

FEATURES

Innovative HPA Architecture
 LDMOS Solid State Technology
 Frequency Range: 850-942MHz P-Band
 Typical Output Peak Power: 4.2kW Min
 Power Gain: 26 dB Typical at 40dBm Input
 Pulse Operation: 64μs and 5% Max
 Power Efficiency: 42% Min
 Output Survivability: ∞ VSWR
 RF Interface: Blind Mate TNC/SC
 DC & I/O Interface: Blind Mate Micro-D
 I/O Interface Protocol: RS-485
 Vertical Thermal Interface
 Operation Modes: Online/Standby/Offline
 Excellent Maintainability: Hot-Swappable

DESCRIPTIONS

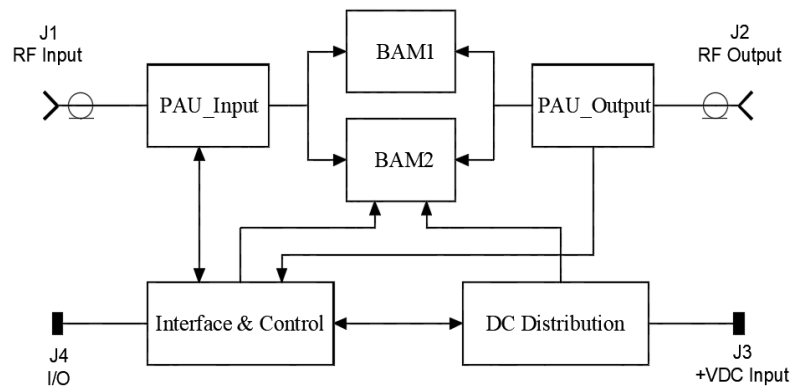
CTX09629-1 is a P-Band Solid State HPA utilizing Daico's patented "T-Plate" High Power Amplifier architecture, which enables both high power density and high reliability. CTX09629-1 is a custom designed high power amplifier that shall be capable of delivering 4.2kW peak power at 850-942MHz frequency range. This uniquely configured HPA supports 24/7 mission critical operation utilized in a higher power building block and demonstrates unprecedented availability, reliability, and maintainability.

The RF chain of 9629-1 Power Amplifier Unit (PAU) consists of PAU_Input, Basic Amplifier Modules (BAMs), and PAU_Out modules. The LDMOS BAMs are the core modules, which shall be capable of amplifying the input to 2.4kW level each with +50VDC supply and an "Enable" bias. PAU_Input includes an input directional coupler to sample the input RF signal a switch to control the input, a gain/phase adjustor to align RF amplitude and phase. PAU_Out includes a hybrid combiner (COM) to sum outputs from the BAMs, an isolator (ISO) to provide ultimate protection to the PAU, and a directional coupler to send forward and reflected RF samplings to a PAU_Det which shall interface with the PAU_Ctrl module. Nominal RF input power is +40dBm (10W) at J1, and its RF output power shall be >+66.23dBm (4.2kW) peak power at J2.

