

WMUM-FM CHANNEL 209 (89.7 MHz)  
CLASS C MINOR CHANGE IN  
LICENSED FACILITY APPLICATION  
*COCHRAN, GEORGIA*  
*(GEORGIA PUBLIC TELECOMMUNICATIONS COMMISSION)*

KESSLER AND GEHMAN ASSOCIATES, INC.  
TELECOMMUNICATIONS CONSULTING ENGINEERS

20070702

*Prepared by William T. Godfrey, Jr.*

KGGA

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**ENGINEERING TECHNICAL STATEMENT PREPARED BY WILLIAM T. GODFREY, JR. OF THE FIRM KESSLER AND GEHMAN ASSOCIATES, INC., TELECOMMUNICATIONS CONSULTING ENGINEERS IN CONNECTION WITH A MINOR CHANGE IN LICENSED FACILITY APPLICATION FOR THE GEORGIA PUBLIC TELECOMMUNICATIONS COMMISSION (GPTC) LICENSED WMUM-FM CHANNEL 209 CLASS C, COCHRAN, GEORGIA NON-COMMERCIAL EDUCATIONAL FM BROADCAST FACILITY (FILE NUMBER: BLED-19850227KR).**

The firm Kessler and Gehman Associates, Inc., has been retained by the Georgia Public Telecommunications Commission (GPTC), Atlanta, Georgia, in order to prepare engineering studies and the engineering portion of a minor change in licensed facility application for the licensed WMUM-FM Channel 209 Class C FM broadcast facility (BLED-19850222KR) requesting authorization to make changes to the following: 1) antenna; 2) antenna height radiation center; and 3) polarization ratio.

**Discussion**

GPTC is licensed to operate WMUM-FM Channel 209C with an ERP of 100 kW (horizontal and vertical polarization) using a Jampro model JSCP-10 nondirectional, circularly polarized, side-mounted antenna with an antenna height radiation center of 305 meters above ground level (AGL).

GPTC is in the process of converting all nine of its full-service television facilities from analog to digital as part of the DTV transition and the contract includes tower upgrades, new transmitters and new antennas for many of its NCE-FM facilities. The new proposed Dielectric model DCRC12CHV twelve-bay antenna will result in a 12.4-meter antenna height radiation center reduction.

The new IBOC capable FM transmitter for the proposed WMUM-FM facility will not provide the power required to operate with an ERP of 100 kW horizontal and 100 kW vertical. Therefore, in accordance with §73.525 of the FCC Rules, GPTC proposes to use mixed polarity. The WMUM-FM transmitter site is 168 km from the WJBF-TV Channel 6 transmitter site. §73.525(a) of the FCC Rules states that an “affected” TV Channel 6 station is a TV broadcast station which is authorized to operate on Channel 6 that is located within 196 km of a Channel 209 NCE-FM station. WMUM is 28 km inside the “affected” TV Channel 6 range and has the option of using mixed polarity in accordance with §73.525(e) of the FCC Rules. Since full circular polarization at 100 kW ERP is not possible with the new FM transmitter, GPTC proposes to use mixed polarity for the proposed WMUM-FM facility to maximize the vertical component and fill in the horizontal component with the remaining transmitter power available.

Accordingly, the changes requested in this minor change in license application are: 1) replace the licensed Jampro model JSCP-10 10-bay nondirectional antenna with a new Dielectric model DCRC12CHV 12-bay nondirectional antenna; 2) decrease the antenna height radiation center from the licensed height of 305 meters AGL to 292.6 meters AGL as a result of the antenna change; and 3) change from circular polarization to mixed polarization (elliptical) where the ERP in the vertical component will continue to be 100 kW and the ERP in the horizontal component will be decreased from 100 kW to 43 kW. Again, the 43 kW ERP in the horizontal component is based on the maximum transmitter power output available after powering the 100 kW ERP in the vertical component. §73.525(e) of the FCC Rules states that an applicant can choose to use mixed polarity if the permissible ERP is as follows:

$[H + (V/A)]$  is no greater than P

- Where: H is the horizontally polarized ERP in kilowatts for mixed polarity;
- V is the vertically polarized ERP in kilowatts for mixed polarity;
- A is 40 if the predicted interference area lies entirely outside the limits of a city of 50,000 persons or more, or 10 if it does not; and
- P is the maximum permitted horizontally polarized-only power in kilowatts.

Since the predicted interference area lies entirely outside the limits of a city of 50,000 persons, a value of 40 is assigned for “A.” The proposed ERP in the vertical component is 100 kW so a value of 100 assigned for “V.” Since the maximum permitted horizontally polarized-only power in kilowatts is 100 kW, a value of 100 is assigned for “P.” Since the maximum TPO available using the new FM transmitter will produce an ERP of 43 kW in the horizontal component, a value of 43 is assigned for “H.” Therefore,

$$P \geq [H + (V/A)]$$

$$100 \geq [43 + (100/40)]$$

$$100 \geq 45.5$$

Therefore, an ERP of 100 kW in the vertical component and 43 kW in the horizontal component is authorized based on the FCC’s rules for mixed polarity.

### **Attached Figures**

The following list is an index of enclosed figures produced by calculations and engineering studies of the proposed WMUM-FM Channel 209 Class C facility.

- 1) Proposed Engineering Specifications (Exhibit 1).
- 2) Antenna Data (Exhibit 2).
- 3) Support Structure Profile/Elevation View of Antenna System (Exhibit 3).
- 4) Antenna Vertical Pattern: 0° - 11° (Exhibit 4)
- 5) Antenna Vertical Pattern: 0° - 90° (Exhibit 5)
- 6) Antenna Vertical Pattern Tabulation (Exhibit 6)
- 7) USGS 7.5-Minute Topographic Quadrangle Map Depicting The Proposed Transmitter Location And Coordinate Lines (Exhibit 7).
- 8) Licensed WMUM-FM 1 mV/m Contour (Black) vs. Proposed WMUM-FM 1 mV/m Contour (Red) – (Exhibit 8)
- 9) Proposed 1mV/m (60 dBuV/m) Community of License Contour (Exhibit 9)
- 10) FM-to-FM Interference Study (Exhibit 10)

- 11) FM Allocation Study – WYFK-FM (Exhibit 11)
- 12) FM Allocation Study - WWBM-FM (Exhibit 12)
- 13) FM Allocation Study – WTHM-FM CP (Exhibit 13)
- 14) FM Allocation Study - WBJY-FM (Exhibit 14)
- 15) FM Allocation Study - WAEF-FM (Exhibit 15)
- 16) TV Channel 6 Study (Exhibit 16)

### **Transmitter Location**

The proposed antenna will be side-mounted at a radiation center height of 292.6 meters AGL on the WMUM-FM support structure (Exhibit 3). The WMUM-FM tower is registered with the FCC and has a registration number of 1018798. The antenna structure is located off of Highway 26 on Salem Cary Road approximately 7.5 miles NE of Cochran, GA.

### **Allocation Studies**

The F(50,50) 60.0 dBuV/m protected service contours for the licensed (black) and proposed (red) WMUM-FM facilities are depicted in Exhibit 8. It can be seen that the licensed facility would completely encompass the proposed facility in all azimuthal directions.

The F(50,50) 60.0 dBuV/m protected service contour for the proposed WMUM-FM facility is depicted in Exhibit 9. It can be seen that the proposed facility's F(50,50) 60.0 dBuV/m service contour would completely encompass Cochran, GA in all azimuthal directions. Cochran, GA is the community of license for the WMUM-FM station.

Exhibit 10 is an FM-to-FM interference study which verifies that the proposed WMUM-FM facility's F(50,10) interfering contour would not overlap any applicable station's F(50,50) 60.0 dBuV/m protected contours and that the proposed WMUM-FM facility's F(50,50) 60.0 dBuV/m

protected contour would not be overlapped by any applicable station's F(50,10) interfering contours.

Exhibit 11 is a pictorial depiction of the contour relationship between the proposed WMUM-FM facility's F(50,50) 60.0 dBuV/m protected (black) and F(50,10) 54.0 dBuV/m interfering (red) contours and the 1<sup>st</sup>-adjacent WYFK-FM F(50,50) 60.0 dBuV/m protected (black) and F(50,10) 54.0 dBuV/m interfering (red) contours. It can be seen that unacceptable overlap would not exist between the two stations.

Exhibit 12 is a pictorial depiction of the contour relationship between the proposed WMUM-FM facility's F(50,50) 60.0 dBuV/m protected (black) and F(50,10) 40.0 dBuV/m interfering (red) contours and the co-channel WWBM-FM facility's F(50,50) 60.0 dBuV/m protected (black) and F(50,10) 40.0 dBuV/m interfering (red) contours. It can be seen that unacceptable overlap would not exist between the two stations.

Exhibit 13 is a pictorial depiction of the contour relationship between the proposed WTHM-FM CP facility's F(50,50) 60.0 dBuV/m protected (black) and F(50,10) 54.0 dBuV/m interfering (red) contours and the 1<sup>st</sup>-adjacent channel WTHM-FM CP F(50,50) 60.0 dBuV/m protected (black) and F(50,10) 54.0 dBuV/m interfering (red) contours. It can be seen that unacceptable overlap would not exist between the two stations.

