

W255CJ
STA REQUEST

This technical report is provided in support of an STA request for W255CJ utilizing a directional pattern developed by Shively Laboratories which utilizes the existing three panel antenna and a power division network to achieve the pattern.

Allocation discussion:

All exhibits utilize the USGS 3 second terrain database.

- E1 Channel study
- E1A WMKP-LP overlap analysis
- E1B WGRU-LP + WIEH-LP + W256DJ overlap analysis
- E1C WSB-FM analysis
- E1D W257DF analysis
- E1E Site aerial view
- E1F DA
- E2 60 dBu contours
- E2A W255CJ and WWWQ 60 dBu contours

A channel study is included as E1 demonstrating compliance with §74.1204 of the Commission's rules with the exception of existing overlaps. In each case it is demonstrated that the existing overlaps will be either eliminated or decreased.

A plot of the proposed 60 dBu contour is provided as E2 showing that it is entirely contained within the licensed 60 dBu contour and WWWQ's 60 dBu contour.

Overlap analysis:

Exhibits E1A and E1B demonstrate that W255CJ's existing interfering contour overlaps with WMKP-LP, WGRU-LP, WIEH-LP and W256DJ. As stated above, that overlap will either be eliminated or decreased by the proposed STA facility.

Exhibit E1C demonstrates that the interference to 2nd adjacent channel WSB-FM will not reach any populated areas.

Exhibit E1D demonstrates that the interference to W257DF's CP (worst case compared to the licensed facility) will be decreased and also will not reach any populated areas or major highways.

Based on the showings demonstrated herein, a waiver of Section 74.1204 is requested in accordance with *Living Way Ministries, Inc.*, 23 FCC Rcd 15070 (2008).

RF Exposure Calculation:

The proposed facility will utilize a single bay Shively panel antenna at 324 meters AGL on ASR #1223132. The RF contribution of the proposed translator was calculated based on a worst case F factor of 1.0 using the formula included below to be 0.16 μ Watts/cm² or 0.08% of the maximum permissible 200 μ Watts/cm² exposure for general population/uncontrolled exposure, and well below the 5% of that limit which requires consideration. The proposed translator clearly complies with Commission RF radiation limits.

$$S \text{ (RF in } \mu\text{Watts/cm}^2\text{)} = \frac{33.4 (F^2 \text{ Vertical Factor}) X (H \text{ ERP} + V \text{ ERP in Watts})}{R^2 \text{ (distance to radiation center in meters} - 2 \text{ m)}}$$

E1 CHANNEL STUDY

REFERENCE CH# 255D - 98.9 MHz, Pwr= 0.18 kW DA, HAAT= 299.6 M, COR= 588 M DISPLAY DATES
 33 48 26.0 N. Average Protected F(50-50)= 20.83 km DATA 08-07-18
 84 20 22.0 W. Standard Directional SEARCH 08-08-18

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
255D Atlanta	W255CJ	LIC DC_ GA		0.0 0.0	0.00 BLFT20110915ACL	33 48 26.0 84 20 22.0	0.250 303		588	---Reference---	Cumulus Licensing Lic

See E1A, E1B, E1C, E1D and E1E for overlap analysis demonstrating that overlap is either maintained or decreased compared to the licensed facility.

