

ORIGINAL



WASHINGTON, DC

2020-01-02 10:21:07

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January 2, 2020

Accepted / Filed

JAN - 2 2020

Federal Communications Commission
Office of the Secretary

Via Hand Delivery

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

**Re: Request for Experimental Authorization
Station WCSX(FM), Fac. ID No. 25084, Birmingham, MI**

Dear Ms. Dortch:

Transmitted herewith, on behalf of Beasley Media Group Licenses, LLC, licensee of station WCSX(FM) (Fac. ID No. 25084), Birmingham, Michigan, is a request for Experimental Authority for asymmetrical IBOC experimental operation.

Details of the requested experimental operation and its parameters are set forth in the attached Engineering Statement. Also included is a certification that no party to this request is subject to a denial of federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862.

Please date-stamp the enclosed "Return Copy" of this request and return it to the courier delivering the package. Should there be any questions concerning this matter, please contact the undersigned.

Respectfully submitted,

A handwritten signature in blue ink that reads 'F. Scott Pippin'.

F. Scott Pippin

Enclosure

cc: Rudy Bonacci, Media Bureau (by e-mail)

ORIGINAL

ANTI-DRUG ABUSE ACT CERTIFICATION

Beasley Media Group Licenses, LLC, licensee of WCSX(FM), Birmingham, Michigan (Facility ID No. 25084) (the "Station") hereby certifies that no party to the request for experimental authority (EA) for the Station is subject to a denial of federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862.

By:

A handwritten signature in blue ink, appearing to read "Caroline Beasley", written over a horizontal line.

Caroline Beasley
CEO

January 2, 2020

Engineering Statement

This engineering statement is prepared on behalf of Beasley Media Group Licenses, LLC, licensee of commercial FM broadcast station WCSX, Birmingham, MI (FCC facility ID 25084) in support of a request for a new experimental authorization to allow the continued use of asymmetrical digital sidebands. Experimental authority was originally granted to operate in this mode on January 7, 2015 (File No. 20141107AEH) and such authority has been renewed annually, at the licensee's request, by the Commission. WCSX has now reached the statutory five-year limit on such renewals and therefore respectfully requests that a new experimental authorization be issued to allow continued operation in this mode. The Commission is actively considering permitting asymmetrical sideband operation on a routine basis for all FM stations utilizing hybrid digital transmissions. If and when such routine operation is allowed, the requirement for further experimental authorization will be rendered moot.

The original justification and related technical supporting data proposing asymmetrical operation by WCSX was submitted to the Commission on November 7, 2014.¹ A copy of this material is appended to this engineering statement for reference purposes as there has been no change in the operational parameters nor in the allocation situation since its initial submission. Interim reports to the Commission relative to the asymmetrical digital operation by WCSX have detailed noticeably improved coverage and improved stability and robustness of digital reception. There have been no reports, whatsoever, of interference to any pertinent co and/or adjacent channel FM station.

WCSX therefore respectfully requests a new experimental authorization to allow continued operation with asymmetrical digital sidebands, employing the following parameters which are unchanged from the currently authorized experimental operation:

Analog ERP: 13.5 kW

LSB Digital ERP: 0.270 kW

USB Digital ERP: 0.680 kW

Any questions relative to the technical aspects of this request may be addressed to the undersigned.

Contact information:

email: Smitty@SKGIconulting.com

office: 609-895-2973

USPS: P.O. Box 6501, Lawrenceville, NJ 08648

Milford K. Smith

Smith, Khanna and Guill, Inc.

December 27, 2019

¹ In 2014, WCSX was licensed to Greater Boston Radio, Inc. The station was subsequently acquired by Beasley in 2016.



WASHINGTON, DC

RETURN

8430
WCSX

NANCY A. ORY
202.416.6791
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November 7, 2014

Via Hand Delivery

Accepted/Files

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

NOV - 7 2014
Federal Communications Commission
Office of the Secretary

**Re: Application for Experimental Authorization
Station WCXS(FM), Fac. ID No. 25084, Birmingham, MI**

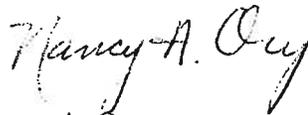
Dear Ms. Dortch:

Transmitted herewith, on behalf of Greater Boston Radio, Inc., licensee of station WCSX(FM) (Fac. ID No. 25084), Birmingham, Michigan, is a request for Experimental Authority to test an asymmetrical IBOC experimental operation at -14/-10 dBc.

Details of the experimental operation and its parameters are set forth in the attached letter. Also included is a certification that no party to this request is subject to a denial of federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862.

Please date-stamp the enclosed "Return Copy" of this request and return it to the courier delivering the package. Should there be any questions concerning this matter, please contact the undersigned.

Respectfully submitted,


Nancy A. Ory

Enclosure

cc: Ms. Susan Crawford, Media Bureau

ENGINEERING STATEMENT

This engineering statement has been prepared on behalf of Greater Boston Radio, Inc., licensee of FM radio station WCSX(FM), Birmingham, Michigan, and is in support of an informal request for an asymmetrical IBOC experimental operation at -14/-10 dBc. The IBOC proposal will be a low level combined operation so the antenna is the same as that in long time use by WCSX, an ERI 1083-2CP two level, three around cogwheel. The ERP will remain at 13.5 kW for the analog operation. The current -20 dBc operation utilizes a dual feed to the ERI antenna but the proposed -14/-10 dBc operation will, as noted, utilize low level combining in the transmitter. Thus, the dual feed system will not be employed. For asymmetrical operation, the digital ERP would be 0.945 kW assuming -10 dBc on the upper side-band and -14 dBc on the lower side-band. The R/C is unchanged from the current license at 290m HAAT. Analog TPO is 16.8 kW, thus digital TPO would be 1176 watts.

WCSX(FM) is licensed to operate on Channel 234B (94.7 MHz) with 13.5 kW effective radiated power (ERP) and 290 meters antenna height above average terrain (HAAT). The WCSX(FM) IBOC operation is currently permitted -14 dBc ND symmetrically and limited by first adjacent channel stations WXKR(FM), Port Clinton, OH and WMMQ(FM), East Lansing, MI from increasing its IBOC power (see attached Figure 1). However, as shown in the attached Figure 2 and terrain profiles, operation at -10 dBc could be allowed asymmetrically on the upper side-band without impacting WMMQ(FM).

The predicted WCSX 49.5 dBu contour overlap with the predicted 60 dBu contour of WMMQ(FM) is primarily located in the eastern portion of Ingham County and the western portion of Livingston County in the eastern portion of the predicted WMMQ(FM) 1 mV/m

(60 dBu) contour. However, based on intervening terrain blockage caused by steadily rising terrain and the earth's curvature, it is believed that the predicted contour overlap of pertinent contours would not occur.

