TELEPHONICS
A Griffon Company
815 Broad Hollow Rd., Farmingdale, New York 11735 (631) 755-7625 Fax: (631) 755-7046

This word document contains figures representing the FCC type acceptance test report for the Receiver Transmitter RT-1401A/RT-1301A. The RT-1401B is a minor change from the RT-1401A. The “B” version now supports a lowest range scale of 0.5 NM, DO-172 format beacons and remembers the present display range scale when switching through test. These figures are scanned images from the FCC type acceptance test report part number 4008849-0001, Revision B dated July 1976. It should be noted that those pages “Intentionally Left Blank” were not scanned and are therefore not included here.

REVISIONS				
LTR	DESCRIPTION	DATE	DR	CHECKED
A	Revised pages 9 thru 16. Added 1 additional page prior to release.	11/75	JH	JH
B	Added pages 30, 31, 32 relating this report also to type acceptance of RT-1301A, Per C.O. 31476	7/76	AV	JH

O.K. FOR MFG.
APR 2 6 1982

IDENTIFYING NUMBER	DESCRIPTION
4008849-0001	FCC TYPE ACCEPTANCE REPORT SHEET 2 THROUGH 32 NOTE: Document entitled "Report of Emission Test of Weather Radar Transmitter RT-1401A Serial Number E-2" and dated 10 June 1975 is part of this Type Acceptance Report. (sheets 17 thru 29)

The Bendix Corporation
Avionics Division
Fort Lauderdale, Florida

D O. Koch 8-19-75	C J. Hazlett 8-26-75	FCC TYPE ACCEPTANCE REPORT BENDIX TYPE RT-1401A AIRBORNE WEATHER RADAR TRANSMITTER-RECEIVER AND RT-1301A UNIT
A J. Hazlett 8-26-75	A [illegible] 8-26-75	

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BENDIX APPROVAL AND CERTIFICATION

This is to certify that based on the measurements included in this report, the Bendix Type RT-1401A Weather Radar complies with the requirements of the FCC Rules and Regulations, Part 2 and Part 87, under normal operation with the usual amount of maintenance. This technical data, having been taken under my supervision, is hereby certified

8/26/75
Date

N. Papanicolaou
Asst. Director of Engineering

CERTIFYING ENGINEER

I certify that the attached data was prepared by me and that to the best of my knowledge, the facts set forth were obtained by using good engineering practice and are true and correct.

8-26-75
Date

E. Natter

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1.0 GENERAL INFORMATION

1.1	Manufacturer	The Bendix Corporation Bendix Avionics Division 2100 N. W. 62nd Street Fort Lauderdale, Florida 33308
1.2	Bendix Type Number	RT-1401A
1.3	Service and Rule Part Under Which Equipment is Operated	Aviation Service: Vol. 5, Part 87 Vol. 2, Part 2

2.0 DESCRIPTION OF EQUIPMENT

2.1	Type of Emission	PO
2.2	Frequency Range	9375 MHz± 5 MHz
2.3	Power Rating	Peak: 10 KW ± 25%. Average: 4.15 W for 2.35 µsec pulse and 200 Hz PRF. 3.5 W for 0.5 µsec pulse and 800 Hz PRF.

2.4 Voltages Applied and Current Into Magnetron

	Cathode		Filaments
Voltage	5 KV	2.35 & 0.5 µsec Pulses	6.3 VDC
Current	5 A		1.5 A

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2.5 Function of Transmitting Magnetron Tube and Receiver Local Oscillators

2.5.1 Coaxial Magnetron

The 5 kv, 5 ampere output pulse received from the modulator is applied to the cathode of the coaxial magnetron (See figure 1). This drives the magnetron into oscillation producing a 9375 MHz, 10 kw peak power output signal.

As shown in figure 2, the coaxial magnetron utilizes alternate vane resonators which are slot-coupled to the stabilizing cavity surrounding the anode. The r-f current on the inner wall of the stabilizing cavity flows into slots of alternate resonators. This flow establishes a condition of zero phase between alternate resonators. Because of mutual flux linkage with slotted resonators, adjacent resonators are coupled 180° out of phase. This construction provides desirable field distribution for a selected frequency allowing unwanted operational modes to be easily suppressed. The stabilizing cavity changes the energy storage distribution in the magnetron so that approximately 10 percent of the total stored energy is in the resonators; the remainder is in the cavity. Because of the cavities large volume and low loss, the unloaded Q's are increased by order of magnitude, resulting in a decrease of the pushing and pulling factor of 3 to 5 times. The coaxial magnetron is less affected by external system changes which are a direct factor in both life and system performance. Coaxial magnetrons are not required to be reconditioned after being stored for several months as with conventional magnetrons.

The magnetron is designed for single-frequency operation. There is a factory fine tuning adjustment that sets the frequency to 9375.0 MHz ± 1.0 MHz.

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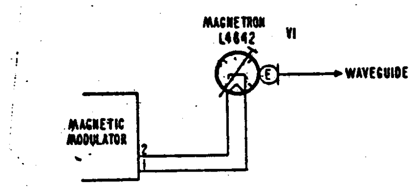
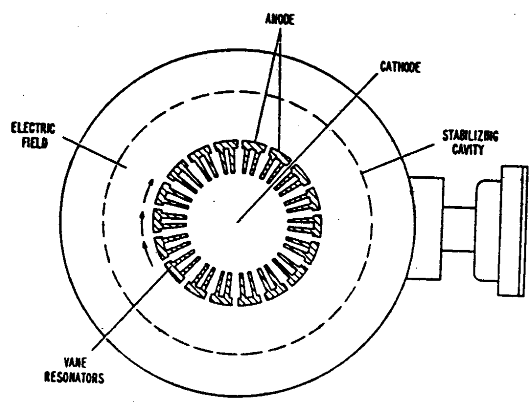


Coaxial Magnetron, Partial Schematic
Figure 1



Pictorial View of Coaxial Magnetron
Figure 2

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2.5.2 1st Local Oscillator

The local oscillator is a solid state X-band frequency source generating a 9401.6 ± 5 MHz output signal with a power of at least 5 milliwatts. The L.O. consists of a cavity stabilized Gunn diode which directly converts DC power to microwave energy. The output frequency is varied electrically by a cavity mounted varactor diode and mechanically by a screw providing for center frequency adjustment. It also contains a regulated power supply for the Gunn diode and requires a 1 to 13V input for varactor operation.

