

## **Exhibit G – Test Reports**

**Final Test Summary, Model 176C TWT Amplifier** – A document provided by the Applied Systems Engineering, Inc., the manufacturer of the amplifier. This report describes the testing performed by Applied Systems Engineering, Inc.

**RF Laboratory Test Report** - A report that describes the RF characteristics of the WDS-9000CS radar measured by an independent test laboratory at the University of Michigan.

**Frequency Stability Test Report** – A report that describes the frequency stability characteristics of the transmitter frequency source with a variation of temperature and input source voltage.

DATE 5-13-98

FINAL TEST SUMMARY

Model 176

TWT AMPLIFIER

MODEL NO. 176C

SERIAL NO. 9800204

PART NO. 63002-1

FREQUENCY RANGE 5.0 to 6.0 GHz

TUBE TYPE & SERIAL NO. MTG 3041K / 004

CONTRACT/P.O. NO. : —

PROJECT: 630

FOR: Weather Detection Systems

By

Applied Systems Engineering, Inc.  
P.O. Box 122987  
Fort Worth, Texas 76121-2987

*Allan Barnes*  
(817) 249-0296

Rev: 04/27/98



APPLIED SYSTEMS ENGINEERING, INC.

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TELEPHONE: (817) 249-4180 FAX: (817) 249-3413

## Final Test Summary, TWT Amplifier

This test summary will document the operational parameters and verify specification compliance for 1KW TWT Amplifiers. Oscilloscope photographs will be used as necessary to document waveforms. The TWT Manufacturer's Final Test Summary will be attached.

- 1.0 Protection Settings and Internal Parameters - Settings for protection circuits will be measured and recorded as specified on the attached data sheet. Internal Parameters such as: TWT Grid Pulse, and Bias will be measured and recorded.
- 2.0 Operational Parameters - All parameters except output power and gain will be measured at midband for each unit. Oscilloscope photographs of pulse operation will be provided. Output Power and Gain will be measured at increments across the frequency range. Measurement increments are shown below:

S-Band	200MHz
C-Band	500MHz
X-Band	500MHz
Ku-Band	500MHz
L-Band	100MHz
UHF	50MHz

- 3.0 Voltage and Current Measurement - Primary power and front panel meter readings will be measured and recorded at 6% duty cycle.
- 4.0 Local and Remote Operation - The operation of front panel controls and indicators will be verified and checked out on the appropriate appendix data sheet. Remote control and indication will be verified in a similar manner using a remote control unit.
- 5.0 Notes and Comments

## 1.0 Protection Settings And Internal Parameters

TWT Grid Bias, WRT Cathode	<u>-2.00</u> VDC
TWT Grid Pulse, WRT Bias (Open Circuit: No Load)	<u>-37.5</u> Volts, Peak
TWT Filament Voltage, WRT Cathode (Tube Connected)	<u>-6.30</u> VDC
Measured at <u>4.25</u> GHz PRF <u>400KHz</u> Pulse Width <u>75</u> nsec. (7%)	
Collector #1 Current Sample 1V/A	<u>1.0</u> Volts, Peak
Collector #2 Current Sample 1V/A	<u>N/A</u> Volts, Peak
200V Current Sample (TP7, A3)	<u>.56</u> VDC
Cathode Voltage Sample (TP6, A3)	<u>9.52</u> VDC
Average Helix Current Sample (TP8, A3)	<u>5.12</u> VDC
Collector #1 Voltage Sample (TP6, A4)	<u>7.18</u> VDC
Filament Voltage Sample (TP6, A5)	<u>7.32</u> Volts

### Protection Settings:

Average Helix Current (A3, Wiper R2)	<u>6.36</u> VDC
Cathode HV Low A3 (Wiper, R2)	<u>8.90</u> VDC
Cathode HV High A3 (Wiper, R3)	<u>10.08</u> VDC
200V Overcurrent A3 (Wiper R4)	<u>2.00</u> VDC
Collector HV Low A4, (Wiper R2)	<u>6.70</u> VDC
Collector HV High A4, (Wiper R3)	<u>7.82</u> VDC
Trigger Threshold (U2 Pin 3, A7)	<u>1.60</u> VDC
Reverse Power Trip A1 (Wiper, R2)	<u>2.11</u> VDC

By: Allen Bane

Date: 5-14-88

## 2.0 Operational Parameters

Measured at Midband 5.625 GHz

PARAMETERS	MEASURED	SPECIFICATION
Input Pulse (50 Ohms)	<u>2 ~ 5</u> Volts	2 - 5 Volts,
Delay, Input to RF Output	<u>140</u> nsec.	300 nsec, Max.
Pulse Repetition Rate	<u>0</u> to <u>400</u> KHz	0 to <u>400</u> KHz, Min.
Pulse Width Range	<u>.04</u> to <u>.15</u> usec.	<u>.05</u> to <u>.15</u> microsec.
Output Pulse Rise Time	<u>.13</u> nsec.	<u>.15</u> nsec, Max.
Output Pulse Fall Time	<u>.9</u> nsec.	<u>.15</u> nsec, Max.
Trigger Delay Jitter	<u>.4 ± .2</u> nsec.	-.5 nsec, Max.
Duty Cycle	<u>.7</u> %	<u>.76</u> % Continuous
Pulse Overshoots	<u>&lt;.2</u> dB	<u>.1</u> dB, Max.
Pulse Droop	<u>&lt;.2</u> dB	.5 dB/100usec.
Pulse to Pulse Amplitude Variation	<u>&lt;.1</u> dB	+.1 dB, Max.
Pulse to Pulse Phase Noise	<u>N/A</u> Degrees	+.1 Degree peak to peak *
Gain Stability	<u>.63</u> dB/24Hr	<u>.5</u> dB/24Hr
Output Power On/Off Ratio	<u>&gt;75</u> dB	<u>75</u> dB, Min.
Pulse Recovery Time (.5 usec. Pulse)	<u>250</u> nsec.	150 nsec, Max.

\* Measured at 5.625 GHz

By: Allan Bane

Date: 5-14-98

## 2.0 Operational Parameters

Contin'd

Measured at Midband 5.625 GHz

<u>PARAMETERS</u>	<u>MEASURED</u>	<u>SPECIFICATION</u>
Calculated Noise Figure (From Worksheet)	<u>30.6</u> dB	35dB, Nominal
Peak Noise Power Output	<u>-26.8</u> dBm/ $\text{mHz}$	<u>-12</u> dBm/ $\text{mHz}$
Spurious Output At Rated Power	<u>-54.1</u> dB	-50 dBc, Min.
Harmonic Output	<u>N/A</u> dBc in Band	<u>N/A</u> dBc, Max.
	<u>-50</u> dBc out of Band	<u>-40</u> dBc, Max.

By: Allen Baker Date: 5-14-98

Work Sheet, Peak Noise Power

Measured Broadband Peak Noise Power 11.0 dBm  
Amplifier Bandwidth 6000 MHz, 37.8 dB  
Amplifier Small Signal Gain  
(Measured at Midband) 56.6 dB

Broadband Peak Noise Power Output 11.0 dBm  
Amplifier Bandwidth 37.8 dB  
Amplifier Small Signal Gain 56.6 dB  
Thermal Noise @ 25 Degrees C 114 dBm  
Noise Figure 30.6 dB

