

Proof of Performance Report

K262CA Richmond, UT

FIN: 157245

100.9 MHz

March 28, 2017

Stephen Wilde
Electrical/RF Engineer
SWE Services, LLC
steve@sweservices.net

TABLE OF CONTENTS

Introduction	3
Test Equipment	3
Station Equipment	3
Summary	3
Affidavit	4
Measurement Diagrams	5
Harmonic Emissions, Spurious Emissions, and Occupied Bandwidth measurement configuration	5
Intermodulation frequency measurement configuration	6
Measurement Results	7
Frequency Measurement	7
Measurement Methodology	7
Harmonic Emissions Measurement	8
Intermodulation Emissions Measurement	8
Occupied Bandwidth Measurement	9

Introduction

The permittee for the K262CA Construction Permit (file number BPFT-20140909AEJ) is Sun Valley Radio, Inc. Stephen Wilde is an Electrical RF Engineer employed by SWE Services, LLC. Stephen Wilde completed the K262CA spurious emissions proof.

Test Equipment

- Agilent N9912A 2-Port Network Analyzer
- Agilent N9912A Spectrum Analyzer
- Bird B series Directional Coupler
- Shively FM 2-Cavity Band Pass Filters
- Mini Circuits High Pass filters

Station Equipment

- Crown FM Transmitter
- Bext FM Combiner
- Nicom BKG-77 FM Antenna
- RFS 7/8" Foam Coaxial line

Summary

Harmonics, Intermodulation, Spurious, and Occupied Bandwidth Emissions measurements were completed at the output of the combiner network with K262CA and all other transmissions operating at 100% power. These measurements provide proof that K262CA is in compliance with the requirements of FCC Part 73.317.

Affidavit

STATE OF CALIFORNIA
Sacramento County

I, Stephen Wilde, do affirm that:

1. I have been engaged in the RF engineering and installation of broadcast facilities since 2005.
2. I hold Bachelor of Science degree in Electrical Engineering from DeVry University Chicago, IL.
3. I further declare, under penalty of perjury, that the statements contained herein are true and correct to the best of my knowledge.