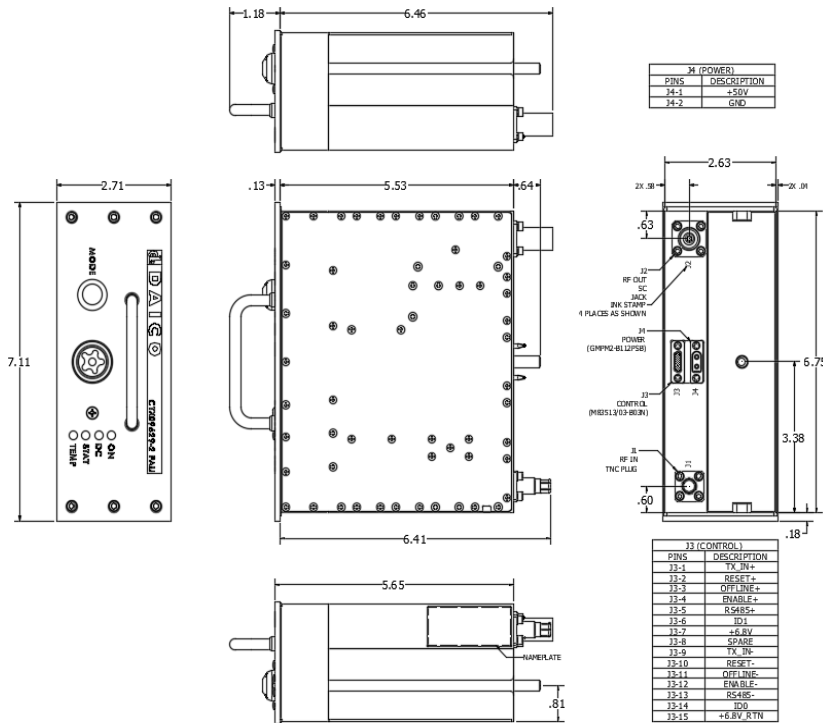


APPLICATIONS: P-Band Pulse High Power Amplifier

FUNCTIONAL BLOCK DIAGRAM



OUTLINE DRAWINGS



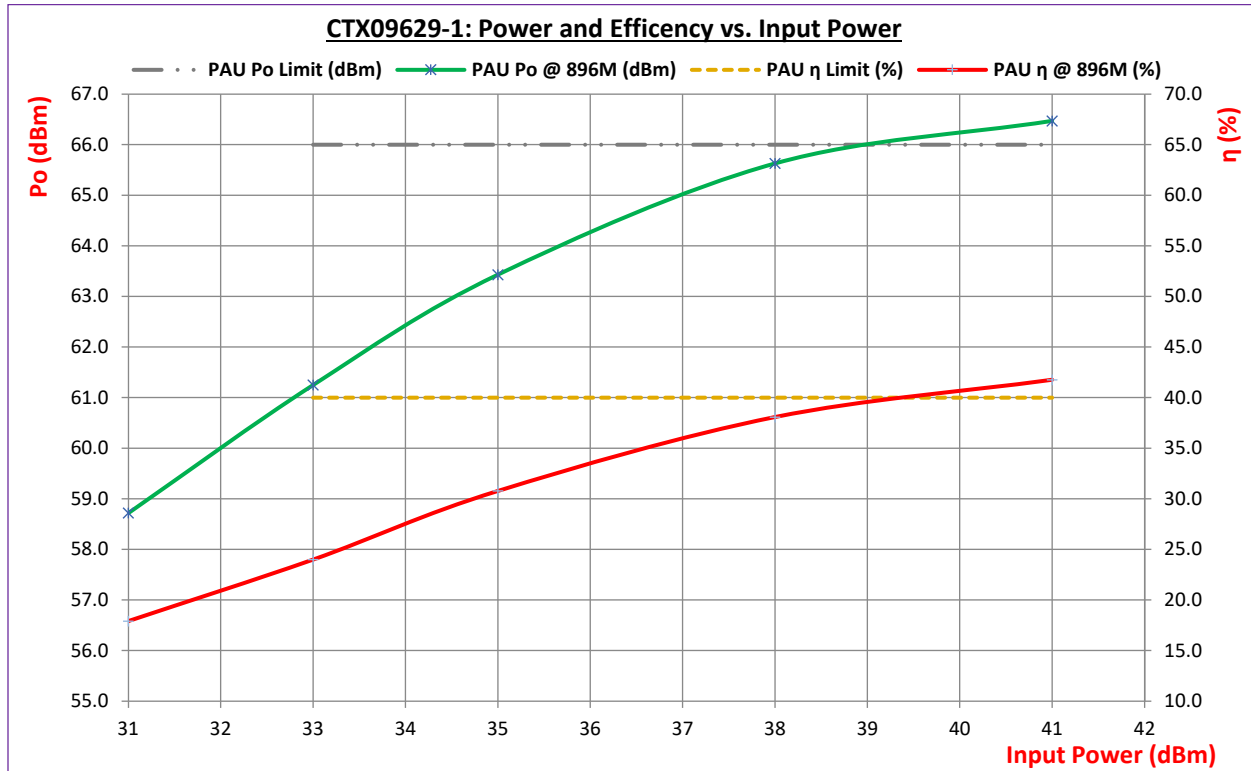
CTX09629-1 850-942MHz/4.2kW Solid State Power Amplifier

