Federal Communications Commission
Washington, D. C. 20554

Approved by OMB
3060-0627
Expires 01/31/98

FOR FCC USE ONLY

FCC 302-AM
APPLICATION FOR AM BROADCAST STATION LICENSE

(Please read instructions before filling out form.

FOR COMMISSION USE ONLY
FILE NO.

SECTION I - APPLICANT FEE INFORMATION

1. PAYOR NAME (Last, First, Middle Initial)
BEASLEY MEDIA GROUP LICENSES, LLC

MAILING ADDRESS (Line 1) (Maximum 35 characters) 3033 RIVIERA DRIVE

MAILING ADDRESS (Line 2) (Maximum 35 characters) SUITE 200

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
NAPLES	FL	34103

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
239-263-5000	KDWN	FAC ID 54686

2. A. Is a fee submitted with this application? [✓] Yes [ ] No

B. If No, indicate reason for fee exemption (see 47 C.F.R. Section

[ ] Governmental Entity [ ] Noncommercial educational licensee [ ] Other (Please explain):

C. If Yes, provide the following information:

Enter in Column (A) the correct Fee Type Code for the service you are applying for. Fee Type Codes may be found in the "Mass Media Services Fee Filing Guide." Column (B) lists the Fee Multiple applicable for this application. Enter fee amount due in Column (C).

(A) FEE TYPE CODE	(B) FEE MULTIPLE	(C) FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
MMR	0001	$ 725.00	

To be used only when you are requesting concurrent actions which result in a requirement to list more than one Fee Type Code.

(A)	(B)	(C)	FOR FCC USE ONLY
MOR	0001	$ 835.00	

	TOTAL AMOUNT REMITTED WITH THIS APPLICATION	FOR FCC USE ONLY
ADD ALL AMOUNTS SHOWN IN COLUMN C, AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE.	$ 1,560.00	

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT BEASLEY MEDIA GROUP LICENSES, LLC		
MAILING ADDRESS 3033 RIVIERA DRIVE, SUITE 200		
CITY NAPLES	STATE FLORIDA	ZIP CODE 34103

2. This application is for:

☑ Commercial ☐ Noncommercial

☑ AM Directional ☐ AM Non-Directional

Call letters	Community of License	Construction Permit File No.	Modification of Construction Permit File No(s).	Expiration Date of Last Construction Permit
KDWN	LAS VEGAS, NV	BP-20190531AAN		OCTOBER 7, 2022

3. Is the station now operating pursuant to automatic program test authority in accordance with 47 C.F.R. Section 73.1620?

☑ Yes ☐ No

If No, explain in an Exhibit.

Exhibit No.

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

☑ Yes ☐ No

If No, state exceptions in an Exhibit.

Exhibit No.

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

☐ Yes ☑ No

If Yes, explain in an Exhibit.

Exhibit No.

6. Has the permittee filed its Ownership Report (FCC Form 323) or ownership certification in accordance with 47 C.F.R. Section 73.3615(b)?

☐ Yes ☐ No

☑ Does not apply

If No, explain in an Exhibit.

Exhibit No.

7. Has an adverse finding been made or an adverse final action been taken by any court or administrative body with respect to the applicant or parties to the application in a civil or criminal proceeding, brought under the provisions of any law relating to the following: any felony; mass media related antitrust or unfair competition; fraudulent statements to another governmental unit; or discrimination?

☐ Yes ☑ No

If the answer is Yes, attach as an Exhibit a full disclosure of the persons and matters involved, including an identification of the court or administrative body and the proceeding (by dates and file numbers), and the disposition of the litigation. Where the requisite information has been earlier disclosed in connection with another application or as required by 47 U.S.C. Section 1.65(c), the applicant need only provide: (i) an identification of that previous submission by reference to the file number in the case of an application, the call letters of the station regarding which the application or Section 1.65 information was filed, and the date of filing; and (ii) the disposition of the previously reported matter.

Exhibit No.

8. Does the applicant, or any party to the application, have a petition on file to migrate to the expanded band (1605-1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination (pursuant to the 5 year holding period allowed) with the AM facility proposed to be modified herein?

☐ Yes ☑ No

If Yes, provide particulars as an Exhibit.

Exhibit No.

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 use of the same, whether by license or otherwise, and requests and 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 that all the exhibits are a material part hereof and are incorporated herein as set out in full in

CERTIFICATION

1. By checking Yes, the applicant certifies, that, in the case of an individual applicant, he or she is not subject to a denial of federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. Section 862, or, in the case of a non-individual applicant (e.g., corporation, partnership or other unincorporated association), no party to the application is subject to a denial of federal benefits that includes FCC benefits pursuant to that section. For the definition of a "party" for these purposes, see 47 C.F.R. Section 1.2002(b).

☑ Yes ☐ No

2. 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.

Name	Signature	
CAROLINE BEASLEY	Caroline Beasley	
Title	Date	Telephone Number
CED	3-23-2020	239-263-5000

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION

FCC NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT AND THE PAPERWORK REDUCTION ACT

The solicitation of personal information requested in this application is authorized by the Communications Act of 1934, as amended. The Commission will use the information provided in this form to determine whether grant of the application is in the public interest. In reaching that determination, or for law enforcement purposes, it may become necessary to refer personal information contained in this form to another government agency. In addition, all information provided in this form will be available for public inspection. If information requested on the form is not provided, the application may be returned without action having been taken upon it or its processing may be delayed while a request is made to provide the missing information. Your response is required to obtain the requested authorization.

Public reporting burden for this collection of information is estimated to average 639 hours and 53 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, can be sent to the Federal Communications Commission, Records Management Branch, Paperwork Reduction Project (3060-0627), Washington, D. C. 20554. Do NOT send completed forms to this address.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant
BEASLEY MEDIA GROUP LICENSES, LLC

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

☑ Station License ☐ Direct Measurement of Power

1. Facilities authorized in construction permit					
Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
				Night	Day
KDWN	BP-20190531AAN	720	UNLIMITED	7.5	25

2. Station location	
State	City or Town
NEVADA	LAS VEGAS

3. Transmitter location			
State	County	City or Town	Street address (or other identification)
NV	CLARK	NORTH LAS VEGAS	CORNER N SLOAN & E TROPICAL PKWY

4. Main studio location			
State	County	City or Town	Street address (or other identification)
NV	CLARK	LAS VEGAS	2920 S DURANGO DR, LAS VEGAS 89117

5. Remote control point location (specify only if authorized directional antenna)			
State	County	City or Town	Street address (or other identification)
NV	CLARK	LAS VEGAS	2920 S DURANGO DR, LAS VEGAS 89117

6. Has type-approved stereo generating equipment been installed? ☐ Yes ☑ No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68? ☑ Yes ☐ No ☐ Not Applicable

Attach as an Exhibit a detailed description of the sampling system as installed. Exhibit No. 1

8. Operating constants:	
RF common point or antenna current (in amperes) without modulation for night system 12.6	RF common point or antenna current (in amperes) without modulation for day system 22.1
Measured antenna or common point resistance (in ohms) at operating frequency Night 50.0 Day 51.0	Measured antenna or common point reactance (in ohms) at operating frequency Night -J2.4 Day +J0.8

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
1	110.1	N/A	1.49	N/A	N/A	N/A
2	0.0	N/A	1.0	N/A	N/A	N/A
3	124.5	N/A	0.657	N/A	N/A	N/A

Manufacturer and type of antenna monitor: POTOMAC INSTRUMENTS AM-1901-3 (S/N 706)

SECTION III - Page 2

9. Description of antenna system ((f directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary.)

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
GUYED, UNIFORM CROSS SECTION	1,3-73.2m, 2-89.3m	1,3-73.6m, 2-90.2m	1,3-74.7m, 2-91.1m	Exhibit No.

Excitation ☑ Series ☐ Shunt

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

North Latitude	West Longitude
36 ° 16 ' 04 "	115 ° 02 ' 42 "

If not fully described above, attach as an Exhibit further details and dimensions including any other antenna mounted on tower and associated isolation circuits. Exhibit No. EXHIBIT 1

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system. Exhibit No. EXHIBIT 1

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

NONE

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

N/A

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.

