

TIMCO ENGINEERING INC.

849 NW State Road 45

Newberry, Florida 32669

<http://www.timcoengr.com>

888.472.2424 F 352.472.2030 email: tei@timcoengr.com

Test Report

Product Name: 6 CHANNEL PROPORTIONAL FM RADIO CONTROL SYSTEM

FCC ID: IFHOPTIC6SP72

Applicant:

HITEC RCD INC.
12115 PAINE STREET
POWAY CA 92064
USA

Date Receipt: 3/19/2007

Date Tested: 3/19/2007

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FCC ID: IFHOPTIC6SP72

REPORT #: H\HITEC_IFH\634AUT7\634AUT7TestReport.doc

COVER SHEET

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EXHIBITS INCLUDING:

BLOCK DIAGRAM
SCHEMATIC
PARTS LIST
USERS MANUAL
LABEL SAMPLE
LABEL LOCATION
EXTERNAL PHOTOGRAPHS
INTERNAL PHOTOGRAPHS
ALIGNMENT PROCEDURE
OPERATIONAL DESCRIPTION
TEST SET UP PHOTOGRAPH

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GENERAL INFORMATION

2.1033(c)(1)(2) HITEC RCD INC. will sell the FCC ID:IFHOPTIC6SP72
Radio Control transmitter in quantity, for use under
PART 95 SUBPART C.

HITEC RCD INC.
12115 PAINE STREET
POWAY CA 92064

2.1033(c)(3) Instruction manual is included in the exhibits.

2.1033 (4) Type of Emission: 8K0F1D
95.631 (b)(5)

$B_n = 2M + 2DK$
 $M = 4,800$ Bits per second
 $D = 800$ Hz (Peak Deviation)
 $K = 1$
 $B_n = 2(4.8/2) + 2(1600)(1) = 4.8K + 3.2K = 8.0k$

ALLOWED AUTHORIZED BANDWIDTH = 8.00 kHz.

95.631 (b) Authorized Bandwidth 8 kHz for RC Transmitter

2.1033(c)(6) Frequency Range: 72.01 - 72.99 MHz

95.623 (a)(7) Power Range and Controls: There are no user
power controls.

(8) Function of each electron tube or semiconductor
device or other active circuit device are
included in the exhibits

(9) Maximum Output Power Rating: 0.3 W ERP.

(10) DC Voltages and Current into Final Amplifier:

FINAL AMPLIFIER ONLY

$V_{ce} = 7.2$ VDC
 $I_{ce} = 0.07$ A.

$P_{in} = 0.5$ W

2.1033(c)(11) Tune-up procedure. The tune-up procedure is
included in the exhibits.

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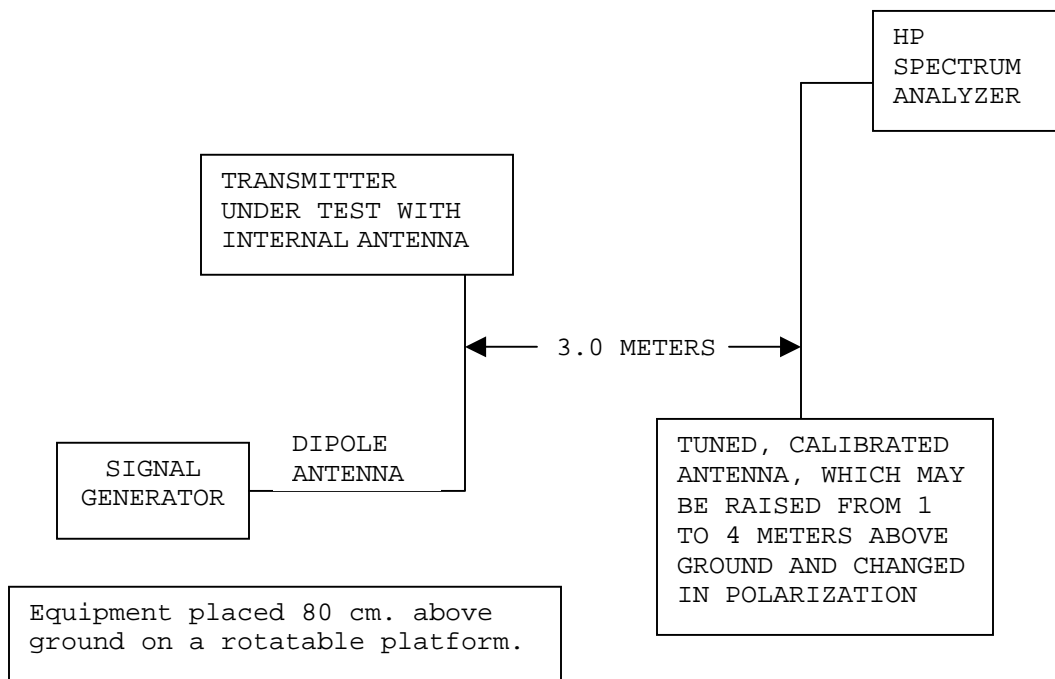
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- 2.1033(c)(12) Complete Circuit Diagrams: The circuit diagrams are included in the exhibits.
- (13) Description of all circuitry and devices provided for determining and stabilizing frequency is given in the exhibits.
- 2.1033(c)(14) The equipment identification is shown in the exhibits.
- 2.1033(c)(15) Photographs of the equipment are shown in the exhibits.
- 2.1033(c)(16) Equipment employing digital modulation. N/A.
- 2.1033(c)(17) The data required by 2.1046-2.1057 follows;
- 2.1046 RF power is measured by the ERP method. There are no provisions to limit the power. With a nominal battery voltage of 7.2 VDC, and the transmitter properly adjusted the RF output measures:
- Po = .20 Watts ERP
- 2.1046 RF power output.



