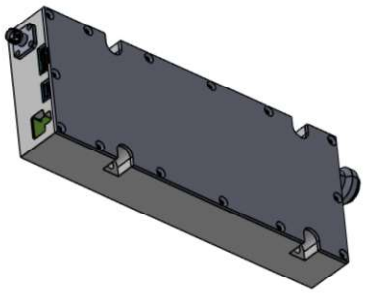
LPA Concepts

LINEAR POWER AMPLIFIER	LPA-AH11-050AB-2640M-2950M-28-00
P3310	

FEATURES

- ♦ 2640-2950MHz Gain 47dB
- ♦ LDMOS linearity
- ♦ Class AB; P_{-1dB}= 50W
- ♦ 28V / 1.15A idle; 28V/4.4A at 25W
- ♦ LTE10, 6Wav , -45dBc ACLR, 28V/2.3A
- ♦ Fast On/Off, Internal ALC
- ♦ Output VSWR protection
- ♦ Overcurrent, Over temperature protection
- ♦ Visual status with LEDs
- ♦ USB monitoring & controls
- ♦ RoHS compliant

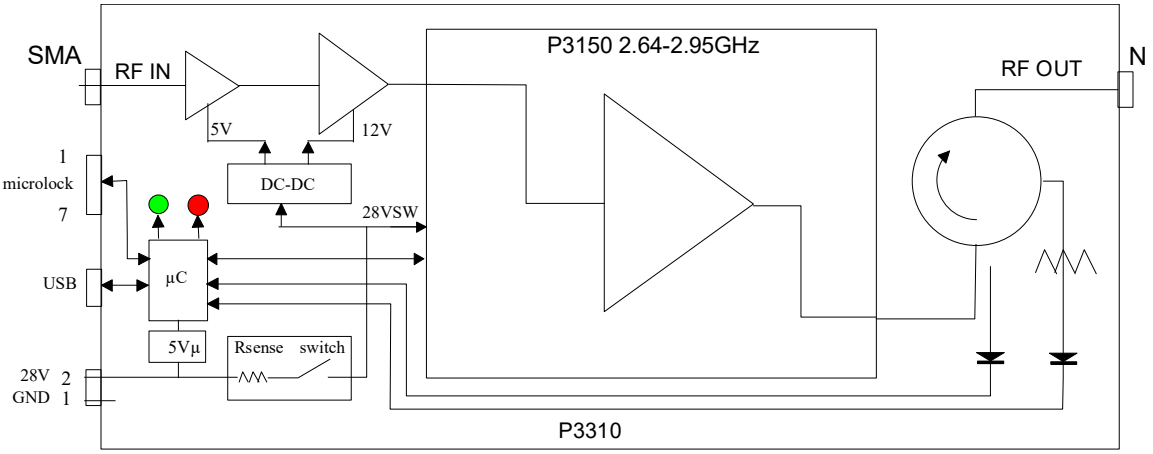
PACKAGE



APPLICATIONS

- ♦ Communications

BLOCK DIAGRAM



Electrical characteristics: 50 ohms; +28V; -25°C to +80°C (1, 2)

Ref	Parameter	Conditions	Note	Min	Typ	Max	Units
1	Bandwidth			2640		2950	MHz
2	Gain small signal	2800 MHz; 50°C			47		dB
3	Gain variation vs frequency	2640-2950 MHz				2.5	dBpp
4	Power gain	50W output			46		dB
5	Power gain vs frequency	50W output				2.5	dBpp
6	Input return loss	50 ohms				-15	dB
7	Output return loss	50 ohms				-15	dB
8	P saturation	CW			65		W
9	Peak envelope power	2 tone -30dBc IMD3			50		W
10	ACLR at 28V/2.3A	10MHz LTE PAR=9dB 6Wave				-45	dBc
11	Fast On/Off rise time	FAOO from 0V to 3V				1	µs
12	Fast On/Off fall time	FAOO from 3V to 0V				1	µs
13	Second harmonic	f1=2800MHz; 50W output			-50		dBc
14	Spurious during On	except harmonics				-30	dBm
15	Gain during Off state					-20	dB
16	Noise during Off state						
17	ALC rise time					300	µs
18	ALC hold time					3	ms
19	Current consumption Off state	28V ; Fast On/Off=0V			0.4		A
20	Current consumption On state	28V ; Fast On/Off=3V; idle			1.15		A
21	Current consumption On state	28V ; Fast On/Off=3V; 6W LTE			2.3		A
22	Current consumption On state	28V ; Fast On/Off=3V; 25W			4.4		A
23	Current consumption On state	28V ; Fast On/Off=3V; 50W			6.2		A

