

TC & FAA Required PED Testing
Learjet Inc.
Bombardier Flight Test Center (BFTC)
Wichita, KS

Date Submitted: 3/29/2011

Submitted by:

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Why a Special Temporary Authority is Necessary

Transport Canada (TC), the airworthiness certification authority for the Bombardier CRJ1000 aircraft, has requested that BFTC perform an RF susceptibility ground test as soon as possible. The testing must be completed as soon as possible to demonstrate compliance with FAA established FAR requirements in accordance with the provisions of the airworthiness agreement or similar arrangement between TC and the FAA.

Purpose of Operation

Transport Canada has required BFTC to perform an RF susceptibility ground test to demonstrate that the aircraft avionics and control systems for a CRJ1000 are not susceptible to emissions from passenger owned portable electronic devices (PEDs) when operated in the European frequency bands for such devices.

Frequencies, Power and Emission

The test will be conducted to simulate a worse case radiating condition in very close proximity to the Avionics Equipment Bay which is located just forward of the Forward Cargo Area and beneath the Forward Passenger Cabin Area inside the airplane. Testing will first be isolated to the Passenger Cabin Area followed by the same simulations isolated to the Forward Cargo Area.

Frequency (MHz)			
Lower Edge	Upper Edge	Emission Types	Power EIRP
876	916	N0N, 271KG7W	2.0 W
1710	1785	N0N, 271KG7W	1.0 W
1920	1980	N0N, 5M00G7W	125 mW

Band	Channel	Sub Band	Emission Types	Bandwidth	Power EIRP
2.4 GHz ISM	1	2.412 GHz	N0N, DSSS	22 MHz	100 mW
	6	2.437 GHz	N0N, DSSS	22 MHz	100 mW
	11	2.462 GHz	N0N, DSSS	22 MHz	100 mW
5 GHz UNII	36	5.180 GHz	N0N, OFDM	22 MHz	100 mW
	40	5.200 GHz	N0N, OFDM	22 MHz	100 mW
	52	5.260 GHz	N0N, OFDM	22 MHz	100 mW
	60	5.300 GHz	N0N, OFDM	22 MHz	100 mW
	136	5.680 GHz	N0N, OFDM	22 MHz	100 mW

Location, Conditions and Schedule

Address of the facility:

Wichita Mid-continent Airport (KICT)
Learjet Inc. - Bombardier Flight Test Facility
Wichita, KS 67209

CRJ1000 Test Location:
Engine Run-up Area partially surrounded by blast fence
37°39'43.53"N / 97°26'25.34"W

The ground elevation is 1329 ft. / 405 m.

The tests must be performed outdoors with engines & APU running and all doors on the airplane closed. The aircraft is to be chocked for all test procedures and no passengers will be onboard. The test will take approximately 15 hours with much of this time being for test setup and tear down. RF transmissions will be limited to less than 45 seconds for each sub test. Coordination with local Learjet facilities management for any local WLAN will be obtained. The metal blast fence is approximately 15 foot high and could provide some additional shielding.

The test will be performed over a two day period between March 31 to April 29, 2011. The focus scheduled days are March 31 to April 2nd.

Stop buzzer contact information

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Chris Confer Cell Phone 316-706-1275

Local Contact

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Radio Frequency Specialist
(316) 946-8826

Equipment and Antennas

Equipment	Manufacturer	Model	ID Number	Quantity
Signal Generator	Hewlett Packard	E4432B	US39341913	1
Signal Generator	Hewlett Packard	8665B	3203A00209	1
Attenuator	Hewlett Packard	8496A	3308A15368	1
Amplifier	Mini-Circuits	ZHL-42	15542	1
Amplifier	Amplifier Research	AR-10S1G4A	NA	1
Omni Antenna	Laird / Antenex	TRAB806/17103P	NA	1
Yagi Antenna	Comtelco	Y42818A	NA	1

Omni Antenna	Mobile Mark	PSKN3-24/55	NA	1
Directional Coupler	Narda	3020A	40450	1
Directional Coupler	Narda	3022	77273	1
Spectrum Analyzer	Hewlett Packard	E4402B	US39380652	1
Spectrum Analyzer	Hewlett Packard	8563A	3207A01670	1
Power Meter	Hewlett Packard	EPM-441A	GB37481499	1
Power Sensor	Hewlett Packard	E4412A	US37181896	1
Power Sensor	Hewlett Packard	8481B	3318A10479	1

Laird/Antenex

TRAB806/17103P:

Radiation: Omni

Gain:

806-896 MHz: 5.9 dBi

890-960 MHz: 5.8 dBi

1710-1880 MHz: 4.2 dBi

1850-1990 MHz: 4.2 dBi

2400-2500 MHz: 3.0 dBi

Mobile Mark Inc.

