, Twin Falls, ID, Channel 210, facility ID # 8414 (see **Figure 1**).

The predicted F(50,50) field strength of KEFX at the proposed translator site is 88.4 dBu (free space equation). Using the Undesired-Desired method for calculating proposed interference, the proposed interfering contour with respect to KEFX is 128.4 dBu (88.4 + 40)(free space equation). This interfering contour would extend 42.1 meters from the transmitting antenna. Since the proposed antenna will be located 88 meters above ground the interfering contour will not reach the ground. There are no tall structures in the immediate area that would penetrate the interference contour (see **Figure 2**). Since no population inhabits the interference area, the Applicant respectfully requests a waiver of FM translator contour overlap regulations with respect to 2<sup>nd</sup> adjacent station KEFX.

The predicted F(50,50) field strength of KAWZ at the proposed translator site is also 88.4 dBu (free space equation). Using the Undesired-Desired method for calculating proposed interference, the proposed interfering contour with respect to KAWZ is 128.4 dBu (88.4 + 40)(free space equation). This interfering contour would extend 42.1 meters from the transmitting antenna. Since the proposed antenna will be located 88 meters above ground, the interfering contour will not reach the ground. There are no tall structures in the immediate area that would penetrate the interference contour (see **Figure 2**). Since no population inhabits the interference area, the Applicant respectfully requests a waiver of FM translator contour overlap regulations with respect to 3<sup>rd</sup> adjacent station KAWZ.

Minor Modification of K207DL Pensacola Christian College, Inc.											
REFERENCE		CH# 207D - 89.3 MHz, Pwr= 0.25 kw DA, HAAT= 57.9 M, COR= 1221.5 M						DISPLAY DATES			
42 33 45.3 N.		Average Protected F(50-50)= 10.0 km						DATA 04-29-19			
114 32 33.9 W.		Standard Directional						SEARCH 04-29-19			
CH	CALL	TYPE	ANT	AZI.	DIST	LAT.	Pwr(kw)	INT(km)	PRO(km)	*IN*	*OUT*
CITY	STATE			<--	FILE #	LNG.	HAAT(M)	COR(M)	LICENSEE	(Overlap in km)	
205C0	KEFX	LIC	VX	29.4	21.33	42 43 47.0	100.000	10.9	76.3	-0.1	-55.5*
Twin Falls	ID		ID	209.5	BLED20060403AUG	114 24 52.0	302	1475	Calvary Chapel Of Twin Fal		
210C0	KAWZ	LIC	VX	29.4	21.33	42 43 47.0	100.000	10.9	76.3	-0.1	-55.5*
Twin Falls	ID		ID	209.5	BLED20060403ANA	114 24 52.0	302	1475	Calvary Chapel Of Twin Fal		
207D	K207DL!	LIC	DV	119.3	2.47	42 33 06.0	0.205		---	Reference---	
Twin Falls	ID		ID	299.4	BLFT20030710ABF	114 30 59.0	6	1180	Pensacola Christian Colleg		
208D	K208FB	LIC	C	99.4	52.51	42 29 02.0	0.140	17.5	11.5	23.7	25.2
Burley	ID		ID	279.8	BMLFT20081125AVU	113 54 39.0	100	1397	Edgewater Broadcasting, In		

208C0 KLRI Rigby	LIC	VX ID	55.0 236.3	185.04 BLED20050729DTE	43 30 04.0 112 39 44.0	78.000 466	120.7 2033	81.5	52.0	85.3	Educational Media Foundati
260C KZDX Burley	LIC	CX ID	107.9 288.5	81.24 BLH20040817AAG	42 20 06.0 113 36 15.0	27.000 747	19.0 2536	12.3	28.5R	52.7M	Lee Family Broadcasting, I
206C1 KAWS Marsing	LIC	VX ID	286.4 104.9	183.10 BMLED20120813ABH	43 00 25.0 116 42 13.0	8.750 668	111.3 2466	76.1	64.8	97.9	Calvary Chapel Of Twin Fal
208C1 KTSY Caldwell	LIC	CX ID	317.0 135.9	182.97 BMLED20130925AHN	43 45 18.0 116 05 52.0	8.300 791	106.5 2174	72.8	68.4	98.8	Idaho Conference Of Sevent
260C KXCD Fairfield	CP	CX ID	316.8 136.2	105.42 BMPH20090121ACC	43 14 59.0 115 25 59.0	40.000 708	19.0 2268	12.3	28.5R	76.9M	Lee Family Braodcasting, I

One Step Application

Terrain database is 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= West Zone, Co to 3<sup>rd</sup> adjacent.

