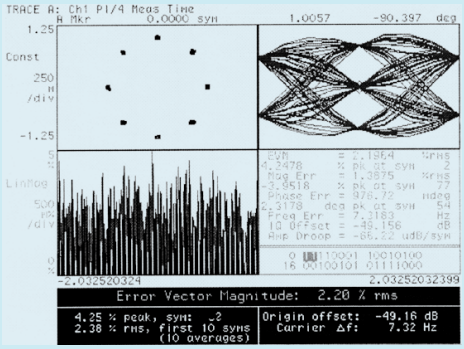
Power Amplifiers

SA1070

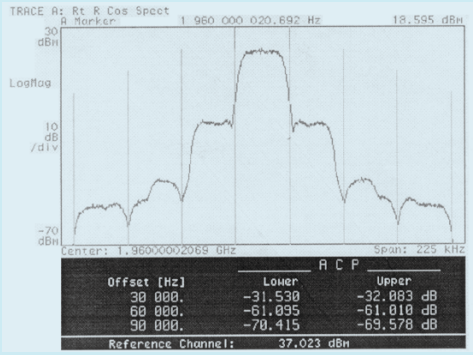
TDMA 8-Watt
1.93 GHz to 1.99 GHz
Linear Power Amplifier Module

- *8 Watts TDMA IS-136*
- *+38 dBm P1dB*
- *40 dB Gain*
- *-30°C to +85°C*



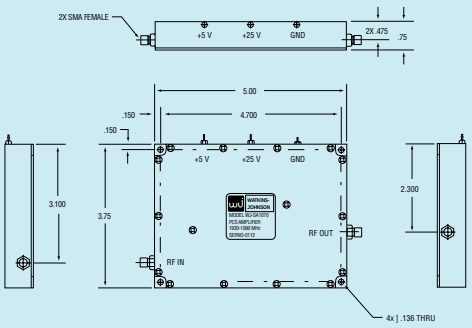
Output modulation characteristics with a +37 dBm (5-watt) NADC π/4 DQPSK output. This HP 89441A display includes a constellation diagram, the samplings of vector error, and the EVM (error vector magnitude) calculations from averaged samplings of the signal.

Watkins-Johnson's SA1070 Power Amplifier provides exceptional linearity and low vector error for TDMA digital modulation applications. Utilizing WJ's GaAs amplifiers driving bipolar transistors in the class A output stage, the SA1070 achieves a very high output third-order intercept point combined with superior efficiency.



Amplifier output spectrum with a +37 dBm (5-watt) NADC π/4 DQPSK output. The first and second adjacent channels are at 30 kHz and 60 kHz offsets. The first adjacent channels of our measurements do not overlap with the primary channel.

OUTLINE DRAWING



The Wireless Edge™

WJ Wireless Products: 1-800-WJ1-4401 • FAX: 650-813-2447 • e-mail: wireless.info@wj.com.

WATKINS-JOHNSON

Power Amplifiers

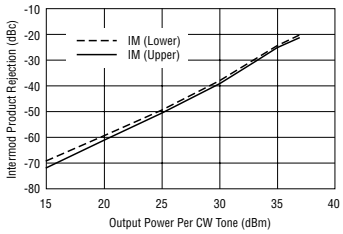
SA1070

TDMA 8-Watt 1.93 GHz to 1.99 GHz Linear Power Amplifier Module

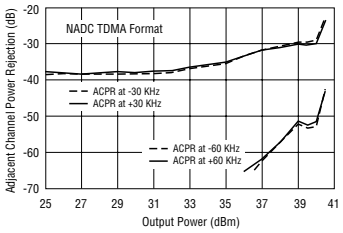
Specifications

Parameters	Typical Level	Specified Limits
Frequency		1.930 -1.990 GHz
P_{out} at 1 dB Gain Compression (Min.)	+38 dBm	+37 dBm
Small Signal Gain at +25°C		40±0.75 dB
Gain Variation over Temperature (-30° to +85°C)		±0.75 dB
NADC Parameters[1] (with P_{out} ≥39 dBm)		
Output Power	+39 dBm	+39 dBm
ACP (30 kHz offset)	-29 dBc	-26 dBc
ACP (60 kHz offset)	-51 dBc	-45 dBc
Error Vector Magnitude	2.9%	4.0%
Magnitude Error	1.7%	2.5%
Phase Error	1.3 degrees	1.7 degrees
3rd Order Two-Tone Output Intercept Point, Measured with +25 dBm per Tone, T = 25°C (Min.)	+47 dBm	+45 dBm
Harmonic Output (with +39 dBm TDMA output at the fundamental) (Max.)		
2nd Harmonic	-25 dBm	-13 dBm
3rd Harmonic	-17 dBm	-13 dBm
Noise Figure (Max.)	5.0 dB	6.0 dB
Input and Output Impedance		50 ohm
Return Loss, 1.930 to 1.990 GHz (Min.)		
Input and Output	-20 dB	-15 dB
Load Mismatch Sustainable without Damage (Pin ≤ -5 dBm Vsupply ≤ +25.0 Vdc) Stability, no Spurious Output above -50 dBm		3.0:1 Unconditionally stable for all loads
Supply Voltages		+5 and +25 Vdc
Maximum Supply without Damage		
+25 Volt Supply		+26.5 Vdc
+5 Volt Supply		+6 Vdc
Maximum DC Current		
+25 Vdc Supply	1850 mA	2000 mA
+5 Vdc Supply	505 mA	560 mA
DC Power Dissipation (Max.)		
+25 Vdc Supply		50 watts
+5 Vdc Supply		2.8 watts
Baseplate Temperature Range[2]		-30 to +85°C
Size (Refer to interface control drawing WJ-299010SK)	0.75" (H) 3.75" (W) 5.00" (L)	
RF Connectors	SMA Female	
Weight	13.8 oz.	14 oz.

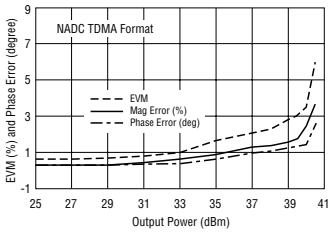
Intermodulation Suppression vs. Output Power Per Tone



ACP Rejection vs. Output Power



EVM vs.Output Power



Notes: 1. TDMA spectral regrowth is measured with a spread spectrum input from a Marconi 2051 Signal Generator selecting the "Digital/Cellaular/NADC" modulation system that produces π/4 DQPSK modulation with 24.30 kHz symbol rate and Root Nyquist filtering with alpha = 0.35.
This unit is to be mounted on a ground plane and thermal heat sink, with a maximum heat sink temperature of +85°C.
2. This unit is to be mounted on a thermal heat sink with a maximum heatsink temperature of +85°C.

The Wireless Edge™