Name (Please Print or Type)	Signature (check appropriate box below)
BERT GOLDMAN	Bert Goldman
Address (include ZIP Code)	Date
560 PERKINS WAY AUBURN, CA 95603	3/22/2020
	Telephone No. (Include Area Code)
	(214) 395-5067

☐ Technical Director

☐ Registered Professional Engineer

☐ Chief Operator

☑ Technical Consultant

☐ Other (specify)

ENGINEERING STATEMENT
IN SUPPORT OF 302-AM

APPLICATION FOR LICENSE EMPLOYING
MOMENT METHOD MODELING

KDWN, 720kHz (Facility ID 54686)

Construction Permit. BP-20190531AAN

25,000 Watt ND-D

7,500 Watt DA-N

Las Vegas, NV.

March, 2020

ENGINEERING STATEMENT IN SUPPORT OF 302-AM
APPLICATION FOR LICENSE EMPLOYING
MOMENT METHOD MODELING

KDWN, 720Hz

March, 2020

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SUMMARY

The following engineering statement has been prepared on behalf of Beasley Media Group Licenses, LLC, ("Beasley"), licensee of standard broadcast station KDWN (AM), Las Vegas, NV 720kHz (Facility ID 54686), in support of an application to cover Construction Permit BP-20190531AAN to relocate and diplex with station KXST, 1140kHz. Three new sample lines were installed and electrically measured to be within 1 degree in length, all ATU's used by KDWN had new calibrated sampling toroids installed. The antenna monitor was checked and verified within manufacturer specifications.

The antenna system has been adjusted to produce monitoring system parameters which are within ± 5% in field ratio and ± 3° in phase of the modeled values as required by 47 C.F.R. §73.151(c)(2)(ii). No changes were made to any of the existing towers. KDWN will operate from three towers at the KXST site; KDWN tower 1 equates to KXST tower 2. KDWN tower 3 is the same as KXST tower 3. KDWN Tower 2 is not used by KXST and is an existing base insulated tower which was built to hold a backup antenna for several FM stations. The only appurtenances to any of the five towers on the property housing KDWN and KXST are on KDWN tower #2 which as previously noted, has an FM antenna and associated transmission line attached. That has been considered in the MoM model.

FCC 302-AM form exhibits

Exhibit A- This application is being filed in order to obtain full power Program Test Authority

The KDWN ground system is existing and in use. A description is attached below.

Special Operating Condition Compliance

1) KDWN is choosing to operate pursuant to moment method as specified in Section 73,151(c) using existing series-fed uniform cross-section towers. All towers with their associated appurtenances were included in the modeling. New sampling coax and calibrated toroids were installed, and the antenna monitor was verified for accuracy. The sampling system is compliant with Section 73.151(c) (2) (i).

2) Transmitter in use is a Harris 3DX-50 type accepted transmitter.

3) This FCC form 302 satisfies condition number 3. Included in this application is measurements of spurii and intermodulation products. The preparer of this application certifies that filters and traps appropriate for isolating KDWN and KXST have been installed and properly tuned. A MoM proof of performance is concurrently being filed by KXST to return to licensed operation. KXST has been operating pursuant to an engineering STA.

4) This application is being filed to cover construction permit BP-20190531AAN well in advance if that permit's expiration.

5) Licensee acknowledges its responsibility for satisfying all reasonable complaints of blanketing interference within the 1V/m contour as required by Section 73.88 of the Commission's rules.

6) Licensee acknowledges that the ground system is the same as described in the 301 application and agrees with the definition on the Construction Permit "Ground system consists of 120 equally spaced, buried, copper radials, about the base of each tower, each 65.7 meters in length around nighttime towers #1(N) and #3(E), and 89.2 meters around daytime/nighttime tower #2(W), except where intersecting radials are shortened and bonded to a transverse copper strap midway between adjacent towers, plus 120 interspersed radials 15.2 meters in length around nighttime towers #1(N) and #3(E), and 7.3 meters around daytime/nighttime tower #2(W)."

FCC 302 Form Exhibits

Exhibit 1 – Station Operation

DESCRIPTION OF KDWN TRANSMISSION FACILITIES AS CONSTRUCTED

RF Power Day, nominal	25kW
RF Power night, nominal	7.5kW
RF Common Point DAY	22.1a, 51Ω Antenna Input resistance
RF Common Point NIGHT	12.5a, 50Ω common point resistance (7.8kW input[1])
TOWERS[2]	Electrical, Towers 1 and 3, 63.3° height. Tower #2, 77.2° height.
	Physical, Towers 1 and 3, each 74.7m OAGL. Tower 2, 91.1m OAGL
Antenna Struct .Reg.	1058337 Designated KDWN Tower 1 1291307 Designated KDWN Tower 2 1058338 Designated KDWN Tower 3

GROUND SYSTEM: 120 equally spaced, buried, copper radials, about the base of each tower, each 65.7 meters in length around nighttime towers #1(N) and #3(E), and 89.2 meters around daytime/nighttime tower #2(W), except where intersecting radials are shortened and bonded to a transverse copper strap midway between adjacent towers, plus 120 interspersed radials 15.2 meters in length around nighttime towers #1(N) and #3(E), and 7.3 meters around daytime/nighttime tower #2(W).

[1] Pursuant to 73.51(b) (2) For stations with nominal powers in excess of 5 kW, the authorized antenna input power to directional antennas shall exceed the nominal power by 5.3 percent.

[2] Survey shows compliance with parameters used in MoM modeling, please see Exhibit 8.

DAY MoM OPERATING PARAMETERS

Non-Directional – N/A

NIGHT MoM OPERATING PARAMETERS (Normalized TCT)

TOWER	**#1**	**#2**	**#3**
Phasing	110.1°	0.0°	124.5°
Field Ratio	1.490	1.0	0.657

Exhibit 2 – Description of sampling system

Description of Sampling System as Constructed

Samples for the antenna monitor are obtained from Phasetek Inc. P600-202 TCT's (0.5V/A measured @ 720kHz) toroidal current transformers mounted at the outputs of the antenna coupling units.

The TCT's were measured with a HP 8753ES Network Analyzer and have the following measured characteristics:

Tower Number	Serial No.	Magnitude	Phase
1	312	0.998	-0.12°
2	313	1.000	0.0°
3	314	0.999	-0.16°

The above measurements certify compliance within +-1.5 percent ratio and +- two degree phase accuracy, as stated by the manufacturer.

Samples are returned to the antenna monitor using equal lengths of RFS LCF-12-50J, ½" foam coaxial cable with solid copper outer shield.

All sample lines were tested and verified to be within 1° electrical length and with characteristic impedance to be within FCC guidelines. Verification of the sample lines is included below.

The phase monitor is a Potomac Instruments AM-1900-3 antenna monitor (serial number 706). Phase monitor accuracy was confirmed by feeding two tower inputs at a time through a splitter and equal length jumpers to confirm equal magnitude and phase on each tower within .001 current ratio and 0.2 degrees phase.

Antenna Monitor Verification

DAY (N/A) Non-directional

NIGHT (Reference #2)

Tower Number	Value	Phase
2-1	1.000	0.2°
2-3	0.999	-0.1°

Impedance measurements were made of the antenna sampling system using a Power AIM 120. The measurements were made looking into the antenna monitor ends of the sample lines with the tower ends open-circuited. All connectors were installed on the sample lines and readings were normalized to include the test leads. All sample lines were equally cut prior to installation and trimmed to achieve identical electrical length and phase stability.

The table in Exhibit 1 shows the frequencies above and below the carrier frequency where resonance, defined as zero reactance corresponding with low resistance, was found. As the length of distortionless transmission line is 180 electrical degrees at the difference frequency between adjacent frequencies of resonance, and frequencies of resonance occur at odd multiples of 90 degrees electrical length, the sample line length at the resonant frequency above carrier frequency, which is the closest one to the carrier frequency, was found to be 90 electrical degrees. The electrical length at carrier frequency appearing in Exhibit 1 below was calculated by ratioing the frequencies.