Exhibit 14 is a pictorial depiction of the contour relationship between the proposed WMUM-FM facility's F(50,50) 60.0 dBuV/m protected (black) and F(50,10) 100.0 dBuV/m interfering (red) contours and the 2<sup>nd</sup> adjacent-channel WBJY-FM facility's F(50,50) 60.0 dBuV/m protected (black) and F(50,10) 100.0 dBuV/m interfering (red) contours. It can be seen that unacceptable overlap would not exist between the two stations.

Exhibit 15 is a pictorial depiction of the contour relationship between the proposed WMUM-FM facility's F(50,50) 60.0 dBuV/m protected (black) and F(50,10) 100.0 dBuV/m interfering (red)

contours and the 3<sup>rd</sup>-adjacent channel WAEF-FM facility's F(50,50) 60.0 dBuV/m protected (black) and F(50,10) 100.0 dBuV/m interfering (red) contours. It can be seen that unacceptable overlap would not exist between the two stations.

Exhibit 16 is a TV Channel 6 study depicting the WJBF-TV Channel 6 F(50,50) Grade B contour (blue), the WCTV-TV Channel 6 F(50,50) Grade B contour (orange), the associated F(50,10) 67.3 dBu interfering contour for the licensed WMUM-FM facility (black) and the associated F(50,10) 67.3 dBu interfering contour for the proposed WMUM-FM facility (red). It can be seen that the interfering contour for the proposed WMUM-FM facility (red) would be completely encompassed by the interfering contour for the licensed WMUM-FM facility (black) in all azimuthal directions. Therefore, the proposed WMUM-FM facility would actually create a smaller interference area within the licensed WJBF-TV Channel 6 Grade B contour and as a result, would cause less interference. There would be no contour overlap with the WCTV-TV Channel 6 facility. Therefore, this application complies with the Television Channel 6 protection rules in §73.525 of the FCC Rules.

### **Intermediate Frequency Interference (53<sup>rd</sup> & 54<sup>th</sup> Adjacent Channels)**

The proposed WMUM-FM site would meet all separation requirements pertaining to intermediate frequency (IF) interference. The station with the narrowest gap with respect to distance from the proposed WMUM-FM transmitter site is (209 + 53 = 262 & 209 + 54 = 263) the licensed WXRS-FM Channel 263 Class C3 facility located approximately 82.4 km from the proposed WMUM-FM transmitter site in Swainsboro, GA at North Latitude 32° 34' 52" and West Longitude 82° 23' 14" where a separation of 29 km is required; therefore, the distance is easily met with a margin of 53.4 km.

### **FM Blanketing Interference**

Blanketing is defined as interference to the reception of other broadcast stations which is caused by the presence of an FM broadcast signal of 115 dBu (562 mV/m) or greater signal strength in the area adjacent to the antenna of the transmitting station. The 115 dBu contour is referred to as the blanketing contour and the area within this contour is referred to as the blanketing area. The proposed WMUM-FM Channel 209 blanketing contour extends 3.27 km from its transmitter and it is understood that GPTC must assume full financial responsibility for remedying new complaints of blanketing interference for a period of one year to all broadcast stations within the proposed WMUM-FM blanketing contour.

### **Environmental Impact**

The proposed WMUM-FM Channel 209 Class C facility would have no significant environmental impact as defined in §1.1307 of the FCC Rules. The FM transmitter, transmission line and antenna system would produce a maximum ERP of 100 kW (V-pol) and 43 kW (H-pol). It was determined that the maximum lobe of radiation from the base of the tower would occur at approximately 220.3 feet from the base of the tower (979.1-foot radial distance from the antenna center). At approximately 220.3 feet from the base of the tower, the depression angle of the main lobe would be approximately 77° below the horizontal. At that point, the relative field is 0.210 and the power density six feet above the ground would be approximately 0.0024 mW/cm<sup>2</sup>. This would only be 0.24% of the maximum permissible exposure (MPE) limits for Occupational/Controlled Exposure and only 1.18% of the MPE limits for General Population/Uncontrolled Exposure authorized by the American National Standards Institute (ANSI).

Since operation of the proposed WMUM-FM Channel 209 facility would not exceed 5.0% of the MPE limit for Occupational/Controlled Exposure or General Population/Uncontrolled Exposure at any point on the ground, the proposed WMUM-FM facility would not be considered a

“significant contributor” to the RF exposure environment pursuant to OET Bulletin 65, Edition 97-01. Therefore, contributions of exposure from other sources were not accounted for in this analysis. It is safe to conclude that the emissions would be insignificant and well within the maximum allowable requirements.

If other antennas are placed on the tower in the future, the applicant will cooperate with those users by reducing or completely terminating the power to the antenna when maintenance workers are in danger from electromagnetic radiation emanating from the antenna.

**Certification**

This technical statement was prepared by William T. Godfrey, Jr., Telecommunications Technical Consultant with Kessler and Gehman Associates, Inc. having offices in Gainesville, Florida and has been working in the field of radio and television broadcast consulting since 1998. He graduated from the University of North Florida with a Bachelor of Arts degree in Criminal Justice and a minor in Mathematics in 1993. As a Professional in the field of Telecommunications he states under penalty of perjury that the information contained in this report is true and correct to the best of his knowledge and belief.



KESSLER AND GEHMAN ASSOCIATES, INC.

A handwritten signature in blue ink that reads "William T. Godfrey, Jr." is written over a horizontal line. Below the line, the name and title are printed in black text.

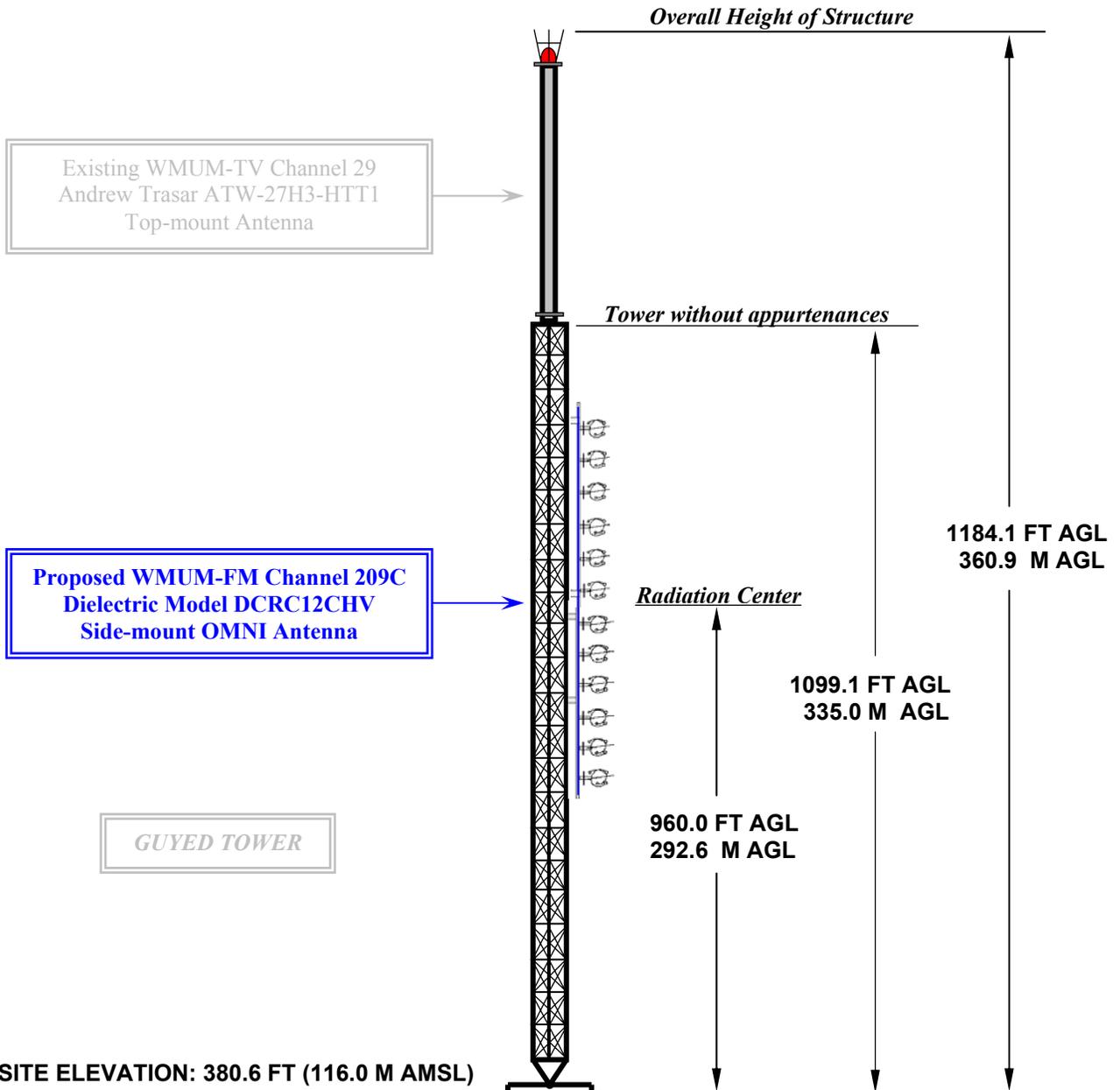
WILLIAM T. GODFREY, JR.  
Telecommunications Technical Consultant

