



ACCEPTANCE TEST DATA

Date	Job Number	SKU No.	Frequency	Output Power
December 29, 2022	17507-1-1	2239-002	2900-3500 MHz	1kW Pulsed/ 250W

Power Amplifier Final Test

ELECTRICAL SPECIFICATIONS @ 220V_{AC}, 25°C ambient, 50Ω System

Parameter	Specifications						Frequency (MHz)							P/F				
	Symbol	Min	Typ	Max	Unit	Notes	2900	3000	3100	3200	3300	3400	3500					
Operating Frequency - BW	BW A	2900		3500	MHz		x	x	x	x	x	x	x					P
Min. P _{in} for P _{OUT} = 1kWpk (530μS PW, DC = 20%, MGC and Gated Input)	Pin		-5		dBm	Record	-3.6	-5.3	-4.4	-4.4	-3.4	-1.4	-2.4					P
Min. P _{in} for P _{OUT} = 1kWpk (200nS PW, DC = 20%, MGC and Gated Input)																		
Droop @ 1kWpk, 530μS PW, DC = 20% (MGC and Gated Input)	P _{Droop}			1	dB	Record	0.50	0.40	0.30	0.30	0.40	0.50	0.50					P
Droop @ 1kWpk, 200nS PW, DC = 20% (MGC and Gated Input)																		
Pulse Characteristics, P _{OUT} = 1kWpk (530μS PW, DC = 20%, MGC and Gated Input)	T _{RISE}			20	nSec	Plots 4-7	x	x	x	x	x	x	x					P
	T _{FALL}			20			x	x	x	x	x	x	x	x				
Pulse Characteristics, P _{OUT} = 1kWpk (200nS PW, DC = 20%, MGC and Gated Input)	T _{RISE}			20		Plots 8-11	x	x	x	x	x	x	x					P
	T _{FALL}			20			x	x	x	x	x	x	x	x				
Min. P _{in} for P _{OUT} = 250Wpk (2.1mS PW, DC = 20%, MGC and Gated Input)	Pin		-15		dBm	Record	-12.00	-14.00	-14.40	-14.50	-13.90	-11.50	-13.70					P
Droop @ 250Wpk, 2.1mS PW, DC = 20% (MGC and Gated Input)	P _{Droop}			1	dB	Record	0.40	0.40	0.40	0.40	0.40	0.40	0.40					P
Pulse Characteristics, P _{OUT} = 250Wpk (2.1mS PW, DC = 20%, MGC and Gated Input)	T _{RISE}			70	nSec	Plots 12-15	x	x	x	x	x	x	x					P
	T _{FALL}			70			x	x	x	x	x	x	x	x				
Harmonics @ P _{OUT_PULSE} = 1000WPK	2nd		-25		dBc	Record	-45	-42	-53	-54	-46	-44	-45					P
	3rd		-30				-44	-53	-54	-57	-58	-66	-58					
Input Return Loss	S11			-10	dB	Plot 1	√	√	√	√	√	√	√					P
Small Gain Flatness	ΔG			±3.5	dB	Plot 1	√	√	√	√	√	√	√					P
Gain @ Shutdown Condition, P _{IN} = 0dBm	G _{SD}			-35	dB	Plot 3	√	√	√	√	√	√	√					P
Gain Adjustment Range (530μS Pulse Width MGC mode and gated input)	VVA	20			dB	Plot 2	√	√	√	√	√	√	√					P
Spurious Signals	Spur			-60	dBc	Record	>-60	>-60	>-60	>-60	>-60	>-60	>-60					P
Noise Power density	N _{SD}			-100	dBm/1MHz	Record	<-103											P

ELECTRICAL SPECIFICATIONS (cont.) @ 220V_{AC}, 25°C ambient, 50Ω System

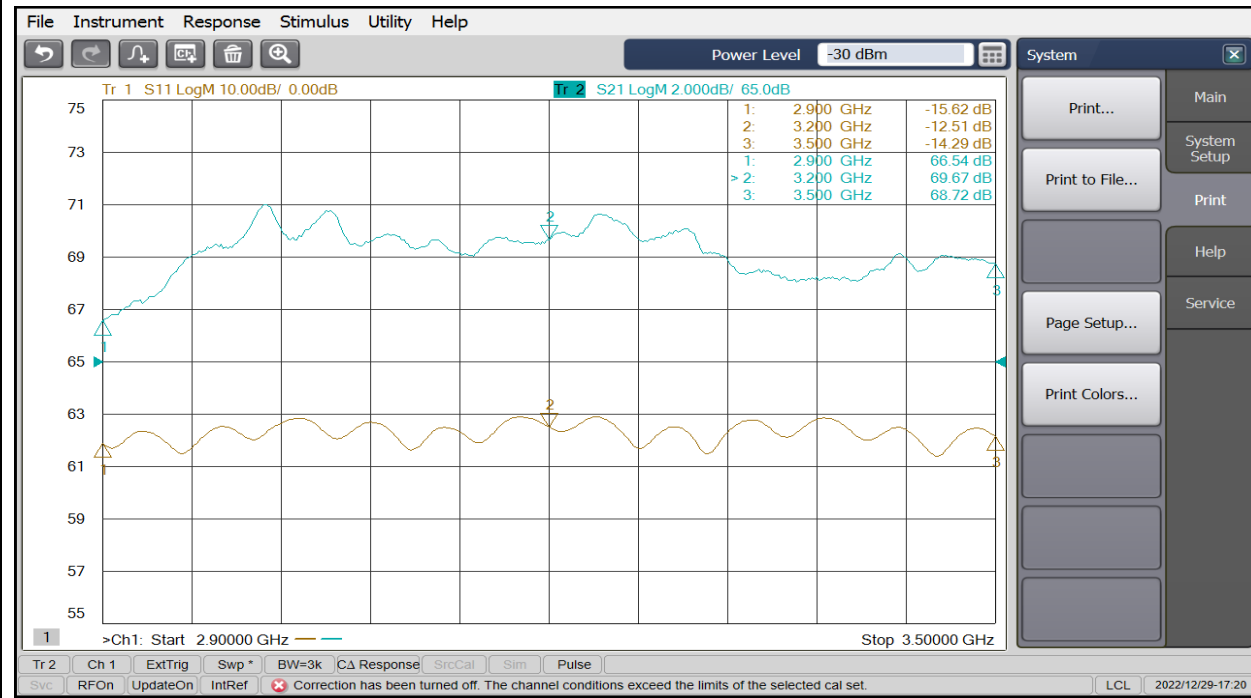
Parameter	Specifications						Frequency (MHz)										P/F					
	Symbol	Min	Typ	Max	Unit	Notes	2900	3000	3100	3200	3300	3400	3500									
Operating Voltage	V _{dc}	100	208	220	V	Record	208	208	208	208	207	206	206							P		
Power Consumption @ P _{OUT} = 1kW (530μS PW, DC=20%, MGC and Gated Input)	P _D			1	kVA	Record	0.80	0.78	0.83	0.87	0.88	0.91	0.93							P		
Power Consumption @ P _{OUT} = 1kW (200nS PW, DC=20%, MGC and Gated Input)				0.5			0.26	0.25	0.26	0.26	0.27	0.27	0.27	0.27								P
Power Consumption @ P _{OUT} = 250W (2.1mS PW, DC=20%, MGC and Gated Input)	P _D			1	kVA	Record	0.47	0.42	0.44	0.45	0.48	0.49	0.50							P		
Sample Port @ 1kWpk 530μS pulse width; 20% duty cycle, MGC = 100% (Measured at the middle of the pulse)	PSAMPLE				dBm	Record	8.00	7.00	8.00	7.80	7.80	8.00	7.00							P		
Efficiency @ 1kW	η				%	Computed	12.5	12.8	12.1	11.5	11.4	10.9	10.7							P		
Power Consumption @ Shutdown	P _{SD}				kVA	Record	0.2													P		
Quiescent Power Consumption	P _{DQ}				kVA	Record	0.2														P	
NTE Test @ limiter threshold	P _{OOD}			60.5	dBm	Record P _{OUT}	-	-	-	60.5	-	-	-	-	-	-	-	-	-	P		
Input Overdrive - Shutdown	P _{IOD}			10	dBm	Verify	√														P	
VSWR - Backoff	VSWR		2:01		-	Verify	√															P
Thermal Overload - Shutdown	T _{OD}			95	°C	Verify	√															P