The attached terrain profiles (Figures 3-5) are from WCSX to WMMQ antenna site-to-antenna site (N 281° E) and WCSX to the south and north of the predicted contour overlap areas on radials N 256.3° E and N 306.6° E. These radials are toward the south and north area of the two stations' predicted contour overlap area. Similar terrain profiles (Figure 6 & 7) from WMMQ on radials N 148.4° E and N 53.8° E have been drawn from WMMQ toward the south and north area of the two stations predicted contour overlap area.

Conclusion

We believe the attached exhibits clearly demonstrate the proposed WCSX IBOC operation at -10 dBc asymmetrical on the upper side-band will not cause harmful interference to the normal off-the-air reception of full service FM station WMMQ(FM), East Lansing, Michigan.

In addition, the attached Engineering Report of non-ionizing radiation measurements recently (September 2014) conducted at the WCSX(FM) transmitter facility clearly shows that the RF field levels near the WCSX tower complies with the FCC guidelines. The proposed asymmetrical IBOC operation at -14/-10 dBc with 1.08 kW digital ERP and 287 meters antenna radiation center above ground, and 0.5 antenna R.F. field, would add less than $0.2 \mu\text{W}/\text{cm}^2$ to the existing RF field levels near the tower. Therefore, the proposed IBOC operation would not result in a significant environmental impact in Radio Frequency (RF) electromagnetic fields near the station's transmitting facility.

With respect to work performed on the tower, station WCSX has established procedures to ensure that workers are not exposed to RF fields above the Commission's guidelines, by reducing or turning off the power, as appropriate.