By: Allen Barr Date: 5-14-98

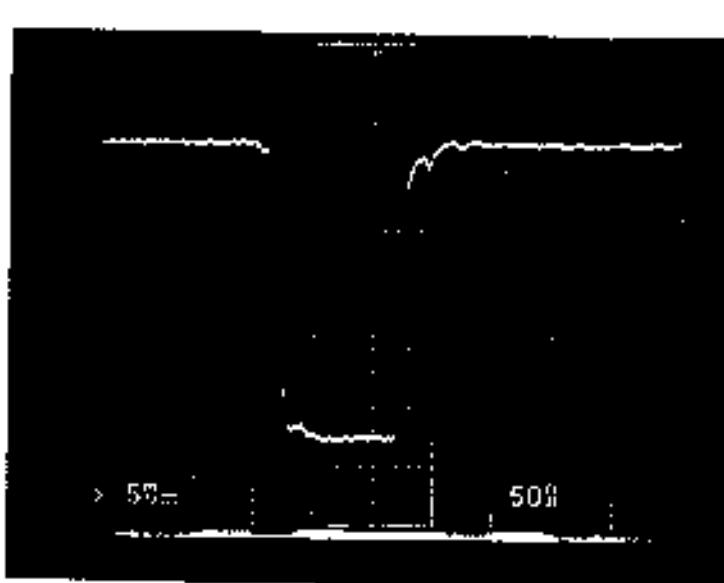
Pulse Photographs

N | A

\_\_\_\_\_ Degrees/Division

\_\_\_\_\_ Microseconds/Division

Phase Stability : Pulse Width = \_\_\_\_\_ usec., PRF = \_\_\_\_\_ KHz



0.05 Microsecond/Division

Detected RF: Pulse Width = 0.10usec., PRF = 400 KHz

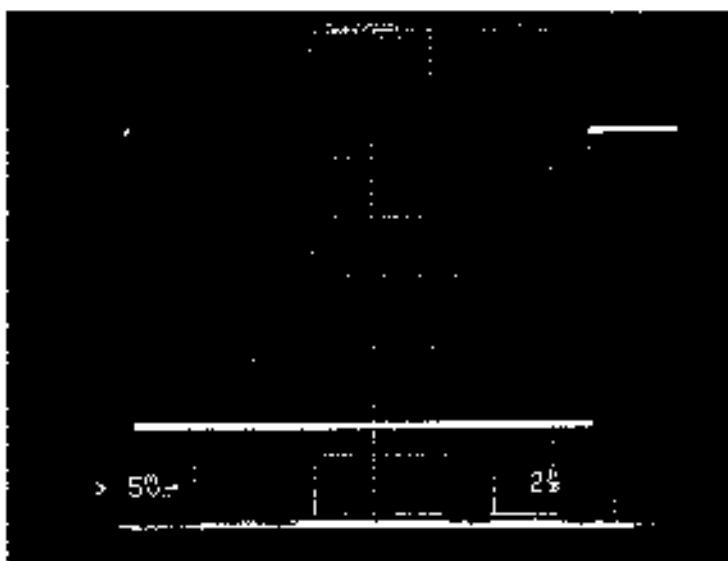
Pulse Photographs

\_\_\_\_\_ Degrees/Division

N | A

\_\_\_\_\_ Microseconds/Division

Phase Stability : Pulse Width - \_\_\_\_\_, PRF - \_\_\_\_\_



5mV/Division

2 Microsecond/Division  
Detected RF: Pulse Width - 15μs, PRF - 1KHz

RF Power Output, Input Level Optimized 63.8 dBm, Max.

Pulse Width : 1 Microseconds

PRF: 70 - kHz

Duty Cycle: 0.7 - 11.5 dB

BY: Allen Barnes

Date: 5-14-98

Gain at Rated Output,  $60.2$  dBm

Pulse Width : 1 Microseconds  
PRF: 70 KHz  
Duty Cycle: .07, 11.5 dB

By: Allan Barnes

Date: 5-14-98

### 3.0 Voltage And Current Measurement

Measured at Midband 5.625 GHz

PRF: 400 KHz

Pulse Width: 125 Microsecond

Input Voltage	<u>240</u>	Volts AC
Input Current	<u>7.30</u>	Amps AC, Operate
	<u>1.35</u>	Amps AC, Standby
Input Voltage Range	<u>216 - 266</u>	<u>216 to 266</u> Volts AC 60 Hz
Input Power	<u>1,260</u>	Watts, Operate
Power factor	<u>.72</u>	
<u>Front Panel</u>		
Collector #1 Voltage	<u>6.49</u>	KVDC
Cathode Voltage	<u>-8.52</u>	KVDC
Helix Current	<u>33.6</u>	mA
HVPS on Time		Hours
Filament Time		Hours
Amplifier Weight	<u>1570</u>	lbs

By: Allan Barnes Date: 5-14-98

#### 4. Local And Remote Operation

##### Local And Remote Control

Power On

Local (  ) Remote (  )  
Compliance

Power Off

(  ) (  )

Reset

(  ) (  )

Standby

(  ) (  )

Operate

(  ) (  )

RS-232

##### Remote IEEE-488

Power On

— (  ) —

Power Off

— (  ) —

Reset

— (  ) —

Standby

— (  ) —

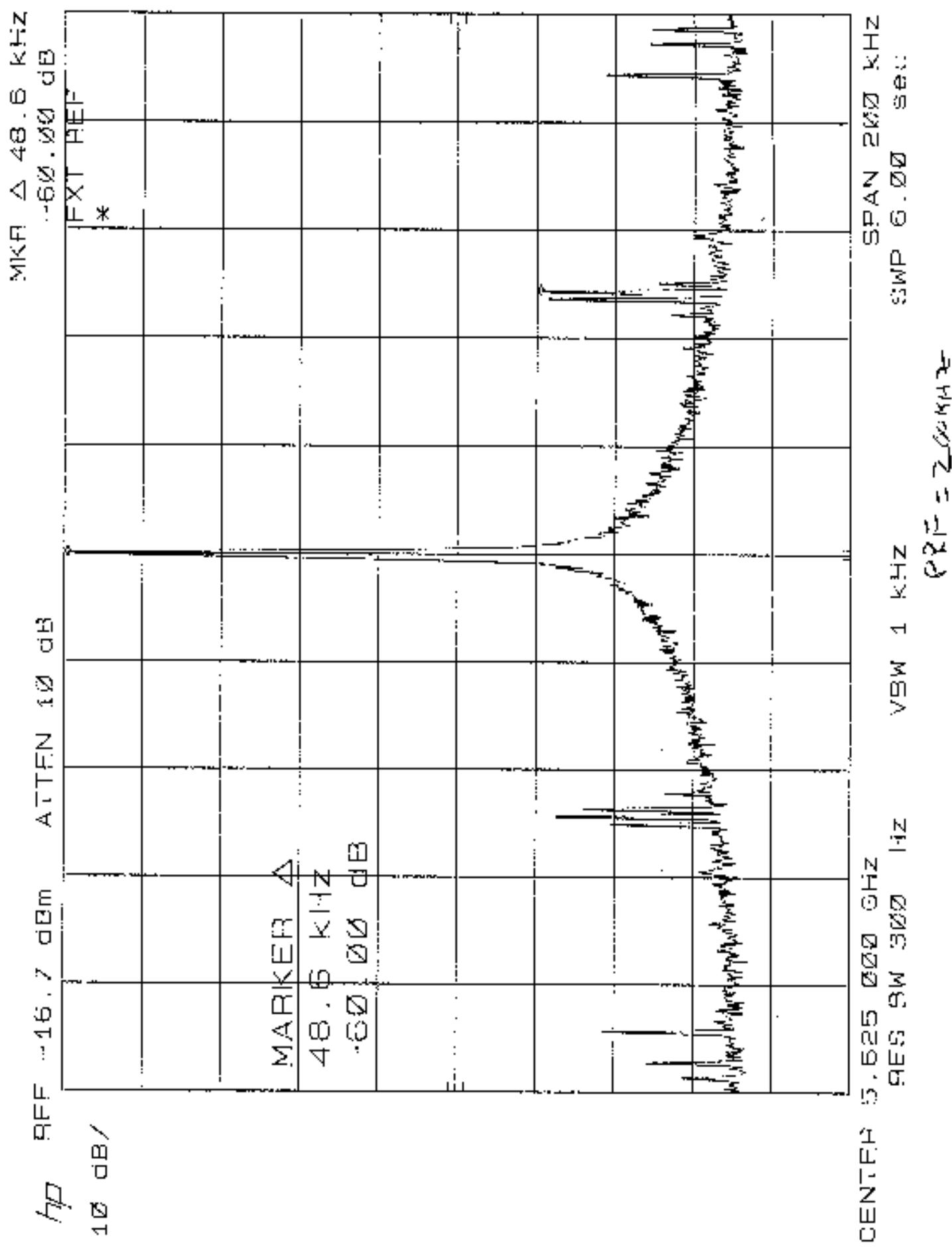
Operate

— (  ) —

By: Allen Baus

Date: 5-14-98

## 5. Notes and Comments



The University of Michigan  
Radiation Laboratory  
3228 EECS Building  
Ann Arbor, MI 48109-2122  
Tel: (734) 647-1792

Measured Radio Frequency Emissions  
From

**Weather Detection Systems Inc  
C-band Weather Radar  
Model: 9000cs**

Report No. 415031-033  
March 3, 2000

For:  
Weather Detection Sysytems Inc  
5405 Steeplechase Lane  
Westerville, OH 43081

Contact:  
Rick Smeltzer  
Tel/fax: 614-891-4714  
PO: verbal

Measurements made by:

Valdis Liepa

Tests supervised by:  
Report approved by:

  
Valdis V. Liepa  
Research Scientist

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**Summary**

Tests for compliance with FCC Regulations (Part 90, Subpart F) were performed on Weather Detection Sysytems Inc C-band Weather Radar. The results reported herein were measured on January 21 and 22, 2000.

