



# ICAO ENGINE EXHAUST EMISSIONS DATA BANK

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: RB211-22B  
UNIQUE ID NUMBER: 1RR002  
ENGINE TYPE: TF

BYPASS RATIO: 4.7  
PRESSURE RATIO ( $\pi_{00}$ ): 25  
RATED OUTPUT ( $F_{00}$ ) (kN): 182.5

### REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
$D_p/F_{00}$ (g/kN) or SN	154.9	222.0	57.5	18.9
AS % OF ORIGINAL LIMIT	790.4 %	188.2 %	63.9 %	94.3 %
AS % OF CAEP/2 LIMIT (NOx)			79.9 %	
AS % OF CAEP/4 LIMIT (NOx)			97.5 %	
AS % OF CAEP/6 LIMIT (NOx)			110.8 %	
AS % OF CAEP/8 LIMIT (NOx)			133.5 %	

### DATA STATUS

x PRE-REGULATION  
- CERTIFICATION  
- REVISED (SEE REMARKS)

### TEST ENGINE STATUS

x NEWLY MANUFACTURED ENGINES  
- DEDICATED ENGINES TO PRODUCTION STANDARD  
- OTHER (SEE REMARKS)

### EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE  
(ANNEX 16 VOLUME II)

### CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)  
x OUT OF PRODUCTION (DATE: - )  
- OUT OF SERVICE

### MEASURED DATA

MODE	POWER SETTING (% $F_{00}$ )	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NOx	
TAKE-OFF	100	0.7	1.866	0.36	2.48	34.32	14.7
CLIMB OUT	85	2.2	1.542	0.39	4.14	25.63	12.9
APPROACH	30	4.0	0.553	7.73	26.38	8.05	8
IDLE	7	26.0	0.277	65.37	93.17	2.7	3.1
LTO TOTAL FUEL (kg) or EMISSIONS (g)			847	29381	44799	10142	-
NUMBER OF ENGINES				3	3	3	1
NUMBER OF TESTS				4	4	4	1
AVERAGE $D_p/F_{00}$ (g/kN) or AVERAGE SN (MAX)				132.8	205.3	54.3	14.7
SIGMA ( $D_p/F_{00}$ in g/kN, or SN)				8.23	8.01	4.4	-
RANGE ( $D_p/F_{00}$ in g/kN, or SN)				122-140	197-212	48-57	-

### ACCESSORY LOADS

POWER EXTRACTION 0 (kW) AT - POWER SETTINGS  
STAGE BLEED 0 % CORE FLOW AT - POWER SETTINGS

### ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	99.3-100.3
TEMPERATURE (K)	287 - 291
ABS HUMIDITY (kg/kg)	0.008

### FUEL

SPEC	DERD 2494
H/C	1.94
AROM (%)	20

MANUFACTURER: Rolls Royce Ltd  
TEST ORGANIZATION: Rolls Royce Ltd  
TEST LOCATION: Derby  
TEST DATES: FROM Jun 79 TO Aug 79

### REMARKS

Package 1 combustor.

If REVISED, this data supersedes databank UID  
Compliance with fuel venting requirements:

0 ('x' if complies, PR if pre-regulation)