



ICAO ENGINE EXHAUST EMISSIONS DATA BANK

SUBSONIC ENGINES

ENGINE IDENTIFICATION: RB211-535E4
UNIQUE ID NUMBER: 5RR038
ENGINE TYPE: MTF
BYPASS RATIO: 4.1
PRESSURE RATIO (π_{oo}): 26
RATED OUTPUT (F_{oo}) (kN): 178.4

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NOx	SMOKE NUMBER
D_p/F_{oo} (g/kN) or SN	0.7	41.2	48.5	9.4
AS % OF ORIGINAL LIMIT	3.6 %	34.9 %	52.7 %	46.5 %
AS % OF CAEP/2 LIMIT (NOx)			65.8 %	
AS % OF CAEP/4 LIMIT (NOx)			80.0 %	
AS % OF CAEP/6 LIMIT (NOx)			90.9 %	
AS % OF CAEP/8 LIMIT (NOx)			109.0 %	

DATA STATUS

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

TEST ENGINE STATUS

- NEWLY MANUFACTURED ENGINES
x 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_{oo})	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NOx	
TAKE-OFF	100	0.7	1.850	0.03	0.26	22.31	7.3
CLIMB OUT	85	2.2	1.500	0	0.29	17.56	6.8
APPROACH	30	4.0	0.520	0.04	2.72	8.38	0.6
IDLE	7	26.0	0.180	0.27	20.33	4.4	0.46
LTO TOTAL FUEL (kg) or EMISSIONS (g)			681	83	6126	7492	-
NUMBER OF ENGINES				1	1	1	1
NUMBER OF TESTS				3	3	3	3
AVERAGE D_p/F_{oo} (g/kN) or AVERAGE SN (MAX)				0.46	33.6	41.8	7.3
SIGMA (D_p/F_{oo} in g/kN, or SN)				-	-	-	-
RANGE (D_p/F_{oo} in g/kN, or SN)				0.32 - 0.7	33.3 - 33.8	40.3 - 43.6	6.9 - 7.9

ACCESSORY LOADS

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

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	100.7 - 101.2
TEMPERATURE (K)	281 - 287
AHS HUMIDITY (kg/kg)	.0058 - .0064

FUEL

SPEC	AVTUR
H/C	1.931
AROM (%)	17.6

MANUFACTURER: Rolls-Royce plc
TEST ORGANIZATION: Rolls-Royce plc
TEST LOCATION: Hucknall
TEST DATES: FROM May 99 TO -

REMARKS

1. Data from certification report DNS63281.
2. Phase 5 combustor

If REVISED, this data supersedes databank UID
Compliance with fuel venting requirements: 0 ('x' if complies, PR if pre-regulation)