



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: CF34-8E5A1 BYPASS RATIO (-): 4.7
UNIQUE ID NUMBER: 07P27GE227 PRESSURE RATIO π_{∞} (-): 24.7
COMBUSTOR: LEC
ENGINE TYPE: TF RATED OUTPUT F_{∞} (kN): 62.5

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 $nvPM_{mass}$	115.6	$9.98\text{E}+14$	3647
AS % OF CAEP/10 LIMIT	-	-	42.5
AS % OF CAEP/11 LIMIT (InP)	3.5	5.1	
AS % OF CAEP/11 LIMIT (NT)	14.1	10.1	

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	0.691	113.5	$7.43\text{E}+14$	
CLIMB OUT	85	2.2	0.565	29.7	$3.90\text{E}+14$	
APPROACH	30	4.0	0.190	1.8	$1.41\text{E}+12$	
IDLE	7	26.0	0.066	2.8	$8.82\text{E}+11$	
LTO TOTAL (kg, mg, number of particles)			252	5886	$5.08\text{E}+16$	-
NUMBER OF ENGINES				2	2	2
NUMBER OF TESTS				6	6	6
AVERAGE LTO/F_{∞} VALUES (mg/kN, particles/kN)				94.2	$8.13\text{E}+14$	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$)				113.5	$7.43\text{E}+14$	3110

* 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	137.5	$2.12\text{E}+15$
CLIMB OUT	85	37.9	$1.36\text{E}+15$
APPROACH	30	2.1	$2.85\text{E}+12$
IDLE	7	3.3	$1.55\text{E}+12$

AMBIENT CONDITIONS

	From	To	FUEL	
BAROMETER (kPa)	98.2	99.1	HEAT OF COMBUSTION (MJ/kg)	43.16
TEMPERATURE (K)	279.5	287.7	HYDROGEN CONTENT (%mass)	13.87
HUMIDITY (kg water/kg dry air)	0.0017	0.0029	AROMATICS CONTENT (%vol)	20.6
			NAPHTHALENE CONTENT (%vol)	0.26
			SULPHUR CONTENT (ppm by mass)	9

MANUFACTURER: General Electric Company
TEST ORGANIZATION: GE Aviation
TEST LOCATION: PTO, Ohio, USA
TEST DATES: 16/12/2023-21/12/2023

REMARKS

- Engine S/N 908-337/1
- Ref. GE Report R2023AE234/Rev.0
- Engine S/N 195-878/1
- Ref. GE Report R2021AE242/Rev.0
- Atmospheric Conditions, Fuel and Test Dates
- are specified for GE Report R2023AE234/Rev.0