KDWN Tower Sample Measurements

	Resonance Below 720Khz	Resonance Above 720Khz	Calculated Electrical Length@720kHz	Impedance into TCT @720kHz
Tower 1	456.137	1376.33	142.06°	48.8 -j0.59
Tower 2	456.365	1377.002	141.99°	48.0 -j0.62
Tower 3	455.875	1377.897	142.14°	48.4 -j0.70
			Max Delta 0.15 deg	Max Delta 0.8Ω

Based upon the measurements shown above, the sample lines are within the one electrical degree requirement.

To determine the characteristic impedance values of the sample lines, open-circuited measurements were made with frequencies offset to produce ± 45 degrees of electrical length from resonance

The characteristic impedance was calculated using the following formula, where R1 +j X1 and R2 +j X2 are the measured impedances at the +45 and -45 degree offset frequencies, respectively:

$$ZO = ((R1^2 + X1^2)^{½} \times (R2^2 + X2^2)^{½})^{½}$$

KDWN Sample Line Characteristic Impedance Measurements

SAMPLE LINE IMPEDANCE MEASUREMENTS

	+45 Degree Offset Frequency (KHz)	+45 Degree Measured Impedance (Ohms)	-45 Degree Offset Frequency (KHz)	-45 Degree Measured Impedance (Ohms)	Calculated Characteristic Impedance (Ohms)
Tower 1	684.206	3.46 +j50.3	228.069	0.72 -j50.72	50.57
Tower 2	684.548	3.38 +j49.88	228.183	0.66 – j50.57	50.28
Tower 3	683.813	3.37 +j49.95	227.938	0.56 -j51.0	50.53
				MAX Impedance	50.57
				MIN Impedance	50.28
				MAX IMPEDANCE DELTA	**0.29 Ω**

As shown above, the sample lines measured characteristic impedances meet the requirement that they be equal to 50 Ohms within +-2 ohms.

The sampling system for KDWN is type approved under 47CFR 73.68 of the FCC rules.

Exhibit 3 – Tower details and isolation circuits

The following isolation circuits are attached to the KDWN towers and have been included in the MoM analysis:

Towers 1,3: Uniform cross-section 20 inch face, guyed towers. Leg diameter 2.5 inches. Each tower with an Austin Ring transformer and Utility base insulator.

Tower 2: Uniform cross-section 36 inch face, guyed tower with Austin Ring transformer and Austin A4722B base insulator. Tower has 4-1/16" Rigid coaxial cable attached to the tower (with grounding kits to tower approximately every 50ft) and an 8-bay ERI FM antenna the last 80ft of the tower (above the guy wires).

Insulators: Towers 1 and 3, Utility Base insulator assumed capacity of 14pf (-j15,789.2 Ω @ 720kHz)

Tower 2 Austin A4722B (20pf) plus ERI Model 430 ISO Transformer to couple FM stations, (140pf). Total assumed 160pf (-j1,381.6 Ω @ 720kHz)

Static Drain: Each tower has a static drain coil. Assumed (+j60,000 Ω @720kHz)

Direct Measurement of Power

The common point current was measured using a Delta TCA-40 RF current meter (S/N 13567) permanently installed in the phasing cabinet. Common point resistance was set to 50Ω –j2. The transmitter was adjusted to yield the correct current as reflected on this 302-AM.

CONCLUSION

All adjustments and measurements were conducted jointly by Bertram Goldman and Kurt Gorman. Method of Moments analysis was conducted by Kurt Gorman. Both Gorman's and Goldman's qualifications are a matter of record with the Federal Communications Commission.

This application was prepared on behalf of Beasley by Bertram Goldman of Goldman Engineering Management. All statements herein are true and correct to the best of his knowledge.

Bertram S. Goldman
560 Perkins Way
Auburn, CA 95603
214-395-5067
bert@bgoldman.net

Exhibit 4 – Method of Moments Computations

Method Of Moments Detail

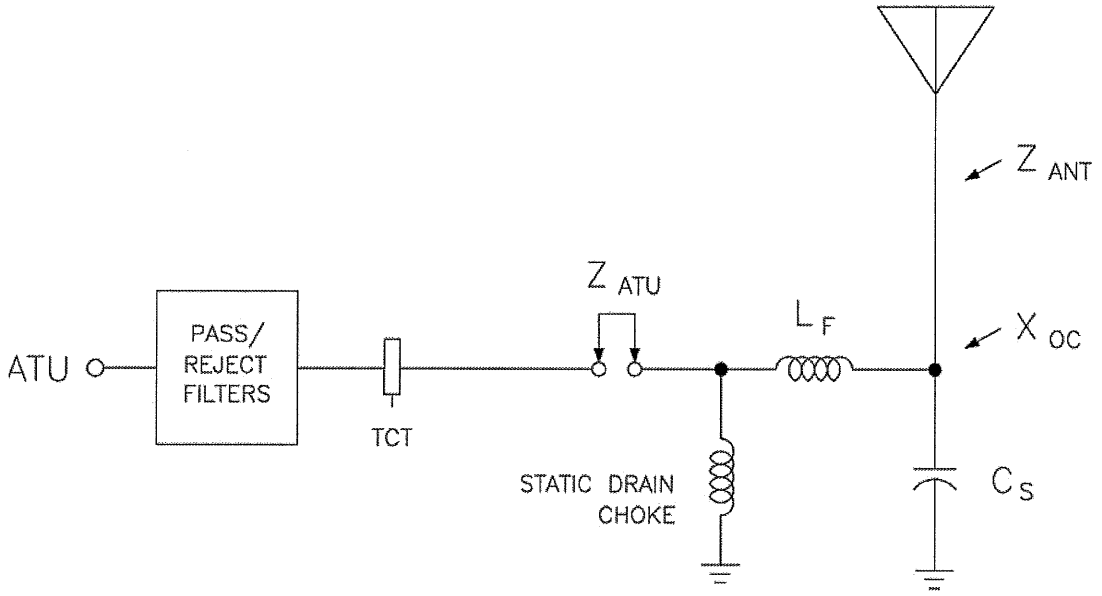
All Moment Method Modeling was done with Expert MININEC Broadcast Professional, Version 23. One wire was used to represent each tower. Towers were driven individually to verify the Model compared to measured impedance data. Once the Model was verified, the Night Directional Antenna System was computed. For the Directional mode, the complex voltage values for sources located at ground level were computed. These sources produce current moment sums for each Tower that, when normalized, equate to the Theoretical Field Parameters for each respective Tower.

Exhibit 4A - Tower Base Impedance Measurements

The impedance of each tower was measured at the J plug at the output of the T matching network and at the TCT at the base of each tower. All impedance measurements were obtained using a HP 8753ES Network Analyzer with an external power amplifier operating on 720kHz. The measurements were taken via remote calibration of the new sample lines after being disconnected from the Delta TCT's. All measurements were taken for each tower with all other towers open-circuited.

The following exhibit describes the measurement conditions and assumptions used in the MoM analysis

Tower Impedance Measurements Compared to Method of Moments Model



TOWER	Specified Cs (pf)	Measured L_F (µH)	Measured X_F (Ω)	Modeled Z_{ANT} (Ω)	Modeled Z_{ATU} (Ω)	Measured Z_{ATU} (Ω)
1	14	6.41	+j29.0	15.2 –j 113.5	15.0 –j 83.9	14.6 –j 84.5
2	160	3.98	+j18.0	32.3 –j 12.2	31.7 +j 5.2	31.6 +j 5.9
3	14	5.75	+j26.0	15.7 –j 107.0	15.6 –j 80.4	15.7 –j 80.5
4	14	4.64	+j21.0	18.3 –j 91.5	18.2 –j 70.0	18.2 –j 70.6
5	14	5.08	+j23.0	15.8 –j 109.7	15.6 –j 86.1	15.3 –j 86.6

Tower	Calculated X_{OC} (Ω)
1	-j21,424.4
2	-j1,414.2
3	-j21,424.8
4	-j21,425.4
5	-j21,425.1

EXHIBIT 4C - MoM Model Parameters

Note: For the MoM model, towers 1, 2, and 3 are as designated in the CP. For purposes of MoM modeling, however, the KXST end towers which are not driven in the KDWN array were added as towers 4 (KXST tower 4) and 5 (KXST tower 1).