1. Unless otherwise specified
2. Hot spot temperature given by temp sensor close to final transistor

Maximum ratings

Ref	Parameter	Conditions	Note	Min	Nom	Max	Units
1	Operating temperature	Hot spot temperature	3	-25°C		+80	°C
2	Supply voltage			26	28	33	V
3	Voltage on Alarm pin					10	V
4	Input CW power	In band	5			+3	dBm
5	Maximum reverse power	>2s	4			50	W
6	Maximum reverse power	continuous				30	W

3. Shuts down at 80°C resume operation at 70°C
4. Will automatically shut down after 2s
5. Will shut down at I>7.8A (60W)

Protections

Ref	Parameter	Description	Remarks
1	Overvoltage	Shut down if supply > 33 V	
2	Under voltage	Shut down if supply < 20 V	
3	Overcurrent	Shut down if current > 8.1 A	Output power > +48dBm CW
4	Temperature	Shut down if temp > 80°C	Auto recovery (at 75°C)
5	Max reverse power	Shut down if Prev > 30W	Shuts down after 2s for Pout>30W

Analog monitoring & controls

Ref	Characteristic	Description	Remarks
1	Temperature	Analog output	-40°C to +100°C (TMP20)
2	Alarm	Open drain (0V on alarm)	Multiplexed with analog temp
3	PA On/Off	Amplifier Off when PAOO > 3V	28V switches off
4	Fast On/Off	Amplifier On when FAOO = 3V	

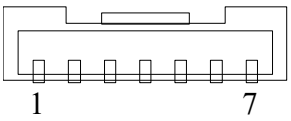
Specifications and information are subject to change without notice

USB Monitoring & controls (6)

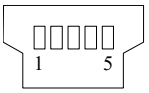
Ref	Characteristic	Description	Remarks
1	Temperature	Hot spot temperature	Digital sensor
2	Supply voltage	Voltage applied by user	
3	Current	Through sense resistor	
4	ON/OFF	Shut down amplifier	
5	Alarm	Provide state of amplifier	

6. Use Interface program PRSI25001V0.2.

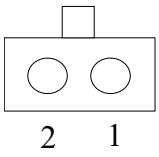
Communication DC Connector Molex Microlock Plus 505567 0771

Pin description			PINOUT
Pin 1 : Fast On/Off			7 circuits Pitch 1.25mm
Pin 2 : PA ONOff		Mate with 505565 0701 505431 crimp terminals AWG 26 wire	
Pin 3 : ALA			
Pin 4 : Temperature			
Pin 5 : Current sense			
Pin 6 : forward power			
Pin 7 : Gnd			

Communication USB 54819-0589

Pin description			PINOUT
Pin 1 : Vbus			Mini USB b
Pin 2 : Data-			
Pin 3 : Data+			
Pin 4 : NC			
Pin 5 : Gnd			

Power Supply DC Connector Molex Minifit Jr 172648-0102

Pin description			PINOUT
Pin 2 : Supply +28V		Mate with 39-01-4020 with 45750-3211 inserts and AWG16 wires	2ckts 4.2mm pitch
Pin 1 : Gnd			