All separation margins (if shown) include rounding. Call signs with exclamation marks need not be protected. 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 restricted contour. « = Station meets FCC minimum distance spacing for its class.

2<sup>nd</sup> adjacent waiver requested, see discussion

3<sup>rd</sup> adjacent waiver requested, see discussion

FIGURE 1



FIGURE 2

## Conformance with FCC 74.1235

The proposed directional antenna pattern will be produced by means of a Nicom Dipole Reflector BKY3/P broadcast element mounted at a 45 degree slant orientation to achieve horizontal and vertical polarization. The BKY3/P-1DA(Slant 45) directional pattern is therefore a maximum composite pattern of the current horizontal and vertical broadcast patterns (see **Figure 3** copy of Manufacturers Directional Antenna Documentation). (Actual Antenna Pattern is rotated to 115 degrees T.)

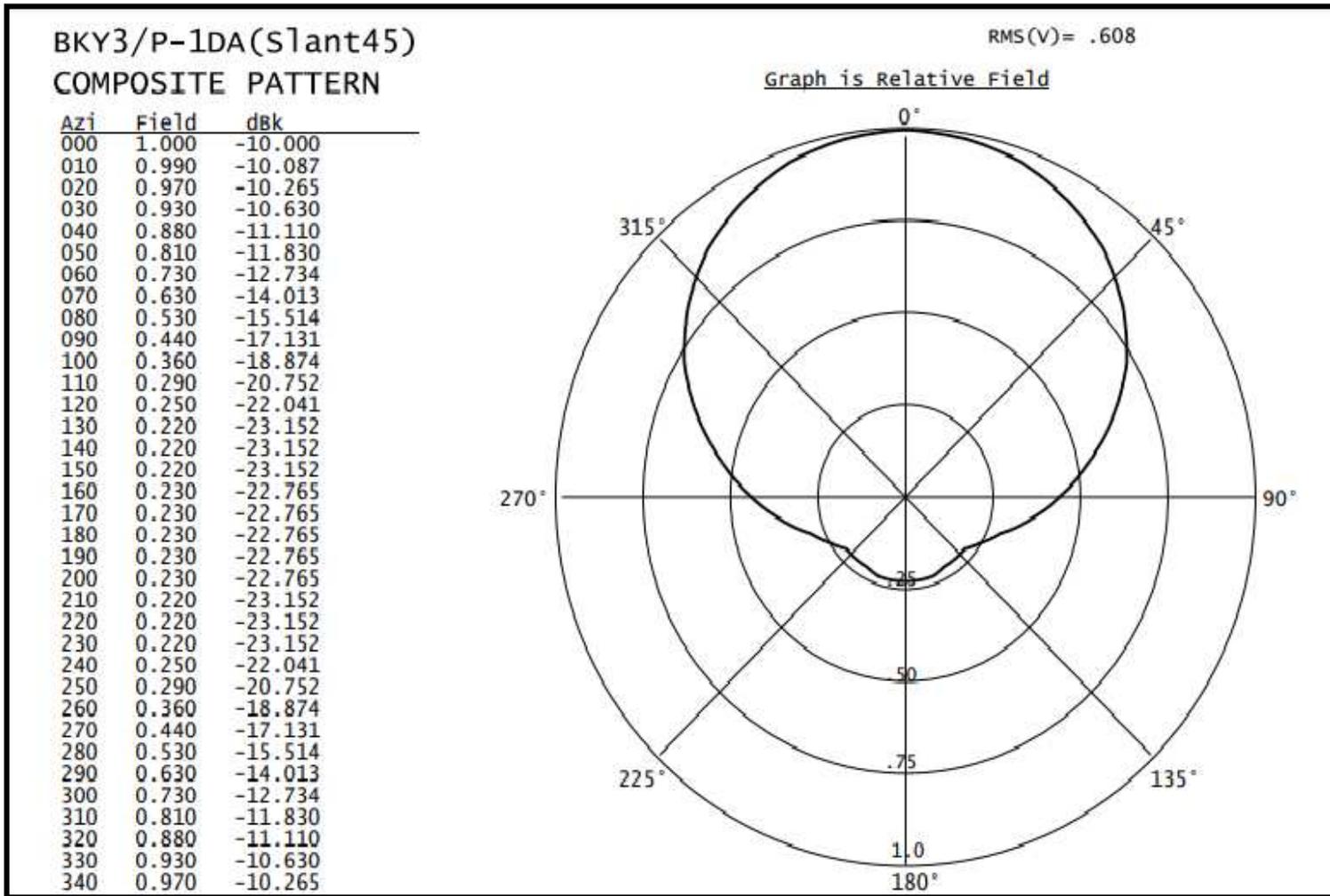


Figure 3

Tabulation of Radial HAAT's is shown in **Table 1**.

**Input Data**

Latitude **42° 33' 45.3" North**  
 Longitude **114° 32' 33.9" West** (NAD 27)

These coordinates convert to NAD 83 coordinates of  
 42° 33' 44.98", North, 114° 32' 37.05" West (NAD 83).

Height of antenna radiation center above mean sea level: **1222 meters AMSL**

