THARRINGTON, SMITH & HARGROVE
ATTORNEYS AT LAW
RALEIGH, NORTH CAROLINA

CARLISLE W. HIGGINS (1887-1980)
J. HAROLD THARRINGTON
WADE M. SMITH
ROGER W. SMITH
WADE H. HARGROVE
GEORGE T. ROGISTER, JR.
CARLYN G. POOLE
RICHARD A. SCHWARTZ
JOHN R. EDWARDS
MARK J. PRAK
DOUGLAS E. KINGSBERY
ELIZABETH F. KUNIHOLM
RANDALL M. RODEN

MICHAEL CROWELL
KIM CHURCH
ANN L. MAJESTIC
BURTON CRAIGE
J. DAVID FARREN
G. BRYAN COLLINS, JR.
C. ALLISON BROWN
C. MARK HOLT
MELISSA H. HILL
NANCY DAIL FOUNTAIN

OF COUNSEL
WILLIAM A. DAVIS, II

MAILING ADDRESS
P.O. BOX 1151
RALEIGH, N.C. 27602

OFFICES
209 FAYETTEVILLE STREET MALL
RALEIGH, N.C. 27601

TELEPHONE
(919) 821-4711

TELECOPIER
(919) 829-1583

June 16, 1988

Mr. H. Walker Feaster, III
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Dear Mr. Feaster:

Transmitted herewith, in triplicate, on behalf of Village Broadcasting Company, Inc., licensee of WCHL(AM), Chapel Hill, North Carolina, is an amendment to its application (File No. BZ-880512AL) for authorization to determine operating power by direct measurement.

The information contained in this amendment has been discussed in a telephone conversation between Ms. Kim Nguyen of the AM Branch and James W. Davis, Village Broadcasting Company, Inc.'s consulting engineer.

If any questions should arise during the course of your consideration of this matter, it is respectfully requested that you communicate with this office.

Very truly yours,

THARRINGTON, SMITH & HARGROVE

Mark J. Prak
Counsel to
Village Broadcasting Company, Inc.

MJP/lac

Enclosure

cc: Hand-Delivered: Kim Nguyen, AM Branch

BEFORE THE

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D.C.

In The Matter Of	)	
	)	
VILLAGE BROADCASTING COMPANY, INC.,	)	
Licensee Of Radio Station WCHL(AM),	)	
Chapel Hill, North Carolina	)	
	)	File No. BZ-880512AL
For Authorization To Determine	)	
Operating Power By Direct Measurement	)	

AMENDMENT

Village Broadcasting Company, Inc., licensee of Radio Station WCHL(AM), Chapel Hill, North Carolina, hereby amends its above-captioned application as follows:

Add the following to "Requests by Licensee" on page 6 of Exhibit #3:

5) A modification of the directions to and description of the 28 degree monitoring point as follows:

"Turn left (North) from Station driveway on Routes 15-501 (U.S.) and proceed for a distance of 0.97 kilometers (0.6 miles) to a left turn on Erwin Road (State Road 1734). Proceed 3.22 kilometers (2.0 miles) and turn right onto Mount Moriah Church Road (State Road 1791). The monitoring point is 0.08 kilometers (0.05 miles) down this road on shoulder on opposite side of road at second Duke Power Company pole from intersection. Pole has bird house mounted on it and is punched 1-2 on plate. This point is point #21 in the 1968 Full Proof of Performance and is 3.83 kilometers (2.38 miles) from the antenna. The field intensity measured at this point should not exceed 7.0 mV/m."

This the 14 day of June, 1988.

Respectfully submitted,

VILLAGE BROADCASTING COMPANY, INC.

By: William D. Whisenant

William D. Whisenant
General Manager

FEE NO: 04014266
FEE TYPE: MAL
FEE AMT : $ 325.00
ID SEQ : 19

United States of America
Federal Communications Commission
Washington, D.C. 20554

Approved by OMB
3060-0029
Expires 9/30/87

DUPLICATE

APPLICATION FOR NEW BROADCAST STATION LICENSE

(Carefully read instructions before filling out Form—RETURN ONLY FORM TO FCC)

For Commission Use Only
File No. BX 880512AK

AL

MAY 23 1988
AM BRANCH

SECTION I General Data

Legal Name of Applicant

Village Broadcasting Company, Incorporated

Mailing Address

P O Box 2127

City	State	ZIP Code	Telephone No. (Include Area Code)
CHAPEL HILL	NC	27514	919-942-8765

1. Facilities authorized by construction permit

This application is for: [x] Commercial [ ] Noncommercial

[xx] AM [ ] FM [ ] TV

Call Letters	Community of License	Construction Permit File No.	Modification of Construction Permit File No(s).	Expiration Date of last Construction Permit
W C H L	Chapel Hill, NC	n/a	n/a	n/a

2. Is the station now operating pursuant to automatic program test authority in accordance with Section 73.1620 of the Commission's Rules?

[ ] YES [xx] NO

If No, explain. Existing, licensed facility

3. Have all the terms, conditions, and obligations set forth in the above described construction permit been fully met?

[ ] YES [ ] NO

If No, state exceptions. n/a

4. Apart from changes already reported, has any cause or circumstance arisen since the grant of the underlying construction permit which would cause any statement or representation contained in the construction permit application to be now incorrect?

[ ] YES [ ] NO

If Yes, explain.

n/a

RECEIVED
880512
FCC
FEE SECTION

THE APPLICANT hereby waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended.)
THE APPLICANT acknowledges that all the statements made in this application and attached exhibits are considered material representations, and all exhibits are a material part hereof and are incorporated herein.

CERTIFICATION

I certify that the statements in this application are true, complete and correct to the best of my knowledge and belief, and are made in good faith.

Signed and dated this 6 day of May, 1988.

William D. Whisenant
Name of Applicant

William D Whisenant
Signature

General Manager
Title

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND IMPRISONMENT, U.S. CODE, TITLE 18, SECTION 1001.

Name of Applicant

Village Broadcasting Company, Incorporated

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

☒ Station License	Answer Items 1-9
☐ Direct measurement of power	1, 2, 6, 7, 8 and 10

1. Facilities authorized in construction permit

Call Sign	File No. of Construction Permit	Frequency	Hours of operation	Power in kilowatts	
				Night	Day
W C H L	n/a	1360 kHz	unlimited	1.0	5.0

2. Station location

State	City or town
North Carolina	Chapel Hill

3. Transmitter location

State	County	City or town	State address (or other identification)
North Carolina	Orange	Chapel Hill	1721 East Franklin Street

4. Main Studio location

State	County	City or town	Number and Street
North Carolina	Orange	Chapel Hill	1721 East Franklin Street

5. Remote control point location (only if authorized)

State	City or town	Street address (or other identification)
n/a		

6. Operating constants:

RF common point or antenna current without modulation for night power in amperes	RF common point or antenna current without modulation for day power in amperes
4.65	6.74
Actual measured antenna or common point *resistance* (in ohms) at operating frequency	**Actual measured antenna or common point *reactance* (in ohms) at operating frequency**
Night 50 Day 110	Night +/-j0 Day +j168

Antenna monitor indication for directional operation

Tower	Phase reading in degrees		Antenna base current		Antenna monitor sample current ratio	
	Night	Day	Night	Day	Night	Day
1 (north)	0 (ref)	-----	2.43 amps	------	1.000	-----
2 (south)	-59	-----	2.36 amps	6.74 amps	0.990	-----

Manufacturer and type of antenna monitor:

Potomac Instruments Model AM-19 (204)

7. Description of antenna system

(If directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary. Height figures should not include obstruction lighting.)

Type radiator	Height in feet of complete radiator above base insulator, or above base if grounded.	Overall height in feet above ground (without obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in Exhibit No. ____
Two each: Uniform cross-section guyed vertical	200 feet-61 meters	203 feet-61.9 meters	n/a

Excitation ☒ Series ☐ Shunt

Geographic coordinate to nearest second. For directional antenna give coordinates of center of array. For single vertical radiator give tower location.

North latitude 35 ° 56 ' 17.5 " West longitude 79 ° 01 ' 36.5 "

If not fully described above, attach as Exhibit No. 1 further details and dimensions including any other antenna mounted on tower and associated isolation circuits. Also, if necessary for a complete description attach as Exhibit No. ____ a sketch of the details and dimensions of ground system.

8. Antenna resistance measurement

Attach as Exhibit No. 2 the following:

(a) Qualifications of persons taking measurements.

(b) Schematic diagram showing clearly all components of coupling circuits, point of resistance measurements, location of antenna ammeter, connection to and characteristics of all tower lighting isolation circuits, static drains, and any other fixtures, lines, etc. connected to or supported by the antenna, including other antennas, and associated circuits.

(c) Full description of method used to make measurements.

(d) Manufacturer's name of each calibrated instrument used and manufacturer's rated accuracy.

(e) Date, accuracy, and by whom each instrument was last calibrated.

(f) Table of complete data taken.

(g) The graph drawn of 10 to 12 readings in a band 50 to 60 kilohertz wide with the operating frequency near the center.