2.5.3 2nd Local Oscillator (Weather and Search channel)

The second local oscillator is a crystal controlled Colpitts oscillator operating at a frequency of 36.600 MHz and feeds the two mixer-amplifiers in the AFC and Receiver circuits.

2.5.4 2nd Local Oscillator (Beacon channel)

The second local oscillator is a crystal controlled Colpitts oscillator operating at a frequency of 156.6 MHz and feeds the double balanced mixer amplifier in the beacon subassembly.

2.6 Circuit Diagram & Photos of Internal Construction

These are included as separate attachments to this report.

3.0 TEST PROCEDURE AND DATA

3.1 RF Power Output

The power measurements were made after the RT-1401A had been aligned and tested for proper operation. A 30.5 db directional coupler and attenuator assembly plus a dummy load were connected to the waveguide output flange. A bolometer and RF power meter were used to measure the average power output.

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PRF = 200 HZ Pulse Width = 2.35 µsec

Pav. (measured) = 36.7 dbm = 4.67 Watts average

$$\text{Peak Power} = \frac{Pav}{PRF \times P.W.} = \frac{4.67}{200 \times 2.35 \times 10^{-6}} = 9.94 \text{ kw}$$

PRF = 800 Hz Pulse Width = 0.5 µsec

Pav. (measured = 34.9 dbm = 3.1 Watts average

$$\text{Peak Power} = \frac{Pav}{PRF \times P.W.} = \frac{3.1}{800 \times 0.5 \times 10^{-6}} = 7.8 \text{ kw}$$

Test Equipment Used:

- Power Meter HP431C
- Thermistor Mount HP478A, S/N F651129
- Calibrated Attenuator HPX752D, S/N 149-19739, Weinschel 210-10 S/N 630003
- Dummy Load Royal X720, S/N 109

3.2 Modulation Characteristics:

The RT-1401A is an unmodulated pulse transmitter. The pulse width was measured at the output flange of the waveguide. A crystal detector and oscilloscope were used to measure both the pulse width and PRF.

Pulse width at 50% points = 2.35µsec & 0.5µsec
Pulse repetition frequency = 200 HZ & 800 HZ

Test Equipment Used:

- Oscilloscope HP547, S/N 140-3-0125 and S/N 149-12714
- Crystal Detector HP420A, S/N 620029

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3.3 Bandwidth Occupied

Spectrum analysis was used to determine the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated would each be equal to 0.5 percent of the total mean power radiated. Spectrum analyzer chart recordings were made for both the 0.5 and 2.35 microsecond pulse modes. The area under the curve was measured. This area was subdivided to locate the points on both upper and lower frequency extremities beyond which 0.5% of the total power occured. The bandwidth between these points is the Occupied Bandwidth.

The results show a bandwidth of 1.86 MHz and 13.5 MHz for the 2.35μsec and 0.5μsec pulse modes respectively. Since the frequency of the magnetron is 9375 ± 5 MHz and the authorized band is 9300 MHz to 9500 MHz, it is evident that 99% of the power is contained within the bandwidth limits.

Equipment Used:

Spectrum Analyzer HP8551B
Chart Recorder, HP7005B

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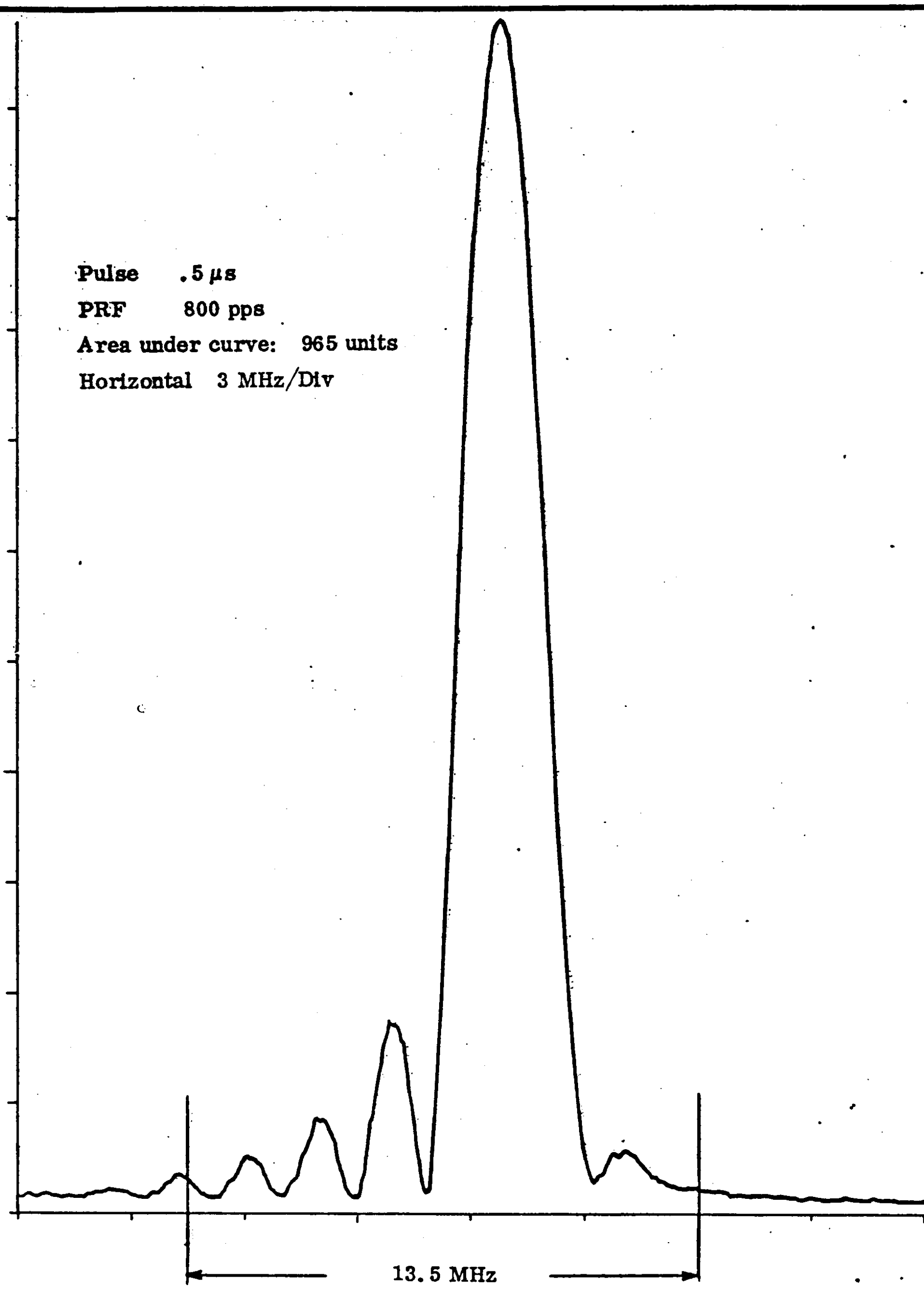

