HARRIS FM COMMISSIONING TEST DATA

KWTU-FM
University of Tulsa

Z Transmission system
With HD spectrum plot

Serial number _PRD00356770001_

Model _Z6HDC_____

Frequency _88.7_____

Location _Tulsa OK_____

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1.1 VISUAL INSPECTION

Visual Inspection Consists of inspecting the transmitters and associated equipment for any signs of physical damage, and to ensure that standard engineering practices were used in placement, and interconnection of all equipment in the system.

2.1 CONTROL OPERATION VERIFICATION

Control operation verification consists of testing the system to ensure all operation modes; normal and emergency are functioning as designed. This includes remote control, status functions and safety interlocks.

TRANSMITTER OPERATING PARAMETERS

All of the following meter readings will be checked against the factory test data sheet to ensure the transmitter is operating within normal operating parameters.

3.1 Transmitter Operating Parameters

AC Input Voltage measured with multimeter at disconnect:

A-B:	_____ Volts
B-C:	_____ Volts
A-C:	_____ Volts

Power supply taps: ____3_____ PS1
____3_____ PS2

Basic Readings:

PA Voltage:	____53.7__ Volts
PA Current:	____77.9__ Amps
Forward Power:	____99.9__ %
Forward Power:	____1.61K_ Watts
Reflected Power:	____1.00__ Ratio
Reflected Power:	____0.00__ Watts
APC	____2.50__

PA ISO loads and Cooling System:

Ambient air temperature	___23_____ C	
Air Flow High Speed	___94_____ %	(90 - 110%)
Air Flow Low Speed	___47_____ %	
Highest PA ISO load	_A2 34C__	(100C maximum)

Notes: _____

CARRIER FREQUENCY MEASUREMENT

4.1 Measurement Description

The RF sample is derived from the RF sample port in the transmitter output directional coupler or thru-line section sample slug.

4.2 Measurement procedure

Connect the counter as shown in figure 4.1. Set counter to 10 second rate.

4.3 Test Data

Carrier Frequency: 88.7MHz, -69Hz (Specification: +/- 300 hz)

4.4 Test Equipment Set-Up

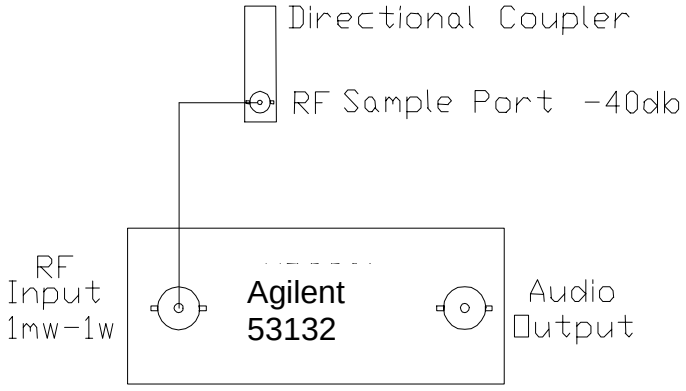

Fig. 4.1

Notes:_____
_____

TRANSMITTER OUTPUT RF HARMONIC ATTENUATION MEASUREMENTS

12.1 Measurement Description

The harmonic attenuation will be measured to ensured proper operation of the transmitter and the output low pass filter. An RF sample is derived from the directional coupler RF sample port or Bird thru-line sample slug. This RF sample will be connected to a spectrum analyzer with a bandwidth capable of measuring the 10th harmonic of the carrier frequency. The second harmonic to the tenth harmonic will be measured and the correction factor will be added to compensate for the capacitive coupling factor (6dB per octave, 20Log{harmonic number}).

12.2 Measurement procedure

Connect the test as shown in figure 12.1 with 20 dB of attenuation inline with the RF sample feeding the RF input of the spectrum analyzer. Set a carrier reference level on the analyzer. Insert the notch filter in line with the RF sample as shown in fig. 12.2. Adjust the filter for a 25dB or greater notch. Remove 20 dB of the attenuation, do not re-adjust the reference level. The sensitivity of the analyzer for the harmonics has been increased by 20dB. For example if the harmonic measures -65 dB from the reference it is actually -85 dB. The coupler correction factor can then be added to this figure. Audio turned off for test.