9. In what respect, if any, does the apparatus constructed differ from that described in the application for construction permit or in the permit?

n/a

10. Give reasons for the change in antenna or common point resistance.

Addition of remote pickup receive antenna to tower #1: see exhibit #3

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Date 2/18/83

Name James W. Davis
(*Please Print or Type*)

919-383-9373
Telephone No. (*Include Area Code*)

Signature
(*Check appropriate box below*)

717 Chalice Street
Address (*Include ZIP Code*)

Durham, NC 27705

☐ Technical Director

☐ Registered Professional Engineer

☐ Chief Operator

☒ Technical Consultant

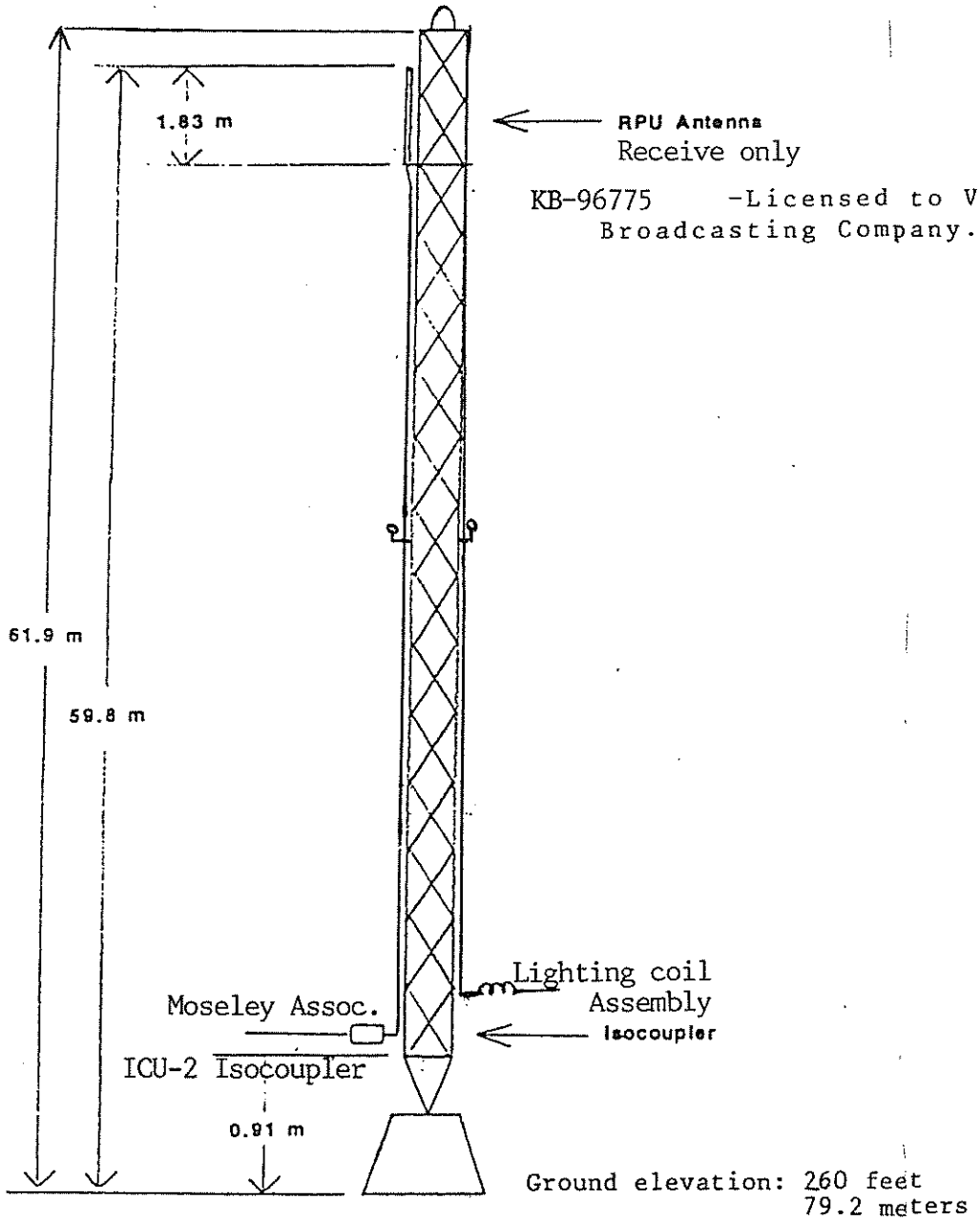
☐ Other (*specify*)

Vertical Plan Sketch

Exhibit #1

11/15/87

Village Broadcasting Company -- WCHL



Tower #1 (South tower) Nighttime Antenna
Non-Directional Tower Daytime Antenna

Prepared by: James W. Davis

1/19/88

EXHIBIT #2

ENGINEERING REPORT

BUREAU BOOK

and

ZONED DATA

IMPROVEMENTS WITHIN PROPOSED

for

Village Broadcasting Company, Incorporated

WFMY-TV - Greensboro, North Carolina

(Channel 2)

Tentative Tth and Television Broadcast Station

October 26th, 1987

Prepared by: James W. Davis

James W. Davis Consultants, Inc.
727 Chanice Street
Durham, North Carolina 27705

LICENSE AND ASSIGNED FREQUENCY
MEASUREMENTS FOR WBRE-FM

This report has been prepared on behalf of Village Broadcasting Company, Incorporated licensee of FM broadcast station WBRE, Chapel Hill, North Carolina in support of an application for new Broadcast Station License and authority to resume measurement of power by the direct method following adjustments to the antenna system.

The base impedance of the WBRE daytime non-directional antenna was measured over a 88 MHz spread in the conventional manner by the use of a variable frequency signal generator, an impedance bridge, a sensitive null detector and an external frequency meter. The variable generator was connected to the drive input of the impedance bridge. The frequency meter was loosely coupled to the variable frequency generator, and the null detector connected to the external null detector jack on the impedance bridge using a double shielded cable. The measurement port of the impedance bridge was connected to the beam side of the interrupter plug on the output side of the antenna coupling unit using the manufacturer's supplied cable, with which the unit was calibrated. The generator was set to the desired frequency by reference to the frequency meter. The impedance bridge was then null off null, and the null detector tuned for maximum signal from the bridge. The bridge was then balanced for a null on the detector, and the reading read off the dials of the impedance

bridge. It is believed that [illegible] the [illegible] by [illegible] frequency [illegible] reactance. [illegible] resistance [illegible] larger [illegible] [illegible]. [illegible] the resistance reading was performed as well. [illegible] measurement was performed at [illegible] kHz increments over the [illegible] range of [illegible] around the assigned frequency of [illegible] kHz. The load impedance has been [illegible] and the antenna coupling network tuning matched to assure a proper load to the transmitter line feeding the antenna coupling network.

The values of feed-point resistance and reactance at the operating frequency of [illegible] kHz were determined to be [illegible] ohms and [illegible] ohms respectively. The resulting value of antenna base current therefore is [illegible] amperes for a nominal station power of [illegible] watts.

For the nighttime antenna common point impedance measurements the measurement port of the impedance bridge was connected to the tracking unit side of the interrupter plug located immediately after the common point ammeter which feeds transmitter power to the input of the power dividing network in the phasor. Measurements were made in the same manner as for the daytime antenna system. The nighttime common point impedance had been adjusted to 50 ohms resistance and zero ohms reactance as documented in the table. The values of feed point resistance and reactance at the operating frequency of 1060 kHz of 50 +/-j0.0 ohms yield a common point current of 4.65 amperes for a transmitter input power of 1080 watts. It is requested that these values be incorporated in the station license.

Preparation of this report and the taking of the

[illegible]

[illegible] OF RESISTIVE EQUIPMENT

ATTENUATOR STANDARD:

Dalton Electronics, Type DID-1, Serial 0340, Calibrated Dalton Electronics Factory July, 20th, 1987 Calibration traced upon receipt in August 1987 to September 12th, 1987 by James A. Davis using IM calibrated components. Rated accuracy +/- 2% ohm +/- 1 ohm of reading.

VARIABLE FREQUENCY SIGNAL GENERATOR:

B & K Model 2328 Function generator serial #65-002562 Frequency settings checked by reference to WWV at 10 MHz and found below as measurements taken.

FREQUENCY MEASUREMENT DEVICE:

JFR Model JM/RM 5006 service monitor, serial 02631. Frequency meter calibrated by reference to WWV at 10 MHz by James A. Davis 8/22/87. Rated accuracy of frequency measurement section +/- 2.5 parts per million.

NULL DETECTOR:

Dalonex Instruments, Type FD-31 Field Internally meter serial 4540, Factory calibrated 10/26/75.

EXTERNAL RESISTIVE COMPONENT STANDARDS:

Manufactured by Dale Inc.
22 ohm, 50.1 ohm, 100 ohm, and 33 ohm 1 % tolerance resistors. Other impedance bridge calibration check using circuit and 100 ohm resistors, accuracy checked at 50, 50.1 and 33 ohms and found to agree within rated accuracy of bridge.