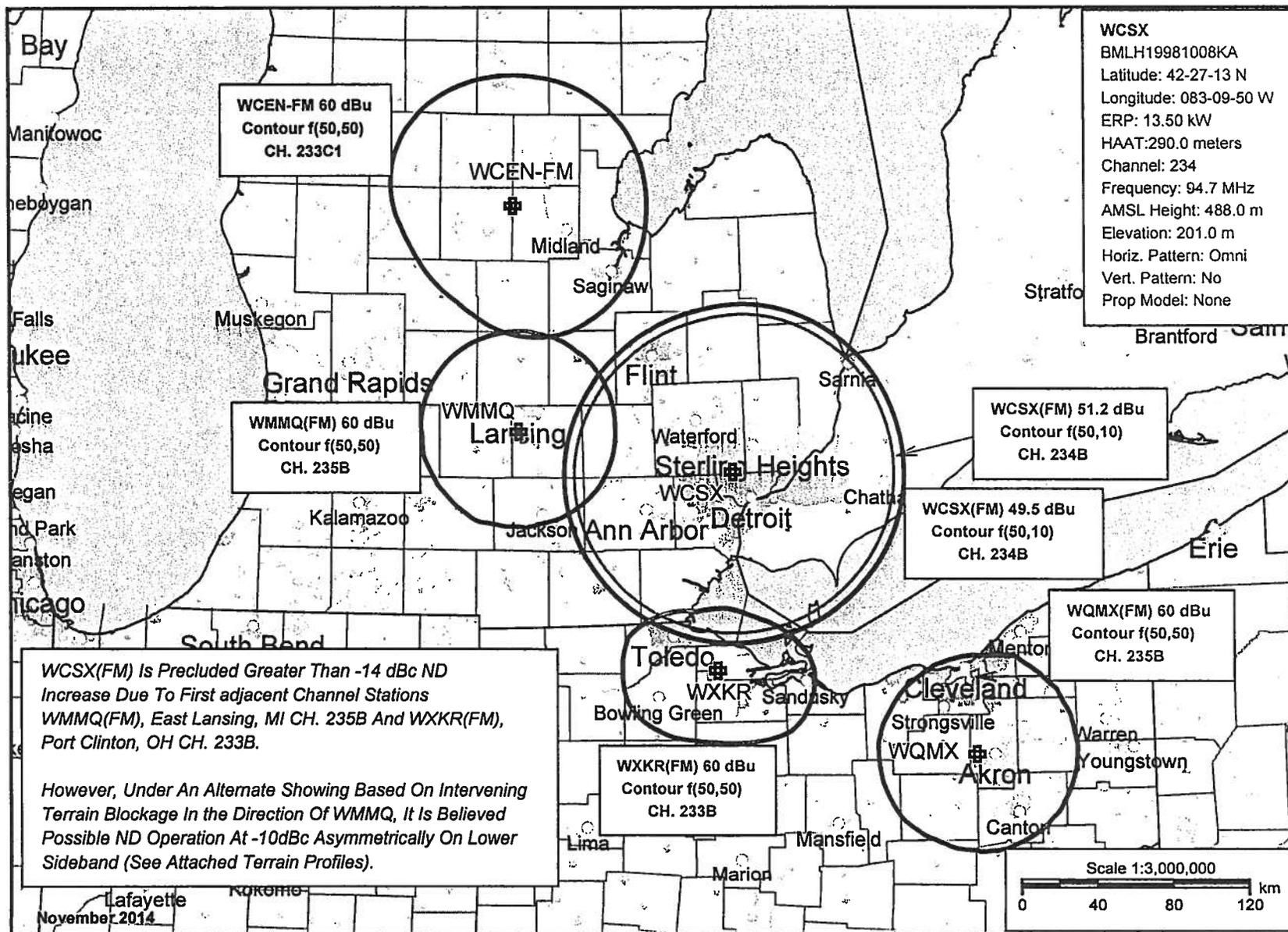


FIGURE 1 - FM ALLOCATION SITUATION FOR WCSX WITH RESPECT TO FIRST ADJACENT CHANNEL STATIONS

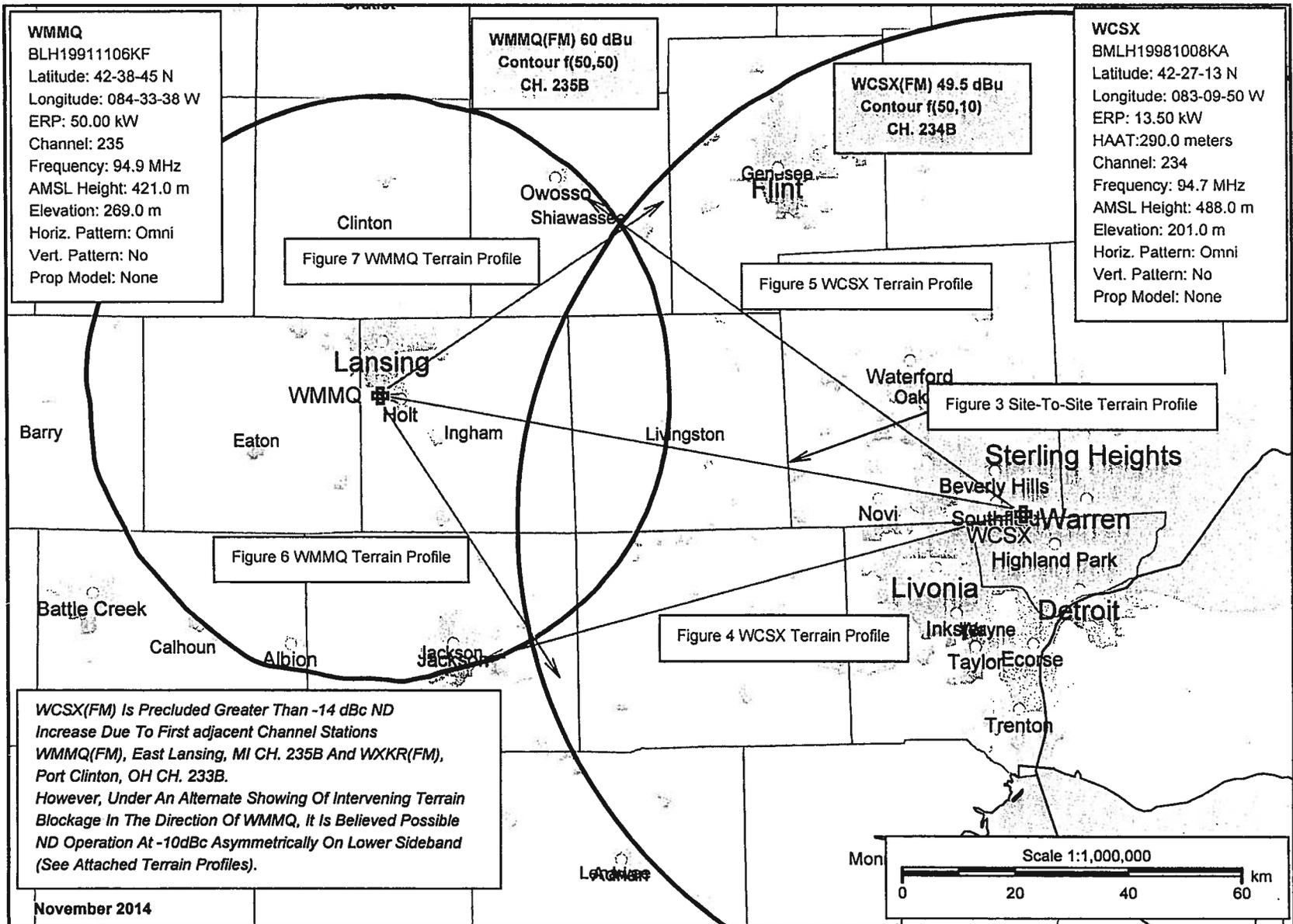
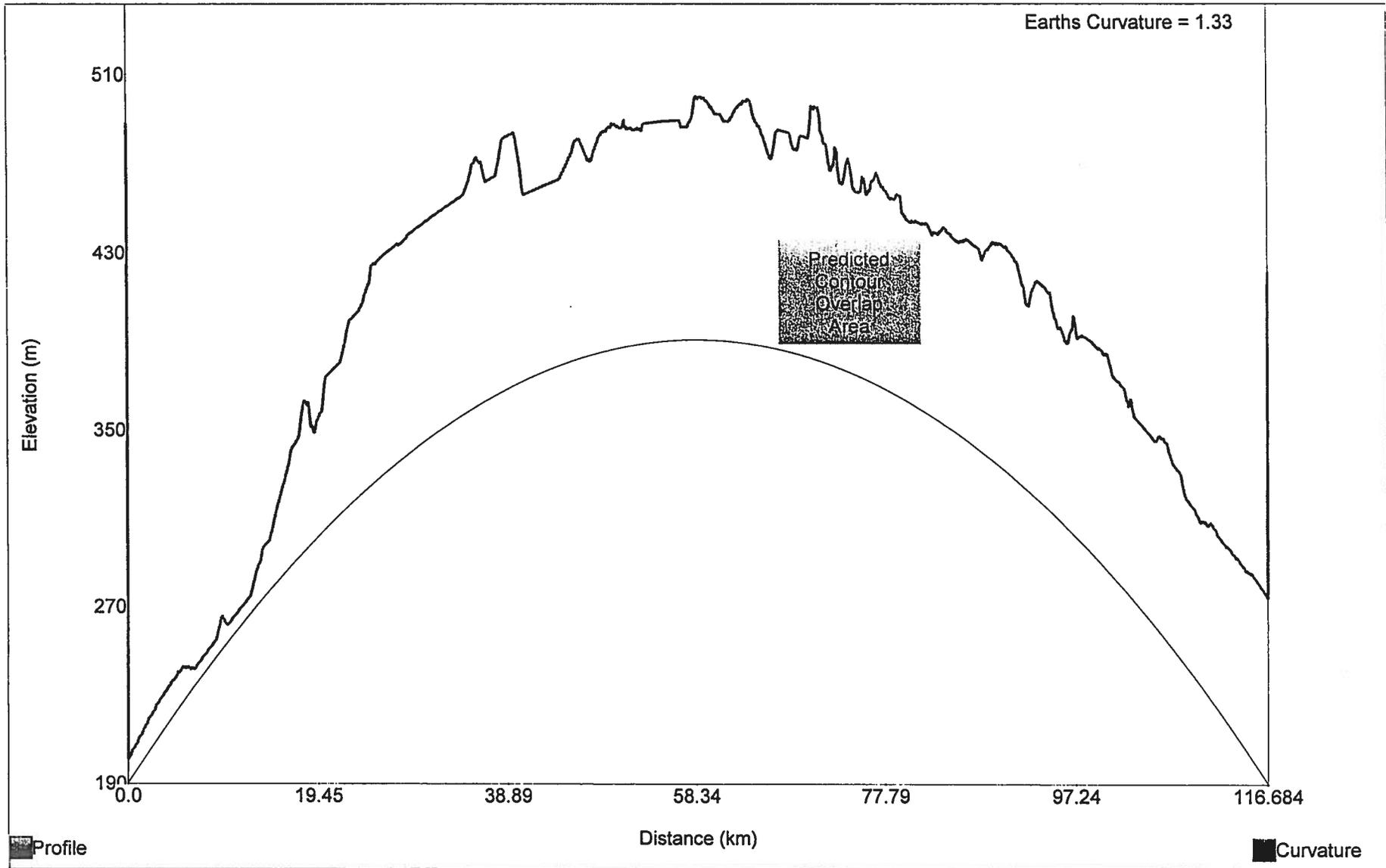


FIGURE 2 - DETAIL FM ALLOCATION SITUATION FOR WCSX WITH RESPECT TO FIRST ADJACENT CHANNEL STATION WMMQ

WCSX WMMQ SITE TO SITE TERRAIN PROFILE



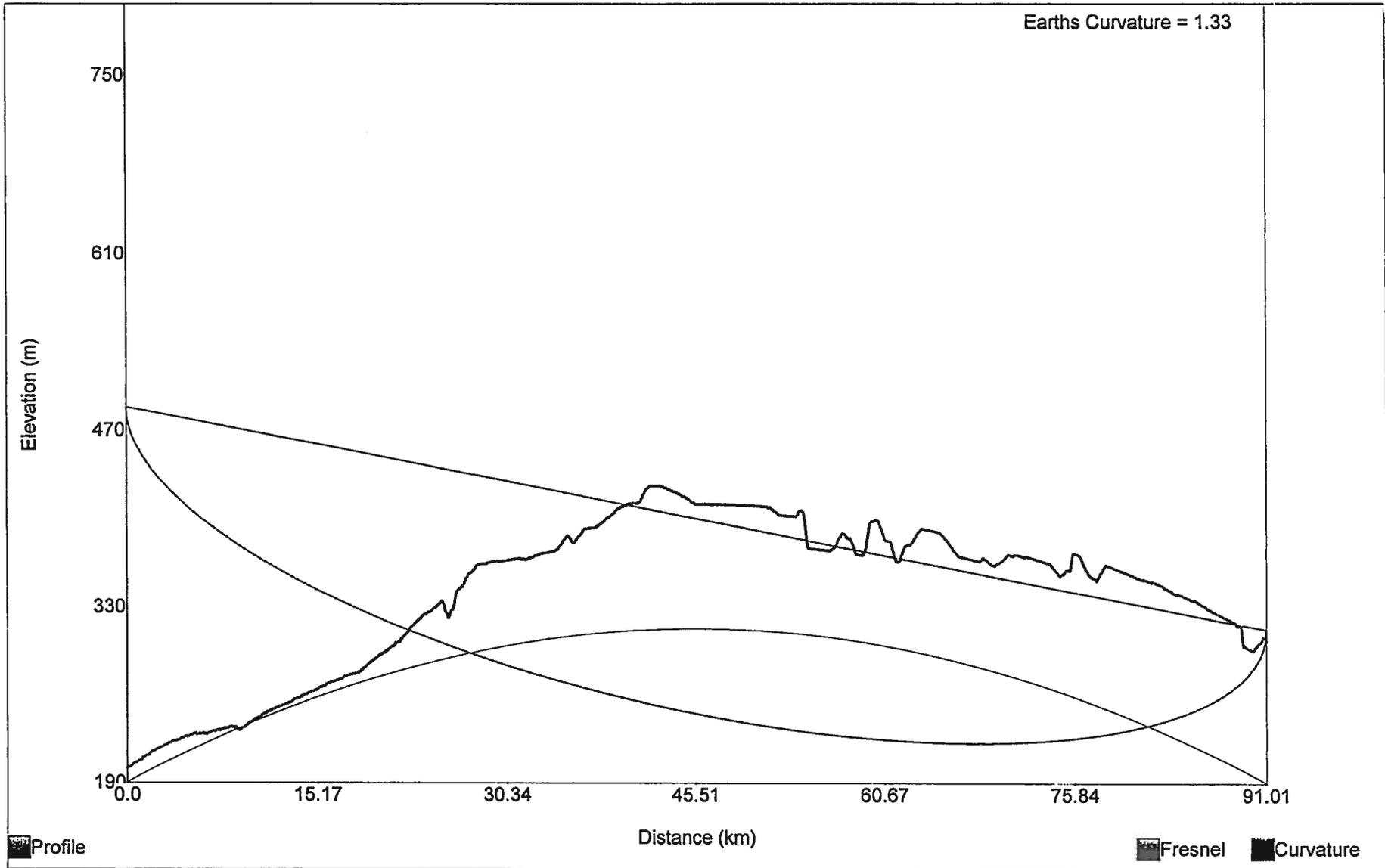
Starting Latitude: 42-27-13 N
Starting Longitude: 083-09-50 W

End Latitude: 42-38-45 N
End Longitude: 084-33-38 W

Distance: 116.684013090 km
Bearing: 281.016 deg

FIGURE 3
Predicted Contour Overlap
65 to 89.5 Kilometers From WCSX

WCSX TO SOUTH CONTOUR OVERLAP OF WMMQ



Starting Latitude: 42-27-13 N
Starting Longitude: 083-09-50 W

End Latitude: 42-15-15.19 N
End Longitude: 084-14-07.19 W

Distance: 91.01 km
Bearing: 256.28 deg

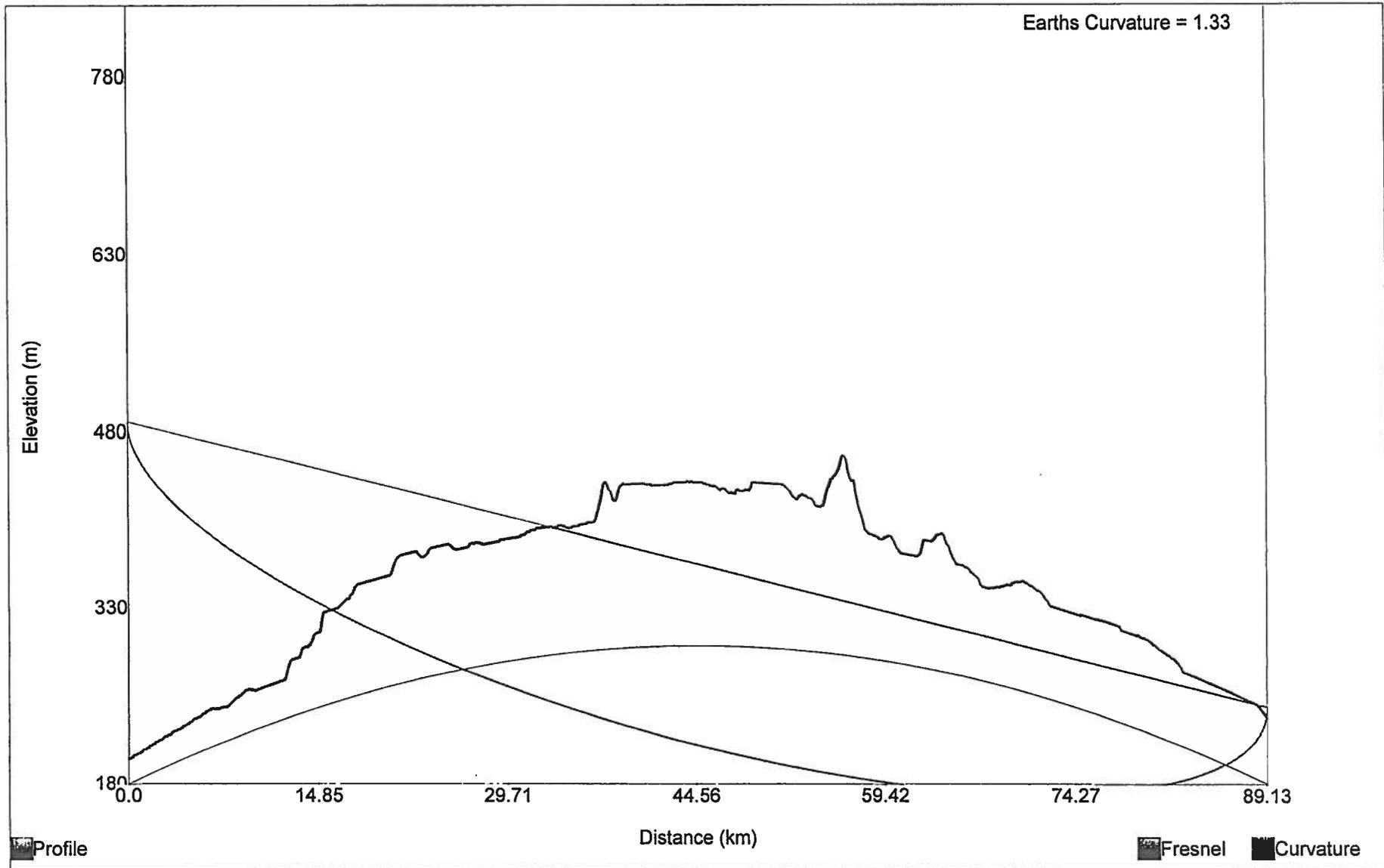
FIGURE 4
Predicted Contour Overlap At
91 Kilometers From WCSX