12.3 Test Data

Carrier Frequency: ____88.7MHz_____

Harmonic	Frequency	Measured Value	Correction Factor	Corrected Value
2nd	__177.4__	_____	-6dB	___ > -90dBc __
3rd	__266.1__	_____	-9.5dB	___ > -90dBc __
4th	__354.8__	_____	-12dB	___ > -90dBc __
5th	__443.5__	_____	-14dB	___ > -90dBc __
6th	__532.2__	_____	-15.6dB	___ > -90dBc __
7th	__620.9__	_____	-16.9dB	___ > -90dBc __
8th	__709.6__	_____	-18.1dB	___ > -90dBc __
9th	__798.3__	_____	-19.1dB	___ > -90dBc __
10th	__887.0__	_____	-20dB	___ > -90dBc __

Notes:_____Analyzer used has 100dB on screen: set carrier to reference line and set delta marker. Insert notch filter, then take readings

12.4 Test Equipment Set Up

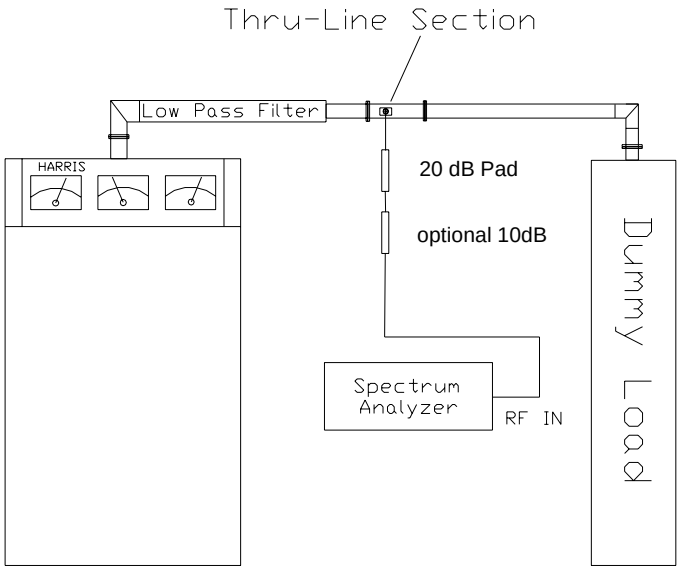

Fig. 12.1

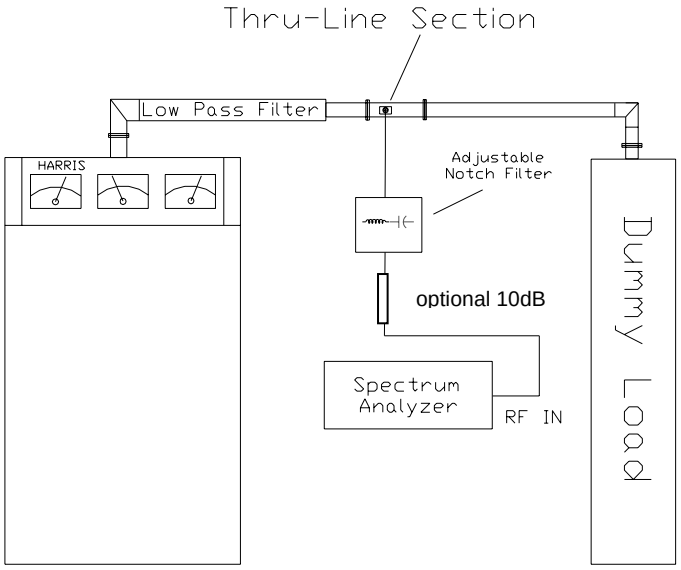

Fig. 12.2

13 **TEST EQUIPMENT LOG**

Manufacturer	Model	Description	Asset Number	Cal Date
Belar	FMSA1	stereo demod	11188	
Audio Precision	port 1 DD	audio test set	11376	
Agilent	53132A	counter	11478	
Agilent	E4402B	spectrum analyazer	11288	
HP	8901	modulation analyzer	9396	
Eagle	TNF-210	notch filter		

14 Spectrum plots: