

# **FM TRANSLATOR EQUIPMENT PERFORMANCE MEASUREMENT REPORT**

**K282BH, Philomath, OR**

Measurements completed: October 28, 2014

**BROWN BROADCAST SERVICES**

INCORPORATED

Michael D. Brown

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## **TECHNICAL STATEMENT/RESULTS**

On October 28, 2014, I performed RF emissions equipment performance measurements on K282BH, Philomath, OR, to show compliance with FCC Rules 47 CFR §74.1236(a)(2) and §73.317(a), (b), (c), and (d).

**The results of these tests, contained herein, show that at the time of the measurements, K282BH appeared to met all standards as set forth in §73.317(a), (b), (c), and (d).**

These measurements are required as a Special Operating Condition in the underlying Construction Permit - BPFT-20140924AAC. This report is being submitted as part of the FCC Form 350 (Application for a Station License), as required by the CP.

K282BH is diplexed into a common antenna with K239BP, Flynn, OR. Both translators were operating at their rated power levels during all tests.

The data and exhibits contained herein were compiled and prepared by me, and that I believe them to be a true and accurate representation of the facts as evident at the time of the measurements.

Michael D. Brown

A handwritten signature in black ink, appearing to read "Michael D. Brown", with a long horizontal flourish extending to the right.

Brown Broadcast Services, Inc.

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## **MEASUREMENT PROCEDURE OVERVIEW**

This report seeks to accurately assess the performance of the FM transmission system. The emissions mask limits are:

|                     |   |
|---------------------|---|
| ± 120 to 240 kHz    | ≥ -25db below carrier level   |
| ± 240 to 600 kHz    | ≥ -35db below carrier level   |
| ± 600kHz and beyond | ≥ -43 +10log(power in watts) or 80db, whichever is the lesser attenuation |

For the 15.5W ERP employed, the limit for ± 600kHz and beyond is -54.9dbc (below carrier).

All measurements were taken during normal audio programming, with both translators operating at their rated powers. An Anritsu MT8222A swept-frequency spectrum analyzer was employed. To begin, a reference level was established using the following setup during normal programming:

|                       |        |
|-----------------------|--------|
| Span:                 | 2MHz   |
| Resolution Bandwidth: | 300kHz |
| Video Bandwidth:      | 1kHz   |

For the occupied bandwidth measurements:

|                       |          |
|-----------------------|----------|
| Span:                 | 2MHz     |
| Resolution Bandwidth: | 1kHz     |
| Video Bandwidth:      | 10kHz    |
| Sweep:                | Auto     |
| Attenuation:          | Auto     |
| Detection:            | Peak     |
| Trace A:              | Max Hold |
| Preamp:               | Off      |

Plots were examined up to 500mhz.

The spectrum analyzer exhibited sufficient linearity, that a notch filter was deemed unnecessary during measurements of possible harmonics and intermodulation products.

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## **GENERAL DATA**

**STATION CALL LETTERS:** K282BH  
**CITY OF LICENSE:** Philomath  
**STATE OF LICENSE:** OR  
**FREQUENCY:** 104.3Mhz  
**TRANSMITTER LOCATION:** Vineyard Mountain, near Lewisburg, OR  
**TRANSMITTER:** Harris Quest 100  
**ERP:** 15.5w  
**TRANSMITTER TPO:** 34.4w  
**COMBINER SYSTEM:** Shively 2930-2/3-04, three section branched combiner -  
combined with K282BH, Philomath, OR  
**DATE OF MEASUREMENTS:** October 28, 2014; 1500 to 1800 PDT  
**MEASUREMENT POINT:** RF sample port directional coupler

## **TEST EQUIPMENT EMPLOYED**

Anritsu MT8222A BTS Master Spectrum Analyzer, serial #0818047  
Narda 771-6 6db 50Ω inline pad  
Bird Model 43 Line Section  
Coaxial Dynamics 87015, -50dB directional coupler slug - flat ±1dB to 500MHz

