TIMCO ENGINEERING, Inc.
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RF Exposure Evaluation Report

APPLICANT	ROCKWELL COLLINS, INC.
	1300 WILSON BLVD. SUITE 200 ARLINGTON VA 22209 USA
FCC ID	AJK8223334
MODEL NUMBER	HFS-2100
PRODUCT DESCRIPTION	HF TRANSCEIVER
STANDARD APPLIED	CFR 47 Part 2.1091
PREPARED BY	Tim Royer

We, TIMCO ENGINEERING, INC. would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and meets the requirements.

The attached report shall not be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

GENERAL REMARKS

Attestations

This equipment has been evaluated in accordance with the standards identified in this report. To the best of my knowledge and belief, these evaluations were performed using the procedures described in this report.

I attest that the necessary evaluations were made, under my supervision, at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32669

Authorized Signatory Name:

Tim Royer

Engineering Project Manager

Date: 1/10/2018

RF Exposure Requirements

General information

Device type: HF TRANSCEIVER

Antenna

The manufacturer does not specify an antenna, but a typical antenna has a gain of 0 dBi.

Configuration	Antenna p/n	Type	Max. Gain (dBi)
Fixed mounted	Any	omni	0

MPE Calculation:

The minimum separation distance is calculated as follows:

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power density: } P_d(mW/cm^2) = \frac{E^2}{3770}$$

Or

$$S = PG/4\Pi R2$$

Where:
S=Power density
P=Power input to antenna
G=Power gain of the antenna relative to an isotropic radiator
R=Distance to the center of radiation of the antenna

The limit for general uncontrolled exposure environment is shown in FCC rule Part 1. 1310, Table 1.

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Minimum Separation Distance for Mobile or Fixed Devices
General Population/Uncontrolled Exposure

Insert values in yellow highlighted boxes to determine Minimum Separation Distance

Max Power	355.6	W	*equals*	Max Power	355600	mW
Duty Cycle	100	%	*equals*	Duty Factor	1	numeric
Antenna Gain	0	dBi	*equals*	Gain numeric	1	numeric
Coax Loss	0	dB		Gain - Coax Lo	1	numeric
Power Density	2.3	mW/cm^2				

Enter power Density from the chart to the right

Frequency	8.9	MHz

Rule Part 1.1310, Table 1 (B)

Frequency ran	Power de	Enter this value
MHz	**mW/cm^2**	**mW/cm^2**
0.3-1.34	100	**100**
1.34-30	$180/f^2$	**2.3**
30-300	0.2	**0.2**
300-1,500	f/1500	**0.0**
1,500-100,000	1	**1**

f = frequency in MHz

Minimum Separation Distance	**111 cm**	**1.11 m**

Minimum Seperation in Inches	43.63615	Inches

Applicant: ROCKWELL COLLINS, INC.
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Report: 2092UT17RF EXP MPE RPT