



# ICAO ENGINE nvPM EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: CF34-8E5A2HA BYPASS RATIO (-): 4.7  
UNIQUE ID NUMBER: 07P27GE228 PRESSURE RATIO  $\pi_{o_0}$  (-): 25.4  
COMBUSTOR: LEC  
ENGINE TYPE: TF RATED OUTPUT  $F_{o_0}$  (kN): 64.5

### 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 $nvPM_{mass}$	149.5	1.16E+15	4691
AS % OF CAEP/10 LIMIT	-	-	55.7
AS % OF CAEP/11 LIMIT (InP)	4.6	6.0	
AS % OF CAEP/11 LIMIT (NT)	18.6	11.9	

### MEASURED DATA

MODE	POWER SETTING (% $F_{o_0}$ )	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	0.721	142.8	8.12E+14	
CLIMB OUT	85	2.2	0.588	40.8	4.65E+14	
APPROACH	30	4.0	0.196	1.8	1.54E+12	
IDLE	7	26.0	0.067	2.8	7.86E+11	
LTO TOTAL (kg, mg, number of particles)			260	7863	6.08E+16	-
NUMBER OF ENGINES				2	2	2
NUMBER OF TESTS				6	6	6
AVERAGE $LTO/F_{o_0}$ VALUES (mg/kN, particles/kN)				121.8	9.42E+14	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ( $\mu\text{g}/\text{m}^3$ )				142.8	8.12E+14	4000

\* 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	
		$EI_{mass\_SL}$ (mg/kg)	$EI_{num\_SL}$ (particles/kg)
TAKE-OFF	100	170.0	2.16E+15
CLIMB OUT	85	51.8	1.58E+15
APPROACH	30	2.1	3.21E+12
IDLE	7	3.2	1.39E+12

### AMBIENT CONDITIONS

### FUEL

	From	To		
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

1. Engine S/N 908-337/1
2. Ref. GE Report R2023AE234/Rev.0
3. Engine S/N 195-878/1
4. Ref. GE Report R2021AE242/Rev.0
5. Atmospheric Conditions, Fuel and Test Dates
6. are specified for GE Report R2023AE234/Rev.0
7. Ref. GE Report R2023AE303/Rev.0