Figure 3, 0.5µsec Pulses

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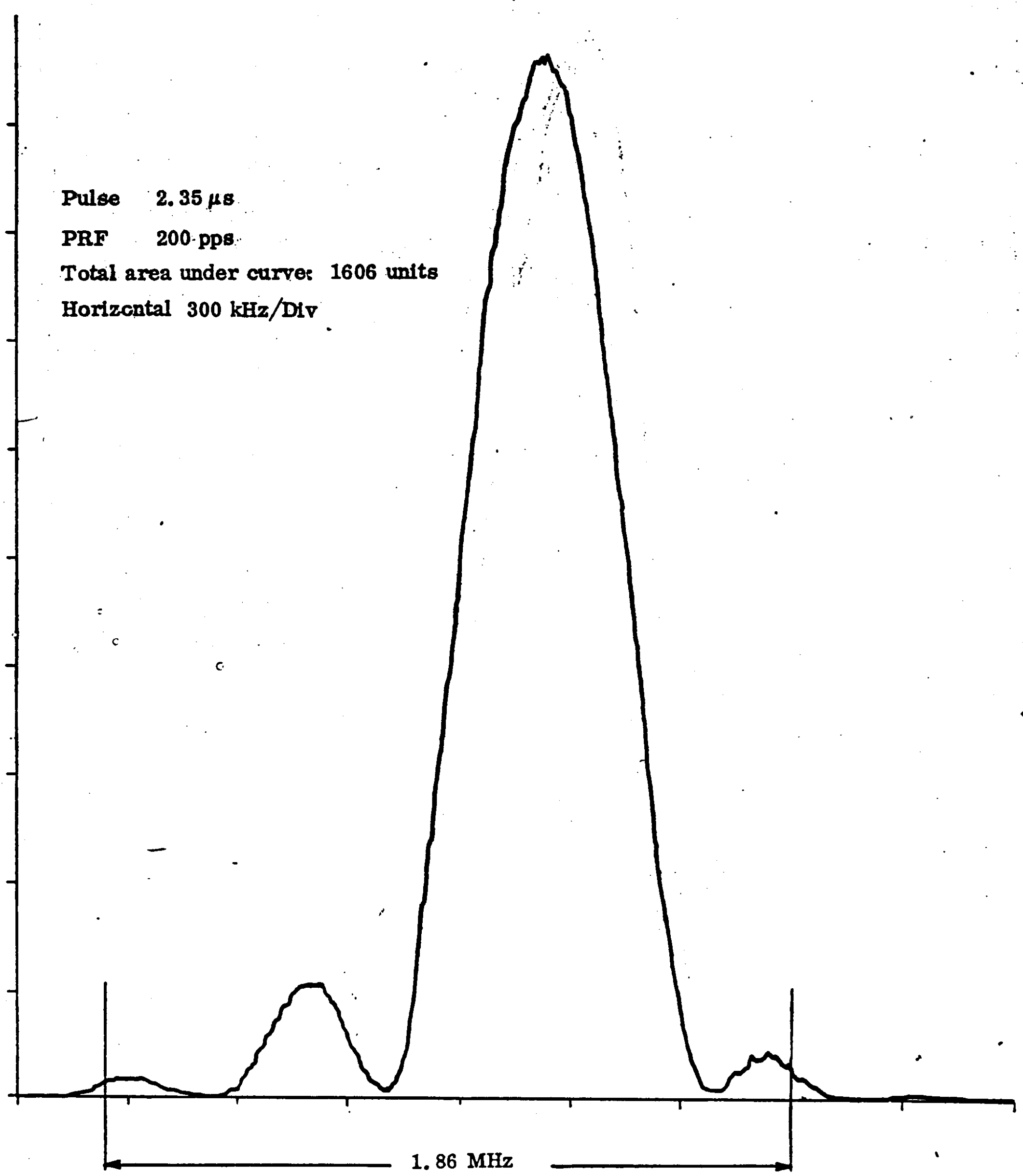

Figure 4
2.35 Microsecond Pulses

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3.4 **Spurious Emissions**

(1) Radio Frequency Voltage Measurements at the Antenna Terminals.
Refer to the attached document entitled:

Report of Emission Test
OF
Weather RADAR
Transmitter RT-1401A
Serial Number E-2

Dated 10 June 1975.