Transmitter Height (AG) = 287.0 m
Receiver Height (AG) = 9.1 m

Transmitter Elevation = 201.0 m
Receiver Elevation = 302.2 m

Frequency = 94.7 MHz
Fresnel Zone: 0.6

WCSX TO NORTH CONTOUR OVERLAP OF WMMQ



Starting Latitude: 42-27-13 N
Starting Longitude: 083-09-50 W

End Latitude: 42-55-42.82 N
End Longitude: 084-02-25.61 W

Distance: 89.13 km
Bearing: 306.59 deg

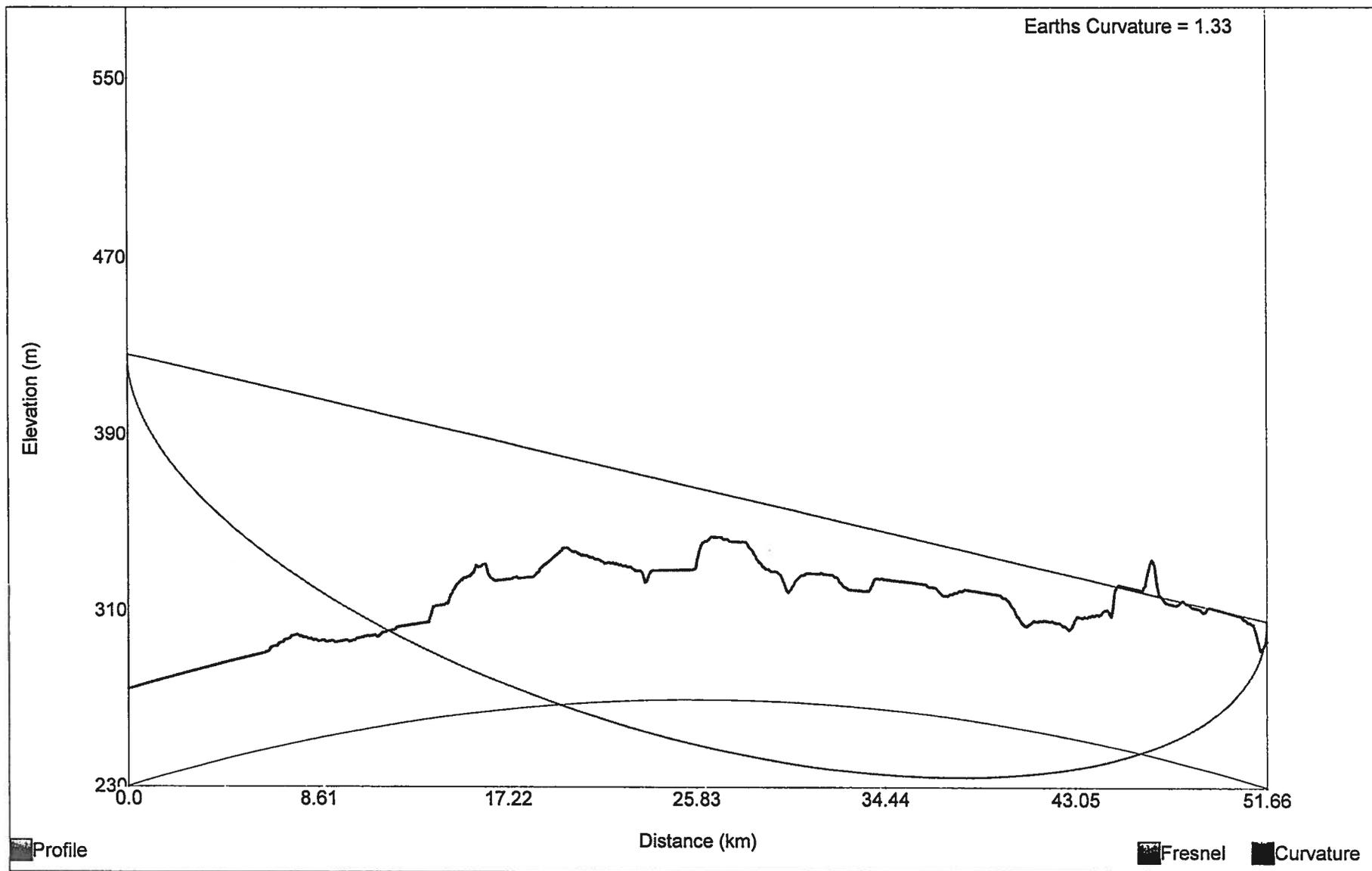
FIGURE 5
Predicted Contour Overlap At
89 Kilometers From WCSX