2 July, 2007





## PROPOSED WMUM-FM ELEVATION VIEW



**SITE ELEVATION: 380.6 FT (116.0 M AMSL)**  
**OVERALL HEIGHT AGL: 360.9 M**  
**OVERALL HEIGHT AMSL: 476.9 M**  
**RADIATION CENTER AGL: 292.6 M**  
**RADIATION CENTER AMSL: 408.6 M**  
**RADIATION CENTER HAAT: 304.1 M**  
**AVG OF ALL NON-ODD RADIALS: 104.5 M**  
**SITE HAAT: 11.5 M**

**COORDINATES (NAD 27):**  
**N. LATITUDE 32° 28' 11"**  
**W. LONGITUDE 83° 15' 17"**

**Antenna Structure Registration Number:**  
**1018798**

**NOTE: NOT TO SCALE**

**KESSLER AND GEHMAN**

TELECOMMUNICATIONS CONSULTING ENGINEERS  
 507 N.W. 60th Street, Suite C  
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**WMUM-FM CHANNEL 209C**

**COCHRAN, GEORGIA**

**20070628**

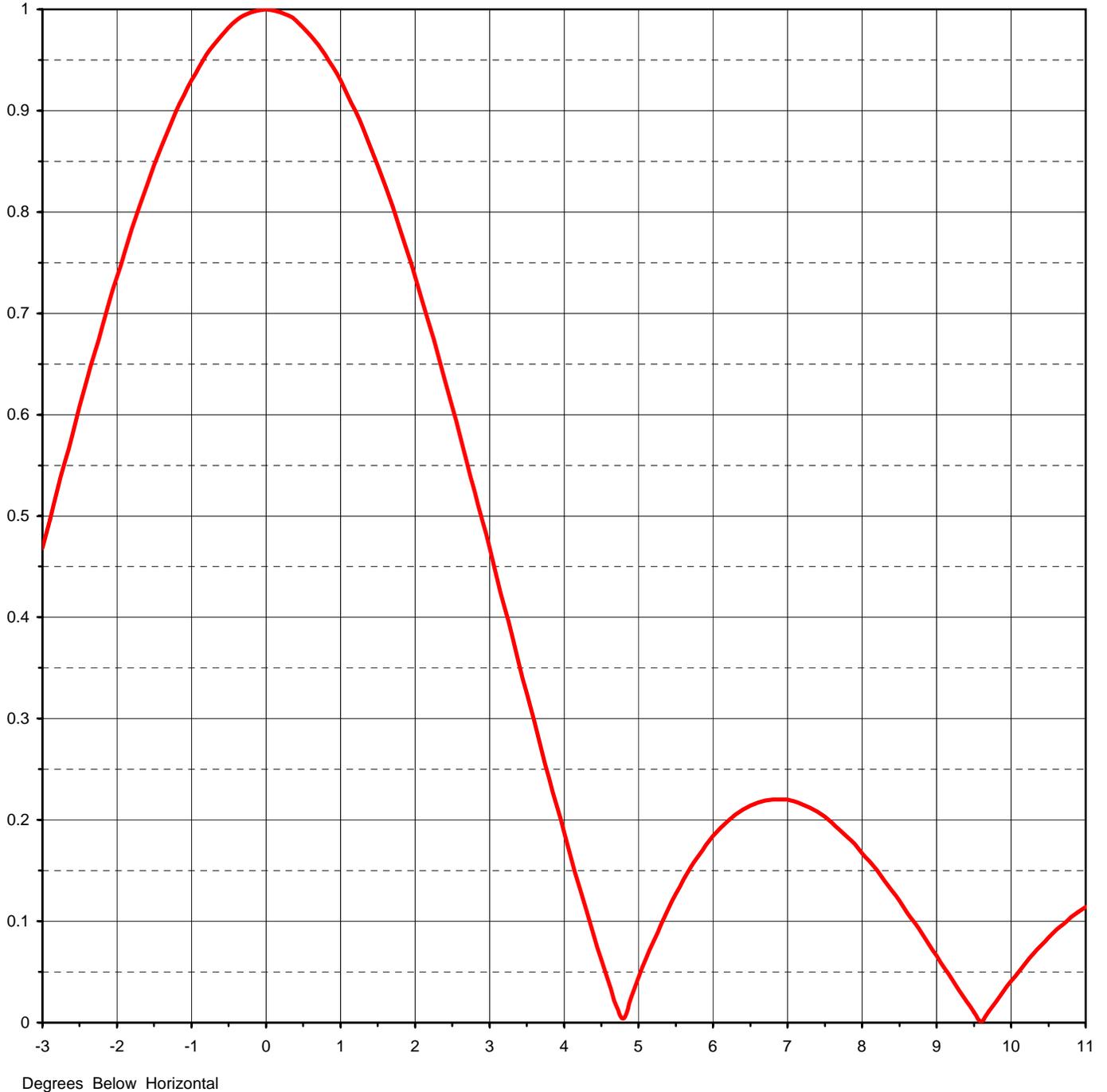
**EXHIBIT 3**



Proposal Number **C-00694-1**    Revision: **1**  
Date **2-Oct-06**  
Call Letters **WMUM**  
Location **Cochran, GA**  
Customer  
Antenna Type **DCRC12CHV**

### ELEVATION PATTERN

RMS Gain at Main Lobe	<b>12.80 ( 11.07 dB )</b>	Beam Tilt	<b>0.00 deg</b>
RMS Gain at Horizontal	<b>12.80 ( 11.07 dB )</b>	Frequency	<b>89.70 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>12C128000</b>

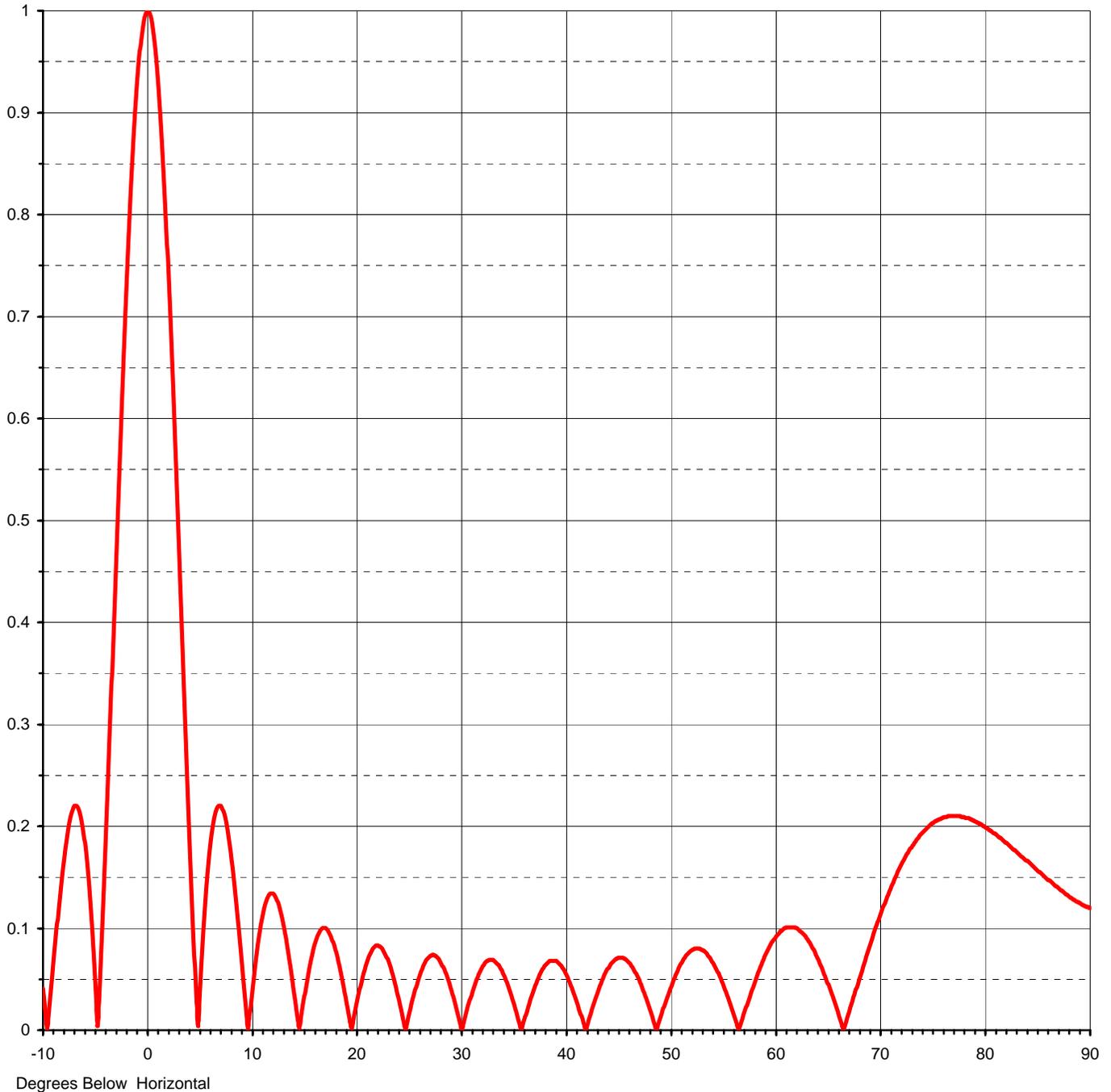




Proposal Number **C-00694-1**      Revision: **1**  
Date **2-Oct-06**  
Call Letters **WMUM**  
Location **Cochran, GA**  
Customer  
Antenna Type **DCRC12CHV**