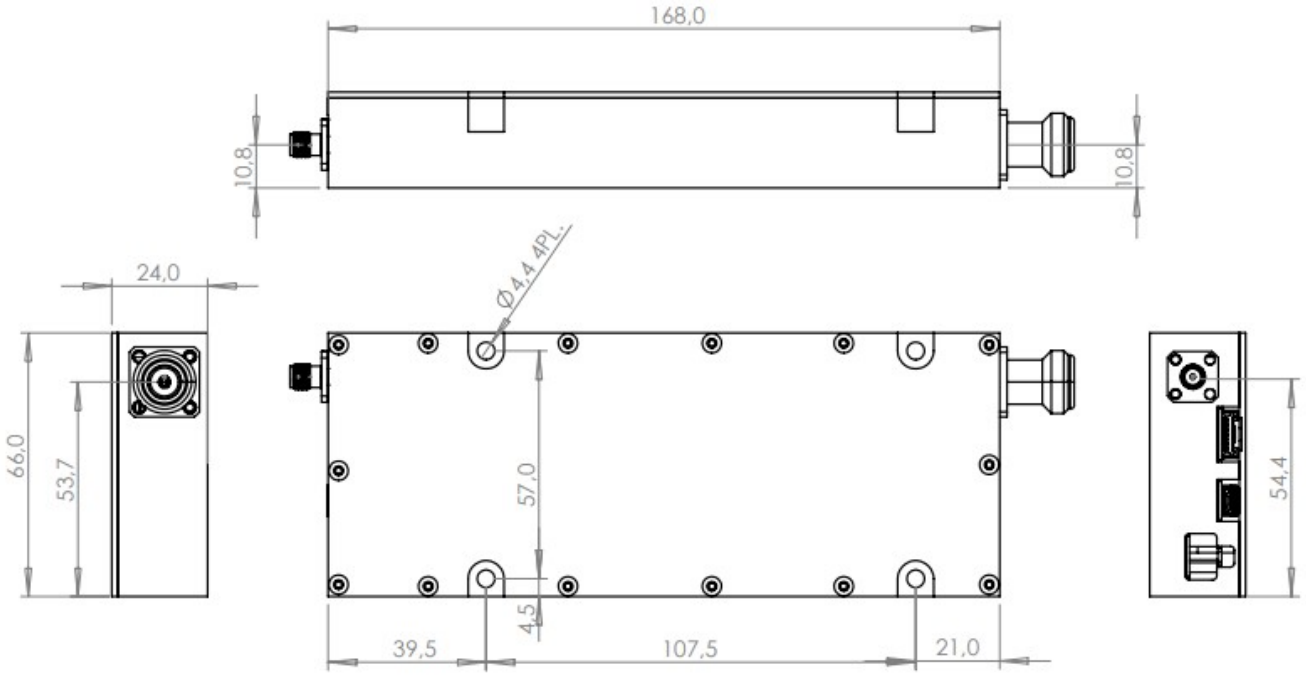
LED significations

LED 1 (green)	LED 2 (red/orange)	Signification
OFF	OFF	Power supply not applied
ON	OFF	Amplifier ON
Blinking	OFF	Amplifier Muted by operator
ON	Orange	Temperature warning, amplifier ON
OFF	Red	Amplifier OFF (Under voltage, over voltage, over temp....)

Mechanical characteristics

Ref	characteristic	description	remarks
1	Housing dimensions	168mm x 66mm x 24mm	
2	Housing cover finish	Electroless nickel	
3	Mounting	4 M4 screws	It is recommended to use a thermal interface material under housing
4	Input RF connectors	SMA	female
5	Output RF connector	N	female
5	DC supply connector	Molex 172648-0102	Male type
6	DC controls connector	Molex 505567-0771	Male type
7	USB connectors	Mini USB B	
8	Weight	460 grams	

Package outline:

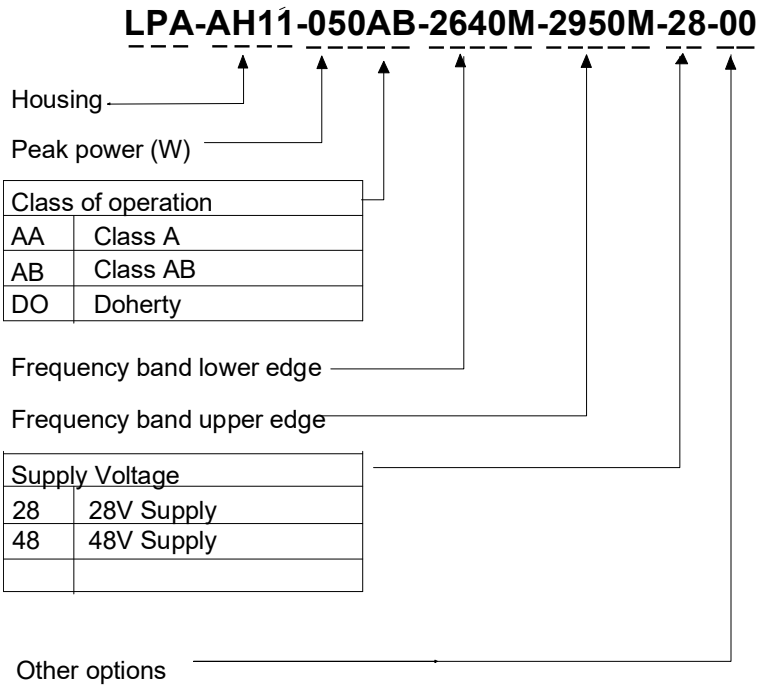


Thermal information

Ref	Parameter	temperature	Condition	Note
1	Temp sensor reading		Hot spot close to final transistor	
2	Housing temperature at 50W CW output	70°C (Shut down condition)	Temp sensor = 80°C (Shut down condition)	7

7. Housing attached to heatsink with thermal interface material

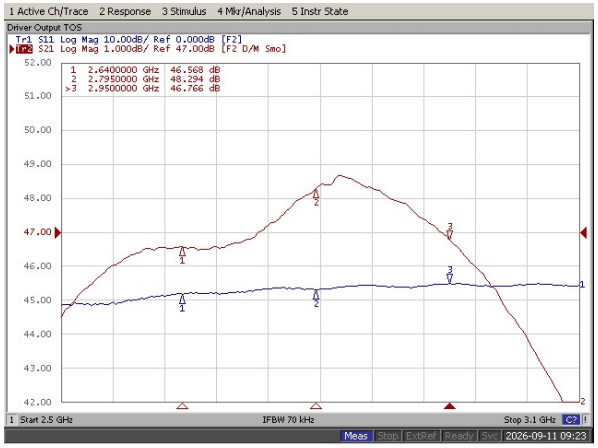
Part numbering:



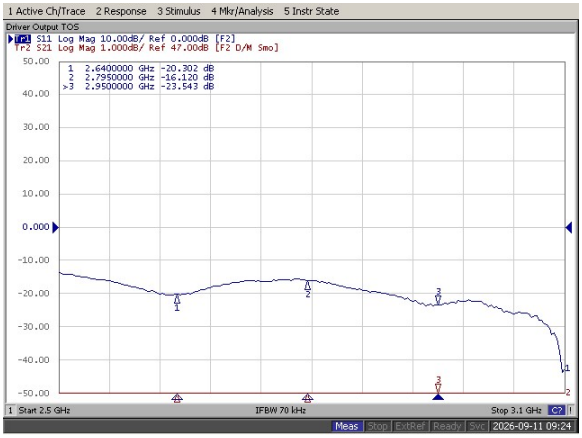
Support material:

Ref	Document type	Document number	Title	Date
1	USB Cable		USB to mini USB B	
2	Interface program	PRSI25001 V0.2.		2025