Transmitter Height (AG) = 287.0 m
Receiver Height (AG) = 9.1 m

Transmitter Elevation = 201.0 m
Receiver Elevation = 235.9 m

Frequency = 94.7 MHz
Fresnel Zone: 0.6

WMMQ TO SOUTH CONTOUR OVERLAP OF WCSX



Starting Latitude: 42-38-45 N
Starting Longitude: 084-33-38 W

End Latitude: 42-14-58.07 N
End Longitude: 084-13-55.58 W

Distance: 51.66 km
Bearing: 148.35 deg

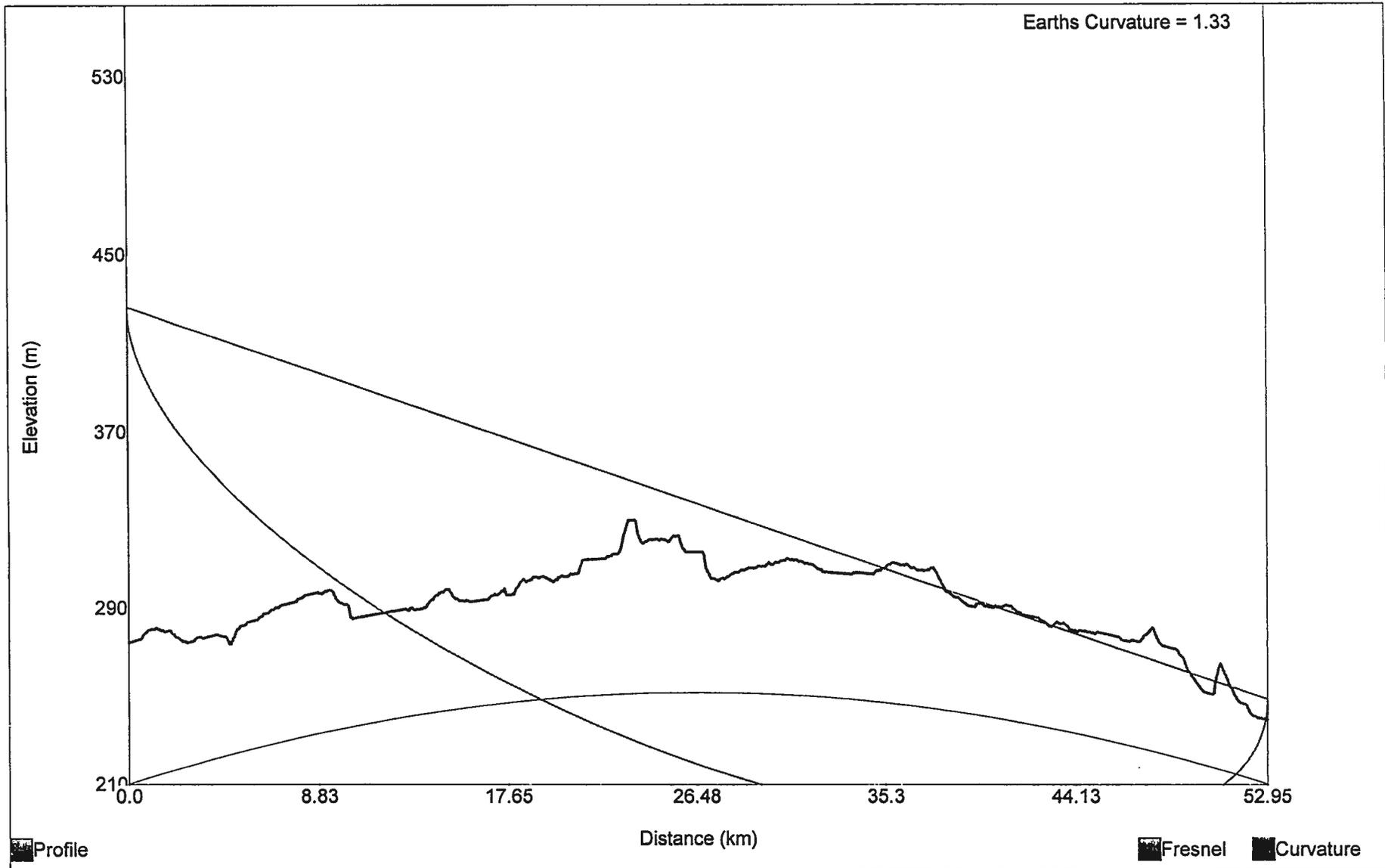
FIGURE 6
Predicted Contour Overlap At
51.5 Kilometers From WMMQ

Transmitter Height (AG) = 152.0 m
Receiver Height (AG) = 9.1 m

Transmitter Elevation = 274.0 m
Receiver Elevation = 296.1 m

Frequency = 94.9 MHz
Fresnel Zone: 0.6

WMMQ TO NORTH CONTOUR OVERLAP OF WCSX



Starting Latitude: 42-38-45 N
Starting Longitude: 084-33-38 W

End Latitude: 42-55-34.25 N
End Longitude: 084-02-13.93 W

Distance: 52.95 km
Bearing: 53.80 deg

Transmitter Height (AG) = 152.0 m
Receiver Height (AG) = 9.1 m

Transmitter Elevation = 274.0 m
Receiver Elevation = 239.2 m

Frequency = 94.9 MHz
Fresnel Zone: 0.6

FIGURE 7
Predicted Contour Overlap At
53 Kilometers From WMMQ

NON-IONIZING RADIATION MEASUREMENTS

WCSX-FM
BIRMINGHAM, MICHIGAN

TRANSMITTER FACILITY
(Located in Royal Oak Township, MI)

MEASURED ON SEPTEMBER 22, 2014

TABLE OF CONTENTS

SUMMARY	3
PROCEDURE	4
FIGURE 1 (MEASUREMENT LOCATIONS)	6
DATA MAIN ANTENNA	7
RESULTS	8
RECOMMENDATIONS	8
QUALIFICATIONS OF ENGINEER	9
EQUIPMENT LIST	10
APPENDIX A (FCC LIMITS)	11
APPENDIX B (ANSI/IEEE GUIDES)	12

SUMMARY

The WCSX-FM transmitter facility was evaluated for compliance with the non-ionizing electromagnetic radiation exposure guide lines for radio frequency radiation that are specified by the Federal Communications Commission Report and Order 96-326, effective Jan. 1, 1997. These limits are the same as those adopted by the National Council on Radiation Protection and Measurements (NCRP), NCRP Report No.86 (1986).

The WCSX antennae are located on a 305-meter tower operated by Greater Motower, Inc. Several other broadcast stations also use the tower. No effort was made to measure the level of exposure of workers and climbers on the antenna tower. This was studied in a report prepared by John F. X. Browne & Associates, P. C., "Non-Ionizing Electromagnetic Radiation Evaluation of WCSX-FM Broadcast Facility".

Measurements were made with WCSX operating from the main antenna and WMGC and WRIF operating in normal mode.

All areas accessible to the general public were below these limits. A fence restricts access with locked gates around the tower and guy anchors. The fence was posted with signs warning of the "High Voltage" inside. The only readings exceeding these limits were touching the top sets of tower guy wires. The top guy wires exceeded the E field limit when touched. Do not touch these guys for more than 2- minutes out of any 6-minute period.

PROCEDURE

WCSX-FM is a Class "B" FM station transmitting on 94.7 MHz. Its antennae are mounted on a 305-meter tower operated by Greater Motower Inc. Several other broadcasters including other FM stations and UHF TV use the tower and transmitter building. The Greater Michigan Radio business offices and studios are located in a building on this site.

Measurements were made with WCSX operating from the main antenna and WMGC operating in normal mode from this tower.

