



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: GEnx-1B74/75/P2 BYPASS RATIO (-): 8.7
UNIQUE ID NUMBER: 07P27GE235 PRESSURE RATIO π_{∞} (-): 46.1
COMBUSTOR: TAPS
ENGINE TYPE: TF RATED OUTPUT F_{∞} (kN): 341.2

REGULATORY DATA

CHARACTERISTIC VALUES:	LTO_{mass}/F_{∞} (mg/kN)	LTO_{num}/F_{∞} (particles/kN)	NVPM MASS CONCENTRATION ($\mu\text{g}/\text{m}^3$)
LTO/ F_{∞} AND MAX nvPM _{mass}	1.7	1.08E+14	160
AS % OF CAEP/10 LIMIT	-	-	4.1
AS % OF CAEP/11 LIMIT (InP)	0.5	2.6	
AS % OF CAEP/11 LIMIT (NT)	0.8	3.9	

MEASURED DATA

MODE	POWER SETTING (% F_{∞})	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	2.722	0.0	8.03E+09	
CLIMB OUT	85	2.2	2.218	0.0	4.44E+09	
APPROACH	30	4.0	0.689	2.2	1.23E+14	
IDLE	7	26.0	0.225	0.2	1.80E+13	
LTO TOTAL (kg, mg, number of particles)			923	427	2.66E+16	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/ F_{∞} VALUES (mg/kN, particles/kN)				1.3	7.80E+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_{∞})	CORRECTED EMISSIONS INDICES	
		EI _{mass_SL} (mg/kg)	EI _{num_SL} (particles/kg)
TAKE-OFF	100	0.0	1.25E+10
CLIMB OUT	85	0.0	6.67E+09
APPROACH	30	3.7	8.00E+14
IDLE	7	0.3	1.62E+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_{mass} occurs between 30% and 85% F_{∞}
4. The maximum EI_{num} occurs between 30% and 85% F_{∞}