

T Z SAWYER TECHNICAL CONSULTANTS

2130 HUTCHISON GROVE COURT, SUITE 100
FALLS CHURCH, VIRGINIA 22043
TELEPHONE (703) 848-2130

PENSACOLA CHRISTIAN COLLEGE, INC.

FM TRANSLATOR STATION W212CO

(WAS W207CL)

KANKAKEE, ILLINOIS

FACILITY ID: 79410

MINOR CHANGE APPLICATION

FCC FORM 2100, SCHEDULE 349

MODIFICATION OF STATION LICENSE

AUGUST 2020

ENGINEERING EXHIBIT

IN SUPPORT OF

**APPLICATION FOR AUTHORITY TO
CONSTRUCT OR MAKE CHANGES IN AN
FM TRANSLATOR OR FM BOOSTER STATION**

ENGINEERING EXHIBIT
PENSACOLA CHRISTIAN COLLEGE, INC.
FM TRANSLATOR STATION W212CO
(WAS W207CL)
KANKAKEE, ILLINOIS
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NARRATIVE STATEMENT

The engineering exhibit, of which this narrative is part, was prepared on behalf of PENSACOLA CHRISTIAN COLLEGE, INC., in support of an application to modify the licensed facility of W212CO, Kankakee, Illinois. No change in the designation of the primary station is sought.

The permittee seeks to make minor changes to the station's ANTENNA system only. The proposal is to change antenna type from a SCA GPFM vertically polarized antenna to a SWR FM1 circularly polarized antenna. No change in antenna height or ERP will occur. Proposal adds circular polarization to the antenna system (H & V polarization).

The changes sought are classified as "minor" by the Commission's recently adopted rules, which allow for non-adjacent channel assignment as minor changes.

In support of the requested changes, the following figures, exhibits or tables have been provided:

Pensacola Christian College, Inc.
FM Translator, W212CO
Kankakee, IL

Figure 1 – Supporting Structure Tower:

This is an existing communications site, no changes are proposed to the antenna structure. This structure (tower) is shared with WVLI (FM) and W267CI, Kankakee, Illinois, and other communications users. The tower has been registered with the FCC and issued ASR number 1016184.

Figure 2 – Vertical Sketch of Tower and Antenna:

A vertical sketch of the antenna's supporting structure with the proposed antenna mounting elevation is provided as Figure 2.

Nondirectional (Omni) Antenna Details:

The antenna is a SWR "FM1", a circularly polarized single-bay FM antenna. The effective radiated power is 0.027 kW (27 watts H & V).

Figure 3 – Predicted Service Contour:

The predicted service contour for the FM translator facility was calculated in accordance with the provisions of 47 CFR 73.313. The average terrain elevations from 3 to 16 kilometers from the proposed translator site were obtained from the NGDC 30-second computer database. The standard twelve radials evenly spaced at 30-degree intervals were used for determining the distance to the 60 dBu translator service contour.

Figure 4 – FM Channel Study:

The proposed operation fully protects all other stations of concern as detailed in the contour overlap study in Figure 4. No predicted overlap of contours occurs, with the exception of overlap to the third-adjacent channel station WONU, Kankakee, IL. As demonstrated in Figure 5, no population resides within the interference contour therefore, the provisions of 47 CFR §74.1204(d) apply.

Waiver Request 47 CFR §74.1204

Based on no population within overlapping contour area

Figure 5 - Contour Overlap Waiver Request: As demonstrated in Figure 5, the interference contour from this proposal does not reach/touch the ground/surface and remains elevated about the surface by 81 meters or more. The interference contour extends a distance of approximately 3 meters horizontally from the tower. No population exists within the interference contour, therefore, a grant of the requested waiver is appropriate and in the public interest.¹

Environmental Considerations:

The applicant believes its proposal will not significantly affect the environment for the following reasons:

The proposal does not meet any of the criteria specified in Section 1.1307 of the FCC Rules. More specifically, the proposed facilities are not known to fall within any of the categories enumerated in Sections 1.1307(a)(1)-(7) and will not involve the use of high-intensity white lights. Furthermore, the operation of the proposed facility will not involve the exposure of workers or the general public to levels of radio frequency electromagnetic fields exceeding guidelines adopted by the Federal Communications Commission.

