

SH |  
DWG NO.

FOR HONEYWELL REFERENCE:	
DPA NO.	
PRODUCT LINE NO.	
AW/PS ANALYSIS EB	
APPLICATION	
NEXT ASSY	USED ON (SYS)

REVISIONS  
FOR REVISION RECORD, SEE LAST SHEET.

**REPORT OF TEST  
ON HONEYWELL INC.**

**RCZ-851B TRANSPONDER TRANSMITTER FOR FCC TYPE ACCEPTANCE**

**MANUFACTURED AND TESTED**

**BY**

**HONEYWELL, INC.**

**COMMERCIAL FLIGHT SYSTEMS GROUP**

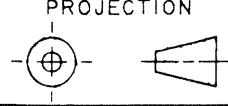
**Prepared By:**

**Approved By:**

*R. Doyle* 19 Feb 1992  
R. Doyle  
 Test Engineer

*R. Fuller* 2-20-92  
R. Fuller  
 Engineering Section Head

**DATE: February, 1992**

OPERATIONAL NOTE																
REF DWG																
ITEM CODE (PER EB699384)	CONTRACT	52	51	50	49	48	47	46	45	44	43	42	41	40	REV SHEET	INDEX
INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M-1982. UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES; TOLERANCES: ANGLES ± 2 PL DEC ± 3 PL DEC ±	DRAWN BY DATE	39	38	37	36	35	34	33	32	31	30	29	28	27	REV SHEET	INDEX
	DESIGNED BY DATE	26	25	24	23	22	21	20	19	18	17	16	15	14	REV SHEET	INDEX
	CHECKED BY DATE	13	12	11	10	9	8	7	6	5	4	3	2	1	REV SHEET	INDEX
	APPROVED FOR MFG DATE															
THIRD ANGLE PROJECTION 	APPROVED FOR QE DATE															
DWG CLASS	APPROVED FOR ENGRG DATE															
FIRST USED ON	APPROVED FOR ENGRG DATE															
	APPROVED FOR DATE															
TITLE		<b>FCC TYPE ACCEPTANCE TESTING OF THE HONEYWELL RCZ-851B</b>														
SIZE	FSCM NO.	DRAWING NO.										REV				
A		A-27-5890-015-00														
SCALE	UNIT WT	SHEET										OF	43			

RUNING 40-21

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SECTION I

INTRODUCTION

This report consists of data establishing the conformance of the Honeywell Inc. RCZ-851B to the requirements established by the Federal Communications Commission in its rules and regulations (as referenced in Section II of this paper).

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SECTION II

REFERENCES AND ATTACHMENTS

1.0 References

Code of Federal Regulations, Title 47

Part 2, Subpart J

Part 87, Subpart D

2.0 Attachments

Circuit Card Assembly - Receiver 7517440-901

Circuit Card Assembly - Interface 7517410-901

Circuit Card Assembly - Processor 7517420-901

Circuit Card Assembly - Power Supply / Modulator 7517470-901

Circuit Card Assembly - Transmitter 7517460-901

Integrated Test Specification for the XS-852 Diversity Mode S Transponder Transmitter CCA IT7517460

Outline and Installation, RCZ-850/851 and MT-852 7510706

Interconnect Diagram, Communications Unit 7510708

Plate, Identification 7500425-16

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SECTION III

TEST CERTIFICATION

I do hereby certify that to the best of my knowledge the technical test data contained in this report are true and correct.

SIGNED: Robert S Doyle 19 Feb 1992

TEST ENGINEER

TEST ENGINEER QUALIFICATION

Robert S. Doyle

1981 B.S.E.E. Pennsylvania State University

10 Years Experience In Commercial Avionics

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SECTION IV

GENERAL INFORMATION

1.0 TYPE DESIGNATION

The equipment has been designated by Honeywell Inc., Commercial Flight Systems Group, as Mode S Transponder, RCZ-851B.

2.0 SERVICE AND RULE FOR INTENDED OPERATION

Air Traffic Control

Part 87, Subpart A

3.0 DESCRIPTION OF EQUIPMENT

- 3.1 Type of Emission: 18MOP1D
- 3.2 Frequency Range: 1090 ± 1 MHz
- 3.3 Power Rating: 250 Watts Minimum, (Pulse)
- 3.4 Final Power Amplifier: Solid State Class C amplifier using an MRF10500 silicon bipolar transistor.

