



# ICAO ENGINE nvPM EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: PW1217G BYPASS RATIO (-): 8.3  
UNIQUE ID NUMBER: 01P22PW169 PRESSURE RATIO  $\pi_{co}$  (-): 32.7  
COMBUSTOR: TALON X, Block-C  
ENGINE TYPE: TF RATED OUTPUT  $F_{oo}$  (kN): 75.7

### 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 <sub>mass</sub>	35.5	7.49E+14	843
AS % OF CAEP/10 LIMIT	-	-	11.0
AS % OF CAEP/11 LIMIT (InP)	1.2	4.1	
AS % OF CAEP/11 LIMIT (NT)	4.9	8.5	

### MEASURED DATA

MODE	POWER SETTING (% $F_{oo}$ )	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES*		NVPM MASS CONCENTRATION PEAK nvPM <sub>mass</sub> ( $\mu\text{g}/\text{m}^3$ )
				EI <sub>mass</sub> (mg/kg)	EI <sub>num</sub> (particles/kg)	
TAKE-OFF	100	0.7	0.634	23.0	2.35E+14	
CLIMB OUT	85	2.2	0.524	17.8	2.97E+14	
APPROACH	30	4.0	0.184	0.2	2.07E+13	
IDLE	7	26.0	0.069	0.8	1.21E+14	
LTO TOTAL (kg, mg, number of particles)			248	1934	4.08E+16	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/ $F_{oo}$ VALUES (mg/kN, particles/kN)				25.5	5.39E+14	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ( $\mu\text{g}/\text{m}^3$ )				23.0	3.02E+14	655

\* 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 <sub>mass_SL</sub> (mg/kg)	EI <sub>num_SL</sub> (particles/kg)
TAKE-OFF	100	27.8	7.33E+14
CLIMB OUT	85	22.6	1.09E+15
APPROACH	30	0.3	1.50E+14
IDLE	7	1.7	9.34E+14

### AMBIENT CONDITIONS

	From	To	FUEL	
BAROMETER (kPa)	101.2	102.6	HEAT OF COMBUSTION (MJ/kg)	43.14
TEMPERATURE (K)	276.5	293.2	HYDROGEN CONTENT (%mass)	13.78
HUMIDITY (kg water/kg dry air)	0.0011	0.0058	AROMATICS CONTENT (%vol)	18.4
			NAPHTHALENE CONTENT (%vol)	1.64
			SULPHUR CONTENT (ppm by mass)	495

MANUFACTURER: Pratt & Whitney  
TEST ORGANIZATION: Pratt & Whitney  
TEST LOCATION: East Hartford, CT  
TEST DATES: 28/03/2019-01/04/2019

### REMARKS

1. Data from certification report PWA-12121
2. Block C combustor
3. nvPM levels in accordance with Annex 16 Vol. II, Chapter 4, Appendix 7 and Appendix 8.