

**T Z SAWYER TECHNICAL CONSULTANTS**

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BASIN BROADCASTING COMPANY, INC.

K261FB CHANNEL 261D (100.1 MHZ)

FARMINGTON, NEW MEXICO

FCC FACILITY ID: 203279

FCC LMS FILE: 0000140811

LICENSE TO COVER - ENGINEERING STATEMENT

All operating specifications and conditions set forth in the K261FB Construction Permit have been fully met and the facility is ready for licensing.

No changes or deviations from the operating parameters authorized in the underlying construction permit have occurred.

Delivery Method:

The applicant wishes to notify the Commission of a change in the delivery method of the signal of the primary station from "Direct-off-air" to "Microwave." No change in the primary station is sought, only the method upon which the primary station's signal is delivered to the translator. As this is a "fill-in" translator, the change reported has no impact on the station license and is administrative in nature. No other changes are reported.

Automatic Program Test Authority:

The facility is operating under the terms of the construction permit, which authorized "Automatic program test authority" upon filing of this application for station license.

Special Operating Conditions:

Basin Broadcasting Company, Inc., accepts and affirms that it is in compliance with the special operating conditions as listed on the construction permit.

Transmitter Power Output (TPO):

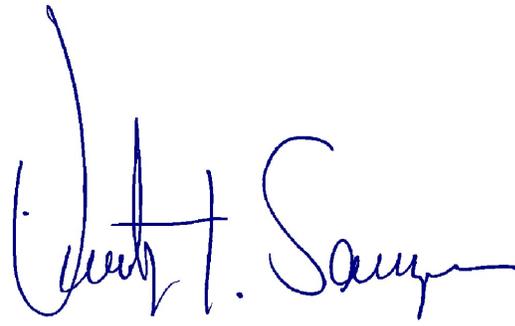
The transmitter power output has been calculated at 0.225 kilowatts to achieve the required effective radiated power (ERP) of 0.250-kilowatts (H & V) as authorized. A TPO worksheet of the calculations is attached.

Diplexed Operation with K278DD

The construction permit authorized diplex operation with co-owned K261FB. The proof of performance and spurious emissions report required in the construction permit is included herein. No adverse interaction results in the diplexed operation with K278DD.

Respectfully submitted,

June 28, 2021

A handwritten signature in blue ink, reading "Timothy Z. Sawyer". The signature is written in a cursive style with a large initial "T" and "S".

Timothy Z. Sawyer, Consulting Engineer  
Writers Direct Number: 703-848-2130  
*e*-Mail to: [tzsawyer@tzsawyer.com](mailto:tzsawyer@tzsawyer.com)

|          |                   |               |
|----------|-------------------|---------------|
| STATION  | K261FB            | FM TRANSLATOR |
| LOCATION | FARMINGTON, NM    |               |
| CHANNEL  | FM TRANSLATOR 261 |               |

**CALCULATED FOR**  
**ERP OF 250 WATTS (0.250 KW) H & V**

**K261FB**  
 FARMINGTON, NM  
 FM TRANSLATOR

**COMPUTED LINE LOSSES - BASED ON MANUFACTURES TABLES AT OPERATING FREQUENCY**

| DESCRIPTION AND LENGTH NEAREST FOOT        | SIZE/TYPE         | LENGTH               | EXTRA LOSS (dB) (IF ANY) | SECTION LOSS (dB) | TOTAL (dB) |
|--------------------------------------------|-------------------|----------------------|--------------------------|-------------------|------------|
| JUMPER ANT                                 | TRANSMISSION LINE |                      | 0                        | 0.000             | 0.000      |
| VERTICAL RUN                               | TRANSMISSION LINE | 7/8" FOAM FEET 49.00 | 0                        | 0.171             | 0.171      |
| BLD TO TOWER                               | TRANSMISSION LINE | 7/8" FOAM FEET 20.00 | 0                        | 0.070             | 0.070      |
| JUMPER TRANS                               | TRANSMISSION LINE |                      | 0                        | 0.000             | 0.000      |
| MISC ANT/LINE/TERMINATION CONNECTOR LOSSES | QYN               | 4.00                 | 0                        | 0.063             | 0.063      |