3.5 Transistor Functions:

<u>Function</u>	<u>Transistor</u>	<u>Manufacturer</u>
Oscillator	NE02135	NEC
Buffer Amplifier	CGY-50	Siemans
Buffer Amplifier	CGY-50	Siemans
Class AB Amplifier	SD8258-01	Thomson
Class C Amplifier	SD8259-01	Thomson
Class C Amplifier	MSC80158	Thomson
Class C Amplifier	AM1011-75	Thomson
Final Amplifier	MRF10500	Motorola
Pulse Modulator	IRFR220	International Rectifier

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Envelope Modulator IRFR9220 International Rectifier

Voltage Regulator IRF9540 International Rectifier

3.6 Circuit Diagram:

See attached schematics.

3.7 Instruction Book:

To Be Supplied As Soon As Possible

3.8 Tune-Up Procedure:

No field tuning is normally required. Tuning is done during manufacturing using subassembly test. See IT7517460.

3.9 Oscillator Circuit:

The carrier frequency of 1090.0 MHz is generated by a varacter-tuned oscillator located on the Transmitter board. The primary frequency determining element is a ceramic coaxial resonator which provides good temperature stability and noise performance. The output of the oscillator is buffered by a Monolithic Microwave Integrated Circuit (MMIC) amplifier. This 1090 MHz RF signal is divided in frequency by 128 to 8.515625 MHz where it is compared in frequency and phase to a 8.515625 MHz crystal controlled reference oscillator. Any frequency or phase error is amplified by an active loop filter and corrections to the 1090 MHz oscillator are made by varying the varacter tuning voltage.

3.10 Frequency Stabilization:

Single channel phase-locked-loop synthesizer referenced to a crystal oscillator.

3.11 Modulation Limiting:

Not applicable

3.12 Radiated Interference Suppression:

Transmitter low-pass filter consisting of microstrip printed circuit elements (See Transmitter Schematic 7517460).

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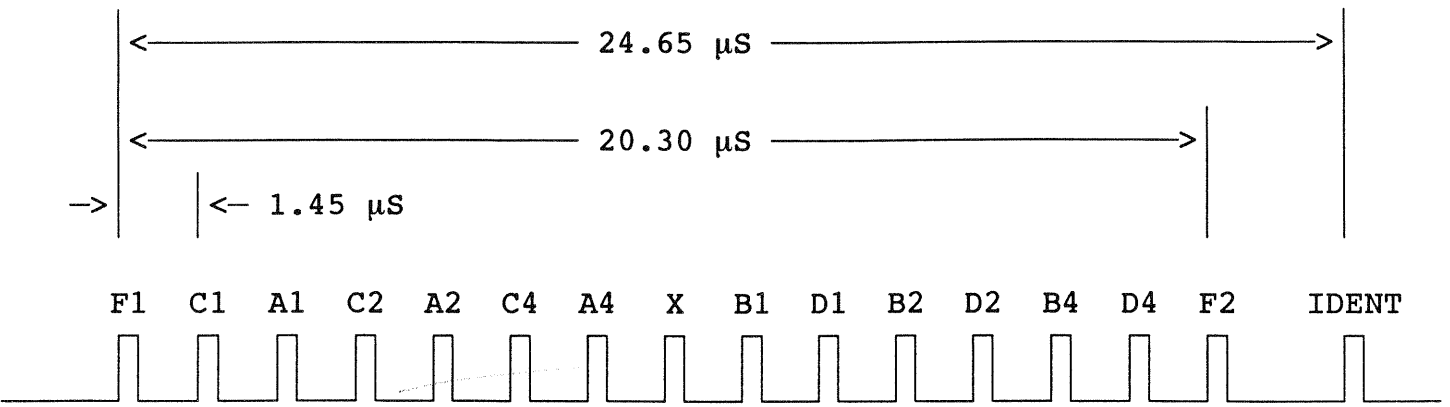
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### 3.13 Reply Transmission Pulse Train