--continued--

TABLE #2

W C H L October 20th 1987 by: J. Davis

DAY TIME ANTENNA BASE IMPEDANCE MEASUREMENTS

Frequency (kHz)	Resistance (Ohms)	Reactance (J Ohms)
1330	95.1	151.0
1335	97.9	154.0
1340	100.0	155.0
1345	101.8	160.0
1350	104.8	161.5
1355	107.3	165.0
1360 (assigned)	110.0	168.0
1365	113.5	170.0
1370	117.0	173.0
1375	119.0	177.0
1380	122.5	179.0
1385	126.5	182.0
1390	130.0	186.0

Date 2/18/88

TABLE #3

W C H L October 7th 1987 by: J. Davis

NIGHT TIME ANTENNA

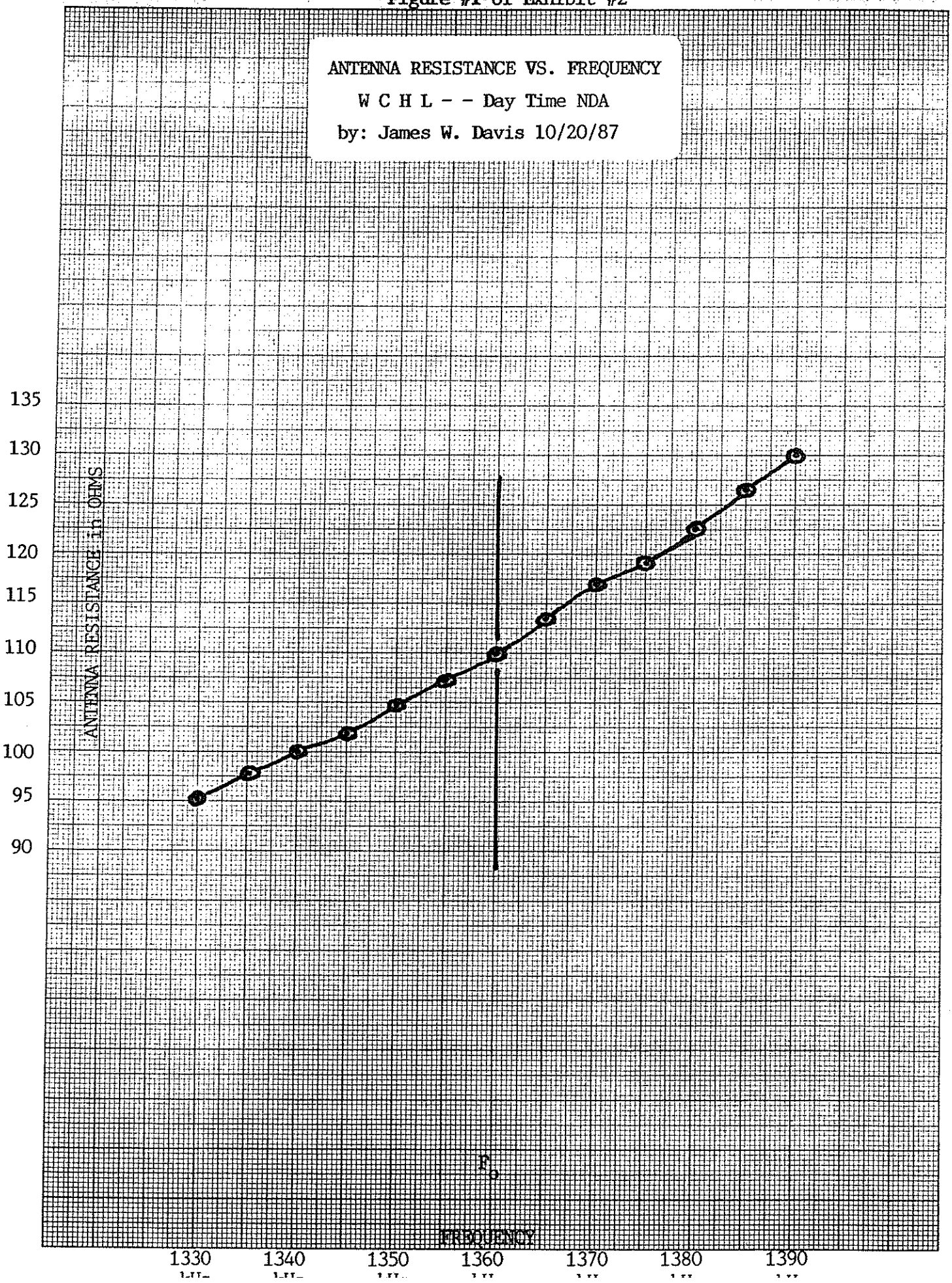
COMMON POINT IMPEDANCE MEASUREMENTS

Frequency (kHz)	Resistance (Ohms)	Reactance (J Ohms)
1330	47.5	-0.50
1335	48.0	-0.25
1340	48.5	0.0
1345	48.5	-0.25
1350	49.0	0.0
1355	49.0	0.0
1360 (assigned)	50.0	0.0
1365	50.0	-0.25
1370	50.5	-0.25
1375	52.0	-0.50
1380	53.0	-1.50
1385	54.0	-2.50
1390	55.0	-3.50