|                                                |               |                              |
|------------------------------------------------|---------------|------------------------------|
| FM                                             | 261           | CH                           |
| FREQ:                                          | 100.1         | MHz                          |
| <b>FREQUENCY SENSITIVE COMPONENTS</b>          |               |                              |
|                                                | DB PER 100 FT | SYSTEM JUMPER AT ANTENNA     |
| 0.3497                                         | DB PER 100 FT | VERTICAL RUN ON TOWER        |
| 0.3497                                         | DB PER 100 FT | HORIZONTAL RUN TO TX BLD     |
|                                                | DB PER 100 FT | SYSTEM JUMPER AT TRANSMITTER |
| 0.0158                                         | DB PER PAIR   | TERMINATING CONNECTOR LOSSES |
| <i>Insertion Loss = 0.05 X sqrt (freq GHz)</i> |               |                              |

|                                        |       |                               |                                                                          |
|----------------------------------------|-------|-------------------------------|--------------------------------------------------------------------------|
| TOTAL FEET (MIXED)                     | 69.00 | <b>COMPUTED SYSTEM LOSSES</b> |                                                                          |
|                                        |       | <b>SUBTOTAL</b>               | 0.305 dB Line Loss (with jumpers, line, and connector losses) from above |
| <b>CLIENT PROVIDED LOSSES (IF ANY)</b> |       |                               | 1.170 dB additional losses (diplexer)                                    |
|                                        |       |                               | 0.000 dB additional losses                                               |
|                                        |       | <b>TOTAL</b>                  | 1.475 Total System Loss in dB                                            |

**71.21%** Transmission System Efficiency Factor = Eff (%)

**COMPUTED TPO NEAREST WATT**  
225

|                |            |                                 |
|----------------|------------|---------------------------------|
| 0.250 kW       | -6.021 dBk | STATION MAXIMUM ERP             |
| 1.559 X (Gain) | 1.928 dBd  | ANTENNA GAIN PER ANT SPEC SHEET |
| 0.160 kW       | -7.949 dBk | ANTENNA INPUT                   |
| 0.065 kW       | 1.475 dB   | SYSTEM TOTAL LOSSES             |
| 0.225 kW       | -6.474 dBk | TRANSMITTER POWER               |

|                          |          |
|--------------------------|----------|
| <b>ANTENNA SPECIFIED</b> |          |
| MAKE                     | AAT      |
| MODEL                    | IV-CP-BB |
| BAYS                     | 3        |
| SPACING                  | 1.00     |
| MODE                     | ND       |
| POLARIZATION             | H & V    |
| ANT GAIN                 | 1.559    |

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 June 28, 2021



|      |       |                |
|------|-------|----------------|
| 105% | 0.236 | TPO HIGH LIMIT |
| 100% | 0.225 | NOMINAL        |
| 90%  | 0.203 | TPO LOW LIMIT  |

|                         |   |        |   |       |       |
|-------------------------|---|--------|---|-------|-------|
| <b>Math Proof Check</b> |   |        |   |       |       |
| TPO                     | X | EFF    | X | ANT G | = ERP |
| 0.225                   |   | 71.21% |   | 1.559 | 0.250 |



**BTA, INC.**

P.O. Box 297  
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Phone: (970) 749-1302  
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*Broadcast Technology  
Associates, Inc.*

**Proof of Performance Measurement  
FOR  
K261FB, Farmington, New Mexico  
And  
K278DD, Farmington, New Mexico**

**Station Information**

| Station | Frequency | C.P. File Number  | License File Number | Facility ID No. |
|---------|-----------|-------------------|---------------------|-----------------|
| K261FB  | 100.1 MHz | BNPFT-20180418AGG | To Be Assigned      | 203279          |
| K278DD  | 103.5 MHz | BNPFT-20171201AHO | To Be Assigned      | 200659          |
|         |           |                   |                     |                 |

Introduction. The two translator stations mentioned above operate into a combined antenna system at a common facility utilizing an American Amplifier Technologies, LLC model ANT-FM-IV-CP-BB3 antenna, fed by a FM Branch Combiner also manufactured by American Amplifier Technologies, LLC and designed and engineered specifically for the two frequencies.

To assure the proper operation and insure that any intermodulation products produced due to inadequate port to port filtering are at or below the required level of -73 dBc. The measurements contained herein were made to verify compliance with Federal Communications Commission Rules and Regulations section 73.317,b,c,d.

Process. For measurement purposes, a coaxial sample port line section was installed in the output port of the Combiner system, this sample port was utilized to sample the signals being applied to the feedline and antenna system. Using a recently calibrated properly operating spectrum analyzer, the total signals from the sample port were connected through a series of step attenuators to establish the correct carrier level, taking care not to overload the input of the analyzer.