PSKN3-24/55:

Radiation: Omni

Gain: 5-6 GHz; 2.3 dBi

Comtelco

Y42818A:

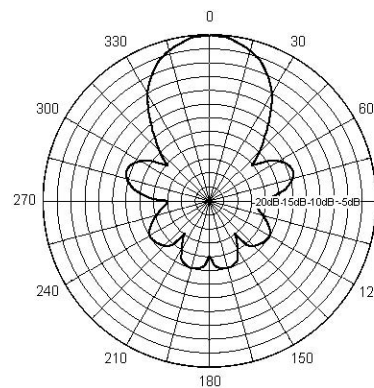
Vert. Beamwidth: 35 deg.

Horz. Beamwidth: 30 deg.

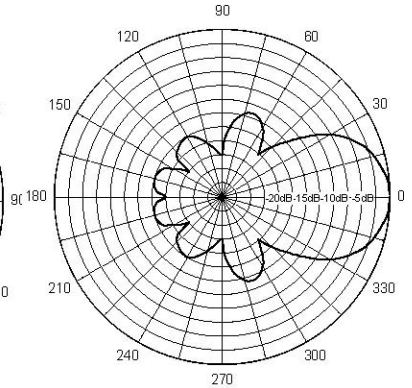
Gain: 806-940 / 1710-2100 MHz; 8 dBd / 10 dBi

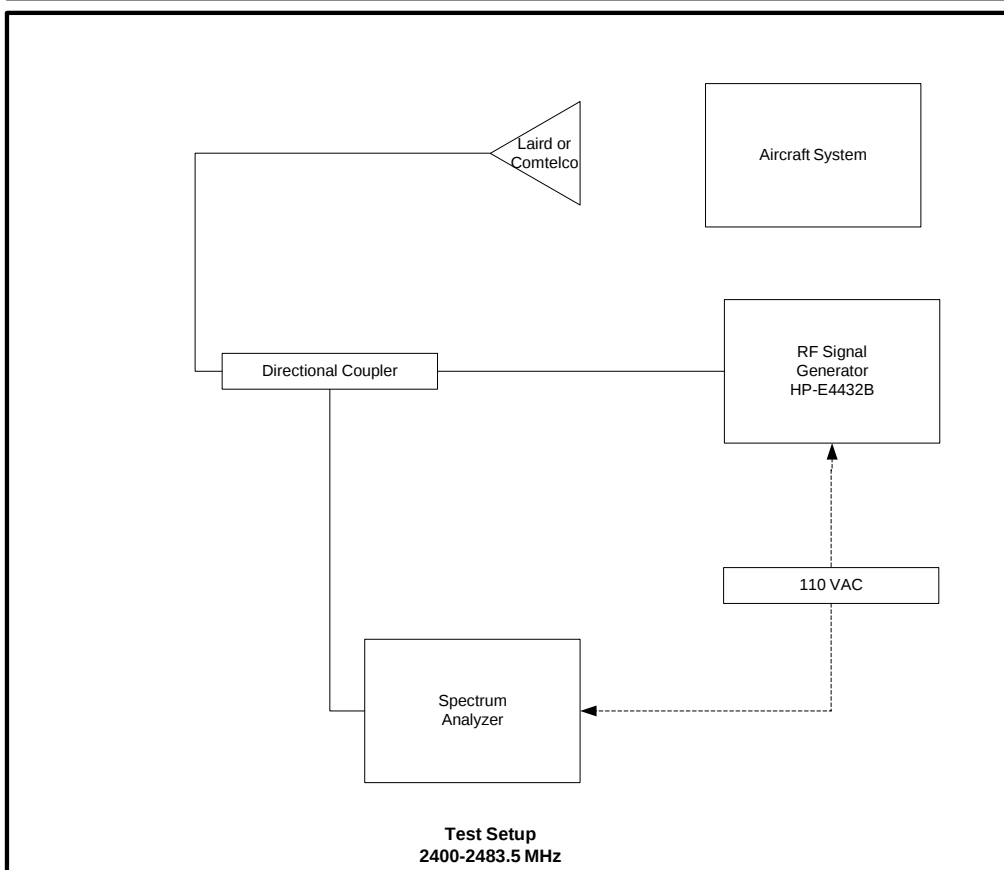
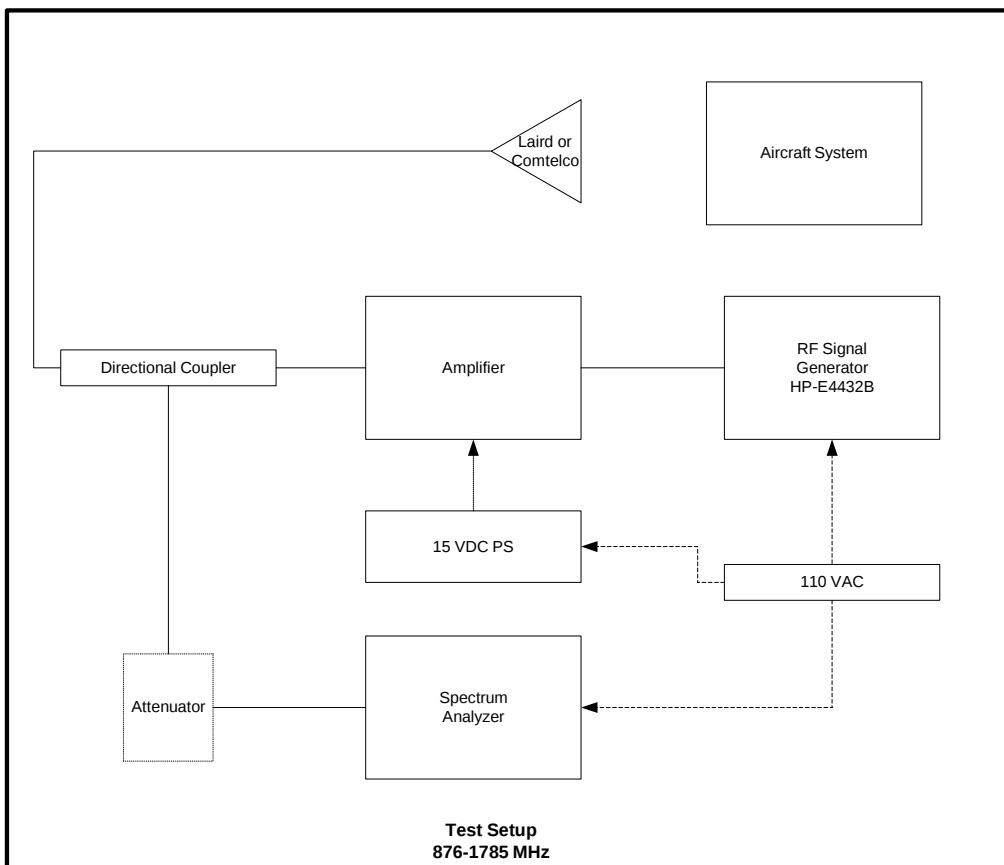


