



1st Generation Modular RF Front End

Multi-Band, Multi-Mode RF X2 MIMO Front End Module

Introduction

The NewEdge Signal Solutions High Power Modular RF Front End Module is aimed at Multi-Band and Multi-Mode operation. The module includes the following:

- Two Broadband Envelope Tracking (ET) RF amplifiers covering 1.8 to 2.7GHz with 7 Watts of Average RF power per PA and 55dB total gain. The PA modules include VSWR detection

- Two Broadband Transceivers and Receive LNAs

- Multi-Arm Core FPGA

- Baseband processing embedded firmware for Crest Factor Reduction (CFR), Digital Pre-Distortion (DPD) and Digital Interface to support Envelope Tracking Power Amplifiers.

Each PA may be operated using envelope tracking for use with amplitude modulated waveforms such as 4G (LTE) and 3G or with constant bias voltage to support constant envelope waveforms.



Features

- Small size: 5.5" by 6.5"
- High Efficiency: <55W consumed when both PA's are transmitting full power
 - Includes CFR and DPD
- Multi-Mode: Power supply may be configured for ET or Constant Voltage operation
- High RF Power: 44 Watts Peak / 7W Average (LTE) Per PA
- Frequency Domain Duplex (FDD) and Time Domain Duplex (TDD) LTE supported
 - Individual TDD controls for each RF channel
 - In TDD mode, power amplifier shutdown using GaN Gate pinch-off for low noise
 - Transmit off time >17 μ s (IAW 3GPP specification)
 - Onboard controls available for optimum T/R Switch control timing
- Broad RF Bandwidth: Tx = 1.8 to 2.7GHz Rx = 1.7 to 2.7GHz
- Independent Mode control for each channel
- Complete PA: All gain stages, power sequencing and supplies included
- LNA Specs: Input P1dB = 1.5dBm and Noise Figure < 1dB
- Peripheral equipment control interface (+3.3V logic) incorporated
- 3GPP (LTE) ACLR1 Better than -48dBc ACLR1 for LTE 10MHz
- PA Modules pluggable into RF Carrier board. Modules with different powers and frequencies can be easily swapped in.
- Broadband transceivers and VSWR detection included
- Ethernet and USB interfaces

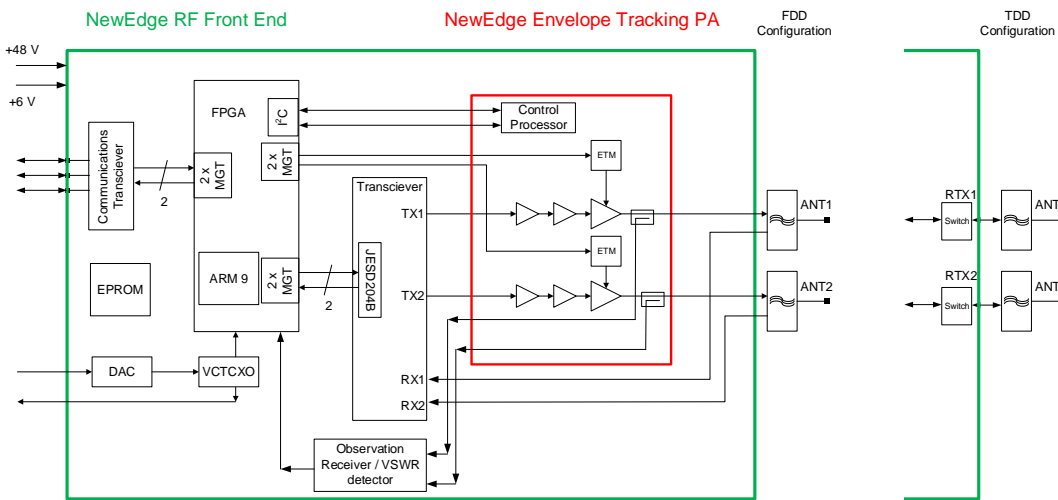
- 6V and 48V external supplies. All other voltages generated internally.

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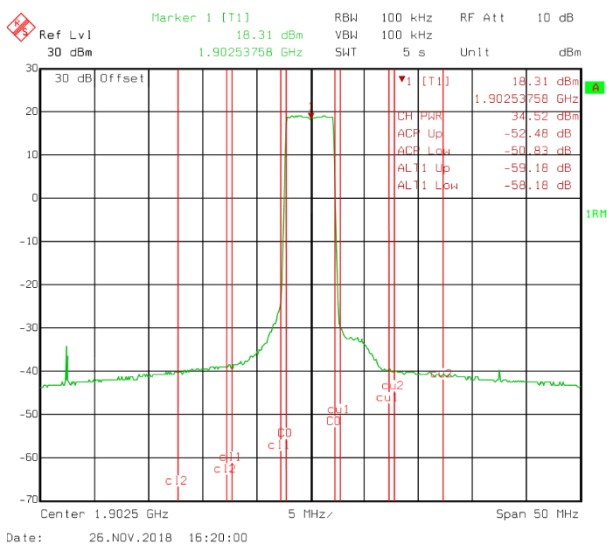
Specification Summary

Parameter	Requirement	Comment
Band of Operation	1.8 – 2.7 GHz Transmit	
FDD & TDD Modes	1.7 – 2.7 GHz Receive	
Output Power, ET Mode	44 Watts peak, 7 Watts average (LTE)	
Output Power, CE Mode	7 Watts	
EVM	3.9%	With CFR applied
Supported Carrier Bandwidth	3, 5, 10, 15, 20 MHz	
Operational Temperature Range	-40°C to +85°C	

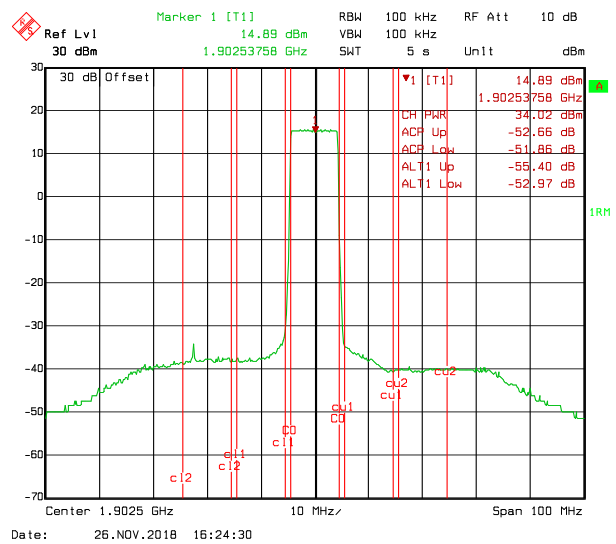
Block Diagram



Typical Performance



LTE 5 MHz 38.0 dBm



LTE 10 MHz 38.0 dBm

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