

Amplifiers

Model 500S1G6C

Features:

- 500 W CW, 1.0 – 6.0 GHz
- Class A design
- 100% mismatch tolerant
- Built-in fault monitoring and protection
- Remote control: Ethernet, USB, GPIB, fiber-optic serial, RS-232
- Modular design for easy maintenance and service
- Low acoustical noise

Applications:

- EMC (military, aviation, automotive, commercial)
- Radiated and conducted EMC testing
- General purpose, antenna, and component testing
- 4G LTE, 5G NR (FR1/FR2), OFDM, PSK/QAM, Wi-Fi etc.

To view our full amplifier portfolio visit: www.ar.ametek-cts.com

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ISO 9001: 2015 Certified
ISO 17025 :2017 Accredited

The Model 500S1G6C is a self-contained, air-cooled, solid-state Class A broadband power amplifier designed for applications demanding wide bandwidth coverage, high gain, and linear performance. It delivers a minimum of 500 W over a frequency range of 1.0 to 6.0 GHz. The unit includes safeguards against input overdrive beyond 0 dBm, as well as various fault conditions such as excessive temperature and power supply issues.

A scalable, module-based design combined with advanced forced-air cooling ensures reliable operation and long-term performance in demanding test environments. A clear front-panel display provides immediate visibility of operating status and fault conditions, enabling fast setup and confident operation. For maximum flexibility, all control and monitoring functions can be accessed either locally via the front panel or remotely through a wide range of standard interfaces, including GPIB/IEEE-488, RS-232, fiber-optic serial, USB, and Ethernet.

This Class A amplifier is engineered for EMC immunity, communications, and aerospace & defense testing, delivering exceptional stability and linearity under demanding load conditions, including high VSWR, open, or short circuits. Low spurious emissions, high spectral purity, and wideband performance make it ideal for modern wireless and 5G applications.

Export classification for this device is 3A001. These goods, technologies, or software are regulated under U.S. Export Administration Regulations, and unauthorized diversion is prohibited by U.S. law.



Model 500S1G6C

- **500 W**
- **1.0 – 6.0 GHz**

Electrical Specifications

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Rated Power Output	PSAT	500	550	>600	W
Input for Rated Output	Pin			1	mW
				0	dBm
Power Output @ 3 dB Compression	P3dB	475	525	>575	W
Power Output @ 1 dB Compression	P1dB	400	450	>500	W
Operating Frequency	BW	1.0		6.0	GHz
Gain (Small Signal)		61	64	66	dB
Gain Reduction Adjustment (when below gain compression)		10	12	15	dB
Flatness @ small signal (-20 dBm input)	ΔG		±2.0	±2.5	dB
Input Impedance	Z in		50		Ohm
			1.5:1	2.0:1	VSWR
Output Impedance	Z out		50		Ohm
3rd Order Intercept	IP3		+63		dBm
Noise Figure	NF		10		dB
Harmonic Distortion @ 400 W for entire band except 2 – 3 GHz	H2, H3		-30	-20	dBc
Harmonic Distortion @ 400 W for 2 – 3 GHz	H2, H3		-22	-18	
Spurious			-73		dBc
Power Consumption	PD			3900	W

Absolute Maximum Rating

Exceeding any of the limits listed here may result in permanent damage to the device.

Parameter	Minimum	Typical	Maximum	Unit
RF Drive		0	+13	dBm
RF Load		1:1	∞	VSWR
RF Load Reflected Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. However, mismatch above 6:1 may limit output to 250 W reflected power.			50	%
AC Power (single phase)	200		240	VAC
AC Power	47	60	63	Hz
Ambient Temperature	+5	+25	+40	°C
Storage Temperature	-20		+50	°C
Altitude			1000	m
Shock/Vibration	MIL-STD-810G Method 514 and 516			

Mechanical Specifications		
Parameters	**Typical**	**Unit**
Dimensions (26U Rack) (W x H x D)	57.3 x 136.0 x 67.1	cm
	22.6 x 53.5 x 26.5	in
Weight (With Cabinet)	177	kg
	390	lb
Cooling	Forced air (self-contained fans)	
Acoustic Noise Measured @ 1 Meter	62	dBA

Connector Interfaces	
Function	**Type**
RF Input	N, female, rear (50 Ω) (option front)
RF Output	7/16 DIN, female, rear (50 Ω)
RF Sample	N, female (50 Ω) (57dB typical)
IEEE-488	24-pin
RS-232	9 pin subminiature D
Ethernet	RJ-45
RS-232 (fiber optic)	ST
USB 2.0	Type B
Interlock	15-pin subminiature D
AC	5-meter harmonized power cord supplied with amplifier. The power cord is left open-ended to allow for facility power connection of user's choice.

