

ILA1053

2496-2690MHz 10Watts LTE-TDD / 5G NR TRx Power Amplifier

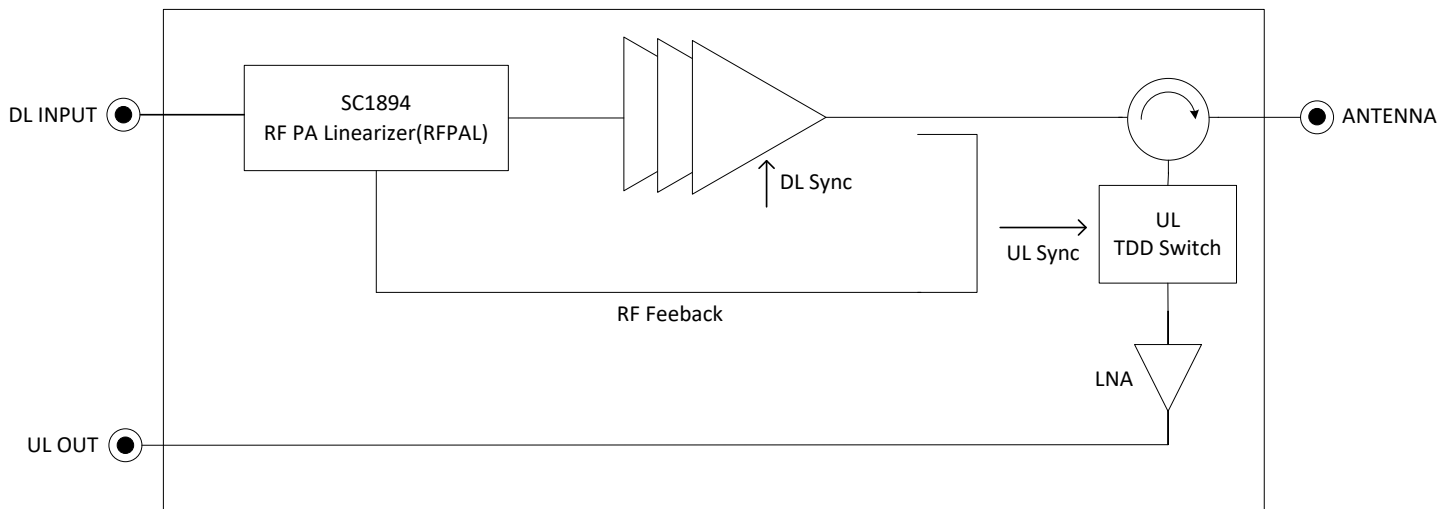
Description

The Model ILA1053 is specifically designed for LTE-TDD applications in the frequency band of 2496MHz to 2690MHz. It features a Doherty design that utilizes LDMOS power devices and RF Pre-distortion linearization technique to ensure excellent efficiency and linearity characteristics. Inspower's advanced design technology makes the amplifier extremely stable within overall environmental temperature range.

Product Features

- Operating Frequency: 2496-2690MHz
- Bandwidth :194MHz
- Pout: +40dBm
- RF Pre-distortion Linearization "APD"
- LTE-TDD Band 38, 41 / 5G NR Band n38, n41, n90
- Application: BTS, DAS, Repeater

Block Diagram



DL Electrical Specifications @ +28.0VDC, 25°C, 50Ω System, PAR 9.7dB @ CCDF 0.01%

Symbol	Parameter		Unit	Min.	Typ.	Max.
BW	Operating Frequency		MHz	2496		2690
P _{OUT}	Output Power		Watt	10		
G	Gain @ Pout=10W		dB	40	42	44
ΔG _{SS}	Small Signal Gain Flatness @ Pin=-20dBm		dB			±1.0
ΔG _{TEMP}	Gain Variation over operating Temperature range		dB			±1.5
ACLR	ACLR @ Pout = 10W ETM3.1 LTE Down Link 10MHz BW PAR 9.7dB @ CCDF 0.01%	±10MHz	dBc		-50	-45
		±20MHz	dBc		-55	-50
UEM	Operating Band Unwanted Emission Limit		Per ETSI TS 136 106 V16.0.0 (2020-07) Category B, Option 2			
S11/S22	DL Input, UL Output & Antenna Port Return Loss		dB			-14
H	2 nd Harmonics @ Pout=10W		dBc		-45	-40
V _{DC}	Operation Voltage		Volt	26.0	28.0	30.0
I _{DD}	Current Consumption @ Pout=10W		Amp		2.5	3.5
I _{DQ}	Quiescent Current		Amp		1.2	1.5
I _{sq}	Current Consumption @ PA Off		mA		100	
T _{ON/OFF}	Built in Tx/Rx witch for TDD with transmitter transient period compliant to 3GPP 36.104, release 10		uSec			1

UL Electrical Specifications @ +28.0VDC, 25°C, 50Ω System

Symbol	Parameter		Unit	Min.	Typ.	Max.
BW	Operating Frequency		MHz	2496		2690
P _{1dB}	Power Output P1dB		dBm	20	21	
G	Gain		dB	22	23	25
ΔG	Gain Flatness		dB			±1.0
ΔG _{TEMP}	Gain Variation over operating Temperature range		dB			±1.0
NF	Noise Figure		dB		3	5
IP ₃	Third Order Intercept Point 2-Tone@37dBm/Tone, 1MHz Spacing		dBm	+30	+33	
ISO	Isolation	Tx Mode: Ant out power vs Rx out power	dBc		-70	-80
		Rx Mode: Ant out power vs Rx out power	dBc		-70	-80

Environmental Characteristics

Parameters	Specifications	Remark
Operating Case Temperature Range	-30°C to +80°C	
Storage Temperature Range	-40°C to +85°C	
Relative humidity w/o condensation	95%	