Product Specification

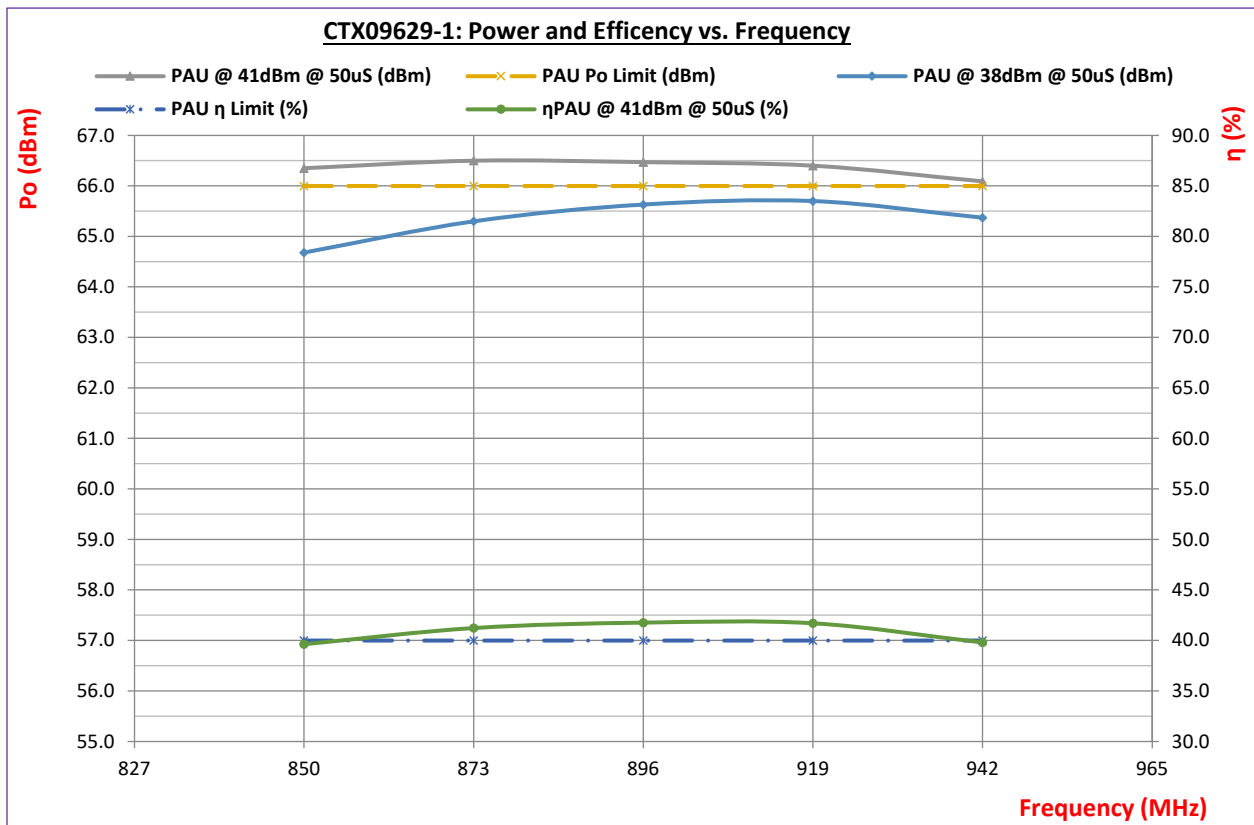
Parameter		Value			Unit	Comments
		Min	Typical	Max		
Electrical						
Operating Frequency		850		942	MHz	Upper and Lower -1dB Point
RF Input Power, peak			40.0 (10W)	41.0	dBm	Nominal Output Power
Linear Dynamic Range		10			dB	>26.5dB gain at 27dBm
RF Output Power, peak		66.00 (4.0kW)	66.23 (4.2kW)	67.35	dBm	2μS pulse width
				67.0		50μS pulse width
RF Output Power, avg.		180	189	226	W	50μS 4.5% duty factor
Harmonic Output	2 nd	30			dBc	
	3 rd	40				
	Others	40				
Spurious Output		60			dBc	962-1212MHz
Input/Output VSWR				1.5:1		14dB return loss minimum
Output VSWR Survival			∞ :1			
Pulse Width		2	50	64	μS	Protection: >68±1μS
Pulse Duty Factor			4.5%	5.0%	%	Protection: >(5.4 ± 0.2)%
Rise/Fall Time		80		800	nS	10% to 90%/90% to 10% power points
Pulse Droop			0.1	0.25	dB	10% to 90% of 32μS pulse
Pulse Phase Variation			4	6	degree	10% to 90% of 50μS pulse
Amplitude Match			±0.2	±0.3	dB	Unit-to-Unit
Phase Match			±3	±4	degree	Unit-to-Unit
Power Efficiency		42			%	
Primary Power (+50V) maximum Current		8.6	8.9	10.0	A	50μS (AV2): 500W maximum
Secondary Power (6.8V) maximum Current				0.367	A	2.5W maximum for PAU_Ctrl
Physical and Thermal						
Outline Dimensions		5.65" x 6.75" x 2.63"			Inches	Nominal L x W x H
Weight				6	Lbs	
Connectors	RF Input, J1	TNC plug				Blind Mate/Smooth Bore
	RF Output, J2	SC Jack				Blind Mate/Smooth Bore
	I/O, J3	Micro-D, 15 Pins, See Outline				PN: M83513/03-C03N
	DC Input, J4	Micro-D, 2 Pins, See Outline				PN: GMPM2-D112PSB
Heat Dissipation Max		237.6	245.7	276.2	W	At 4.5% duty factor
Heat Interface Area		1.63" x 6.75"				See Outline Drawing