INTERFACE

System Controller	SW/FW	NTE	Max MGC	Set Point		Fwd./Rev.	Watt/dB	USB	RS232/RS422	Monitors
	Version	dBm	Percent	Min	Max	-	-	-	-	-
Verify / Record	01.29.25	60.5	100	0	100	√	√	-	√	-

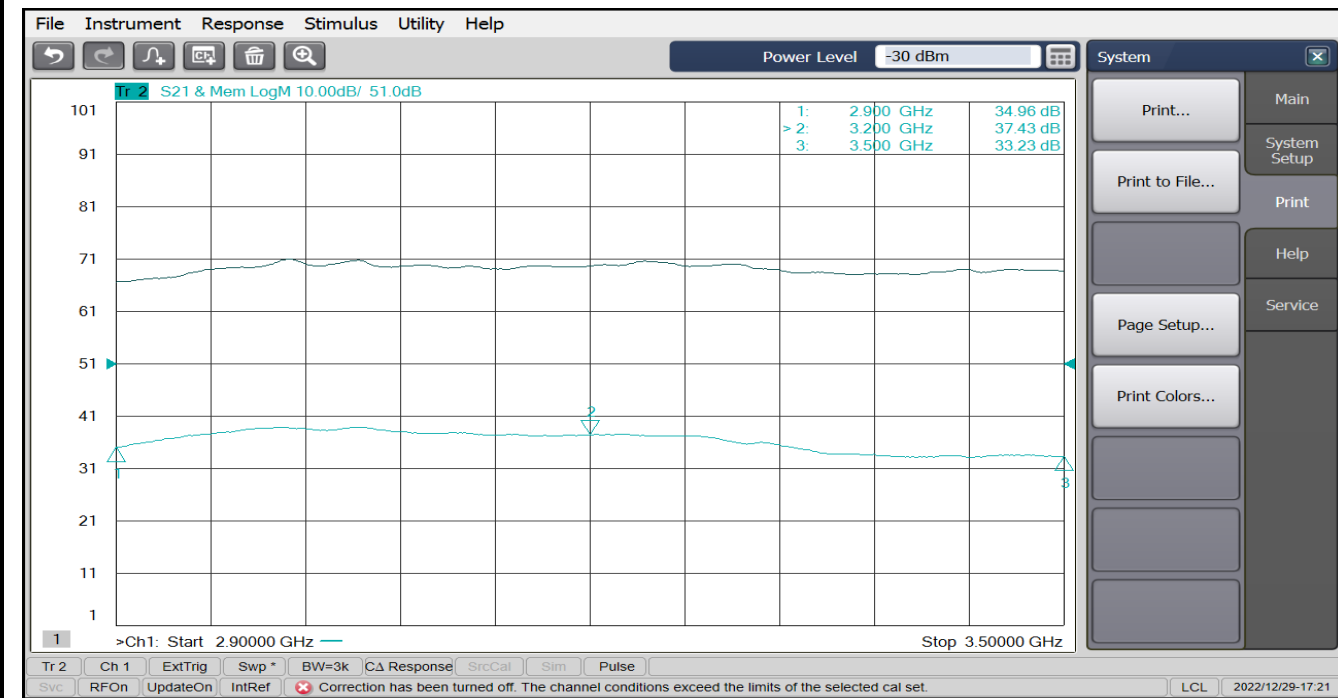
Plot 1 - Small Signal Gain and Input Return Loss (Peak)

Top Curve: Small Signal Gain @ $P_{IN} = -30\text{dBm}$
 Reference: 65dB, 2dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