## 1. Introduction

Weather Detection Systems, Inc. C-band radar was tested for compliance with FCC (Part 90, Subpart F) regulations. The tests were performed at the University of Michigan Radiation Laboratory Willow Run Testing Range following the procedures described in ANSI C63.4-1991 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40 GHz". The description of the facility and the attenuation characteristics of the Open Site are on file with the FCC Laboratory, Columbia, Maryland, (FCC file 31049/SIT).

## 2. Test Equipment Used

The pertinent test equipment commonly used in our facility for microwave measurements is listed in Table 2.1 below. The second column identifies the specific equipment used in these tests. The HP8593E spectrum analyzer is the principal instrument that maintains traceability to NIST standards for signal amplitude and frequency.

Table 2.1. Test Equipment

Test Equipment	Equip. Used	Manufacturer/Model	Cal. Date/By
Spectrum Analyzer (9kHz-22 GHz)		Hewlett-Packard 8593A SN: 3107A01258	October 199/UM
Spectrum Analyzer (9kHz-26 GHz)	X	Hewlett-Packard 8593E SN: 3107A01131	September 1999/HP
Spectrum Analyzer (9kHz-26 GHz)	X	Hewlett-Packard 8562A SN: 2952A04671	April 1998/HP
Harmonic Mixer (26.5-40 GHz)	X	Hewlett-Packard 11970A SN: 2332A08237	February 1997/HP
Harmonic Mixer (40-60 GHz)	X	Hewlett-Packard 11970U SN: 2332A00491	February 1996/HP
Harmonic Mixer (75-110 GHz)		Hewlett-Packard 11970W SN: 2521A00161	February 1996/HP
S-band Std. Gain Horn (2.6 – 3.95 GHz)	X	S/A, Model SGH 12-2.6	Manufacturer, NRL Des.
C-band Std. Gain Horn (3.95 – 5.85 GHz)	X	University of Michigan	Manufacturer, NRL Des.
XN-band Std. Gain Horn (5.85 – 8.2 GHz)	X	University of Michigan	Manufacturer, NRL Des.
X-band Std. Gain Horn (8.2 – 12.4 GHz)		Narda 640	1970/Manufacturer
X-band Std. Gain Horn (8.2 – 12.4 GHz)	X	S/A, model SGH 12-8.2	Manufacturer, NRL Des.
Ku-Band Std. Gain Horn (12.4 0 18 GHz)	X	University of Michigan	Manufacturer, NRL Des.
K-band Std. Gain Horn (18 – 26.5 GHz)	X	FXR, Inc., K638KF	Manufacturer, NRL Des.
Ka-band Std. Gain Horn (26.5 – 40 GHz)	X	FXR, Inc., U638A	Manufacturer, NRL Des.
U-band Std. Gain Horn (40 60 GHz)	X	Custom Microwave, WR-19	1996/Manufacturer
W-band Std. Gain Horn (75 – 110 GHz)		Custom Microwave, WR-10	1996/Manufacturer

### 3. Configuration and Identification of Device Under Test

The Device Under Test (DUT) is a pulsed Doppler weather radar, operating at 5.55 – 5.65 GHz (C-band) with 2.5 KW rated (pulse) output. The unit consists of three rack-mount modules: synthesized source and receiver, TWT amplifier, and a signal processor unit. The RF output connection is a C-band waveguide flange. This radar is intended to be operated at a remote unmanned site, with a scanning (rotating) antenna at 100-plus feet high on a tower, fed via waveguide.

The DUT was designed and manufactured by Weather Detection Systems, Inc., 5405 Steeplechase Lane, Westerville, OH 43081. It is identified as:

Weather Detection Systems, Inc. Weather Radar  
Model: WDS-9000CS  
Model (Synth. and Rec.): Custom made by WDS  
Model (TWT Amp.): Applied Systems Engineering, 176C  
Model (Signal Processor): Sigmet, RVP7  
FCC ID: NWOWDS9000CS

#### 3.1 Changes made to the DUT

There were no modifications made to the DUT by this laboratory.

### 4. Measurements and Results

The DUT was tested per requirements of FCC (Part 90, Subpart F). Since the frequency range of the DUT is selectable (5.55 – 5.65 GHz), the applicable measurements were made for DUT set to 5.55, 5.60, and 5.65 GHz.

#### 4.1 Power Output

##### 4.1.1 Conducted Antenna Measurement (2.985(a), 90.205)

For this test the DUT was terminated in high power load and measurements were taken through the built in –28.3 dB coupler. The signal was then attenuated further by a 37.9 dB attenuator and the connecting cable (1.3 dB loss) to the spectrum analyzer. This test configuration is shown in Figure 1. The analyzer was set RBW = 5 MHz, VBW = 3MHz.

Pulse (peak) power:

Freq: 5.55 GHz	Sp. Anal: -4.0 dBm	Pulse Power: 63.5 dBm or 2.25 KW
Freq: 5.60 GHz	Sp. Anal: -3.9 dBm	Pulse Power: 63.6 dBm or 2.32 KW
Freq: 5.65 GHz	Sp. Anal: -3.9 dBm	Pulse Power: 63.6 dBm or 2.32 KW

Average power:

The pulse rate and pulse width are variable. Rep. rate: 448 – 1100 Hz; pulse width: 5 – 15  $\mu$ s. For the worst case setting (measured 912  $\mu$ s period (rep-rate) and 15.15  $\mu$ s pulse-width), the measured (field) peak-to-average ratio was 38 dB. (The average ratio was measured with 100 Hz VBW).

Thus, the average power is down 19 dB, giving 44.68 dBm or 28.8 W.

