



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: PW815GA BYPASS RATIO (-): 5.7
UNIQUE ID NUMBER: 01P22PW142 PRESSURE RATIO π_{co} (-): 34.6
COMBUSTOR: TALON X
ENGINE TYPE: MTF RATED OUTPUT F_{oo} (kN): 71.2

REGULATORY DATA

CHARACTERISTIC VALUES:	LTO_{mass}/F_{oo} (mg/kN)	LTO_{num}/F_{oo} (particles/kN)	NVPM MASS CONCENTRATION ($\mu\text{g}/\text{m}^3$)
LTO/ F_{oo} AND MAX nvPM _{mass}	17.9	2.92E+14	57
AS % OF CAEP/10 LIMIT	-	-	0.7
AS % OF CAEP/11 LIMIT (InP)	0.6	1.6	
AS % OF CAEP/11 LIMIT (NT)			

MEASURED DATA

MODE	POWER SETTING (% F_{oo})	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES*		NVPM MASS CONCENTRATION PEAK nvPM _{mass} ($\mu\text{g}/\text{m}^3$)
				EI _{mass} (mg/kg)	EI _{num} (particles/kg)	
TAKE-OFF	100	0.7	0.701	11.0	1.51E+14	
CLIMB OUT	85	2.2	0.579	5.0	8.67E+13	
APPROACH	30	4.0	0.204	1.2	4.72E+12	
IDLE	7	26.0	0.071	1.3	3.30E+13	
LTO TOTAL (kg, mg, number of particles)			266	918	1.50E+16	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/ F_{oo} VALUES (mg/kN, particles/kN)				12.9	2.10E+14	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$)				11.0	1.51E+14	44

* Emissions Indices are corrected for thermophoretic loss and fuel hydrogen content

DATA FOR EMISSIONS INVENTORIES (ESTIMATIONS FOR ENGINE EXIT PLANE VALUES)

MODE	POWER SETTING (% F_{oo})	CORRECTED EMISSIONS INDICES	
		EI _{mass_SL} (mg/kg)	EI _{num_SL} (particles/kg)
TAKE-OFF	100	14.5	5.63E+14
CLIMB OUT	85	6.7	3.40E+14
APPROACH	30	1.4	9.71E+12
IDLE	7	2.0	1.64E+14

AMBIENT CONDITIONS

	From	To	FUEL	
BAROMETER (kPa)	100.0	101.4	HEAT OF COMBUSTION (MJ/kg)	43.26
TEMPERATURE (K)	293.6	303.0	HYDROGEN CONTENT (%mass)	13.82
HUMIDITY (kg water/kg dry air)	0.0065	0.0149	AROMATICS CONTENT (%vol)	16.0
			NAPHTHALENE CONTENT (%vol)	0.68
			SULPHUR CONTENT (ppm by mass)	120

MANUFACTURER: Pratt & Whitney Canada
TEST ORGANIZATION: Pratt & Whitney Canada
TEST LOCATION: Longueuil & Mirabel, Quebec, Canada
TEST DATES: 16/07/2019-18/07/2019

REMARKS

- P&WC ER 7572 Rev. D includes CO-0003044 and CO-0005972.
- Engines tested: GA0020B19.
- Data acquired using procedures and systems prescribed in Annex 16 Volume II, Amd. 9.
- Thermophoretic correction applied as described in Annex 16 Volume II, Amd. 9, Appendix 7, Section 6.2.1.
- Data corrected for fuel hydrogen content according to CAEP11.WP91 App.A
- Export classification: EIPA NSR, DPA No, US-I 9E991, OUS-I NSR.