



# ICAO ENGINE nvPM EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: CF34-8C5A1 BYPASS RATIO (-): 5.1  
UNIQUE ID NUMBER: 01P08GE191 PRESSURE RATIO  $\pi_{00}$  (-): 24.3  
COMBUSTOR: LEC  
ENGINE TYPE: TF RATED OUTPUT  $F_{00}$  (kN): 60.6

### 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 $nvPM_{mass}$	32.5	$3.39\text{E}+14$	1161
AS % OF CAEP/10 LIMIT	-	-	13.3
AS % OF CAEP/11 LIMIT (InP)	1.0	1.7	
AS % OF CAEP/11 LIMIT (NT)	3.9	3.4	

### 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	0.662	33.2	$3.13\text{E}+14$	
CLIMB OUT	85	2.2	0.541	4.4	$8.09\text{E}+13$	
APPROACH	30	4.0	0.183	1.0	$1.85\text{E}+12$	
IDLE	7	26.0	0.063	1.4	$2.07\text{E}+12$	
LTO TOTAL (kg, mg, number of particles)			242	1418	$1.48\text{E}+16$	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE $LTO/F_{00}$ VALUES (mg/kN, particles/kN)				23.4	$2.44\text{E}+14$	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ( $\mu\text{g}/\text{m}^3$ )				33.2	$3.13\text{E}+14$	902

\* 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	41.0	$1.06\text{E}+15$
CLIMB OUT	85	5.6	$2.92\text{E}+14$
APPROACH	30	1.1	$3.24\text{E}+12$
IDLE	7	1.6	$4.74\text{E}+12$

### AMBIENT CONDITIONS

	From	To	FUEL	
BAROMETER (kPa)	98.1	98.6	HEAT OF COMBUSTION (MJ/kg)	43.19
TEMPERATURE (K)	290.7	296.3	HYDROGEN CONTENT (%mass)	13.67
HUMIDITY (kg water/kg dry air)	0.0033	0.0048	AROMATICS CONTENT (%vol)	17.5
			NAPHTHALENE CONTENT (%vol)	0.23
			SULPHUR CONTENT (ppm by mass)	77

MANUFACTURER: General Electric Company  
TEST ORGANIZATION: General Electric Company  
TEST LOCATION: PTO, Site 3B  
TEST DATES: 17/04/2017-18/04/2017

### REMARKS

- GE Aviation Report R2018AE311/Rev. 0
- Engine S/N 902-647/1

\*\* DATA SUPERSEDED \*\*

SEE FOLLOWING UID FOR REVISED DATA:

07P27GE222