(2) Field Strength Measurements of Spurious Radiation

This test was run in accordance with the standards set down in RTCA Paper #DO-138. All measurements are in terms of peak values for pulsed equipment.

A calculated value had to be used as a reference level since it is impractical to measure the output power (i.e., electric field intensity) 12 inches from the antenna.

THUS $W = \frac{PT}{4\pi R^2}$

W = Power density in watts/m^2
P_T = Peak transmitted power in watts
R = Distance from antenna in meters

$W = \frac{9 \times 10^4}{4\pi(.09)}$ W/m^2

WHEN $P_T = 0.9 \times 10^4$ W
$R = 12'' = 0.3$m

$W = 8$ KW/m^2

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However, this is a far field equation which is only valid from 5.6m ($\frac{2D^2}{\lambda}$) to infinity. The region 30 cms (12") away from the antenna is in the Fresnel zone which extends from 25 cms to 5.6 m (i.e., 8λ to $\frac{2D^2}{\lambda}$) and calculations of the power density in this region show a reduction of 2.4 db below that calculated using the far field equation for a planar array antenna.

THEREFORE:

$$W = \frac{8000}{1.74} \text{ w/m}^2 = 4600 \text{ w/m}^2$$

but $W = \frac{E^2}{Z}$ where $Z = 120\pi$, & E = Electric field intensity in V/m

THEREFORE:

$$E = WZ$$

$$= 4600 \times 120\pi$$

$$E = 1310 \text{ V/m}$$

$$E = 1.31 \times 10^9 \mu\text{V/m}$$

$$E = 182 \text{ db above } \mu\text{V/m}$$

Dividing by the spectrum bandwidth of $\frac{1}{\tau}$:

$$\tau = .5\mu s,\ E_1 = \frac{1.31 \times 10^9}{2} \mu\text{V MHz/m} = 0.65 \times 10^9 \mu\text{V MHz/m}$$

or 176 db above one μV MHz/m

$$\tau = 2.35\mu s, E_2 = \frac{1.31 \times 10^9}{.425} = 3.1 \times 10^9 \mu\text{V MHz/m}$$

or 190 db above one μV MHz/m

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The authorized frequency band is 9.3 GHz to 9.5 GHz. From 50% to 100% of the authorized bandwidth each side of the transmitter the emission has to be 25 db below the above determined reference levels.

The emission has be be 35 db below the above reference levels between 100% to 250% of the authorized bandwidth on either side of the transmitted frequency.

Any emissions removed from the assigned frequency by more than 250% of the authorized bandwidth are to be attenuated from the reference levels by not less than 43 + 10 log (fundamental mean power output in watts).

We thus establish as limits that any emissions outside the frequency range 9175 MHz to 9375 MHz are required to be attenuated from the reference levels by not less than 43 + 5.5 db = 48.5 db. The amplitude of spurious emissions which are more than 68.5 db below the reference levels are not reported.

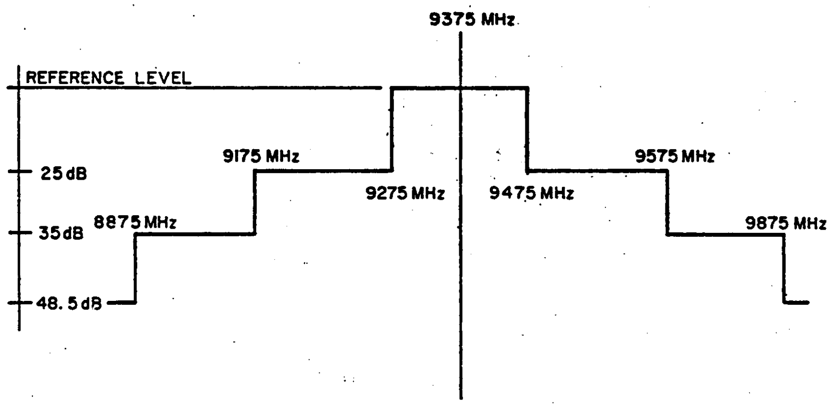

Figure 5, Emission Limitations

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Since the reference levels calculated above = 176 db (τ = .5μs) and 190 db (τ = 2.35μs) above 1 μV/MHz/m, the maximum amplitude of spurious emission is given by 176 − 48.5 = 127.5 db above 1 μV/MHz/m for τ = .5μs and 190 − 48.5 = 141.5 db above 1 μV/MHz/m for τ = 2.35μs.

Measurements were made from 90 kHz through 10G Hz using the equipment listed below. No spurious emissions of amplitude greater than 74 db above 1 μV/MHz/m were measured.

Equipment Used:

1)	Monitor Unit	- Polarad Electronics Corp.	FIM-B
2)	Power Unit	- Polarad Electronics Corp.	FIM-P
3)	Tuning Units	- Polarad Electronics Corp.	FIM-L, FIM-M, FIM-S, FIM-X
4)	Directive Antennas & Reflectors	- Polarad Electronics Corp.	CA-L, CA-M, CA-S, CA-X, CA-B
5)	Antenna Tripod	- Polarad Electronics Corp.	CA-T
6)	Field Intensity Meter	- Empire Devices	NF105
7)	Tuning Units	- Empire Devices	TA-NF105, TI-NF105, T2-NF105, T3-NF105
8)	Switching Unit	- Empire Devices	SU-105
9)	Dipole Antennas	- Empire Devices	DM105-T1, DM105-T2, DM105-T3
10)	Vertical Antenna	- Empire Devices	VA-105

3.5 Frequency Stability

The following measurements were made in order to determine the frequency change with temperature and line voltage variations as specified below. After each change in temperature or line voltage, the frequency was allowed to stabilize before measurements were made.