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Typical Performance

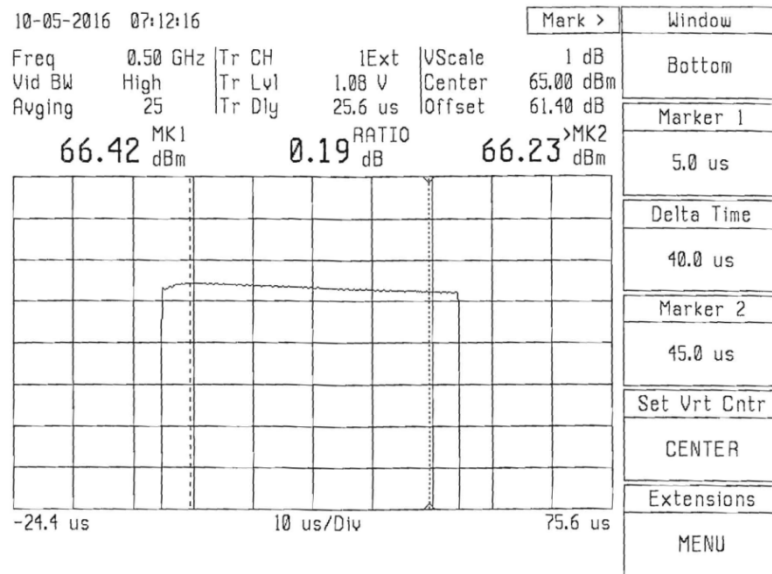


Plot 1: "Po and η vs. Input power at 896MHz" for CTX09629-1 under 50uS 4.5% Pulse