Tower	Wire No.	Segments	Base Node	Radius (meters)	Percent of equivalent radius	Model Length (deg)	Physical Length (deg)
1	1	12	1	0.32	131.9	65	63.3
2	2	12	13	0.4366	100.0	83.7	77.2
3	3	12	25	0.32	131.9	66	63.3
4	4	12	37	0.32	131.9	69	63.3
5	5	12	49	0.32	131.9	65.5	63.3

CIRCUIT ANALYSIS

Circuit analysis was performed on each tower of the KDWN model. The "Phasetek" Nodal Circuit Analysis program was used to compute base model Input/ Output voltages and currents. For directional operation, the calculated Mininec Tower Base Drive Voltage was used to determine the Base Network Input Current. This point is the location of the sampling TCT. "Z_1" represents the ATU Shunt impedance, "Z_2" represents the Tower Feed impedance, and "Z_3" represents the Tower Base Shunt impedance.

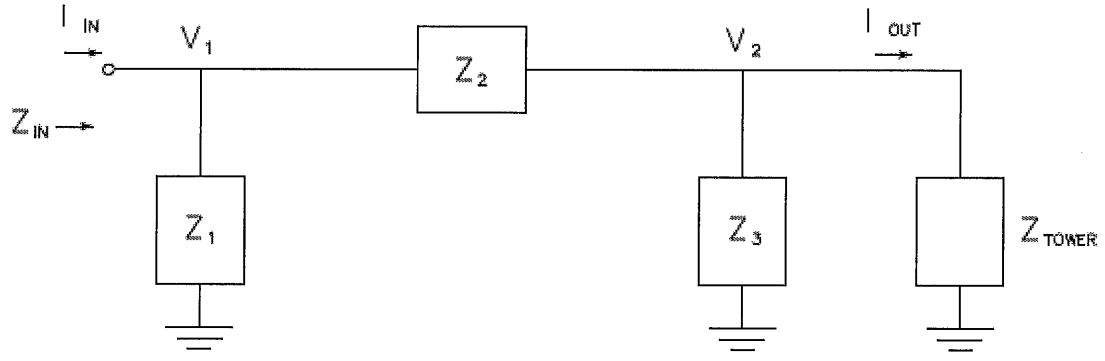


EXHIBIT 4D- DERIVED DIRECTIONAL PARAMETERS

APPLICATION FOR LICENSE INFORMATION

EMPLOYING MOMENT METHOD MODELING

KDWN, 720 KHZ, DA-N

DAY: **Non-Directional (All other towers detuned)**

NIGHT: **Directional (KXST Towers #1, #4, detuned)**

	Theoretical		Base Network Input Current		Normalized TCT	
Tower	**Field**	**Phase**	**Amplitude**	**Phase**	**Amplitude**	**Phase**
1 (E)	1.000	0.0°	17.12	1.08°	1.49	110.1°
2 (W)	1.100	246.5°	11.49	-108.99°	1.0	0.0°
3 (N)	.45	15.5°	7.55	15.46°	.657	124.5°

Exhibit 5 - Method of Moment Analysis

EXHIBIT 5A BASE NETWORK COMPUTATION

BASE NETWORK COMPUTATION
PHASETEK INC.
QUAKERTOWN PA

CUSTOMER : KDWN
NETWORK ID : TOWER 1 (OTHERS OPEN)

FREQUENCY : 720.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 60000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 29.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00,-15789.20 OHMS
TOWER IMPEDANCE (R,X) : 15.17, -113.54 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	60000.00
2		GROUND	14.96	-112.74
1		2	0.00	29.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	133.69	-2.57

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	15.00	-83.86	85.19	-79.86
INPUT CURRENT (AMPS) :	0.21	1.16	1.17	79.86
OUTPUT CURRENT (AMPS) :	0.21	1.15	1.17	79.82

INPUT/OUTPUT CURRENT RATIO = 1.0058
INPUT/OUTPUT PHASE = 0.04 DEGREESBASE NETWORK COMPUTATION

BASE NETWORK COMPUTATION
PHASETEK INC.
QUAKERTOWN PA

CUSTOMER : KDWN
NETWORK ID : TOWER 1 NIGHT

FREQUENCY : 720.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 60000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 29.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00,-15789.20 OHMS
TOWER IMPEDANCE (R,X) : 9.88, -127.16 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	60000.00
2	GROUND	9.72	-126.15
1	2	0.00	29.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	1673.85	-83.19
2	2169.11	275.50

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	9.75	-97.31	97.79	-84.28
INPUT CURRENT (AMPS) :	17.11	0.32	17.12	1.08
OUTPUT CURRENT (AMPS) :	17.00	0.31	17.01	1.06

INPUT/OUTPUT CURRENT RATIO = 1.0064
INPUT/OUTPUT PHASE = 0.03 DEGREES

BASE NETWORK COMPUTATION
PHASETEK INC.
QUAKERTOWN PA

CUSTOMER : KDWN
NETWORK ID : TOWER 2 (OTHERS OPEN)

FREQUENCY : 720.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 60000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 18.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -1381.60 OHMS
TOWER IMPEDANCE (R,X) : 32.28, -12.20 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	60000.00
2	GROUND	31.70	-12.82
1	2	0.00	18.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	106.46	-31.30

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	31.69	5.19	32.11	9.30
INPUT CURRENT (AMPS) :	3.07	-0.50	3.11	-9.30
OUTPUT CURRENT (AMPS) :	3.03	-0.57	3.09	-10.60

INPUT/OUTPUT CURRENT RATIO = 1.0092
INPUT/OUTPUT PHASE = 1.30 DEGREES

BASE NETWORK COMPUTATION
PHASETEK INC.
QUAKERTOWN PA

CUSTOMER : KDWN
NETWORK ID : TOWER 2 NIGHT

FREQUENCY : 720.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 60000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 18.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -1381.60 OHMS
TOWER IMPEDANCE (R,X) : 34.49, 22.66 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	60000.00
2	GROUND	35.63	22.13
1	2	0.00	18.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	616.28	-60.55
2	481.66	282.90

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	35.58	40.13	53.63	48.44
INPUT CURRENT (AMPS) :	-3.74	-10.87	11.49	-108.99
OUTPUT CURRENT (AMPS) :	-4.07	-10.94	11.67	-110.40

INPUT/OUTPUT CURRENT RATIO = 0.9846
INPUT/OUTPUT PHASE = 1.42 DEGREES

BASE NETWORK COMPUTATION
PHASETEK INC.
QUAKERTOWN PA

CUSTOMER : KDWN
NETWORK ID : TOWER 3 (OTHERS OPEN)

FREQUENCY : 720.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 60000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 26.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00,-15789.20 OHMS
TOWER IMPEDANCE (R,X) : 15.73, -106.96 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	60000.00
2	GROUND	15.52	-106.26
1	2	0.00	26.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	131.37	-2.64

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	15.56	-80.36	81.85	-79.04
INPUT CURRENT (AMPS) :	0.23	1.20	1.22	79.04
OUTPUT CURRENT (AMPS) :	0.23	1.19	1.22	79.00

INPUT/OUTPUT CURRENT RATIO = 1.0054
INPUT/OUTPUT PHASE = 0.04 DEGREES

BASE NETWORK COMPUTATION
PHASETEK INC.
QUAKERTOWN PA

CUSTOMER : KDWN
NETWORK ID : TOWER 3 NIGHT

FREQUENCY : 720.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 60000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 26.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00,-15789.20 OHMS
TOWER IMPEDANCE (R,X) : -1.00, -122.62 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	60000.00
2	GROUND	-0.98	-121.68
1	2	0.00	26.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	723.21	-75.13
2	919.72	285.00

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	-0.99	-95.83	95.83	-90.59
INPUT CURRENT (AMPS) :	7.27	2.01	7.55	15.46
OUTPUT CURRENT (AMPS) :	7.23	2.00	7.50	15.47

