AVIATION CLEAN AIR

SURFACE AND AIR PURIFICATION COMPONENT

OZONE EMISSION FLIGHT TEST REPORT

FTR-ACA-OZ-0001

Compiled by: _____
Abbas Tabar

Approved by: _____
Jimmy Galbreath

Approved by: _____
Mallie Seckinger

TABLE OF CONTENTS

1.0 Introduction

The intent of this flight testing is to ensure that there is no adverse effect on the cabin ozone concentrations within the cabin after installation of Aviation Clean Air (ACA) Air and Surface Purification Component (Air Ionizer) in the aircraft Environmental Control System (ECS) in accordance with 14 CFR Part 25. 832 guidelines. The flight testing will record the maximum cabin values of ozone concentration.

This report provides the cabin ozone concentration measurement results during a six (6) hour test flight on November 11, 2020. The flight test aircraft, a fully furnished Bombardier Global 7500 S/N 70021 aircraft departed from Tucson, AZ, USA. This aircraft was configured with two ACA Air Ionizer installed on aircraft ECS cold air supply ducts – See Figure 1 for the ACA Air Ionizer installation locations. The cabin ozone concentration level was measured and recorded at the different cabin locations on the ground and during different phases of the test flight – See Figure 2 for the measurement locations within the cabin.

1.1 ACA Air and Surface Purification Component

The ACA Air Ionizer component produces positive and negative ions that are introduced in to the aircraft ECS. The positive and negative ions are carried into the Cabin and Cockpit by the airflow provided by the aircraft ECS. Ions rapidly and proactively kill pathogens (SARS-Covid, MRSA, SARS, E. coli, C. diff, Tuberculosis, H1N1, H5N1, Polio, and more) in the air and on surfaces. The ions also rapidly control most undesirable smells (Fuel odor, fuel emissions, body odor, cleaning agent odours, and more) and at the same time reduces allergens, such as mold spores, pollen, etc. throughout the aircraft. The ACA Air Ionizer can be located in a variety of locations throughout an aircraft ECS both pressurized and unpressurized. See Figure 1 for the ACA Air Ionizer installation locations in association with this test.

1.2 Test Standard / Specification

Number	Title
RTCA/DO-160	Environmental Conditions and Test Procedures for Airborne Equipment.
MIL-STD-810 F	Environmental Test Methods and Engineering Guidelines.
UL867	Ozone Test Method / Requirements of National Standard
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
D-16 PortaSense III	Porta Sense III Ozone Testar 0-200 ppm

1.3 ACA Documents

Number	Title
ACA-SPC-0001	SPECIFICATION - ACA IONIZATION UNIT ASSY
ACA-RN-0001	ACA IONIZATION COMPONENT
ATP-ACA-RN-001	ACA IONIZATION UNIT ASSY ACCEPTANCE TEST PROCEDURE
G7500-70006-M-7270401	AVIATION CLEAN AIR INSTALL - BA7500

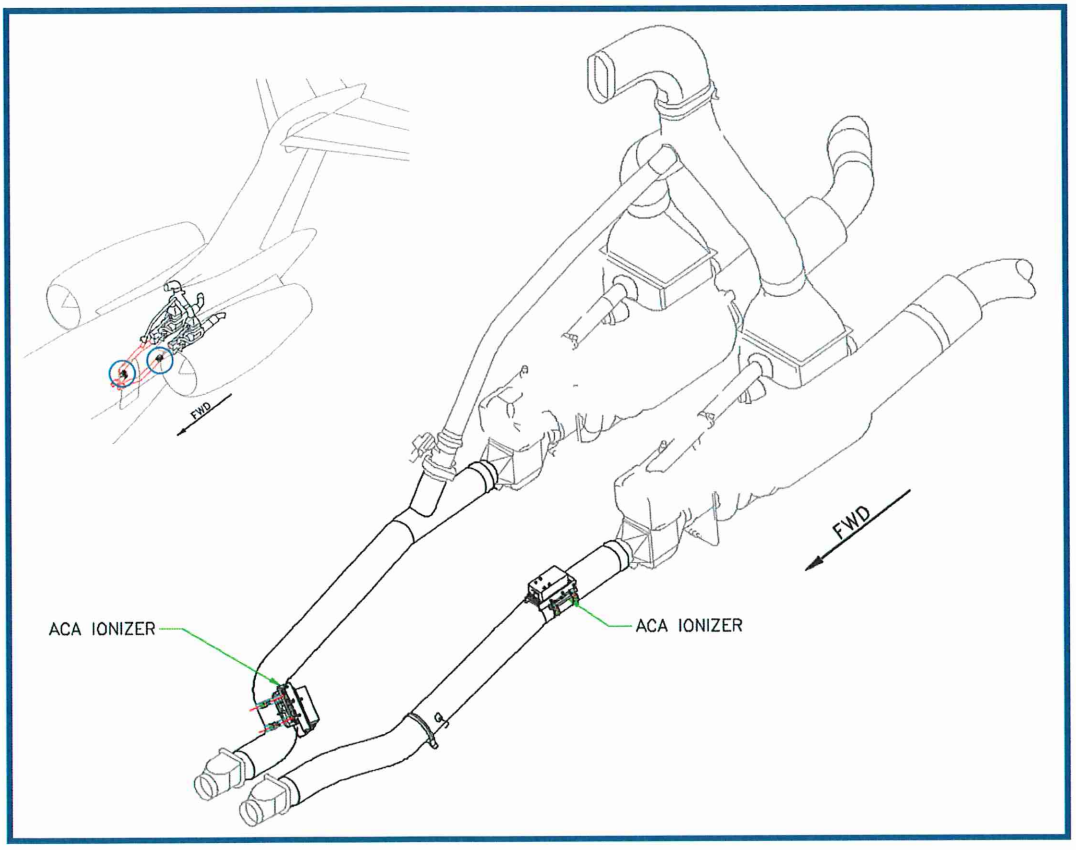

Figure 1: ACA Component Installation

2.0 Test Procedures

(A) The intent of flight testing is to record the maximum cabin values of ozone concentration after installation of ACA components on the aircraft ECS. To accomplish these the following two scenarios were used:

1. "Maximum Measured" raw ozone maximum concentration (in ppm) in the cabin and the Cockpit during ground operations.