### ELEVATION PATTERN

RMS Gain at Main Lobe	<b>12.80 ( 11.07 dB )</b>	Beam Tilt	<b>0.00 deg</b>
RMS Gain at Horizontal	<b>12.80 ( 11.07 dB )</b>	Frequency	<b>89.70 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>12C128000-90</b>





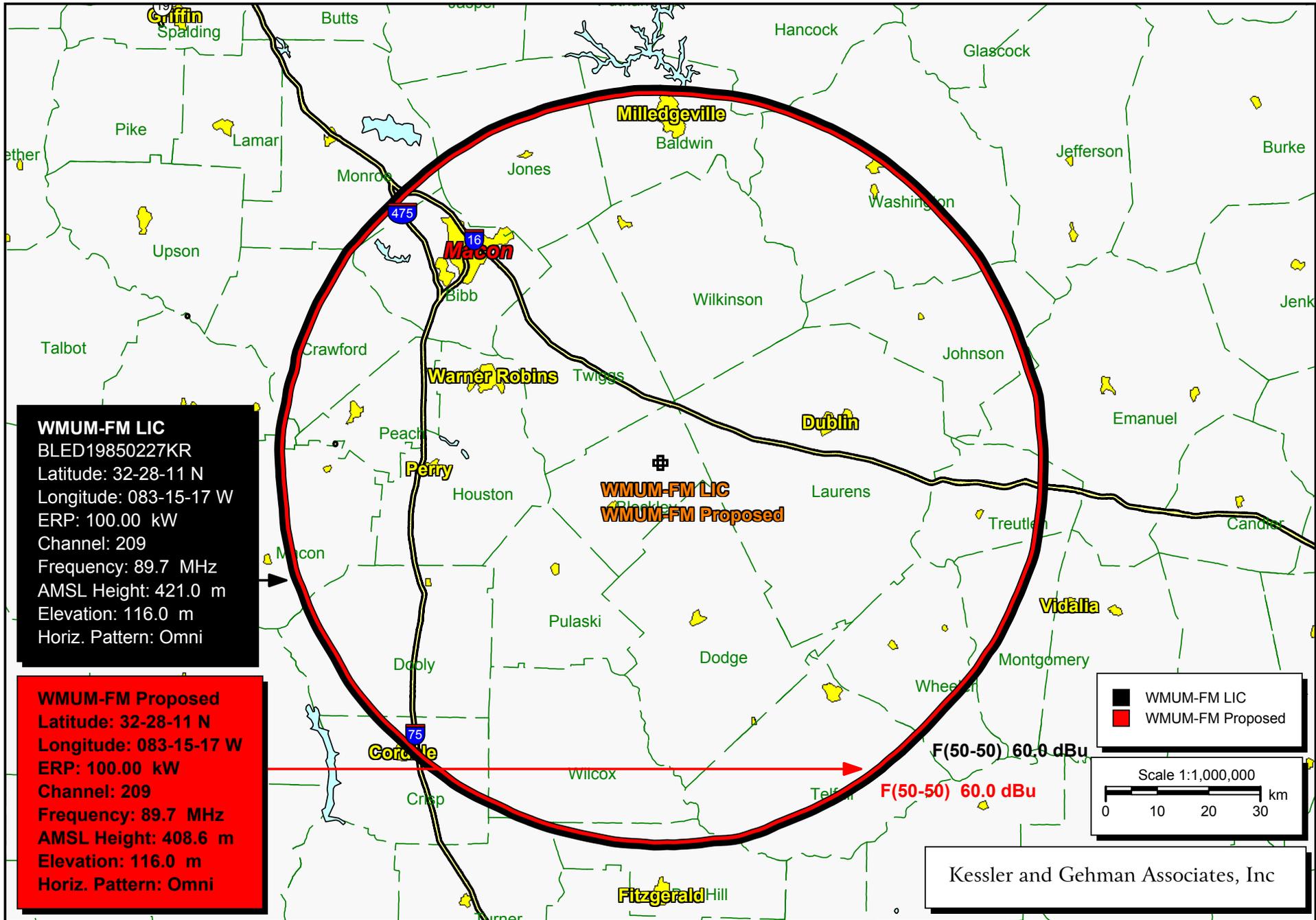
Proposal Number **C-00694-1**      Revision: **1**  
 Date **2-Oct-06**  
 Call Letters **WMUM**  
 Location **Cochran, GA**  
 Customer  
 Antenna Type **DCRC12CHV**

## TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **12C128000-90**

Angle	Field										
-10.0	0.041	2.4	0.635	10.6	0.084	30.5	0.016	51.0	0.065	71.5	0.152
-9.5	0.010	2.6	0.580	10.8	0.097	31.0	0.034	51.5	0.073	72.0	0.163
-9.0	0.066	2.8	0.525	11.0	0.109	31.5	0.050	52.0	0.078	72.5	0.173
-8.5	0.120	3.0	0.468	11.5	0.129	32.0	0.061	52.5	0.080	73.0	0.181
-8.0	0.167	3.2	0.410	12.0	0.134	32.5	0.068	53.0	0.079	73.5	0.188
-7.5	0.203	3.4	0.353	12.5	0.126	33.0	0.069	53.5	0.075	74.0	0.194
-7.0	0.220	3.6	0.297	13.0	0.106	33.5	0.065	54.0	0.067	74.5	0.199
-6.5	0.214	3.8	0.241	13.5	0.077	34.0	0.056	54.5	0.058	75.0	0.203
-6.0	0.184	4.0	0.187	14.0	0.042	34.5	0.044	55.0	0.046	75.5	0.206
-5.5	0.127	4.2	0.135	14.5	0.006	35.0	0.028	55.5	0.032	76.0	0.209
-5.0	0.044	4.4	0.086	15.0	0.029	35.5	0.010	56.0	0.017	76.5	0.210
-4.5	0.062	4.6	0.039	15.5	0.060	36.0	0.008	56.5	0.001	77.0	0.210
-4.0	0.187	4.8	0.004	16.0	0.083	36.5	0.025	57.0	0.015	77.5	0.210
-3.5	0.325	5.0	0.044	16.5	0.096	37.0	0.041	57.5	0.030	78.0	0.209
-3.0	0.468	5.2	0.080	17.0	0.100	37.5	0.054	58.0	0.045	78.5	0.207
-2.8	0.525	5.4	0.112	17.5	0.094	38.0	0.063	58.5	0.059	79.0	0.205
-2.6	0.580	5.6	0.141	18.0	0.079	38.5	0.068	59.0	0.072	79.5	0.202
-2.4	0.635	5.8	0.164	18.5	0.058	39.0	0.068	59.5	0.082	80.0	0.199
-2.2	0.687	6.0	0.184	19.0	0.032	39.5	0.064	60.0	0.090	80.5	0.196
-2.0	0.736	6.2	0.199	19.5	0.004	40.0	0.056	60.5	0.097	81.0	0.192
-1.8	0.783	6.4	0.210	20.0	0.023	40.5	0.044	61.0	0.100	81.5	0.188
-1.6	0.826	6.6	0.217	20.5	0.047	41.0	0.030	61.5	0.101	82.0	0.184
-1.4	0.865	6.8	0.220	21.0	0.066	41.5	0.014	62.0	0.100	82.5	0.179
-1.2	0.900	7.0	0.220	21.5	0.078	42.0	0.003	62.5	0.096	83.0	0.175
-1.0	0.930	7.2	0.215	22.0	0.083	42.5	0.020	63.0	0.090	83.5	0.170
-0.8	0.955	7.4	0.208	22.5	0.080	43.0	0.035	63.5	0.082	84.0	0.166
-0.6	0.974	7.6	0.197	23.0	0.070	43.5	0.049	64.0	0.072	84.5	0.161
-0.4	0.989	7.8	0.183	23.5	0.054	44.0	0.060	64.5	0.058	85.0	0.156
-0.2	0.997	8.0	0.167	24.0	0.033	44.5	0.067	65.0	0.045	85.5	0.152
0.0	1.000	8.2	0.150	24.5	0.010	45.0	0.071	65.5	0.030	86.0	0.147
0.2	0.997	8.4	0.130	25.0	0.013	45.5	0.071	66.0	0.014	86.5	0.143
0.4	0.989	8.6	0.109	25.5	0.034	46.0	0.067	66.5	0.002	87.0	0.139
0.6	0.974	8.8	0.088	26.0	0.052	46.5	0.060	67.0	0.018	87.5	0.135
0.8	0.955	9.0	0.066	26.5	0.065	47.0	0.050	67.5	0.035	88.0	0.131
1.0	0.930	9.2	0.043	27.0	0.072	47.5	0.037	68.0	0.052	88.5	0.128
1.2	0.900	9.4	0.021	27.5	0.073	48.0	0.022	68.5	0.068	89.0	0.125
1.4	0.865	9.6	0.001	28.0	0.068	48.5	0.006	69.0	0.084	89.5	0.122
1.6	0.826	9.8	0.011	28.5	0.057	49.0	0.010	69.5	0.100	90.0	0.120
1.8	0.783	10.0	0.031	29.0	0.042	49.5	0.026	70.0	0.114		
2.0	0.736	10.2	0.050	29.5	0.024	50.0	0.041	70.5	0.128		
2.2	0.687	10.4	0.068	30.0	0.004	50.5	0.054	71.0	0.141		