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2.1047 Modulation characteristics:

AUDIO FREQUENCY RESPONSE

The Voice is NOT allowed in this band.

2.1049
95.635 (b) Occupied bandwidth:

- (1) At least 25dB on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth.
- (2) At least 45 dB on any frequency removed from the center of the authorized bandwidth by more than 100% up to and including 125% of the authorized bandwidth.
- (3) At least 55 dB on any frequency removed from the center of the authorized bandwidth by more than 125% up to and including 250% of the authorized bandwidth.
- (4) At least $56 + 10 \log_{10} (T)$ dB on any frequency removed from the center of the authorized bandwidth by more than 250%.

Radiotelephone Transmitter with Modulation Limiter

Test Procedure Diagram

OCCUPIED BANDWIDTH MEASUREMENT



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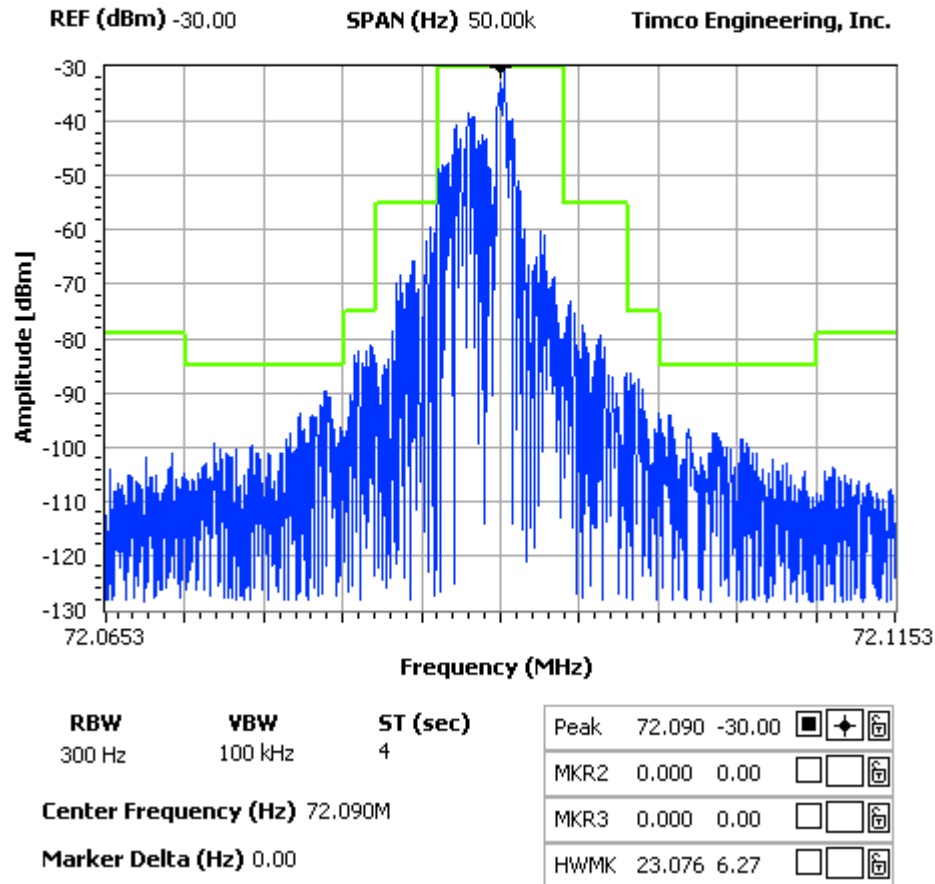
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OCCUPIED BANDWIDTH PLOT

NOTES:

634aut7 occupied bandwidth

FCC 95.635 Mask (1) (10) (11) (12)



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2.1051

SPURIOUS EMISSIONS AT ANTENNA TERMINALS

NOT APPLICABLE, No antenna port. This UUT has a permanently attached antenna.