Date 2/18/88

Made in USA

Figure #1 of Exhibit #2



Made in USA

Figure #2 of Exhibit #2

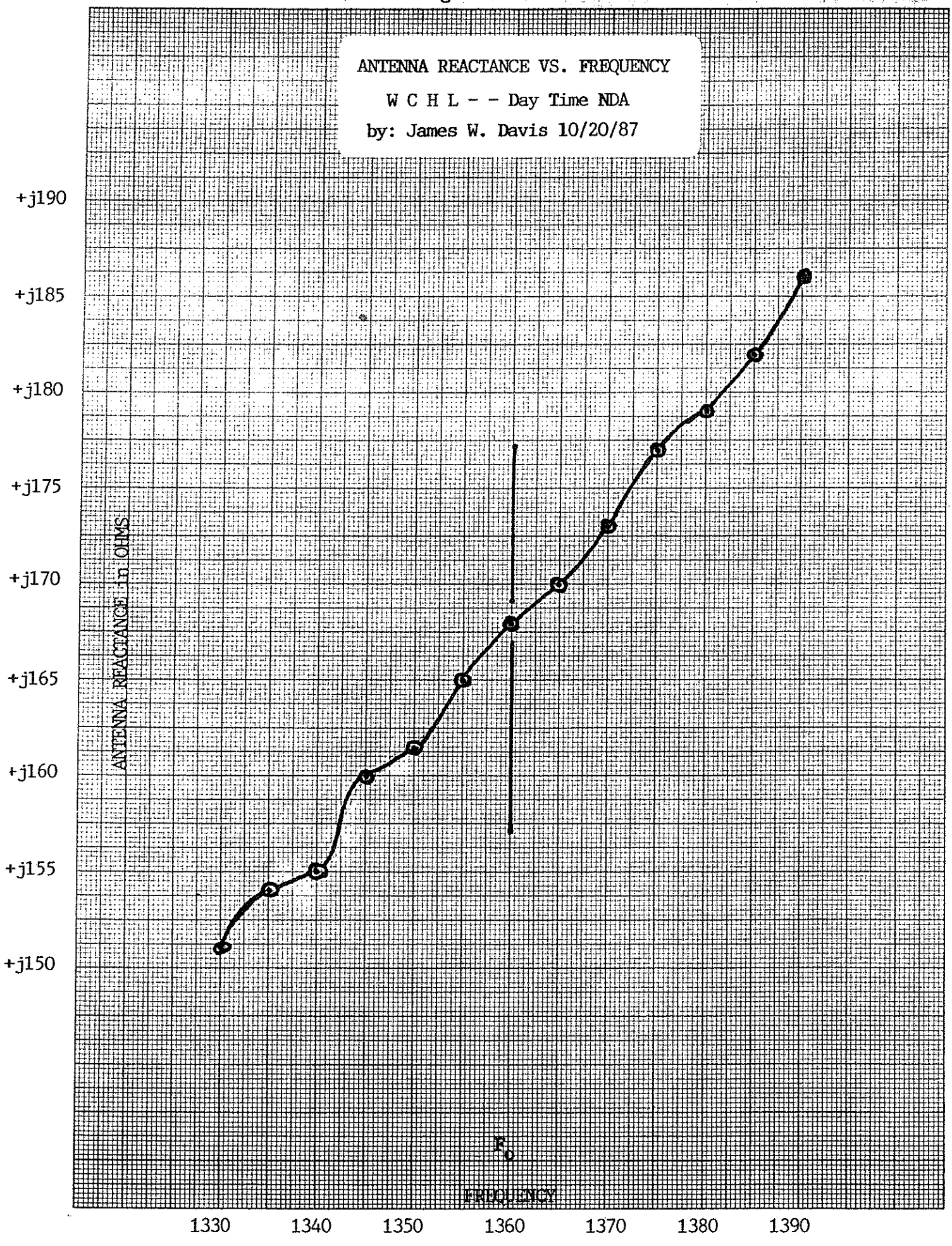
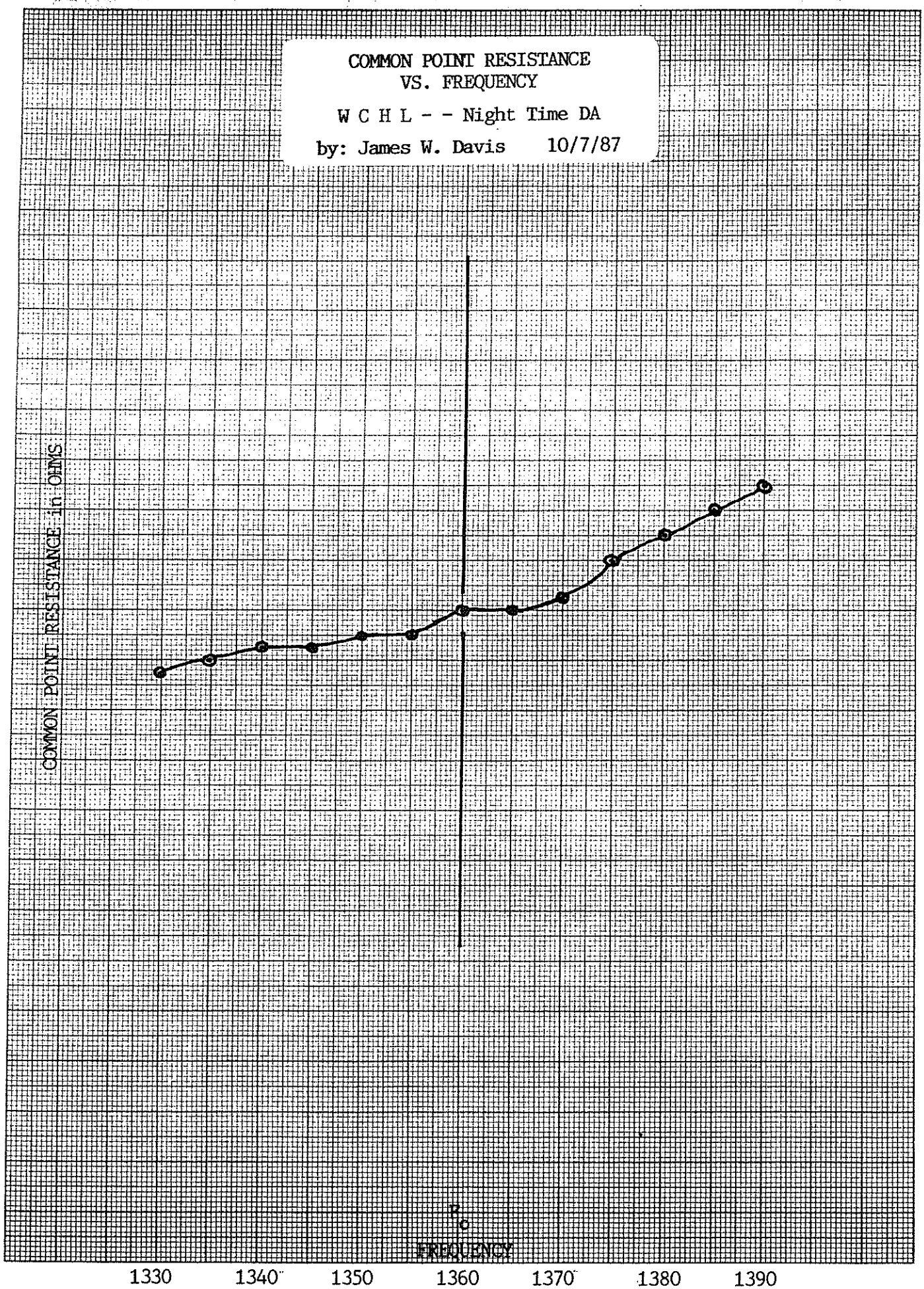
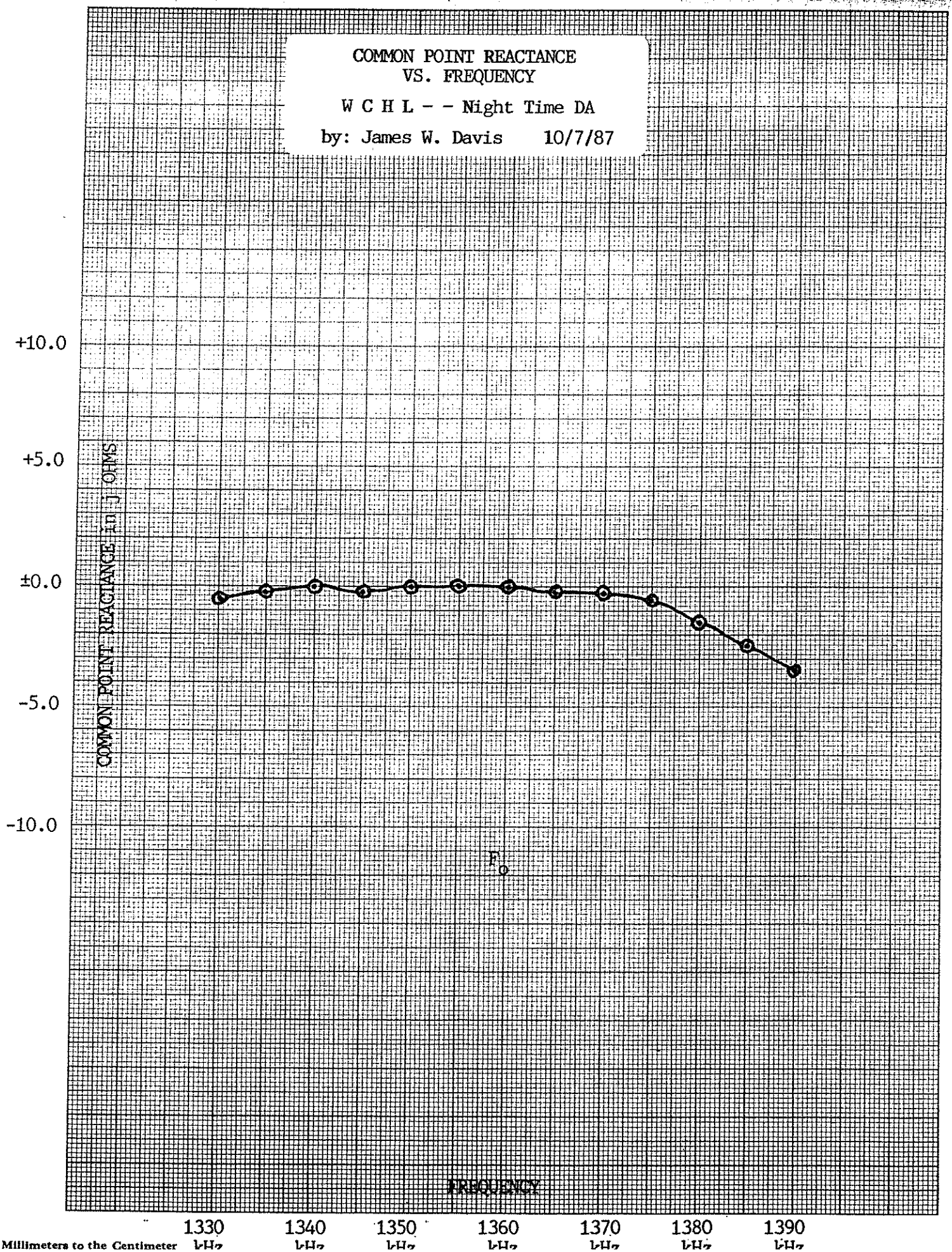