253C0 Atlanta	WSB-FM	LIC_CN GA		175.3 355.3	5.34 BLH19980903KB	33 45 33.0 84 20 05.0	100.000 313	10.3 594	73.3 Cox Radio, Inc.	-25.5*	-68.8*
257D Atlanta	W257DF	LIC DC_ GA		283.6 103.6	0.13 BLFT20180413AAC	33 48 27.0 84 20 27.0	0.012	0.2 529	8.5 Edgewater Broadcasting, Inc	-13.3*	-8.7*
257D Atlanta	W257DF	CP DC_ GA		195.3 15.3	7.18 BPFT20180530AAA	33 44 41.0 84 21 36.0	0.015	0.3 533	10.3 Edgewater Broadcasting, Inc	-11.5*	-3.9*
256L1 Riverdale	WGRU-LP	LIC ____ GA		196.9 16.8	28.17 BLL20150715ABV	33 33 51.0 84 25 40.0	0.100 26		305	0.8 Minority Voices Speak	-5.3
256D Conyers	W256DJ	CP_C_ GA		103.6 283.8	31.97 BNPFT20171204AAD	33 44 21.6 84 00 14.3	0.004	11.6 579	8.0 Vanessa Nguyen	1.7	-3.5
255C3 Chatsworth	WNGH-FM	LIC NCX GA		341.9 161.7	110.19 BLED20170106AAG	34 45 02.0 84 42 52.9	0.420 542	95.3 908	34.1 Georgia Public Telecommuni	-1.2	24.1
255A Tallapoosa	WWGA	LIC_CX GA		259.1 78.6	90.21 BLH20100927AAH	33 39 03.0 85 17 41.0	1.850 182	78.0 520	26.1 Wkng, Lic	0.5	30.0
256L1 Marietta	WIEH-LP	LIC ____ GA		335.0 155.0	28.90 BLL20150625AAU	34 02 35.6 84 28 19.3	0.030 53		361	6.0 Semeadores De Boas Novas,	0.6
255L1 Oakwood	WMKP-LP	LIC ____ GA		38.9 219.2	70.55 BLL20160111ABR	34 18 00.6 83 51 23.4	0.023 62		399	23.5R Totus Tuus Catholic Radio,	47.1M
256L1 Dallas	WDJY-LP	LIC ____ GA		287.6 107.4	42.30 BLL20150717ABE	33 55 16.6 84 46 32.6	0.013 58		360	21.2 Hype Media Global Inc	16.9

Terrain database is USGS 03 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, Co to 3rd adjacent.
 All separation margins (if shown) include rounding.
 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.
 Reference station has protected zone issue: AM tower

W255CJ LIC 40 DBU (50:10)

WMKP-LP 60 DBU

WMKP-LP

E1A

W255CJ STA 40 DBU (50:10)
NOTE THAT THE OVERLAP TO
WMKP-LP IS DECREASED.

W255CJ +
W255CJ

Latitude: 33-48-26 N
Longitude: 084-20-22 W
ERP: 0.18 kW
Channel: 255
Frequency: 98.9 MHz
AMSL Height: 588.0 m
Elevation: 264.0 m
Horiz. Pattern: Directional

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Scale 1:750,000

0 10 20 30 km

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W255CJ

BLFT20110915ACL

Latitude: 33-48-26 N

Longitude: 084-20-22 W

ERP: 0.18 kW

Channel: 255

Frequency: 98.9 MHz

AMSL Height: 588.0 m

Elevation: 264.0 m

Horiz. Pattern: Directional

WIEH-LP 60 DBU

WIEH-LP

E1B

W255CJ LIC 54 DBU (50:10)

W255CJ STA 54 DBU (50:10)
NOTE THAT THE OVERLAP TO
ALL FACILITIES IS
DECREASED.

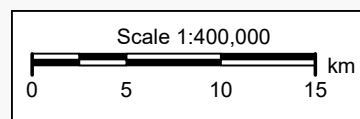
W255CJ +
W255CJ

W256DJ.C

W256DJ 60 DBU

WGRU-LP

WGRU-LP 60 DBU



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E1C WSB-FM ANALYSIS

W255CJ Atlanta, GA, Showing Protection to WSB-FM
 Geographic Coordinates: N. 33 4 8 26.0 W. 84 2 0 22.0
 74.1204(d) Study - Using GLOBE 30 SEC Terrain Database
 Translator or LPFM Maximum Licensed ERP = 0.18
 Translator or LPFM Antenna Height AG = 324 Meters
 W255CJ Antenna Model = SHI-1

Protected Station's Contour = 109.2688 dBu
 Translator's or LPFM's full Interference contour 149.2688

Review Azimuth = 0 Degrees True
 Horizontal Relative Field at Review Azimuth = 1.000
 Translator/LPFM ERP on the horizontal at Review Azimuth = 0.18 kW
 Distance between stations = 5.4 km
 Protected Station= WSB-FM, 100 kW, 594 M Meters COR AMSL

