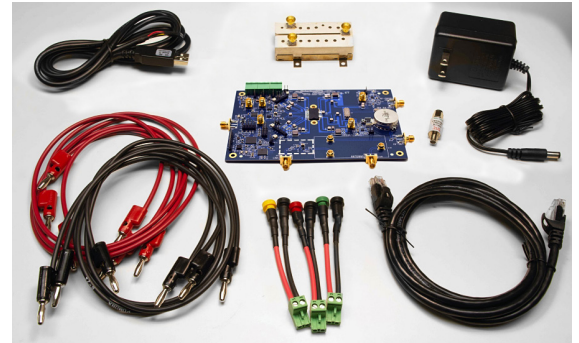


LTE RF Front-End Reference Design Platform

The DE705 Doherty Excelerator is a complete RF Front-End evaluation platform for FDD operation of LTE Bands 14 and 28. The platform has selected components of universal footprint to utilize the same PCB dimensions for all sub 1 GHz LTE bands.

The platform features a single channel transmitter and a single channel receiver with a swappable ceramic duplexer that will allow configuration for band 14 or band 28. Included in the TX circuitry is a high performance 2-stage LDMOS PA implemented as an asymmetrical Doherty amplifier for optimum TX efficiency and linearity performance. An onboard bias generation IC and an Advanced Doherty Alignment Module (ADAM) IC with SW control provide for additional levels of configuration.



Key Features:

- Added complete transmit and receive signal chain with 57 dB of gain, 5 Watts avg power at the antenna port
- High efficiency Doherty Power Amplifier linearized to -50 dBc or better with Analog Devices AD9375 DPD
- High performance Receiver with 18dB of gain, NF<2.5 dB, OIP3>+39 dBm at the antenna port
- Low-loss, high rejection ceramic mono-block duplexer
- On-board DC power generation and PA bias circuit
- Custom SW/GUI available for system flexibility and control

Absolute Maximum Ratings:

Parameters	Symbol	Value	Units
Operating Voltage	Vin1	32	Vdc
Operating Voltage	Vin2	6.0	Vdc
Operating Voltage	Vin3	3.6	Vdc
Input Power (RF In) CW	Pin	-15	dBm
Input Power (RF ANT)	Pant	+20	dBm
Storage Temperature	Tstg	-60 to +100	C

RF Electrical Specifications:

(All specs are at 25 Degrees C, Vin1=28V, Vin2=5V, Vin3=3.3V unless otherwise noted.)

Testing Item	Symbol	Test Constraints	Min	Typical	Max	Unit
Frequency B28	fB28tx	Transmit	758		803	MHz
Frequency B28	fB28rx	Receive	703		748	MHz
Frequency B14	fB14tx	Transmit	758		768	MHz
Frequency B14	fB14rx	Receive	788		798	MHz
Output power – Antenna port	P_ant	LTE, single carrier BW 10-20MHz		5		Watts
Output power – RF out port	P_RFout	LTE, single carrier BW 10-20MHz		8		Watts
Tx gain (with 3dB ATTN on ADAM IC)		RFin connector to ANT	55	57	60	dB
Rx gain		ANT to LNA connector	17	18	19	dB
Rx Noise Figure	NFRx	At the ANT port		2.5		dB
LNA Noise Figure	NFINa	SMP-max connector		0.4	0.5	dB

DC Electrical Specifications:

(All specs are at 25 Degrees C unless otherwise noted.)

Testing Item	Symbol	Test Constraints	Min	Typical	Max	Unit
Input Voltage 1 (note 1)	Vin1		26	28	30	V
Input Voltage 2 (note 1)	Vin2		4.5	5	5.5	V
Input voltage 3 (note 1)	Vin3		3	3.3	3.5	V
Current consumption (39.5dBm at RF_OUT port)		Vin 1, 28V input		0.75	1.0	A
Current consumption		Vin 2, 5V input		0.40	0.6	A
Current consumption		Vin 3, 3.3V input		14	25	mA
Power Added Efficiency (PA only)	PAE	Tx Efficiency	40	45		%
Efficiency	Eff	System Efficiency	35			%

Note:

1) Nominal supply voltage is recommended for typical RF performance. Any changes in supply voltage will impact overall RF performance.

Package Contents:

- DE705 Board
- DC Power Jumpers (3)
- Banana plug assemblies, red (3)
- Banana plug assemblies, black (3)
- SMP-“MAX” bullet adapters (3)
- TTL to USB Serial Converter Cable
- Band 28 Duplexer
- USB Thumb drive with data

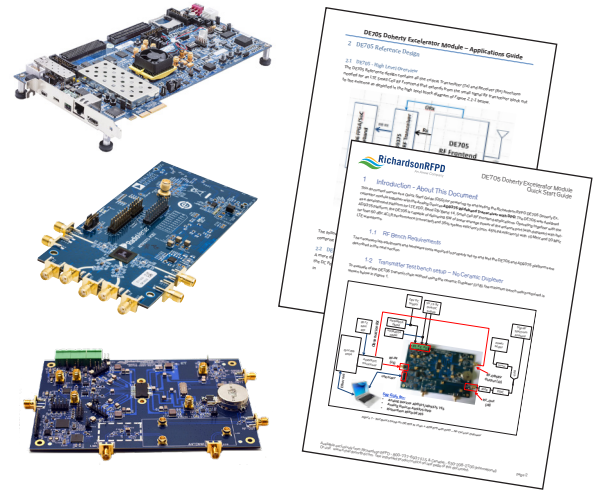
Ordering Information

Part Number	Description
DE705	Doherty Excelerator RF Front End Board
ADI-DPD-DEVKIT	Development Kit (Includes RFFE, FPGA, and Transceiver Boards)

Email address For Technical Support: faesupport@richardsonrfpd.com

Development Kit:

The DE705 works with a variety of transceiver and linearizer solutions, but Richardson RFPD has released a development kit that characterized the DE705 with ADI ADRV9375 transceiver with DPD evaluation board and ADI EVAL-TPG-ZYNQ3 SoC board. The kit includes the boards, software, documentation, and most accessories. For more information please refer to the ADI-DPD-DEVKIT brochure and [product page](#).



Additional Required Accessories:

**Not included in ADI-DPD-DEVKIT. Available separately from Richardson RFPD.*

- 20 dB Directional Coupler, e.g. Narda 4243-20
- 30 dB attenuator, e.g. API-Weinschel [33-30-34](#)
- RF cable assemblies (SMA)
- Band 14 Duplexer [UMD014A-M3](#)

Richardson RFPD, Inc., 1950 S.Batavia Ave #100, Geneva, IL 60143
Telephone: (800) 737-6937 / (630) 262-6800 Fax: (630) 208-2662
Online: www.richardsonrfpd.com

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