Figure #3 of Exhibit #2



Made in USA

Figure #4 of Exhibit #2



10 Millimeters to the Centimeter

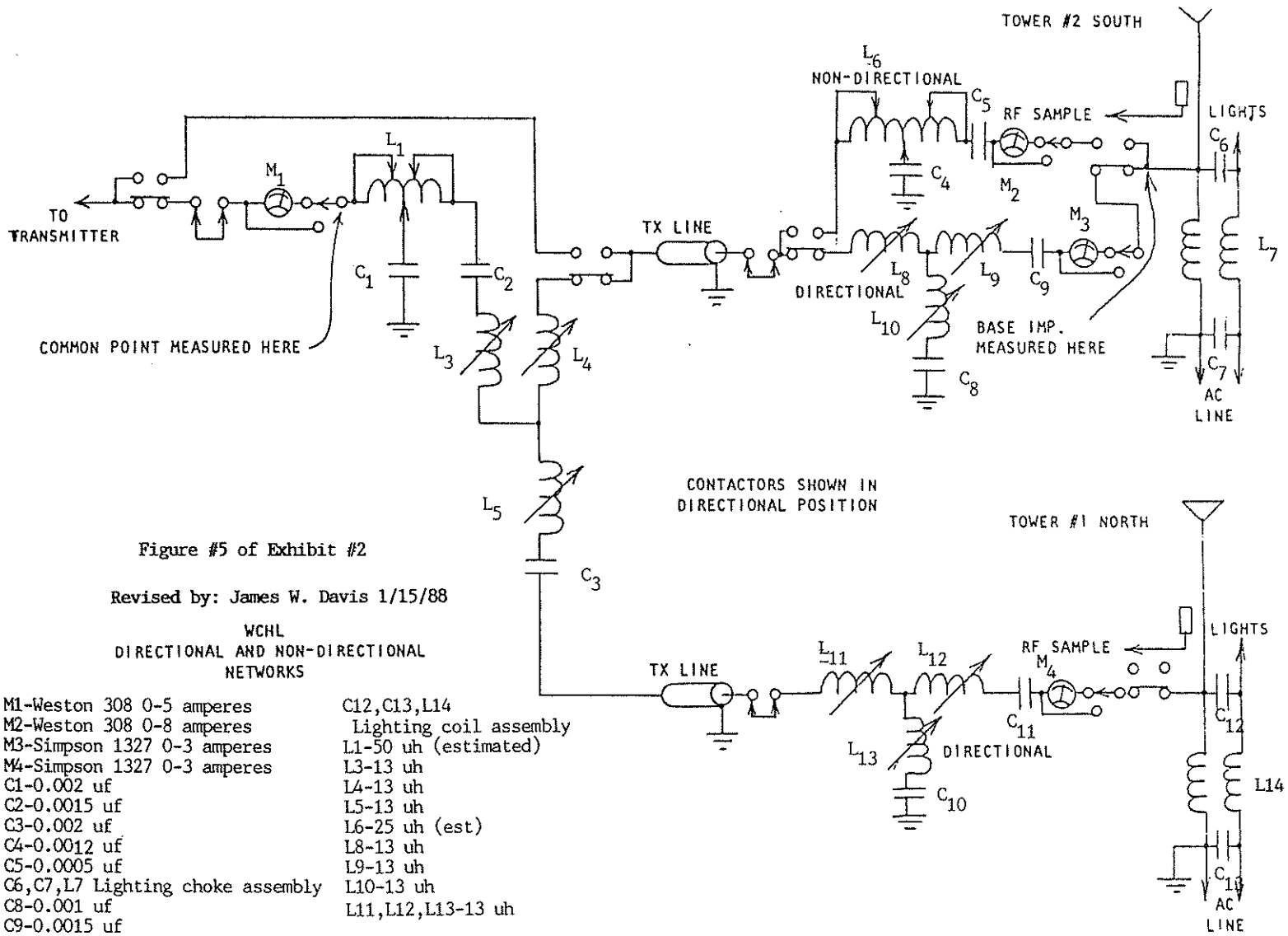


Figure #5 of Exhibit #2

Revised by: James W. Davis 1/15/88

WCHL
DIRECTIONAL AND NON-DIRECTIONAL
NETWORKS

M1-Weston 308 0-5 amperes
M2-Weston 308 0-8 amperes
M3-Simpson 1327 0-3 amperes
M4-Simpson 1327 0-3 amperes
C1-0.002 uf
C2-0.0015 uf
C3-0.002 uf
C4-0.0012 uf
C5-0.0005 uf
C6,C7,L7 Lighting choke assembly
C8-0.001 uf
C9-0.0015 uf
C10-0.0015 uf
C12,C13,L14
Lighting coil assembly
L1-50 uh (estimated)
L3-13 uh
L4-13 uh
L5-13 uh
L6-25 uh (est)
L8-13 uh
L9-13 uh
L10-13 uh
L11,L12,L13-13 uh

L1-L6 and L8-L13 variable. Actual inductance set by taps or control position. All meters calibrated as new by manufacturer. M1 M2 existing M3, M4 installed 1012/87. Accuracy +/- 2 percentfull scale.

AFFIDAVIT/QUALIFICATIONS AND SIGNATURE OF THE AFFIANT

The affiant, James W. Davis, states that he is the holder of a valid FCC general radiotelephone operator license number PG-5-6267 which was issued January 2nd, 1985.

The affiant states that as a licensed operator he has had to date 22 years continuous experience in the broadcast technical field and also holds Bachelor of Science and Master of Science degrees in Electrical Engineering from Duke University, Durham North Carolina.

The affiant states that his employer, James W. Davis Consultant Inc, has been retained by Village Broadcasting Company, Inc. licensee of WCHL and that he has acted in this capacity for the purpose of taking the described measurements and preparing this report.

The affiant states that the data and methods given in the accompanying report are accurate representations, to the best of his knowledge and belief.

Affiant _____ Date 2/18/88

717 Chalice Street
Durham, North Carolina
27705

Phone: 919-383-9373

EXHIBIT #3

ENGINEERING REPORT

ANTENNA ADJUSTMENTS

-and-

ANTENNA SYSTEM RADIAL

CURRENT OR PERFORMANCE

for

Village Broadcasting Company, Inc.

WCHL -- Chapel Hill, North Carolina

1360 kHz - 5 kW DA Daytime

1 kW DA Night Time

January 1988

Prepared By: James W. Davis

James W. Davis Consultant, Inc.
717 Shallow Street
Durham, North Carolina 27705

ENGINEERING EXHIBIT IN SUPPORT OF APPLICATION

This exhibit has been prepared on behalf of Village Broadcasting Company, the proposed licensee of FM broadcast station WOIL, Orcutt Hill, Illinois in support of an application for a modified Broadcast Station License and authority to perform measurement of power by the direct method following adjustments to the antenna system.

WOIL operates daytime with a power of 5200 watts into a non-directional antenna. The tower comprising this antenna is also one element of the two tower directional antenna system used for night time operation at a power of 1722 watts. Addition of a remote pickup antenna to the non-directional tower in such a manner that it did not increase the height of the tower nevertheless caused a change in the non-directional base impedance of this tower for daytime operation, and a slight shift in the parameters and monitoring point values of the night time antenna system. As a result of these circumstances the station obtained an STA to operate at variance from licensed parameters and began determining power by the indirect method. Some adjustments were made to the antenna system by others, not connected with this filing, the common point of the night time antenna system adjusted and measured, and the daytime antenna base impedance measured. A partial proof of performance was executed, and the results of this work were filed as part of a Form 302 request for a modified station license. That application was deemed patently defective by the Federal Communications Commission and dismissed.

Prior to the proof the following work has been done:

1) Field strengths were measured along several radials to establish the behavior of the signal along the radials in directions for which radiation is limited in the current authorization.

2) All base and common point admittance in the system were tested and defective units replaced.

3) All connections were checked for tightness and the towers inspected.

4) Minor adjustments were made to lower fields along two critical radials (80 degrees and 320 degrees) such that measured fields when analyzed in accordance with section 73.186 would yield radiation values well within the standard pattern and construction permit limitations.

5) The phasing system common point impedance was adjusted to 92 ohms resistance and a zero residual reactance, and a common point impedance measurement sweep performed. Similar measurements were made of the base impedance of the daytime non-directional antenna.

6) A set of directional mode measurements on all radials measured in the 1968 full proof of performance were taken for a partial proof of performance, with ten points measured on each radial and the data analyzed in accordance to section 73.186 of the Federal Communications rules and regulations to confirm that all radiation values were at or below the values for the nighttime standard radiation pattern. The average ratio method was used for the calculations. The data and calculations for all radials are contained in tables 1-10 in this report. Note that the inverse fields in the 1968 full proof of performance and the original standard pattern values were in millivolts per meter at one mile. These have been converted to millivolts per meter

of the directive gain readily when reduced to relative field by the Federal Communications Commission by multiplying by 1.629 kilometers per kilowatt. All inverse modulation values are at 1 Hz. Additional measurements were made along critical radials in non-directional mode to substantiate and support the results of the directional measurements.

Field intensity measurements were made using a Ness-Clark 1024 field intensity meter serial #1465 last calibrated on February 20nd, 1982 by Potomac Instruments Incorporated, Silver Spring Maryland. This meter was compared with two similar instruments and found to be in satisfactory agreement. Measurements were made at least two hours after sunrise and terminated at least two hours before sunset. At the beginning of each measuring period, actual antenna input power was adjusted as necessary licensed power. The numbering of all measured points corresponds to the numbering of points in the 1980 full proof of performance. All directional measurements and non-directional measurements on one radial were made under similar weather conditions between October 28th and December 2nd, 1987 by Mr. Benjamin J. Brinitzer, an employee of James W. Davis Consultant Incorporated, who had also participated in a partial proof of performance of the WCHL nighttime antenna system in 1983 while an employee of the licensee of WCHL, Village Broadcasting Incorporated. Measurement procedures and measured data were reviewed with Mr. Brinitzer by James W. Davis, and analysis and preparation of this report performed by Mr. Davis. Two additional non-directional radials were measured by Mr. Davis on January 3nd, 1988 under weather conditions similar to those which prevailed during the earlier measurements.