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(1) Line Voltage Variations

%	-15%	Nominal	±15%
V	+24 VDC	+28 VDC	+32 VDC
F	9375.9 MHz	9375.9 MHz	9375.9 MHz

$\Delta F_1 = 0$ MHz $\Delta F_2 = 0$ MHz

(2) Temperature Variations

T	F (2.35μsec Pulse)	F (0.5μsec Pulse)
-40°C	9377.24 MHz	9377.64 MHz
-30°C	9376.94 MHz	9377.32 MHz
-20°C	9376.617 MHz	9377.158 MHz
-10°C	9375.878 MHz	9376.35 MHz
0	9375.013 MHz	9375.59 MHz
+10°C	9374.58 MHz	9375.03 MHz
+20°C	9373.77 MHz	9374.33 MHz
+30°C	9373.38 MHz	9373.89 MHz
+40°C	9372.49 MHz	9372.93 MHz
+50°C	9372.01 MHz	9372.36 MHz
+60°C	9371.36 MHz	9371.44 MHz
+70°C	9370.88 MHz	9370.77 MHz

The linearized Thermal Coefficient of Frequency is:

$$\frac{\Delta F\ (\text{total})}{\Delta T} = \frac{6.87\ \text{MHz}}{110^\circ\text{C}} = -62.45\ \text{kHz}/^\circ\text{C}$$

In order to prove that the maximum emission will not approach closer than 1.5/T MHz to the edge of the authorized frequency band, as specified in Vol. 5, Part 87.65(d) of the FCC Rules and Regulations, it is necessary to add all factors which may shift the frequency of maximum emission from its nominal frequency of 9375.0 MHz.

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Center frequency tolerance	+1.0 MHz	-1.0 MHz
Maximum Δ F for temperature	+3.75 MHz	-3.12 MHz
Maximum Δ F for line voltage	+0.0 MHz	-0.0 MHz
	+4.75 MHz	-4.12 MHz

The authorized frequency band is 9300 MHz to 9500 MHz. With a nominal frequency of 9375 MHz, the frequency of maximum emission must be from 9300.44 MHz to 9499.56 MHz. The data above shows that the frequency of emission will be within the limits.

Equipment Used:

Radar Test Set - Aeromotive Equipment Co., X-Band Model 7201, S/N 326
Transfer Oscillator - Hewlett Packard, Model 540B, S/N 129-02491

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Report of
Emission Test
of
Weather RADAR
Transmitter RT-1401A
Serial Number E2

10 June 1975

Prepared by:

J. E. Pratt
EMC Engineering Section
Engineering Services
Department 773

Bendix Field
Engineering Corporation
9250 Route 108
Columbia, Maryland 21045

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1. INTRODUCTION AND ABSTRACT

This document presents a description of the tests performed and the results obtained in FCC type-acceptance tests performed on Weather RADAR Transmitter RT-1401A, serial number E2. This unit was tested to determine compliance with FCC Rules and Regulations, Vol. II, Part 2, paragraph 2.579 (d), and Vol. V, Part 87, paragraph 87.71 (3). The tests performed indicate that no emissions removed by more than 250% of the transmitter bandwidth from the fundamental frequency other than the 2nd Harmonic were present. Harmonic emissions above the 2nd if present were below the detector sensitivity of the measurement system. The measurement system was of sufficient sensitivity to assure harmonic attenuation from the fundamental amplitude to satisfy the requirements of the applicable paragraphs of the FCC Rules and Regulations.

2. REFERENCES

FCC Rules and Regulations

Volume II, Part 2, paragraph 2.579 (d)

Volume V, Part 87, paragraph 87.71 (3)

3. TEST SAMPLE

The test sample was one Receiver/Transmitter Unit of Weather Radar Set Model RDR-1400, number E2, manufactured by Bendix Avionics Division, Ft. Lauderdale, Florida. The following nominal data apply to the test sample:

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	Search	Weather
Pulse Width (us):	.5	2.35
PRF:	800	200
Occupied Bandwidth:	15.5 MHz	3.2 MHz

The following data were measured at the time of the test:

	Search	Weather
Average Power Output:	35.2dBm	36.7dBm
Fundamental Frequency:	9375.0 MHz	

4. TEST AGENCY, DATE, AND LOCATION

The test reported herein was performed by Bendix Field Engineering Corporation, Columbia, Maryland on the 14th and 15th of May 1975. The test was performed in an open area at the Bendix Field Engineering Headquarters facility.

5. TEST EQUIPMENT

The test equipment employed is listed in Table 1. All equipment employed was in current calibration, as applicable, traceable to the National Bureau of Standards.

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Table 1 Test Equipment

Equipment Name	Manufacturer	Model	Serial Number
Spectrum Analyzer	Hewlett-Packard	851/8551-B	247/163
Antenna	Empire Devices	AT-112	285
Antenna	Polarad	K	114
Antenna	Polarad	Ka	114
Signal Generator	Hewlett-Packard	620A	01726
Signal Generator	Hewlett-Packard	626A	01390
Mixer	Hewlett-Packard	11517A	None
Frequency Doubler	Hewlett-Packard	940A	324
Power Meter	Hewlett-Packard	431C	00834
Frequency Doublcr	Hewlett-Packard	938A	311

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6. LIMITS

In accordance with the provisions of the paragraphs of the FCC Rules and Regulations referenced above, a limitation upon the amplitude of undesired emissions from equipment operation at an assigned frequency above 30 MHz is established. All emissions removed from the assigned frequency by more than 250% of the authorized bandwidth are to be attenuated from the fundamental amplitude by not less than 43 + 10 log (fundamental mean power output in watts). From the nominal data of paragraph 3 above we calculate 250% of occupied bandwidth to be 38.75 MHz for the Search Mode and 8 MHz for the Weather Mode. From the measured data of paragraph 3 above we determine the operating frequency to be 9325.0 MHz and the mean output power to be 5.2 dBw for the Search Mode and 6.7 dBw for the Weather Mode. We thus establish as limits that any emissions outside the frequency of 9355.625 MHz to 9394.375 MHz (9375 ±19.375 MHz) for the Search Mode and 9371 MHz to 9379 MHz (9375 ±4 MHz) for the Weather Mode are required to be attenuated from the fundamental amplitude by not less than 48.3 dB (43 + 5.3) for the Search Mode and 49.8 dB (43 + 6.8) for the Weather Mode.

