



# ICAO ENGINE nvPM EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: GE90-115B BYPASS RATIO (-): 7.1  
UNIQUE ID NUMBER: 01P21GE217 PRESSURE RATIO  $\pi_{o_0}$  (-): 42.9  
COMBUSTOR: DAC  
ENGINE TYPE: TF RATED OUTPUT  $F_{o_0}$  (kN): 513.9

### 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 $nvPM_{mass}$	32.9	5.12E+14	587
AS % OF CAEP/10 LIMIT	-	-	17.5
AS % OF CAEP/11 LIMIT (InP)	9.5	12.3	
AS % OF CAEP/11 LIMIT (NT)	15.4	18.4	

### 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	4.600	14.9	8.94E+13	
CLIMB OUT	85	2.2	3.566	9.7	1.03E+14	
APPROACH	30	4.0	1.073	7.3	1.43E+14	
IDLE	7	26.0	0.341	5.3	1.63E+14	
LTO TOTAL (kg, mg, number of particles)			1454	12145	1.89E+17	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE $LTO/F_{o_0}$ VALUES (mg/kN, particles/kN)				23.6	3.68E+14	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ( $\mu\text{g}/\text{m}^3$ )				14.9	1.63E+14	456

\* 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	17.4	2.33E+14
CLIMB OUT	85	11.8	3.36E+14
APPROACH	30	9.7	6.44E+14
IDLE	7	7.6	9.25E+14

### AMBIENT CONDITIONS

### FUEL

	From	To		
BAROMETER (kPa)	98.0	98.3	HEAT OF COMBUSTION (MJ/kg)	43.49
TEMPERATURE (K)	295.9	298.7	HYDROGEN CONTENT (%mass)	13.65
HUMIDITY (kg water/kg dry air)	0.0063	0.0094	AROMATICS CONTENT (%vol)	16.4
			NAPHTHALENE CONTENT (%vol)	0.40
			SULPHUR CONTENT (ppm by mass)	71

MANUFACTURER: General Electric Company  
TEST ORGANIZATION: General Electric Company  
TEST LOCATION: PTO, Ohio  
TEST DATES: 25/05/2016-26/05/2016

### REMARKS

1. GE Report R2019AE459/Rev. 1
2. Engine S/N 901-007

\*\* DATA SUPERSEDED \*\*

SEE FOLLOWING UID FOR REVISED DATA:

07P27GE240