The results of the FCC's FM Model computer program output indicate that the power density from this proposal using a "Type 1" EPA model antenna is predicted to be 0.162 $\mu\text{W}/\text{cm}^2$ or less. The computed power density is 0.016% of the Commission's guidelines for a controlled area and 0.08% for an uncontrolled area.

¹ 47 CFR §74.1204(d) The provisions of this section concerning prohibited overlap will not apply where the area of such overlap lies entirely over water. In addition, an application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur due to intervening terrain, lack of population or such other factors as may be applicable.

Pensacola Christian College, Inc.
FM Translator, W212CO
Kankakee, IL

This level is well below the Commission's guidelines for maximum exposure levels to electromagnetic fields, and no further study is required. The applicant will fully-cooperate and coordinate with all site users as required by the Commission's rules.

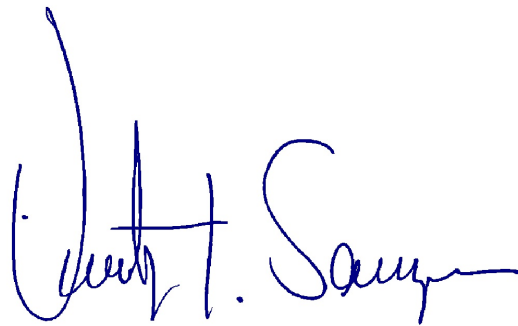
Summary:

The FM translator will continue to operate as a translator for Noncommercial FM broadcast station WPCS, Pensacola, Florida, Facility ID: 52230, with a maximum ERP of 0.027 kilowatts (H & V) utilizing a SWR FM1 nondirectional antenna operating on FM Channel 212D (90.3 MHz).

The proposed operation is in compliance with all areas of the Commission's rules and applicable international agreements at the time of filing of this application.

August 13, 2020

T Z Sawyer Technical Consultants
2130 Hutchison Grove Court, Suite 100
Falls Church, Virginia 22043
Tel.: 703-848-2130 / 202-642-2130
web site: www.tzsawyer.com
e-mail: tzsawyer@tzsawyer.com



Timothy Z. Sawyer, Consulting Engineer

Existing Communications Tower - No FAA Notice Required
(No change in existing tower height is proposed)

Registration Detail			
Reg Number	1016184	Status	Constructed
File Number	A1107813	Constructed	08/23/1984
EMI	No	Dismantled	
NEPA	No		
Antenna Structure			
Structure Type	GTOWER - Guyed Structure Used for Communication Purposes		
Location (in NAD83 Coordinates - Convert to NAD27)			
Lat/Long	41-07-23.5 N 087-53-36.1 W	Address	250 N MAIN AVE (204374)
City, State	KANKAKEE , IL		
Zip	60901	County	KANKAKEE
Center of AM Array		Position of Tower in Array	
Heights (meters)			
Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)		
192.9	106.7		
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances		
299.6	105.7		
Painting and Lighting Specifications			
FAA Chapters 4, 8, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1L			
FAA Notification			
FAA Study	2018-AGL-5928-OE	FAA Issue Date	07/06/2018