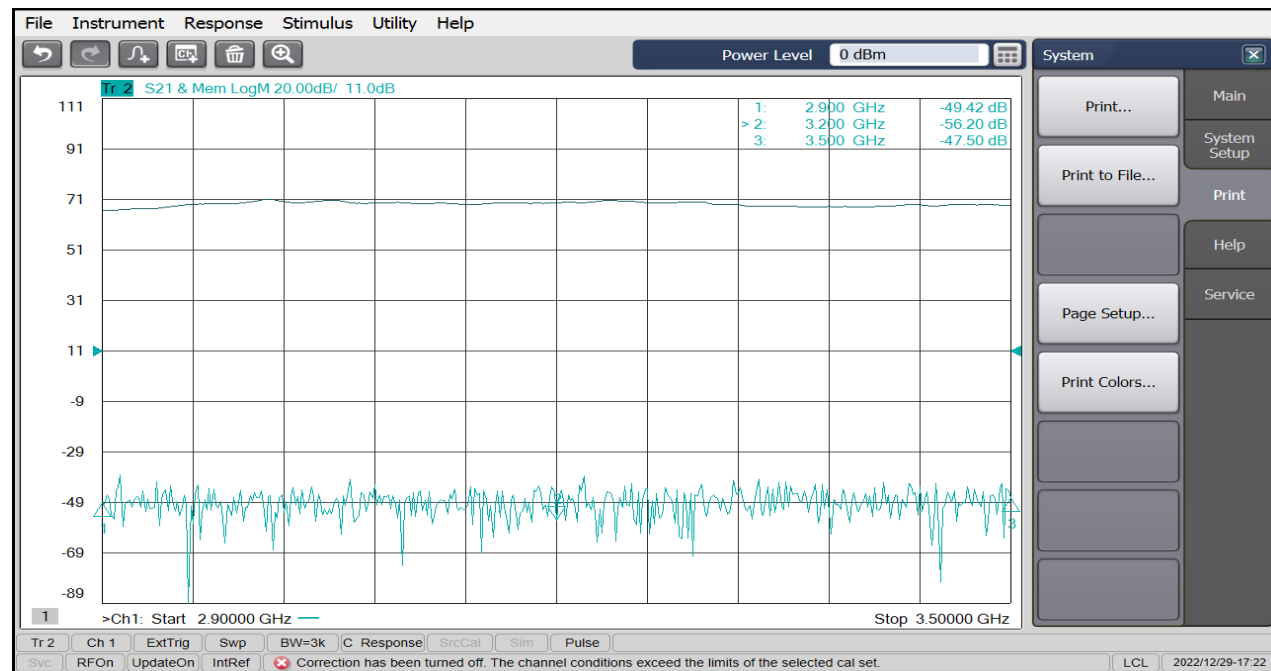
Plot 2 -Gain adjustment range

Top Curve (Trace Memory): Maximum Gain (MGC Mode and $P_{IN} = -30\text{dBm}$)
 Reference :51dB, 10dB/div.
 Bottom Curve (Active Trace): Minimum Gain (MGC Mode and $P_{IN} = -30\text{dBm}$)
 Reference: 60dB, 10dB/div.