Regulatory Compliance	
Type	**Standard**
EMC	EN 61326-1
Safety	UL 61010-1
	CAN/CSA C22.2 #61010-1
	CENELEC EN 61010-1
RoHS	Directive 2011/65/EU
Export	3A001

Ordering Options

500S1G6C	-		-	**N**	-	**R**	-	**716**	-	
Model		**RF IN Conn Location, Type**				**RF OUT Conn Location, Type**				**RF Sample Ports**

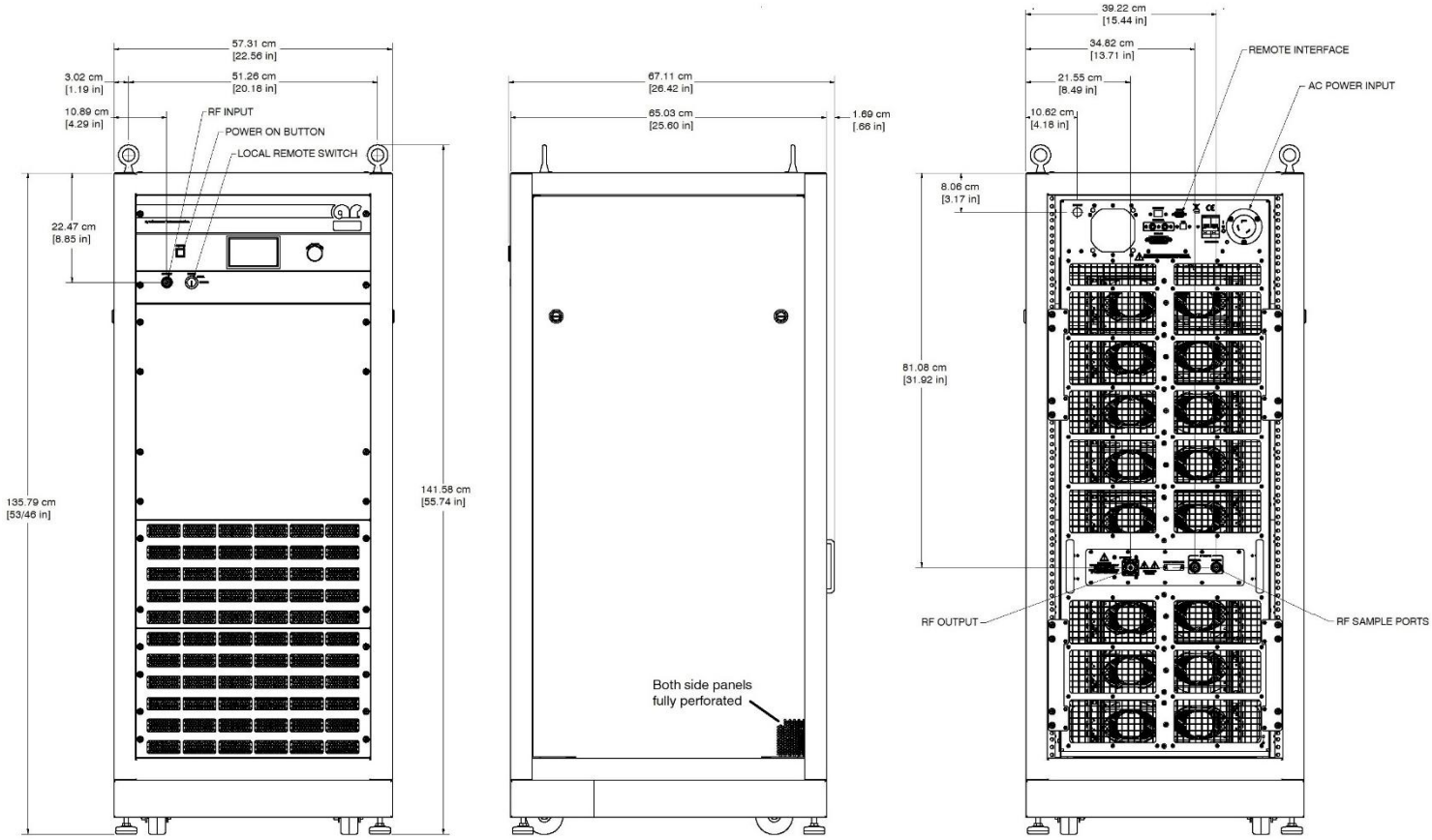
Connector	
Front	F
Rear	R

RF Sample Ports	
Front	SPF
Rear	SPR

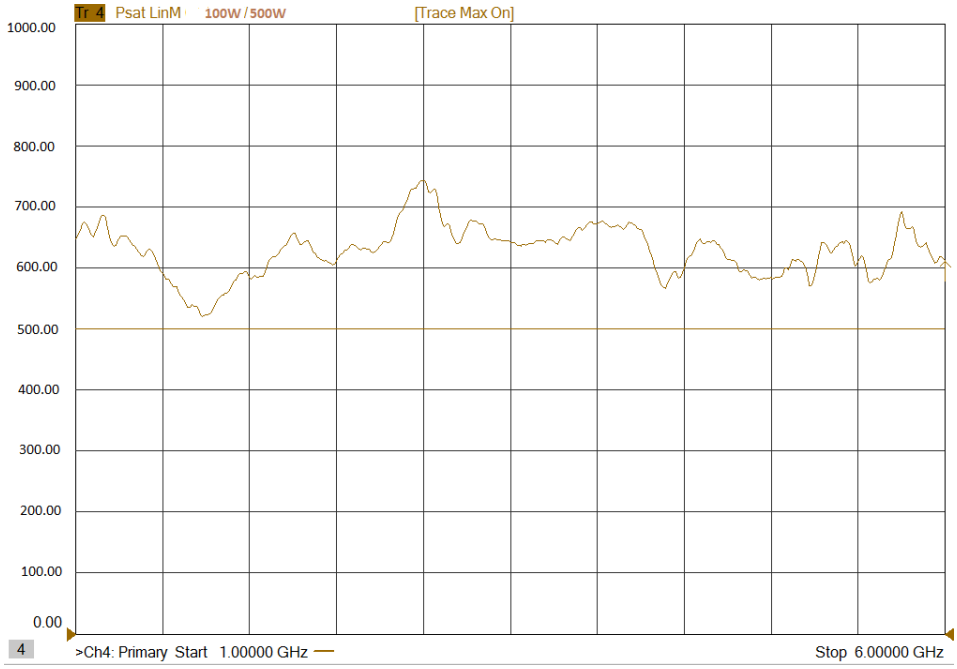
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- **1.0 – 6.0 GHz**