**T Z SAWYER TECHNICAL
CONSULTANTS**

Tel.: (703) 848-2130
www.tzsawyer.com

FCC TOWER ASR REGISTRATION 1016184
FAA NOTICE NOT REQUIRED - NO CHANGE IN STRUCTURE

W212CO FM TRANSLATOR
KANKAKEE, ILLINOIS

**FIGURE
1**

FALL CHURCH, VIRGINIA 22043-2555

SIZE

A

CAGE NO

N/A

DWG NO

20200507W207CL.F1

REV

08/13/2020

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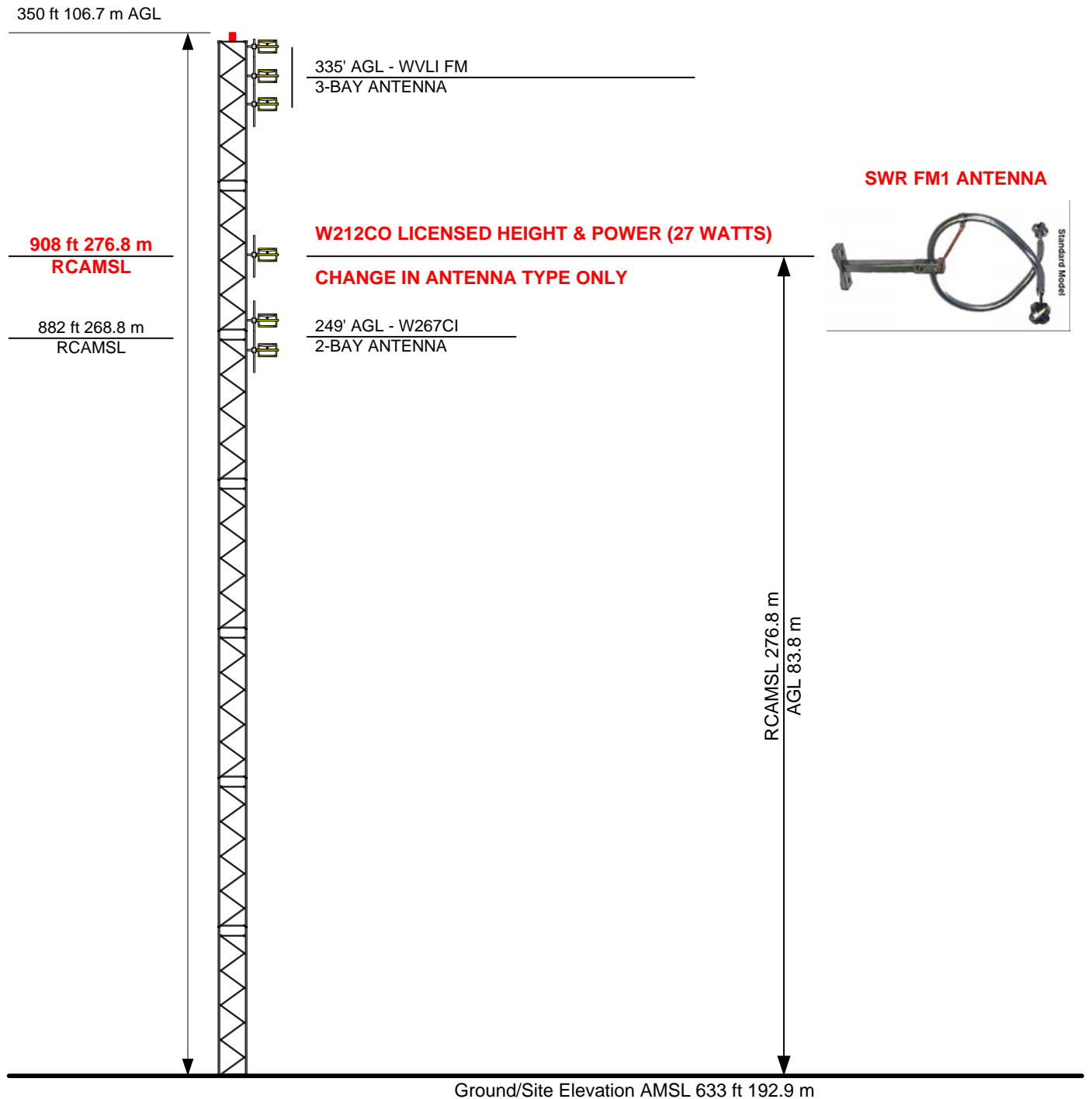
SCALE

N/A

AUGUST 2020

SHEET

EXISTING COMMUNICATION TOWER
FCC ASR: 1016184
NO CHANGE TO ANTENNA ELEVATION OR STRUCTURE HEIGHT



T Z SAWYER TECHNICAL CONSULTANTS Tel.: (703) 848-2130 www.tzsawyer.com	VERTICAL SKETCH OF SUPPORTING STRUCTURE			
	W212CO FM TRANSLATOR KANKAKEE, ILLINOIS			FIGURE 2
FALL CHURCH, VIRGINIA 22043-2555	SIZE A	CAGE NO N/A	DWG NO 20200507W207CL.F2	REV 8/13/2020
(c) 2020, ALL RIGHTS RESERVED	SCALE N/A	AUGUST 2020		SHEET