7. MEASUREMENTS PERFORMED AND RESULTS OBTAINED

The test sample was set up on an equipment cart in an open area and operating power was supplied to it by cable from a motor generator in a van approximately 40 feet away. Receiving antennas were aligned with the transmitting antenna for each measurement and were located a distance of 33 feet from the transmitting antenna. The receiving antennas are indicated in Table 1 above. The transmitting antenna was a waveguide horn antenna which was

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connected to the RADAR transmitter through a directional coupler. A power meter (HP Mod. 431C) was connected to the forward power sampling port of the directional coupler and was monitored during the tests to indicate proper operation of the test sample. No variation in transmitter output power in excess of 0.1 dB was indicated throughout the test period.

All measurement equipment other than the antennas and the mixers were located within the BFEC Shielded Mobile Laboratory which was positioned at a convenient location behind the receiving antennas. All measurements were made by the direct signal substitution technique. Calibrated substitution signals were injected into the measurement system at the antenna end of the cable connecting the antennas with the measurement receiver, thus eliminating cable loss from the calculations relating substitution signal amplitude to the test sample emission amplitude.

The measurement receiver system consisted on the HP Spectrum Analyzer and external mixer connected to calibrated antennas. The HP signal generators and doublers were used to provide the calibrated substitution signals. Then outputs were checked with the power meter.

The initial measurement was a determination of the radiated field intensity of the transmitter fundamental. This test setup is shown in Figure 1. The results of this measurement are shown below:

	Search	Weather
Calibrated substitution signal level (dBuV):	154	158
AT-112 antenna factor @ 9375.0 MHz (dB):	25.4	25.4
Radiated Field Intensity at Fundamental (dBuV):	179.4	183.4

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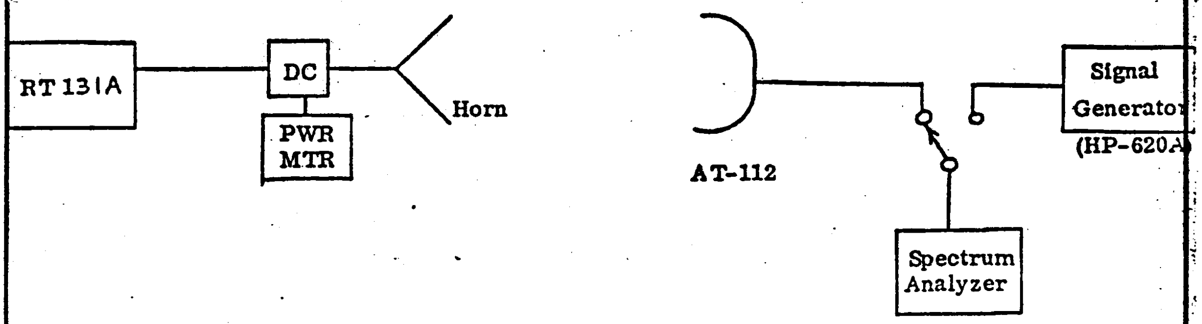
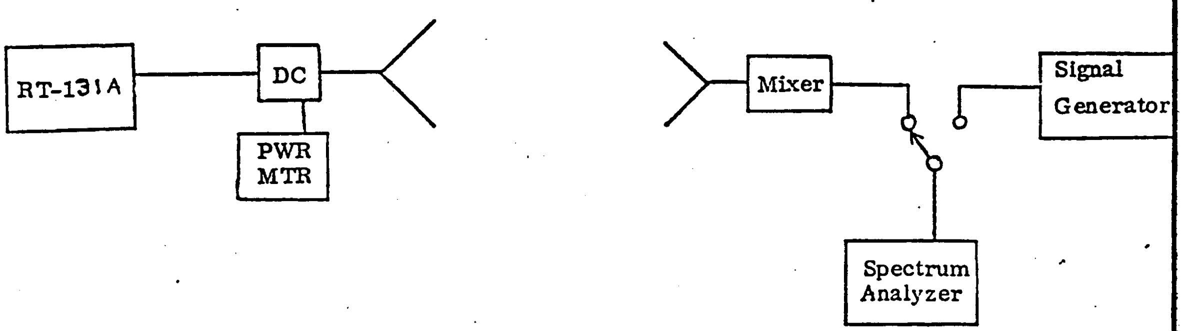


Figure 1 Fundamental Measurements Set-up



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Next, measurements were made of the field intensities of the harmonic emissions of the test sample, and these field intensities are related back to the harmonic amplitude to fundamental amplitude ratio at the transmitter output.

The square of the electric field intensity sought, divided by the impedance of free space is equal to the power density at the receiving antenna:

$$\frac{E^2}{120\pi} = \frac{4\pi Pr}{G_r G_t \lambda^2}$$

The additional factor, G_t, is the gain of the transmitting antenna relative to its gain at the fundamental frequency and is included so that the ratios obtained will indicate the ratio of amplitudes at the transmitter output port rather than the ratios in space.

The equation above may be rewritten:

$$E^2 = \frac{P_r (480\pi^2)}{G_r G_t \lambda^2}$$

Now, $\lambda = \frac{3 \times 10^2}{f}$, when f is express in MHz and λ in meters.

Therefore, $\lambda^2 = \frac{9 \times 10^4}{f^2}$. Reducing to logarithmic notation we have: 2 log λ = 4.954-2 log f. Multiplying by 10 to express the ratio in decibels we have: 20 log λ = 49.54-20 log f.