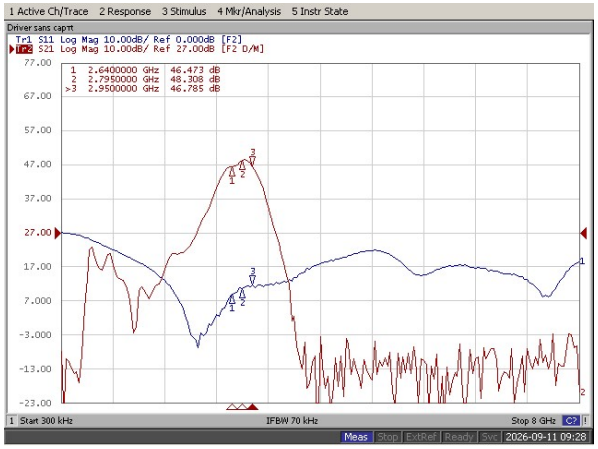
TYPICAL PERFORMANCE



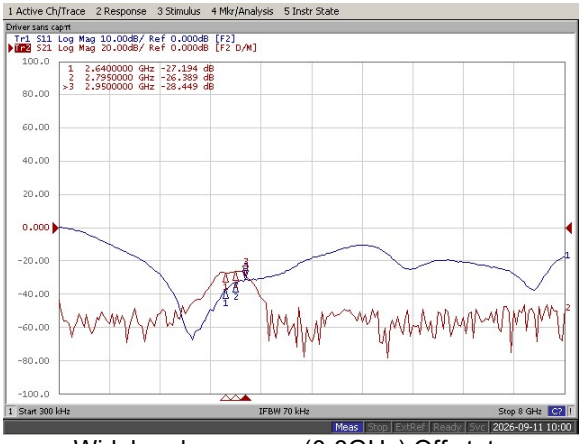
Gain / IRL vs frequency



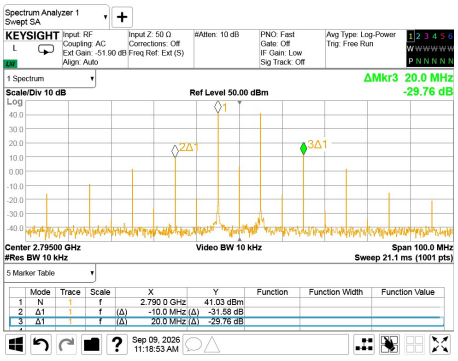
Output return loss vs frequency



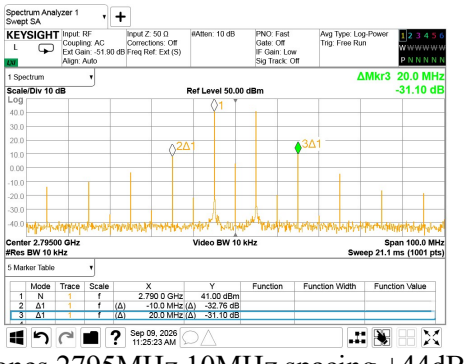
Wideband response (0-8GHz) On state



Wideband response (0-8GHz) Off state

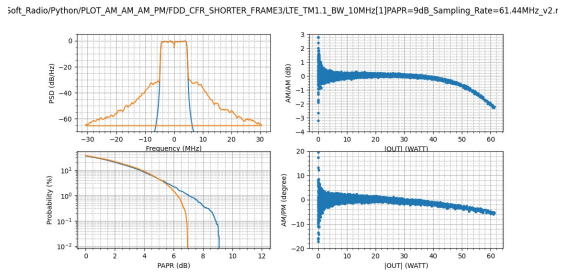


2 tones 2795MHz 10MHz spacing +44dBm each
28V/4.1A

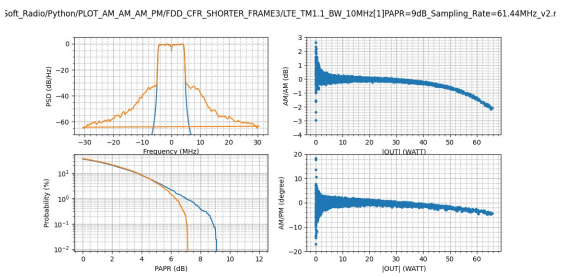


2 tones 2795MHz 10MHz spacing +44dBm each
32V/4.1A

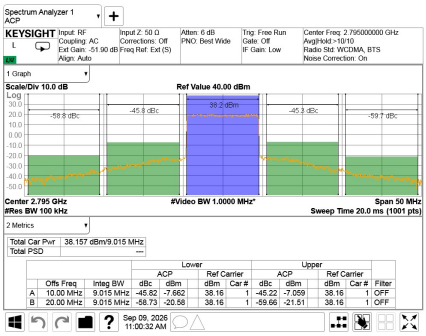
TYPICAL PERFORMANCE (continued)