W212CO

NO CHANGE IN CONTOUR - CHANGE ANTENNA MODEL/ TYPE ONLY

FCC FacID: 79410

NAD 83 Latitude: 41-07-23.47 N

NAD 83 Longitude: 087-53-36.16 W

ERP: 0.027 kW ADDS H & V

Channel: 212 Frequency: 90.3 MHz

Antenna RCAMSL Height: 276.8 m

Horiz. Pattern: Omni

PRESENT AND PROPOSED SERVICE CONTOUR
CHANNEL 212 (90.3 MHz) 27 WATTS

MINOR CHANGE APPLICATION - CHANGE IN ANTENNA
MODEL & TYPE - ADDS CIRCULAR POLARIZATION (H & V)

FIGURE 3

Bonfield

Bourbonnais

W212CO

Kankakee

Sun River Terrace

Aroma Park

60 DBU 27 WATTS (PRESENT AND PROPOSED)
CH 212D

Herscher

Irwin

Saint Anne

Chebanse



Scale 1:150,000



FIGURE 4
CHANNEL CONTOUR OVERLAP STUDY

Minor Change Application Channel 212
Pensacola Christian College, Inc.

REFERENCE	CH# 212D - 90.3 MHz, Pwr= 0.027 kW, HAAT= 83.3 M, COR= 276.8 M	DISPLAY DATES
41 07 23.5 N.	Average Protected F(50-50)= 6.8 km	DATA 05-07-20
87 53 36.2 W.	Omni-directional	SEARCH 05-07-20

CH CITY	CALL	TYPE	ANT STATE	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
209B Kankakee	WONU	LIC	IL	26.5 206.6	4.16 BLED19860908KA	41 09 24.10 87 52 16.10	35.000 126	5.1 322	46.5 Olivet Nazarene University	-7.3*	-42.7*
211B Chicago	WMBI-FM	LIC	IL	354.0 173.9	89.89 BLED19970613KA	41 55 41.10 88 00 25.20	100.000 135	85.4 350	55.9 The Moody Bible Institute	-2.1	24.7
212B1 Bloomington	WJWR	LIC D	IL	236.5 55.9	88.00 BLED20101208AEN	40 40 59.40 88 45 43.20	18.000 100	82.2 321	26.9 Good News Radio, Inc.	-0.8	38.6
212B1 Covington	WFOF	LIC	IN	161.4 341.7	113.71 BLED19870319KG	40 09 08.10 87 27 58.00	19.000 81	99.8 269	28.8 The Moody Bible Institute	6.8	60.9
213B1 Crown Point	WRTW	LIC D	IN	58.5 238.8	48.32 BLED20100225ACD	41 20 56.10 87 24 02.10	3.100 183	27.6 396	18.6 Hyles-Anderson College	14.0	18.9
214A Morris	WBEQ	LIC	IL	292.1 111.8	48.52 BLED20040713AAP	41 17 09.10 88 25 49.20	1.450 143	2.0 317	24.5 Chicago Public Media Inc	39.6	23.6
213A Paxton	WRTK	LIC	IL	190.6 10.5	71.87 BLED20120521ABA	40 29 13.10 88 02 59.10	1.700 52	25.6 279	17.3 Hyles-Anderson College	39.6	45.0
211B1 Champaign	WEFT	CP Z	IL	199.0 18.7	110.59 BPED20190522AAL	40 10 52.10 88 19 03.20	10.000 126	53.6 349	35.3 Prairie Air Incorporated	50.3	65.8
211B1 Champaign	WEFT	LIC D	IL	199.0 18.7	110.59 0000107505	40 10 52.10 88 19 03.20	10.000 126	53.6 349	35.3 Prairie Air Incorporated	50.3	65.8

TV CHANNEL 6 - PROTECTION - NO CONTOUR OVERLAP - MARGIN GREATER THAN 45.7 KM

06 Chicago	WRME-LP	LI D N	IL	14.5 194.7	89.06 KM BLTVL-20100111AIE	44 07 31.00 87 37 41.30	3.000	2.8 566	34.8 (ANALOG FACILITY)	37.6R	51.5M
06 Chicago	WRME-LP	CP N	IL	14.5 194.7	89.06 KM BDFCDVL-20130114AC	44 07 31.00 87 37 41.30	3.000	2.8 566	40.6 (DIGITAL FACILITY)	43.4R	45.7M

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= East Zone
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.

Protected zones report for W207CL on channel 212D 05-07-2020
Facility is okay with respect to Canada. Distance = 407.1 km.
Facility is okay with respect to AM station towers.
Facility is okay with respect to FCC monitoring stations.
Facility is okay toward West Virginia Quiet Zone.
Facility is okay toward Table Mountain.

CONTOUR OVERLAP WAIVER REQUESTED TO THIRD ADJACENT CHANNEL STATION
209B WONU LIC Kankakee, IL BLED19860908KA - NO POPULATION WITHIN INTERFERENCE CONTOUR
SEE FIGURE 5 FOR ADDITIONAL DETAILS.

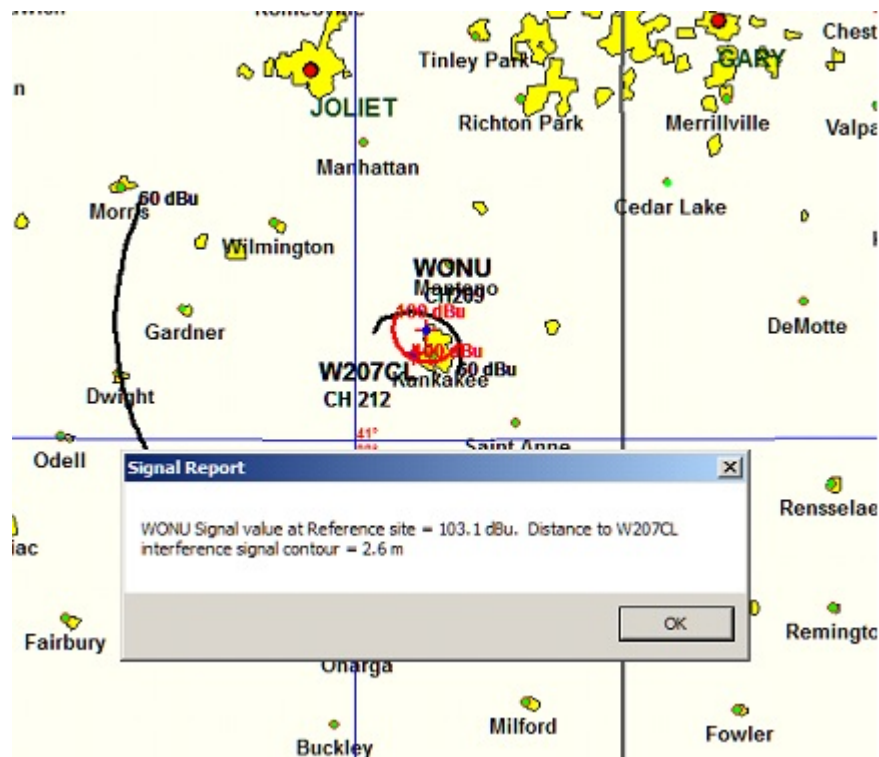
THIRD-ADJACENT CHANNEL CONTOUR OVERLAP WAIVER REQUEST
TO
STATION WONU (Ch. 209B)
KANKAKEE, IL

Basis for Waiver Request 47 CFR §74.1204(d)

No population within predicted interference contour area

Third-Adjacent Channel Station WONU (Ch. 209B), a licensed facility, is predicted to have a signal level of 103.08 dBu at the proposed site (the reference site). The D/U (desired to undesired) signal ratio is 40 dBu. Thus, the interfering signal level from this proposal is $103.08 + 40 = 143.08$ dBu.

The map below shows the calculated predicted signal level from WONU at the proposed translator site, and the predicted interfering contour distance (maximum horizontal distance).



The center of radiation from the proposed antenna is 83.8 meters above ground level (see Figure 2).

The interference signal from this proposal extends a distance of 2.6 meters as noted above, and remains $(83.8 \text{ m} - 2.6 \text{ m}) = 81.2$ meters above ground in all directions. As the interference signal remains well above ground level (266 feet) and does not reach the ground in any location, or any populated or traveled areas, it cannot cause interference to any populated or traveled areas.

There are no tall building, roof tops, or other occupied spaces within the interference contour horizontal distance of 2.6 meters (8.5 feet) from the supporting structure.

Thus, no interference is predicted to occur to a populated area, i.e., no population resides within the interference contour therefore, application of the provisions of 47 CFR §74.1204(d) is appropriate.

A grant is in the public interest in that it has been demonstrated that no harm will occur to WONU and that no population is present within the elevated contour.

Applicant believes that it has demonstrate that due to lack of population within the interference contour that it is in compliance with the Commission's rules.