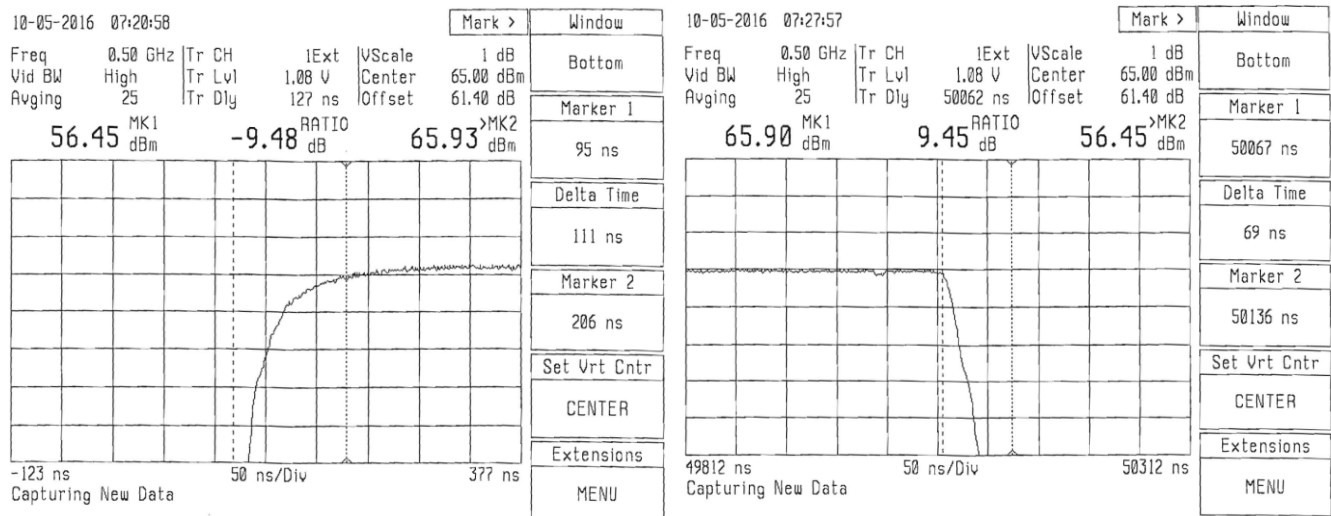


Plot 2: "Po and η vs. Frequency" for CTX09629-1 under 50μS 4.5% Pulse Operation

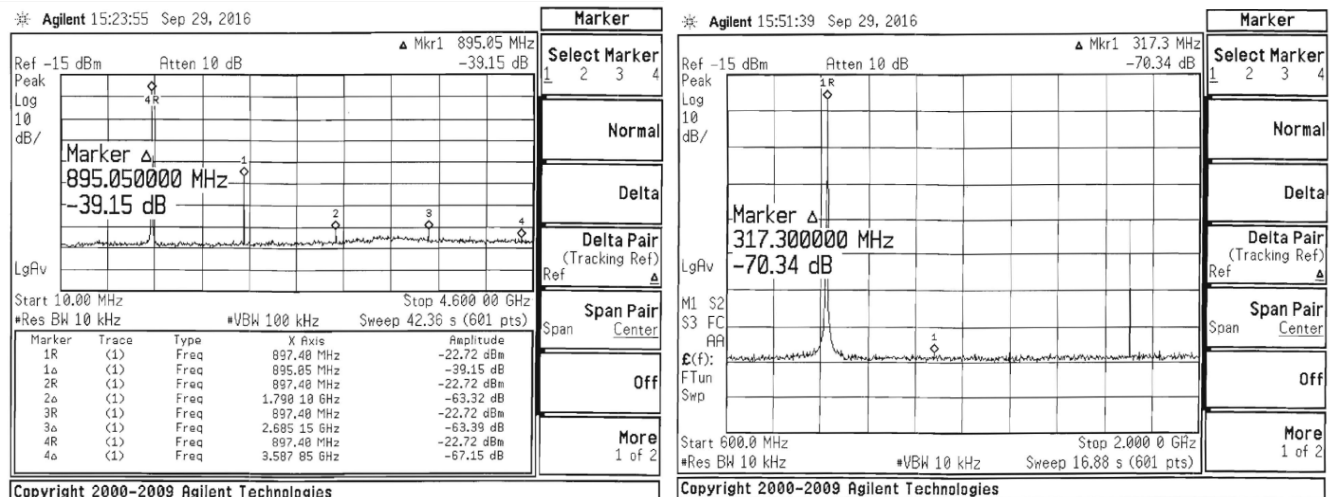
CTX09629-1 850-942MHz/4.2kW Solid State Power Amplifier



Plot 3: "Pulse Drog at Nominal Output Power at 896MHz" for CTX09629-1 under 50μS 4.5% Pulse