Depression Angle From Hori zon(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle(m)	Dist to IX Contour From Tower Base(m)	Height IX Above Ground (m)
00.00	1.0	1.0	0.1800	003.2374	003.2374	324.000
05.00	0.996	1.0	0.1786	003.2244	003.2122	323.719
10.00	0.985	1.0	0.1746	003.1888	003.1404	323.446
15.00	0.967	1.0	0.1683	003.1306	003.0239	323.190
20.00	0.949	1.0	0.1621	003.0723	002.8870	322.949
25.00	0.91	1.0	0.1491	002.9460	002.6700	322.755
30.00	0.871	1.0	0.1366	002.8198	002.4420	322.590
35.00	0.826	1.0	0.1228	002.6741	002.1905	322.466
40.00	0.774	1.0	0.1078	002.5057	001.9195	322.389
45.00	0.717	1.0	0.0925	002.3212	001.6413	322.359
50.00	0.654	1.0	0.0770	002.1173	001.3609	322.378
55.00	0.586	1.0	0.0618	001.8971	001.0881	322.446
60.00	0.514	1.0	0.0476	001.6640	000.8320	322.559
65.00	0.437	1.0	0.0344	001.4147	000.5979	322.718
70.00	0.357	1.0	0.0229	001.1558	000.3953	322.914
75.00	0.273	1.0	0.0134	000.8838	000.2287	323.146
80.00	0.186	1.0	0.0062	000.6022	000.1046	323.407
85.00	0.096	1.0	0.0017	000.3108	000.0271	323.690
90.00	0.0	1.0	0.0000	000.0003	000.0000	324.000

E1D W257DF ANALYSIS

W255CJ Atlanta, GA, Showing Protection to W257DF.C
 Geographic Coordinates: N. 33 4 8 26.0 W. 84 2 0 22.0
 74.1204(d) Study - Using GLOBE 30 SEC Terrain Database
 Translator or LPFM Maximum Licensed ERP = 0.18
 Translator or LPFM Antenna Height AG = 324 Meters
 W255CJ Antenna Model = SHI-1

Protected Station's Contour = 65.71058 dBu
 Translator's or LPFM's full Interference contour 105.71058

Review Azimuth = 0 Degrees True
 Horizontal Relative Field at Review Azimuth = 1.000
 Translator/LPFM ERP on the horizontal at Review Azimuth = 0.18 kW
 Distance between stations = 7.2 km
 Protected Station= W257DF.C, .015 kW, 533 M Meters COR AMSL