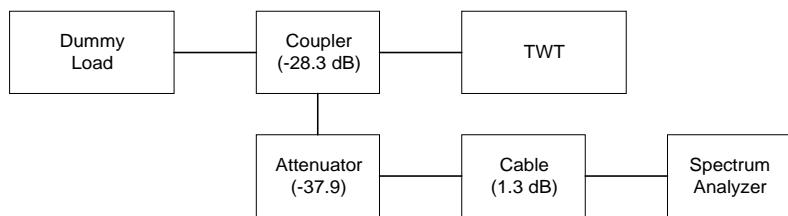


Figure 1 Peak Power Test Configuration

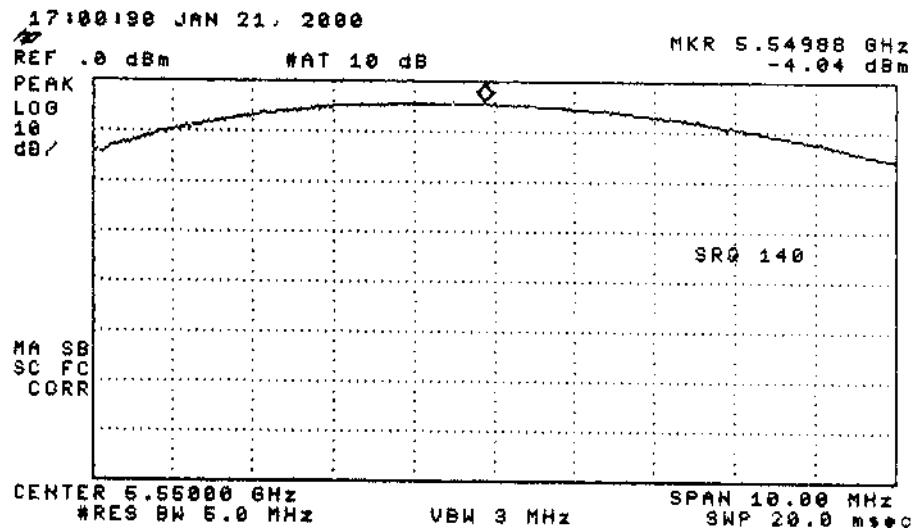


Figure 2 Peak Power Measurement at 5.55 GHz

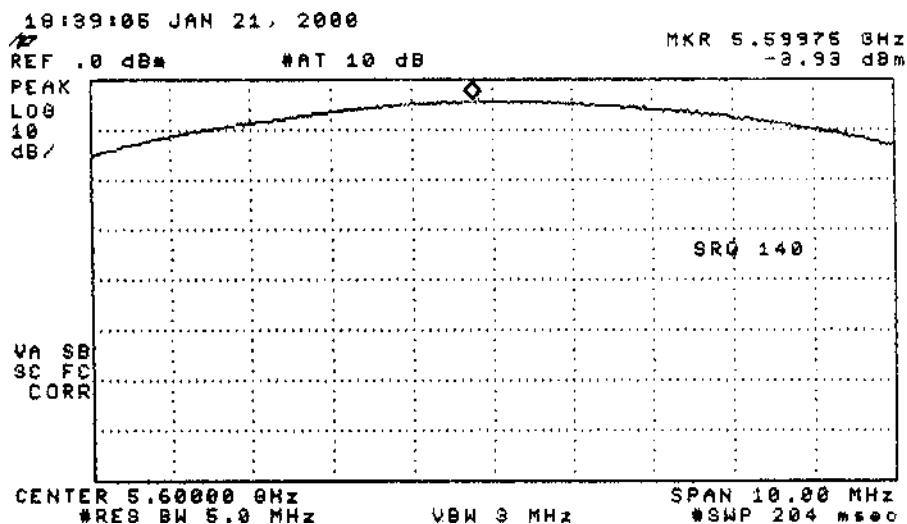


Figure 3 Peak Power Measurement at 5.60 GHz

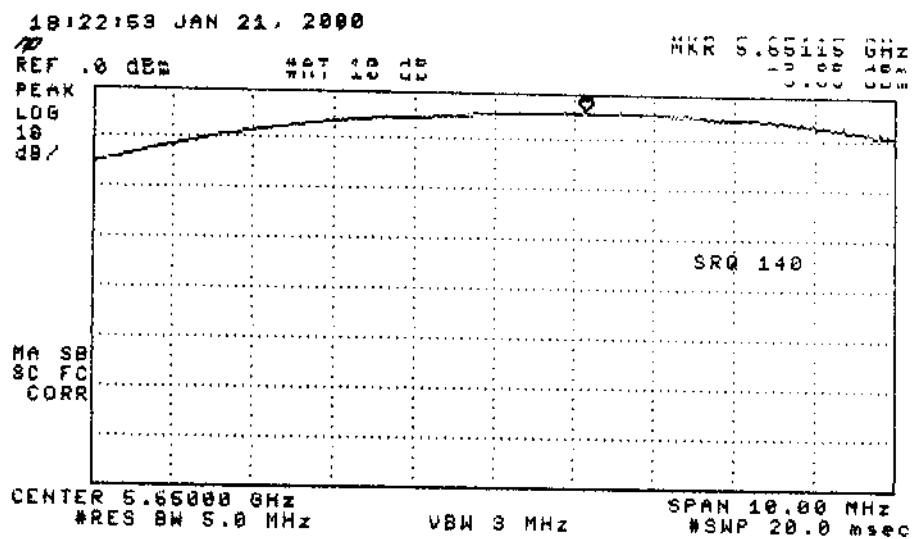


Figure 4 Peak Power Measurement at 5.65 GHz

#### 4.1.2 Spurious Emissions

##### 4.1.2.1 Spurious Conducted (2.991)

First, the DUT was connected directly to the spectrum analyzer and scanned up to 26 GHz. Here we saw only the fundamental and the second harmonic.

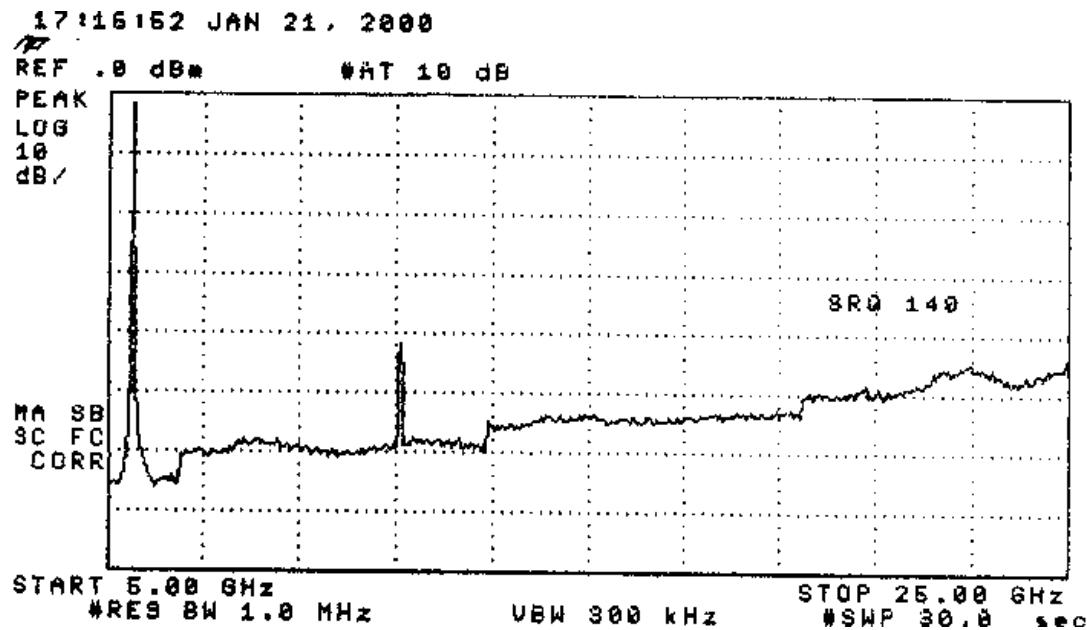


Figure 5 Spurious Conducted Emissions (5.55 GHz)

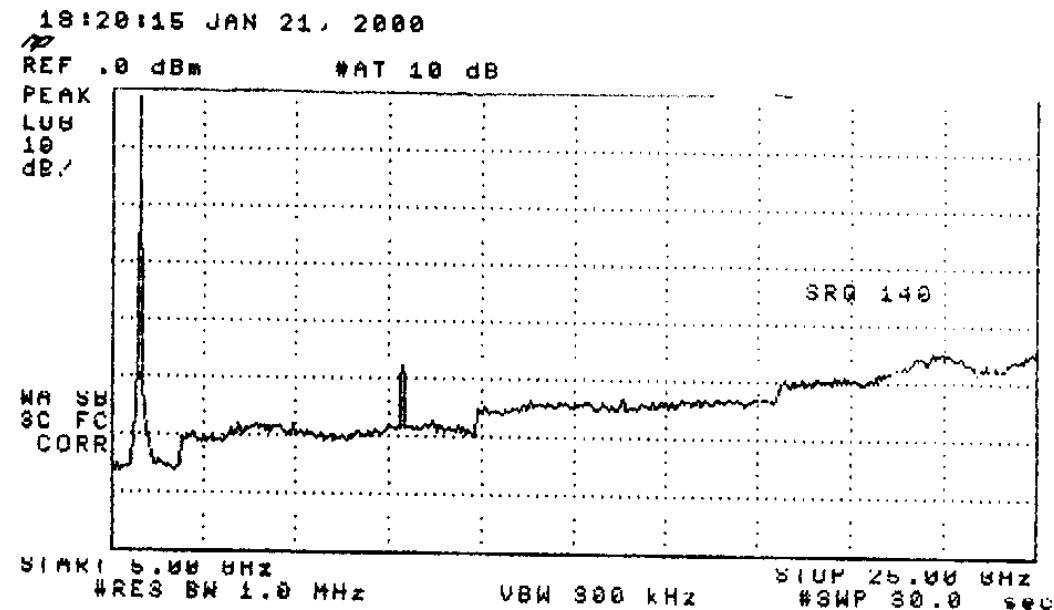


Figure 6 Spurious Conducted Emissions (5.65 GHz)