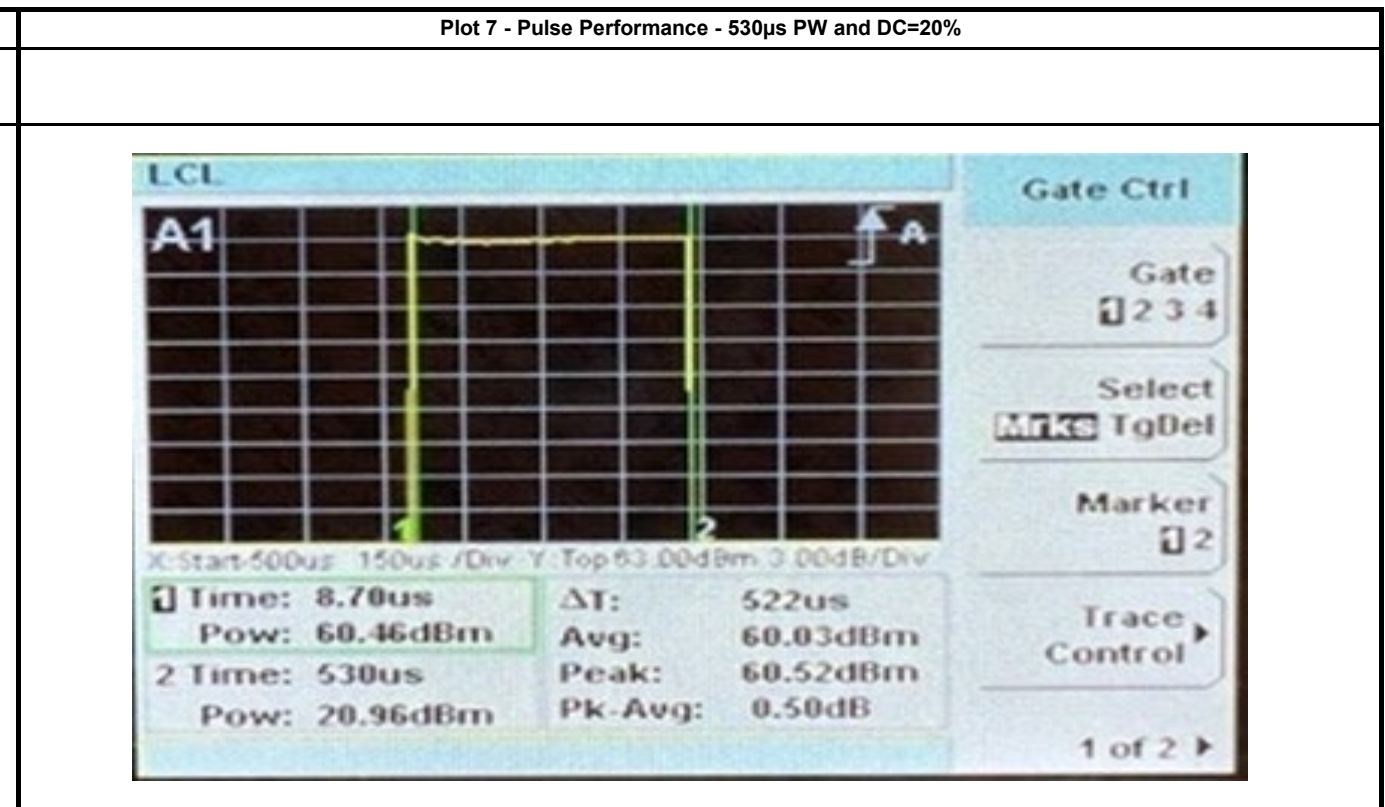
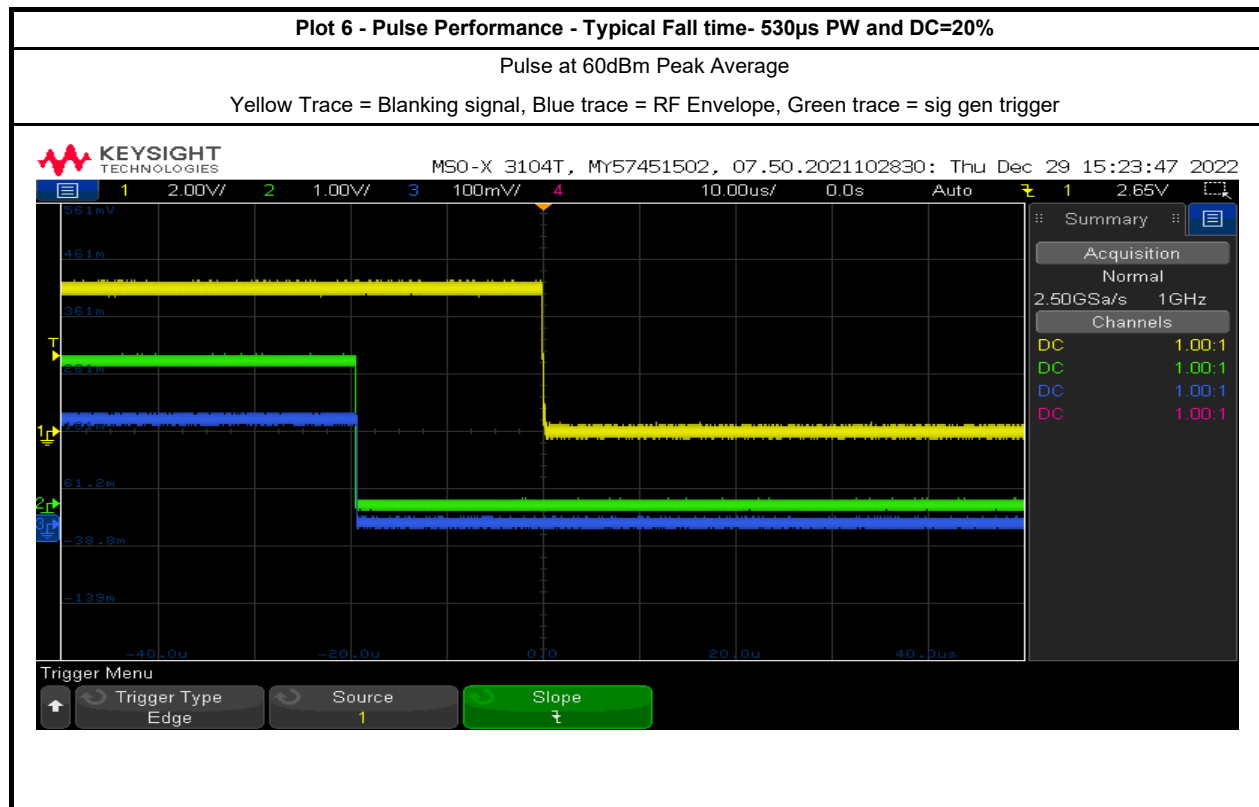