**WMUM-FM LIC**  
 BLED19850227KR  
 Latitude: 32-28-11 N  
 Longitude: 083-15-17 W  
 ERP: 100.00 kW  
 Channel: 209  
 Frequency: 89.7 MHz  
 AMSL Height: 421.0 m  
 Elevation: 116.0 m  
 Horiz. Pattern: Omni

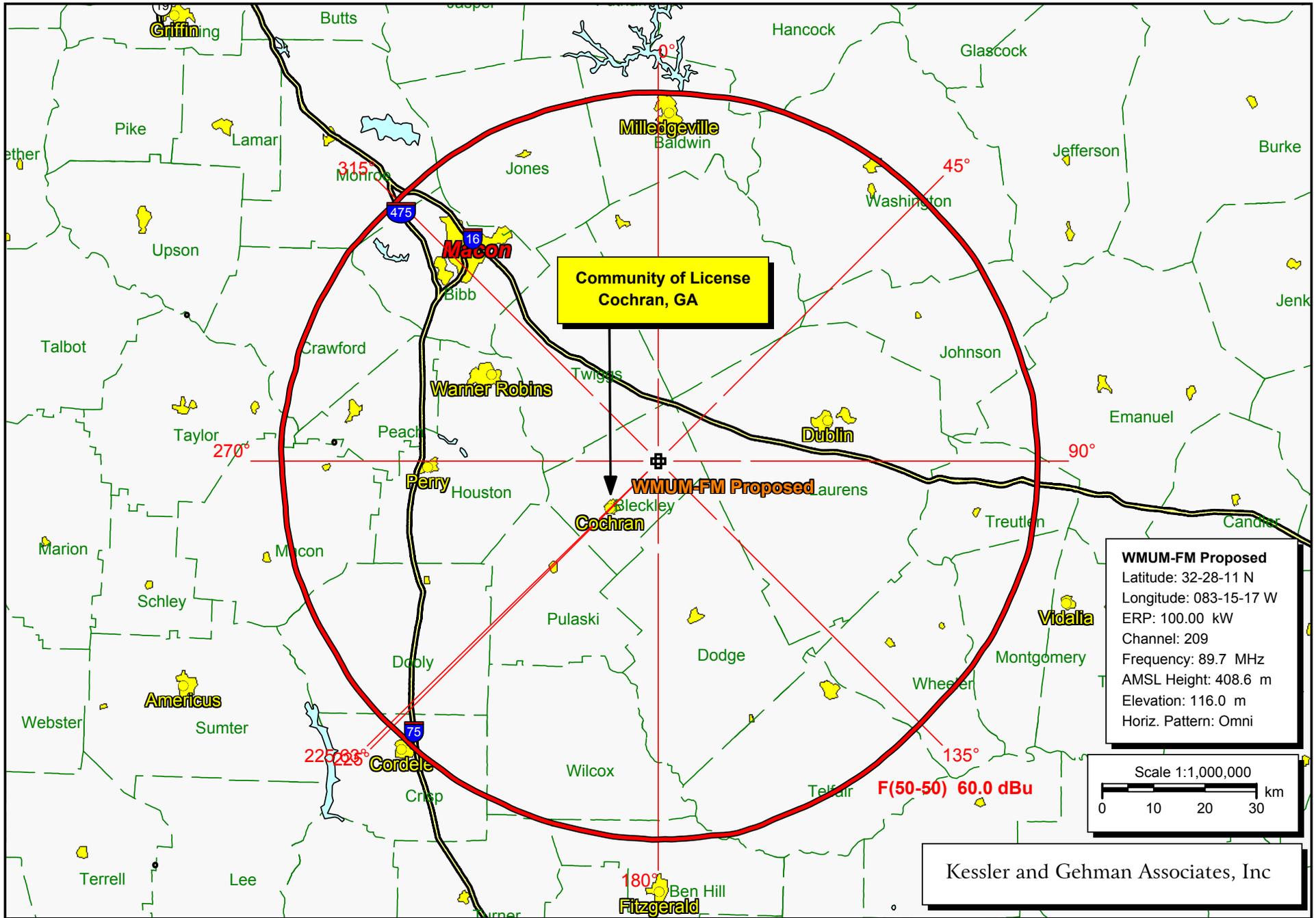
**WMUM-FM Proposed**  
 Latitude: 32-28-11 N  
 Longitude: 083-15-17 W  
 ERP: 100.00 kW  
 Channel: 209  
 Frequency: 89.7 MHz  
 AMSL Height: 408.6 m  
 Elevation: 116.0 m  
 Horiz. Pattern: Omni

WMUM-FM LIC  
 WMUM-FM Proposed

Scale 1:1,000,000  
 0 10 20 30 km

Kessler and Gehman Associates, Inc

WMUM-FM (License) vs. WMUM-FM (Proposed)



Proposed WMUM-FM Community of License Contour

NCE-FM Interference Study

WMUM-FM

REFERENCE  
32 28 11.0 N.  
83 15 17.0 W.

CH# 209C - 89.7 MHz, Pwr= 100 kW, HAAT=304.1 M, COR= 408.6 M  
Average Protected F(50-50)= 72.7 km

DISPLAY DATES  
DATA 06-26-07  
SEARCH 06-28-07

CH CITY	CALL	TYPE STATE	ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*OUT* (Overlap in km)
06+2C Augusta	WJBF	LI GA	_HY	51.5 232.3	168.63 BLCT20040130AOR	33 24 20.0 81 50 01.0	100.000 495	564	122.3 187.1R Media General Communicatio	-18.4M
208C2 Columbus	WYFK	LIC GA	_CN	278.3 97.4	161.19 BLED19870807KD	32 40 03.0 84 57 19.0	50.000 134	73.4 313	48.0 Bible Broadcasting Network	7.32
209A Yates	WWBM	LIC GA	DCX	306.3 125.4	188.67 BLED20040217ABU	33 27 47.0 84 53 35.0	1.000 98	26.3 351	7.9 Best Media, Inc.	8.98
06Z3C Thomasville	WCTV	LI GA	_HY	198.2 17.8	209.87 BLCT19870630KF	30 40 13.0 83 56 26.0	97.700 619	667	128.5 194.2R Gray Television Licensee,	15.7M
210C3 Thomson Vertical Polarization Only	WTHM	CP GA	DVN	28.6 209.0	163.16 BPED19980319MI	33 45 28.0 82 24 36.0	8.500 150	55.7 269	37.3 Educational Media Foundati	20.99
207C1 Americus	WBJY	LIC GA	_VX	206.9 26.7	103.24 BLED20020305AAP	31 38 22.0 83 44 58.0	65.000 187	7.0 296	58.3 American Family Associatio	34.62
212C2 Cordele	WAEF	LIC GA	DV_	206.9 26.7	103.24 BLED20010607AAH	31 38 22.0 83 44 58.0	11.000 154	2.9 263	31.7 American Family Associatio	61.21
06Z2 Wren	LMWCES	AP GA	DHN	45.6 226.1	126.05 BPRM20060619ABI	33 15 33.0 82 17 09.0	30.000 436	551	31.5 95.9R Test	30.1M
208C1 Savannah	WYFS	LIC GA	DEN	103.5 284.6	184.48 BLED19890727KA	32 04 04.0 81 21 17.0	100.000 183	62.8 191	42.6 Bible Broadcasting Network	34.35
208A Winder	WYFW	LIC GA	DCN	344.8 164.5	175.15 BLED19970821KA	33 59 32.0 83 45 15.0	6.000 61	36.4 330	23.9 Bible Broadcasting Network	47.29
263C3 Swainsboro One Step Application	WXRS-FM	RSV GA	---	83.9 264.4	79.03	32 32 31.0 82 25 05.0	25.000 100	19.6 177	78.7 31.0R Radiojones, Llc	48.0M
209A Toccoa Falls	WTXR	LIC GA	DCX	357.6 177.5	236.40 BLED20010125ABQ	34 35 57.0 83 21 55.0	0.400 42	54.7 387	16.9 Toccoa Falls College	48.39
263C3 Swainsboro One Step Application	WXRS-FM	CP GA	NCX	81.1 261.6	82.40 BPH20050815ADK	32 34 51.0 82 23 15.0	25.000 84	19.6 162	78.7 31.0R Radiojones, Llc	51.4M
209C Columbia	WMHK	LIC SC	DCN	51.3 232.7	293.93 BLED19940323KA	34 05 49.0 80 45 51.0	100.000 426	159.1 507	68.3 Columbia Bible College Bro	53.36
263A Swainsboro	WXRS-FM	LIC GA	_CN	81.1 261.6	82.43 BMLH19921120KD	32 34 52.0 82 23 14.0	3.000 91	19.6 170	78.7 29.0R Radiojones, Llc	53.4M
209A Tallahassee Vertical Polarization Only	WVFS	LIC FL	_VN	203.8 23.3	245.73 BLED19931115KA	30 26 22.0 84 17 29.0	2.700 53	51.8 82	13.0 Florida State University	59.57
06Z3 Pelham	LMWABW	AP GA	DHN	198.2 17.8	209.87 BPRM20060619ABE	30 40 13.0 83 56 26.0	3.800 474	525	78.8 144.5R Test	65.4M
210C1 Beaufort	WJWJ-FM	LIC SC	_C_	82.9 264.3	243.06 BLED20060221AER	32 42 42.0 80 40 54.0	48.000 334	98.6 340	67.7 South Carolina Educational	68.51
211C1 Waycross	WXVS	LIC GA	DEN	154.9 335.3	152.70 BLED19860403KD	31 13 17.0 82 34 24.0	79.000 280	8.8 329	66.6 Georgia Public Telecommuni	75.88