Further reducing to logarithmic notation we find:

$$\log (480 \pi^2) = 3.676$$

It will also be noted that the calibration signal generators and the receiving system constitute a constant impedance (50 Ω) system. Therefore, it is possible to express the received power in terms of a voltage across 50 Ω.

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Therefore, expressing all ratios in decibels and combing terms we have:

$$E - E_r - G_r G_t + 20 \log f - 29.78$$

We may now proceed to determine the ratio between the harmonic energy and the fundamental energy at the transmitter output port.

Second Harmonic

f	=	18750.0 mHz
20 log f	=	85.5 dB
G_r	=	16.9 dB
G_t	=	6.0 dB
E_r (Search)	=	77 dB/uV
E_r (Weather)	=	92 dB/uV
E_2 (Search)	=	77 -16.9 -6.0 -29.78 +85.5 = 109.82 dB/uV
$E_f - E_2$ (Search)	=	179.4 -109.82 = 69.58 dB
E_2 (Weather)	=	92 -16.9 -6.0 -29.78 +85.5 = 124.82 dB/uV
$E_f - E_2$ (Weather)	=	183.4 -124.82 = 59 dB

The 2nd harmonic is 69.58 dB below the fundamental for the Search Mode and 59 dB below for the Weather Mode.

Third Harmonic

f	=	28125.0 MHz
20 log f	=	89.0 dB
G_r	=	17.6 dB
G_t	=	9.0 dB
E_r (Search & Weather)	=	74 dB/uV (sensitivity - no 3rd harm. detected)

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E_3	=	74 -17.6 -9.0 -29.78 +89.0 = 106.62 dB/uV
E_f (Search) - E_3	=	179.4 -106.62 = 72.78 dB
E_f (Weather) - E_3	=	183.4 -106.62 = 76.78 dB

The third harmonic is 72.78 dB or more below the fundamental for the Search Mode and 76.78 dB for the Weather Mode.

Fourth Harmonic

f	=	37500.0 MHz
20 log f	=	91.5 dB
G_r	=	20.0 dB
G_t	=	12.0 dB
E_r (Search & Weather)	=	74 dB/uV (sensitivity - no 4th harmonic detected)
E_4	=	74 -20.0 -12.0 -29.78 +91.5 = 103.72 dB/uV
E_f (Search) -E_4	=	179.4 -103.72 = 75.68 dB
E_f (Weather) -E_4	=	183.4 -103.72 = 79.68 dB

The fourth harmonic is 75.68 dB or more below the fundamental amplitude for the Search Mode and 79.68 dB for the Weather Mode.

The frequency range from 1000 MHz to 15,000 MHz was carefully scanned for the presence of spurious emissions of the test sample RADAR transmitter. It is therefore concluded that no emissions other than the fundamental and 2nd harmonic emanated from the test sample.

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TELEPHONICS
A Griffon Company
815 Broad Hollow Rd., Farmingdale, New York 11735 (631) 755-7625 Fax: (631) 755-7046

1973

This form may be reproduced ONLY in accordance with the requirements on reverse side of this application.

United States of America
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

APPLICATION FOR TYPE ACCEPTANCE

Instructions:
1. Application must be accompanied by filing and grant fees as required by Section 1.1120 of FCC Rules. Use separate FCC Form for each Type Number.
2. Submit *one copy*, together with all data required by Part 2 of FCC Rules applicable to type acceptance to: Federal Communications Commission Washington, D. C. 20554

(1) Name of applicant: BENDIX CORP., AVIONICS DIVISION	(2) Amount of Fees Attached $200. 00
(3) Address of applicant: *(number, street, city, state, ZIP Code)* 2100 N. W. 62nd Street P. O. Box 9414 Ft. Lauderdale, Florida 33310	
(4) (a) Identifying name (logo) on equipment: *(If different from name of applicant in item (1) above)* N/A	
(b) Type Number of equipment: RT-1401A	(c) Model number of associated Receiver: *(If any)* Same
(d) If a receiver requiring certification pursuant to Part 15, Section 15.69 of the Commission's Rules is provided as part of this equipment, has application for such certification (FCC Form 722 required) been submitted? ____ Yes ____ No X Not Applicable	
(5) Type acceptance is requested for use under the following Part(s) of the Rules: 87	
(6) Equipment specifications:	
(a) Frequency range: 9300 – 9500 MHz Magnetron Design Center 9375 MHz	(b) Rated power output: *(if variable give range)* 10KW ± 25% Peak
(c) Power input to final RF amplifier: *(if applicable)* 5000 vdc, 5 Amps, 2. 35µsec & 0. 5µsec Pulses	(d) Rated frequency tolerance: ± 5 MHz
(e) Emission designator(s): Po	(f) Use of this equipment: *(i.e. ship station, aviation, FM broadcast, etc.)* Aviation

All the statements made in this application and the attached exhibits (to , inclusive) are considered material representations, and all exhibits are a material part hereof and are incorporated herein as if set out in full in this application. The statements in this application are true, complete, and correct to the best of my knowledge and belief and are made in good faith.

APPLICATION MUST BE SIGNED AND DATED

BENDIX CORP., BENDIX AVIONICS DIVISION
Name of Applicant (Must agree with name as shown in item 1)

T. P. Mullinix — Aug. 27, 1975
Signature — Date (Mo.-Day-Yr.)

T. P. Mullinix, Manager, Systems Engineering
Name and title of signer (print or type)

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND IMPRISONMENT, U. S. CODE, TITLE 18, SECTION 1001.

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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D. C. 20554

GRANT OF TYPE ACCEPTANCE

Bendix Corporation
Avionics Division
2100 N. W. 62nd St.
P. O. Box 9414
Ft. Lauderdale, Florida 33310

Attention: Mr. T. P. Mullinix

Re: Application dated August 27, 1975

Name of grantee Bendix Corp./Avionics Division

Equipment Type Number RT-1401A

Pursuant to the above referenced application, TYPE ACCEPTANCE of the equipment specified IS HEREBY ISSUED to the above-named GRANTEE for use under the Commission's Rules and Regulations as shown herein.