Stephen Wilde
March 28, 2017

5/21/2017

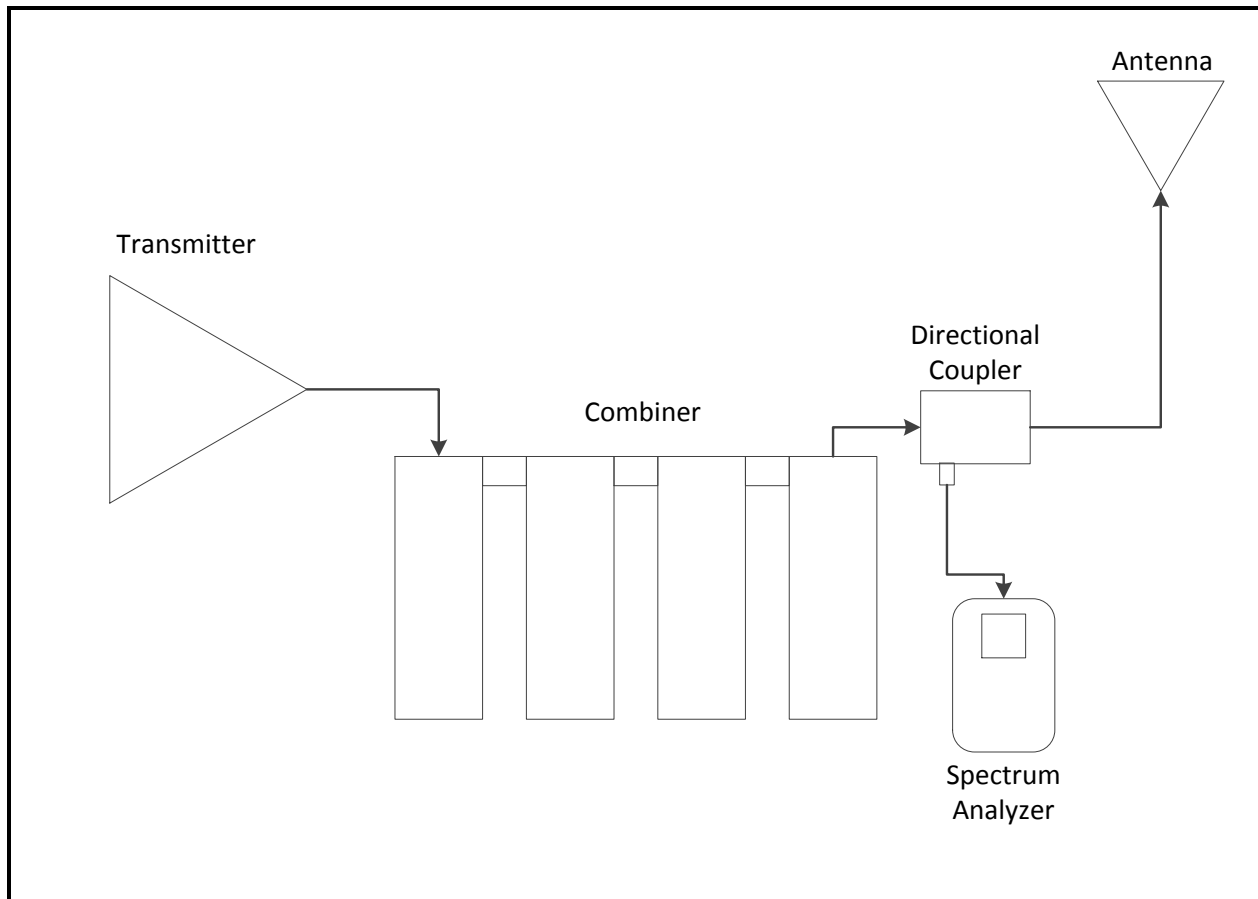
X



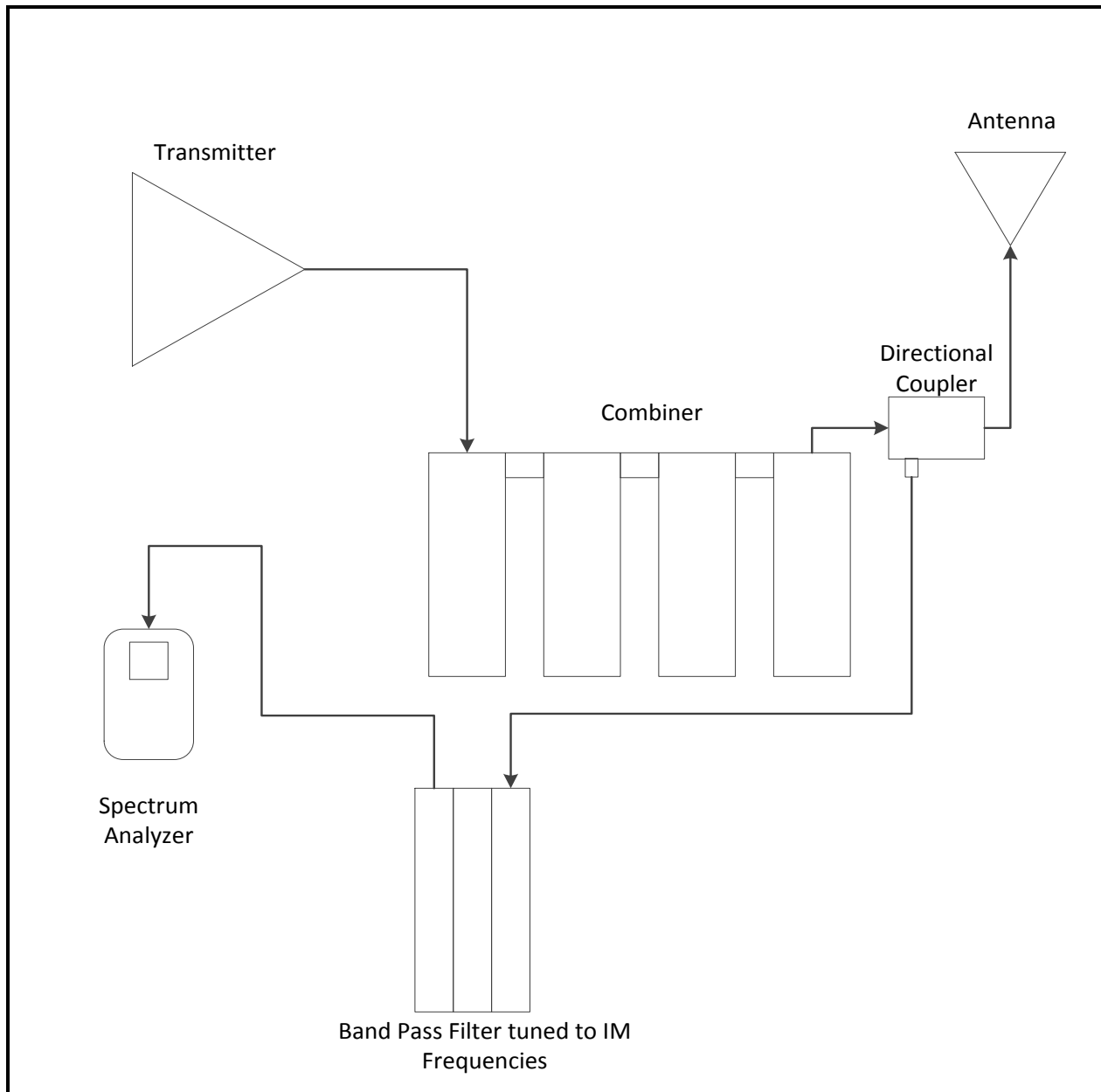
Stephen Wilde
RF Engineer
Signed by: swilde