This transmitter facility was evaluated for compliance with the non-ionizing electromagnetic radiation exposure guide lines for radio frequency radiation that are specified by the Federal Communications Commission Report and Order 96-326, effective Jan. 1, 1997. These limits are the same as those adopted by the National Council on Radiation Protection and Measurements (NCRP), NCRP Report No.86 (1986) (see Appendix A

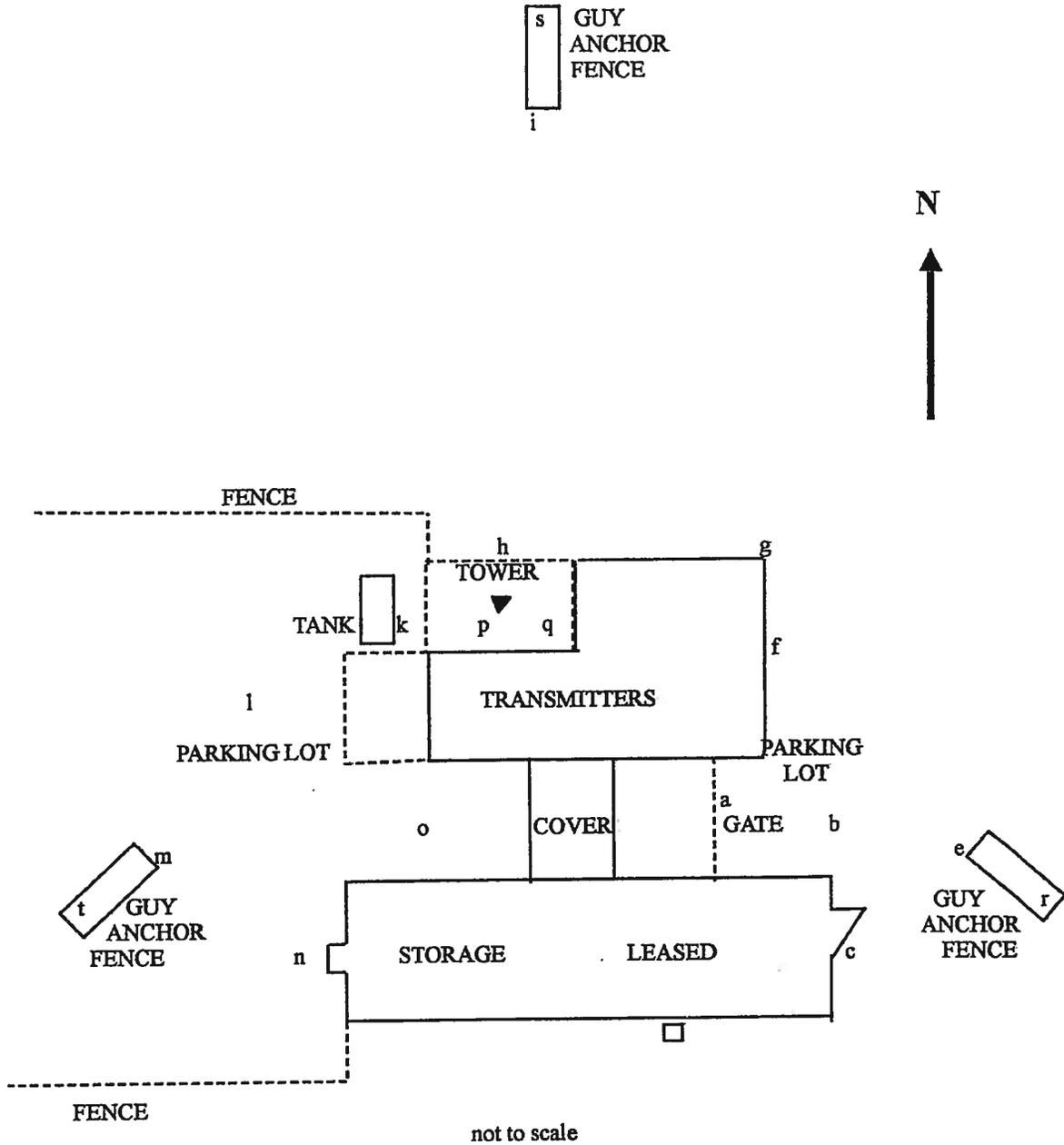
The Narda Microwave Corp. Broadband Field Meter, model NBM-550, was used with an Isotropic Conformal Electric Field Probe, model 2402/07. This probe reads directly the percentage of the maximum permitted exposure (MPE) of the Federal Communications Commission limits effective Jan. 1, 1997, for Controlled Environments (see Appendix A). For employee exposure (controlled environment) the limit is a reading of 100% MPE. For public exposure or uncontrolled environment, the limit is a reading of 20% MPE.

METHOD:

All areas measured were surveyed with the Narda Microwave Corp. Broadband Field Meter, model NBM-550, used with an Isotropic Conformal Electric Field Probe, model 2402/07. The probe was moved to scan an area of about 3 feet wide and from about 1 foot to a height of 7 feet, while walking through the area to be checked. The meter, as used, displays the maximum reading encountered until it is cleared. The maximum reading was recorded for each location and the meter was cleared. In areas where high local fields could exist such as around transmitter doors, transmission line joints, and the dummy load touch measurements were made as well. All WCSX transmitters were operated at normal power during the measurements in the WCSX transmitter room.

Areas accessible to the general public were measured. A survey of the studio/transmitter property was made. The outside perimeter of the fence around the tower was checked. The tower guy anchor fence enclosures were checked. The area around the studio and transmitter buildings was also checked. Figure 1 shows the location of the measurement points. Those areas accessible only to the radio station employees were also measured. These areas include the transmitter rooms and inside the fence around the tower and the guy anchors.

FIGURE 1
WCSX MEASUREMENT LOCATIONS



WCSX MAIN ANTENNA WITH WRIF & NORMAL WMGC DATA
THE MAXIMUM PEAK FIELDS MEASURED AT EACH LOCATION

LOCATION	E-FIELD	
MEASUREMENT LOCATIONS REF. FIG. 1	%MPE	
PUBLIC AREAS		
"a" Driveway between buildings	.22	
"b" Radio Plaza at parking lot drive	.23	
"c" Outside old office entrance	.63	
"d" Outside old office south side	.54	
"e" East guy anchor fence gate	.96	
"f" Parking lot 20' east of door	.10	
"g" North east corner building	.82	
"h" North side of tower fence	.64	
"i" North guy anchor fence gate	.88	
RESTRICTED AREAS		
"k" West side tower fence	.99	
"l" West parking lot center	1.1	
"m" West guy anchor fence gate	.16	
"n" West side building	1.3	
"o" Driveway between buildings	2.0	
"p" At tower base	.22	
"q" By A/C equipment	.30	
"r" East outer guy 18 inches away	58.8	touch <200 *
"s" North outer guy 18 inches away	48.7	touch <200 *
"t" West outer guy 18 inches away	35.3	touch <200 *
* Maximum found touching top/outer guys.		
WCSX transmitter room working area	.27	
WCSX Transmitters front touch	.65	
WCSX Transmitters back touch	.34	
WCSX Transmission lines	.40	
WCSX Transmission line over Dummy load	.23	
WCSX dummy load	.23	
Warehouse / entry room	.19	
Combiner room	.095	
New Short tower	.88	
Fire plug in parking lot	1.3	
New building employee entrance	.062	
New Engineering Office	.048	
New Entry Hall	.016	
New WMGC Production Room	.052	
New Sales	.40	
New Conference Room	.052	
New upper Roof	2.4	
New lower Roof	.93	
New lunch area	.44	

Measured on September 22, 2014 between 8:15 AM and 9:48 AM.