Horizontal Pattern



Vertical Pattern





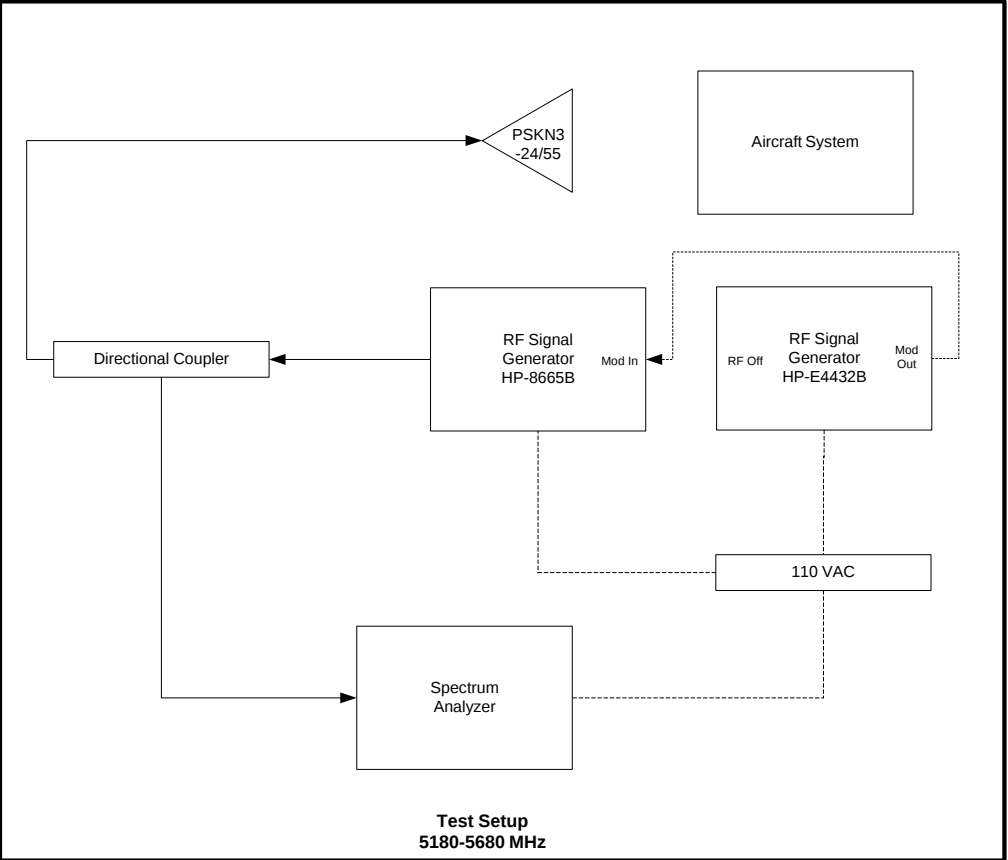




Image U.S. Geological Survey
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Imagery Date: Mar 1, 2008

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37°39'43.50" N 97°26'25.18" W elev 1329 ft

Eye alt 1885 ft



Imagery Dates: Feb 29, 2008 - Mar 1, 2008

Image U.S. Geological Survey
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37°39'01.43" N 97°25'17.02" W elev. 1315 ft.

Eye alt 25414 ft