Mechanical Specifications

Parameters	Specifications	Remark
Dimensions (L x W x H)	170 * 150 * 35 mm	
Weight	1.2 Kg	
RF Connectors DL In/ UL Out / Ant	SMA – Female	
DC Interface	15pin D-SUB (Male)	
Cooling	Adequate Airflow Required	

Protection

Item	Specifications for Activation	Remark
TX Input Power Range	7dBm Average Max	
VSWR Alarm	3:1 (R.L = 6dB)	DL Path
Thermal Overload	90°C±5 shutdown	75°C±5 Auto-recover

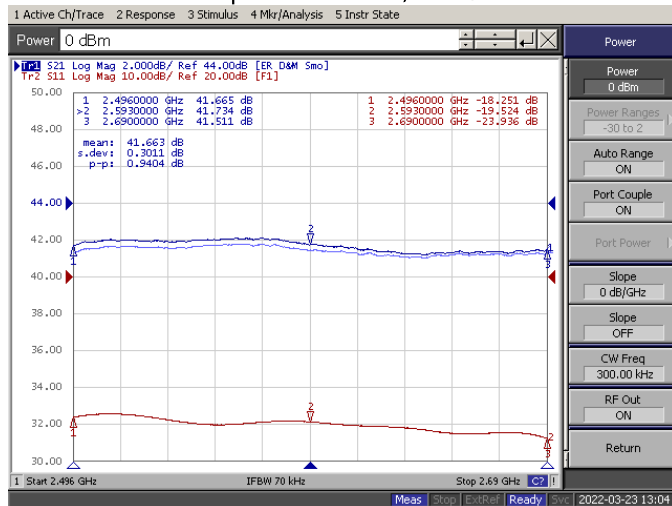
I/O Interface (D-sub 15pin Male)

Pin No	Pin Description	Specifications	Remark
1,9	VDD	+28VDC	
2	APD Reset	Normal: +3.3V or +5V or Open Reset: 0V or Ground	
3	VSWR	Normal: 0V Alarm: +3.3V~+5.0V	VSWR=3:1(RL=6dB)
4	PA On/Off	On: Open or 0V Off: +3.3V or +5V	Pull-Down Value = 10KΩ
5	Forward Power Monitor	3.5V @40dBm, 100mV/dB	Range: 45~15dBm
6	DL Sync.	DL Path On: Open or 0V DL Path Off: +3.3V or +5V	Pull-Down Value = 10KΩ
7	UL Sync.	UL Path On: +3.3V or +5V UL Path Off: Open or 0V	Pull-Down Value = 10KΩ
8,15	GND	Ground	
10	Reverse Power Monitor	3.5V @40dBm, 100mV/dB	
11	Temperature Monitor	0.75 @ 25°C±5°C, 10mV/°C	Use of the LM50C
12	Temperature Alarm	Normal: 0V Alarm: +3.3~+5V	
13,14	NC	No Connected	Manufacture Reserved

Typical Characteristics @ +28VDC, 25°C

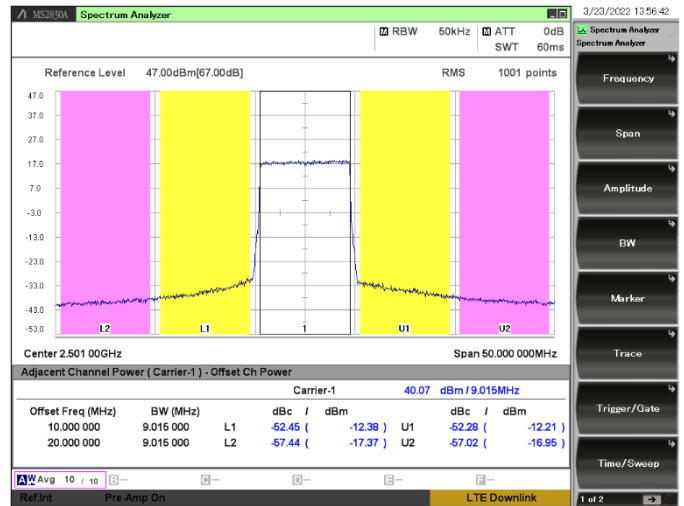
Plot 1 – Gain

Ch1: DL Path Gain @ Pout = 10W, Pin = 0dBm
Ch2: Input Return Loss, 10dB/div



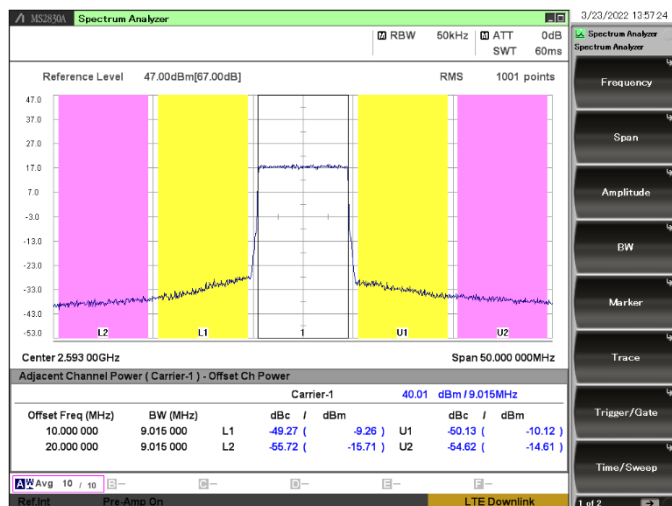
Plot 2 – ACLR, LTE 10MHz

Fc = 2501MHz



Plot 2 – ACLR, LTE 10MHz

Fc = 2593MHz



Plot 2 – ACLR, LTE 10MHz

Fc = 2685MHz