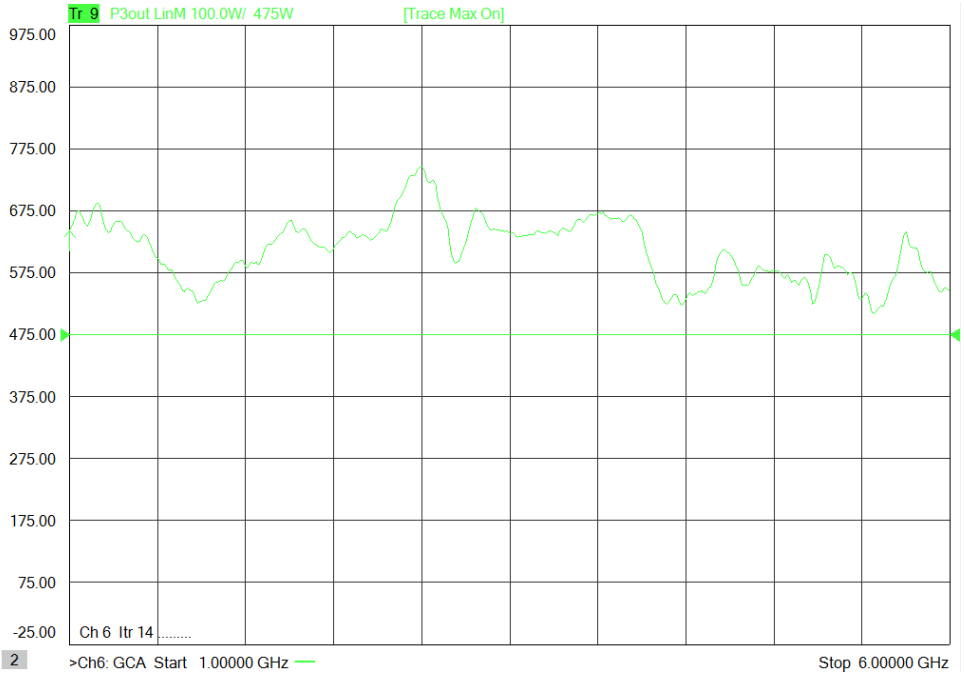
Envelope Drawing



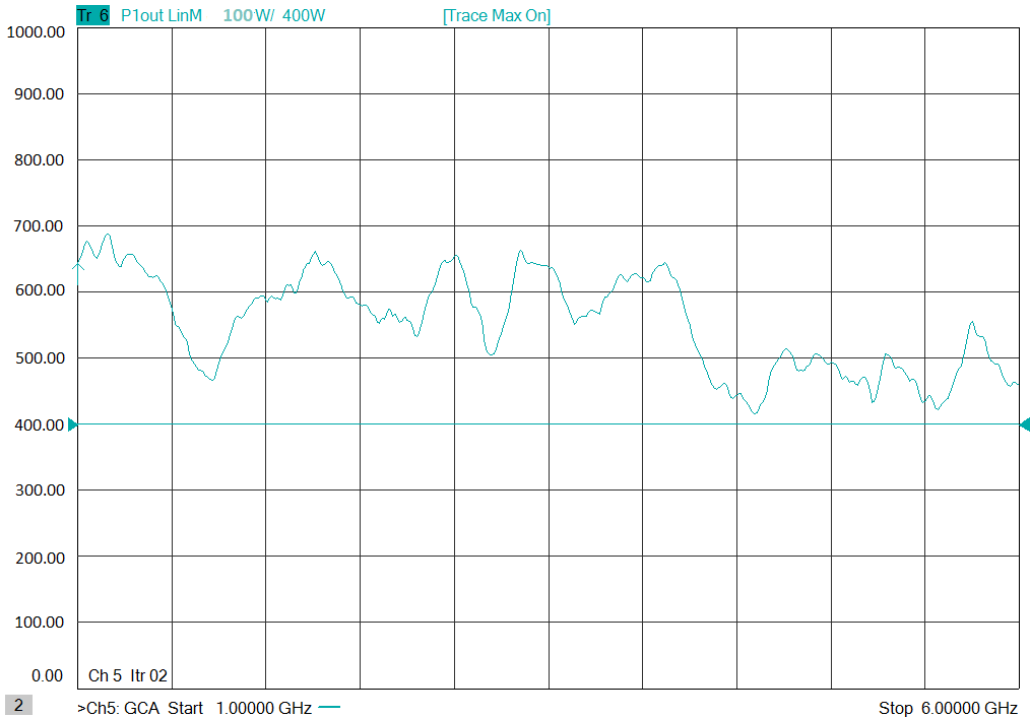
TYPICAL PSAT POWER @ 0 dBm INPUT



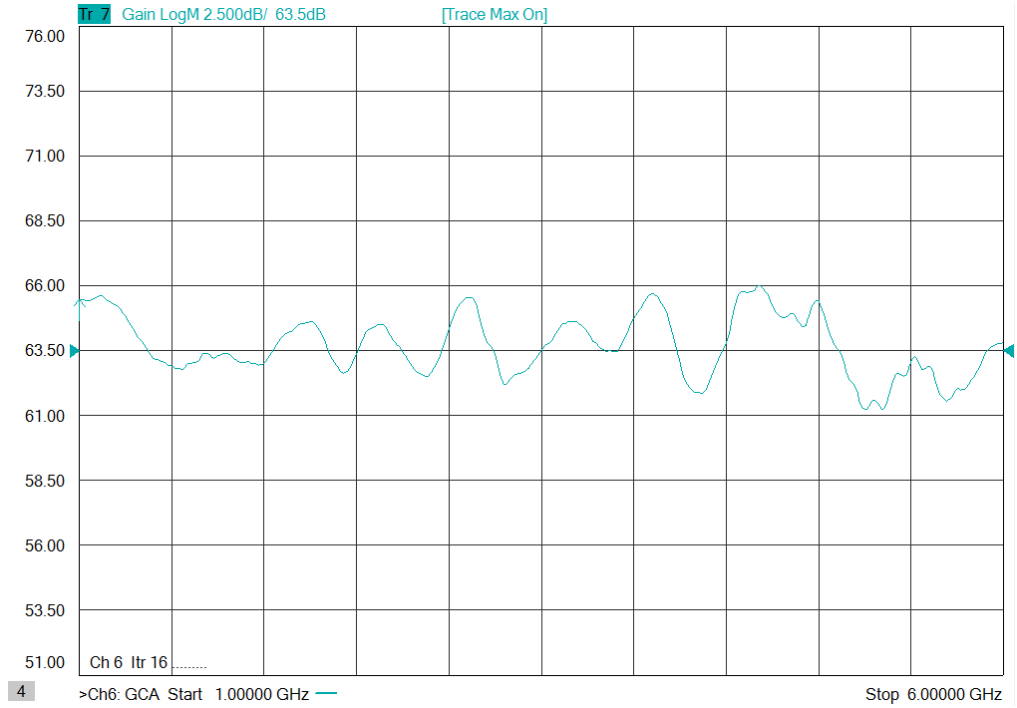