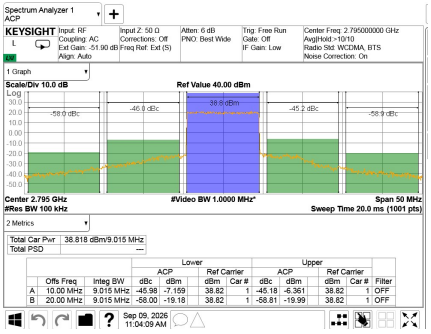
AMAM/AMPM : LTE10 PAR=9dB, 28V, 2795MHz



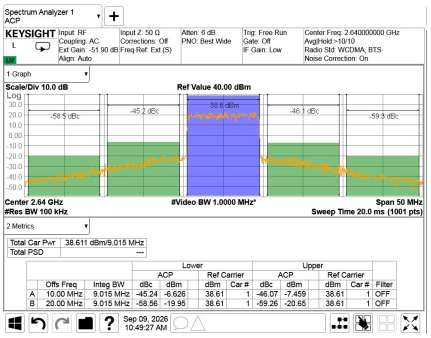
AMAM/AMPM : LTE10 PAR=9dB, 32V, 2795MHz



LTE10; 2795MHz ; 6.7W; 28V/2.33A



LTE10; 2795MHz ; 7.6W; 32V/2.48A

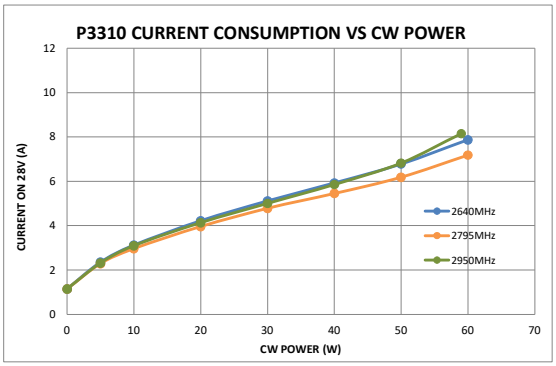


LTE10; 2640MHz ; 7.3W; 28V/2.56A

