



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: PW812D BYPASS RATIO (-): 4.5
UNIQUE ID NUMBER: 05P25PW205 PRESSURE RATIO π_{co} (-): 34.8
COMBUSTOR: TALON X
ENGINE TYPE: MTF RATED OUTPUT F_{oo} (kN): 61.6

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 $nvPM_{mass}$	5.1	2.15E+14	21
AS % OF CAEP/10 LIMIT	-	-	0.2
AS % OF CAEP/11 LIMIT (InP)	0.2	1.1	
AS % OF CAEP/11 LIMIT (NT)	0.6	2.2	

MEASURED DATA

MODE	POWER SETTING (% F_{oo})	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES* EI_{mass} (mg/kg)	EI_{num} (particles/kg)	NVPM MASS CONCENTRATION PEAK $nvPM_{mass}$ ($\mu\text{g}/\text{m}^3$)
TAKE-OFF	100	0.7	0.660	3.4	9.51E+13	
CLIMB OUT	85	2.2	0.544	1.4	5.68E+13	
APPROACH	30	4.0	0.187	0.1	1.24E+12	
IDLE	7	26.0	0.070	0.2	2.54E+13	
LTO TOTAL (kg, mg, number of particles)			253	226	9.54E+15	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/F_{oo} VALUES (mg/kN, particles/kN)				3.7	1.55E+14	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$)				3.4	9.51E+13	16

* 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	4.8	3.43E+14
CLIMB OUT	85	2.5	3.10E+14
APPROACH	30	0.2	5.14E+12
IDLE	7	0.6	1.68E+14

AMBIENT CONDITIONS

	From	To	FUEL	
BAROMETER (kPa)	99.9	101.6	HEAT OF COMBUSTION (MJ/kg)	43.27
TEMPERATURE (K)	294.4	300.8	HYDROGEN CONTENT (%mass)	13.83
HUMIDITY (kg water/kg dry air)	0.0081	0.0107	AROMATICS CONTENT (%vol)	17.5
			NAPHTHALENE CONTENT (%vol)	0.59
			SULPHUR CONTENT (ppm by mass)	220

MANUFACTURER: Pratt & Whitney Canada
TEST ORGANIZATION: PW800 Development Engineering
TEST LOCATION: Longueuil, Quebec, Canada
TEST DATES: 29/07/2022-31/07/2022

REMARKS

- Export classification: US EAR: 9E991, Outside US EAR: NSR, EIPA (ECL): NSR.
- P&WC ER 9208 Rev. D.
- Engine tested: GB0005B01.
- Data acquired using procedures & systems prescribed in Annex 16, Vol. II, Amd. 10.
- Fuel venting report: P&WC ER9207 Rev. A.
- Thermophoretic correction applied as per Annex 16 Vol. II, Amd. 9, App. 7, Sect. 6.2.1.
- Data corrected for fuel composition as per Annex 16 Vol. II, Amd. 9, App. 7, Sect. 6.2.2.