



ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: RB211-535E4
UNIQUE ID NUMBER: 1RR013
COMBUSTOR:
ENGINE TYPE: MTF

BYPASS RATIO: 4.1
PRESSURE RATIO (π_{oo}): 25.4
RATED THRUST (F_{oo}) (kN): 176.1

REGULATORY DATA

** DATA SUPERSEDED **

SEE FOLLOWING UID FOR REVISED DATA:

1RR014

CHARACTERISTIC VALUE:	HC	CO	NO _x	SMOKE NUMBER
D _p /F _{oo} (g/kN) or SN	9.3	32.6	84.6	2.0
AS % OF ORIGINAL LIMIT	47.3	27.6	93.1	9.8
AS % OF CAEP/2 LIMIT (NO _x)			116.4	
AS % OF CAEP/4 LIMIT (NO _x)			141.8	
AS % OF CAEP/6 LIMIT (NO _x)			161.1	
AS % OF CAEP/8 LIMIT (NO _x)			193.8	

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 (DATE: -)

MEASURED DATA

MODE	POWER SETTING (%F _{oo})	TIME (minutes)	FUEL FLOW (kg/s)	HC	CO	NO _x	SMOKE NUMBER
TAKE-OFF	100	0.7	1.860	0.69	1.01	52.70	
CLIMB OUT	85	2.2	1.510	0.94	1.23	36.20	
APPROACH	30	4.0	0.570	1.33	1.71	7.50	
IDLE	7	26.0	0.190	2.85	15.44	4.30	
LTO TOTAL FUEL (kg) or EMISSIONS (g)			711	1268	5134	13633	-
NUMBER OF ENGINES				2	2	2	2
NUMBER OF TESTS				5	5	5	5
AVERAGE D _p /F _{oo} (g/kN) or AVERAGE SN (MAX)				7.1	28.6	76.9	1.7
SIGMA (D _p /F _{oo} in g/kN, or SN)				0.5	3.5	1.3	0.3
RANGE (D _p /F _{oo} in g/kN, or SN)				6.6-7.7	24.6-33.4	75-78.9	1.5-2.3

ACCESSORY LOADS

POWER EXTRACTION 0 (kW)
STAGE BLEED 0 (% CORE FLOW)

AT - POWER SETTINGS
AT - POWER SETTINGS

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	100.8-101.2
TEMPERATURE (K)	285-298
ABS HUMIDITY (kg/kg)	0.0058-0.0087

FUEL

SPEC	AVTUR
H/C	1.91
AROM (%)	20

MANUFACTURER: Rolls-Royce plc
TEST ORGANIZATION: Rolls-Royce Ltd
TEST LOCATION: SINFIN-Derby
TEST DATES: 02/07/1984-25/10/1984

REMARKS

1. Ref RR report CRR58095

Compliance with Fuel Venting requirements:

- ('x' if complies, 'PR' if pre-regulation,
'- ' if information is not available)