



# ICAO ENGINE nvPM EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: Genx-1B76A/P2, 1B76/P2      BYPASS RATIO (-): 8.7  
UNIQUE ID NUMBER: 07P27GE237      PRESSURE RATIO  $\pi_{o_0}$  (-): 47.1  
COMBUSTOR: TAPS  
ENGINE TYPE: TF      RATED OUTPUT  $F_{o_0}$  (kN): 349.2

### REGULATORY DATA

CHARACTERISTIC VALUES:	$LTO_{mass}/F_{o_0}$ (mg/kN)	$LTO_{num}/F_{o_0}$ (particles/kN)	NVPM MASS CONCENTRATION ( $\mu\text{g}/\text{m}^3$ )
LTO/ $F_{o_0}$ AND MAX nvPM <sub>mass</sub>	1.9	1.13E+14	160
AS % OF CAEP/10 LIMIT	-	-	4.2
AS % OF CAEP/11 LIMIT (InP)	0.5	2.7	
AS % OF CAEP/11 LIMIT (NT)	0.9	4.1	

### MEASURED DATA

MODE	POWER SETTING (% $F_{o_0}$ )	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	2.807	0.0	9.26E+09	
CLIMB OUT	85	2.2	2.282	0.0	4.55E+09	
APPROACH	30	4.0	0.705	2.4	1.31E+14	
IDLE	7	26.0	0.228	0.1	1.71E+13	
LTO TOTAL (kg, mg, number of particles)			944	466	2.83E+16	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/ $F_{o_0}$ VALUES (mg/kN, particles/kN)				1.3	8.11E+13	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ( $\mu\text{g}/\text{m}^3$ )				5.8	2.45E+14	124

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

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

MODE	POWER SETTING (% $F_{o_0}$ )	CORRECTED EMISSIONS INDICES	
		EI <sub>mass_SL</sub> (mg/kg)	EI <sub>num_SL</sub> (particles/kg)
TAKE-OFF	100	0.0	1.46E+10
CLIMB OUT	85	0.0	6.85E+09
APPROACH	30	4.0	8.50E+14
IDLE	7	0.3	1.53E+14

### AMBIENT CONDITIONS

	From	To	FUEL	
BAROMETER (kPa)	97.9	98.5	HEAT OF COMBUSTION (MJ/kg)	43.22
TEMPERATURE (K)	293.4	300.5	HYDROGEN CONTENT (%mass)	13.71
HUMIDITY (kg water/kg dry air)	0.0070	0.0122	AROMATICS CONTENT (%vol)	16.3
			NAPHTHALENE CONTENT (%vol)	0.27
			SULPHUR CONTENT (ppm by mass)	6

MANUFACTURER: General Electric Company  
TEST ORGANIZATION: GE Aerospace  
TEST LOCATION: PTO, Ohio, USA  
TEST DATES: 24/05/2023-31/05/2023

### REMARKS

1. Engine S/N 958-859/1
2. Ref. GE Report R2022AE169/Rev.0
3. The maximum EI<sub>mass</sub> occurs between 30% and 85%  $F_{o_0}$
4. The maximum EI<sub>num</sub> occurs between 30% and 85%  $F_{o_0}$