Number of Evenly Spaced Radials = **72**      0° is referenced to True North

**Results**

Calculated HAAT = **58 meters**

Antenna Height Above Average Terrain calculated  
 using FCC 30 second terrain database (continental USA only)

**Individual "Radial HAAT" Values, in meters**

0°	145.7 m	120°	47.7 m	240°	-11.3 m
5°	141.6 m	125°	40.6 m	245°	0.7 m
10°	135.7 m	130°	30.3 m	250°	8.8 m
15°	125.9 m	135°	16.4 m	255°	17.9 m
20°	120.0 m	140°	2.8 m	260°	27.7 m
25°	112.3 m	145°	-9.5 m	265°	36.4 m
30°	115.4 m	150°	-19.8 m	270°	46.0 m
35°	119.3 m	155°	-31.0 m	275°	55.9 m
40°	118.4 m	160°	-42.1 m	280°	67.3 m
45°	125.2 m	165°	-47.1 m	285°	80.9 m
50°	121.0 m	170°	-48.5 m	290°	92.4 m
55°	120.4 m	175°	-48.9 m	295°	103.1 m
60°	121.5 m	180°	-49.1 m	300°	113.4 m
65°	117.5 m	185°	-47.4 m	305°	125.9 m
70°	117.1 m	190°	-48.9 m	310°	142.4 m
75°	105.5 m	195°	-51.0 m	315°	164.1 m
80°	98.5 m	200°	-54.5 m	320°	166.2 m
85°	87.8 m	205°	-58.3 m	325°	169.4 m
90°	80.6 m	210°	-61.4 m	330°	170.1 m
95°	73.2 m	215°	-57.6 m	335°	165.7 m
100°	68.7 m	220°	-51.1 m	340°	154.7 m
105°	65.3 m	225°	-44.1 m	345°	148.7 m
110°	61.0 m	230°	-36.1 m	350°	144.7 m
115°	55.6 m	235°	-23.1 m	355°	145.1 m

**TABLE 1**

The antenna pattern and proposed ERP conform to the MERP radial requirements of 74.1235 as shown in **Table 2**.

