



Compliance Testing, LLC

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Test Report

Prepared for: Aviation Communication and Surveillance Systems

Model: T3CAS Integrated Platform

Description: TCAS and Transponder

Serial Number: TQE01187 & TQE01100

FCC ID: P8CT3C-16

To

FCC Part 1.1310

Date of Issue: September 9, 2016

On the behalf of the applicant:

**Aviation Communication and Surveillance Systems
19810 N. 7th Ave.
Phoenix, AZ 85027**

Attention of:

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Project No: p1680017**

**Poona Saber
Project Test Engineer**

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Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	September 9, 2016	Poona Saber	Original Document

ILAC / A2LA

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated January 2009)

The tests results contained within this test report all fall within our scope of accreditation, unless below

Please refer to <http://www.compliancetesting.com/labscope.html> for current scope of accreditation.

Testing Certificate Number: **2152.01**



FCC Site Reg. #349717

IC Site Reg. #2044A-2

Non-accredited tests contained in this report:

N/A

EUT Description

Model: T3CAS Integrated Platform

Description: TCAS and Transponder

Additional Information: T3CAS system has two RF transmit functions: TCAS (1030 MHz) and Transponder (1090 MHz).



RF Exposure

Engineer: Poona Saber

Test Date: 9/8/2016

Requirements

Licensed transmitters are subject to the radio frequency radiation exposure requirements specified in §1.1307(b), §2.1091 and §2.1093 of this chapter, as appropriate. All equipment shall be considered to operate in a “general population/uncontrolled” environment. Applications for equipment authorization of devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. In addition, systems operating under the provisions of this section shall be operated in a manner that insures that the public is not exposed to radio frequency energy levels in excess of the Commission’s guidelines.

Exposure Limits

At operating frequencies less than or equal to 6 GHz, the limits for maximum permissible exposure (MPE) shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Section 1.1307(b), except for portable devices as defined in §2.1093 as these evaluations shall be performed according to the SAR provisions in §2.1093 of this chapter.

Source Based Time Averaged Power Calculation

Average Power Calculations

Average Power = Peak Power * duty-cycle%

Model	Tuned Frequency (MHz)	Conducted Peak Output Power (mW)	Duty Cycle (%)	Average Power (mW)
TCAS mode C	1030	344349.9	0.298	1026.1
XPDR mode S	1090	724435.9	0.936	6780.7



MPE Evaluation

This is a **fixed/mobile** device used in uncontrolled /general population exposure environment.

Limits Uncontrolled Exposure 47 CFR 1.1310 Table 1, (B)	0.3-1.234 MHz	Limit [mW/cm²] = 100
	1.34-30 MHz	Limit [mW/cm²] = (180/f²)
	30-300 MHz	Limit [mW/cm²] = 0.2
	300-1500 MHz	Limit [mW/cm²] = f/1500
	1500-100,000 MHz	Limit [mW/cm²] = 1.0

Test Data TCAS mode C

Test Frequency, MHz	1030
Power, Conducted, mW (P)	1026.1
Antenna Gain Isotropic	7.7
Antenna Gain Numeric (G)	
Antenna Type	Directional 4 array vertically polarized
Distance (R)	20

$S = \frac{P * G}{4\pi r^2}$			
Power Density (S) mw/cm²	Power mW (P)	Numeric Gain (G)	Distance (r²) cm
0.154386	1026.1	5.8	20

Power Density (S) =	1.18
Limit =(from above table) =	0.68

Since The calculated power density is above the Limit the minimum safety distance is 26.39 cm based on the table below

formula $R = \sqrt{(PG/4\pi L)}$			
Distance (R) (cm)	Power (mW)	Numeric Gain (G)	Limit (mW/cm)
26.39730343	1026.1	5.8	0.68



Test Data XPDR mode S

Test Frequency, MHz	1090
Power, Conducted, mW (P)	6780.7
Antenna Gain Isotropic	5.7
Antenna Gain Numeric (G)	3.71
Antenna Type	Directional 4 array vertically polarized
Distance (R)	20

$S = \frac{P * G}{4\pi r^2}$			
Power Density (S) mw/cm ²	Power mW (P)	Numeric Gain (G)	Distance (r ²) cm
	6780.7	3.71	20

Power Density (S) =	5
Limit =(from above table) =	0.72

Since The calculated power density is above the Limit the minimum safety distance is 52.74 cm based on the table below

formula $R = \sqrt{(PG/4\pi L)}$			
Distance (R) (cm)	Power (mW)	Numeric Gain (G)	Limit (mW/cm)
52.74279638	6780.7	3.71	0.72