RESULTS

The WCSX-FM transmitter facility was evaluated for compliance with the non-ionizing electromagnetic radiation exposure guide lines for radio frequency radiation that are specified by the Federal Communications Commission Report and Order 96-326, effective Jan. 1, 1997. These limits are the same as those adopted by the National Council on Radiation Protection and Measurements (NCRP), NCRP Report No.86 (1986) (see Appendix A).

The WCSX antennae are located on a 305-meter tower operated by Greater Motower, Inc. Several other broadcast stations also use the tower. No effort was made to measure the level of exposure of workers and climbers on the antenna tower. This was studied in a report prepared by John F. X. Browne & Associates, P. C., "Non-Ionizing Electromagnetic Radiation Evaluation of WCSX-FM Broadcast Facility".

Measurements were made with WCSX operating from the main antenna and WMGC operating in normal mode from this tower.

All areas accessible to the general public were below these limits. Locked doors to the transmitter building and fences around the tower and guy anchors restrict access. Areas checked include the driveway, parking lot, around the outside of studio and transmitter buildings and around the tower.

Areas with access restricted to station employees were checked. The only readings exceeding the limits were when touching the top set of tower guy wires.

RECOMMENDATIONS

The top guy wires exceeded the limit when touched. Unless frequency specific measurements establish this, do not touch these guys for more than 2-minutes out of any 6- minute period.

All the areas normally accessed by the WCSX employees here are well below the non-ionizing electromagnetic radiation exposure limits. Do not operate any of the transmitters or other RF devices with cover panels removed that could allow increased RF leakage. Follow the tower operating guidelines for reducing power or ceasing operation when anyone is climbing the tower. This was studied in a report prepared by John F. X. Browne & Associates, P. C., "Non-Ionizing Electromagnetic Radiation Evaluation of WCSX-FM Broadcast Facility".

QUALIFICATIONS OF ENGINEER

Richard G. Silvera has a BS in Engineering Science degree with a major in Electrical Engineering from Hofstra University. The SBE certifies him as a Senior Radio Engineer. He obtained a FCC First Class Radiotelephone license with Ship Radar endorsement in 1971. He now has a Lifetime General Class Radio-telephone license with Ship Radar endorsement.

He has worked with RF and antenna systems since 1967. He was an RF Communication Engineer with Grumman Aerospace Corp. working on the Lunar Module Communications Ground Support equipment from 1967 to 1970.

He has worked as a Radio Broadcast Engineer since 1971.

In March of 1989 he completed a three-day course on, The Identification and Control of Microwave/Radio Frequency Radiation Hazards, given by R&B Enterprises.

In June of 1996 he completed a one-day course on RF Safety Measurements conducted by Narda Microwave Corp.

EQUIPMENT LIST

E-FIELD MEASUREMENTS

Narda Microwave Corp.

Broadband Field Meter
Model NBM-550
Part Number 2401/01
Serial Number B-0675
Calibration 13 May 2013

Isotropic Conformal Electric Field Probe
Frequency shaping to match FCC occupational /
controlled environment

Model EA5091
Part Number 2402/07
Serial Number 01054
Calibration 29 May 2013

H-FIELD MEASUREMENTS

Narda Microwave Corp.

Broadband Field Meter
Model NBM-550
Part Number 2401/01
Serial Number B-0675
Calibration 13 May 2013

H-Field Probe 300 KHZ - 30 MHZ
Model HF3061/05, H Field
Part Number 2402/05 (300kHz - 30MHz)
Serial Number A-00227
Calibration 22 May 2013

Appendix A
Federal Communications Commission FCC 96-326
NCRP EXPOSURE CRITERIA FOR RF FIELDS (1986)
(FCC LIMITS EFFECTIVE JAN. 1, 1997)

Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3 - 3	614	1.63	(100)*	6
3 - 30	1842/f	4.89/f	(900/f)	6
30 - 300	61.4	0.163	1.0	6
300 - 1500	--	--	f/300	6
1500 - 100,000	--	--	5.0	6

f = frequency in megahertz (MHz)

* = Plane-wave equivalent power density

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3 - 1.34	614	1.63	(100)*	30
1.34 - 30	824/f	2.19/f	(180/f)	30
30 - 300	27.5	0.073	0.2	30
300 - 1500	--	--	f/1500	30
1500 - 100,000	--	--	1.0	30

f = frequency in megahertz (MHz)

* = Plane-wave equivalent power density

Appendix B
ANSI/IEEE C95.1-1992 RADIO FREQUENCY PROTECTION GUIDES
(IEEE C95.1-1991)
MAXIMUM PERMISSIBLE EXPOSURE (MPE)
FOR CONTROLLED ENVIRONMENTS
(Not adopted by the FCC)

(Used for calibration of Narda, Conformal Response, E-field, Probe # 8722B)

Frequency Range (MHz)	Electric Field Strength E (V/m)	Magnetic Field Strength H (A/m)	Power Density S (mW/cm ²)	Averaging Time (E) (minutes)
0.003 - 0.1	614	163	(100;1,000,000)*	6
0.1- 3.0	614	16.3/f	(100;10,000/f	6
3.0 - 30	1842/f	16.3/f	(900/f	6
30 - 100	61.4	16.3/f	(1.0;10,000/f	6
100 - 300	61.4	0.163	1.0	6
300-3000	--	--	f/300	6
3000-15,000	--	--	10	6
15,000-300,000	--	--	10	6

* Plane-wave equivalent power density; not appropriate for near-field conditions, but used for comparison.

f = Frequency in megahertz (MHz)

A/m = amperes per meter

V/m = volts per meter

mW/cm² = milliwatt per centimeter squared

Note:

Narda Microwave Corp. Electromagnetic Survey Meter readings with Isotropic Conformal Electric Field Probe #8722B:(this is a square law response sensor)

For Occupational/Controlled Exposure the IEEE C95.1-1991 and the NCRP EXPOSURE CRITERIA FOR RF FIELDS (1986) are identical for E-Field exposure limits below 1500 MHz. If there is no significant RF energy above 1500 MHz, the meter should read directly in %MPE.

For General Population/Uncontrolled Exposure the IEEE C95.1-1991 and the NCRP EXPOSURE CRITERIA FOR RF FIELDS (1986) are identical for E-Field exposure limits below 1.34 MHz.

For AM broadcast stations, if there is no significant RF energy above 1.34 MHz, the meter should read directly in %MPE. Between 1.34 MHz and 3.0 MHz the correct MPE would be lower than a reading of 100%. Actual Maximum MPE= $(100\%) \times ((824/f)^2 / 614^2)$

For FM broadcast stations the correct MPE would be a reading of 20%.

Actual Maximum MPE= $(100\%) \times (27.5^2 / 61.4^2) = 20.0\%$