TYPICAL POWER @ P3 dB COMPRESSION



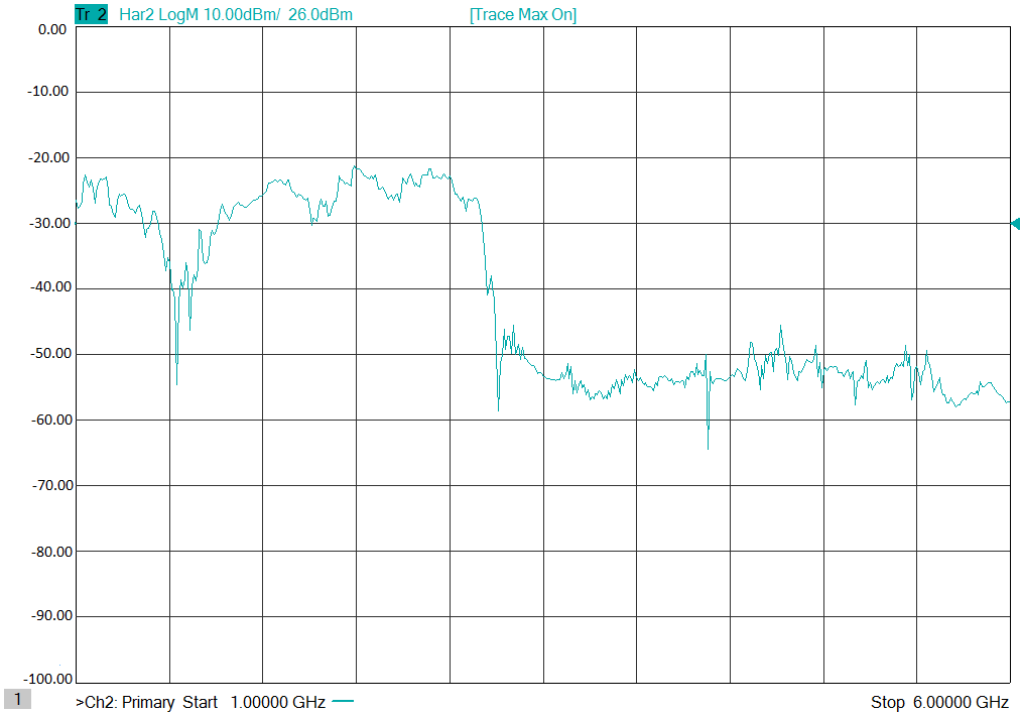
TYPICAL POWER @ P1 dB COMPRESSION



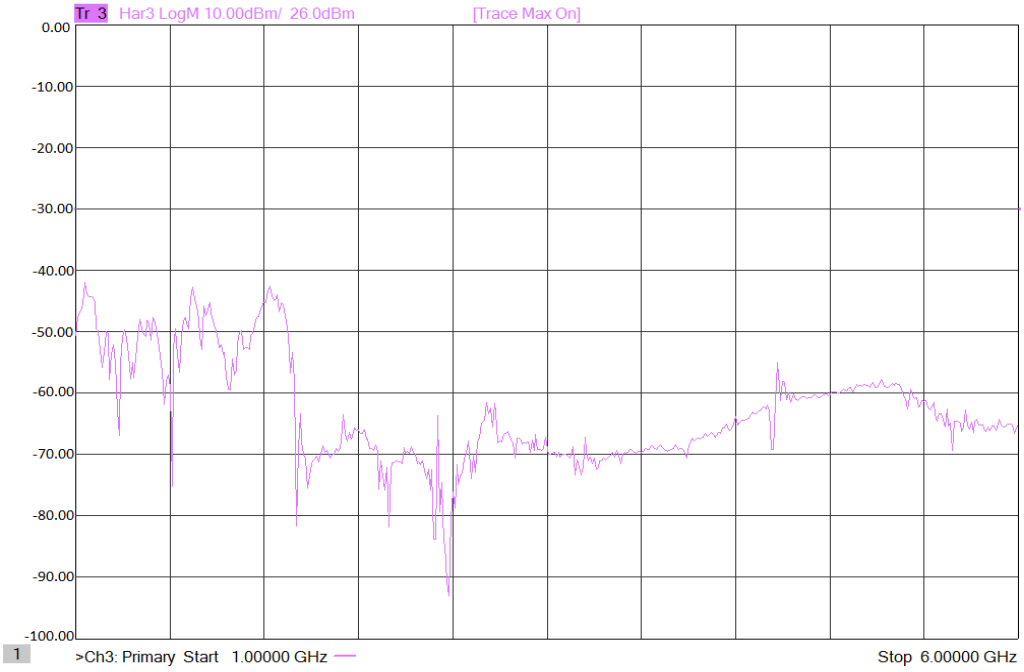