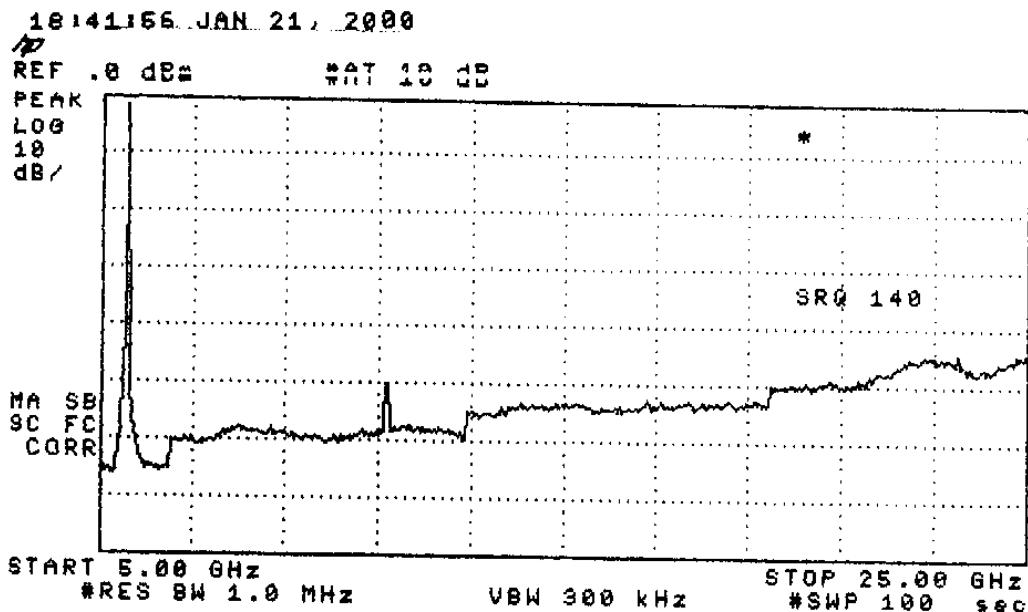


Figure 7 Spurious Conducted Emissions (5.60 GHz)

From 26 to 60 GHz the conducted measurements were made via coupling from a C-band horn to Ka and U-band horns as seen in Figure 8. This was done to provide high-pass filtering to protect the spectrum analyzer and, as well as, to provide a means to couple energy into the spectrum analyzer. The high harmonics were seen, but there were two spurious emissions, at 31.41 and 35.15 GHz. The dBm reading taken there were corrected by the ratio of the radiating and receiving antenna apertures; i.e.,  $10\log(A_1/A_2)$ .

5.55 GHz	Fund: -4.0 dBm	2 <sup>nd</sup> Harm: -31.0 dBm	31.41 GHz: -64.8 dB	35.15 GHz: -63.0 dBm
5.60 GHz	Fund: -4.0 dBm	2 <sup>nd</sup> Harm: -48.0 dBm	31.41 GHz: -64.8 dB	35.15 GHz: -63.0 dBm
5.65 GHz	Fund: -4.0 dBm	2 <sup>nd</sup> Harm: -39.5 dBm	31.41 GHz: -64.8 dB	35.15 GHz: -63.0 dBm

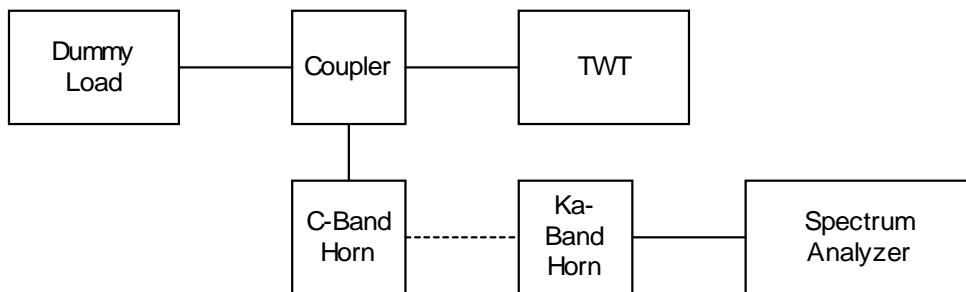


Figure 8 Spurious Conducted Emissions 25 MHz to 60 MHz Test Configuration

#### 4.1.2.2 Spurious radiated from cabinet (2.993b(2))

For this test, the DUT outputs were terminated in matched loads and emissions were measured at a distance of 3 meters using horns and, as required external mixers, spanning 3 to 60 GHz. In these measurements only the fundamental frequency was detected and was the same amplitude for 5.55, 5.60, and 5.65 GHz. The emissions seem to come from wave guide flange connections.

To convert the corrected dBm's measured on the spectrum analyzer to dB( $\mu$  V/m), we use expression

$$E_3(\text{dBmV/m}) = 107 + P_R + K_A + K_C + K_D + K_E$$

Where  $P_R$  = power recorded on spectrum analyzer, dBm

$K_A$  = antenna factor, dBm

$K_C$  = cable loss, dB

$K_D$  = distance correction factor, dB (0dB for 3m distance, -9.5 dB for 1m distance)

$K_E$  = pulse duration correction factor, dB(<0)

For our particular case,  $K_C = 1.3$  dB,  $K_D = 0$  dB,  $K_E = -35.6$  dB,  $P_R = 0.4$  dBm, and  $K_A = 23.6$  dB/m. This gives

$$E(\text{dB}\mu\text{V/m}) = 96.7 \text{ dB}\mu\text{V/m}$$

For this, the (average) equivalent EIRP is 2.2 dBm or 1.7 mW.

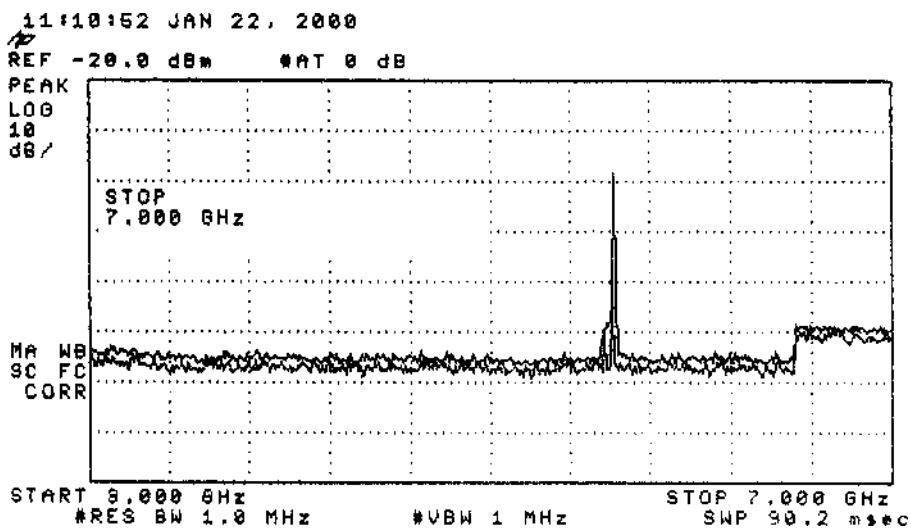


Figure 9 Spurious Radiated Emissions (3 GHz to 7GHz)

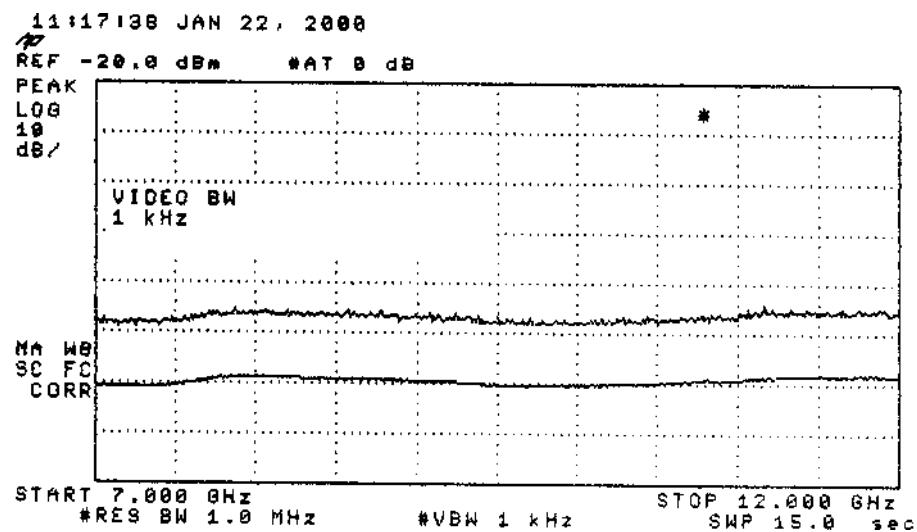


Figure 10 Spurious Radiated Emissions (7GHz to 12GHz)