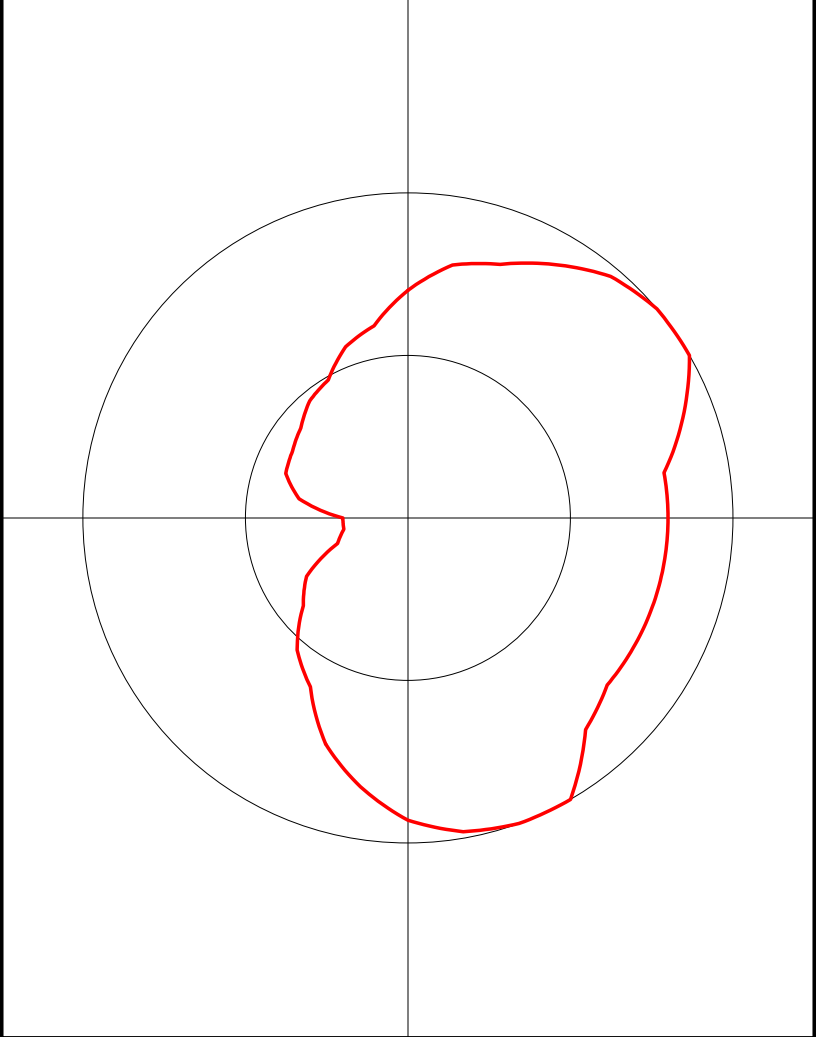
Depression Angle From Hori zon(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle(m)	Dist to IX Contour From Tower Base(m)	Height IX Above Ground (m)
00.00	1.0	1.0	0.1800	487.6489	487.6489	324.000
05.00	0.996	1.0	0.1786	485.6983	483.8501	281.669
10.00	0.985	1.0	0.1746	480.3342	473.0368	240.591
15.00	0.967	1.0	0.1683	471.5565	455.4886	201.952
20.00	0.949	1.0	0.1621	462.7788	434.8698	165.720
25.00	0.91	1.0	0.1491	443.7605	402.1836	136.459
30.00	0.871	1.0	0.1366	424.7422	367.8375	111.629
35.00	0.826	1.0	0.1228	402.7980	329.9528	92.965
40.00	0.774	1.0	0.1078	377.4402	289.1360	81.386
45.00	0.717	1.0	0.0925	349.6443	247.2358	76.764
50.00	0.654	1.0	0.0770	318.9224	204.9994	79.691
55.00	0.586	1.0	0.0618	285.7623	163.9065	89.917
60.00	0.514	1.0	0.0476	250.6515	125.3258	106.929
65.00	0.437	1.0	0.0344	213.1026	90.0610	130.863
70.00	0.357	1.0	0.0229	174.0907	59.5425	160.408
75.00	0.273	1.0	0.0134	133.1282	34.4561	195.408
80.00	0.186	1.0	0.0062	90.7027	15.7504	234.675
85.00	0.096	1.0	0.0017	46.8143	4.0801	277.364
90.00	0.0	1.0	0.0000	0.0488	0.0000	323.951

E1E AERIAL VIEW OF SITE



E1F Antenna Pattern

Azimuth (deg)	Relative Field
0.0	0.7
10.0	0.79
20.0	0.83
30.0	0.9
40.0	0.97
50.0	1.0
60.0	1.0
70.0	0.9
80.0	0.8
90.0	0.8
100.0	0.8
110.0	0.8
120.0	0.8
130.0	0.8
140.0	0.85
150.0	1.0
160.0	1.0
170.0	0.98
180.0	0.93
190.0	0.84
200.0	0.74
210.0	0.6
220.0	0.53
230.0	0.42
240.0	0.36
250.0	0.23
260.0	0.2
270.0	0.2
280.0	0.34
290.0	0.4
300.0	0.41
310.0	0.43
320.0	0.47
330.0	0.49
340.0	0.56
350.0	0.6



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BLFT20110915ACL
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Elevation: 264.0 m
Horiz. Pattern: Directional

E2 CONTOURS

STA 60 DBU IS
CONTAINED
WITHIN LICENSED
60 DBU.

W255CJ LIC 60 DBU

W255CJ STA 60 DBU

W255CJ
WWWQ

Atlanta

Scale 1:500,000

0 7 14 21 km

W255CJ
BLFT20110915ACL
Latitude: 33-48-26 N
Longitude: 084-20-22 W
ERP: 0.18 kW
Channel: 255
Frequency: 98.9 MHz
AMSL Height: 588.0 m
Elevation: 264.0 m
Horiz. Pattern: Directional

E2A

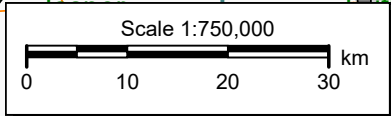
W255CJ LIC 60 DBU

W255CJ STA 60 DBU

WWWQ 60 DBU

W255CJ
WWWQ

Atlanta



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