



ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-M3
UNIQUE ID NUMBER: 02P23RR134
COMBUSTOR: Phase5 Tiled
ENGINE TYPE: TF

BYPASS RATIO: 8.9
PRESSURE RATIO (π_{co}): 48.8
RATED THRUST (F_{oo}) (kN): 358.1

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NO _x	SMOKE NUMBER
D _p /F _{oo} (g/kN) or SN	0.0	8.3	77.7	16.4
AS % OF ORIGINAL LIMIT	0.0	7.0	56.5	98.2
AS % OF CAEP/2 LIMIT (NO _x)			70.6	
AS % OF CAEP/4 LIMIT (NO _x)			74.3	
AS % OF CAEP/6 LIMIT (NO _x)			80.5	
AS % OF CAEP/8 LIMIT (NO _x)			88.6	

For non-volatile particulate matter (nvPM) emissions, please refer to the ICAO Engine nvPM Emissions Data Sheet.

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)

- OUT OF PRODUCTION (DATE: -)
- OUT OF SERVICE (DATE: -)

MEASURED DATA

MODE	POWER SETTING (%F _{oo})	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO _x	
TAKE-OFF	100	0.7	2.802	0.00	0.44	64.41	7.6
CLIMB OUT	85	2.2	2.274	0.00	0.43	46.59	10.0
APPROACH	30	4.0	0.732	0.00	0.54	14.74	10.0
IDLE	7	26.0	0.267	0.00	6.08	6.17	1.8
LTO TOTAL FUEL (kg) or EMISSIONS (g)			1010	0	2807	26725	-
NUMBER OF ENGINES				6	6	6	6
NUMBER OF TESTS				14	14	14	14
AVERAGE D _p /F _{oo} (g/kN) or AVERAGE SN (MAX)				0.0	7.8	74.6	14.7
SIGMA (D _p /F _{oo} in g/kN, or SN)				0.0	1.3	0.9	2.0
RANGE (D _p /F _{oo} in g/kN, or SN)				0.0	6.54-9.43	73.24-75.47	11.4-16.7

ACCESSORY LOADS

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

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.9-102.1
TEMPERATURE (K)	280.4-303.5
ABS HUMIDITY (kg/kg)	0.00308-0.01917

FUEL

SPEC	
H/C	1.92
AROM (%)	16.89

MANUFACTURER: Rolls-Royce plc
TEST ORGANIZATION: Rolls-Royce plc
TEST LOCATION: Derby
TEST DATES: 24/09/2009-28/08/2019

NO_x REGULATION PARAGRAPH

	2.3.2 c) (CAEP/4)
	2.3.2 d) (CAEP/6)
x	2.3.2 e) (CAEP/8)

REMARKS

- Representative of Trent 1000-TEN engines
- EDNS01000935986

Compliance with Fuel Venting requirements:

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