Terrain database is USGS 03 SEC

ERP and HAAT are on direct line to and from reference station.

Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, \_= Omni), Polarization (C,H,V,E), Beamtlt(Y,N,X)

Incoming contour overlap is ignored.

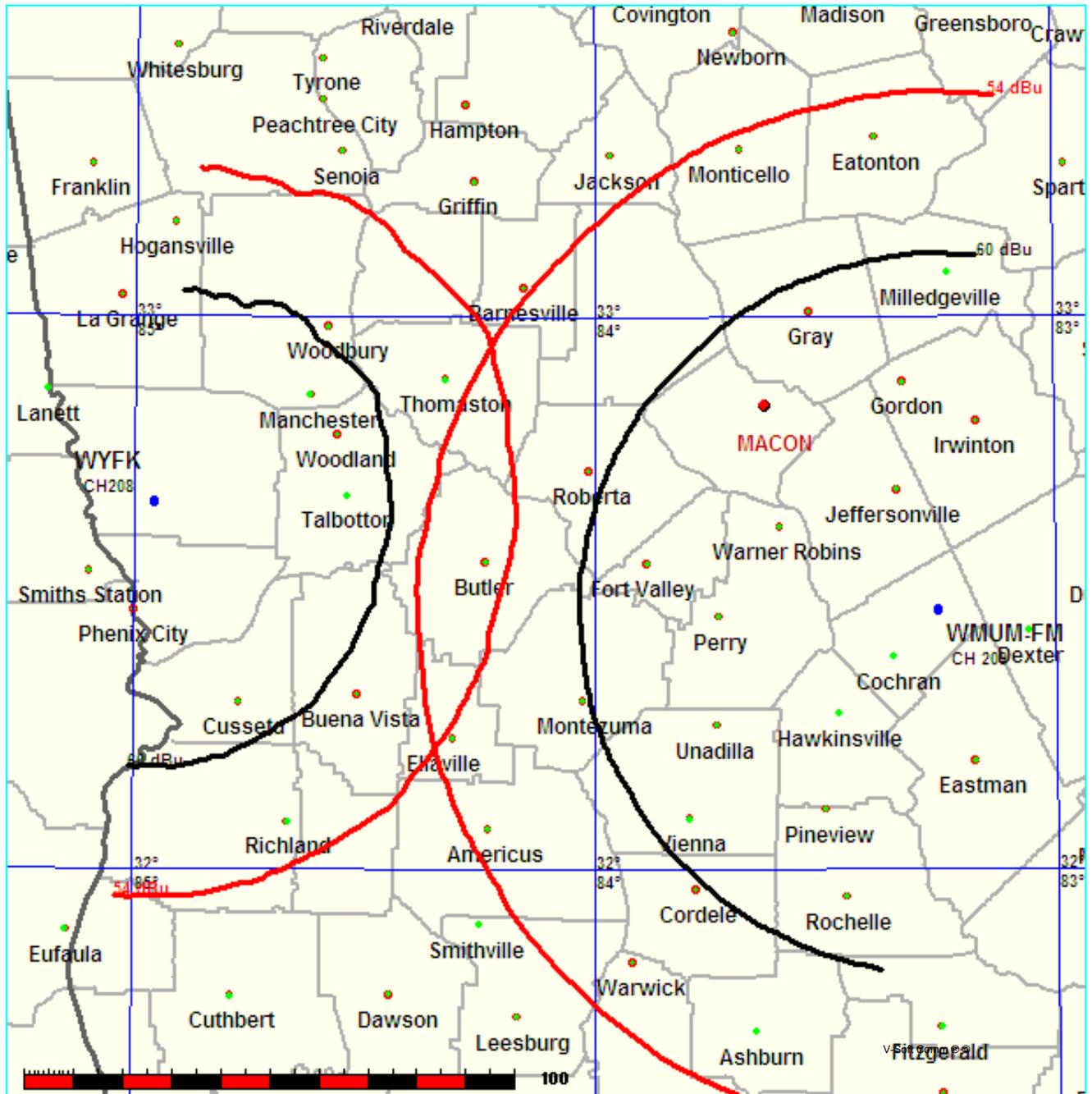
NCE-FM Allocation Study  
WMUM-FM and WYFK-FM

FMCommander Single Allocation Study  
06-28-2007

WMUM-FM CH 209 C  
100.0 kW 408.6 M COR  
Prot. = 60 dBu  
Intef. = 54 dBu

WYFK CH 208 C2 BLED19870807KD  
50.0 kW, 313 M COR  
Prot. = 60 dBu  
Intef. = 54 dBu

Scale = 1:2,000,000



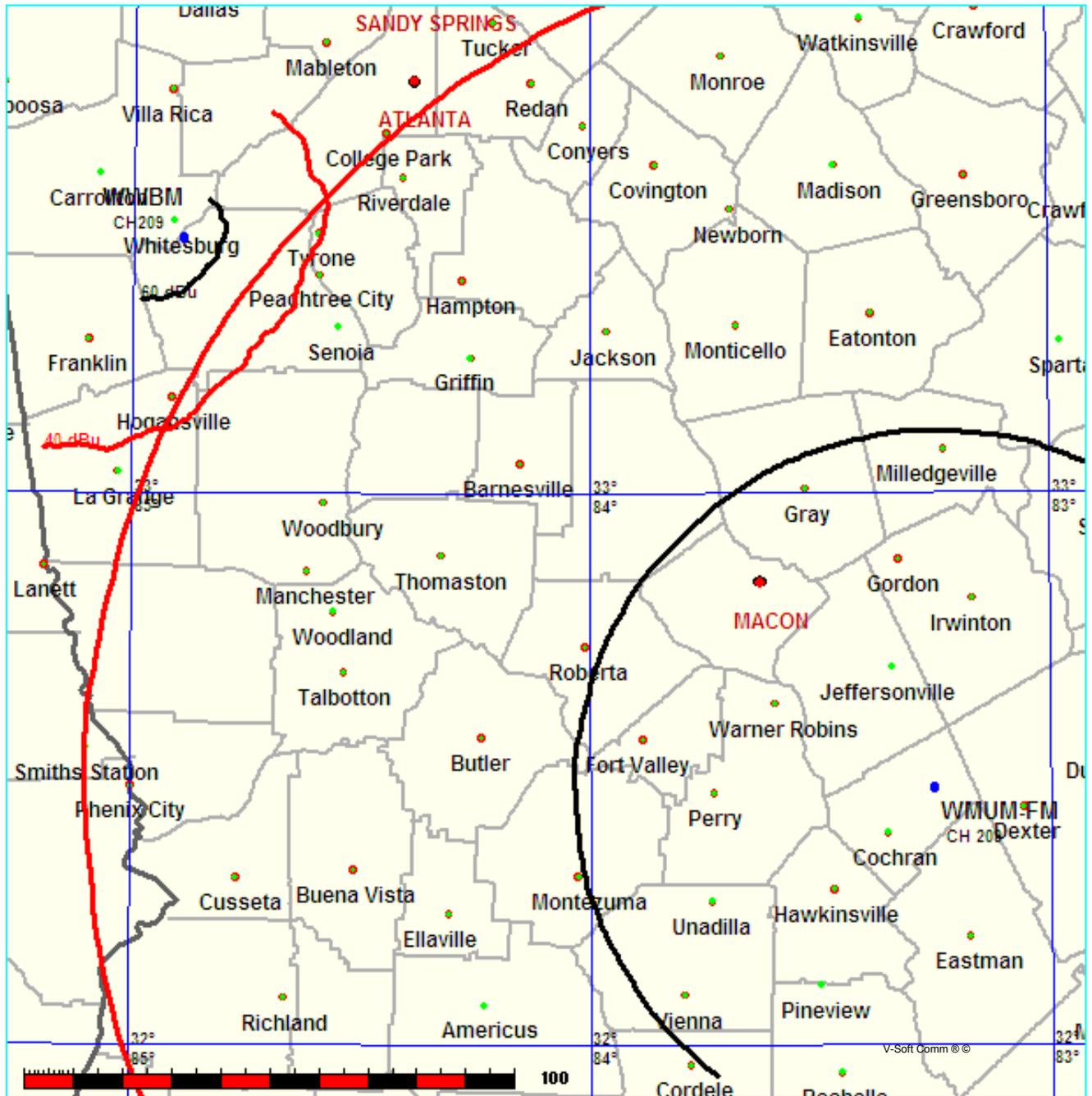
NCE-FM Allocation Study  
WMUM-FM and WWBM-FM