It should be noted that the computed values for the nighttime pattern and the day and night time antenna impedances differ little from those in the previous report, but the field intensities measured differ significantly. Measurements and environmental factors on specific radials are discussed separately as necessary. Replacement of the antenna base ammeters has resulted in much closer agreement between the base current ratio and the indicated ratio on the antenna monitor. The final phase angle between the towers is also closer to the original phase angle in the 1958 licensed configuration than previously used angles. The final value of -59 degrees is almost identical to that contained in the standard pattern conversion for KOIL (construction number 1358-B2). As such, it is our opinion that the KOIL night time antenna system is in compliance with and is in accordance with the standard pattern for this station and that driving point impedances for both antennas are known such that the station should be issued a new station license and authority granted to resume retransmission of power by the direct method.

REQUESTS BY LICENSEE

The licensee therefore requests in this application the following:

1) The issuance of a modified station license reflecting the measurements obtained on Form 302 and authority to determine power using the direct method.

2) A modification of the directional to the 340 degree monitoring point as described in the section "240 degree radial analysis" (page 22).

3) An increase in the maximum monitoring point value on the 340 degree radial from 11.1 mV/m to 15.5 mV/m for the reasons given in the section "340 degree radial analysis" (page 31).

4) A waiver of the requirement for 10 measured and analyzed points in the 150 degree radial for the reasons given in the section "150 degree radial analysis" (page 14)

ANTENNA SYSTEM PARTIAL PROOF OF PERFORMANCE DATA

Table 1

Direction (Degrees): 28.0 T Mode of Operation: 1kW DA-N Times: EST

Measuring Location		Field Intensity (mV/m)			
Point Number	Distance (Kilometers)	1968 Original mV/m/mi	1987 Present	Pres./Orig. Ratio	Date/Time Present Data
(21)	*2.38 mi 3.83	3.0	1.3	0.433	10/26 1:10PM
22	2.46 3.96	1.65	1.0	0.606	10/26 1:07PM
25	3.28 5.28	0.83	0.66	0.795	10/26 1:04PM
28	6.47	0.65	0.58	0.892	10/26 1:01PM
29	6.92	0.75	0.55	0.733	10/26 12:55PM
30	7.47	0.61	0.47	0.770	10/26 12:57PM
32	8.50	0.49	0.47	0.959	10/26 12:50PM
33	9.46	0.41	0.42	1.024	10.26 12:44PM
34	10.7	0.28	0.30	1.071	10/26 12:32PM
35	11.3	0.23	0.27	1.174	10/26 12:37PM

Average ratio * Original Radiation = Present Radiation Ave. 0.846

Thus: 0.8460 * 15.12 mV/m @ 1 km = 12.79 mV/m @ 1km

Maximum allowable radiation = 21.00 mV/m @ 1km

* monitoring point, maximum value is ~~7.0~~ 2.0 mV/m.

39 Degree Radial Analysis

The area immediately north and west of the antenna system within a distance of one kilometer from the antenna system has undergone significant development since the time of the last partial proof and the ambient character of the area has changed since the original proof in 1968. Additionally since 1968 a directional antenna system consisting of two 328 foot towers for radio station WRTP has been constructed directly on the 39 degree radial at a distance of four kilometers from the WDNC antenna system. At a distance of twelve kilometers the radial runs through the three tower antenna system of station WDNC. Several new high tension power lines run over this radial, and a new interstate highway (I-40) has been constructed during 1986-1987 which intersects the radial at a distance of two kilometers, with a significant movement of earth as a result of the construction. Points were carefully chosen to avoid perturbation where possible, but significant variability in the ratios between the current measurements and the 1968 proof measurements is noted. The field along this radial has been conservatively set to insure that the actual inverse field along this radial will surely be within the standard pattern limit and that the observed monitoring point value will not exceed the authorized limit with seasonal variations. The current measurements were made during a period of damp weather and low temperatures which would induce a seasonal variation which would increase the ground conductivity. The full proof of 1968 was apparently executed during the late summer. We therefore feel that the ratios between the current measurements and the 1968 measurements are higher

is used as an indicator that the ground conductivity differences. Therefore we expect that our calculated fields would be higher rather than lower than our actual fields. In such we consider our analysis to be conservative. Note also that since the pattern is symmetrical about the axis of the towers (340 degrees) the complementary direction is 320 degrees. The current calculated inverse field in the 320 degree direction is 12.50 mV/m at 1 kilometer, which is in good agreement with the calculated value of 12.79 mV/m at one kilometer on the 20 degree radial. The standard pattern limit is 21.00 mV/m at one kilometer for both 20 degrees and 320 degrees. Non-directional measurements and analysis presented in Appendix A yield a similar estimate of the inverse field in this direction with less variation noted in the calculated ratios.

DIRECTIONAL ANTENNA RATIO TEST OF PERIPHERAL DATA

Table 2

Direction (Degrees): 54.0 T Mode of Operation: Day Time: EST

Monitoring Location		Field Intensity (mV/m)				
Point Number	Distance (Kilometers)	1950 Original	1987 Present	Pres./Orig. Ratio	Date/Time Present	Data
30	4.02	47.7	31.0	0.650	11/6	11:04AM
31	5.54	25.1	24.3	0.968	11/6	11:14AM
32	6.46	17.85	17.5	0.987	11/6	11:21AM
33	7.93	13.75	16.0	1.140	11/6	11:04PM
34	7.38	13.95	15.0	1.075	11/6	11:31PM
35	9.65	7.62	13.5	1.755	11/6	11:35AM
36	10.52	7.47	5.4	0.722	11/6	11:44AM
38	11.38	5.58	7.5	1.344	11/6	11:49AM
37	13.09	4.64	4.8	1.038	11/6	11:58AM
39	14.53	3.34	2.6	0.802	11/6	12:01PM

Average ratio = Original Radiation = Present Radiation

Thus: 1.011 x 281.6 mV/m @ 1 km = 284.9 mV/m @ 1 km

Maximum allowable radiation = 288.0 mV/m @ 1 km

ANTENNA SYSTEM PARTIAL PROOF OF PERFORMANCE DATA

Table 2

Orientation (Degrees): 101.5 T Mode of Operation: 1kW DA-N Times: DST

Measuring Location		Field Intensity (mV/m)			
Point Number	Distance (Kilometers)	1950 Original	1987 Present	Pres./Orig. Ratio	Date/Time Present Data
23	5.45	33.3	29.0	0.871	11/4 1:15PM
24	5.74	26.55	24.5	0.923	11/4 1:10PM
31	8.45	15.3	12.6	0.837	11/4 1:08PM
32	9.85	13.05	12.0	0.920	11/4 1:03PM
33	10.06	10.8	7.8	0.722	11/4 12:58PM
34	10.86	9.45	7.6	0.804	11/4 12:55PM
35	11.70	8.10	5.8	0.716	11/4 12:41PM
36	12.44	7.20	6.0	0.833	11/4 12:27PM
38	14.21	5.67	4.8	0.847	11/4 12:23PM
42	15.77	4.14	4.0	0.966	11/4 12:27PM

Average ratio * Original Radiation = Present Radiation

Thus: 0.844 * 421.6 mV/m @ 1 km = 355.73 mV/m @ 1 km 0.844

Maximum allowable radiation = 432.82 mV/m @ 1 km

ANTENNA SYSTEM PARTIAL PROOF OF PERFORMANCE DATA

Table 4

Direction (Degrees): 131.0 T Mode of Operation: 1 kW, DA-N Tunes: 25T

Measuring Location Field Intensity (mV/m)

Point Number	Distance (Kilometers)	1958 Original	1987 Present	Pres./Orig. Ratio	Date/Time Present Data	
30	3.57	45.0	62.0	1.378	11/4	10:54AM
31	3.86	37.0	56.0	1.514	11/4	10:58AM
33	4.83	30.0	36.2	1.207	11/4	11:05AM
32	7.96	11.0	11.0	1.000	11/4	11:20AM
31	5.32	10.5	8.4	2.000	11/4	11:14AM
38	9.58	10.0	7.1	0.537	11/4	11:31AM
34	10.68	5.6	4.69	0.838	11/4	11:36AM
37	12.84	4.53	3.93	0.858	11/4	11:42AM
35	13.33	3.53	2.9	0.706	11/4	11:55AM
40	15.67	3.25	2.28	0.934	11/4	11:51AM

Average ratio * Original Radiation = Present Radiation

Thus: 0.988 * 353.98 mV/m @ 1 km = 349.64 mV/m @ 1 km

Maximum allowable radiation = 368.46 mV/m @ 1 km

NYSEG/NG SYSTEM TYPICAL PROOF OF PERFORMANCE DATA

Table 5

Direction (Degrees): 150.2 T Mode of Operation: 1kW DA-1 Tower: 2T

Measuring Location Point Number	Distance (Kilometers)	Field Intensity (mV/m) 1950 Original	1987 Present	Pres./Orig. Ratio	Date/Time Present Data
18	3.37	60.0	59.0	2.983	11/8 10:40PM
19	3.53	53.0	56.0	1.056	11/8 10:43PM
** points 20-23 inaccessable-owner refused permission **					
23	5.05	35.0	20.5	1.142	11/8 10:53PM
24	5.08	32	20.5	0.938	11/8 10:49PM
25-30 ** points inaccessable, swamp area **					
31	8.42	6.5	7.3	1.123	11/8 10:51PM
36 !!	12.50	4.6	4.05	2.531	11/8 11:20PM
37 !!	13.29	1.3	3.0	2.923	11/8 11:17PM
38 !!	14.23	1.8	3.85	3.208	11/8 11:13PM
39 !!	14.82	1.55	3.4	1.98	11/8 11:20PM

Average ratio * Original Radiation = Present Radiation (12)

Thus: 1.03 * 283.18 mV/m @ 1 km = 291.68 mV/m @ 1 km

Maximum allowable radiation = 291.57 mV/m @ 1 km

!! points measured over water in Jordan Lake. Not included in average ratio to calculate new radiation value. See analysis.

