



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: CF34-10A16/16-B BYPASS RATIO (-): 5.7
UNIQUE ID NUMBER: 01P11GE202 PRESSURE RATIO π_{00} (-): 25.4
COMBUSTOR: SAC
ENGINE TYPE: TF RATED OUTPUT F_{00} (kN): 77.0

REGULATORY DATA

CHARACTERISTIC VALUES:	LTO_{mass}/F_{00} (mg/kN)	LTO_{num}/F_{00} (particles/kN)	NVPM MASS CONCENTRATION ($\mu\text{g}/\text{m}^3$)
LTO/ F_{00} AND MAX nvPM _{mass}	117.0	2.52E+15	1968
AS % OF CAEP/10 LIMIT	-	-	25.8
AS % OF CAEP/11 LIMIT (InP)	3.9	14.0	
AS % OF CAEP/11 LIMIT (NT)	16.3	29.1	

MEASURED DATA

MODE	POWER SETTING (% F_{00})	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	0.789	55.8	4.57E+14	
CLIMB OUT	85	2.2	0.650	33.2	4.00E+14	
APPROACH	30	4.0	0.222	1.6	9.31E+13	
IDLE	7	26.0	0.084	12.9	6.50E+14	
LTO TOTAL (kg, mg, number of particles)			304	6478	1.40E+17	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/ F_{00} VALUES (mg/kN, particles/kN)				84.2	1.82E+15	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$)				55.8	6.50E+14	1529

* 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_{00})	CORRECTED EMISSIONS INDICES	
		EI _{mass_SL} (mg/kg)	EI _{num_SL} (particles/kg)
TAKE-OFF	100	66.9	1.34E+15
CLIMB OUT	85	41.1	1.36E+15
APPROACH	30	3.0	9.08E+14
IDLE	7	22.2	5.71E+15

AMBIENT CONDITIONS

	From	To	FUEL	
BAROMETER (kPa)	98.1	98.6	HEAT OF COMBUSTION (MJ/kg)	43.08
TEMPERATURE (K)	293.2	298.4	HYDROGEN CONTENT (%mass)	13.74
HUMIDITY (kg water/kg dry air)	0.0084	0.0111	AROMATICS CONTENT (%vol)	19.1
			NAPHTHALENE CONTENT (%vol)	0.22
			SULPHUR CONTENT (ppm by mass)	0

MANUFACTURER: General Electric Company
TEST ORGANIZATION: General Electric Company
TEST LOCATION: PTO, Site 3C
TEST DATES: 24/07/2019-25/07/2019

REMARKS

1. GE Aviation Report R2019AE310/Rev. 0
2. Engine S/N 424-879/1

** DATA SUPERSEDED **

SEE FOLLOWING UID FOR REVISED DATA:

07P27GE229