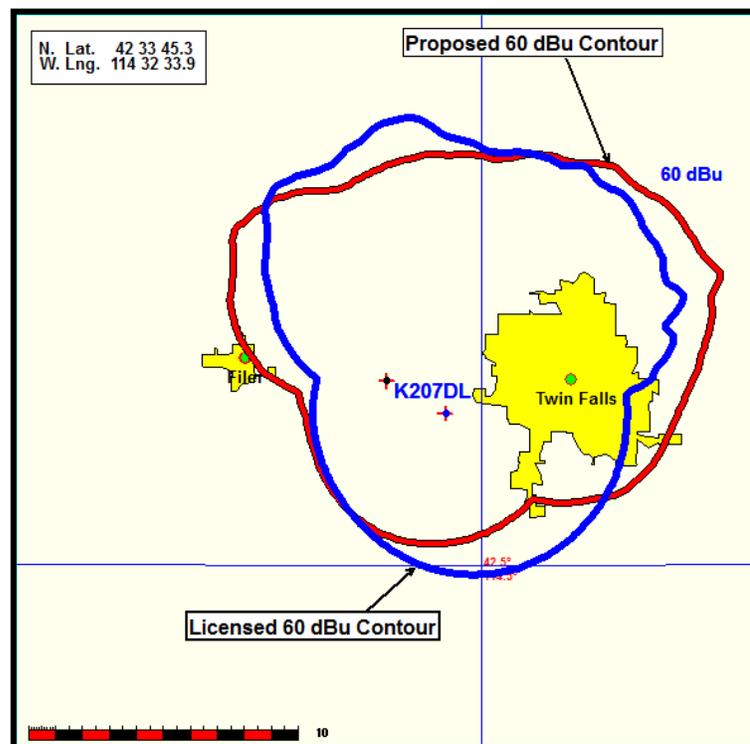
Radial Azimuth	Radial HAAT	Relative Field	dbk	Radial ERP V-soft (kW)	FCC(74.1235) MERP (kW)
0	145.7	0.073	-27.535	0.001	0.115
30	114.4	0.237	-17.046	0.014	0.205
60	121.5	0.595	-9.683	0.089	0.170
90	80.6	0.903	-6.549	0.204	0.250
115	55.6	1.000	-6.021	0.250	0.250
120	47.7	0.990	-6.196	0.245	0.250
150	-19.8	0.820	-8.246	0.168	0.250
180	-49.1	0.465	-14.045	0.054	0.250
210	-61.4	0.162	-23.742	0.007	0.250
240	-11.3	0.056	-32.396	0.001	0.250
270	46.0	0.051	-31.535	0.001	0.250
300	113.4	0.053	-31.535	0.001	0.205
330	170.1	0.048	-32.396	0.001	0.092

**TABLE 2**

**TV Channel 6 Protection**

There are no TV Channel 6 facilities requiring consideration (see **Figure 1**).

**60 dBu overlap Minor Modification qualifier (see Figure 4)**



**Figure 4**

## **Environmental Compliance**

There will be no new construction. The proposed facility will be mounted on a currently registered tower (ASR # 1021395).

The proposed facility complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments as set forth under §1.1307(b)(3) of the Commission's rules and the guidelines for RF radiation protection guidelines as set forth in OET Bulletin No. 65 (Edition 97-01), and the accompanying Supplement A, (Edition 97-01). The site is intended to house multiple transmitters, therefore the potential for human exposure to non-ionizing radiofrequency radiation has been evaluated with regard to the §1.1307(b)(3) "five percent (5%) contribution rule" utilizing the Commission's own FM Model web-based software application. The use and implementation of this FCC sanctioned software is a matter of record before the Commission.

With regard to the "five percent (5%) contribution rule", §1.1307(b)(3), five percent (5%) of the maximum permissible 200  $\mu\text{W}/\text{cm}^2$  uncontrolled limit yields a threshold value of 10  $\mu\text{W}/\text{cm}^2$ . Five percent (5%) of the maximum permissible 1000  $\mu\text{W}/\text{cm}^2$  controlled limit yields a threshold value of 50  $\mu\text{W}/\text{cm}^2$ . Therefore, single contributions of  $\leq 10 \mu\text{W}/\text{cm}^2$  remain within the tolerances as allowed by §1.1307(b)(3) and its governing OET Bulletin No. 65 (Edition 97-01) for the more restrictive of these two protections.

The proposed Channel 207 – Twin Falls, ID analog FM Translator (Facility ID: 121885) will operate on CH207 (89.3 MHz) with 0.250 kW ERP circular polarization (H&V). The proposed operation will broadcast from an antenna COR mounted 88 meters above ground level (AGL). For purposes of this RF Compliance Study, a worst case one bay EPA Type 1 element as defined by the Commission's own FM Model - Appendix B (issued March 31, 2016) has been assumed. Application of these parameters using the FCC's FMModel software yields a worst case total of 1.359  $\mu\text{W}/\text{cm}^2$  at 23 meters from the base of the tower. This is well below the 5% contribution threshold.

To ensure complete protection, the maximum FM contribution has been assumed without regard to any restricted access fencing distance. In addition, the facility is, or will be, properly marked with signs. Furthermore, coordination with other users of the site will be secured to 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