Analysis of 1969 Gordon Radial

Since the 1968 proof of performance the Gordon Lake road has been graded with material brought behind the B. Everhart Gordon property in the points within the 2 to 10 kilometer distance range from the WCKL antenna system along the 183 degree radial and through the lake itself and the swampy area surrounding it. The increase in ground conductivity caused by the changes in conditions over the lake and swampy area render the readings very high compared to the 1968 readings as the radiation does not drop off nearly as fast as it did in 1968. Lake points were measured using a rented boat. The swampy area was simply not accessable. Additionally the owner of land bordering the swampy area was unwilling to give permission for measurements to be made on his property. We therefore have only nine points to report and have analyzed the data using the four "dry land" points before the change in ground conductivity. This radial is not in a direction with a radiation limit as a result of protection requirements, and we feel that the radiation value in this direction is not above that specified in the standard pattern since the conditions under which these measurements were made would tend to inflate the value of observed radiation in relation to actual radiation. The current measurements were made during a period of damp weather and low temperatures which would induce a seasonal variation which would increase the ground conductivity. The 1968 full proof was apparently executed during the late summer. We therefore feel that the ratios between the current measurements and the 1968 measurements are higher due to the ground conductivity difference. Therefore our calculated fields would be higher rather than lower than the actual fields and we consider our analysis to be conservative.

[illegible] STATION [illegible] FOR [illegible]

Table 3

Direction (Degrees): 225.0 T Mode of Operation: 1kW DA-N Tower: 1&T

Measuring Location Field Intensity (mV/m)

Point Number	Distance (Kilometers)	1950 Original	1987 Present	Meas./Orig. Ratio	Date/Time Present	Date
19	2.54	44.8	46.5	1.06	12/1	10:44AM
32	3.67	41.0	50.3	1.37	12/1	10:52AM
21	3.94	39.5	41.0	1.04	12/1	10:54AM
22	4.31	30.0	23.0	2.75	12/1	10:58AM
23	4.72	22.5	17.0	2.76	12/1	11:03AM
24	5.16	22.0	20.2	0.91	12/1	11:05AM
26	5.92	17.0	10.2	1.96	12/	11:10AM
27	6.36	16.0	15.5	1.52	12/1	11:32AM
35	10.54	3.5	4.2	1.09	12/1	11:24AM
38	13.11	2.3	2.2	2.95	12/1	11:30AM

Average ratio * Original Radiation = Present Radiation

Thus: 1.08% * 357.30 mV/m @ 1 km = 354.33 mV/m @ 1 km

Maximum allowable radiation = 366.35 mV/m @ 1 km

P2

Table V

Direction (Degrees): 334.5 T Mode of Operation: 1kW DA Tower "D"

Receiving Location		Field Intensity (mV/m)				
Point Number	Distance (Kilometers)	1980 Original	1987 Present	Pres./Orig. Ratio	Date/Time Present	Data
20	3.38	45.0	20.0	0.444	11/3	12:35PM
21	3.41	31.25	48.5	1.369	11/3	10:25AM
22	3.73	49.58	25.5	0.510	11/3	12:40PM
23	4.37	41.4	34.3	0.833	11/3	12:55PM
25	4.85	20.0	28.5	0.952	11/3	11:20AM
27	5.72	23.33	21.3	0.914	11/3	11:05AM
32	6.66	17.1	17.5	1.023	11/3	11:45AM
33	7.40	13.85	11.5	0.831	11/3	11:55AM
35	9.56	7.20	9.5	1.257	11/3	11:35AM
36	10.30	5.65	4.75	0.713	11/3	11:30AM

Average ratio * Original Radiation = Present Radiation 0.817

Thus: 0.837 * 419.93 mV/m @ 1 km = 376.22 mV/m @ 1 km

Maximum allowable radiation = 431.21 mV/m @ 1 km

ANTENNA SYSTEM PARTIAL FIELD OF INTERFERENCE DATA

Table B

Direction (Degrees): 272.0 T Mode of Operation: 1kW DA-N Time: 1ST

Measuring Location		Field Intensity (mV/m)				
Point Number	Distance (Kilometers)	1960 Original	1987 Present	Pres./Orig. Ratio	Date/Time Present	Date
19	3.22	34.3	37.0	1.088	11/1	11:35AM
22	3.78	19.0	25.0	1.316	11/1	11:03AM
23	4.28	17.0	12.0	0.706	11/1	12:50PM
24	4.55	14.1	21.0	1.489	11/1	12:35PM
25	4.95	11.0	9.5	0.851	11/1	12:32PM
27	5.95	7.3	6.5	0.945	11/1	10:44AM
30	7.18	5.7	6.5	1.140	11/1	12:02PM
31	7.45	4.3	5.8	1.355	11/1	12:59PM
38	10.97	1.9	1.3	0.684	11/1	1:00PM
41	15.37	1.37	0.82	0.599	11/1	11:32AM

Average ratio * Original Radiation = Present Radiation

Thus: 1.025 * 278.36 mV/m @ 1 km = 285.42 mV/m @ 1 km

Maximum allowable radiation = 288.21 mV/m @ 1 km

ANTENNA SYSTEM PARTIAL PROOF OF PERFORMANCE DATA

Table 3

Direction (Degrees): 300.0 T Mode of Operation: 1kW DA-N Times: DST

Measuring Location			Field Intensity (mV/m)			
Point Number		Distance (Kilometers)	1968 Original	1987 Present	Pres./Orig. Ratio	Date/Time Present Data
21		3.86	1.4	0.96	0.685	10/22 11:13AM
23	*	4.75	1.15	2.06	0.574	10/22 11:13AM
24		5.21	0.87	1.26	1.027	10/22 11:25AM
25		5.65	0.755	0.90	0.654	10/22 11:32AM
30		7.53	0.345	0.17	0.433	10/22 11:58AM
31		8.14	0.342	0.15	0.441	10/22 12:05PM
32		8.78	0.305	0.23	0.700	10/22 12:22PM
35		9.53	0.215	0.22	0.630	10/22 12:14PM
37		12.10	0.29	0.11	1.009	10/22 12:37PM
40		14.10	0.257	0.27	1.045	10/22 12:45PM

Average ratio % Original Radiation = Present Radiation

Thus: 0.771 x 17.54 mV/m @ 1 km = 13.53 mV/m @ 1 km

Maximum allowable radiation = 31.08 mV/m @ 1 km

* monitoring point, maximum value is 1.42 mV/m

300 Degree Radial Analysis

Significant residential and commercial developments have occurred along this radial, but most is at least 2 kilometers from the WSM antenna system itself. Several new high tension power lines run over this radial. Towers were carefully chosen to avoid reradiation where possible, but significant variability in the ratios between the current measurements and the 1968 proof measurements is noted. The field along this radial has been conservatively set to insure that the actual inverse field along this radial will surely be within the standard pattern limit and that the observed monitoring point value will not exceed the authorized limit with seasonal variations. The current measurements were made during a period of damp weather and low temperatures. The full proof of 1968 was apparently executed during the late summer. We therefore feel that the ratios between the current measurements and the 1968 measurements are higher than would be expected if the measurements had been taken under more similar conditions, and therefore our calculated fields are higher rather than lower than the actual fields. As such our analysis is conservative. Note also that since the pattern is symmetrical about the axis of the towers (120 degrees) the complementary direction is 30 degrees. The current calculated inverse field in the 300 degree direction is 13.59 mV/m at 1 kilometer, which is in good agreement with the calculated value of 13.70 mV/m at one kilometer on the 30 degree radial. The standard pattern limit is 21.08 mV/m at one kilometer for both 30 degrees and 300 degrees. Non-directional measurements and analysis presented in Appendix A yield a similar estimate of the inverse field on this direction with less variation noted in the calculated ratios.