After the gain of the measurement system was established, a Trilithic adjustable VHF band pass filter was utilized to sweep the band of frequencies from 90 MHz to 600 KHz, with the output feeding the spectrum analyzer to reduce the undesired signals by at least 30 dB, assuring that there was no unwanted mixing in the input stages of the analyzer, and to allow examination of the band area where calculated and expected second order products might exist.

| Station | Carrier Frequency | Calculated TPO | Operating ERP | Notes |
|---------|-------------------|----------------|---------------|-------|
| K261FB  | 100.1 mHz         | 0.225 KW       | 0.250 KW      |       |
| K278DD  | 103.5 mHz         | 0.217 KW       | 0.250 KW      |       |
|         |                   |                |               |       |

The span of frequencies between 50 MHz and 600 MHz were checked for any evidence of intermod products resulting from the 2 stations transmitters being combined into one output, there were no spurious signals detected.

In addition to the expected frequencies shown above, a scan of frequencies from 50 MHz to 600 MHz was made, the results showed no abnormal spurious signals, and those signals that did show up were not attributable to the subject stations.

Based on the above measurements made at the time, it can be concluded that the above described transmission system is operating in accordance with Federal Communications Rules and Regulations.

Technical Certification. I, James R. Burt, Principal Engineer for BTA, Inc., a Company providing technical service to the Broadcast Industry, and having been involved in the field of radio engineering for more than 25 years, and hold FCC General Radio Telephone License number PG-15-6264, am familiar with the requirements and procedures for making RF Intermodulation Product measurements.

I hereby certify that the measurements discussed above were made by myself or under my supervision on June 26, 2021, and that all representations contained herein are true and accurate to the best of my knowledge.

DATE: 6/26/2021

A handwritten signature in black ink, appearing to read "James R. Burt", written over a horizontal line.

BY:  
James R. Burt

## K261FB & K278DD Intermod Measurements

### June 26, 2021

| Harmonic  | Frequency | Measured   | Reference | Actual     | Pt 73.317d | Pass/Fail | Notes                         |
|-----------|-----------|------------|-----------|------------|------------|-----------|-------------------------------|
| Carrier   | 100.1     | -12.00 DBM | -12       |            |            |           | Carrier Reference calibration |
| Carrier   | 103.5     | -12.00 DBM | -12       |            |            |           | Carrier Reference calibration |
| 2nd Order | 200.2     | -98.28 DBM | -12       | -86.28 DBC | -73.00     | Pass      |                               |
|           | 203.6     | -99.01 DBM | -12       | -87.01 DBC | -73.00     | Pass      |                               |
|           | 207.0     | -98.27 DBM | -12       | -86.27 DBC | -73.00     | Pass      |                               |
| 3rd Order | 300.3     | -98.88 DBM | -12       | -86.88 DBC | -73.00     | Pass      |                               |
|           | 303.7     | -98.69 DBM | -12       | -86.69 DBC | -73.00     | Pass      |                               |
|           | 307.1     | -96.24 DBM | -12       | -84.24 DBC | -73.00     | Pass      |                               |
|           | 310.5     | -98.87 DBM | -12       | -86.87 DBC | -73.00     | Pass      |                               |
| 4th Order | 400.4     | -99.79 DBM | -12       | -87.79 DBC | -73.00     | Pass      |                               |
|           | 403.8     | -99.80 DBM | -12       | -87.80 DBC | -73.00     | Pass      |                               |
|           | 407.2     | -97.21 DBM | -12       | -85.21 DBC | -73.00     | Pass      |                               |
|           | 410.6     | -97.25 DBM | -12       | -85.25 DBC | -73.00     | Pass      |                               |
|           | 414.0     | -98.69 DBM | -12       | -86.69 DBC | -73.00     | Pass      |                               |
| 5th Order | 500.5     | -99.33 DBM | -12       | -87.33 DBC | -73.00     | Pass      |                               |
|           | 503.9     | -98.21 DBM | -12       | -86.21 DBC | -73.00     | Pass      |                               |
|           | 507.3     | -96.30 DBM | -12       | -84.30 DBC | -73.00     | Pass      |                               |
|           | 510.7     | -99.10 DBM | -12       | -87.10 DBC | -73.00     | Pass      |                               |
|           | 514.1     | -98.80 DBM | -12       | -86.80 DBC | -73.00     | Pass      |                               |
|           | 517.5     | -96.11 DBM | -12       | -84.11 DBC | -73.00     | Pass      |                               |

The above frequencies were identified using intermodulation product calculating software and the it indicated possible combining frequencies. These frequencies were checked for any existence of out of band energy as produced by the two transmitted frequencies.

Based on the measured results I can conclude that the FM Translators, and diplexer system was operating in compliance with FCC Rule Part 73.317d at the time of measurements were made.

Sincerely,