INPUT/OUTPUT CURRENT RATIO = 1.0062
INPUT/OUTPUT PHASE = 0.00 DEGREES

BASE NETWORK COMPUTATION
PHASETEK INC.
QUAKERTOWN PA

CUSTOMER : KDWN
NETWORK ID : TOWER 4 (OTHERS OPEN)
(KXST Tower 4, not driven by KDWN)

FREQUENCY : 720.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 60000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 21.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00,-15789.20 OHMS
TOWER IMPEDANCE (R,X) : 18.32, -91.47 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	60000.00
2	GROUND	18.10	-90.96
1	2	0.00	21.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	128.34	-3.25

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	18.15	-70.04	72.35	-75.47
INPUT CURRENT (AMPS) :	0.35	1.34	1.38	75.47
OUTPUT CURRENT (AMPS) :	0.35	1.33	1.38	75.43

INPUT/OUTPUT CURRENT RATIO = 1.0046
INPUT/OUTPUT PHASE = 0.05 DEGREES

BASE NETWORK COMPUTATION
PHASETEK INC.
QUAKERTOWN PA

CUSTOMER : KDWN
NETWORK ID : TOWER 5 (OTHERS OPEN)
(KXST Tower 1, Not driven by KDWN)

FREQUENCY : 720.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 60000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 23.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00,-15789.20 OHMS
TOWER IMPEDANCE (R,X) : 15.79, -109.70 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	60000.00
2		GROUND	15.57	-108.96
1		2	0.00	23.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	125.99	-2.13

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	15.62	-86.08	87.48	-79.72
INPUT CURRENT (AMPS) :	0.20	1.12	1.14	79.72
OUTPUT CURRENT (AMPS) :	0.20	1.12	1.14	79.68

INPUT/OUTPUT CURRENT RATIO = 1.0055
INPUT/OUTPUT PHASE = 0.04 DEGREES

EXHIBIT 5B- TOWER GEOMETRY

(KDWNTOWER1)

KDWN TOWER 1 (OTHERS OPEN)

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.32	12
		0	0	65.		
2	none	53.4	209.2	0	.4366	12
		53.4	209.2	83.7		
3	none	122.3	129.1	0	.32	12
		122.3	129.1	66.		
4	none	244.6	129.1	0	.32	12
		244.6	129.1	69.		
5	none	122.3	309.1	0	.32	12
		122.3	309.1	65.5		

Number of wires = 5
current nodes = 60

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	5.41667	2	6.975
radius	1	.32	2	.4366

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	.72	0	1	.0150463	.019375

Sources

source	node	sector	magnitude	phase	type
1	1	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	13	0	-1,414.2	0	0	0
2	25	0	-21,424.8	0	0	0
3	37	0	-21,425.4	0	0	0
4	49	0	-21,425.1	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
.72	15.174	-113.54	114.55	277.6	20.539	-.84645	-7.5182

Tower 2 - Others Floating

(KDWNTOWER2)

KDWN TOWER 2 (OTHERS OPEN)

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.32	12
		0	0	65.		
2	none	53.4	209.2	0	.4366	12
		53.4	209.2	83.7		
3	none	122.3	129.1	0	.32	12
		122.3	129.1	66.		
4	none	244.6	129.1	0	.32	12
		244.6	129.1	69.		
5	none	122.3	309.1	0	.32	12
		122.3	309.1	65.5		

Number of wires = 5
current nodes = 60

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	5.41667	2	6.975
radius	1	.32	2	.4366

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	.72	0	1	.0150463	.019375

Sources

source	node	sector	magnitude	phase	type
1	13	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-21,424.4	0	0	0
2	25	0	-21,424.8	0	0	0
3	37	0	-21,425.4	0	0	0
4	49	0	-21,425.1	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 13, sector 1							
.72	32.277	-12.197	34.504	339.3	1.6978	-11.745	-.30075

KDWN TOWER 3 (OTHERS OPEN)

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.32	12
		0	0	65.		
2	none	53.4	209.2	0	.4366	12
		53.4	209.2	83.7		
3	none	122.3	129.1	0	.32	12
		122.3	129.1	66.		
4	none	244.6	129.1	0	.32	12
		244.6	129.1	69.		
5	none	122.3	309.1	0	.32	12
		122.3	309.1	65.5		

Number of wires = 5
current nodes = 60

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	5.41667	2	6.975
radius	1	.32	2	.4366

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	.72	0	1	.0150463	.019375

Sources

source	node	sector	magnitude	phase	type
1	25	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-21,424.4	0	0	0
2	13	0	-1,414.2	0	0	0
3	37	0	-21,425.4	0	0	0
4	49	0	-21,425.1	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 25, sector 1							
.72	15.733	-106.96	108.11	278.4	17.979	-.96723	-6.9972

KDWN TOWER 4 (OTHERS OPEN)

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.32	12
		0	0	65.		
2	none	53.4	209.2	0	.4366	12
		53.4	209.2	83.7		
3	none	122.3	129.1	0	.32	12
		122.3	129.1	66.		
4	none	244.6	129.1	0	.32	12
		244.6	129.1	69.		
5	none	122.3	309.1	0	.32	12
		122.3	309.1	65.5		

Number of wires = 5
current nodes = 60

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	5.41667	2	6.975
radius	1	.32	2	.4366

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	.72	0	1	.0150463	.019375

Sources

source	node	sector	magnitude	phase	type
1	37	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-21,424.4	0	0	0
2	13	0	-1,414.2	0	0	0
3	25	0	-21,424.8	0	0	0
4	49	0	-21,425.1	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 37, sector 1							
.72	18.315	-91.467	93.282	281.3	12.15	-1.433	-5.5121

KDWN TOWER 5 (OTHERS OPEN)

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.32	12
		0	0	65.		
2	none	53.4	209.2	0	.4366	12
		53.4	209.2	83.7		
3	none	122.3	129.1	0	.32	12
		122.3	129.1	66.		
4	none	244.6	129.1	0	.32	12
		244.6	129.1	69.		
5	none	122.3	309.1	0	.32	12
		122.3	309.1	65.5		

Number of wires = 5
current nodes = 60

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	5.41667	2	6.975
radius	1	.32	2	.4366

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	.72	0	1	.0150463	.019375

Sources

source	node	sector	magnitude	phase	type
1	49	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-21,424.4	0	0	0
2	13	0	-1,414.2	0	0	0
3	25	0	-21,424.8	0	0	0
4	37	0	-21,425.4	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 49, sector 1							
.72	15.789	-109.7	110.83	278.2	18.674	-.93114	-7.1449

EXHIBIT 5C- KDWN MoM Geometry (Night)

```
KDWN NIGHT
GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire  caps Distance     Angle        Z            radius      segs
 1    none 0            0            0            .32          12
           0            0            65.
 2    none 53.4         209.2        0            .4366        12
           53.4         209.2        83.7
 3    none 122.3        129.1        0            .32          12
           122.3        129.1        66.
 4    none 244.6        129.1        0            .32          12
           244.6        129.1        69.
 5    none 122.3        309.1        0            .32          12
           122.3        309.1        65.5

Number of wires          =  5
          current nodes  =  60

                         minimum                  maximum
Individual wires       wire    value             wire  value
segment length          1      5.41667            2    6.975
radius                  1      .32                2    .4366


ELECTRICAL DESCRIPTION
Frequencies (MHz)
     frequency                 no. of  segment length (wavelengths)
 no. lowest       step         steps   minimum        maximum
 1   .72          0             1      .0150463       .019375

Sources
source node    sector  magnitude      phase          type
 1      1       1      3,067.59       275.5          voltage
 2      13      1      681.164        282.9          voltage
 3      25      1      1,300.68       285.           voltage

Lumped loads
            resistance    reactance     inductance  capacitance passive
load  node  (ohms)        (ohms)        (mH)        (uF)        circuit
 1     37   0             656.33        0           0            0
 2     49   0             719.7         0           0            0

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IMPEDANCE
   normalization = 50.
freq     resist   react    imped    phase    VSWR    S11      S12
(MHz)    (ohms)   (ohms)   (ohms)   (deg)            dB       dB
source =  1; node 1, sector 1
.72      9.8762   -127.16  127.54   274.4    37.978  -.45752  -10.001

source =  2; node 13, sector 1
.72      34.487   22.655   41.263   33.3     1.915   -10.064  -.45049

source =  3; node 25, sector 1
.72      -1.0014  -122.62  122.62   269.5    ****    ****     ****
```