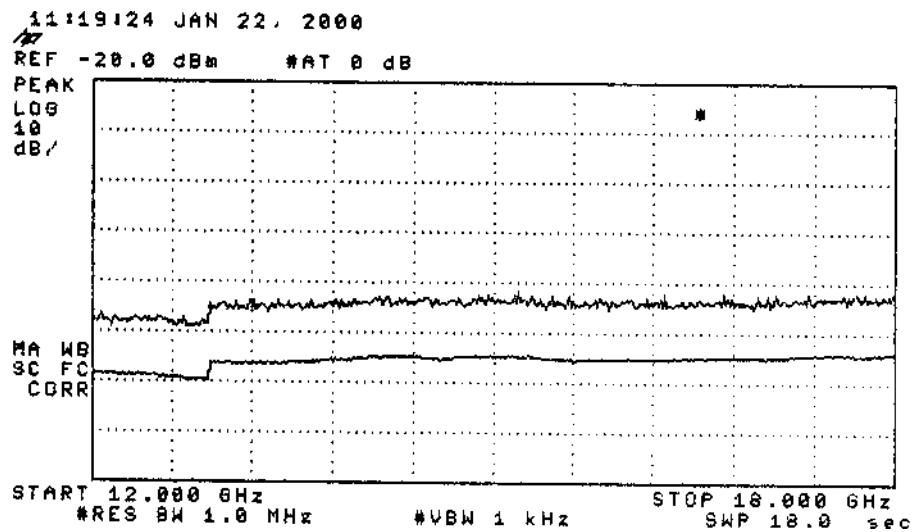


Figure 11 Spurious Radiated Emissions (12 GHz to 18 GHz)

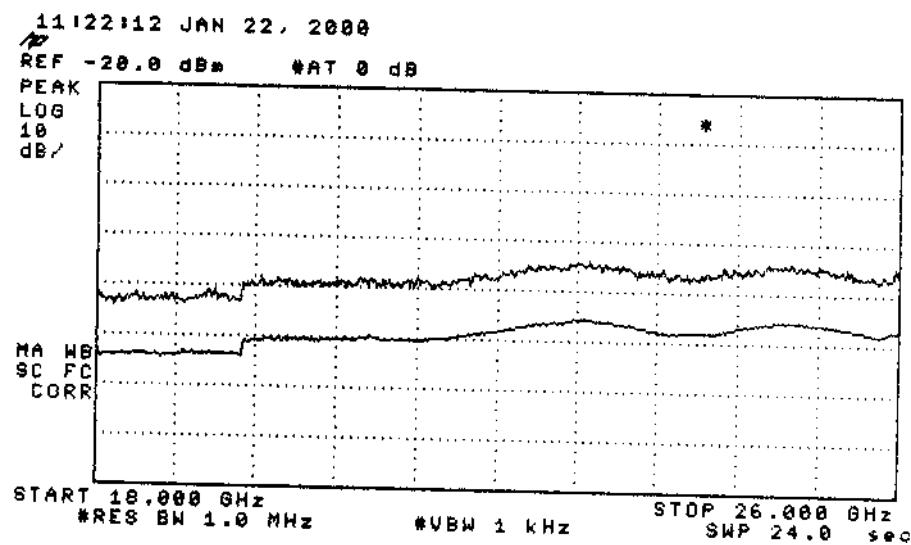


Figure 12 Spurious Radiated Emissions (18 GHz to 26 GHz)

#### 4.2 Modulation Characteristics (2.987(d))

The DUT uses a pulse-modulated carrier. The pulse rate and width are variable. Rep rate: 448 – 1100 Hz; pulse width: 0.5 – 15  $\mu$ s. For the worst case we measured 912  $\mu$ s period (rep-rate) and 15.15  $\mu$ s pulse width.

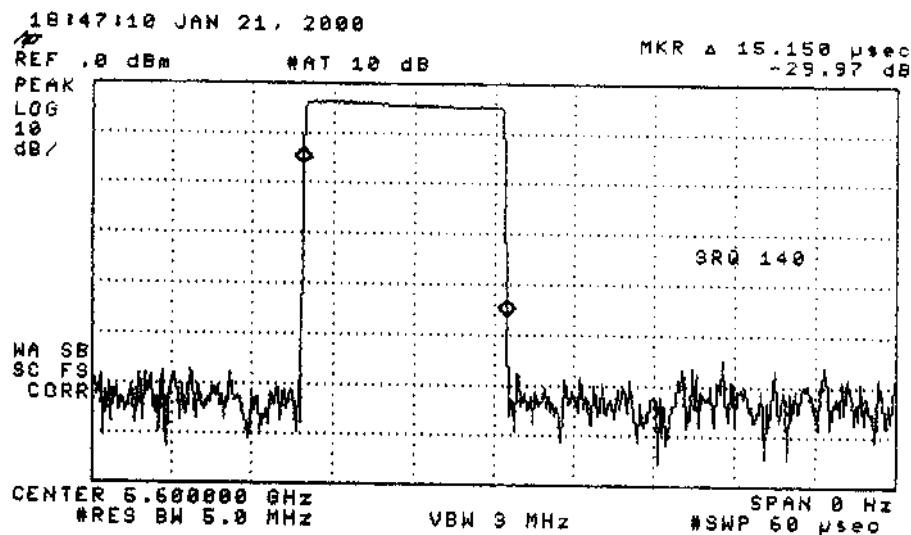


Figure 13 Pulse Width Example - 15 uSec Pulse

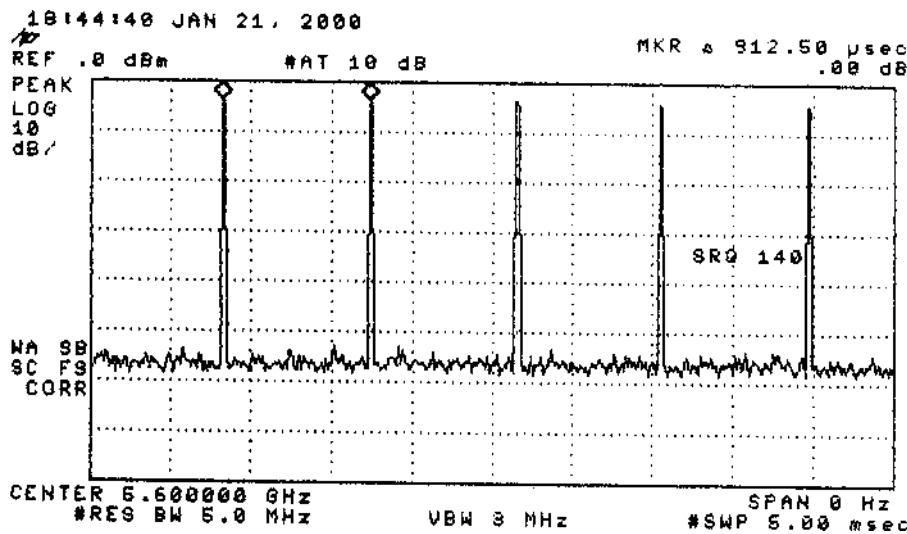


Figure 14 Pulse Repetition Rate Example - 1100 PRF

#### 4.3 Occupied Bandwidth (2.989(b))

This measurement was made with spectrum analyzer set to 100 kHz RBW and modulated as given in 4.2 above.

5.55 GHz	-20 dB BW: 1.00 MHz	-50 dB BW: 48.3 MHz
5.60 GHz	-20 dB BW: 0.95 MHz	-50 dB BW: 36.0 MHz
5.65 GHz	-20 dB BW: 2.20 MHz	-50 dB BW: 107.5 MHz