## **POWER OUTPUT CALCULATIONS**

Transmission line: Andrew LDF4-50A  
Length: 28.6m  
Loss db: 0.654db; 86.0% efficiency  
Power dissipated in line: 3.69w  
Other losses: 0.026db - (4 pairs of N-connectors @0.0065db)  
Other losses: 1.1162db - Shively 2930-2/3-04, three section branched  
combiner  
Antenna: Bext TFC2K  
Bays: 2  
Bay Spacing: 0.545  
Antenna power gain: -1.66dBd; (0.682 power gain multiplier)  
System ERP: 15.5w  
Transmitter Output: 34.4w

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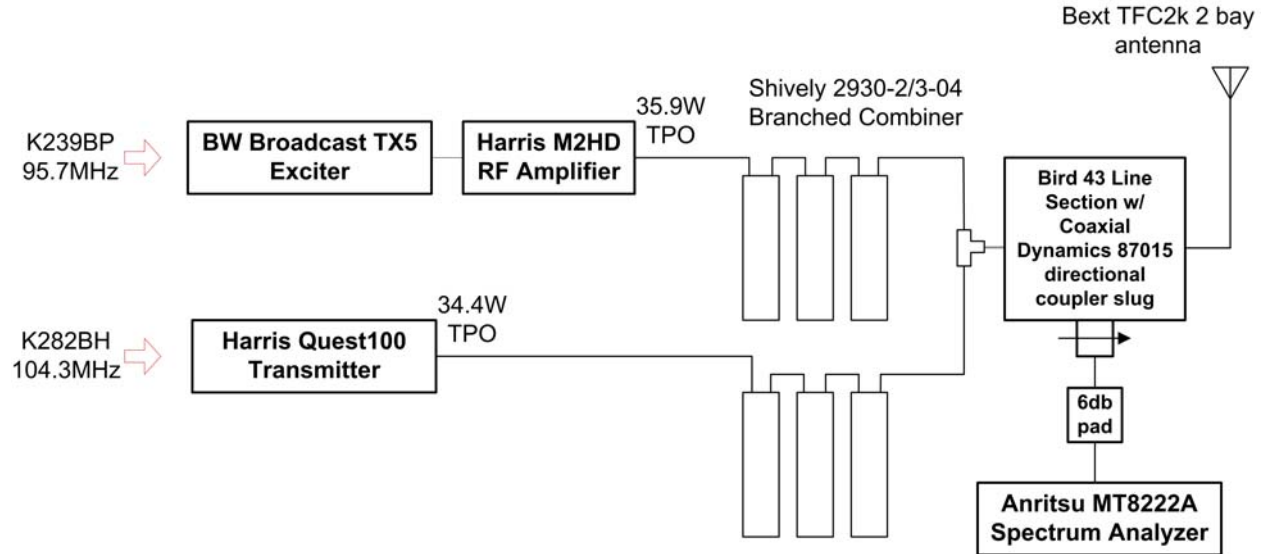
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## TEST SETUP



## DATA ANALYSIS

### SPURIOUS AND HARMONIC RADIATIONS

(using “max hold” peak function)

|                      | FREQ     | SIGNAL     | REL      | COMMENTS                |
|----------------------|----------|------------|----------|-------------------------|
| <b>CARRIER:</b>      | 104.3mHz | -12.82dBm  | peak ref | --                      |
| <b>2nd HARMONIC:</b> | 208.6mHz | unreadable | --       | FCC SPEC: -54.9dbc - OK |
| <b>3rd HARMONIC:</b> | 312.9mHz | unreadable | --       | FCC SPEC: -54.9dbc - OK |
| <b>4th HARMONIC:</b> | 417.2mHz | unreadable | --       | FCC SPEC: -54.9dbc - OK |
| <b>5th HARMONIC:</b> | 521.5mHz | unreadable | --       | FCC SPEC: -54.9dbc - OK |