CURRENT rms
Frequency = .72 MHz
Input power = 7,500. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	17.0077	1.1	17.0048	.314302
2	0	0	5.41667	15.6947	.7	15.6935	.196871
3	0	0	10.8333	14.6338	.5	14.6333	.121279
4	0	0	16.25	13.5388	.3	13.5387	.0599609
5	0	0	21.6667	12.3772	0.0	12.3772	9.73E-03
6	0	0	27.0833	11.1392	359.8	11.1391	-.0304587
7	0	0	32.5	9.82306	359.6	9.82288	-.060812
8	0	0	37.9167	8.43049	359.4	8.43009	-.081157
9	0	0	43.3333	6.96361	359.3	6.96301	-.0910683
10	0	0	48.75	5.423	359.1	5.42225	-.089893
11	0	0	54.1667	3.80258	358.8	3.80181	-.0766454
12	0	0	59.5833	2.07675	358.6	2.07616	-.0496021
END	0	0	65.	0	0	0	0
GND	-46.614	26.0517	0	11.6734	249.6	-4.06926	-10.9412
14	-46.614	26.0517	6.975	11.7789	248.2	-4.3757	-10.936
15	-46.614	26.0517	13.95	11.6269	247.4	-4.4714	-10.7327
16	-46.614	26.0517	20.925	11.2661	246.8	-4.44224	-10.3533
17	-46.614	26.0517	27.9	10.7073	246.3	-4.3021	-9.80499
18	-46.614	26.0517	34.875	9.96051	245.9	-4.06028	-9.09537
19	-46.614	26.0517	41.85	9.03648	245.7	-3.72514	-8.23294
20	-46.614	26.0517	48.825	7.94674	245.4	-3.30479	-7.22697
21	-46.614	26.0517	55.8	6.70282	245.2	-2.80696	-6.08677
22	-46.614	26.0517	62.775	5.31431	245.1	-2.23814	-4.82003
23	-46.614	26.0517	69.75	3.78419	245.	-1.6014	-3.42864
24	-46.614	26.0517	76.725	2.09555	244.8	-.890663	-1.89685
END	-46.614	26.0517	83.7	0	0	0	0
GND	-77.1317	-94.9105	0	7.50069	15.5	7.22902	2.00043
26	-77.1317	-94.9105	5.5	6.93532	15.5	6.68303	1.85359
27	-77.1317	-94.9105	11.	6.47449	15.5	6.23829	1.73284
28	-77.1317	-94.9105	16.5	5.99619	15.5	5.77695	1.60661
29	-77.1317	-94.9105	22.	5.48668	15.6	5.2857	1.4714
30	-77.1317	-94.9105	27.5	4.94185	15.6	4.76058	1.3262
31	-77.1317	-94.9105	33.	4.36114	15.6	4.201	1.17096
32	-77.1317	-94.9105	38.5	3.74537	15.6	3.60774	1.00597
33	-77.1317	-94.9105	44.	3.0956	15.6	2.9818	.831603
34	-77.1317	-94.9105	49.5	2.41207	15.6	2.3234	.648009
35	-77.1317	-94.9105	55.	1.69212	15.6	1.62993	.454546
36	-77.1317	-94.9105	60.5	.924346	15.6	.890388	.248244
END	-77.1317	-94.9105	66.	0	0	0	0
GND	-154.263	-189.821	0	.0725879	213.	-.0608667	-.0395505
38	-154.263	-189.821	5.75	.044669	213.1	-.0374205	-.0243931
39	-154.263	-189.821	11.5	.0266258	213.6	-.0221864	-.0147207
40	-154.263	-189.821	17.25	.0120743	215.6	-9.81E-03	-7.04E-03
41	-154.263	-189.821	23.	9.59E-04	289.	3.12E-04	-9.07E-04
42	-154.263	-189.821	28.75	9.21E-03	24.6	8.37E-03	3.83E-03
43	-154.263	-189.821	34.5	.0161076	26.7	.0143877	7.24E-03
44	-154.263	-189.821	40.25	.0205696	27.1	.0183112	9.37E-03
45	-154.263	-189.821	46.	.0225101	27.	.0200504	.0102316
46	-154.263	-189.821	51.75	.0218166	26.8	.0194759	9.83E-03
47	-154.263	-189.821	57.5	.0183157	26.4	.0164007	8.15E-03
48	-154.263	-189.821	63.25	.0116768	26.	.0104934	5.12E-03
END	-154.263	-189.821	69.	0	0	0	0

GND	77.1317	94.9105	0	.273458	318.4	.204573	-.181464
50	77.1317	94.9105	5.45833	.16254	318.5	.121656	-.107791
51	77.1317	94.9105	10.9167	.0928554	318.6	.0697035	-.0613478
52	77.1317	94.9105	16.375	.0381308	319.6	.0290376	-.0247139
53	77.1317	94.9105	21.8333	5.1E-03	123.5	-2.82E-03	4.25E-03
54	77.1317	94.9105	27.2917	.0376765	135.5	-.0268872	.0263931
55	77.1317	94.9105	32.75	.060673	136.1	-.0437043	.0420851
56	77.1317	94.9105	38.2083	.074346	136.1	-.0536017	.0515188
57	77.1317	94.9105	43.6667	.0789288	136.	-.056819	.0547846
58	77.1317	94.9105	49.125	.0745449	135.9	-.0535202	.0518896
59	77.1317	94.9105	54.5833	.0611306	135.7	-.0437413	.0427042
60	77.1317	94.9105	60.0417	.0381374	135.5	-.0271811	.0267516
END	77.1317	94.9105	65.5	0	0	0	0

EXHIBIT 5D- *Medium Wave Array Synthesis From Field Ratios (Night)*

KDWN NIGHT

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = .72 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	1.1	246.5
3	.45	15.5
4	0	0
5	0	0

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	2,169.11	275.5	17.0069	1.
13	481.655	282.9	11.6709	249.6
25	919.722	285.	7.50014	15.4
37	47.6627	122.8	.0725953	211.3
49	196.863	228.3	.273521	317.7

Sum of square of source currents = 963.552
Total power = 7,500. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.000386983	.00897161
Y(1, 2)	.000244697	-.00482489
Y(1, 3)	3.5391E-05	-.000187539
Y(1, 4)	-.000119213	8.8136E-05
Y(1, 5)	.000162108	-.000194
Y(2, 1)	.00024154	-.00482477
Y(2, 2)	.0285264	.0124388
Y(2, 3)	-.00304727	-.00230097
Y(2, 4)	-.000426618	.00314237
Y(2, 5)	-.00312561	-.00090778
Y(3, 1)	3.5662E-05	-.000187469
Y(3, 2)	-.00304698	-.00230159
Y(3, 3)	.00156184	.009619
Y(3, 4)	.000304025	-.00135245
Y(3, 5)	-.000177832	.000324662
Y(4, 1)	-.000119274	8.7851E-05
Y(4, 2)	-.000426792	.00314252
Y(4, 3)	.000303947	-.00135249
Y(4, 4)	.00174639	.0106271
Y(4, 5)	.000400924	-2.6392E-05
Y(5, 1)	.000162355	-.000194031
Y(5, 2)	-.00312557	-.00090832
Y(5, 3)	-.000177832	.000324656
Y(5, 4)	.00040096	-2.6378E-05
Y(5, 5)	.0016071	.00900286