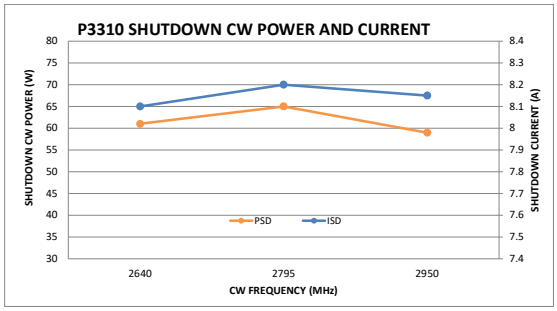


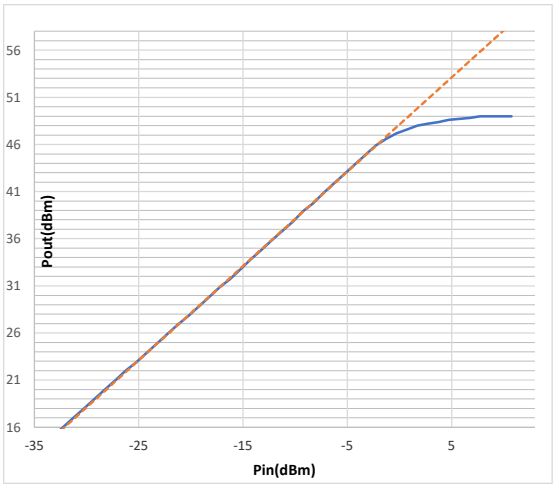
LTE10; 2950MHz ; 6.5W; 28V/2.41A

TYPICAL PERFORMANCE (continued)

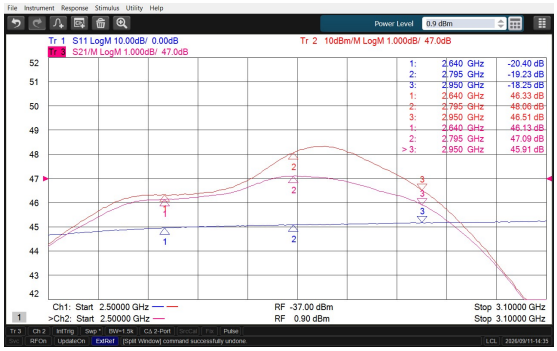


Current vs CW power

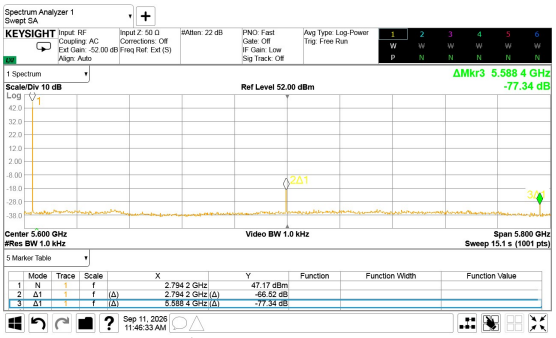




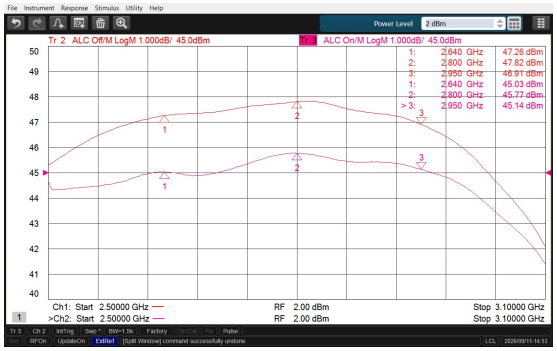
P1dB (pulse width : 1ms, pulse period 10ms)