DATE OF GRANT: November 24, 1975

Note(s)	Rule(s) Part Number(s)	Frequency Range (MHz)	Input Watts	Output Watts	Frequency Tolerance	Emission
-	87	9300-9500	-	10000	-	13500P0

Remarks:

W 471 766
FFC/AMG

FEDERAL COMMUNICATIONS COMMISSION

SIZE	CODE IDENT NO.	DRAWING NUMBER
A	27914	4008849
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FORM 1033-1

TELEPHONICS
A Griffon Company
815 Broad Hollow Rd., Farmingdale, New York 11735 (631) 755-7625 Fax: (631) 755-7046

Bendix

Avionics
Division

Federal Communications Commission
Technical Division
Office of the Engineer
Washington, D. C. 20554

February 13, 1976

Attention: Mr. Vincent Mullins, Secretary

Gentlemen:

Enclosed find FCC Form 723 requesting Type Acceptance of our RT-1301A Radar Transmitter, a component of our RDR-1300 Weather Radar System.

The following are also enclosed:

- Name Plate Identification Drawing
- Data Sheet on Frequency Stability
- ~~Outline Drawing #4000088 (2 Sheets)~~
- Schematic of RT-1301A Main Frame Schematic showing differences from RT-1401A (#4000931)
- One check covering required fee ($200.00)

A new type number was assigned to this unit primarily for marketing purposes. The unit is electrically and mechanically identical to the RT-1401A except for deletion of the Beacon Amplifier and substitution of a magnetron with less stringent frequency tolerances. The characteristics of this magnetron are well known, having been used in our RT-1201A Type Accepted unit. All data, schematics and photos submitted with the RT-1401A are equally applicable to the RT-1301A except deletion of the Beacon Amplifier from the Main Frame indicated on the submitted data herein.

We consider the changes to be Class I permissive changes as outlined in paragraph 2.1001, Part 2, Vol. 2 of the FCC Rules and therefore not requiring data resubmission. The only exception is Frequency stability of the transmitting tube which we consider to be a Class II permissive change and data is therefore supplied with this application.

Very truly yours,

T.P. Mullinix

T. P. Mullinix
Manager, Systems Engineering

TPM:av
Enclosures

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FORM 1033-1

United States of America
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

This Form may be reproduced ONLY in accordance with the requirements on reverse side of this application.

APPLICATION FOR TYPE ACCEPTANCE

Instructions: 1. Application must be accompanied by filing and grant fees as required by Section 1.1120 of FCC Rules. Use separate FCC Form for each Type Number.
2. Submit one copy, together with all data required by Part 2 of FCC Rules applicable to type acceptance to: Federal Communications Commission
Washington, D. C. 20554

(1) Name of applicant: BENDIX CORP., AVIONICS DIV.

(2) Amount of Fees Attached: $ 200.00

(3) Address of applicant (number, street, city, state, ZIP Code):
2100 N.W. 62nd Street
P. O. Box 9414
Fort Lauderdale, Florida 33310

(4) (a) Identifying name (logo) on equipment: (if different from name of applicant in item (1) above) N/A

(b) Type Number of equipment: RT-1301A

(c) Model number of associated Receiver: (if any) SAME

(d) If a receiver requiring certification pursuant to Part 15, Section 15.69 of the Commission's Rules is provided as part of this equipment, has application for such certification (FCC Form 722 required) been submitted? ___ Yes ___ No X Not Applicable

(5) Type acceptance is requested for use under the following Part(s) of the Rules: 87

(6) Equipment specifications:

(a) Frequency range: 9300–9500 MHz, Magnetron Design Center 9345 MHz

(b) Rated power output: (if variable give range) 10 KW ±25% Peak

(c) Power input to final RF amplifier: (if applicable) 5000 Vdc, 5 Amps, 2.35µsec & 0.5µsec Pulses

(d) Rated frequency tolerance: ±30 MHz

(e) Emission designator(s): Po

(f) Use of this equipment: (i.e. ship station, aviation, FM broadcast, etc.) Aviation

All the statements made in this application and the attached exhibits (to , inclusive) are considered material representations, and all exhibits are a material part hereof and are incorporated herein as if set out in full in this application. The statements in this application are true, complete, and correct to the best of my knowledge and belief and are made in good faith.

APPLICATION MUST BE SIGNED AND DATED

Bendix Corp., Avionics Division
Name of Applicant (Must agree with name as shown in item 1)

T.P. Mullinix (signature) — Feb 13 1976
Signature — Date (Mo.-Day-Yr.)

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND IMPRISONMENT, U.S. CODE, TITLE 18, SECTION 1001.

T. P. Mullinix, Manager, Systems Engineering
Name and title of signer (print or type)

Applicant should not use this block

Accounting Classification 079

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FCC Form 723-A
October 1975

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D. C. 20554

GRANT OF TYPE ACCEPTANCE

Bendix Corp., Avionics Div.
2100 N. W. 62nd St.
P. O. Box 9414
Fort Lauderdale, Florida 33310

Attention: Mr. T. P. Mullinix

Re: Application dated February 13, 1976

Name of grantee Bendix Corp., Avionics Div.

Equipment Type Number RT-1301A

Pursuant to the above referenced application, TYPE ACCEPTANCE of the equipment specified IS HEREBY ISSUED to the above-named GRANTEE for use under the Commission's Rules and Regulations as shown herein.

DATE OF GRANT: April 7, 1976

Note(s)	Rule(s) Part Number(s)	Frequency Range (MHz)	Input Watts	Output Watts	Frequency Tolerance	Emission
	87	9300-9500		10,000	–	13500P0

Remarks:

W 534 210-
C-3

FEDERAL
COMMUNICATIONS
COMMISSION

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