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	15.32	-113.325
Z(1, 2)	18.3907	-5.24944
Z(1, 3)	3.75182	-8.63202
Z(1, 4)	-5.94972	-.275355
Z(1, 5)	3.60703	-8.46528
Z(2, 1)	18.3946	-5.23826
Z(2, 2)	32.2919	-12.193
Z(2, 3)	4.78751	-12.395
Z(2, 4)	-8.71194	-.709297
Z(2, 5)	1.25299	-12.0363
Z(3, 1)	3.75185	-8.63202
Z(3, 2)	4.78519	-12.3962
Z(3, 3)	15.8212	-107.052
Z(3, 4)	4.53554	-9.14292
Z(3, 5)	-5.78818	-.340466
Z(4, 1)	-5.94976	-.275395
Z(4, 2)	-8.71206	-.708768
Z(4, 3)	4.53581	-9.14266
Z(4, 4)	18.3108	-91.4166
Z(4, 5)	1.82681	3.95374
Z(5, 1)	3.607	-8.46528
Z(5, 2)	1.25101	-12.0367
Z(5, 3)	-5.78819	-.340455
Z(5, 4)	1.82684	3.9537
Z(5, 5)	15.8095	-109.8

KDWN NIGHT

CURRENT MOMENTS(amp-degrees) rms

Frequency = .72 MHz
Input power = 7,500. watts

			vertical current moment	
wire	magnitude	phase (deg)	magnitude	phase (deg)
1	995.891	0.0	995.891	0.0
2	1,095.66	246.5	1,095.66	246.5
3	448.166	15.5	448.166	15.5
4	.143741	301.3	.143741	301.3
5	.190912	47.6	.190912	47.6

Medium wave array vertical current moment (amps-degrees) rms
(Calculation assumes tower wires are grouped together.
The first wire of each group must contain the source.)

tower	magnitude	phase (deg)
1	995.891	0.0
2	1,095.66	246.5
3	448.166	15.5
4	.143741	301.3
5	.190912	47.6

EXHIBIT 6 – Spurious Radiation Measurements

KDWN/KXST SPURIOUS RADIATION MEASUREMENTS
JANUARY, 2020
KDWN (720 KHZ), 25.0 KW DAY (ND) MODE
KXST (1140 KHZ), 10.0 KW DAY(ND) MODE

Frequency (kHz)	Field Intensity (mV/M)	Attenuation (dB) relative to KDWN	Attenuation (dB) relative to KXST
720	1510	--	--
1140	1416	--	--
300	.059	88.2	87.6
420	.014	100.7	100.1
840	N.R.	--	--
1020	.080	85.5	85.0
1260	.055	88.8	88.2
1440	.020	97.6	97.0
1560	.062	87.7	87.2
1860	.019	98.0	97.4
1980	.016	99.5	98.9
2160	.015	100.1	99.5
2280	.013	101.3	100.7
2580	.059	88.2	87.6
2700	.010	103.6	103.0
3000	.084	85.1	84.5
3300	.008	105.5	105.0
3420	.058	88.3	87.8
3720	.009	104.5	103.9
4140	.010	103.6	103.0
4440	.010	103.6	103.0
4860	.011	102.8	102.2

Above taken with Potomac Instruments, PI 4100, SN249, 0.97 kM from the Antenna on a bearing of 244°T.

Point coordinates: (NAD 27): N36° 15' 50.1", W115° 03' 16.7".

N.R. denotes not readable due to other station on the same frequency

Above readings meet required attenuation of 80.0dB (KDWN Day) and 80.0dB (KXST Day).

KDWN/KXST SPURIOUS RADIATION MEASUREMENTS
JANUARY, 2020
KDWN (720 KHZ), 7.5 KW NIGHT (DA) MODE
KXST (1140 KHZ), 2.5 KW NIGHT(DA) MODE

Frequency (kHz)	Field Intensity (mV/M)	Attenuation (dB) relative to KDWN	Attenuation (dB) relative to KXST
720	1170	--	--
1140	862	--	--
300	.070	84.5	81.8
420	.015	97.8	95.2
840	N.R.	--	--
1020	.043	88.7	86.0
1260	.040	89.3	86.7
1440	.027	92.7	90.1
1560	.049	87.6	84.9
1860	.012	99.8	97.1
1980	.011	100.5	97.9
2160	.024	93.8	91.1
2280	.013	99.1	96.4
2580	.070	84.5	81.8
2700	.010	101.4	98.7
3000	.089	82.4	79.7
3300	.008	103.3	100.6
3420	.013	99.1	96.4
3720	.008	103.3	100.6
4140	.010	101.4	98.7
4440	.015	97.8	95.2
4860	.012	99.8	97.1

Above taken with Potomac Instruments, PI 4100, SN249, 0.97 kM from the Antenna on a bearing of 244°T.

Point coordinates: (NAD 27): N36° 15' 50.1", W115° 03' 16.7".

N.R. denotes not readable due to other station on the same frequency

Above readings meet required attenuation of 80.0dB (KDWN Night) and 77.0dB (KXST Night).

EXHIBIT 7 - Reference Field Strength Measurements- KDWN

Reference field strength measurements for the nighttime directional operation were made using a Potomac Instruments FIM-4100 serial number 307 Calibrated 9/3/2013) at three locations along radials at the azimuths with radiation values as determined by pattern minima, readings were taken at the 234° lobe and the minima at 74°.

The measured field strengths, descriptions, and GPS coordinates for the reference measurement points are shown on the following pages. All locations indicated are listed using NAD 83 datum. All measurements were taken on January 14th, 2020 between 12pm and 3:30pm.

NIGHT REFERENCE POINTS

234° Radial

Point No	Dist. Km.	N. Latitude	W. Longitude	Field mV/m	Comments
1	0.284	36° 15' 58.8"	115° 02' 51.3"	2710	5801- Corner Nicco & El Campo Grande
2	0.376	36° 15' 57.1"	115° 02' 54.5"	2650	Dirt lot
3	0.739	36° 15' 42"	115° 03' 33"	1400	Dirt lot next to fence & Solar array

74° Radial

Point No	Dist. Km.	Latitude	Longitude	Field mV/m	Comments
1	0.52	36° 16' 08.3"	115° 02' 21.8"	90	Amazon Dist ctr Pkg lot- NW Corner
2	0.886	36° 16' 11.8"	115° 02' 07.8"	57.3	Parking lot- nr Green Xfmr
3	1.07	36° 16' 13.6"	115° 02' 01"	24	6272 Parking lot

EXHIBIT 8 – Site Survey

Pursuant to FCC rule 73.151 (c)(1)(ix), the existing KXST site was surveyed. The orientation and distances among the individual antenna towers in the array were confirmed by a post-construction certification by a land surveyor licensed or registered in the state of Nevada. That certification is attached above. The survey analysis is shown below. It should be noted that the survey is specific to the orientation of the three towers used for KDWN. Since the other towers are used only by KXST and have been previously licensed by them, they are not included in the survey:

EXHIBIT "A"

KXST RADIO
NWC of SLOAN LANE & EL CAMPO GRANDE AVENUE

CITY OF NORTH LAS VEGAS, NEVADA APN: 123-28-701-006

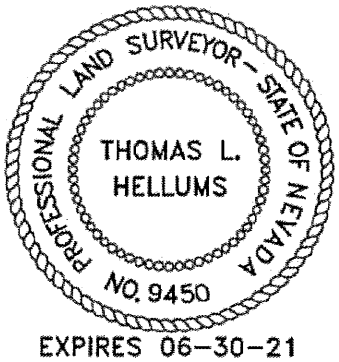
BASIS OF BEARINGS

NORTH 88°01'19" EAST BEING THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 28, TOWNSHIP 19 SOUTH, RANGE 62 EAST, M.D.M. AS SHOWN AS BEING NORTH 88°01'18" EAST ON THAT CERTAIN RECORD OF SURVEY FILE 101, PAGE 69 AND BEING THE PROPOSED CENTERLINE OF ANN ROAD OF CLARK COUNTY, NEVADA OFFICIAL RECORDS.