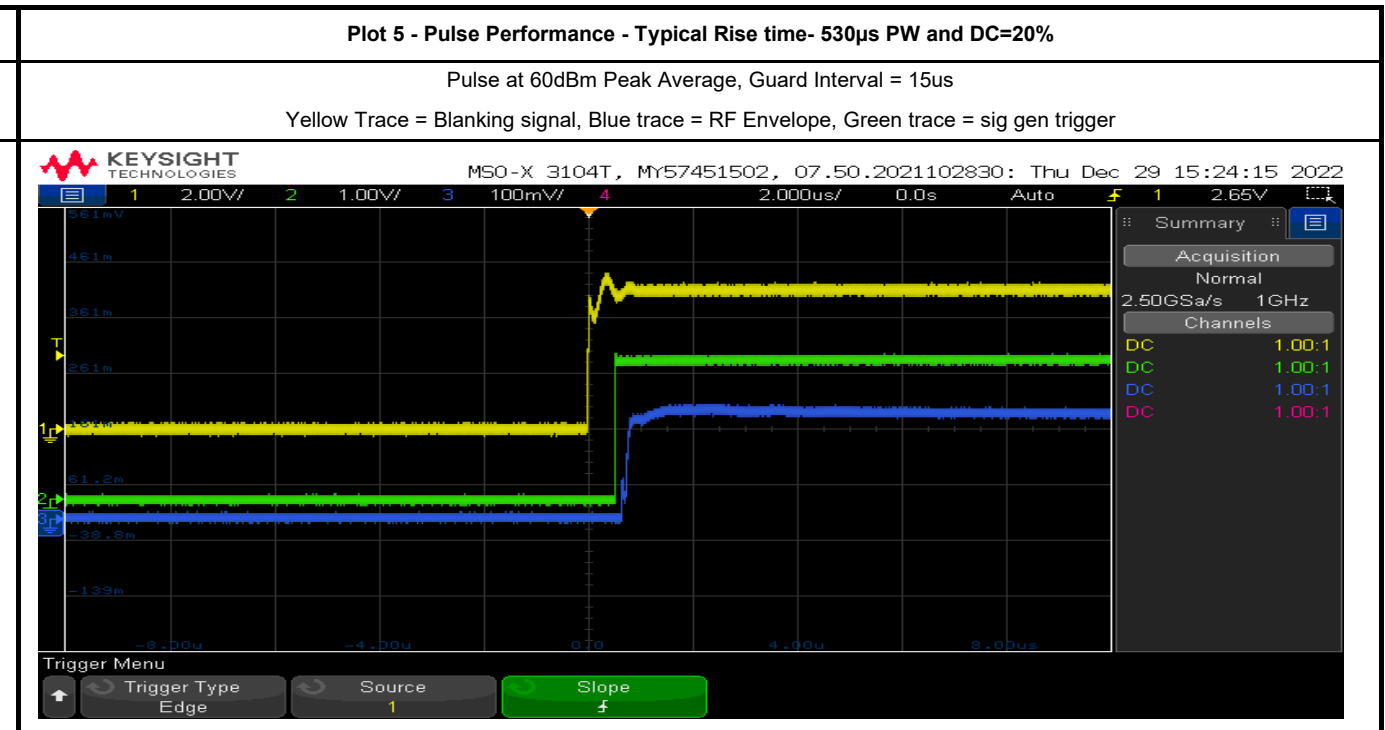
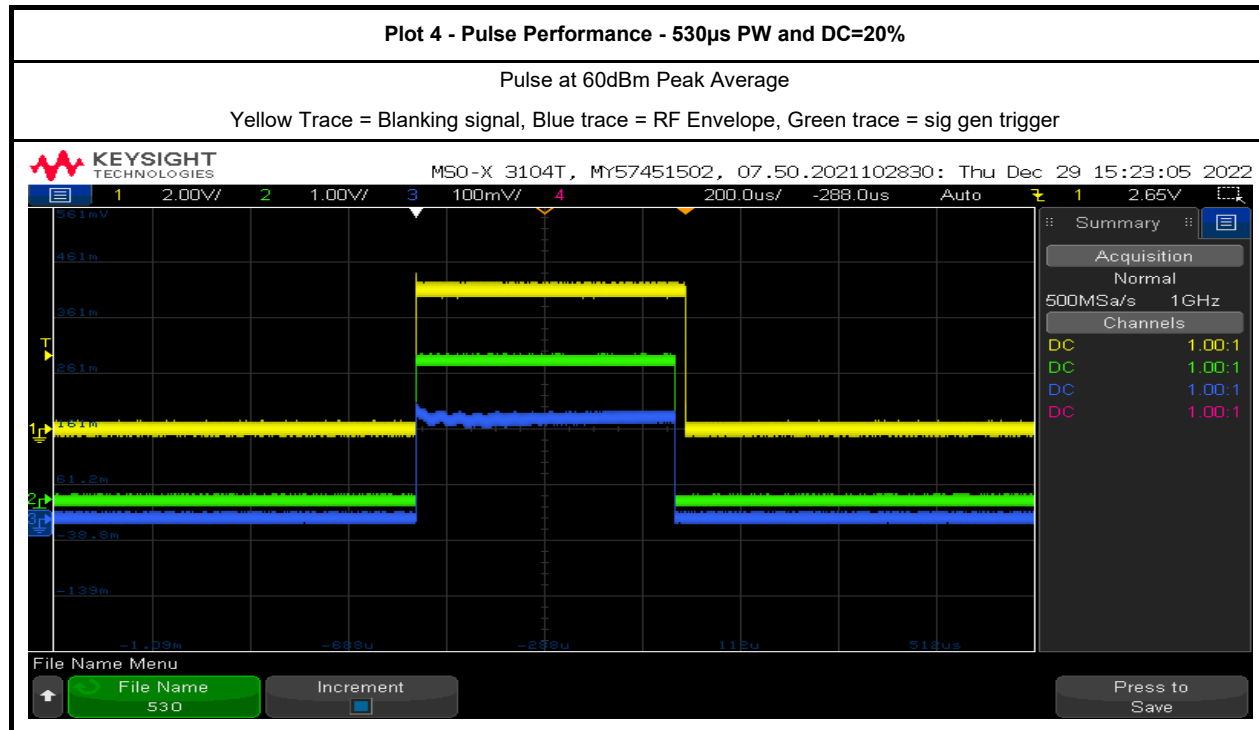