FMCommander Single Allocation Study  
06-28-2007

WMUM-FM CH 209 C  
100.0 kW 408.6 M COR  
Prot. = 60 dBu  
Intef. = 40 dBu

WWBM CH 209 A BLED20040217ABU  
1.0 kW, 351 M COR DA  
Prot. = 60 dBu  
Intef. = 40 dBu

Scale = 1:2,000,000

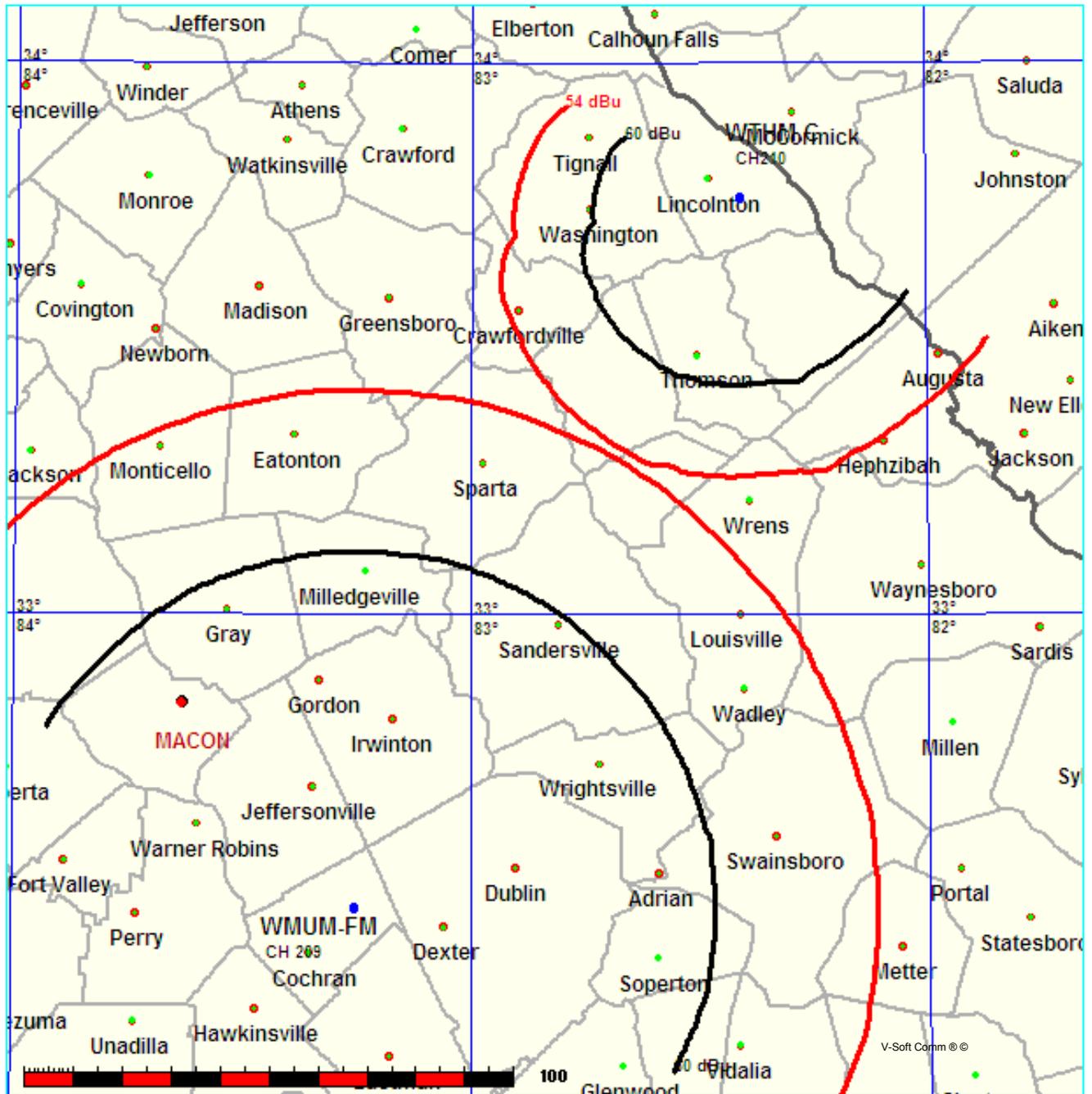


NCE-FM Allocation Study  
WMUM-FM and WTHM-FM

FMCommander Single Allocation Study  
06-28-2007

WMUM-FM CH 209 C	WTHM.C CH 210 C3	BPED19980319MI
100.0 kW 408.6 M COR	8.5 kW, 269 M COR DA	
Prot. = 60 dBu	Prot. = 60 dBu	
Intef. = 54 dBu	Intef. = 54 dBu	

Scale = 1:2,000,000



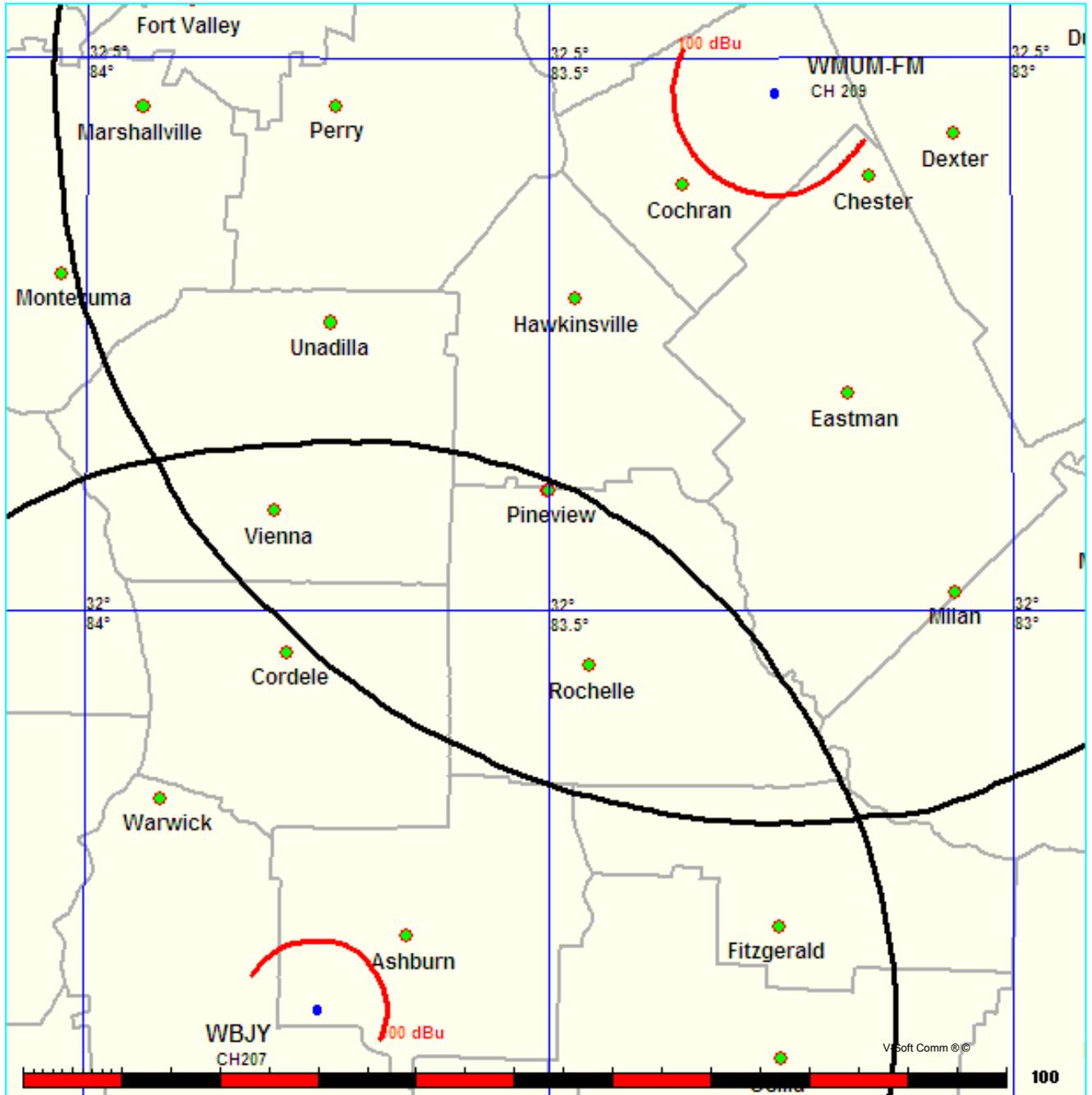
NCE-FM Allocation Study  
WMUM-FM and WBJY-FM