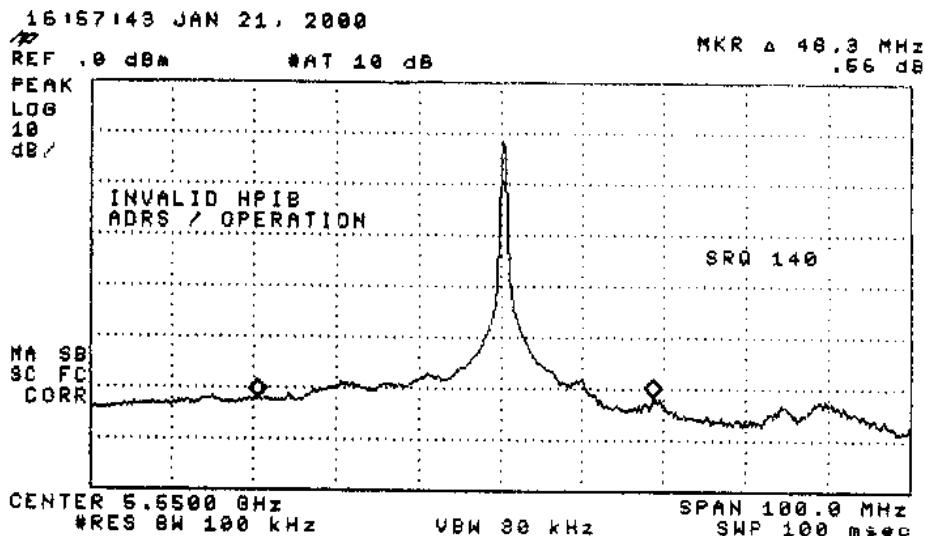


Figure 15 -50 dB Bandwidth at 5.55 GHz

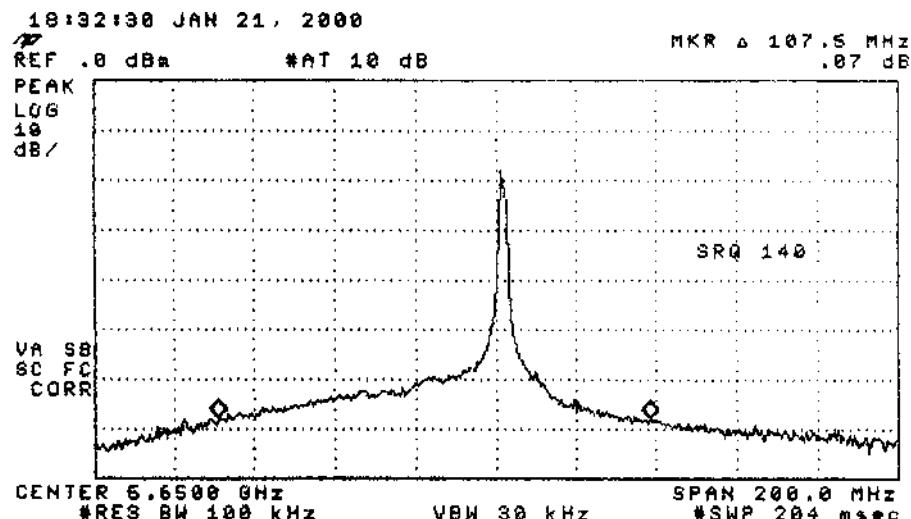


Figure 16 -50 dB Bandwidth at 5.65 GHz

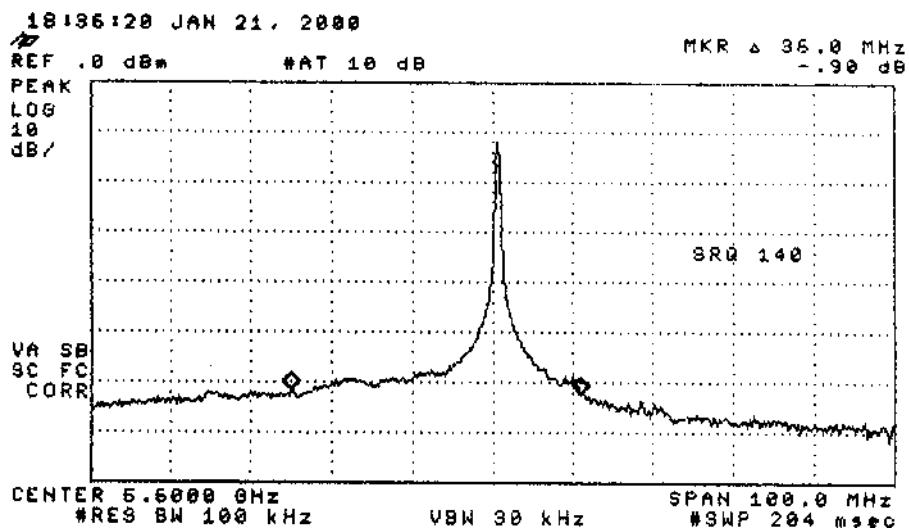


Figure 17 -50 dB Bandwidth at 5.60 GHz

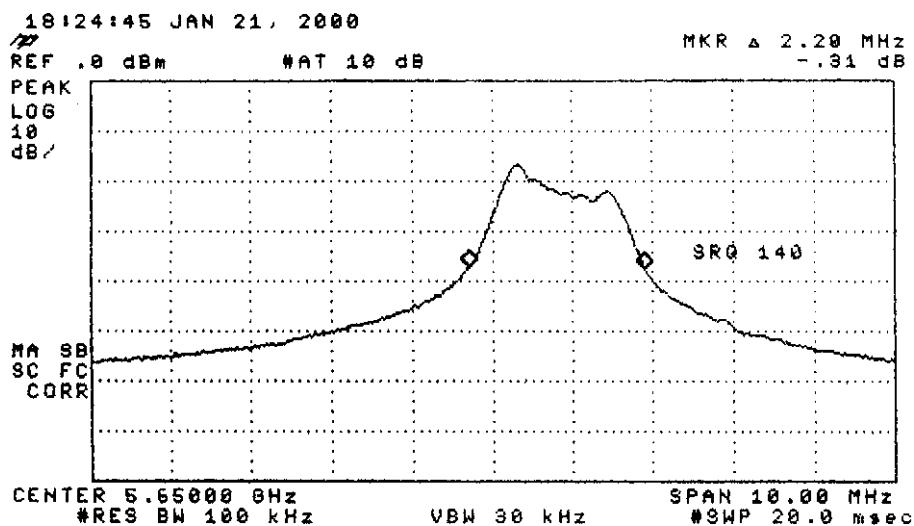


Figure 18 -20 dB Bandwidth at 5.55 GHz

#### 4.4 Potential Health hazard EM Radiation Level

**This measurement applies for the radiation from the enclosure and does not include the radiation from the antenna. Measurements were made with antenna port terminated in a match load.**

The maximum radiation level from the unit was determined by using an open-end waveguide probe feeding directly into a spectrum analyzer. In case the 1 mW/cm<sup>2</sup> limit is exceeded, the maximum distance from the DUT is determined by measurement where the field density is 1 mW/cm<sup>2</sup>.

An open-end waveguide probe is as basic as a standard gain horn. Their characteristics have been extensively studied and experimentally verified. (Yaghjian, IEEE/APS pp. 378-384, April, 1984). For the C-band (WR-187) waveguide at 5.6 GHz, for open-end waveguide Gain is 6.77 dBi and this equates to  $A_{eq} = 10.2 \text{ cm}^2$  giving

$$P(\text{mW/cm}^2) = 10.2 P(\text{mW}) \quad \text{where } P(\text{mW}) \text{ is power received by the probe.}$$

In probing the near field for the subject DUT, the maximum average power measured was -16 dBm. This corresponding to power density of 0.002 mW/cm<sup>2</sup>. This value was at the waveguide flanges.

# Frequency Stability Test

## FCC Type Acceptance

### 47 CFR Ch.1 Part 2.995

01/20/2000

#### Purpose

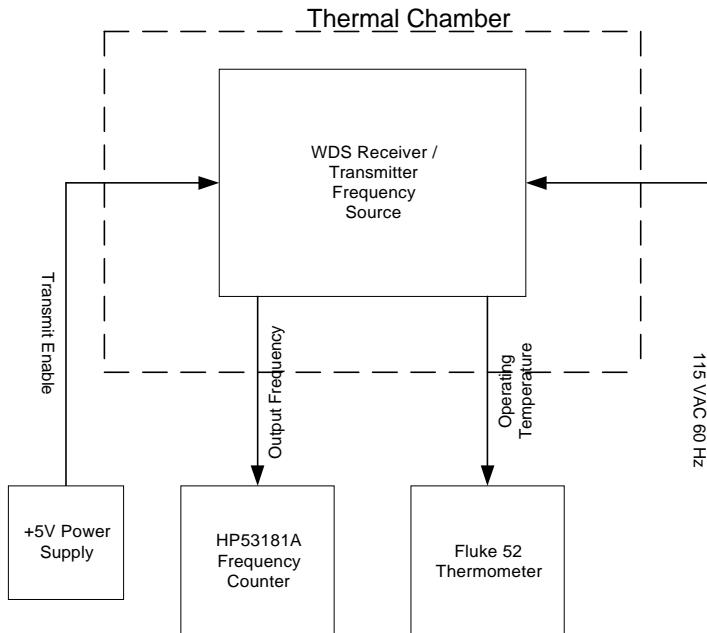
The objective of this test is to demonstrate transmitter frequency source stability over a range of ambient operating temperatures as specified in the Federal Communications Commission 47 FCR Ch. 1 Part 2.995 .