Table 12

Direction (Degrees): 098.0 T Year of Operation: 1st Day: Tues. 25th

Measuring Location Point Number	Distance (Kilometers)	Field Intensity (mV/m) 1958 Original mV/m/mile	1987 Present mV/mmile	Meas./Orig. Ratio	Date/Time Present Data
30	3.44	17.7	12.0	0.678	10/26 9:33AM
32	3.99	8.7	3.2	0.368	10/26 9:43AM
34	4.82	10.2	3.2	0.314	10/26 9:48AM
36	5.02	3.4	4.0	2.059	10/26 9:53AM
38	6.63	2.8	2.45	0.817	10/26 9:59AM
39	9.54	1.4	1.05	0.750	10/26 10:13AM
39	10.86	1.24	0.78	2.750	10/26 10:21AM
41	12.66	0.64	0.61	0.953	10/26 10:52AM
42	13.60	0.61	0.45	0.738	10/26 10:33AM
43	14.35	0.57	0.51	0.895	10/26 10:38am

Average ratio * Original Radiation = Present Radiation

Thus: 0.819 * 122.28 mV/M @ 1 km = 100.18 mV/M @ 1 km

Maximum allowable radiation = 129.04 mV/m @ 1 km

* monitoring point, maximum value is 11.1 mV/m

348 Degree Radial Analysis

It should be noted that the observed value along this radial at the monitoring point of 10 mV/m exceeds the licensed value of 9.9 mV/m. The radial was therefore immediately analysed and it was determined that the inverse field in this direction was within the standard pattern limit by a reasonable margin. The point was subsequently remeasured and found to be below the licensed value. Investigation of how the limit of 11.1 mV/m was derived revealed the following. In the 1983 partial proof in support of a change in monitor point location to this position on the 348 degree radial the ratio between the 1983 measured value for point M28 (9.4 mV/m) and the 1968 full proof value for point M32 (17.7 mV/m) was 2.531. This was the lowest ratio observed on the radial. It is also much less than the overall ratio observed for this radial in the 1983 partial proof of 2.89. As a result we feel that the monitor point measurement may have been in error, or may have been a bad choice of point location.

Taking the data from our current 1987 measurements we therefore propose a modified limit for this point in keeping with current directional pattern data calculated as follows:

Standard pattern field at 1 km (120.04 mV/m) divided by observed inverse field at 1 km (100.18 mV/m) multiplied by the observed value at the monitor point (12 mV/m) = new limit (15.9 mV/m). It should be noted that this proposed limit is less than the value which was observed at this point in the 1968 full proof.

Another contributing factor to the difference in readings between 1983 and 1987 may be that the recently constructed I-40 intersects the radial within 200 meters of the monitoring point. We therefore propose to modify the description of and field intensity at monitoring point for the 340 degree radial as follows.

> Direction of 340 degrees True North. Turn left out driveway of station onto US 13-301. Go 0.6 miles to Erwin Road and turn left. Go 2.5 miles to Weaver Dairy Road (SR 1733) and turn left. Go 1.2 miles to Sunrise Road (SR 1730) and turn right. Go 2.5 miles on Sunrise and cross over Interstate 40. Go 100 meters beyond overpass on Sunset. On West side of road is a telephone buried cable junction box. The point is 30 meters on this side of Sunset back down the road toward the overpass. The field intensity measured at this point should not exceed 15.5 mV/m.

Appendix A

Non-Directional Measurements and Analysis

During collection of data for the partial proof of performance analysis, data were collected in 5000 watt non-directional mode on the 348 degree radials by Mr. Brinitzer. Upon analysis of the data from the 26 and 308 degree radials it was decided that non-directional measurements on these radials would be desirable as well. Since Mr. Brinitzer had left our employ as of late December 1987, new measurements were taken January 3rd, 1989 by James W. Davis on the 26 and 308 degree radials. The results and analysis of this data with respect to the 1987 directional measurements are presented in this appendix. In general the purpose of this analysis is to establish an estimate of the fields in the critical directions independent of point by point data from the 1968 proof. Only the inverse non-directional fields at one mile in each of the three directions are used, and these are supposedly independent of environmental factors along the radials.

As shown in the tables below, current directional fields were ratioed with current non-directional fields and the ratios arithmetically averaged. The 1000 watt non-directional inverse F with at one mile from the 1968 proof were converted to equivalent fields for a power of 5000 watts at one kilometer by multiplying the 1968 fields by 1.609 (miles to kilometers conversion) and by 8.536 (the square root of the power ratio). This equivalent field was multiplied by the arithmetic average ratio to yield an estimate of the inverse field at one mile radial. In all cases the fields were within the standard pattern value, were in reasonable agreement with the previous method of analysis, and

the meters will show an increased variability in the sound field [illegible] degrees) and table 2 (360 degrees). Some of the measuring variability [illegible] the directional to omnidirectional meters are most likely due to near field effects on the meter points and off radial roundabouts [illegible] radial affecting the directional readings in spite of efforts to minimize such effects.

ANTENNA SYSTEM SECTORAL PROOF OF PERFORMANCE DATA

Table II

Direction (Degrees): 20.0 T Mode of Operation: D or N Time: GMT

Date of Measurements: 1/3/88 by James W. Davis

Point Number	Distance (Kilometers)		Present NDA	Present DA	DA/NDA Ratio	Time Present Data
21	*	3.83	105	1.3	0.0124	1:32 PM
22		3.96	68	1.0	0.0147	1:40 PM
25		5.28	40	0.66	0.0165	1:47 PM
28		6.47	36	0.58	0.0161	1:53 PM
29		6.92	31	0.55	0.0177	1:55 PM
30		7.47	26	0.47	0.0181	2:17 PM
32		8.52	24.3	0.47	0.0193	2:25 PM
33		9.46	19.0	0.42	0.0221	2:34 PM
34		10.7	16.5	0.30	0.0182	2:44 PM
35		11.3	14.25	0.27	0.0189	2:57 PM

Average ratio x Equivalent 1968 NDA inverse field = Present Radiation

Thus: 0.0174 x 827.49 mV/m @ 1 km = 14.39 mV/m @ 1 km

Maximum allowable radiation = 21.00 mV/m @ 1 km

* monitoring point, maximum value is 7.0 mV/m

Table 15

Direction (Degrees): 305.0 T Mode of Operation: 5 KW NDA Time: 08:

Date of Measurements: 1/3/88 by James J. Davis

Measuring Location			Field Intensity (mV/m)			
Point Number		Distance (Kilometers)	Present NDA	Present DA	DA/ND Ratio	Time Present Data
21		3.96	43	2.96	0.0323	8:35 AM
23	x	4.76	38	2.66	0.0174	9:47 AM
24		5.21	40	1.25	0.0219	9:58 AM
25		5.65	27.3	0.52	0.0107	10:05 AM
30		7.53	18.1	0.17	0.0142	12:15 PM
31		8.14	14.5	0.13	0.0120	12:22 PM
32		8.72	18.0	0.23	0.0138	12:25 PM
33		8.93	14.25	0.22	0.0154	12:36 PM
37		13.10	7.5	0.11	0.0143	12:44 PM
42		14.19	4.5	0.07	0.0156	12:55 PM

Average ratio * Equivalent 1968 NDA inverse field = Present Radiation

Thus: 0.0162 * 719.54 mV/m @ 1 km = 11.68 mV/m @ 1 km

Maximum allowable radiation = 21.00 mV/m @ 1 km

* monitoring point, maximum value is 1.43 mV/m

ANTENNA SYSTEM PARTIAL PROOF OF PERFORMANCE DATA

Table 10

Direction (Degrees): 340.0 T Mode of Operation: 5 kW NDA Tuned: YES

Date of Measurements: 12/05/87 by Benjamin M. Bwinitzer

Point Number	Measuring Location Distance (Kilometers)	Present NDA	Present DA	DA/NDA Ratio	Time Present Data
30	* 3.44	66	13.2	0.1995	10:35 AM
33	3.99	62	8.9	0.1290	10:47 AM
34	4.02	57	8.2	0.1439	10:38 AM
36	5.08	35.5	4.6	0.1352	10:30 AM
31	6.63	21.2	3.45	0.1167	11:25 AM
37	9.94	7.2	1.03	0.1458	11:33 AM
39	10.86	4.65	2.73	0.1677	11:40 AM
41	13.66	3.8	0.61	0.1605	12:17 PM
42	13.50	3.88	0.43	0.1379	11:56 AM
43	14.35	3.18	0.51	0.1604	12:02 PM

Average ratio * Equivalent 1968 NDA inverse field = Present Radiation

Thus: 0.1457 * 737.53 mV/m @ 1 km = 107.43 mV/m @ 1 Km

Maximum allowable radiation = 139.04 mV/m @ 1 km

* monitoring point, maximum value is 11.. mV/m

AFFIDAVIT/QUALIFICATIONS AND SIGNATURE OF THE AFFIANT

The affiant, James W. Davis, states that he is the holder of a valid FCC general radiotelephone operator license number PG-5-6267 which was issued January 2nd, 1985.

The affiant states that as a licensed operator he has had to date 22 years continuous experience in the broadcast technical field and also holds Bachelor of Science and Master of Science degrees in Electrical Engineering from Duke University, Durham North Carolina.

The affiant states that his employer, James W. Davis Consultant Inc, has been retained by Village Broadcasting Company, Inc. licensee of WCHL and that he has acted in this capacity for the purpose of taking the described measurements and preparing this report.

The affiant states that the data and methods given in the accompanying report are accurate representations, to the best of his knowledge and belief.

Affiant _____ Date 2/18/85

717 Chalice Street
Durham, North Carolina
27705

Phone: 919-383-9373