2. "Maximum Measured" raw ozone maximum concentration (in ppm) in the cabin and the Cockpit during flight at the following intervals:

    a. FL450 – Approximately 2 Hours into flight
    b. FL450 – Approximately 4.5 Hours into flight.

(B) The test will measure and record the raw ozone concentration using the D-16 PortaSense III Ozone Sensor /Tester (Range: 0-200 ppm, Resolution: 0.1 ppm, Sampling Rate: Instantaneous / Continues) to measure and record the cabin ozone consternation level.

(C) Measure and record the ozone concentration on ground and in flight at the following locations:

1. Each Seat – At eye level sitting position
2. Floor Duct distribution - At floor level directly in front of floor duct at each cabin zone
3. Each Gasper
4. Cockpit

3.0 Test Results

Based on these real time measurements taken during all test phases, both ground operations and in flight at each location shown on cabin layout (Figure 2), the Ionizer sensor D-16 PortaSense tester did not record any detectable levels of ozone concentration. All locations identified in Figure 2 consistently maintained a 0.0 -ppm value/reading during the entire test. This result clearly indicates that there is no detrimental impact to the cabin ozone concentration levels due to ACA component installation.

Measurement Location	Base Line (No ACA)	Ground Operation	FLT450 2 Hrs.	FLT450 4.5 Hrs.	Measurement Location	Base Line (No ACA)	Ground Operation	FLT450 2 Hrs.	FLT450 4.5 Hrs.
	T: 79 F R/H: 43% C/A: Grd	T: 79 F R/H: 43% C/A: Grd	T: 71 F R/H: 2% C/A: 5,680 FT	T: 71 F R/H: 2% C/A: 5,680 FT		T: 79 F R/H: 43% C/A: Grd	T: 79 F R/H: 43% C/A: Grd	T: 71 F R/H: 2% C/A: 5,680 FT	T: 71 F R/H: 2% C/A: 5,680 FT
Cockpit	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Floor - 1	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Crew Rest - Gasper	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Floor - 2	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Crew Rest - Seat	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Floor - 3	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
LAV - Gasper FWD	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Floor - 4	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Seat - 1	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Floor - 5	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Seat -2	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Floor - 6	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Seat - 3	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Floor - 7	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Seat - 4	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Floor - 8	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Seat - 5	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Gasper -FWD LHS	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Seat - 6	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Gasper -FWD RHS	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Seat - 7	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Gasper -MID Cab. LHS	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Seat - 8	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Gasper -MID Cab. RHS	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Seat - 9	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Gasper -Div. FWD	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Seat - 10	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Gasper -Div. AFT	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Seat - 11	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Gasper -AFT Cab. LHS	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Divan - 1	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	Gasper -AFT Cab. RHS	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
Divan - 2	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	LAV - Gasper AFT	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm
T (Temperature)	R/H (Relative Humidity)		C/A (Cabin Altitude)		T (Temperature)	R/H (Relative Humidity)		C/A (Cabin Altitude)	

Table 1: Measured Ozone Concentration Levels

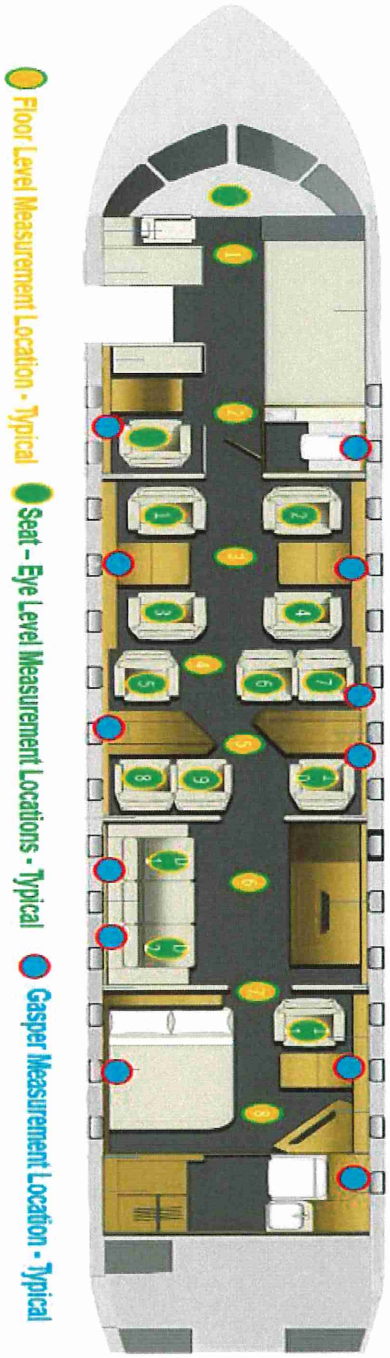

Figure 2: Typical Ozone Measurement Location