TYPICAL SMALL SIGNAL GAIN @ -20 dBm INPUT



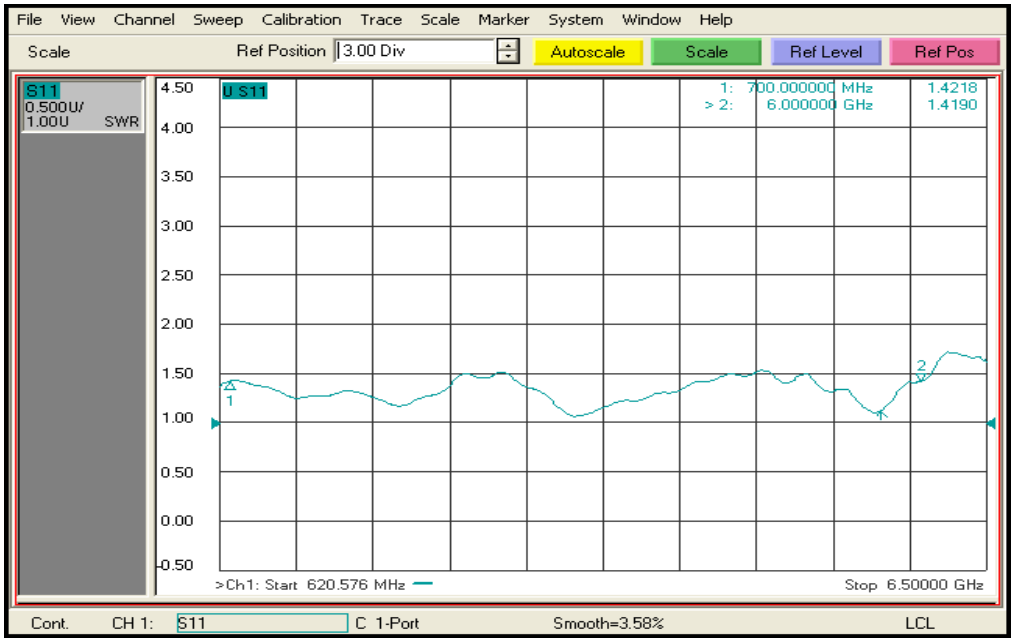
TYPICAL 2ND HARMONIC @ 400 W



TYPICAL 3RD HARMONIC @ 400 W



TYPICAL INPUT VSWR



TYPICAL NOISE FIGURE