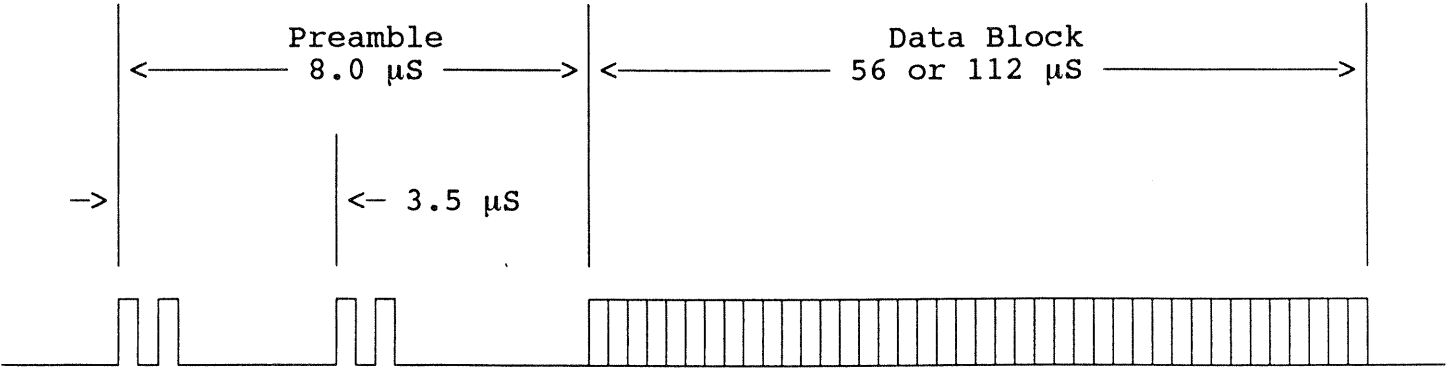


ATCRBS Timing Diagram

Pulse Widths (50% - 50%):  $0.45 \pm 0.1 \mu\text{s}$

Rise Time (10% - 90%):  $\leq 0.1 \mu\text{s}$

Fall Time (10% - 90%):  $\leq 0.2 \mu\text{s}$



MODE S Timing Diagram

Pulse Widths:  $0.5 \pm 0.05 \mu\text{s}$  or  $1.0 \pm 0.05 \mu\text{s}$

Rise Time (10% - 90%):  $\leq 0.1 \mu\text{s}$