Plot 3 - Gain at shutdown condition

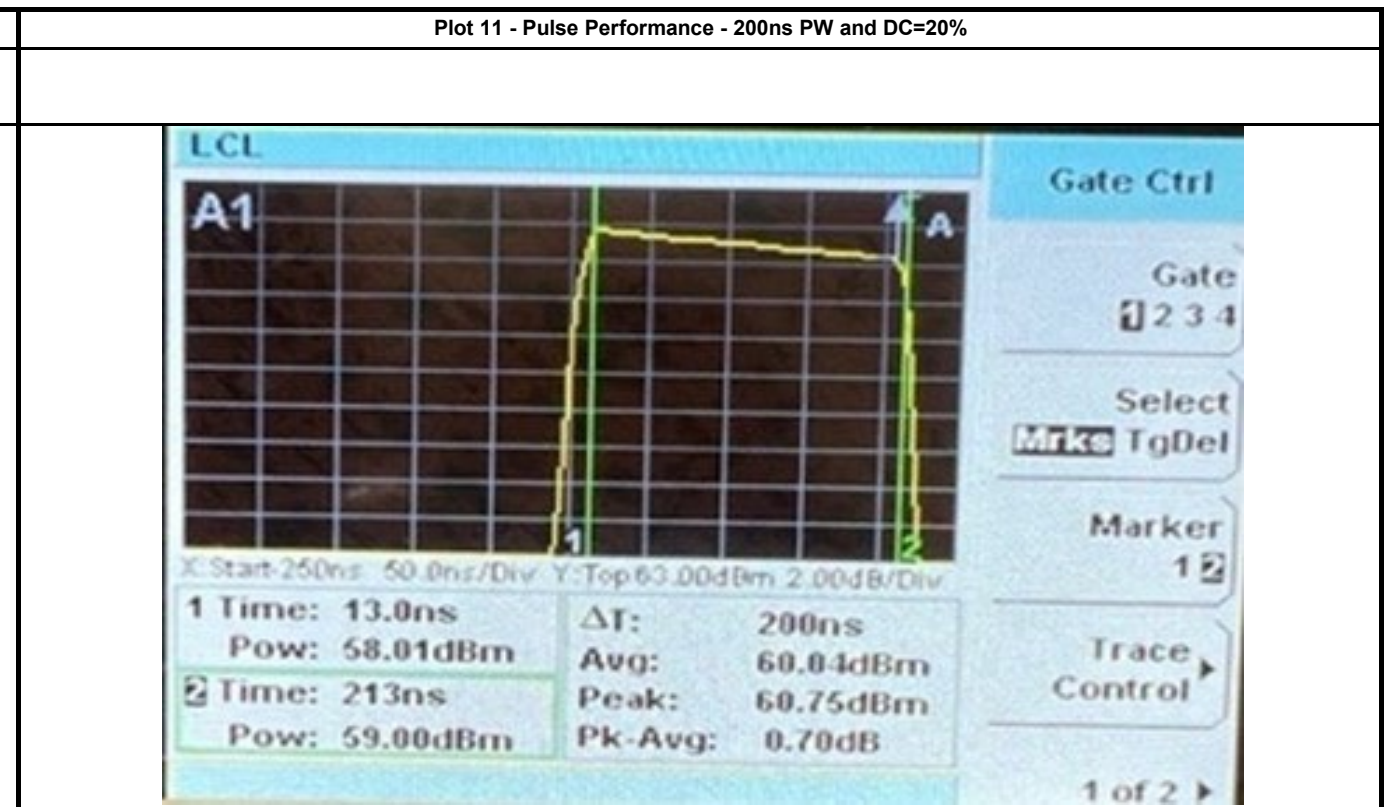
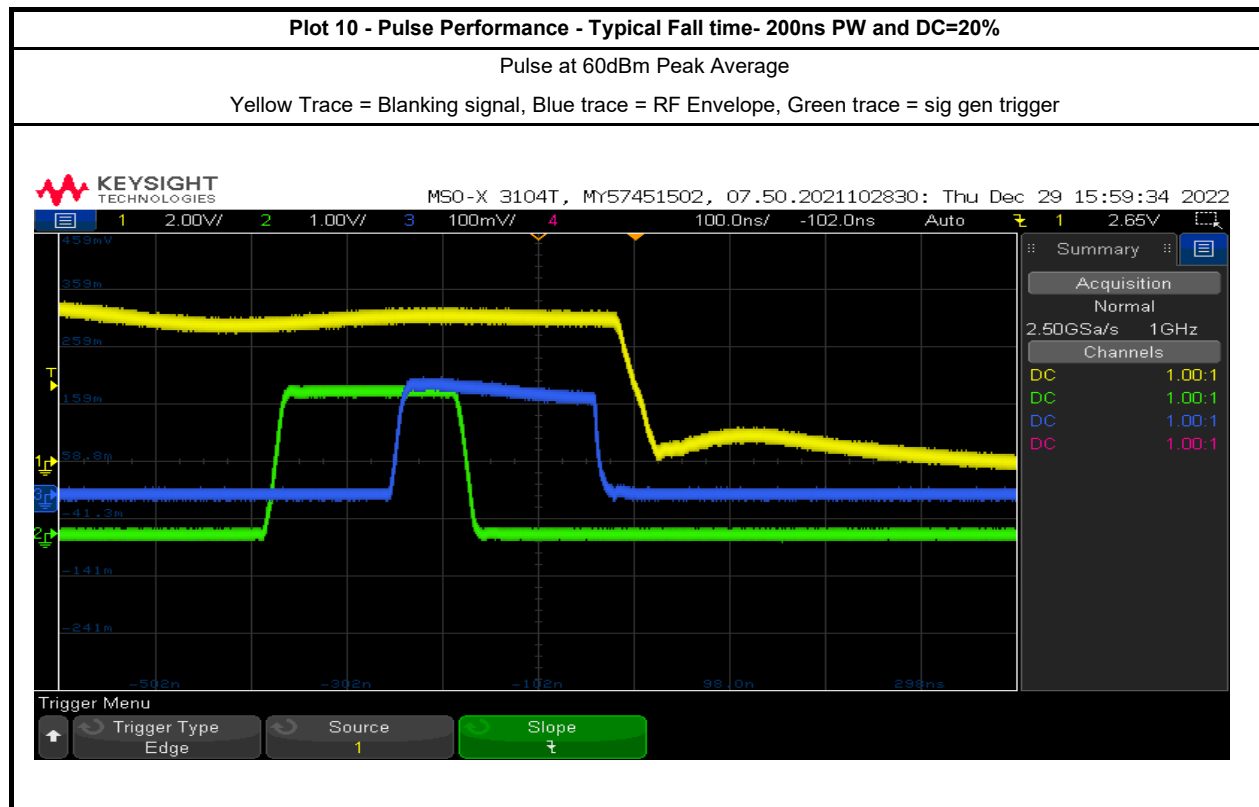
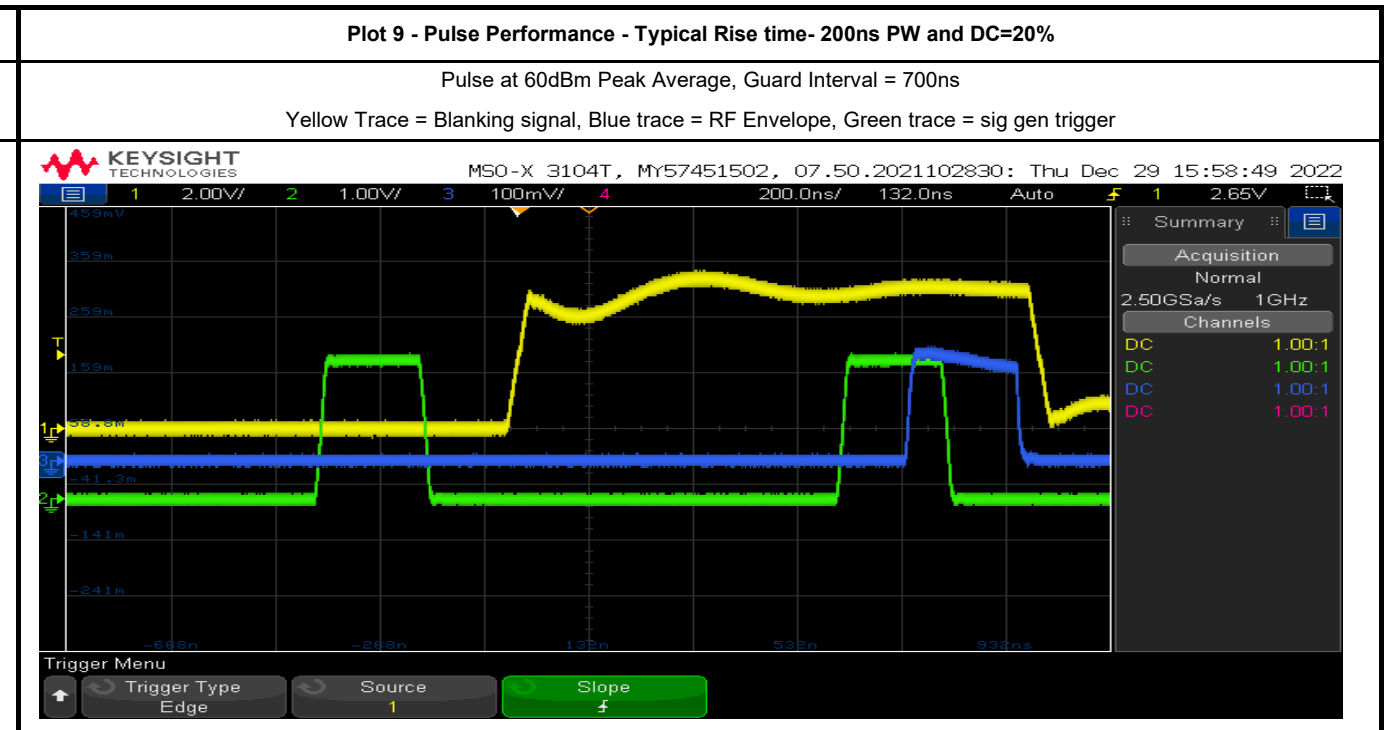
Top Curve (Trace Memory): Maximum Gain (MGC Mode and $P_{IN} = -30\text{dBm}$)
 Reference: 11dB, 20dB/div.
 Bottom Curve: (Active Trace): Gain at Shutdown (MGC Mode and $P_{IN} = 0\text{dBm}$)
 Reference: 11dB, 20dB/div.