FMCommander Single Allocation Study  
06-28-2007

WMUM-FM CH 209 C  
100.0 kW 408.6 M COR  
Prot. = 60 dBu  
Intef. = 100 dBu

WBJY CH 207 C1 BLED20020305AAP  
65.0 kW, 296 M COR  
Prot. = 60 dBu  
Intef. = 100 dBu

Scale = 1:1,000,000



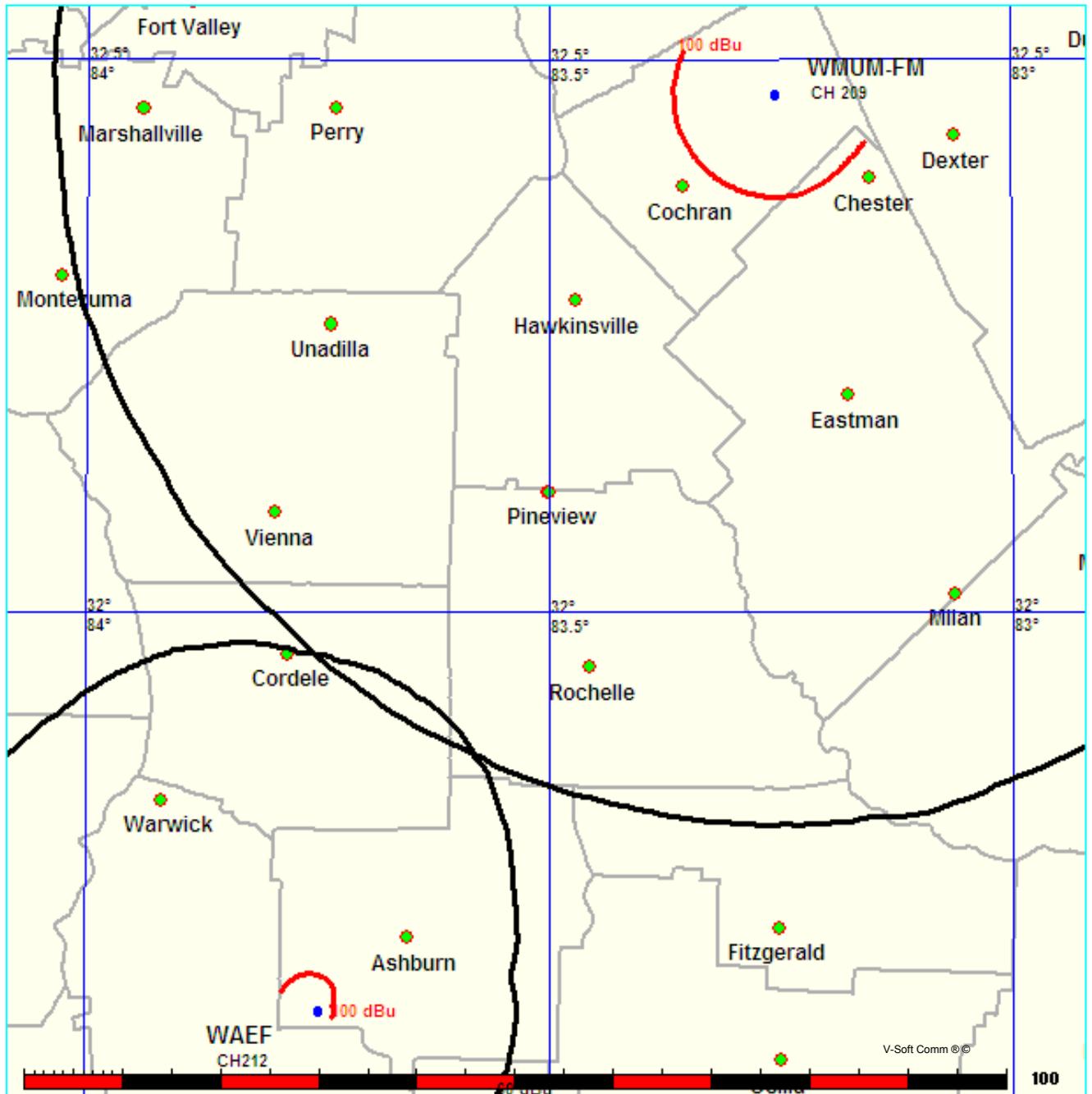
NCE-FM Allocation Study  
WMUM-FM and WAEF-FM

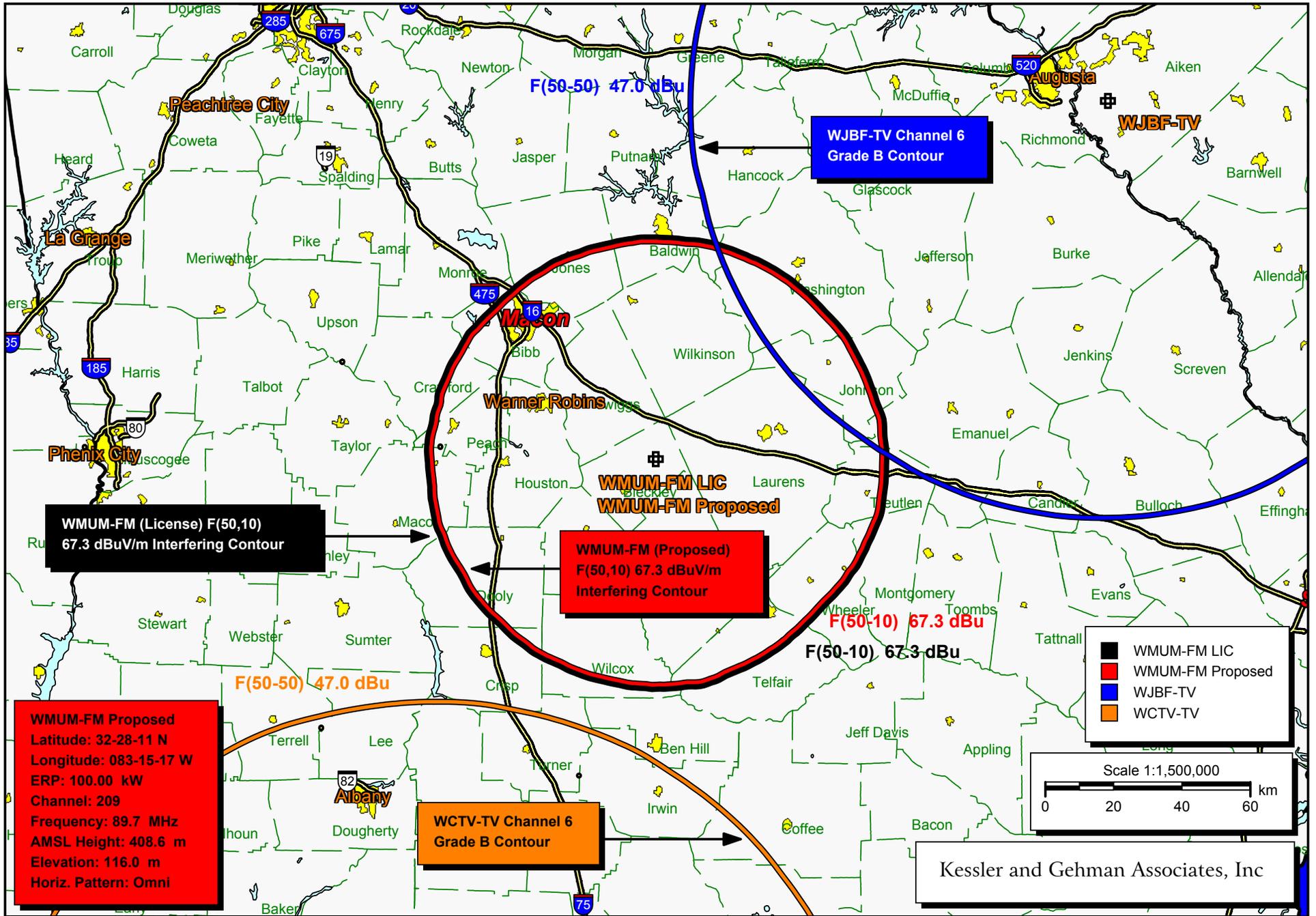
FMCommander Single Allocation Study  
06-28-2007

WMUM-FM CH 209 C  
100.0 kW 408.6 M COR  
Prot. = 60 dBu  
Intef. = 100 dBu

WAEF CH 212 C2 BLED20010607AAH  
11.0 kW, 263 M COR DA  
Prot. = 60 dBu  
Intef. = 100 dBu

Scale = 1:1,000,000





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