



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: PW814GA BYPASS RATIO (-): 5.7
UNIQUE ID NUMBER: 01P22PW141 PRESSURE RATIO π_{co} (-): 33.6
COMBUSTOR: TALON X
ENGINE TYPE: MTF RATED OUTPUT F_{oo} (kN): 68.6

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}	15.5	2.68E+14	47
AS % OF CAEP/10 LIMIT	-	-	0.6
AS % OF CAEP/11 LIMIT (InP)	0.5	1.4	
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	0.672	9.5	1.39E+14	
CLIMB OUT	85	2.2	0.556	4.1	7.31E+13	
APPROACH	30	4.0	0.198	1.2	4.91E+12	
IDLE	7	26.0	0.070	1.3	3.42E+13	
LTO TOTAL (kg, mg, number of particles)			258	766	1.32E+16	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/ F_{oo} VALUES (mg/kN, particles/kN)				11.2	1.93E+14	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$)				9.5	1.39E+14	36

* 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	12.6	5.30E+14
CLIMB OUT	85	5.5	2.84E+14
APPROACH	30	1.4	1.04E+13
IDLE	7	2.0	1.74E+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

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