Measurement Diagrams

Harmonic Emissions, Spurious Emissions, and Occupied Bandwidth measurement configuration



Intermodulation frequency measurement configuration



Measurement Results

Frequency Measurement

Assigned Frequency	100.9000000	MHz	Variance in Hz
Measured Frequency	100.9004247	MHz	424.7

Measurement Methodology

To ensure accurate measurements, the frequency response of all couplers, RF filters, and sample ports were characterized prior to taking any measurements. The resulting dB variances at each frequency were added to the recorded measurements to ensure accurate calculations.

The spectrum analyzer reference point of the fundamental frequency is 0.00 dBm. The directional coupler forward power sample port has less loss at all harmonic frequencies in reference to the fundamental frequency. The losses and gains are a dB reference relative to the fundamental frequency. Therefore, the directional coupler forward port loss or gain, high pass filter loss, and dB reference point are added to the instrument measurement to provide the resulting dBc calculation.

Harmonic Emissions Measurement

Harmonic	Frequency (MHz)	Directional Coupler (dB)	High Pass Filter (dB)	Reference Level (dB)	Instrument Reading (dB)	Corrected Measurement (dBc)	FCC Limit (dBc)	Clearance (dB)
X2	201.80	-5.50	0.50	0.00	-122.90	-127.90	-72.96	54.94
X3	302.70	-9.10	0.40	0.00	-118.20	-126.90	-72.96	53.94
X4	403.60	-11.60	0.30	0.00	-121.30	-132.60	-72.96	59.64
X5	504.50	-13.60	0.10	0.00	-125.10	-138.60	-72.96	65.64
X6	605.40	-15.00	0.10	0.00	-123.70	-138.60	-72.96	65.64
X7	706.30	-16.10	0.10	0.00	-123.70	-139.70	-72.96	66.74
X8	807.20	-17.00	0.10	0.00	-123.30	-140.20	-72.96	67.24
X9	908.10	-17.60	0.20	0.00	-124.40	-141.80	-72.96	68.84

Intermodulation Emissions Measurement

Due to the relationship between the fundamental frequencies, the resulting intermodulation products were evaluated with all fundamental frequencies within the combiner network operating at 100% power.

IM Product Frequency (MHz)	Bandpass Filter (dB)	Reference Level (dB)	Directional Coupler (dB)	Instrument Reading (dB)	Corrected Measurement (dBc)	FCC Limit (dBc)	Clearance (dB)
104.5	0.00	0.00	0.00	-98.88	-98.88	-72.96	25.92
93.7	0.00	0.00	0.00	-99.17	-99.17	-72.96	26.21

Occupied Bandwidth Measurement

The occupied bandwidth was measured with an Agilent N9912A spectrum analyzer utilizing fourteen mask segments to determine the occupied bandwidth. Measurements were completed over five minutes using a max-hold spectrum sweep, and demonstrate that K262CA is operating within the permissible bandwidth.