UTILIZING THE TRIMBLE PIVOT WEB GPS NETWORK AS ADMINISTRATED BY THE UTAH GIS DEPARTMENT, BEING A LOCAL VIRTUAL REFERENCE SYSTEM OF 70+ CONTINUOUSLY OPERATING BASE STATIONS ACROSS THE STATE OF UTAH AND PORTIONS OF SOUTHERN NEVADA. USING DIAMOND BACK WEST LAS VEGAS AND MONSEN LAS VEGAS AS THE PRIMARY CONTROLLING BASE STATIONS FOR THIS PROJECT AND SURVEYED BY GPS-RTK AND STATIC METHODS.

BENCHMARK

CITY OF NORTH LAS VEGAS –
BENCHMARK NO. NLV9228SE6;
BEING A RIVET AND 2" ROUND ALUMINUM DISK STAMPED NORTH LAS VEGAS BM NO. NLV 9228SE6, LOCATED IN A 3' X 4' CONCRETE CABLE BOX APPROX. 75 FEET WEST AND 30 FEET SOUTH OF THE INTERSECTION OF EL CAMPO GRANDE AVE. AND LINN LANE.
NAVD 88 ELEVATION=605.689m.,
1987.165 US SURVEY FEET



EXPIRES 06-30-21

DWYER ENGINEERING INC.
7310 SMOKE RANCH RD., SUITE E
LAS VEGAS, NEVADA 89128
Phone: (702) 254-2200
Fax: (702) 254-2236

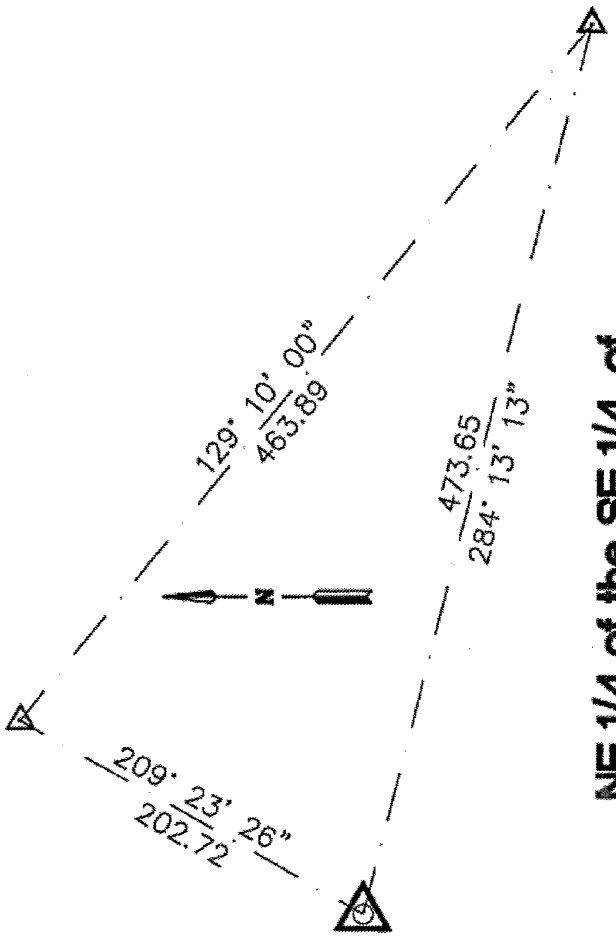
KXST
TOWER LOCATIONS

Drawn: TLH	Pn: 19833	Date: 06-18-19

EXHIBIT "B"

APN: 123-28-701-006

SCALE: 1" =100'



NE 1/4 of the SE 1/4, of SECTION 28, T 19 S., R 62 E.

PROFESSIONAL LAND SURVEYOR - STATE OF NEVADA
THOMAS L. HELLUMS
NO. 9450

EXPIRES 06-30-21

PAGE 2 OF 4

DWYER ENGINEERING INC.
7310 SMOKE RANCH RD., SUITE E
LAS VEGAS, NEVADA 89128
Phone: (702) 254-2200
Fax: (702) 254-2236

KXST
TOWER LOCATIONS

Drawn: TLH	Pn: 19833	Date: 06-18-19

EXHIBIT "B"

APN: 123-28-701-006

LEGEND

— · — · — · — · — · — ANTENNA-NORTH AZIMUTHS

▷ ANTENNA TOWER-EXISTING

▷ ANTENNA TOWER-NEW

SURVEYOR'S NOTES:

1. ELEVATIONS ARE A PART OF THIS SURVEY.
2. THIS SURVEY WAS COMPLETED ON JUNE 11, 2019.
3. THE LEGAL DESCRIPTION OF THIS PARCEL IS THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 28, TOWNSHIP 19 SOUTH, RANGE 62 EAST, M.D.M., CITY OF NORTH LAS VEGAS, CLARK COUNTY, NEVADA.

PROFESSIONAL LAND SURVEYOR - STATE OF NEVADA
THOMAS L. HELLUMS
NO. 9450

EXPIRES 06-30-21

DWYER ENGINEERING INC.
7310 SMOKE RANCH RD., SUITE E
LAS VEGAS, NEVADA 89128
Phone: (702) 254-2200
Fax: (702) 254-2236

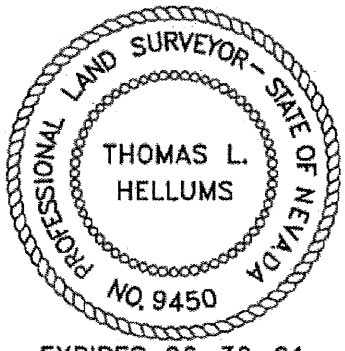
KXST
TOWER LOCATIONS

Drawn: TLH	Pn: 19833	Date: 06-18-19

EXHIBIT "B"

APN: 123-28-701-006

Point Table				
Point #	Elevation	Northing	Easting	Description
2000	2224.10	26803407.97	814532.46	WEST ANTENNA-KXST
2001	2020.30	26803291.61	814991.61	SOUTHEAST ANTENNA-KXST
2002	2025.90	26803584.59	814631.95	NORTH ANTENNA-KXST



EXPIRES 06-30-21

PAGE 4 OF 4

DWYER ENGINEERING INC.
7310 SMOKE RANCH RD., SUITE E
LAS VEGAS, NEVADA 89128
Phone: (702) 254-2200
Fax: (702) 254-2236

KXST
TOWER LOCATIONS

Drawn: TLH | Pn: 19833 | Date: 06-18-19

Station Tower Geometry Analysis

- Enter Requested Data in Yellow Blocks			
Callsign:	KDWN	*Reference Tower:*	1
Freq. (kHz):	720 kHz	*Feet per wavelength:*	1366.070912

Tower Pair Studied	*Licensed Spacing (Electrical degrees)*	*Licensed Azimuth (Degrees True)*	*Measured Distance (feet)*	*Measured Azimuth (Degrees True)*	*Tower Location Error from Licensed (Result in Feet)*	*Tower Location Error from Licensed (Electrical Degrees)*	*Tower No. & (Loc)*
1 (ref)	0.0	0.0	0.0	0.0	0.00	0.00 °	#1(N)
1 to 2	53.4	209.2	202.720	209.3910	0.68	0.18 °	#2(S)
1 to 3	122.3	129.1	463.890	129.1670	0.58	0.15 °	#3(SE)
					--	--	
					--	--	
					--	--	
					--	--	
					--	--	
					--	--	

Law of Cosines Analysis

Tower Pair Studied	Licensed Specification (Side "a") of Triangle (Feet)	Licensed Azimuth Versus Measured Azimuth Difference	Included Angle A Converted to Radians	Tower Location Error from licensed position (Result in Feet)	Error in Feet Converted to Electrical Degrees	*Error Greater Greater Than 1.5° ? (5.69 ft)*
1 (ref)	--	--	--	0.00	0.00 °	N/A
1 to 2	202.63	0.1910 °	0.003333579	0.68	0.18 °	No - Therefore Okay
1 to 3	464.08	0.0670 °	0.001169371	0.58	0.15 °	No - Therefore Okay
0	--	--	--	--	--	--
0	--	--	--	--	--	--
0	--	--	--	--	--	--
0	--	--	--	--	--	--
0	--	--	--	--	--	--
0	--	--	--	--	--	--