### **OTHER SPURIOUS & INTERMOD PRODUCTS:**

--none found--

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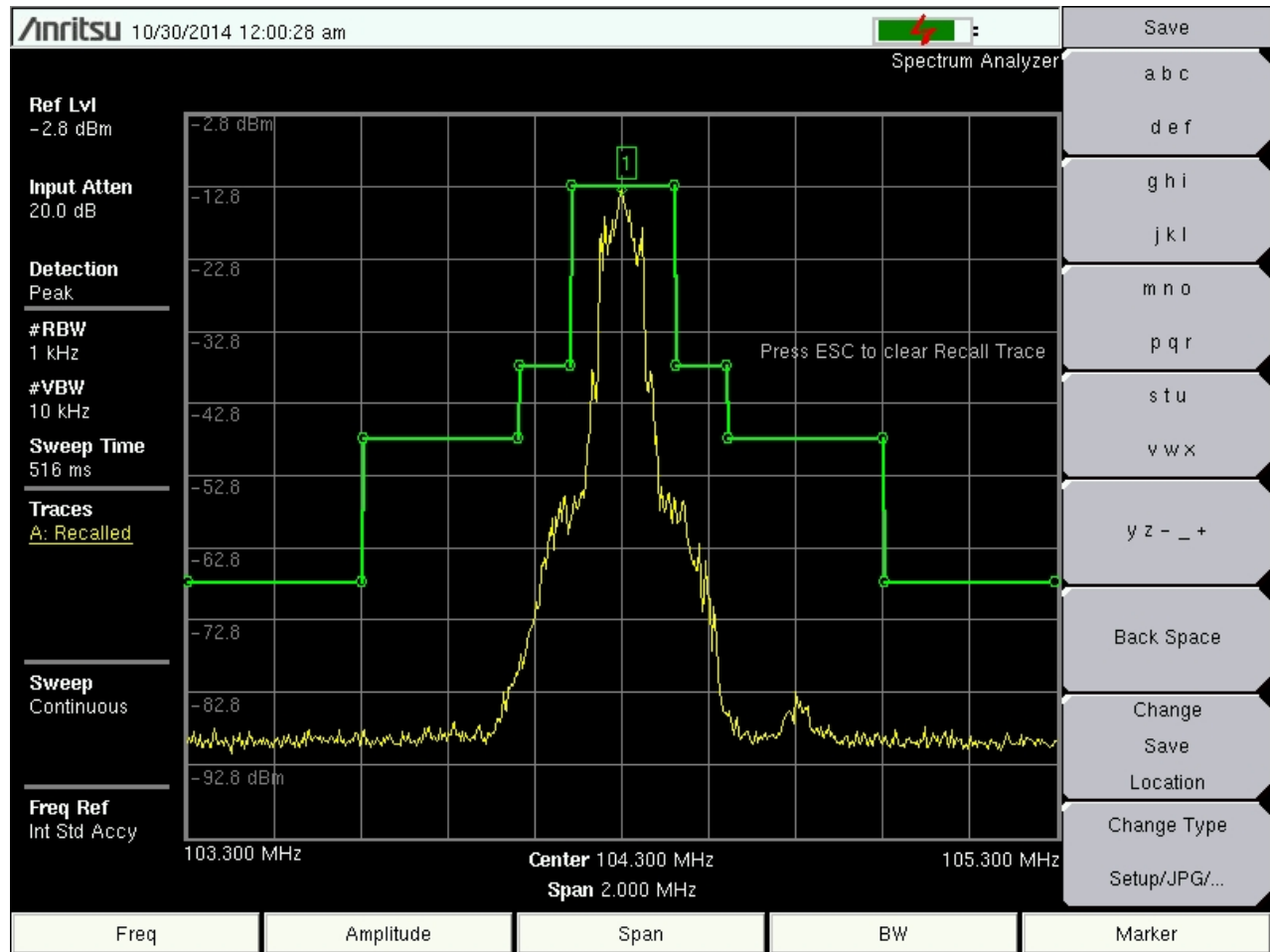
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# PLOT 1

200khz/div



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