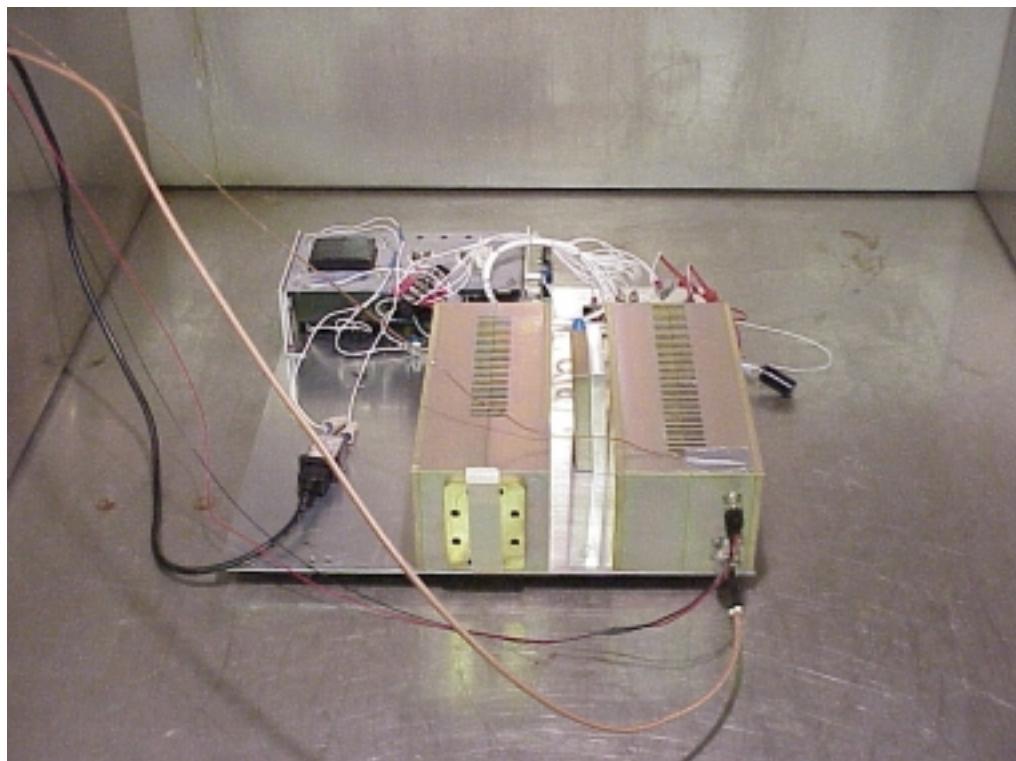
#### Approach

Frequency measurements shall be taken from the transmitter frequency source that is operating in temperature controlled thermal chamber. Frequency and temperature measurement devices and primary power shall reside outside the thermal chamber. Sufficient time shall be provided between each ambient temperature test so that thermal stabilization is achieved.

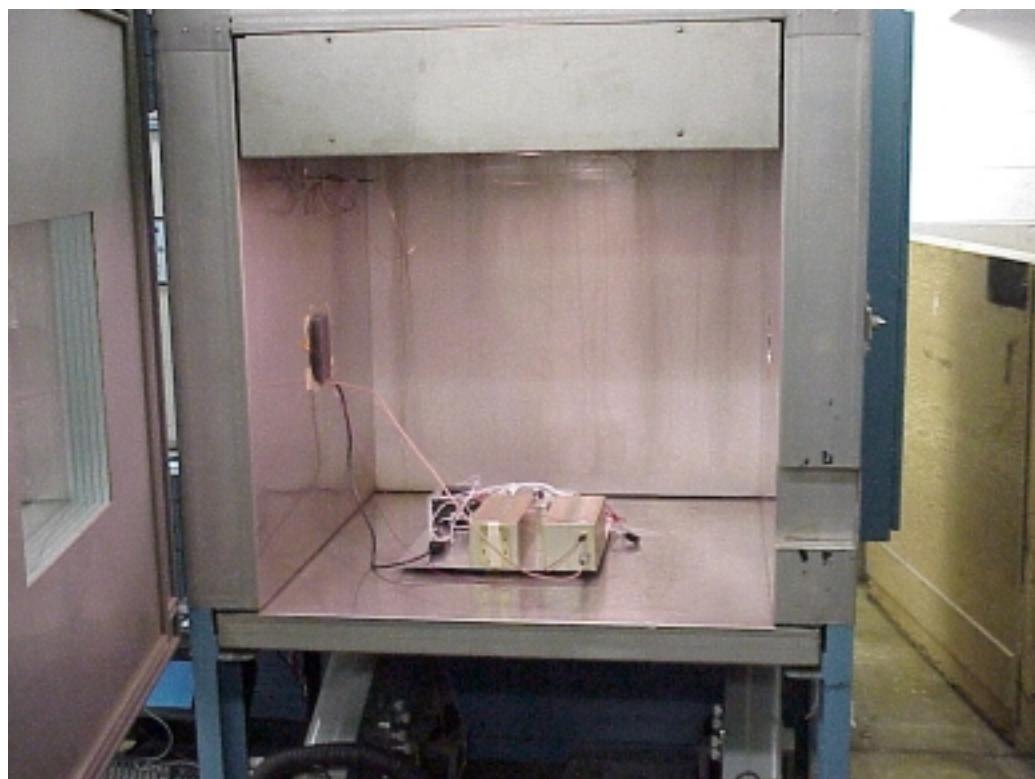
#### Test Configuration

**Figure 1 - Thermal Chamber Test Setup**





**Figure 2 – WDS Receiver/Transmitter Frequency Source Connections**



**Figure 3 – Thermal Chamber (inside)**



**Figure 4 – Thermal Chamber (outside)**



**Figure 5 – Measurement Equipment**

## **Test Equipment**

Transmitter Frequency Source – WDS Receiver  
Frequency Counter – HP 53181A  
Thermometer – Fluke 52  
AC Power Source – Standard 115 VAC - 60 Hz Power (from wall outlet)

## **Frequency Stability vs Ambient Temperature Test**

Frequency stability measurements shall be recorded as “average frequency” taken using the HP 53181A. This device has a mode that measures the statistical: mean, standard deviation, high and low of a frequency source over a period of time.

## Frequency Stability vs Ambient Temperature Test Results

Elapsed Time	Ambient Temperatures											
	0° C		10° C		20° C		30° C		40° C		50° C	
	Average Measured Frequency (Hz)	Meas Temp (°C)										
0 Min.	5,550,008,960	0.4	5,550,008,389	10.4	5,550,007,255	20.2	5,550,007,255	29.4	5,550,004,526	39.7	5,550,003,627	48.8
1 Min.	5,550,009,023	0.4	5,550,008,402	10.4	5,550,007,267	20.1	5,550,007,267	29.6	5,550,004,627	39.7	5,550,003,687	49.4
2 Min.	5,550,009,042	0.4	5,550,008,426	10.4	5,550,007,281	20.1	5,550,007,281	29.7	5,550,004,690	39.9	5,550,003,718	49.5
3 Min.	5,550,009,007	0.4	5,550,008,380	10.4	5,550,007,289	20.1	5,550,007,289	29.8	5,550,004,736	40.0	5,550,003,757	49.6
4 Min.	5,550,008,939	0.5	5,550,008,392	10.4	5,550,007,298	20.1	5,550,007,298	29.8	5,550,004,794	40.0	5,550,003,781	49.6
5 Min.	5,550,008,882	0.5	5,550,008,373	10.4	5,550,007,299	20.3	5,550,007,299	29.9	5,550,004,801	40.0	5,550,003,798	49.7
6 Min.	5,550,008,868	0.6	5,550,008,349	10.5	5,550,007,294	20.3	5,550,007,294	30.0	5,550,004,849	40.1	5,550,003,848	49.8
7 Min.	5,550,008,855	0.7	5,550,008,316	10.5	5,550,007,292	20.4	5,550,007,292	30.1	5,550,004,880	40.0	5,550,003,857	50.0
8 Min.	5,550,008,846	0.7	5,550,008,316	10.5	5,550,007,292	20.5	5,550,007,292	30.1	5,550,004,908	40.2	5,550,003,893	50.0
9 Min.	5,550,008,849	0.7	5,550,008,293	10.5	5,550,007,297	20.6	5,550,007,297	30.2	5,550,004,942	40.2	5,550,003,914	50.0
10 Min.	5,550,008,823	0.7	5,550,008,276	10.5	5,550,007,294	20.7	5,550,007,294	30.2	5,550,004,946	40.2	5,550,003,922	50.0