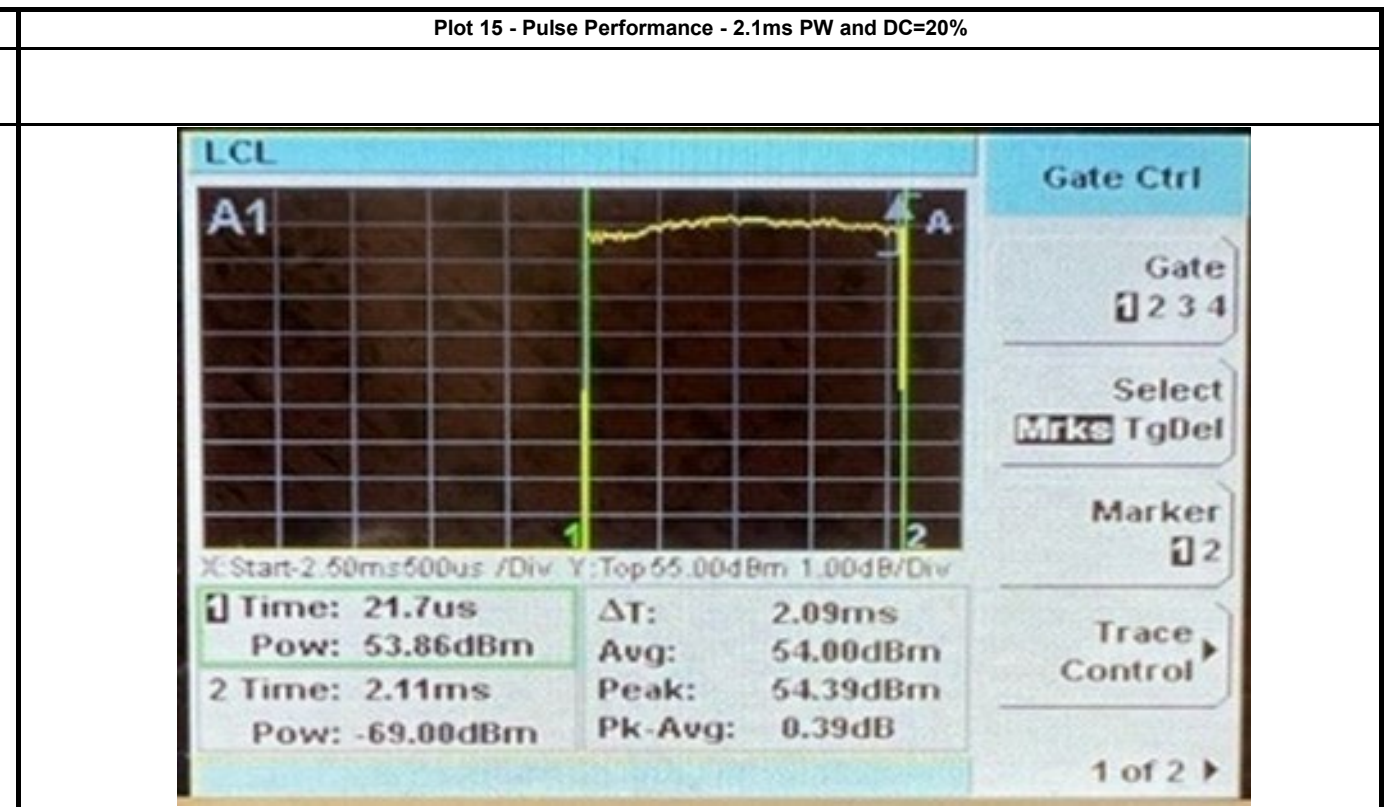
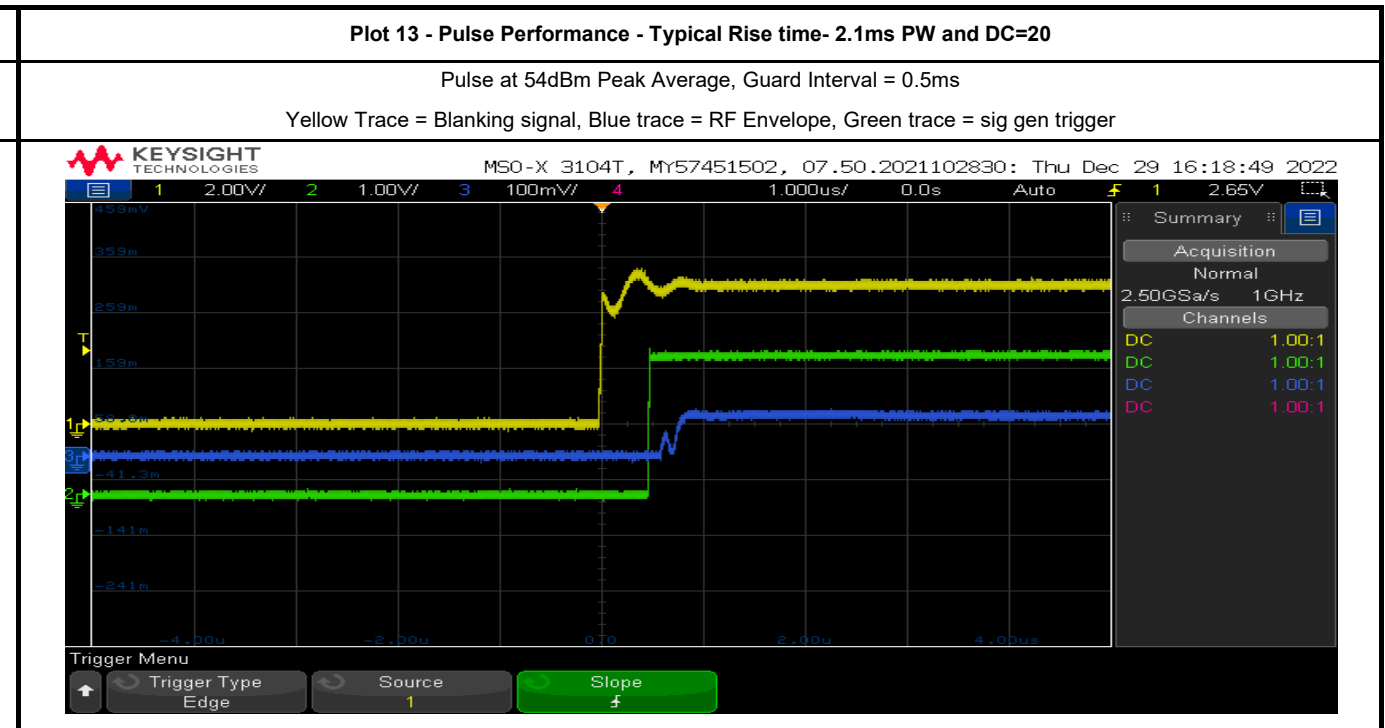
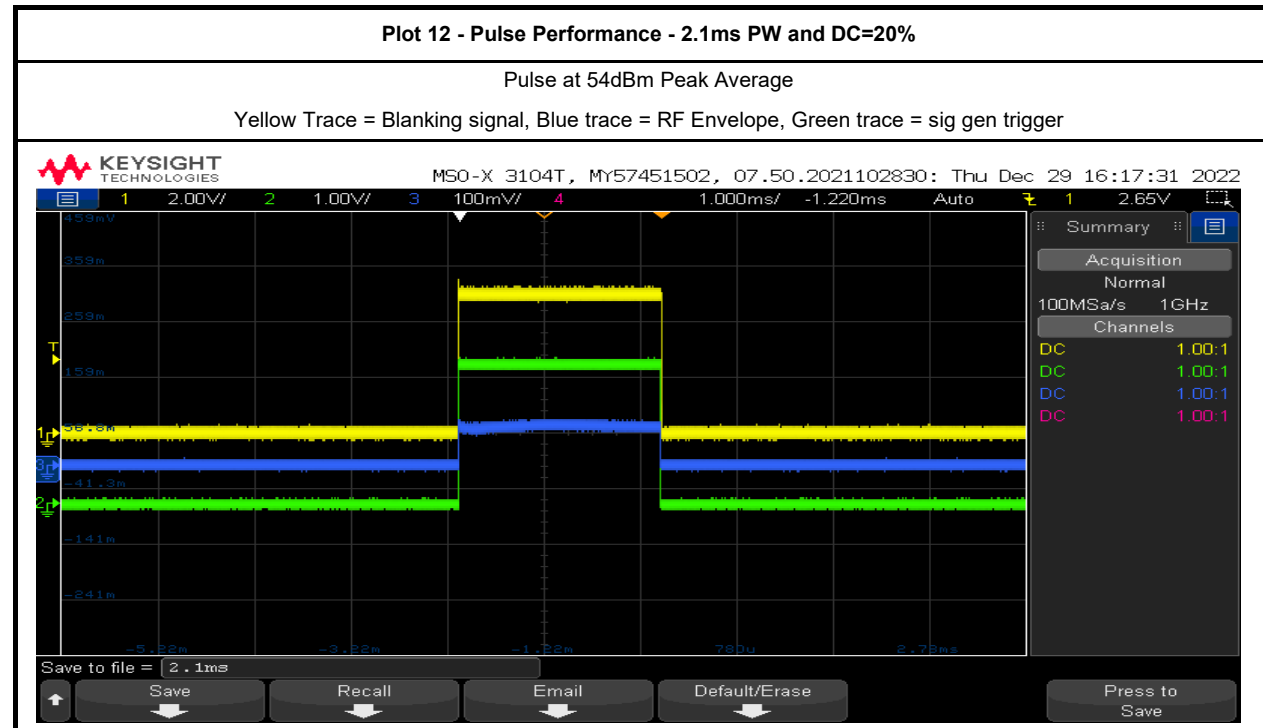
Performance Plots



Performance Plots



Performance Plots



Power Reporting Accuracy

Forward Power, 50 Ohm Load (Pulse/Long Pulse)						
Frequency (GHz)	Measuremnt Method	530uS pulse widht, 20% DC @ 59dBm out	200nS pulse widht, 20% DC @ 59dBm out	2.1mS pulse widht, 20% DC @ 54dBm out	Limits	P/F
2.9	External Test Equipment	60	60	54	±1 dB	P
	Ethernet Reporting	61	61	55		
3.2	External Test Equipment	60	60	54	±1dB	P
	Ethernet Reporting	60.2	60.3	54		
3.5	External Test Equipment	60	60	54	±1 dB	P
	Ethernet Reporting	60.6	60.4	53.6		