Gain compression @52W output
pulse width : 1ms, pulse period : 10ms

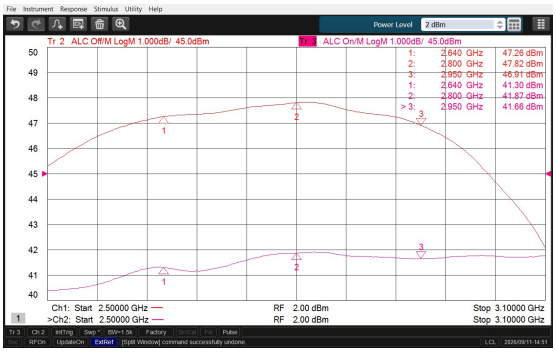


2nd and 3rd Harmonics at 50W output

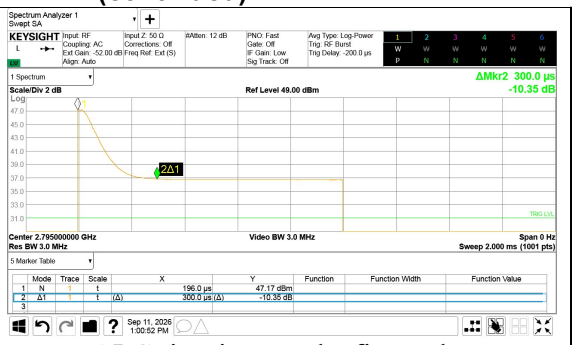


ALC level set at 46dBm, Pout=45.8dBm
(47.8dBm with ALC Off)

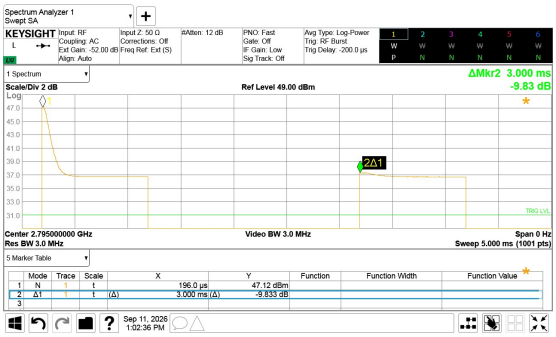
TYPICAL PERFORMANCE (continued)



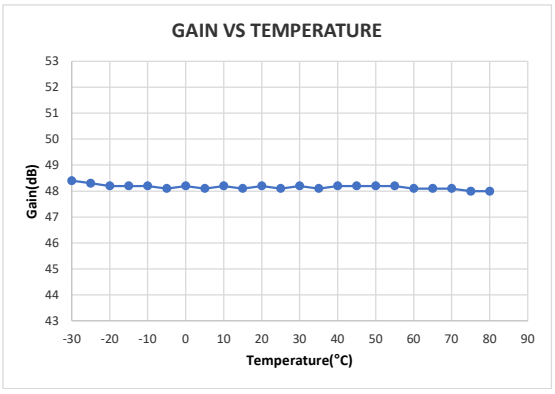
ALC level set at 42dBm, Pout=41.7dBm
(47.8dBm with ALC Off)



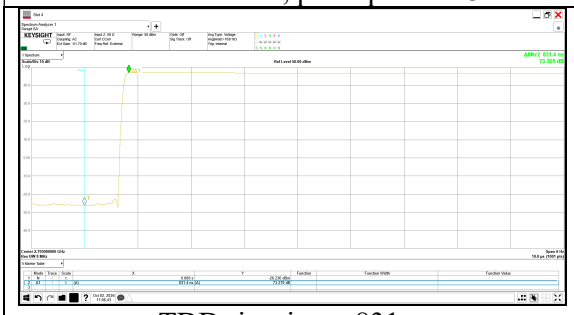
ALC rise time on the first pulse
ALC level set at 37dBm (Pout with ALC Off : 47dBm)
Pulse width : 1ms, pulse period : 3ms



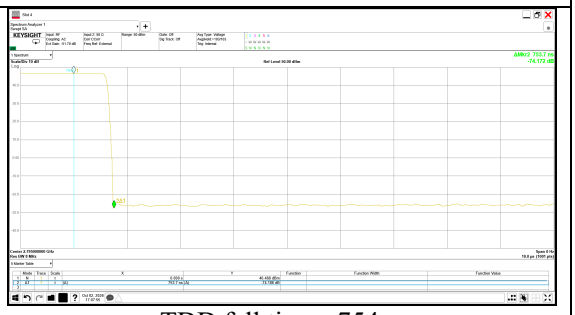
ALC hold time
ALC level set at 37dBm (Pout with ALC Off : 47dBm)
Pulse width : 1ms, pulse period : 3ms



Gain vs temperature 2795MHz



TDD rise time : 831ns



TDD fall time : 754ns