

## Arthur Doak

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**From:** Donald Lynch <donalddlynch@windstream.net>  
**Sent:** Tuesday, December 20, 2016 7:48 PM  
**To:** Arthur Doak  
**Cc:** Bob Holladay  
**Subject:** WESP Dothan, AI Form 302  
**Attachments:** Intermodulation and Spurious Emmisions Study Dothan 11-18-2016.pdf

The WESP engineer has revised the Intermod and Spurious Emissions Report. A copy is attached. Please review and let me know if this is acceptable. Also, do I need to file an amendment to replace the previous study with this one? Happy Holidays!

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## Intermodulation and Spurious Emissions Study

### Pretext:

Mr. Bob Holladay, holder of construction permit BPH-20150612AAJ as a requirement of these permits, must show proof of performance of the combined antenna system to meet spurious emission limits. For these tests, all three transmitters were energized into the combined antenna, at their rated ERP. In accordance with the FCC Code of Federal Regulations, all FM radio stations employing transmitters manufactured after January 1, 1960, must perform a *one-time* check of their transmitter's performance to ensure compliance of their emissions within the FM spectrum. These rules are outlined herein:

#### **§73.317 FM transmission system requirements.**

(a) FM broadcast stations employing transmitters authorized after January 1, 1960, must maintain the bandwidth occupied by their emissions in accordance with the specification detailed below. FM broadcast stations employing transmitters installed or type accepted before January 1, 1960, must achieve the highest degree of compliance with these specifications practicable with their existing equipment. In either case, should harmful interference to other authorized stations occur, the licensee shall correct the problem promptly or cease operation.

(b) Any emission appearing on a frequency removed from the carrier by between 120 kHz and 240 kHz inclusive must be attenuated at least 25 dB below the level of the un-modulated carrier. Compliance with this requirement will be deemed to show the occupied bandwidth to be 240 kHz or less.

(c) Any emission appearing on a frequency removed from the carrier by more than 240 kHz and up to and including 600 kHz must be attenuated at least 35 dB below the level of the un-modulated carrier.

(d) Any emission appearing on a frequency removed from the carrier by more than 600 kHz must be attenuated at least  $43 + 10 \log_{10}(\text{Power, in watts})$  dB below the level of the un-modulated carrier, or 80 dB, whichever is the lesser attenuation.

Measurements were taken on November 16th 2016 from 10:00 AM to 2:00 PM using the following equipment:

DSA 815 Spectrum Analyzer  
EMCO 3120 Calibrated antenna

### Harmonic Content Study for WESP 102.5 MHZ

Harmonic Measurements were taken one quarter mile from the transmitter location.

The following chart indicates the results of the test.

| Ref Measurement | Fundamental       |  | 2nd       |  | 3rd       |
|-----------------|-------------------|--|-----------|--|-----------|
|                 | 102.5 Mhz         |  | 205.0 Mhz |  | 307.5 Mhz |
|                 | -28 Dbm           |  | -108      |  | -108      |
|                 | Measured          |  | -120      |  | -120      |
|                 | <i>Difference</i> |  | 12        |  | 12        |

This test shows that we are exceeding the required -80 Dbm level and Passes the Harmonic Content Study.

For the intermod study an unmodulated carrier was applied to each transmitter combiner input. Only the pilot signal was present on the signal. Measurements were taken one quarter of a mile away using the same test setup as the above Harmonics test.

## Intermodulation Measurements

### Fundamental Frequency Measurements

|                       |             |
|-----------------------|-------------|
| Frequency 1           | 105.300 Mhz |
| Reference measurement | -28 Dbm     |
| Frequency 2           | 102.500 Mhz |
| Reference measurement | -28 Dbm     |
| Frequency 3           | 100.500 Mhz |
| Reference measurement | -28 Dbm     |

### Products

| 3rd Order | Level | Difference | 5th Order | Level | Difference | 7th Order | Level | Difference |
|-----------|-------|------------|-----------|-------|------------|-----------|-------|------------|
| 107.3000  | -110  | -2         | 114.9000  | -114  | -6         | 119.7000  | -120  | -12.0000   |
| 106.5000  | -114  | -6         | 112.1000  | -114  | -6         | 116.9000  | -88   | 20.0000    |
| 104.5000  | -110  | -2         | 109.3000  | -114  | -6         | 114.1000  | -110  | -2.0000    |
| 108.1000  | -110  | -2         | 112.9000  | -114  | -6         | 111.3000  | -112  | -4.0000    |
| 99.7000   | -54   | 54         | 106.5000  | -110  | -2         | 117.7000  | -110  | -2.0000    |
| 103.3000  | -113  | -5         | 110.9000  | -114  | -6         | 108.5000  | -113  | -5.0000    |
| 97.7000   | -110  | -2         | 101.7000  | -83   | 25         | 115.7000  | -109  | -1.0000    |
| 98.5000   | -83   | 25         | 106.1000  | -110  | -2         | 103.7000  | -113  | -5.0000    |
| 95.7000   | -114  | -6         | 96.9000   | -61   | 47         | 113.7000  | -113  | -5.0000    |
|           |       |            | 101.3000  | -57   | 51         | 98.9000   | -113  | -5.0000    |
|           |       |            | 94.9000   | -111  | -3         | 108.9000  | -113  | -5.0000    |
|           |       |            | 92.9000   | -115  | -7         | 94.1000   | -83   | 25.0000    |
|           |       |            | 96.5000   | -92   | 16         | 104.1000  | -110  | -2.0000    |
|           |       |            | 93.7000   | -92   | 16         | 92.1000   | -57   | 51.0000    |
|           |       |            | 90.9000   | -108  | 0          | 99.3000   | -110  | -2.0000    |
|           |       |            |           |       |            | 90.1000   | -115  | -7.0000    |
|           |       |            |           |       |            | 88.1000   | -110  | -2.0000    |
|           |       |            |           |       |            | 94.5000   | -111  | -3.0000    |
|           |       |            |           |       |            | 91.7000   | -112  | -4.0000    |
|           |       |            |           |       |            | 88.9000   | -110  | -2.0000    |
|           |       |            |           |       |            | 86.1000   | -110  | -2.0000    |

### Notes:

Items in **RED** are local stations on Same Carrier or Local Interference.

99.700 WOOF

98.500 WFSY

101.700 WTOT

96.900 WDJR

101.300 WAGF

96.500 WMJJ

93.700 WDBT

94.100 No FM Carrier present on Demod. Local Interference

92.100 WJJN

119.700 Interference from 91.0300 WVOB

All measurements exceed reference by at least -80 Dbm.

All measurements pass.

In accordance with the requirements set forth in the construction permit, station Passes.

Certification:

Under penalty of perjury, all of the findings in this document are true and accurate to the best of my knowledge and ability.

A handwritten signature in black ink, appearing to read "Samuel D. Hunter". The signature is fluid and cursive, with a large, stylized initial 'S'.

Samual D. Hunter  
Holladay Broadcasting