Fall Time (10% - 90%):  $\leq 0.2 \mu\text{s}$



4.0 PHOTOGRAPHS

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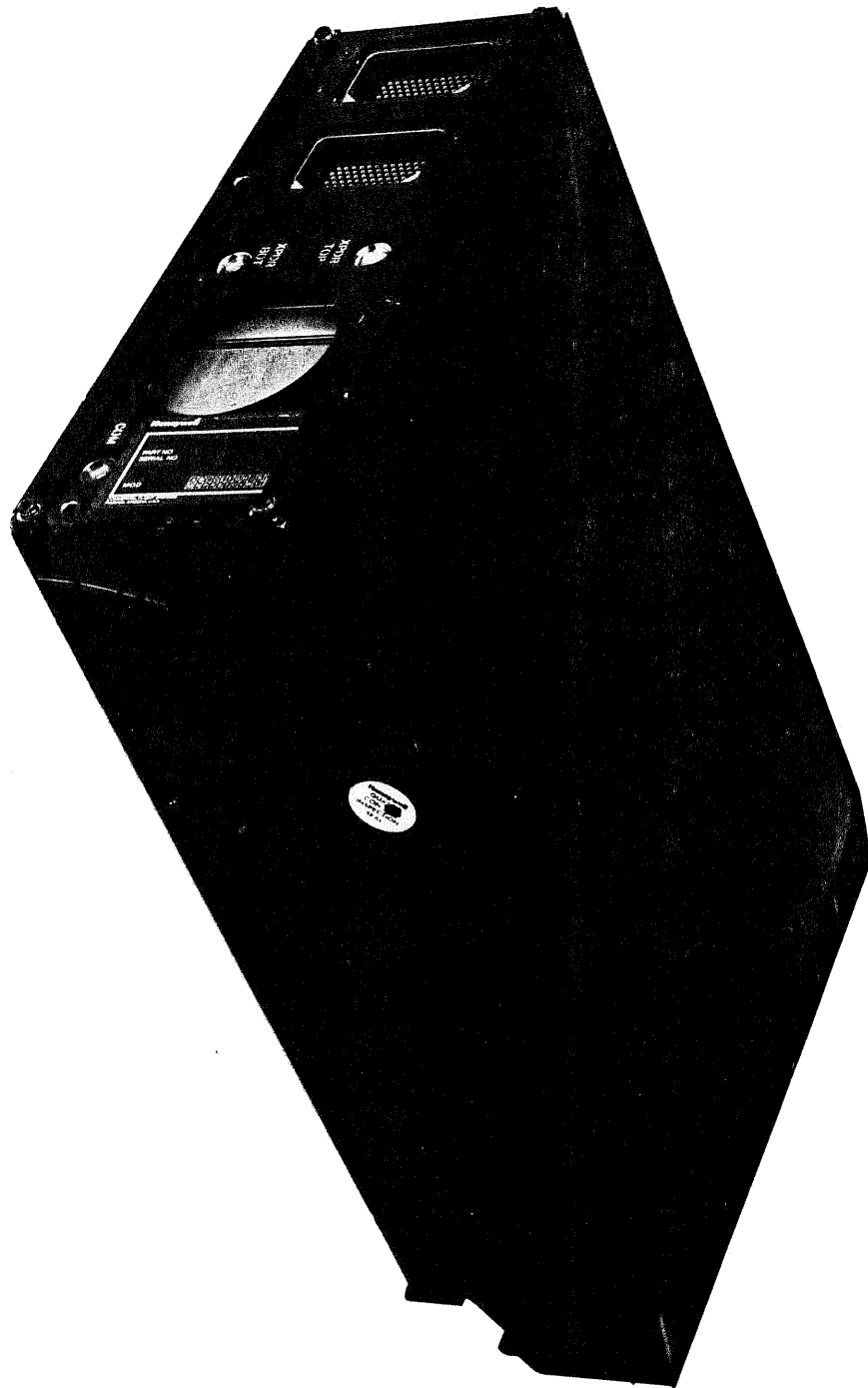
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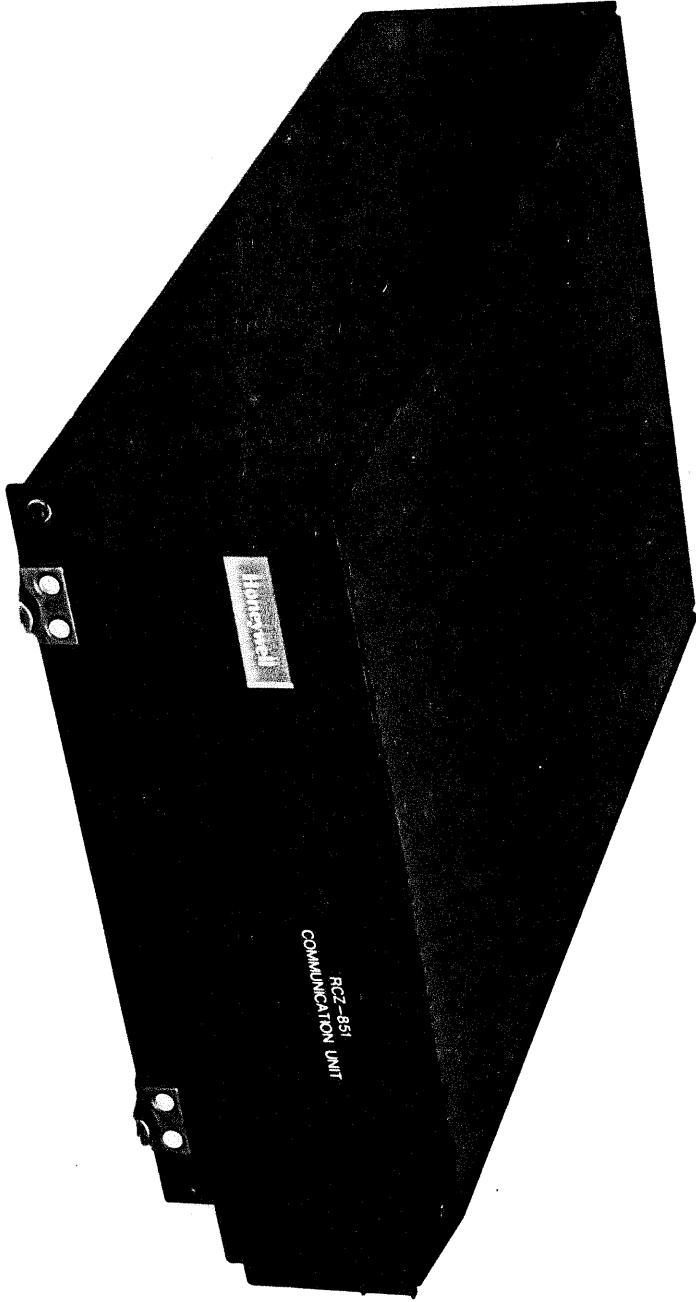
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RCZ-851

RCZ-851  
COMMUNICATION UNIT