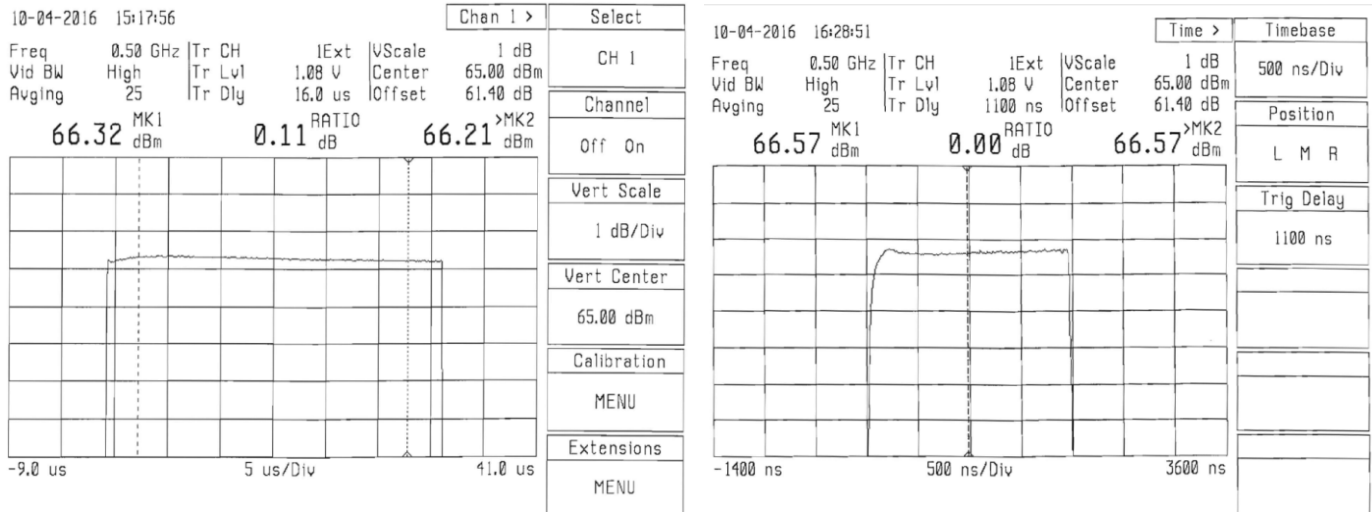


Plot 4: "Rise and Fall Time at Nominal Output at 896MHz" for S/N: 013 under 50μS 4.5% Pulse

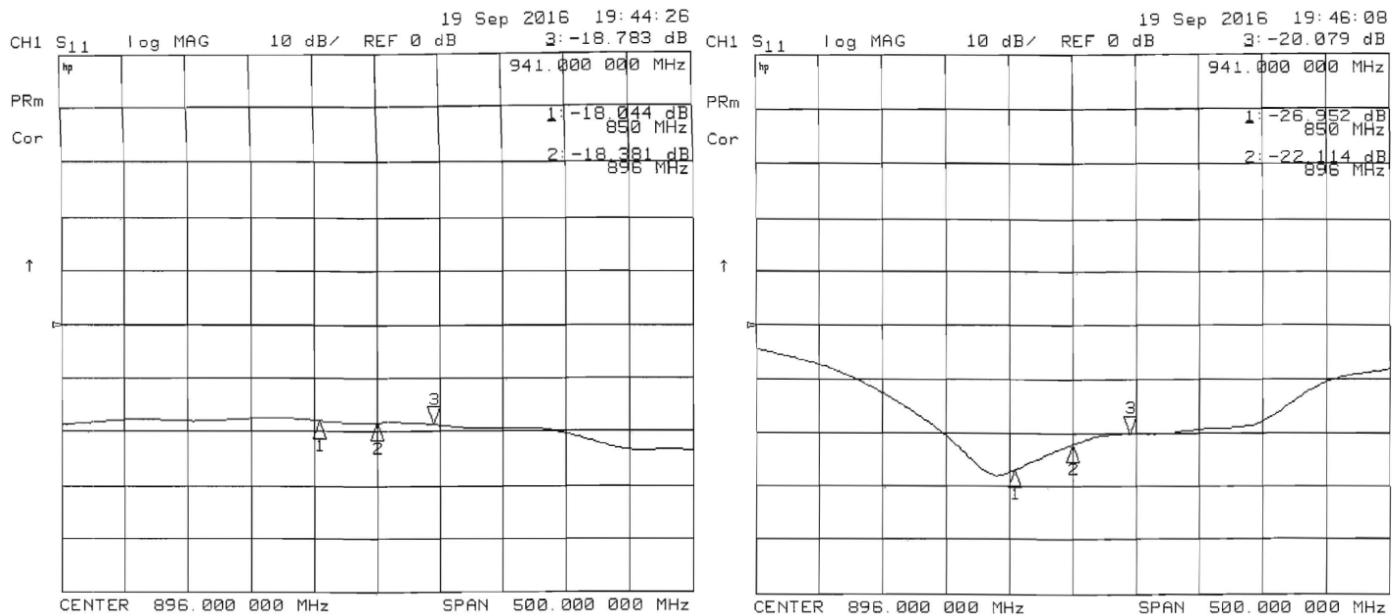


Plot 5: Typical Harmonic and Spurious Components at Nominal Output at 896MHz for CTX09629-1

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Plot 6: Typical 32µS Pulse (left) and 2µS (right) Pulse Outputs at 896MHz for CTX09629-1



Plot 7: Input VSWR (left) and Output VSWR (right) for CTX09629-1