2.1053

UNWANTED RADIATION:

95.635(1)(3)(7)(10)(11)(12)

REQUIREMENTS:

At least $56 + 10\log(T)$ on any frequency removed from the center of the authorized bandwidth by more than 250%.

$$56 + 10\log(0.2) = 49 \text{ dB}$$

TEST DATA:

Emission Frequency MHz	Ant. Polarity	dB Below Carrier (dBc)
72.10	V	0
144.10	V	51.91
216.20	V	61.26
288.30	V	68.57
360.40	V	56.61
432.50	H	66.60
504.60	V	66.05
576.70	V	64.98
648.80	H	63.03
720.90	V	70.60

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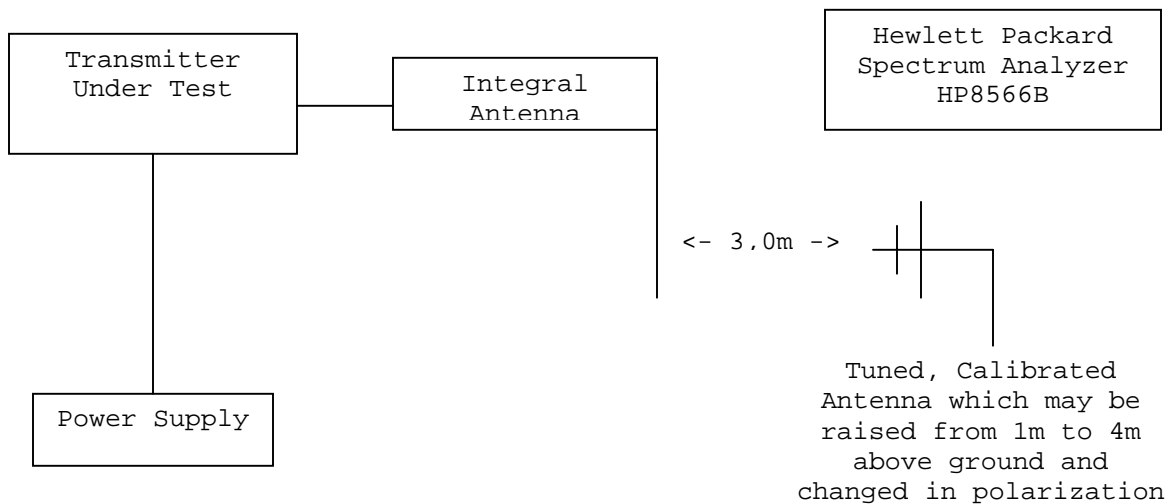
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Method of Measuring Radiated Spurious Emissions



Equipment placed 80cm above
ground on a rotatable platform.

METHOD OF MEASUREMENT: The procedure used was ANSI/TIA 603-C:2004.
Measurements were made at the open field test site of TIMCO ENGINEERING INC.
located at 849 N.W. State Road 45 Newberry, FL 32669.

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2.1055(a)(1) Frequency stability:
95.623 (b)

Temperature and voltage tests were performed to verify that the frequency remains within the .002%, 20-ppm specification limit. The test was conducted as follows:

The transmitter was placed in the temperature chamber at 25 degrees C and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which four frequency readings were recorded at 15-second intervals. The worse case number was taken for temperature plotting. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -30 degrees C after which the transmitter was again allowed to stabilize for one Hour. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15-second intervals. The worst-case Number was recorded for temperature plotting. This procedure was repeated in 10 degree increments up to + 50 degrees C.

Readings were also taken at the end point of the battery voltage of 7.2 VDC.

MEASUREMENT DATA:

REFERENCE FREQUENCY: 72.089730

	Data	PPM
-30C	72.0902261	6.88
-20C	72.090308	8.01
-10C	72.0902943	7.83
0C	72.090203	6.57
10C	72.090041	4.31
20C	72.0898794	2.07
30C	72.089588	-1.97
40C	72.089731	0.01
50C	72.0896172	-1.56

Batt. Volts	Batt. Data	Batt. PPM
-15%	72.089746	0.22
+15%	72.089736	0.08

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EMC Equipment List

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Analyzer Tan	HP	8566B Opt 462	3138A07786	CAL 12/7/05	12/7/07
Tower			3144A20661		
Spectrum					
Analyzer					
Analyzer Tan	HP	85685A	3221A01400	CAL 12/7/05	12/7/07
Tower RF					
Preselector					
Analyzer Tan	HP	85650A	3303A01690	CAL 12/8/05	12/8/07
Tower Quasi-					
Peak Adapter					
Analyzer Tan	HP	8449B-H02	3008A00372	CAL 12/8/05	12/8/07
Tower					
Preamplifier					
Antenna:	Electro-Metrics	BIA-25	1171	CAL 4/29/05	4/29/07
Biconnical					
Antenna: Log-	Electro-Metrics	LPA-25	1122	CAL 12/1/06	12/1/08
Periodic					
Antenna:	Electro-Metrics	RGA-180	2319	CAL 12/29/04	12/29/06
Double-Ridged					
Horn					
LISN	Electro-Metrics	ANS-25/2	2604	CAL 10/5/06	10/5/08
Termaline	Bird Electronic	611	16405	CAL 7/16/04	7/16/06
Wattmeter	Corporation				

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